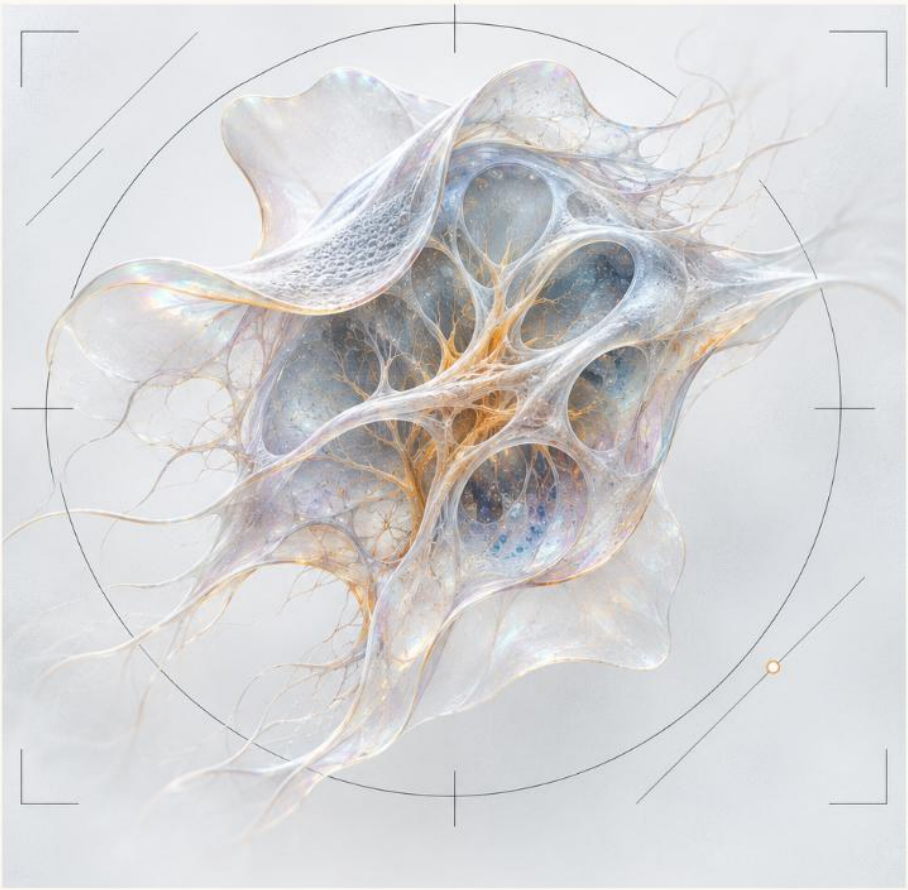
A Protocol for the Unknown



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Mira Veyran

2026

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A practical book about decisions during biological threats and events of unknown nature. It guides the reader from the first report through helping people, investigation, and addressing consequences to the restoration of ordinary life.

The book is intended for studying how a response is organized and for developing local procedures. Specialists apply medical, engineering, and laboratory procedures within their training and authority. The authors' proposed pathways require validation under the conditions of a specific organization.

The text distinguishes published scientific propositions, the authors' proposals, and teaching scenarios. Artistic scenes show spatial arrangements; precise diagrams explain connections and decisions. An amber accent draws attention to an element, whose meaning is determined by its caption or legend. Color alone does not indicate an established hazard.

If an event is happening now: NAV · p. 003 · For sequential reading: Reading guide · p. 007 · Full contents: Contents · p. 010 · Action cards: Action cards · p. 154 · Terms and abbreviations: Glossary · p. 187

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Quick navigator: what's happening now

Find the line that describes the observed event and open the card on the right. The name of the reason can be clarified later. If security is compromised and someone needs help at the same time, assign responsibility for both tasks. The medical team assesses the urgency based on the person's condition.

Situation	The meaning of the first task	Card
An unusual message, illness, or device reading has appeared	Convey the facts, check the signal, name the recipient of the decision	P01 · p. 155
The person is breathing heavily, is unconscious, or is rapidly deteriorating	Assess immediate danger and arrange immediate assistance	P02 · p. 156
Possible exposure, no symptoms yet	Assess the circumstances and agree on surveillance of the person	P03 · p. 157
The protection is damaged or its operation cannot be confirmed	Check people, site vital functions and existing barriers	P04 · p. 158
Need a first aid plan for unclear reasons	Identify leading disorders, support and diagnostic issues	P05 · p. 159
It is unclear what was found and whether it is associated with harm	Compare explanations and establish the limits of available evidence	P06 · p. 160
Control has come or the patient’s condition has changed	Check the dynamics, the result of assistance and the need for strengthening	P07 · p. 161
New data requires reconsidering treatment	Update prescriptions, explain to the patient and monitor the result	P08 · p. 162
Exposure continues or environment requires recovery	Separate the source, exposure path and completion criteria	P09 · p. 163
Available diagnostic, prevention or treatment tools are insufficient	Identify the need and organize a sound research program	P10 · p. 164
The event affects other facilities or exceeds local capabilities	Request specific assistance and agree on the distribution of tasks	P11 · p. 165
Control, communication, help, or critical resource unavailable	Turn on reserve and preserve vital functions	P12 · p. 166
You need to allow access, resume work or remove the measure	Check the reasons for a specific action and follow-up	P13 · p. 167
The acute stage has been stabilized, consequences and challenges remain	Transfer assistance and restoration to permanent services with confirmation	P14 · p. 168

After the card, check the location and control according to U0 · p. 169. If the resource or person in charge is unavailable, open P12 · p. 166, if external assistance is needed - P11 · p. 165. The transfer is completed by confirmation of the recipient.

Navigation by location

Find the location of the event. A full chapter explains its limitations and dependencies, and a short script helps put together the first outline. If the event spans multiple locations, assign a host person at each boundary between them.

Where does the event take place?	Full chapter	Brief scenario
Orbital station with closed life support	G43 · p. 108	S1 · p. 171
Lander, external works and base on a planet, satellite or comet	G44 · p. 111	S2 · p. 172
Return of crew or robotic samples	G45 · p. 114	S3 · p. 173
Unknown object discovered on Earth	G46 · p. 116	S3 · p. 173
Laboratory, production, storage, material transportation	G47 · p. 119	S4 · p. 174
Hospital, long-term care facility, congregate living	G48 · p. 121	Choice according to the situation
Village, island, expedition, remote settlement	G49 · p. 124	S5 · p. 175
School, workplace, public event	G50 · p. 127	Choice according to the situation
Train, ship, plane, airport, port	G51 · p. 129	Choice according to the situation
City, water supply, food chains, connected networks	G52 · p. 132	S6 · p. 176
Region, country, international interaction	G53 · p. 135	S7 · p. 177
Agriculture, Wildlife, Affected Areas	G54 · p. 137	Choice according to the situation

How to combine chapters. If a passenger falls ill, the medical team uses the help card, and the head of the transportation uses the head of transport. When transferred to a hospital, the task of the receiving institution appears. Each party confirms what exactly it accepts and what else the sender must do.

What to find out on the spot. What help is available? Where do water, energy and necessary supplies come from? How to contact the receiving service? Who has the right to change the operation of systems? The answers determine what actions the team can perform without losing vital functions.

If there is no exact match, start with P01 · p. 155 and U0 · p. 169. Select a chapter with similar restrictions: distance, shared air, large numbers of people, movement, or dependence on external supplies. Write down significant differences and have a subject matter expert evaluate them.

Navigation by role and failed function

Select your task and first route. If you combine responsibilities, indicate in which role you make each decision. The head and deputy are determined according to G5 · p. 021, the general operating procedure is according to U0 · p. 169. Instructions should be consistent with your training and available resources.

Your role	Problem and first route
Witness or person after possible exposure	Report facts, get help, coordinate observation: P01 · p. 155, P02 · p. 156, P03 · p. 157
Medical team	Assess urgency, initiate assistance, review condition and treatment: P02 · p. 156, P05 · p. 159, P07 · p. 161, P08 · p. 162
Incident Commander or Deputy	Assign owners, coordinate resources and external support: U0 · p. 169, P11 · p. 165, P12 · p. 166
Engineer and security specialist	Check barriers, dependencies and suitability of the regime: P04 · p. 158, G14 p. 040, G18 · p. 047
Epidemiological and diagnostic group	Define case, assess impact and evidence: P06 · p. 160, G32 · p. 079, G33 · p. 081
Scientific director and research organization	Determine the need and permitted path of research: P10 · p. 164, G39 · p. 095, G41 · p. 101
Recovery Manager and Access Authority	Eliminate source and verify specific use: P09 · p. 163, P13 · p. 167, G55 · p. 140
Supply and social support	Provide for the needs of people, reserves and subsequent restoration: G18 · p. 047, G19 · p. 049, P14 · p. 168
Responsible for information and shift transfer	Save the basis of decisions, versions and unfinished tasks: G6 · p. 024, P11 · p. 165, P14 · p. 168

If it fails, find the lost function. The manager appoints two people responsible: one provides the necessary assistance, the other restores the possibility of work. In a small team, these duties may be performed by one person, but both tasks should remain on record.

What stopped working	Where to go and what to install
Communication, digital system or access to the manager	P12 · p. 166, G18 · p. 047: active control, standby, local recording
Medical care does not meet need	P02 · p. 156, G29 · p. 071, P11 · p. 165: necessary support, limiting resource, receiving team
Engineering protection or monitoring its condition	P04 · p. 158, G14 p. 040, G15 · p. 042: available functions, dependencies, valid mode
Supply or vital resource	P12 · p. 166, G18 · p. 047, G20 · p. 052: residual capacity, reserve, need to move people

When requesting assistance, state the shortage and the consequences of the delay. After restoring the function, check its readiness and review the restrictions on P13 · p. 167.

How to use the book

The book can be read sequentially or opened for a specific task. Navigators at the beginning lead to the desired page. Action cards are collected in a separate section CARDS · p. 154; explanations and detailed cases are in the chapters. For your first quiet reading, start with READING · p. 007, then go to G1 · p. 013.

Part	Chapters	For what decision?
I. Intake and coordination	G1 · p. 013–G6 · p. 024	Find route, assign owner, save decision and transfer
II. Nature and limits of the threat	G7 · p. 026–G13 · p. 037	Distinguish between mechanisms of harm, origin and degree of confirmation
III. Protection and continuity	G14 · p. 040–G20 · p. 052	Check barriers, resources, limitations and rescue capability
IV. Helping a person	G21 · p. 054–G31 · p. 076	Organize urgent care, treatment, review and recovery
V. Investigation and elimination	G32 · p. 079–G42 · p. 104	Determine the cause, restore the environment and evaluate the remedy
VI. Space and return	G43 · p. 108–G46 · p. 116	Consider confined environment, mission, crew and material transfer
VII. Earthly locations	G47 · p. 119–G54 · p. 137	Apply a general framework to the institution, territory, and associated networks
VIII. authorization and development of the system	G55 · p. 140–G60 · p. 151	Review measures, finalize management and verify corrections

How to read the grounds. The number in square brackets leads to the source at the end of the book. The source confirms the position in its field of application. The author's sequences combine these concepts into a working model that the organization adapts to its people, resources, and mandates. Study cases are indicated separately; their events and names are fictitious.

Who is the text intended for? The reader without special training can understand the general course of events, the order of the message and how to get help. The manager will find the distribution of tasks and transfer conditions. The physician, engineer, and researcher use explanations as a link between their professional procedures and the overall work of the team. Checking local instructions is described in G59 · p. 150 and G60 · p. 151.

Three reading levels. The card helps you find the nearest action. The chapter explains the choice and its limitations. The case study shows how the decision changes as information becomes available. Working forms save the result; Completed examples are in EXAMPLES · p. 178, blank forms - in FORMS · p. 182.

Before Your First Reading

At the beginning of an incident, there are usually isolated reports: someone has become ill, an instrument has shown a deviation, or a transfer record does not match the information received. There is no overall picture yet. Some people are already waiting for a decision; others are only beginning to collect data. This book starts in that interval between the first signal and a clear explanation.

The reader's task is to learn to keep several connected questions in view at once. Who needs help now? What has the team actually observed? What harm does it fear? What action is available given the current information? Who will check the outcome? As you read, these questions will acquire specific content.

Most organizational decisions must be made before an investigation provides a complete answer. The book therefore examines the grounds for choosing an action and the conditions for reconsidering it in detail. A decision may be temporary and still be adequately justified: the team states its objective, explains its assumptions, and defines in advance what new information would change the plan.

What We Mean by a Protocol

A protocol connects an observable situation to an action by a designated person. Its trigger, immediate objective, necessary resources, means of confirming completion, and next responsible person must be clear. This helps people coordinate their actions even when they see different parts of an incident.

Imagine handing a task from one shift to another. "The information has been sent" describes the sender's action. "The receiving employee confirmed the task and stated the next step" describes a completed handover. The difference is small on paper, but it is what tells us who is continuing the work.

In this book, a "barrier" is a measure or procedure that limits a particular exposure or effect. It may be a technical system, a check before movement, or an organizational separation of tasks. It is assessed through its specific function: what it prevents, what it depends on, and how the team detects failure. This is examined in detail in Chapter 14 · p. 040.

Finding Your Way through the Main Text

The first six chapters explain how to receive a report, assign responsibility, and preserve the grounds for decisions. The book then introduces distinctions among mechanisms of harm and shows how to handle competing explanations. These distinctions prevent every unusual event from being attributed to the same cause.

Part III concerns protection and the continuity of vital functions. The medical part follows: urgency, an initial plan, reassessment, and continuing care. The research part connects the team's question with data capable of answering it, then considers removing the source and the path toward developing a medical intervention.

The chapters on space and locations on Earth show how the general logic changes with distance, environmental structure, mobility, or people's dependence on care. The final part concerns checking outcomes and recovery. It returns the reader to the beginning: analyzing an incident should change preparations for the next event.

On your first reading, you can skip detailed source lists and return to them after the chapter. Check unfamiliar words in the Glossary · p. 187. If you need a specific task, use the navigation guides; you do not have to read every preceding chapter in sequence.

Five Cases That Continue throughout the Book

The teaching cases let you follow one event from different professional perspectives. Their places, people, and circumstances are fictional. They demonstrate decision-making logic, rather than proving the existence of a particular threat. R denotes an extended case; short location scenarios are labeled S.

R1. Two signals aboard Sfera Station. An unusual reading in a work compartment and a crew member's illness initially appear connected. The team must test technical and medical explanations, keep the station operating, and separate decisions about the person from decisions about the compartment. The case begins in	Chapter 1 · p. 013
and develops further in	Chapter 9 · p. 029, Chapter 14 · p. 040, Chapter 43 · p. 108, and Chapter 55 · p. 140.
R2. A cargo transfer between Sever and Bereg. Dispatch has been recorded, but receipt is unconfirmed. The investigation shows how an old copy of a log can distort the overall picture. Actual location, the material's fitness for use, and the transfer of responsibility receive separate answers. The case begins in	Chapter 5 · p. 021 and Chapter 6 · p. 024
and continues in	Chapter 10 · p. 032, Chapter 35 · p. 086, Chapter 47 · p. 119, and Chapter 58 · p. 147. Completed documents: Examples · p. 178.

R3. The hospital continues to receive patients. Patients have been in the same location, but the urgency of their needs differs. New information and resource constraints change the plan. The case runs through the medical chapters, assessment of a diagnostic question, and the organization of the institution: Chapter 21 · p. 054–

Chapter 31 · p. 076, Chapter 33 · p. 081, Chapter 39 · p. 095, Chapter 48 · p. 121, and Chapter 57 · p. 144.

R4. Kedrovoye settlement before the transport window closes. Reports of illness arrive alongside a warning of deteriorating transport conditions. The team must maintain care and ordinary supplies, prepare reserves, and coordinate necessary movements. The main episodes are in Chapter 18 · p. 047–Chapter 20 · p. 052, Chapter 29 · p. 071, Chapter 49 · p. 124, and Chapter 57 · p. 144.

R5. A city with conflicting reports. Information from two districts is linked to an unconfirmed explanation involving water. Some reports turn out to be forwarded copies of a single source. The team refines the area of investigation and explains changes in its conclusions to the public. Episodes are in Chapter 4 · p. 019, Chapter 32 · p. 079, Chapter 34 · p. 083, Chapter 52 · p. 132, Chapter 53 · p. 135, Chapter 56 · p. 143, and Chapter 58 · p. 147.

How to Read a Decision Analysis

First establish what the characters know at that moment. Then consider the options available to them. Assess a decision against the information the team had at the time; a later outcome helps test its reasoning, but does not by itself make the initial choice good or bad.

Notice when the plan changes. Sometimes new evidence about the cause becomes available. Sometimes an earlier measure becomes unworkable because of resources, weather, or lost communications. In either case, the team returns to its objective, records the new basis for action, and communicates the change to those carrying it out.

Not every case ends with a complete explanation of every event. A transfer of responsibility can be confirmed while the cause of an illness is still under investigation. One function can be restored while restrictions on another remain in place. At the end of a stage, it is important to state the result obtained and the tasks that remain.

How the Chapters Relate to Professional Manuals

This book explains the connections among different people's actions. A professional manual describes work within its own field in detail. A physician selects a clinical pathway based on the patient, an engineer checks the operating mode of a specific system, and a researcher justifies a method's fitness for purpose. When their conclusions affect the shared work, this book helps make the transfer of a decision understandable to everyone else.

Information about extraterrestrial biology is considered with the limits of knowledge identified. Hypothetical scenes test organizational assumptions concerning autonomy, communications, supplies, return, and reception. Establishing an event's nature and the suitability of a particular measure requires evidence of its own; Chapter 12 · p. 035 and the research part address this.

As you read, it helps to keep one brief note: "What question is being answered here, and what will change once it is answered?" This connects terms with actions. The next chapter applies this approach to the first signal: Chapter 1 · p. 013.

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Reference sections

Action cards and short scenarios - CARDS · p. 154 · Completed examples - EXAMPLES · p. 178 · Worksheets - FORMS · p. 182 · Concepts and abbreviations - DICTIONARY · p. 187 · Index of illustrations - ILL · p. 192 · Sources - IST · p. 194

Part I: Preparedness and Management

Chapters 1–6. How to detect an event, find instructions and ensure accountability.

An unknown event rarely begins with a clear name. First, someone notices an anomaly, gets a strange result, or asks for help. The first chapters explain how to turn this message into concerted action. This requires a clear destination, a division of tasks and a record so that the next shift can continue working.

It is convenient to read this part sequentially. First, let's look at the choice of the first action, then the preparation of people and means, verification of the message and transfer of responsibility. At the end it will become clear what to save in the journal. Cards in the CARDS section · p. 154 allow you to quickly return to these actions during an event.

1 Starting with the situation

Navigation: NAV · p. 003 · Contents: OGL · p. 010

First decision with incomplete information

Start with what can be described now. “The person became ill,” “the protective system stopped confirming its mode,” and “an unusual result was obtained” lead to different first actions. To select them, it is not necessary to know the origin of the proposed agent. The navigator helps the reader find a task within the limits of his training and transfer the remaining questions to those who know how to work with them.

The person's condition determines the urgency of help. Unusual properties of an object require a separate specialist assessment. Both tasks can occur simultaneously: the doctor organizes assistance while the researcher determines the properties of the material. The discovery of new material does not in itself give the researcher the authority to prescribe treatment. U0 · p. 169 helps coordinate parallel work.

How to use

1. An eyewitness reports what happened, where and when. He distinguishes between what he has seen himself and what he has learned from others. The receiving party needs a clear description; a diagnosis from an eyewitness is not required.
2. The duty officer or medical specialist selects urgent action. If the person feels worse, open P02 · p. 156; with possible exposure without symptoms - P03 · p. 157; in case of violation of protection - P04 · p. 158. When several tasks arise, the cards are used in parallel.
3. The appointed manager clarifies the conditions of the location: availability of communication and assistance, the state of vital systems, dependence on external services. The head of the desired location helps check these restrictions.
4. The person responsible for each task checks his authority and means. If it is impossible to perform the action, he names what exactly is missing and sends a request via P11 · p. 165 or P12 · p. 166.

5. The recipient confirms that they have accepted the task and understand what they are responsible for. The transfer ends after this response. One sent message is not enough to complete the transfer.

During an incident, a person performs emergency actions for which he is trained. Detailed explanations are studied in advance: they help to understand why the card is designed this way and what changes will require a different route. This understanding is tested in the exercise.

When the route needs to be changed

The card selection describes the current task and is subject to change. The observed person developed symptoms, a necessary resource ran out, a contradictory result came - each of these events requires checking the previous plan. When handed over, the next card, the person responsible and the expected answer are directly named.

Result of correct entry

The first pass through the book should end with a clear distribution of work. The director, the medical officer in charge, the current restrictions and the next review have been named. Unresolved issues remain in the journal. If there is no ready-made example, start with P01 · p. 155 and describe the unknown in your own words. To organize a response, an honest description of the situation is sufficient.

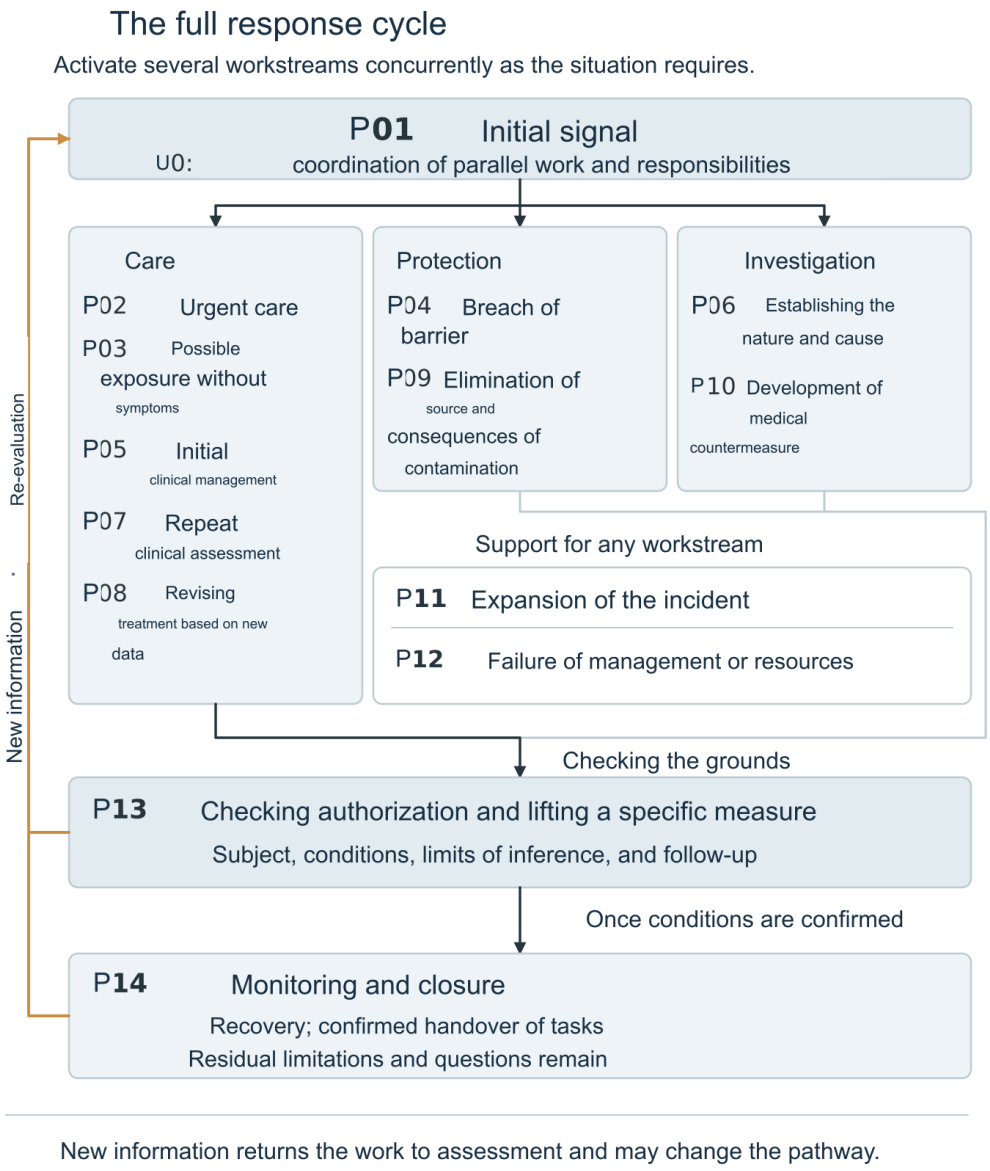


Figure 01. Full response cycle
The author's scheme connects the first signal with the parallel tasks of assistance, protection and investigation. Source elimination, authorization, and restoration have their own effects; new data returns to the appropriate estimate.

Educational analysis R1. There are six people at the Sfera station. It has a living module and a separate work compartment. An unusual monitoring signal appears in the work compartment. One crew member later reports feeling unwell. So far there are two known observations; the connection between them remains to be clarified.

The team is tempted to immediately choose one explanation: either the device detected a general threat, or the alarm was false. But no explanation has yet been confirmed. If you direct all your attention to the device, you can delay helping the person. If we immediately accept a common cause, different problems will begin to depend on an assumption that has not yet been tested.

The manager divides the work. The medical officer assesses the person’s condition and the assistance needed. The engineer checks what exactly the system shows and how reliable its information is. Participants report results to one coordinator, but do not wait for each other where waiting interferes with their own urgent task.

The first entry therefore contains two separate questions: “What is the person’s condition and what help is needed?” and “What does the signal in the work compartment mean?” In the line about the connection of events it is “not established”. This record allows you to continue working even if the answer in one direction arrives before the other.

The workaround is specific to a specific problem. The manager indicates who checks the working compartment mode, what actions of the crew are currently allowed according to station procedures, and when the situation needs to be re-evaluated. The medical plan has its own executor and grounds for revision. No decision is silently extended to the entire crew and all systems.

After this first step, the cause of the event is still unknown. However, the team is already helping the person, checking technical information and understanding who will collect the next report. In chapter 9 we will return to the case when the engineer receives the first data about a malfunction. This result will change part of the picture, but will require careful determination of which one.

2 Indexes by location, role, syndrome and failed function

Navigation: NAV · p. 003 · Contents: OGL · p. 010

Four independent search methods

There are four ways to search for the section you need. The situation prompts the first action. The location shows the limitations of the environment. A role helps you separate your responsibilities from those of others. The failed function indicates what needs to be restored: communication, energy, helping people, or reliable monitoring of the defense system.

Most often, two pointers are needed at once. The hospital may experience a mass influx of patients, loss of water, or suspected spread of disease. The word “hospital” alone is not enough to select an action. The search by role is also structured: medical triage, intensive care and laboratory diagnostics require different training, although doctors can participate in them.

How to combine pointers

Original question	First choice	Next clarification
What happens to a person	P02 · p. 156 or P05 · p. 159	Clinical chapters G21 · p. 054–G31 · p. 076
What no longer protects	P04 · p. 158	Function and dependencies according to G14 · p. 040–G18 · p. 047
How to understand the research result	P06 · p. 160	Question and limits of conclusion according to G33 · p. 081–G35 · p. 086
How to eliminate the source	P09 · p. 163	Purpose of work and approval according to G36 · p. 088–G38 · p. 093
Is it possible to resume activities?	P13 · p. 167	Separate decisions on G55 · p. 140

In medical sections, the search begins with the observed syndrome - a combination of signs that helps to choose the direction of assessment. For example, the words “respiratory disturbances” and “changes in consciousness” indicate a problem, but do not yet explain its cause. The applicability of a particular guideline will be determined by a healthcare professional. The initial systematic assessment is supported by the Basic Emergency Care (BEC) curriculum; An appropriate version of the Interagency Integrated Triage Tool (IITT) is available for emergency department triage. [20, 21]

Responsibilities of the Local Editor

In the local version, the card code is saved even if its page has changed. The editor checks the links, and the head of the corresponding direction checks the content of the transition: who to transfer the task to and what information he needs. Future users then try to find the desired action. The review includes the night shift, temporary employee and person without access to the network.

It is useful to check also the erroneous first choice. The participant receives an incomplete message and then a new circumstance. The organizer checks to see if he noticed the change, found the required section and submitted the task. A quick page search makes sense if the action found matches the reader's background and credentials.

Access without network

The paper kit must be suitable for working without the Internet. It includes a situational navigator, active cards, local contacts and a backup method of communication. The detailed e-book is also saved locally. Each working copy indicates the version and date of review; the outdated printout is clearly marked.

Use internal links to jump to the desired section. The organization reviews navigation after changes affecting work procedures and responsibilities. This way the book remains accessible both during regular reading and during an urgent search.

3 Organizational readiness and offline access

Navigation: NAV · p. 003 · Contents: OGL · p. 010

Preparation is checked by action

Organizational readiness can be seen in action. People know their tasks, tools are operational, external partners are willing to accept calls, and limitations are discovered before an incident occurs. The WHO Framework for Health Risk Management in Emergency and Disasters (Health EDRM) links prevention, preparation, response and recovery into the overall work of health and other stakeholders. Below, this approach is applied to checking a specific object. [37]

Start with what the organization is obliged to preserve: assistance to people, communications, water, energy, conditions for safe stay, recordkeeping of people and necessary supplies. For each function, name the person responsible, the resource, and the reserve. Then the person in charge checks whether the current shift can use the reserve in the event of the failure for which the facility is being prepared.

Sequence of preparation

1. The site manager defines the plan's objectives and his or her legal authority. He coordinates with external services what work the object performs itself and what it delegates to them.
2. Area managers describe possible events and consequences of failures. Include a situation with an unknown cause so that the preparation also covers an event without a familiar name.
3. The supply service compares the need with what can actually be obtained. It checks delivery times, equipment compatibility, supplies, and availability of people to maintain.
4. Medical and engineering managers coordinate work under restrictions. Before the site closes, they are figuring out how assistance and service will continue and how people will be able to get out in another emergency.
5. The communications officer checks the main and backup channels. The check ends with a confirmed response from the external recipient.
6. The organizer conducts the exercise without hazardous material. Detected gaps are recorded; each gap is assigned a responsible person and a deadline for correction. [16]

The reserve must be independent

The reserve may have the same vulnerabilities as the main system. Two programs on the same server will disappear along with the server. Two shifts will not replace each other if both depend on a single employee with the right key. The function passport needs to show what will remain available after the selected failure and who will be able to use it.

Let's imagine a scenario: the network is unavailable, although all electronic contacts usually work. The team looks for a valid number in the local copy, uses another channel

and receives a response. If contact cannot be reached, a gap in preparation has been identified. It is corrected until the next inspection; the serviceability of the main channel on a normal day does not eliminate this gap.

Acceptance of readiness and revision

Having accepted readiness, the manager reviews the results of the review along with the remaining restrictions. For each critical deficiency, he approves a temporary decision, the work allowed before correction and the condition for stopping it. These restrictions must be visible next to the plan approval mark.

The plan is returned for review when infrastructure, personnel, external partners, clinical guideline, or failure records change. At the same time, people’s everyday needs during restrictions are also checked: medicines, food, communication with loved ones, clear language of messages and access to routine emergency care.

4 First signal and message check

Navigation: NAV · p. 003 · Contents: OGL · p. 010

The signal has a source and degree of confirmation

The first message may come from an eyewitness, an instrument, a hospital, a laboratory, or an external organization. The receiver finds out what can be checked in it. The authority of the sender helps establish contact, but does not confirm his assumption. Conversely, a serious observation remains important even if the report has not yet been formalized.

The times of event, detection and transmission are recorded separately; there may be a significant gap between them. If the exact moment is unknown, indicate the known interval. A fictitious precise marker will later distort the chronology and create connections between events that were not actually established.

Minimum set of information

The receiver finds out what was observed and where, who needs help now, whether the immediate danger continues and what has already been done. The eyewitness is not required to name the agent. The manager on duty acknowledges receipt and schedules a check. In the event of an urgent medical need, P02 · p. 156 is switched on at the same time.

The journal distinguishes between observation, retelling and explanation. “Three employees reported nausea” – a record of the information received. “A new virus infected the department” is an explanation that still requires evidence of the nature of the event and transmission. Unknown information is indicated separately. Such accuracy helps to connect the right specialists, while maintaining the ability to change the original version.

Check without delaying the help you need

1. The verifier contacts the primary source or independent witness. He clarifies the description and notes errors that could arise during the retelling.

2. The subject matter expert compares the message with the normal state of the object and considers other explanations. Changing the instrument readings still requires finding out what has changed and why.
3. The manager selects temporary measures, explains their basis and orders a review. He checks whether they reduce plausible harm and allow assistance to continue.
4. The person in charge of the log records the questions, performers, and expected responses. If there is no answer yet, the question remains open.
5. The information officer communicates what is known, what activities are in progress, and when an update will occur. The Crisis and Emergency Risk Communication (CERC) Guidelines outline principles for clear reporting and correction of information. [13]

False alarm and good faith reporting

If the signal is disproved, the manager writes down the reason and ends tasks that are no longer needed. Helping a person or repairing a separately detected fault can continue. The corrected message is received by the same groups that received the original message. A malfunction or erroneous procedure still has its own person responsible for correction.

Educational analysis R5. In the city there are reports of illness among residents of two areas. An explanation is spreading online: the cause was water. At the first stage, the municipal team has reports of people and an unconfirmed version of the route of exposure. This information is recorded separately.

It would be possible to count all the transfers and immediately build a distribution map. However, then one message posted multiple times in different groups will turn into many cases. Therefore, the reviewer looks for primary reports and notes which stories relate to the same observation. Help for people is organized according to their condition while this check is ongoing.

New information is emerging: in one area, some of the messages actually go back to one source. The other retains independent observations. Now one can neither count the initial number of reports as the number of cases, nor declare the entire event a rumor. The team refines the picture separately for each area and retains the question of the cause.

The public message is also changing. The person in charge explains what has been updated in the records, what observations continue to be verified, and what services are performing the work. He does not attribute a causal role to water without justification, nor does it promise the absence of a threat simply because repetitions are found. When prescribing specific measures, the supply of hospitals and residential buildings is taken into account separately.

It is useful to keep both versions of the summary in the log and the reason for the correction: the number of independent messages has changed, not the status of each previously mentioned person. This part will be needed by the investigation in chapter 32 and the city team in chapter 52. It will also make it possible to explain to residents why the updated picture is different from the first, without hiding the fact of the change.

When reliable information contradicts the original version, the review team changes the explanation and maintains the basis for the change. Local policies should allow suspicions to be reported in good faith. Consideration of possible violation of the rules is carried out separately: otherwise people may choose to remain silent precisely when early communication is most needed.

5 Authority, deputies and transfer of control

Navigation: NAV · p. 003 · Contents: OGL · p. 010

A task must have a specific owner

The overall leader coordinates goals, people, and resources within his or her authority. The medical director organizes assistance, the engineer is responsible for the acceptable technical conditions, and the laboratory director is responsible for the safety and quality of his work. Experts discuss the decision together, but after the discussion it should be clear who made it and who will check its implementation.

The Incident Command System (ICS) distinguishes command, operations, planning and supply. The WHO Emergency Response Framework (ERF) describes the response organization of the World Health Organization itself. Here both models help to consider the structure of the team; The powers of a particular organization are determined by the applicable rules. [8, 9]

How to assign responsibility

The manager assigns responsibility for assistance, engineering systems, investigation, supply, information and work safety. For each function, he defines a deputy and the condition under which he assumes responsibility. In a small facility, one person can lead multiple directions if they can handle the workload and can get the necessary review of important decisions.

Before considering a task accepted, four things need to be checked: the person responsible understands the assignment, has the training, has the means, and knows the order of the report. If something is missing, he names a specific need. The manager considers it before the formal consent of the overloaded employee becomes the only basis to consider the work organized.

A short response from the person responsible helps to understand the order. He names the expected result, his immediate action and the obstacle, if it is already known. The manager can immediately detect different understandings: one participant is only going to send a request, the other expects confirmed help from him. By agreeing on the result, they receive a common completion criterion.

If responsibilities are combined in a small team, this is noted in the record. Then you can see which tasks are competing for one person’s time and who to transfer them to when overloaded. Discussion of workload becomes part of choosing a feasible plan.

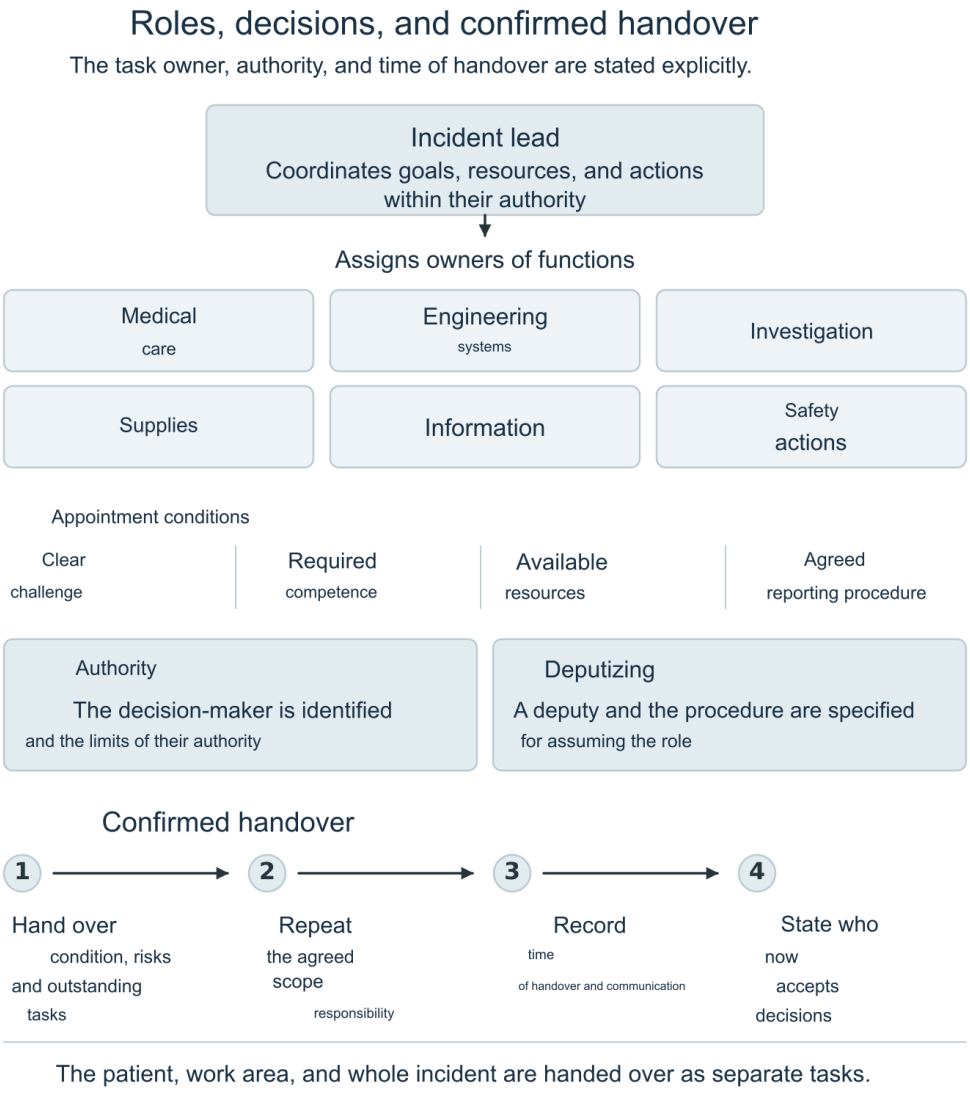


Figure 02. Roles, decisions and confirmed handover

Roles are defined by tasks and authority. A surrogate, available resources, and confirmed acceptance of responsibility are required for a valid transfer; a formal appointment is not enough.

Confirmed transfer

1. The transmitter describes the state of people and systems, the work performed, remaining risks and immediate decisions.
2. The recipient confirms in his own words what he is responsible for and what tasks have not yet been completed. Both parties check access to documents, communications and funds.
3. Both parties record the moment of transfer and how to contact if circumstances change.
4. The manager informs the performers who now makes decisions on the transferred tasks.

Each handover has a specific subject. The hospital admits a patient; the material is received by the specialized organization; management of the event passes to a

designated person. The transmission of a general summary does not increase the authority of the recipient. Therefore, the record directly states what was transferred and what responsibilities remained with the former party.

Case Study R2: Transfer between Organizations

The organization Sever sent a sealed container to the organization Bereg. The sender has a dispatch record but no confirmation of receipt. The container's actual location and the person responsible for it remain unknown. No damage to the casing or exposure of people has been reported.

The first choice concerns the organization of the search. You can wait for the usual automatic notification, considering the transportation completed according to the sender’s record. You can immediately declare the container lost. Both formulations go further than known data. The manager records the confirmation gap and assigns an employee who will contact the recipient through the established channel.

The task for this employee should be verifiable: obtain the actual location, the name of the accepting person responsible and a description of unfinished actions. A request to “deal with the container” would leave the outcome to the discretion of the person responsible. While there is no response, the sender remains able to maintain contact and provides information for verification.

Bereg confirms the container's location and names the receiving employee. The question of location is now resolved. At this stage, however, the records still need to be compared to establish why the confirmation was not visible. A separately appointed specialist assesses the container's condition and whether further use is permissible, within that specialist's authority.

Thus, several different results appear: the location is confirmed, responsibility is accepted, the reason for the discrepancy in the documents is still being clarified. In the general summary they are not combined with the word “closed”. If a new anomaly is subsequently discovered, the team can determine which decision is affected.

In chapter 6 we will continue this case from the point of view of records. A written handover is useful precisely because it allows the other shift to see the boundaries of the completed decision. The completed sample transfer in the appendix shows how to keep these differences in a concise form.

Order conflict

In case of conflicting orders, the executor reports the conflict to a predetermined level of approval. An immediate threat to life and a dangerous operation are considered according to the facility's emergency procedures. Both orders and the final decision are stored in the journal so that subsequent analysis is based on the actual sequence of events.

In a training situation, the shift manager is unavailable, and life support resources are reduced. The appointed deputy acts within the limits of pre-delegated powers: includes an autonomous procedure according to P12 · p. 166, suspends non-essential work and requests support. The inability to obtain a manager's response remains a noted limitation.

The effectiveness of management is visible in the urgent question: who makes the decision, who will replace him in his absence, and who will confirm execution. This sequence is checked during training and during shift handover. In order for the next team to understand the basis for decisions already made, it will need a journal, the subject of the next chapter.

6 Decision log and version control

Navigation: NAV · p. 003 · Contents: OGL · p. 010

What should the journal save?

The journal stores information available at the time of decision, action and its result. During an emergency, a short note is sufficient. Later additions provide the author and time so as not to attribute to the team knowledge acquired subsequently.

For a decision, record the number, time, factual basis, significant unknowns, action, responsible person, date or event of review and result. If there is a deviation from the plan, the reason is indicated. Corrections maintain access to the original content.

recordkeeping units

Patients, facilities, and organizations receive individual records with numbers and explicit connections. The coincidence of a surname or room does not replace verification of the identity of the information. Reconciliation reveals both duplicates of one case and omissions: both errors distort the picture.

Record	Content owner	What is confirmed
Medical decision	Responsible doctor	Reason, purpose, observation
Changing Engineering Mode	Authorized Engineer	Configuration Validity and Validation
Transfer of responsibility	Sending and receiving sides	Acceptance of the task and the moment of transition
Change in overall rating	Head of Investigation	New information and impact on output

Instruction version and data version

The new patient is registered in the current register. A change in case definition, triage order, or authority requires revision of the working document. The summary separately identifies the protocol version, operational case definition, and data update time.

The editor maintains a list of current documents. Line managers confirm content changes, and the person responsible for distribution confirms receiving the new version at work sites. The owner and date of verification of the paper copy helps to select a valid printout when the network is lost.

Continuation of analysis of R2: Two versions of the recording

Comparing the documents from Sever and Bereg reveals that the sender was looking at an old copy of the log. The current record already confirms receipt. This explains the discrepancy between the reports while preserving the actual chronology of events.

The person in charge saves the old entry, adds a confirmation, and notes the time the version error was discovered. Now both the moment of transfer of the container and the moment of its confirmation to the sender are visible. Subtly replacing the line would hide the reason for the scan being started.

The entry indicates the copy used, the confirmation received, its sender and open tasks. The phrase “everything is fixed” does not indicate whether the conditions for further use of the container have been assessed. Therefore, correction of recordkeeping and conclusion on suitability receive separate lines and responsible persons.

The employee finds out who still has the old copy and confirms receipt of the latest information. The reason for issuing an outdated record is analyzed separately. In chapter 58, checking the next transmission will show whether the fix worked.

Access and data minimization

Medical data are shared only with those who need them to provide care or carry out authorized work; the general summary contains the minimum necessary information. Before publication, check whether a combination of indirect identifiers could identify a particular person. The organization establishes the legal basis for access and the retention periods within its own jurisdiction.

In another training situation, shifts count cases using different definitions. The investigation director retains both versions, explains the differences, and compares notes. Otherwise, changing the recordkeeping may create a false impression that the event has changed.

The log should allow you to reconstruct the decision. A new required field is added if it supports a specific help, control, or verification task. Subsequent analysis and verification of corrections is described in G58 · p. 147.[17]

Part II. The nature of the threat and the limits of knowledge

Chapters 7–13. How to distinguish mechanisms of harm and retain testable explanations.

After the first answer, the next question appears: what exactly is happening? A similar illness in several people may have different explanations; an unusual research result also requires interpretation. In this part we will separate the mechanism of possible harm from the origin of the material and the scale of the event.

The reader's task is to learn to see which conclusion is already supported by the information, and which is still being verified. This will allow you to choose a useful next question and understand why one new observation only changes part of the plan. The analysis at the Sfera station will continue in chapter 9.

7 Infection, contamination, toxicity and mixed hazards

Navigation: NAV · p. 003 · Contents: OGL · p. 010

Different mechanisms require different questions

The word "biological" covers different events. The material may be on the surface - this is a matter of contamination. Infection involves the penetration of an agent into the body with its subsequent development or reproduction; The contact itself does not yet establish an infection. [47] Harm may be associated with a toxic substance. These mechanisms sometimes combine, so it is important to understand what event each record received describes.

At the first stage, this distinction helps to select specialists and the right questions. For unknown etiology, that is, an unknown cause of the disease, WHO guidelines retain several explanations, including environmental and toxicological. [2] Therefore, the version of infection is considered together with the possibility of a common non-infectious cause, especially if people were in similar conditions.

Working map of mechanisms

Proposed mechanism	The main question	Which directions are connected?
Infectious process	Is there any reason to suspect an infection; whether it causes disease; what transmission routes are possible - questions are assessed separately	Clinical, epidemiological, diagnostic
Environmental pollution	Where is the material located and is there an impact?	Engineering, environmental, specialized laboratory
Toxic effects	Is the intake of harmful substances continuing?	Clinical, toxicological, engineering
Environment failure	What necessary conditions are violated?	Life support and medical care
Mixed danger	What mechanisms operate simultaneously?	Coordinated work of relevant services

The mechanism of harm and the scale of necessary assistance are also assessed separately. Even a small group of victims can exceed the capabilities of a remote base. On the contrary, the widespread presence of the material in the environment still requires determining whether it causes infection. When assessing risk, they take into account possible consequences, conditions of exposure and available assistance. The name of the factor alone is not enough for this. [19]



Figure 03. Different mechanisms of harm

From left to right, top to bottom: material on the surface; process in the body; harmful effects of the environment; equipment as a conditional example of violation of conditions of stay. Amber marks are relative. Panels are not stages of a single event or established diagnoses.

Actions with an unknown mechanism

While the mechanism is unknown, the medical team describes the people's condition and the care needed. The investigation director collects observations and formulates several explanations. The engineer checks the environmental conditions and available normal modes. The general manager agrees on the temporary measures, records their basis and orders a review.

Each version must have a question, the answer to which will change the action. If a common source is suspected, connections with it and the possibility of ongoing impact are clarified. Possible transmission between people requires appropriate epidemiological information and protection during care. Until the picture is clarified, the team can carry out both lines of work.

Typical logical errors

The conclusion always relates to a specific issue. Clothing soiling describes the material on clothing; the person’s condition requires a separate assessment. The coincidence of symptoms requires finding out the causes of the disease. Even the discovery of a familiar microorganism leaves open the question of additional chemical exposure or disturbance of environmental conditions. If communication with the site is not available, the absence of complaints from it means, first of all, a gap in observation.

In a training situation, several employees became ill in the same room. The team reviews the infection while the engineer simultaneously checks the environmental conditions. An identified malfunction becomes a new fact, the connection of which with the condition of people still needs to be assessed. Help for P02 · p. 156 continues while experts compare explanations. This order allows you to use the find while preserving the questions that it does not yet answer.

8 Known pathogen in unusual circumstances

Navigation: NAV · p. 003 · Contents: OGL · p. 010

A familiar name doesn't complete the assessment

When the study indicates a familiar pathogen, it is easier for the doctor to choose the direction of work. The doctor then checks whether the guideline is appropriate for the patient and the care setting, taking into account age, condition, facilities needed and ability to be monitored. A familiar name helps narrow your search; local conditions determine how to carry out the chosen plan.

The unusual severity of the group of cases requires explanation. It may be associated with late detection, the condition of the victims, registration features, exposure conditions, or other reasons. By itself, it does not yet establish a change in the properties of the agent. Versions are checked through P06 · p. 160 and G35 · p. 086, storing data that does not fit into the first explanation. [2]

Adaptation procedure

1. The attending physician verifies that the result applies to the correct patient and answers the question asked. He clarifies the limitations of the study with a diagnostic specialist.
2. The clinical lead selects the current specialist guideline and records its version, the review date, and any conditions the local organization cannot yet meet.
3. The infection control manager checks the placement of people and work procedures taking into account the expected route of transmission.
4. Procurement and engineering confirm that the resources necessary to safely carry out the selected activities are available.
5. The investigation manager compares the event with the working version. Unexplained cases and conflicting results are considered equally with supporting evidence.

Following this work, local guidance should show what the team is capable of accomplishing and where support will be needed. If an important component is not available, its absence is recorded. The further action is chosen from the provided options: reserve, consultation, change of place of assistance or request to the next level.

Conditions for revision

The plan is revised if there is a case outside the expected chain, deterioration against the background of assistance, discrepancy in results or failure of control. Each circumstance is recorded separately. The number of unexplained events is assessed along with the quality of the observation and the case definition for which they were included.

A training situation at a remote base shows the boundary of the transfer of ready-made manuals. The result was in favor of a known infection, but the base does not have all the hospital capabilities. The team verifies whether the result matches the patient’s condition, receives consultation, and selects the level of care available. The name of the disease helps discuss treatment, but the decision about where to care remains a matter of people and resources.

Return to general uncertainty

If the result does not explain what is happening well, the investigation continues. Experts check the quality of the data, the possibility of the accompanying presence of the detected material and other reasons. The responsible doctor changes the direction of treatment according to P08 · p. 162, maintaining the support the patient needs.

In a public summary, it is useful to explicitly state the level of knowledge achieved: a factor has been discovered; the cause of certain cases has been confirmed; the remaining observations are still being studied. Then the participants understand why some decisions have already been clarified, while others are still being retained. The next chapter shows how to record such uncertainty and choose further testing.

9 Unknown etiology and competing explanations

Navigation: NAV · p. 003 · Contents: OGL · p. 010

The hypothesis should help the choice of action

A working hypothesis is an explanation against which the team can compare new information. They write down what supports it, what contradicts it, and what action will change after verification. This makes the assumption useful to work with. The head of the investigation chooses first of all the issues on which assistance and limitation of harm depend.

WHO describes the investigation of an illness of unknown cause as a process in which explanations are refined. [2] Both the case definition and the idea of the source may be inaccurate at first. The team saves the changes along with their reasons. Then the information from different stages can be compared, and the new conclusion can be verified.

Explanation Matrix

For significant versions, a matrix is compiled - a general record of the proposed mechanism, supporting information, contradictions and the next question. The doctor assesses how well each explanation fits people’s clinical condition. An epidemiologist looks at the distribution of cases and relationships. The laboratory specialist explains what the study can conclude. The engineer and environmental specialist check the general sources and occupancy conditions.

The matrix does not need confidence percentages that have no justification. Instead, write down which explanations remain plausible, what is missing to choose between them, and which actions are already justified. Such a record helps the next shift to continue the reasoning without taking a beautiful number for a measured result.

The useful matrix can be checked on the next shift. Having received it, the specialist must understand what the team considers an observation, why it is still saving each version, and what issue needs to be resolved first. The line “possible infection” is too broad: it does not show what information needs to be compared. A more meaningful entry points out the connection that is suggested, the observations in its favor, and the contradiction that is not yet explained.

Brevity is achieved by clear boundaries of the question. If the question concerns the suitability of the work premises, the matrix is not required to simultaneously complete an investigation into the origin of the material. At the same time, the connection between areas must not be lost: new medical information may require a return to environmental assessment. Therefore, next to the conclusion, an event is indicated after which it should be revised.

A justified interim decision has a positive content. The team can name the available action, explain what information supports it, and show how it will verify the result. The remaining unknown information is written down next to it. This allows you to act within certain limits, while maintaining the ability to correct the decision after a new observation.

How to choose the next question

First, a question is selected whose answer may change immediate care, stop ongoing exposure, reduce significant transmission, or permit needed action. They then evaluate whether a response can be received in a timely manner and how safe the work itself is. An interesting research question may remain important even if a more immediate need now takes priority.

1. The head of the investigation names a decision for which there is not yet enough information.
2. The profile team explains which answer will help distinguish between the significant versions.
3. The authorized person confirms that the work can be performed safely and that the result is applicable to the question asked.
4. The decision maker describes in advance what to do for different possible answers.
5. The team schedules a review in case of delay or uncertain outcome.

Continuation of the analysis of R1: When one explanation weakens

Let's return to the Sfera station. The initial information is the same: an unusual signal in the working compartment and a message from one crew member about being unwell. The team checks the possibility of a common cause, but also retains another possibility: the technical deviation and the human condition may have different explanations.

The two versions have a common corollary: the person needs a medical assessment, and the system's readings need to be verified. Therefore, these actions are already being performed. The distinction is important for subsequent decisions, such as assessing the operating compartment and the scope of further investigation. The manager does not force the team to choose one version before discriminating information has emerged.

An engineer reports a failure of one measurement channel. This explains why some of the technical information cannot yet be trusted. But the message itself does not say anything about the cause of the malaise. The entry “alarm turned out to be technical, event completed” would combine two different conclusions and leave the medical issue without a person in charge.

The team updates the matrix. A confirmed fact appears in the technical version line: a channel failure has been detected. In the line of connection with the human condition, the unknown remains. The medical officer continues the assessment, and the engineer determines what conclusions about the work compartment are available from the remaining information and what needs to be independently confirmed.

Now we can compare the two organizational decisions. The first is to keep all restrictions unspecified until each event is fully explained. It is simple for the message, but can unnecessarily link different tasks and consume limited station capacity. The second is to review each measure on its own basis. It requires more accurate recording, but allows you to complete confirmed stages, leaving the rest under observation.

The manager chooses the second logic. This is not permission to return to any work. He instructs to determine which conditions for the specific use of the compartment are confirmed and who has the right to make the appropriate decision. The medical plan is saved separately. Significant regime restrictions remain visible to the crew.

The next question is formulated in advance: what information will show the state of the working compartment, regardless of the faulty channel? If you receive a sufficient answer, you can revise the technical part. If the response is delayed or inconsistent, the assigned review order will remain in place. This way the team knows not only the current version, but also what its action should change.

This example shows the value of partial knowledge. The identified technical fault is already useful, although the overall picture is not yet complete. In chapter 14 we will look at why the second screen by itself may not be an independent confirmation. And in chapter 55 we will return to the separate completion of decisions about a person and a workplace.

Dealing with Contradictions

If a valid observation contradicts the hypothesis, the team revises the hypothesis. If there is doubt about the quality of the observation itself, it is checked separately. For example, a misattributed outcome to a patient and a true difference between cases require different decisions. The record should show which of these questions is currently open.

In a teaching situation, the case definition initially includes only fever. Later, convincingly related observations without fever appear. The epidemiologist and physician clarify the definition, retain the previous version, and revise previously excluded reports. New information expands the search area; the former records remain part of the investigation's history.

Sometimes the cause remains unidentified at the end of the investigation. The report then describes the confirmed facts, the measures taken, the limitations of the research and the reasons for reopening the investigation. Assistance continues according to people's needs; each remaining constraint requires its own justification. Completion of a stage means that its tasks have been completed within certain limits. Open questions and follow-up are referred to the named person in charge.

10 Laboratory association and the limits of inference about origins

Navigation: NAV · p. 003 · Contents: OGL · p. 010

Origin and properties are assessed separately

Linking an event to a laboratory can mean a variety of issues: loss of containment, recordkeeping error, or transmission failure. Each requires its own verification. The conclusion about the artificial creation of the agent, the intentional action or the severity of the consequences is considered separately and supported by relevant information.

Help for people and stop the ongoing impact are organized while the origin of the event is still being clarified. WHO laboratory biosafety and biosecurity guidelines describe risk assessment and responsible handling of materials and information. The authority of a particular investigation is determined by the organization and applicable regulations. [1, 7]

Two related lines of investigation

The overall leader organizes the response to ongoing consequences. The authorized investigating party investigates the circumstances and stores the information. Participants must understand the difference between these tasks: the employee reports the problem and receives assistance while liability issues are still being addressed.

Versions of documents, transfer information, procedures in effect, maintenance and fault records are retained for investigation purposes. Access to sensitive information is provided within the scope of the recipient's task. The public brief provides useful information without dangerous technicalities or unnecessarily exposing victims.

Sequence of decisions

1. The employee reports the observed failure via P01 · p. 155 and P04 · p. 158. Independent research of unknown material is not included in this task.
2. The laboratory manager advises the response team of known hazards and staffing limitations. He identifies unconfirmed information separately.
3. The medical service assesses possible exposure and organizes assistance based on the condition of each person.
4. The investigation director determines the credentials of the participants, the required records, and how they will be retained. Specialized work is entrusted to authorized performers.
5. An independent or sufficiently separate party reviews the main findings and possible impact of conflicts of interest.
6. The authorized body separately considers further work safety and responsibility for the incident.

What cannot be concluded from one sign

To infer an origin, you need to show how a particular source supports it. The proximity of the research project, the unusual type of material, or the sequence of events provide questions for testing. A missing document also requires checking the completeness of the search. Each of these signs is assessed as part of the event information.

In case R2, the discrepancy between records came from an old copy of the log. This explained the missing visible confirmation, but established neither the properties of the contents nor the condition of the container. Likewise, in a more complex laboratory incident, a document check must answer the particular question it actually examined. A new account of origins does not automatically broaden the inference.

Resumption of work is considered after P13 · p. 167 and G55 · p. 140. Equipment may be checked before the observation of employees is completed. Administrative investigation also has its own tasks. Each direction requires a separate completion basis.

11 Resistant forms and persistent contamination

Navigation: NAV · p. 003 · Contents: OGL · p. 010

The time of the event is not equal to the time the danger persists

Once the initial exposure has ceased, individual materials, areas and systems may still require assessment. The absence of new diseases describes the observation of people, but not the condition of each subject. Observation periods and authorization conditions are determined taking into account the specific hazard, method of verification and intended use.

The word "spore" refers to a biological form found in different organisms. The decision requires information about a specific agent and conditions. The stability of the material and the suitability of the method of elimination are assessed separately. Ideas about

ordinary microorganisms cannot be transferred without verification to another proposed mechanism of harm.

Re-exposure map

The restoration manager and engineer map the source, associated areas, movements, utilities and waste. Medical and epidemiological teams compare it with information about people. Diagnostic specialists show which parts of the map are covered by the check and where data is not yet available.

The card must have a date and version. Unchecked areas are marked directly. They still require a decision on acceptable actions; absence of data is not substituted for either a statement of stated hazard or permission for any use.



Figure 04. Preserved material and untested areas

Surfaces, tissue folds and hidden cavities are assessed separately. Amber inclusions conventionally indicate the material and do not prove infection. The extent of inspection of each site is recorded separately; The absence of a mark does not mean that the area has been checked.

Prolonged containment as a managed process

If immediate termination is not yet warranted, the team develops a containment plan. It identifies who is responsible, resources, condition monitoring, signs of failure, and upcoming review. The plan is valid under the conditions described; continuation requires re-evaluation rather than habituation to a temporary routine.

They check the condition of structures, equipment and data, the possibility of maintenance and personnel changes. When the intended use changes, the evaluation is repeated. Prepared technical access, permanent residence and transfer of property require different conditions, so the permit must name a specific activity.

Conclusion of completion

The US Environmental Protection Agency (EPA) approach links the remediation decision to the quality of the data and the question for which it was collected. [31] Therefore, together with the negative result, the subject of the search, the conditions covered and the restrictions are indicated. If multiple studies have the same blind spot, the number of results alone does not eliminate it.

In a training situation, the premises are allowed to be used by a trained team after the work has been completed. However, property from the adjacent storage facility has not yet been appraised. The manager separately describes the permitted activities and the procedure for handling this property. The summary preserves the decision boundaries so that the expression “object open” does not take on a broader meaning.

With a new signal, select P04 · p. 158, P06 · p. 160 or P09 · p. 163 on factual circumstances. The possibility of re-entry, incompleteness of the initial assessment, data error and other explanations are checked. The saved history helps you understand which part of the plan needs to be changed.

12 Hypothetical extraterrestrial biology and planetary protection

Navigation: NAV · p. 003 · Contents: OGL · p. 010

Frontier of knowledge

The extraterrestrial biological threat scenarios in this book are hypothetical. The unusual appearance and unknown origin of an object does not in itself establish the presence of life. NASA points out there is no confirmed evidence of extraterrestrial life; therefore, the following considerations require an explicit separation of the known and the assumed. [3]

In the first message, it is appropriate to call the object an unknown material and describe information about its origin. Then the signs of the biological process, possible harm and contacts are considered separately. If an estimate is based on an assumption about terrestrial biochemistry, this assumption must remain visible: the scope of the inference depends on it.



Figure 05. Unknown sample under observation

An artistic model of a hypothetical scenario. The structure depicted is not evidence of extraterrestrial life or an identified biological threat; origin, biological characteristics and possible harm require independent assessment.

What do existing documents provide?

COSPAR (Committee on Space Research) Policy 2026 describes planetary protection and special conditions for individual missions, including the return of materials. It also acknowledges the limitations of assessing unknown extraterrestrial biology. It is an international science policy with a specific scope; its provisions do not automatically become national law or universal instructions for any orbital station. The document is compared to the specific mission and applicable regulations. [4]

From existing documents, assessment procedures, distribution of responsibilities and requirements for confirming decisions within their scope can be used. The suitability of a particular study, retention, or treatment for a hypothetical agent remains an independent question.

Designing under deep uncertainty

Prior to the mission, the operator describes the expected contacts and transfers, assigns those who authorize them, and determines the available actions in case of deviation. The Planetary Protection Specialist reviews mission-related requirements. The engineer evaluates containment and its dependencies. The medical director prepares assistance to the crew and transfer to the next stage.

For each measure, write down its reasons: what mechanism it should limit, under what conditions it works, and how the team will notice a failure. The unconfirmed

assumption remains in the journal. Then it is clear to the next participant why the decision is temporary and what information will allow it to be changed.

Man and material have separate routes

Rescue of a person, relocation of equipment and return of research material require separate decisions. For each, the need, potential impact, available protection, and recipient readiness are assessed. The plan must simultaneously support the life of the crew and address the risk of transferring the perceived hazard.

In a learning situation, an unusual result appears after external work. The medical team evaluates people, the engineer figures out actual systems connections, the mission director reviews non-essential transmissions. The research version is being developed in parallel. Material inspection is carried out by an authorized team within the agreed scope of work.

What is considered a useful result?

A useful outcome at this stage is preserved vital signs, confirmed task transfer, description of contacts and clear boundaries of conclusions. The level of knowledge allows us to evaluate certain actions and leaves other questions open. For an actual mission, the proposed organizational chart is reviewed by engineering, medical, scientific, and legal experts.

13 Animals, plants and ecosystems

Navigation: NAV · p. 003 · Contents: OGL · p. 010

The object of observation is wider than human disease

The event may affect animals, plants, food chains and the environment. Significant harm can occur in people without severe illness. The One Health approach links these areas and supports different services working towards the big picture. [18]

The first report distinguishes between the observed death or illness, the change in the observation itself, and the identified cause. Seasonal variations, new recordkeeping rules and local influences may also explain part of the picture. The close time of events serves as a reason to compare information, but the connection between them still requires verification.

Collaborative work picture

The territorial head appoints contacts for veterinary, environmental, sanitary and, if necessary, phytosanitary services. The investigation leader will agree on what the participants consider to be an observation, what area and time they are considering. The data manager maintains recordkeeping differences so that the overall table does not create the appearance of identical measurements.

The summary shows affected species and sites, monitoring conditions, connections to human activities, potential impact pathways, and knowledge gaps. Sensitive information is received by authorized participants. The public message explains what is available and how to get help.

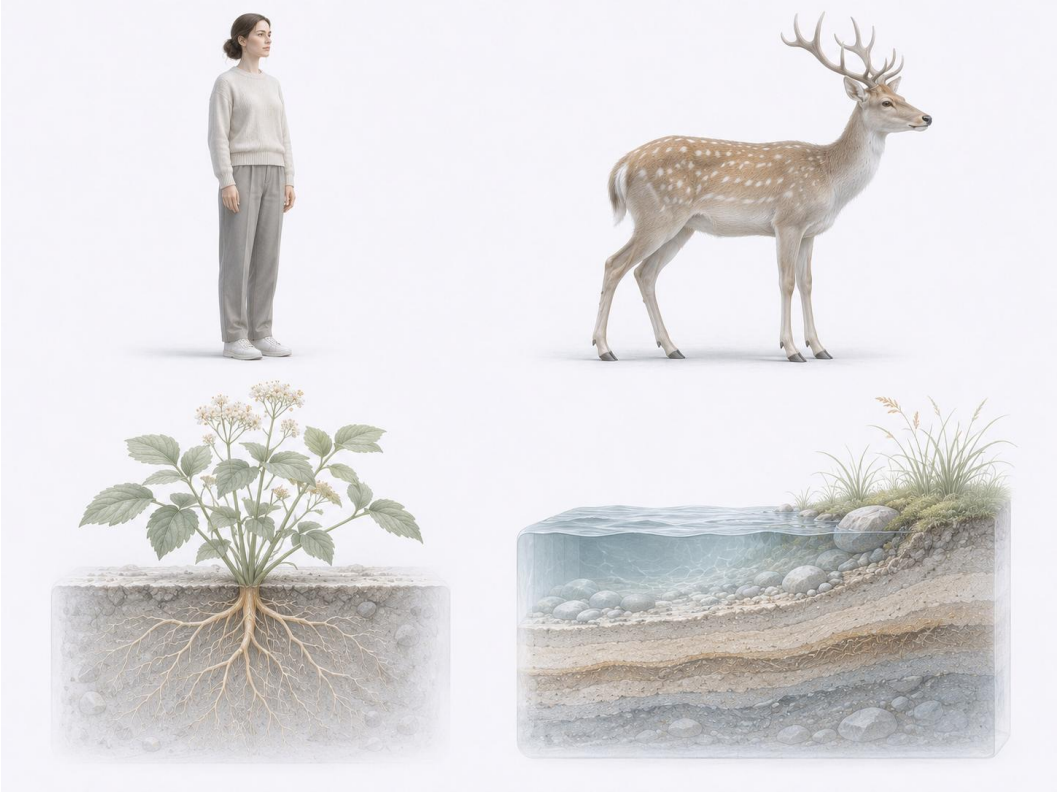


Figure 06. Four areas of joint surveillance

Man, animals, plants and the environment provide different objects of observation. The overall operational picture preserves service competencies, recordkeeping differences and significant gaps; proximity of observations does not prove transmission.

Response order

1. An eyewitness reports the location, time, and change noticed. You do not need to contact or transport suspicious material yourself to confirm the report.
2. The relevant service appoints a competent inspector and determines the boundaries of the first decision.
3. The general group compares information about people, animals, plants and the environment. The degree of confirmation of each hypothesized relationship is kept separately.
4. The manager coordinates measures and supplies, taking into account the consequences for residents and households.
5. Restoration services determine further monitoring and conditions for the specific use of the territory or product.

The World Organization for Animal Health (WOAH) considers preparation for animal health emergencies as part of associated risk management. Decisions regarding animals and products are made by the authorized veterinary party in their area of responsibility. [41]

Consequences of the measures themselves

By limiting access to the farm, you need to conserve water, feeding and care. When closing a site, it is necessary to find out which services will lose the ability to maintain

the infrastructure. Therefore, the plan immediately names the person responsible for the necessary work and checking the consequences of the restrictions. Otherwise, the measures themselves may create additional harm.

In a training situation, complaints from people and reports of sick animals were simultaneously received. The services create a general chronology and check possible connections. Each organizes assistance in its own area. Decisions about water, products and territory are given their own reasons; the possibility of transmission between species remains a matter of investigation.

Completion of work also occurs according to directions. Living conditions, product suitability and ecosystem restoration are assessed separately. Long-term tasks are transferred to permanent services through P14 · p. 168 and G57 · p. 144. To carry out these decisions, the team needs functional defense systems; their structure and dependencies are discussed in the next part.

Part III. Barriers and continuity of functions

Chapters 14–20. How to limit exposure while maintaining care and vital systems.

Protection works because of specific people, devices and conditions. The door can be closed, but air, water, maintenance and the human need for help remain. In this part we will look at how to describe the operation of the barrier and check what it saves when it fails.

Then we move on to moving people and materials, training staff and supplies. In the last chapters of the part, difficult choices will arise: how to limit the impact when the restrictions themselves change people's lives, and how to organize rescue when the picture of the threat is incomplete. In the analysis of the Kedrovoye settlement, these questions will arise simultaneously.

14 Protection design and common causes of failure

Navigation: NAV · p. 003 · Contents: OGL · p. 010

Start your security design with the event you want to prevent. One barrier holds the source, another helps maintain the route of assistance, the third allows you to notice the change before the next move. For each, the working conditions and consequences of failure are indicated. Even if several tasks use the same equipment, each has its own person responsible.

The NIOSH Hierarchy of Controls gives priority to eliminating the hazard and other actions closer to the source when feasible. Engineering protection, work organization and individual means perform different tasks. Their combination is assessed in relation to a specific job. [11] If the mechanism of harm is unknown, the team explicitly records the assumptions on which the choice of protection is based.

From function to testable barrier

1. The work manager and the relevant specialist determine the undesirable event. They name who or what they protect and show the boundaries of the system in question and transmissions through them.
2. An engineer describes what technology can do now. Checks power, communications, maintenance, environmental conditions, and operator participation. The record includes the actual condition of the equipment.
3. The security manager determines how to test each security function. He designates a recipient of the information and explains when the control data can no longer be trusted.
4. Management approves acceptable work and failure actions. Before the operation begins, the person responsible knows when to stop it and what reserve to use.
5. The reviewing party evaluates the general causes of failure and the consequences of protective actions. If there is a significant change in the source, operation or equipment, the assessment is repeated.

Verification level	Main Question	Required entry
Single element	Does it fulfill its function?	Validation conditions and output limitation
Combination of elements	Do they interfere with each other?	Dependencies and Consistent Mode
System as a whole	What remains in the event of a general failure?	Saved functions and next person in charge

A common cause can override multiple protections at once

Multiple tools may depend on a single vulnerability. Two devices are powered from a common circuit; different programs receive information from the same source; two teams use the same false guess. Therefore, independence is checked according to individual dependencies: energy, measurements, data, people and the original threat model.

In the tutorial example, the second screen continues to show a healthy state after the first one fails. Upon inspection, it turns out that both use the same data stream. The second screen helps display information, but does not independently validate it. The fix should address how the status is checked and what happens when the validity is lost.

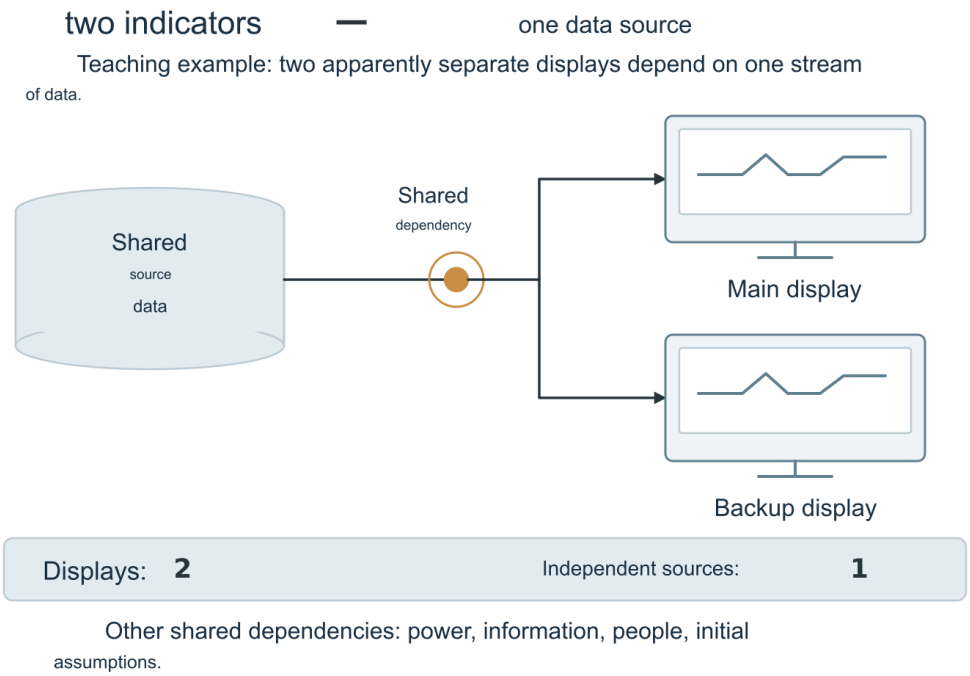


Figure 07. Two indicators - one data source
Case study from the chapter: two screens share the same data stream. The number of indicators does not determine the number of independent bases; general relationships are also tested for energy, people, and underlying assumptions.

Continuation of the analysis of R1: What the second screen confirms

A failure of one measurement channel was detected on the Sfera. The crew member suggests using the second screen: it shows a summary of the same system. The

proposal is clear - the team needs a way to evaluate the compartment while the first channel is being tested. However, first the engineer finds out where the second screen is getting its information.

In this tutorial, both views are associated with the same data source. The second mapping may inherit the same failure and therefore does not provide an independent assessment of the environment. The manager maintains the exact boundary in the summary: additional display is available, confirmation independence is absent.

The team has two different questions. The first is how to restore a faulty product. The second is how to evaluate the admissibility of a particular job beforehand. The repair contractor answers first. The authorized engineer, together with the supervisor, determines the available confirmations and mode for the second. The very fact of starting repairs does not complete the decision to work in the compartment.

Comparing options involves the consequences of expectation. If you postpone an optional operation, you need to know which station functions will be affected. If you use the provided backup mode, you must confirm its conditions and available monitoring facilities. To call something that depends on the same faulty source a reserve would be a mistake in the protection model itself.

An independent audit later clarifies the technical fault. The team returns to the previously recorded question: What conditions of the selected job are now confirmed? The engineer's conclusion relates to a technical problem. The medical officer continues his assessment of the person; the technical result does not assign to it a ready-made cause of the ailment.

It is useful to store the found general dependence in the barrier passport. Then, during the next check, the team will count independent bases, and not the number of devices on the screen. This is also a way for the reader to look at any multi-layered defense: to find out what common cause is capable of depriving it of several functions at the same time.

Protection must maintain habitability

Before restricting access to a premises, they check how people will receive help, escape in the event of a fire, and maintain the necessary living conditions. The ventilation mode is changed by a competent site procedures engineer. CDC guidelines for healthcare facilities address ventilation performance and maintenance in their area of application. [15] A decision for another system requires its own evaluation.

Violation of protection leads to P04 · p. 158, and return to work - to check according to P13 · p. 167. Training, maintenance and fault reporting are required throughout use. A designed barrier becomes an available defense when the organization has the people and resources to maintain it.

15 Air, water, waste and process streams

Navigation: NAV · p. 003 · Contents: OGL · p. 010

Air, water and maintenance connect the premises. Therefore, when assessing protection, a map of actual flows is needed. The wall shows the boundary of the room,

but does not yet explain what systems are shared with neighbors. Unspecified connections are also indicated on the map; the proposed route of exposure remains a matter of verification.

The engineer collects information from operational services. The medical director explains what care is available for each network. The security specialist assesses the possible impact, and the overall manager agrees on the consequences of the regime change. The management of the system is assigned to someone who has the required authority and training.

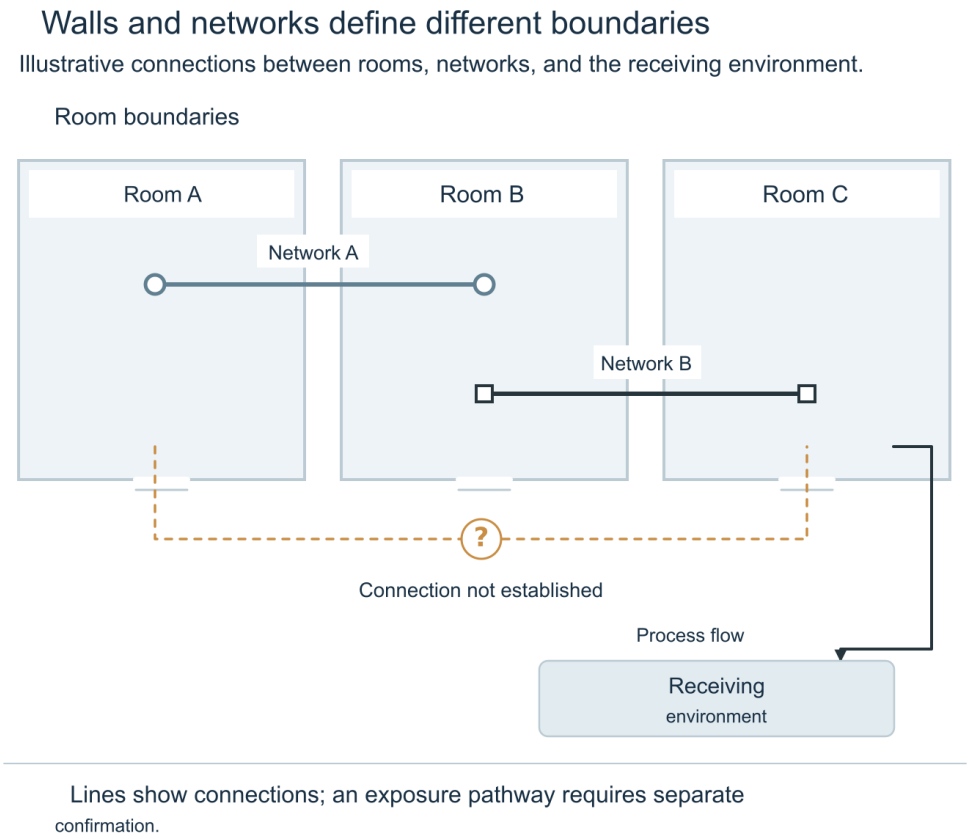


Figure 08. Walls and networks define different boundaries

The schematic diagram shows that the boundaries of premises and service networks may not coincide. The unspecified connection remains indicated; the admissibility of a particular regime requires an assessment of the functions and consequences in a given object.

Air and conditions of stay

First, find out what conditions the system supports for people and equipment. Then they check the accuracy of information about its condition and the available standard modes. Changes in operation may affect adjacent spaces, fire protection, temperature and assistance. All of these consequences are included in the evaluation of a particular decision.

The engineer presents the available options and conditions of each. The manager selects an acceptable regime, assigns observation and determines the grounds for changing it. If a safe standard decision is not available, the team requests the next level

of support and indicates the remaining uncertainty. For a medical facility, appropriate engineering guidelines apply. [15]

Water and related services

When a water supply problem is suspected, the operator works together with the public health authority and water-dependent institutions. They specify which users and uses the signal concerns: drinking, food, care or technical work. The further decision must be consistent with this assessment area.

The operator shows serviced areas and known deviations. The authorized service prepares a clear message with the terms of the review. If it is necessary to limit use, supply will simultaneously organize an available alternative. WHO guidance on water safety plans links risk management to system design and monitoring of its operation. [42]

Waste and completion of the technological chain

The plan must cover the entire waste path to the authorized recipient. Otherwise, after processing one object, an unaccounted flow may remain, which again requires a decision. Specialized handling methods are chosen by competent performers. This organizational chart helps verify the completeness of the task and does not replace the technical procedure.

1. The flow owner describes the origin, destination, and known transfers. In the overall chain, he notes gaps in information.
2. A specialized specialist determines reasonable restrictions. He distinguishes between established danger, speculation and lack of data.
3. The engineer and supply check whether the chosen plan can be carried out. They call a reserve and a resource that limits work.
4. The receiving organization confirms the possibility and conditions of admission. A specific recipient is assigned for the transfer.
5. The overall manager determines who will revise the plan if there is new information, deviation, or loss of reliable control.

For each network, a short operational summary is sufficient: what it provides, what its status is, who is affected by the decision, and when it will be reviewed again. Loss of a vital function leads to P12 · p. 166. Renewal of use is issued according to P13 · p. 167, naming a specific service and permission boundaries.

16 Moving people, materials and vehicles

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The transfer is completed when the recipient has actually accepted the person, material or equipment and has the necessary information and means. Dispatch is just the beginning of this process. Between organizations, it is especially important to confirm the last step: otherwise, each may assume that the other is already doing the rest of the work.

The patient, research material, equipment, and waste require different handling decisions. For a person, they proceed from medical need. For the material, the permissible purpose and authority of the recipient are specified. If they travel by the same vehicle, the corresponding decisions are still stored separately. Laboratory safety guidelines consider the handling of materials and information as a management task in their own right. [1, 7]

Decision before departure

1. The initiator explains the purpose of the move: what task cannot or is inappropriate to be solved here. This entry allows you to compare the need to move with other possibilities.
2. The medical or specialty director describes the condition and significant unknowns. For the patient, the director specifies assistance and observation; for the material, the known status and handling restrictions.
3. The transport coordinator coordinates the route, personnel, communications and actions when conditions change. He checks the ability to maintain the necessary conditions throughout the journey.
4. The recipient names the reception point and the responsible employee, confirms the means to complete the task. This information will be agreed upon prior to the scheduled arrival.
5. The sender transmits the necessary data, records the shipment and remains available for clarification. The recipient confirms actual receipt and reports any discrepancies.

What to convey along with responsibility

Subject of transfer	Essential information	Who confirms acceptance
Patient	Condition, assistance, expected impact, expected results	Host medical team
Material or equipment	Purpose, status, restrictions and history of critical transfers	Authorized Profile Recipient
Waste	Agreed treatment category and transfer conditions	Organization with appropriate authority

The amount of information is determined by the safe execution of the task. Medical data is not included in publicly available passenger and cargo lists. If a digital system is not available, a prepared local recording and an available secure channel are used. Then the general transmission history is restored.

When the route changes

When a patient's condition changes, transportation fails, a receiving facility closes, or new information about a hazard occurs, the coordinator contacts both parties. The previous plan is revised if its essential conditions have disappeared. For immediate rescue, a separate procedure is provided in advance so that registration does not delay the necessary assistance.

In the case study, the hospital agreed to accept the patient, but lost the necessary follow-up along the way. The transport team notifies the medical coordinator, who will coordinate an alternative route with the confirmed recipient. Until transfer, the patient remains under the responsibility of the accompanying team. The original application is retained along with the change record.

After the transfer, those responsible for the further use of transport and equipment, the condition of the personnel and the necessary supervision are appointed. Urgent deterioration leads to P02 · p. 156; inability to maintain the route - by P12 · p. 166. Elimination of pollution and authorization of transport are considered through P09 · p. 163 and P13 · p. 167.

17 Personnel protection and implementation control

Navigation: NAV · p. 003 · Contents: OGL · p. 010

An employee can perform a protective procedure when he understands the task, is trained in using the tools, and has the right to report a difficulty. The manager checks these conditions along with the condition of the equipment. The product in the warehouse becomes available for operation after confirming its suitability and people's readiness for use.

Protective equipment is selected based on expected exposure, operating conditions, and applicable requirements. If the hazard is unknown, the reasons for the choice are recorded. A familiar set from a different situation is tested for suitability for a new task. In the hierarchy of controls, personal protection is part of a broader system of exposure prevention. [11]

Access to a specific task

1. The manager describes the assigned work and the expected result. The employee understands what actions are included in the task and what requires separate permission.
2. The security specialist works with subject matter experts to determine preparation and protection for the anticipated exposure.
3. The Training Officer verifies that the approved procedure is being followed in a safe training environment. Participation in the briefing is recorded separately from the practical test.
4. Supply confirms suitable products, consumables and replacement in case of failure.
5. The shift manager checks the condition of people, communications, work supervision and stopping conditions. If the required function is not available, the beginning of the task is revised.
6. The contractor confirms that he understands the boundaries of the work and reports any deviations. The leader receives the signal and writes down the further decision.

Fatigue and interaction

The length of a shift is determined by the job, the condition of the people, and the resources available. Someone who notices a decrease in the ability to perform a task is

appointed in advance, has the right to stop the work and organizes a replacement. If there is no reserve, the manager must know about it before the operation begins.

A colleague can help notice a mistake if he himself is prepared for observation and has time for it. When he simultaneously controls equipment, communicates and monitors several people, this load must be assessed separately. The supervisor's assignment must be consistent with what the person is capable of performing.

Error and possible impact

If the guard is damaged or contact is suspected, the employee stops the associated work in a safe manner and notifies the supervisor. The medical route is chosen through P03 · p. 157 or P02 · p. 156. First, they organize help and save important information; the reasons for the error are considered separately from the medical need.

In a training situation, an employee notices that he cannot reliably complete a control step. The procedure allows stopping, replacement and re-evaluation. The manager records a timely noticed difficulty as a useful result of the defense’s work. If you mark only completed operations, the information that helps prevent the problem from recurring will disappear from the log.

Before the employee returns to work, his condition, training and task conditions are checked. After a change in equipment or procedure, the corresponding check is repeated. WHO guidelines serve as sources for specialized training, and permission to work locally is issued by the specific organization. [1, 7]

18 Energy, communications, medicine and supply during failures

Navigation: NAV · p. 003 · Contents: OGL · p. 010

During a prolonged event, assistance may be limited to loss of energy, water, people, transportation, or conventional medications. Therefore, the manager keeps two reports side by side: what is known about the threat and what necessary services the organization is able to continue. This makes it possible to notice deterioration in supplies before aid stops.

The WHO Health EDRM framework links preparation, response and recovery to the work of different sectors and the needs of vulnerable groups. [37] For a specific object, this approach means: naming the person responsible for each important function, checking its dependencies and reserves, determining the basis for requesting support.

Identify features that cannot be lost

The manager requests from departments a list of services, the loss of which would harm people. The medical team directs treatment and care; engineering - life support and safe modes; supply - deliveries; communication service - management and requests for help. The list includes people's routine needs, even if they are not related to the suspected outbreak.

For each function, record the available resource, consumption, expected load, and forecasting assumptions. Instead of saying “there are enough reserves,” specify the

work and conditions for which they suffice. Consider equipment together with its power supply, maintenance, consumables, and trained staff.

Actions in case of deterioration of security

1. The person responsible for the function reports a likely shortage before it stops if available information allows it to be anticipated.
2. The supply and engineer check the reserve: delivery, connection, maintenance and availability of the required shift.
3. The manager reviews non-essential work and allocates funds to agreed upon priorities. He records the reasons for the choice and the expected consequences.
4. The medical service is assessing the ability to remain on site and continue assistance. If necessary, it coordinates the transfer taking into account the availability of transport.
5. The external support coordinator specifies in the request the required function, shortage, delivery conditions and recipient. He checks the received answer for feasibility.

Working without a common digital system

During the exercise, both the communication reserve and the authority to work without a common system are tested. Local recording saves time, author, decision made, and unfinished tasks. Once the network is restored, a designated manager will collate records and resolve discrepancies. He takes into account the timing and content of information, even if new information is first written down on paper.

Educational analysis R4. There is one medical specialist working in the Kedrovoye settlement. Several cases of illness have been reported; their cause and connection are still unknown. At the same time, the carrier warns that the weather is making the route less accessible. Some residents continue to have ongoing needs for medications and care.

In a summary, it's easy to focus only on the new event. Then the usual medications and help for dependent people will be postponed until the cause is clarified. But the weather restriction applies regardless of the investigation. Therefore, the local manager requests two estimates: the medical need now and what will no longer be available when the route is closed.

The provider determines who needs urgent assessment and support, and which routine services cannot be interrupted. The supply coordinator checks with the carrier about the actual delivery capability and the recipient of the cargo. The manager checks the replacement of personnel: a single specialist cannot simultaneously perform all new and previous tasks without limiting the load.

The first option is to wait for the cause to be clarified before requesting external support. It may appear wary of an unspecified threat, but leaves the known deterioration of transport accessibility unaddressed. The second option is to coordinate assistance and supplies in advance for already identified needs while continuing the investigation. The team chooses the second one because medical and household tasks exist regardless of the event's final name.

The request describes a specific function. Instead of “send everything you need,” the coordinator indicates what supplies are needed, where they should go, who will accept them, and the dangers of delay to ongoing assistance. Medical information is transmitted to the required extent; the general transport application does not turn into a public list of diagnoses.

The weather changes, and the carrier clarifies the route possibilities. Now we need to reconsider not only the promised delivery, but also the plan for the waiting time. The manager receives an updated medical assessment, details of local provision and confirmation of available alternatives. An unconfirmed agreement remains an open task for which a person is assigned.

The decision contains change conditions: deterioration of condition, loss of necessary assistance, change of route, or response from the receiving service. It does not set the same waiting period for all residents. By the time of the next update, the team should know what has actually been secured, what has not yet been delivered, and what issue has been escalated to an external recipient.

In chapter 19 we will consider the everyday consequences of restrictions for the residents of Kedrovoye. Chapter 20 will continue with moving selection. The settlement itself will be discussed in chapter 49, where the features of distance, a small team and trust between familiar people will be added to these decisions.

Return to normal provision

After the resource arrives, the person in charge checks the operation of the function under the expected load and reports the result to the manager. Supplies replenish the used reserves, the personnel manager assesses fatigue, deferred medical and social tasks are assigned to performers. The current failure is carried out through P12 · p. 166, extended support request - via P11 · p. 165, permission to specific work - through P13 · p. 167.

19 Limiting contact and meeting human needs

Navigation: NAV · p. 003 · Contents: OGL · p. 010

A measure must have a goal and a limit

Limiting contacts must serve a specific purpose. Isolation of a sick person, observation after possible exposure, stopping a work operation and restricting the movement of the population have different reasons and consequences. The contact describes the circumstance, but the disease requires a separate assessment. The result of the study is considered taking into account the method and conditions of its receipt.

WHO ethical guidance links restrictions on freedom to necessity, proportionality, support for people and fair decision-making. [12] In practice, the person responsible explains the expected benefits of the measure, available alternatives, assistance to affected people and the conditions for review. When the cause is unknown, events directly indicate what uncertainty remains and how it is tested.

Purpose and execution

1. A medical or health professional describes the risk: for whom, in what interaction and according to what information. From this assessment follows the purpose of the measure.
2. The authorized manager selects the least restrictive option likely to achieve the goal and reviews the legal basis. He indicates the boundaries of the measure, the person responsible and the next revision.
3. The support coordinator finds out living conditions: housing, food, medications, care for children and dependent relatives, availability of communication and regular assistance. For each identified need, an executor is assigned.
4. The person responsible for communication explains in clear language the procedure for action and seeking help. A person should know how to report a deterioration, lack of security or an error in their data.
5. The appointed specialist re-evaluates the basis of the measure and its consequences. The decision to continue, change or terminate is updated along with checking the availability of the necessary services.

Support is part of implementation

If a person does not have food, adequate space, or substitutes to care for a relative, it may not be possible to complete the order. The coordinator organizes provision or, together with the medical team, changes the way the measure is carried out. Support is provided without unnecessary public disclosure of the diagnosis. The recipients of the data and their volume are determined by the task.

Continuation of analysis of R4. A Kedrovoye resident requires evaluation after a possible exposure and is caring for a family member with limited mobility at home. When planning such a measure, continuation of care is simultaneously organized. If protection is needed immediately, the person in charge includes assistance to the dependent relative among urgent tasks. The social coordinator looks for a replacement, the medical specialist assesses the circumstances of both people, the manager agrees on a feasible plan.

To test this plan, it is useful to go through a person's day through his or her usual needs. Who will bring the food? How will regular medications be obtained? Who will help a relative if communication is interrupted? The response is the confirmed action of a specific person responsible. Just contacting the service does not mean that help is already available.

Here two organizational options arise: to support the implementation of the measure at the place of residence or to agree on another available accommodation or method of assistance. The choice depends on medical assessment, housing conditions, care options and legal grounds. The general book asks questions for this comparison; the local team tests real options with the person.

The weather restriction from the previous episode changes this plan as well. Promised delivery may be delayed. Then the coordinator informs the medical officer in charge of the violation of support so that he can assess the consequences and the need for

revision. The record stores the need, the assigned person, and the actual result. The words “support arranged” are acceptable after confirming that the person can use it.

This is how the restrictive measure receives verifiable execution conditions. At the next review, the specialist evaluates both its medical basis and the life difficulties that have arisen. If a less burdensome, effective option becomes available, it is considered with the same justification and feasibility requirements.

For people who have difficulty understanding instructions, using digital services, or protecting their rights, accessible formats and assistance are provided in advance. If necessary, a translator or legal representative is involved. The public message must explain actions and correct mistakes while remaining respectful of the people affected. [13]



Figure 09. House in which the restriction can be fulfilled

Household support makes agreed upon restrictions feasible. In the case study, substitute care for a dependent relative, supplies, and accessible communications are included in the plan; the image does not specify a mandatory housing layout.

Revision

An unscheduled review is needed when there is new information about the mechanism, deterioration in health, violation of security, or the emergence of a more acceptable effective alternative. If there is no new data, the continuation of the measure still requires justification. Completion is completed via P13 · p. 167, further assistance through P14 · p. 168. The person is explained what else needs to be done and who to contact.

20 Rescue and evacuation at risk of transfer

Navigation: NAV · p. 003 · Contents: OGL · p. 010

Two risks of one decision

The decision to move has consequences in both directions. Evacuation may reduce immediate hazards and create the risk of transfer of exposure. Staying in place may mean deterioration of care, loss of nutrition, or inability to care. The manager compares available options with their means and unknown conditions.

Rescue operations require a specific leader and clear transfer of tasks. [9] Medical urgency is being assessed while the investigation into the cause continues. If the condition requires immediate assistance, the team acts in the appropriate order. Arriving specialists are informed in advance about the possible impact to the extent necessary for the work.

Decision to move

1. The head of the rescue work finds out what is threatening people now and how conditions are changing. He describes realistic options for shelter, on-site assistance, and movement.
2. The medical officer in charge determines the urgency and necessary support. He communicates to the manager and recipient how the delay is affecting patient care.
3. The engineer checks the suitability of the route and intermediate places for people, equipment and life support. An option with obviously unacceptable physical conditions is not included as available.
4. The coordinator agrees on transport, personnel, recipient and backup option. The receiving organization confirms readiness; the named responsible person is retained until the actual transfer.
5. The authorized leader makes a decision taking into account the urgency and possibilities of rescue. Performers receive a route, communication order, reasons for stopping, and a way to change the plan.

The recordings provide assistance to an extent that does not create unnecessary delay. In the event of an immediate threat to life, an approved emergency procedure is used, including actions without communication. After stabilization, the records are supplemented, indicating the basis for decisions and information about the possible impact. Such preparation is included in the organization of response to emergency events. [37]

People and materials require different decisions

The need to rescue a person is assessed separately from the removal of property and research material. Medicines, medical devices and communications are considered for their role in care. The rest of the cargo receives a separate decision and responsible person. By deferring unnecessary transportation, the team can preserve space and resources for the patient.

Support is planned taking into account the person’s condition and needs: disability, age, impairment of consciousness or dependence on medical devices. If separation from loved ones is contemplated, the clinical and practical implications are assessed. Ethical assessment includes fair access to limited resources and support for vulnerable people. [12]

Continuation of analysis of R4. In Kedrovoye, the medical officer in charge discusses on-site support and the possibility of an agreed transfer. The weather window limits transport, but does not in itself determine the same decision for everyone. Each person is assessed for urgency, availability of necessary assistance and support requirements.

Comparison of options begins with confirmed conditions. To remain on site, available assistance, supervision and support are required; for moving - suitable transport, accompanying persons and a ready recipient. If one of the components has not yet been confirmed, it is marked as an unfinished task. Comparing the current option with an imaginary fully secured option would be a mistake.

The coordinator receives updated information from the carrier. The previous route agreement is no longer sufficient. He communicates the change to the medical director and the receiving party, reviews the alternative, and communicates what remains feasible. The medical responsible person re-evaluates the consequences of the wait; the general manager agrees on the updated plan within the scope of authority.

Ongoing accountability is important at this step. The message “reception agreed” does not mean that the patient has already been transferred. Until the recipient actually confirms, the named team is responsible for assistance. If there is a delay, the person responsible, the method of communication and the reasons for the next decision remain clear.

When the transfer is complete, the record contains the actual recipient, the status of the transfer, and the remaining issues. Delivery of routine medications and care for other residents may still continue. The manager does not close the entire episode just because one transport task is completed.

The analysis ends with several results, each with its own owner. Help for a specific person continues with the receiving team; the supply of the settlement is controlled by the coordinator; The investigation remains unclear about the connection between the cases. The next part of the book will take a closer look at medical decisions and show how new information changes them.

When to change route

The route is revised if the patient is unstable, life support is lost, the route is closed, or the recipient's readiness changes. After the transfer, the condition of the accompanying persons, the availability of transport and the remaining tasks are checked. Return to the abandoned zone is decided separately through P13 · p. 167. Urgent assistance is provided by P02 · p. 156, organizational failure - according to P12 · p. 166, exceeding local capabilities - according to P11 · p. 165.

Part IV. Medical care and human recovery

Chapters 21–31. How to choose a clinical route, review decisions, and continue care.

The incident commander and the attending physician have different units of attention. The manager sees the entire event: premises, connections, resources and possible distribution. The doctor is responsible for a specific person at each moment. The overall version of the incident helps to ask questions, but the medical plan must explain this patient's condition and the care he needs. Therefore, this part begins with the division of urgency and possible impact, then moves through the first plan, its revision, and recovery from illness.

For the reader without medical training, this section helps to understand the structure of care, questions to the team and the transfer of responsibility. The professional reader associates the procedure described with the applicable guidelines. In the case study R3, the district hospital admits people after a general event. We will return to it when new data and limitations require us to change the original plan. All circumstances of the case are fictitious; the task of parsing is to make visible the course of choice.

21 Clinical urgency and risk of transmission

Navigation: NAV · p. 003 · Contents: OGL · p. 010

At the first contact, the medical team solves two problems: determines the urgency of care and assesses the possible impact on the person. Urgency addresses the question of “how quickly help is needed,” while impact assessment addresses the question “what conditions are needed to help and prevent further harm.” These tasks are performed in parallel. A serious condition may be due to infection, poisoning, injury, or other cause. A person who may have been exposed may not yet have symptoms. Therefore, the suspected origin of an event does not in itself determine the order of treatment and placement of patients.

Two entries on first contact

The triage staff member records the clinical urgency on the accepted instrument. Separately, a medical or specialized specialist clarifies what is known about the possible exposure. In a small team, one person can perform both functions, but both outputs are needed in the recording. The label "biological risk" is not enough for the next shift: it doesn't tell you how seriously ill the patient is. The “stable condition” label is also incomplete, since it does not indicate anything about the necessary precautions.

Condition	Impact assessment	Organizing the next step
Immediate assistance needed	There is reasonable suspicion	Urgent care with coordinated protection and suitable accommodation
Immediate assistance needed	No exposure data available yet	Help continues; circumstances are being clarified in parallel
No urgent violations identified	Possible contact requires assessment	Individual examination and observation plan
No urgent violations identified	Signal not confirmed	Explanation of the result and clear conditions for re-applying

The table shows the author's order of organization of decisions. The medical triage itself is carried out using a suitable approved instrument. For example, IITT, a WHO tool for triaging care in emergency departments, has its own scope. [21]

First decisions and their owners

1. The on-call medical director assigns a team to assess the person without undue expectation. If there is a threat to vital functions, use P02 · p. 156. The record indicates who is already providing care and where the patient is located.
2. The infection control specialist, together with a specialist in the anticipated hazard, selects protective measures based on available information. They also take into account possible chemical or toxic effects. Standard infection control measures are supplemented with those necessary for the suspected mode of transmission. [22, 23]
3. The attending physician determines what information is needed now and what can be clarified after stabilization. He asks the patient or accompanying person clear questions: when the symptoms began, where the person was, what might have affected him, and what help he has already received. If the answer is unknown, write it down.
4. The case coordinator—the staff member who liaises the steps of care—arranges the next step. He records the person in charge, the method of calling when deteriorating, and the receiving team when transferring. If the usual entrance is closed to separate the flows, the person is explained where and how he will receive help.

Pitfalls in separating patient flows

A separate area can reduce contact while making observation more difficult. The manager checks whether the staff will hear the call and can quickly come and provide urgent assistance. Food, toileting and other routine needs are also checked. If a person has difficulty speaking, seeing, hearing or moving, they need an accessible way to get attention. Placement management is only considered to work when the team can actually observe and assist the patient.

In the case study R3, a district hospital accepts people who were in the same place but need different care. One person requires urgent assessment, the other is still stable. The team retains a general question about the cause of the event and makes a separate plan for each patient. Information about the general location helps the investigation; The priority of medical care is determined by the person’s condition.

The time of assessment and the reasons for its revision are recorded immediately. A repeat decision is required if there are new symptoms, changes in contact information, failure of protection, or deterioration in surveillance. In G22 · p. 056 considers the organization of emergency assistance, and G23 · p. 057 - transition from the first examination to the initial treatment plan.

22 Urgent care and medical triage

Navigation: NAV · p. 003 · Contents: OGL · p. 010

A trained medical team begins with a systematic assessment of the person: looking for problems that require immediate intervention and checking the response to help. For the eyewitness, the route remains the same - P02 · p. 156, calling for help and acting within the limits of the skills mastered. The basis for professional training can be the Basic Emergency Care Course (BEC), prepared by WHO and the International Committee of the Red Cross. Practical skills are acquired through training; this chapter explains how to organize their use during an incident. [20]

Organize a place of help

The shift manager names those responsible for triage, clinical work and protection. In a small team, responsibilities can be combined if it is clear who performs each of them. Before starting work, equipment, communications and reserves are checked. It is especially important to distribute attention: the employee collecting information about the source should not unnoticed remain the only one observing a serious patient.

The arriving person must understand where he will be received. When the anticipated exposure requires a different placement, the receiving staff member will arrange the transition and confirm that the patient has reached the team. The instruction “go to the next room” leaves the possibility of losing a person between zones. Accompaniment is especially important for children without an adult, patients with impaired consciousness and people who have difficulty breathing.

Assessment and initial actions

1. A trained triage staff member determines the urgency and guides the patient through the appropriate pathway. WHO IITT provides age-specific instruments; A separate mass triage regime is used when the institution's normal capacity is exceeded. The sheer number of arrivals still requires an assessment of available resources. [21]
2. The clinical team consistently assesses the airway, breathing, circulation, consciousness, and other significant impairments within the scope of their training. When a threat is detected, it provides appropriate assistance and verifies the response. Necessary actions continue while other employees clarify the medical history and its possible cause.
3. The responsible physician decides whether the current level of care is sufficient. If another team's capabilities are required, the physician initiates transfer negotiations while maintaining available support. The request contains clinical need, anticipated risks of exposure, and transportation restrictions.

4. A nurse or other designated staff member observes changes and reports to the doctor. The instruction “observe” reveals: what exactly to check, how to record the result and under what signs to immediately call for help. The frequency of assessment is based on the patient's condition and applicable guidelines.
5. The clinical note taker notes the timing of significant decisions, the interventions performed, and the patient's response. If there is a shortage of personnel, use a short form followed by an addition. Documentation ensures continuity while maintaining the priority of needed care.

Re-sorting and transfer

An urgency category describes the condition at the time of assessment. It may change during a wait, in transit, or after treatment. A staff member is therefore assigned to reassessment in the waiting area, and the patient is given an accessible way to report deterioration. If the person cannot ask for help independently, the team arranges monitoring that accounts for this limitation.

The transmission reports the current state and its changes, possible impacts, completed actions, response to help, and unfinished tasks. The receiving team confirms that they have received the information and accept responsibility. WHO includes clinical documentation and patient referral tools in the Emergency Care Toolkit, a set of emergency care management tools. They can be taken as a basis for the local form. [36]

In the training scenario, two patients received the same primary category, but one began to rapidly deteriorate. The team is reviewing his route regardless of the order of arrival. If security makes observation difficult, the manager changes the organization of observation. The reason for the delay is recorded for later correction, rather than being hidden by a time correction in the log.

After this stage, the person is already assisted, he is monitored by a certain employee, and the next person in charge is known. The initial treatment plan is drawn up according to P05 · p. 159. G23 · p. 057 shows how to relate observed disorders to the choice of further medical route.

23 First hours and choice of syndrome route

Navigation: NAV · p. 003 · Contents: OGL · p. 010

The first hours here refers to the time it takes for the team to create an initial treatment plan after a person has presented. This is not a period of development of an unknown disease. The patient could have been exposed much earlier, and sometimes the moment of contact cannot be determined. Therefore, the record is divided into four events: possible exposure, onset of symptoms, first medical assessment, and significant interventions. Each event has its own source of information and its own accuracy.

The doctor begins by observing the patient. A syndrome is a combination of symptoms that describes a disorder, even if its cause is not yet known. To choose the nearest help, the doctor needs to understand what is happening with breathing, blood circulation, consciousness, water balance and other functions. The general expression

“unknown infection” does not provide such a description. The syndromic route allows you to draw up a work plan and subsequently refine it based on new data.

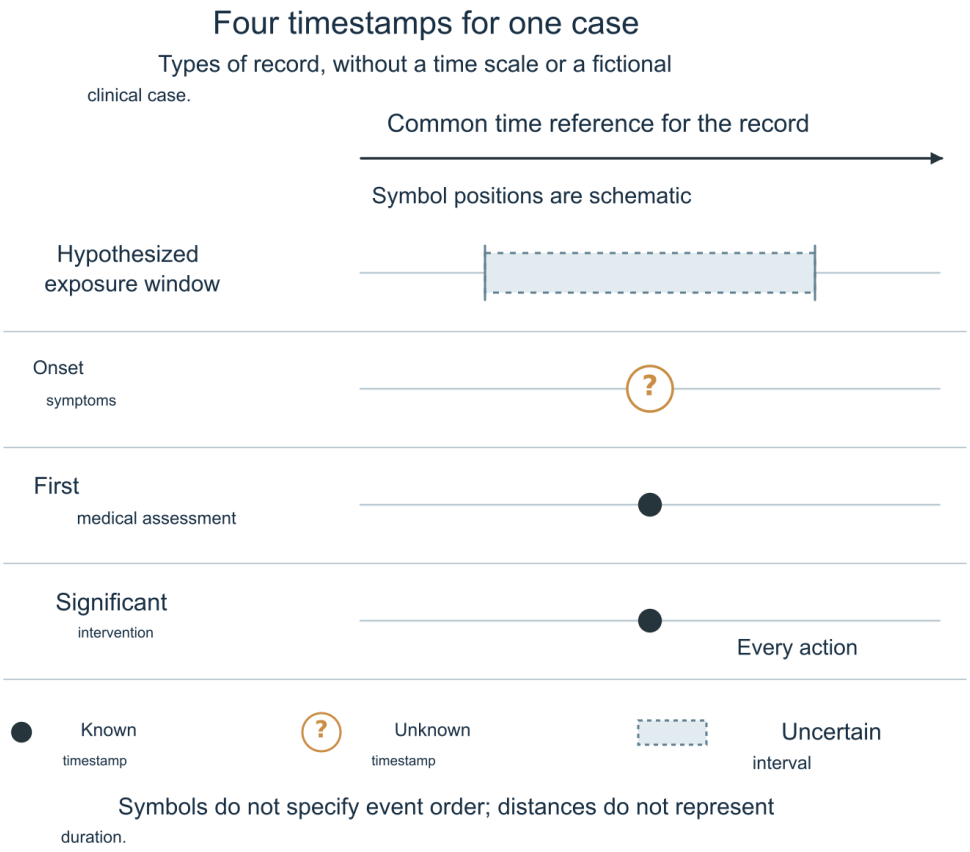


Figure 10. Four timestamps of one case

Types of time records are shown without scale and fictitious chronology of the case. The window of possible exposure, onset of symptoms, first assessment, and significant interventions retain their own sources and degrees of certainty.

Make an initial plan

1. The responsible doctor identifies problems that require help now. For each, he writes down the purpose of the intervention and how the team will evaluate the response. If the condition is unstable, emergency work according to P02 · p. 156 continues while the rest of the plan is formed.
2. The doctor and nurse collect anamnesis - information about what happened to the person before treatment. We need a sequence of symptoms, possible contacts, medications, allergies, concomitant diseases, pregnancy and other significant circumstances. If the stories diverge, both versions are preserved with the sources indicated. The doctor explains why he relies on one of them.
3. The team identifies a small list of causes that need to be checked or taken into account when treating. Possible contact helps formulate the question, but the person may have another disease. If people were in the same environment, along with infection, possible toxic, chemical or other effects of this environment are considered.

4. The doctor, together with a diagnostic specialist, selects studies that can change the immediate decision. They discuss the limitations of the method, the availability of the answer, and how it is communicated. If the right test is not available, the physician will be explicit about how the gap affects care and whether a consultation or patient transfer is needed.
5. The physician selects a guideline appropriate for the identified syndrome and the patient. He checks its current edition and the ability to implement recommendations on the spot. Empirical therapy—treatment until the cause is definitively established—must have a clinical basis and conditions for review. The list of available drugs does not in itself constitute a treatment plan.

Select support level

When choosing an intervention, the doctor simultaneously determines the necessary conditions for its implementation. If certain equipment or constant monitoring is required, the team confirms its availability. When a condition cannot be provided, the physician will agree on an acceptable alternative or transfer. The record includes a decision that can be performed in a given shift, with an assigned person responsible and the ability to check the result.

If sepsis is suspected, the physician refers to the recommendations for the appropriate age group. The Surviving Sepsis Campaign, abbreviated SSC (Surviving Sepsis Campaign) guidelines, 2026, differentiate situations by the severity and likelihood of infection and provide for a review of diagnosis and therapy. A single test does not replace overall clinical assessment. Treatment parameters are selected by a qualified team according to current guidelines. [24, 25]

Make the plan available to the next shift

The handover to the next shift includes the main problems, working explanations, selected guideline, intervention goals, and conditions for carrying them out. The physician states what to monitor and what would require an earlier review. A specific recipient is assigned to pending test results. The immediate next steps are explained to the patient in ordinary language, along with the questions the team cannot yet answer.

In the case of R3, information about a common location prompts the team to look for a common cause. However, patients' initial plans vary in urgency, needed capabilities, and next assessment issues. This distinction continues in the journal: the general investigative record links cases, while the clinical record explains care to a specific individual.

Educational analysis R3: First plan in the face of general uncertainty

People who were in the same place are admitted to the emergency department. One of them needs urgent assessment, the other is still stable. In the first message, the expression “group infection” already appeared, although only a common location was confirmed. If we take this formulation as a ready-made diagnosis, we may mistakenly assign one route to the entire group and miss the differences between people.

The doctor on duty shares the task. For a person whose condition requires urgent assessment, the team will organize the necessary assistance. The stable patient

continues to undergo individual examination and clarify the circumstances. Another designated employee gathers information about the overall event and contacts those in charge of the investigation. This distribution is important for a simple reason: the search for a common explanation should not take away the only observer from the patient who needs help now.

The initial choice does not come down to the name of the disease. The team decides which actions are already justified by each person's condition and which require additional information. A common infectious cause remains one of the versions. Possible environmental influences and overlap between different diseases also remain until they can be sufficiently assessed. The clinical note does not require equal certainty on all issues: urgency can be clear when the cause is not yet known.

The physician selects the applicable guideline for the identified disorder and checks whether it is possible to implement it locally. Suppose part of the next decision depends on research that has not yet been obtained. In this case, the plan contains two elements: assistance that continues now, and a specific action after the response is received. The research person responsible knows to whom to convey the result; the physician determines which changes will require reassessment before the test result arrives. These roles do not remain the shared responsibility of “all on duty.”

By the end of the first stage, the team can explain their choice to the next shift. For each patient, the leading problem, current plan, available follow-up, and unresolved issue are identified. In the general record, the version about the connection between the cases remains. This decision allows for subsequent clarification: a new explanation will not require reconstructing the entire event from memory, and a different level of urgency will not be hidden behind the general name of the group.

The next step is advanced when the team is able to complete it, understands the distribution of tasks, and knows when to reassess the patient. The cause of the disease may remain unknown. In G24 · p. 060 a re-assessment of P07 · p. 161 is being considered; a change in prescriptions due to new data accompanies P08 · p. 162.

24 The first days and reassessment of treatment orders

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After the first plan, the team monitors how the person’s condition changes and whether the chosen help helps. The word “days” in the title of the chapter refers to the next period of work, not the allowable interval between inspections. A significant intervention, new finding, patient report, or deterioration may require unscheduled evaluation. A serious condition remains urgent no matter how long a person remains in the hospital.

Compare condition to treatment goals

For each problem, the team records the initial condition, treatment goal, actions taken, observed response, and next question. If the expected response is absent, the physician checks several explanations: whether the cause was understood correctly, whether the intervention was sufficient, whether it was actually delivered, and whether harm

occurred. After this review, the physician explains why the treatment order is retained or changed. The record thus makes the decision process visible.

Changes in condition are compared with research and care settings. Improvement after intervention may support the working hypothesis, but causality remains to be assessed. If there is a deterioration, the doctor considers the course of the underlying disease, complication, new exposure, undesirable effect and possible disruptions in care. The choice of next action depends on which explanations are consistent with the available evidence.

Re-evaluation procedure

1. The responsible doctor and nurse compare the current condition with the previous one. New complaints, tolerance, changes in functions and the need for urgent assistance are clarified. Dangerous deterioration immediately returns the patient to P02 · p. 156.
2. The doctor reviews the working explanations and checks whether the ordered results have been obtained. A person is assigned to receive and interpret each important response. If the answer is delayed or lost, the plan remains an open task: who to call, what to clarify and how to act until information is received.
3. The physician, together with the clinical pharmacist, if available, checks the relevance of essential prescriptions. Continuation, modification, narrowing and termination according to indications are considered. In SSC 2026, review of antimicrobial therapy is included in clinical management; the approach depends on the data set. [24, 25]
4. The care coordinator checks to see if the plan is being implemented: if resources and advice are available, and if necessary follow-up is possible. The lack of resource is reported to the doctor so that he can agree on further action. This gap should not remain known only to the employee who encountered it during the shift.
5. The team discusses the plan with the patient and arranges handover to the next shift. If there is a significant change in diagnosis or treatment, P08 · p. 162 is used. The next control is tied to the state and task.

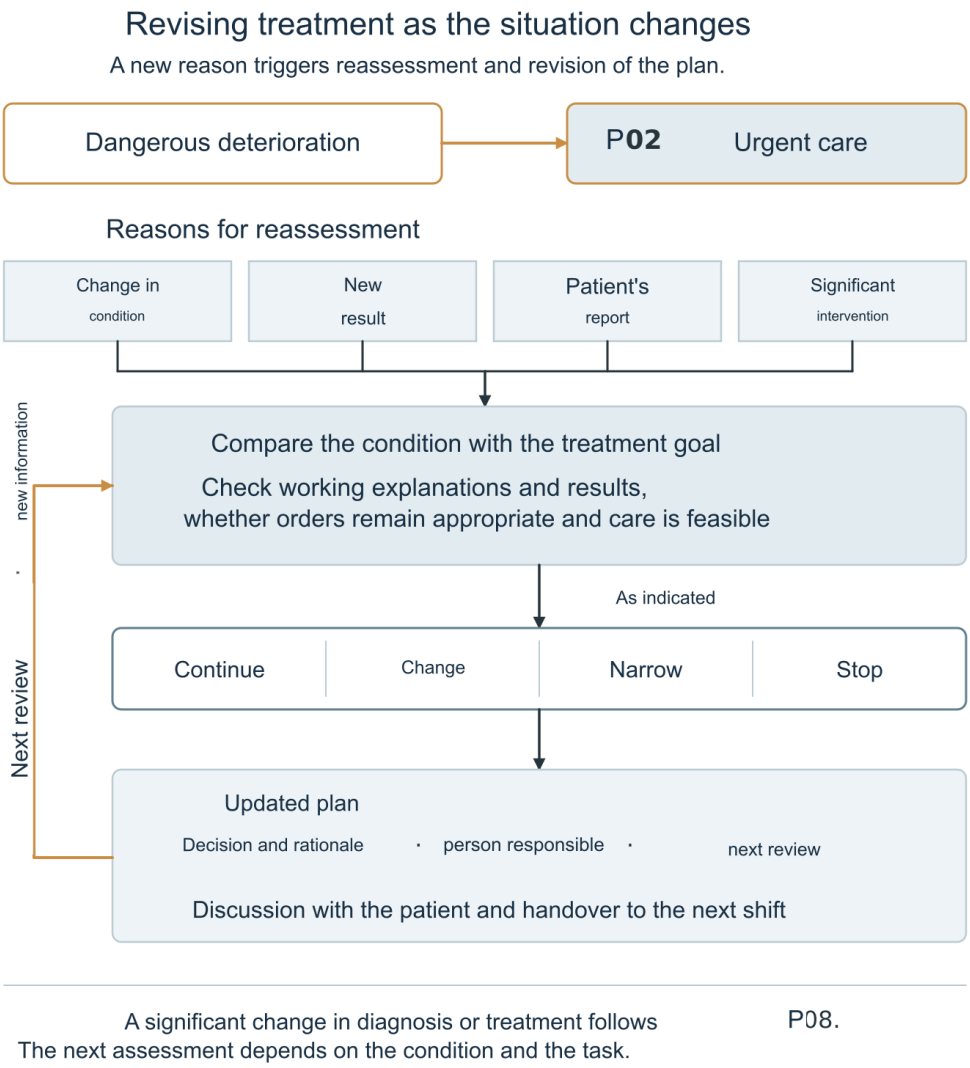


Figure 11. Reviewing treatment as the situation changes

The author's re-evaluation scheme combines the person's condition, new information, treatment orders and the feasibility of the plan. The decision receives a basis, a person responsible and a subsequent review. Dangerous deterioration requires urgent assistance according to P02.

Maintain usual care

An unusual incident does not change chronic illnesses and everyday needs. The doctor checks your permanent medications and explains temporary changes. The nurse monitors nutrition, pain management, hygiene, sleep, and a person's ability to care for themselves. The social service helps to remove practical barriers that prevent you from continuing treatment after hospital.

If the person is separated from loved ones, the team will coordinate contact with their chosen contact and maintain confidentiality. The patient must understand the meaning of the proposed actions and have the opportunity to ask questions. When the explanation remains unclear, the employee repeats it in a different way and checks understanding.

In the case study, the condition has improved, but the institution is preparing a transfer due to a lack of space. The physician separately checks clinical readiness, necessary observation conditions and the readiness of the receiving team. An improvement in the indicator does not confirm all of these conditions at the same time. The transfer is analyzed in G29 · p. 071, further recovery - in G30 · p. 074.

Training review R3: What changes when re-evaluated

By the next assessment, some of the information about the place of stay had been clarified, and the patients' conditions had changed differently. It is tempting for the team to draw a single conclusion: if one person gets better, the original plan worked for everyone; if the other one got worse, the entire original version was wrong. Both outputs are too wide. The doctor returns to the goals written down for each patient and compares actual changes with them.

First he finds out what the person actually received. The treatment-order sheet shows the team's intent; execution recording and observation show what happened. For example, a delay in an expected study leaves one question open, and staff shortages may change the availability of observation. These circumstances have different consequences. The first requires restoring the response route, the second requires reconsidering the organization of assistance right now.

The team then checks the status explanation. A changed version of a common event may weaken one hypothesis, but does not by itself explain all symptoms. The doctor notes which prescriptions remain valid, which require revision, and for which decision there is still insufficient data. Saving the plan also becomes a meaningful decision: the record shows that it has been checked using new information, and not just rewritten from yesterday.

At the same time, the institution reports a shortage of places and staff. For the administration, the transfer looks like a way to free up resources. For the patient, the question is different: where can the necessary help be provided and what will happen along the way. Therefore, the doctor describes the need, and the coordinator looks for a receiving team capable of filling it. Improvement of condition is taken into account in this decision along with observation and transport conditions.

At the end of the review, the duty officer conveys the changes and their reasons to the next shift. The expected test result retains a named recipient, and the transfer retains a responsible coordinator. If a resource appears or status changes before scheduled monitoring, the team already knows which decision to reopen. The review reduces uncertainty gradually while maintaining continuity of care.

After the review, it should be clear to the next shift what has changed, what decision the doctor made and who will check the result. If the plan remains the same, the recording explains why it is still suitable and what questions remain open.

25 Leading clinical syndromes

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The syndromic route connects the observed disorder with the immediate goal of help. It is needed when the origin of the harm is still being clarified. The doctor continues to

look for the cause, since the same manifestations may require different subsequent treatment. This chapter helps the medical specialist choose a direction of work. He takes specific interventions, parameters and contraindications from the guidelines applicable to the patient and condition.

Map of initial tasks

Leading violation	Immediate clinical task	What needs to be clarified in parallel
Difficulty breathing or signs of respiratory failure	Assessment of airway, oxygenation and need for respiratory support	Infection, toxicity, cardiac, allergic or other cause
Shock or signs of insufficient blood supply to organs	Circulatory assessment and appropriate hemodynamic support	Probable mechanism, ongoing losses and tolerability of interventions
Loss of consciousness or seizures	Prevention of immediate injury, assessment of vital signs and urgent cause	Metabolic, toxic, infectious, vascular and other explanations
Marked fluid loss	Assessing water balance and choosing the appropriate replenishment route	Severity, ability to drink, circulatory status and patient limitations
Bleeding or other signs of severe systemic damage	Urgent specialist assessment and support appropriate to the patient's condition	Source, consequences, associated disorders and need for transfer

The table helps determine the initial task. Systematic assessment of acute disorders is taught in the BEC Basic Emergency Care course. Individual syndromes require appropriate additional guidance and training. [20]

Translate the syndrome into a feasible purpose

Breathing. The physician will use clinical judgment and protocol to determine whether oxygen and other supports are needed. The team tests equipment, skills and observation capabilities; if more complex assistance is needed, an appropriate specialist is involved. Personnel protection is coordinated with the infection control service, taking into account the expected exposure. The cause of the breathing difficulty is still being investigated.

Blood circulation. The doctor finds out why the tissues may not be receiving enough blood and chooses support with re-evaluation of the response. Fluids, medications and other interventions have their indications and limitations. In cases of probable sepsis, age-specific recommendations are used. [24, 25] If the condition worsens after the intervention, check the original explanation and the possible harm of the treatment.

Consciousness and convulsions. The team provides the necessary emergency care within its competence, while clarifying potentially reversible causes and the need for a specialized route. The patient's impaired ability to communicate reinforces the importance of observation, companion information, and available medical history. No exposure story is not the same as no impact.

Fluid loss and nutrition. The doctor evaluates the severity of the losses, the ability to safely take fluids, and associated restrictions. The plan indicates the available method of support, monitoring the result and the conditions for changing this method. While the diagnostic search is underway, the team continues to provide nutrition and necessary care.

Mixed states and the danger of a single explanation

A person can have several leading problems at the same time. The clinical manager determines the urgency of each and considers how interventions affect each other. If different specialists are involved, one doctor agrees on the overall plan. This allows you to promptly notice recommendations that require incompatible conditions or additional monitoring.

In the training scenario, a person experiences shortness of breath and confusion after the intended exposure. The team initiates the necessary support, reviews the environment, and considers multiple causes. A research hypothesis about an unusual agent should not supersede the evaluation of available treatment explanations.

For each chosen route, the goal, expected response, risk, execution conditions and the next decision are recorded. Changing the leading syndrome returns the patient to P07 · p. 161; urgent deterioration - by P02 · p. 156. If there is a lack of opportunities, G29 · p. 071 applies.

26 Children, pregnancy and special needs

Navigation: NAV · p. 003 · Contents: OGL · p. 010

Age, pregnancy, comorbidities and communication patterns can change the assessment of the condition, the choice of care and its organization. Therefore, the doctor clarifies what tools and consultations the patient needs. The manager provides access to them. None of these features in itself determines the severity of the disease: the individual assessment is retained.

Patient's age and condition

Children. Age-specific assessment tools, appropriate monitoring parameters and pediatric guidelines are used. Adult schemes are not transferred mechanically. For sepsis there is a separate SSC guideline 2026 for children. [25] Information from parents or other caregivers helps reconstruct the course of the condition, but clinical judgment remains the task of the team. If the child is admitted without an accompanying person, an employee is appointed who is responsible for organizing representation and communication in accordance with local regulations.

Pregnancy and postpartum period. The doctor takes into account the woman’s condition, the characteristics of the period and the need for obstetric or neonatal consultation. The plan of care must address the patient's current threats and the associated needs of the fetus or newborn. Information about a possible threat does not automatically create a reason to stop necessary treatment or undertake irreversible intervention without appropriate clinical judgment.

Old age and chronic diseases. The team finds out how the person lived before the event, what he could usually do on his own, and what medications he took. Then compares this with the current state. This makes it easier to notice a new deterioration and distinguish it from the usual limitation. Age is not a substitute for assessing the need for help and expected benefits.

Features of immunity. The doctor clarifies known diseases and treatments that may change the clinical picture. Together with a specialized specialist, he evaluates whether the usual signs and methods are appropriate for this patient. If there are no typical manifestations, the remaining uncertainty is reflected in the further search and observation plan.

Provide accessible communication

1. The coordinator finds out in what language and in what way the person is comfortable communicating, and whether a translator, accompanying person or technical means is needed. This information is passed on to the next shift along with other conditions of assistance.
2. The team checks that the patient understands the explanation, can express choices, and report deterioration. If a person does not speak, he is offered an accessible method of communication, as much as the urgency allows. After this, they evaluate how he can participate in the decision.
3. The responsible physician will arrange consent and representation in accordance with the state and applicable regulations. Emergency situations have a procedure prescribed by law. Medical care and participation in the study receive separate grounds; consent to one does not imply consent to the other.
4. The nursing service reviews access to toileting, meals, mobility, routine supports and staff call-outs. Placements to prevent transmission must maintain the ability to provide necessary care.



Figure 12. Individual conditions for participation in assistance

Communication, calling and movement tools illustrate possible adaptations and are not a required set. The sheet contains conditional rows. An individual plan takes into account age and condition, pregnancy or postpartum period, initial capabilities, immune system characteristics and method of communication.

Review the plan with the patient

In the case study, a hearing-impaired patient does not respond to instructions from the next room. The employee first checks the method of communication, then conveys the information in an accessible way and makes sure that it is understood. The records reflect the need for such communication. This helps the next shift avoid the mistaken conclusion that the person refused to follow the recommendations. The same question is asked if there is a language barrier, visual impairment or reading difficulty.

In research, the inclusion of special populations requires justification, appropriate consent, and protection of participants. A lack of data must be acknowledged; it neither permits arbitrary experimentation nor justifies automatic exclusion from beneficial care. [26]

Once assessed, the person has the right care settings, the specialists they need, and an accessible way to participate in decisions. The change in state leads to P07 · p. 161. G30 · p. 074 continues this route after the acute stage: transport, communication, medications and assistance with daily living are covered.

27 Transition to targeted treatment

Navigation: NAV · p. 003 · Contents: OGL · p. 010

New information allows the physician to make more accurate treatment choices when it actually changes the understanding of the cause of a disease or the suitability of an intervention. Such information can be a diagnosis, clarification of the mechanism, a response to help, or the result of a specialized study. The doctor evaluates them together. The laboratory message describes the result of the test; the clinical decision explains what this outcome does for a given patient.

Check what exactly has changed

1. The attending physician names the decision that now needs to be made: to continue, change, narrow or stop a particular intervention. He records the new rationale alongside the decision. This makes it clear why an additional result changes the plan or why the plan remains the same for now.
2. The doctor and diagnostic specialist check the reliability of the result, its limitations and suitability for the patient’s condition. The detected factor may cause the disease, accompany it, or have another significance. If the result does not match observations, the team resolves the discrepancy and continues to provide necessary assistance.
3. The subject matter consultant evaluates the applicability of the guidance to the identified situation. Patient characteristics, severity, organ function, drug interactions, previous interventions, and availability of follow-up are taken into account. A known drug with a different indication does not automatically receive proven effectiveness for a new threat.
4. The responsible physician draws up an updated plan and explains the changes to the patient. The team receives a consistent set of treatment orders, expected responses, and reasons for unscheduled revisions. Previous treatment orders that are no longer valid are explicitly canceled in the recording system used.

Tapering and stopping therapy

When there is enough evidence, the doctor can narrow therapy, stop unnecessary interventions, or change the purpose of the intervention. He takes into account changes in condition and the consequences of cancellation. A negative answer to one diagnostic question helps evaluate that question within the method; the decision to discontinue a particular intervention requires an assessment of the entire clinical picture.

SSC 2026 addresses re-evaluation of diagnosis and antimicrobial treatment in the management of sepsis; the choice depends on the specific situation and the quality of available information. [24, 25] In the proposed system, each significant treatment order retained receives a current basis. If the basis remains presumptive, the conditions for its further verification are fixed.

New data may indicate several processes at the same time. Having specified the treatment for one cause, the doctor remains focused on other problems. He coordinates the recommendations of specialists and checks the overall picture, including tolerability and ability to carry out the treatment orders.

If there is no suitable proven remedy

If there is no proven cure for the cause, the team continues to support the impaired function and care. The opportunity to study a new intervention is considered separately. Routine care, a clinical trial, and the exceptional use of an untested drug outside of a trial have different rationales, consents, and oversight. For these issues, WHO publishes guidelines for clinical trials and an ethical framework for the controlled emergency use of unproven clinical interventions (MEURI) for limited exceptional circumstances. [26, 27]

Refusal to participate in a study should not deprive a person of appropriate care. Inclusion in the program does not mean refusal to review the diagnosis, support and treatment of related problems. The status of the evidence, available options, and procedures for reporting adverse events are explained to the participant.

In the case of R3, an additional conclusion is received when the original plan is already in effect. The doctor determines whether the result is relevant to the question asked and whether it is consistent with the condition of each patient. He then retains or changes the treatment orders and communicates the decision to the team. The mere appearance of a file in the system does not trigger equal treatment of the entire group.

Training analysis R3: How to use the new conclusion

Let's imagine the following moment of the same case: the hospital receives an additional diagnostic report. It refers to part of the reasons under consideration and contains a disclaimer on the scope of application. In an information system, the answer is visible to everyone, but different employees are going to use it for different tasks. The doctor wants to clarify the treatment, the coordinator wants to know the terms of the transfer, and the head of the facility wants to change the placement.

The treating physician begins by asking: Does this result change the explanation for this patient's condition enough to reconsider the intervention? The diagnostic specialist explains what the method confirms and what it did not evaluate. The doctor compares the answer with clinical observations. With consistent data, he can clarify the working reason; if there is a discrepancy, he prescribes its analysis, continuing the necessary assistance.

Then the doctor makes a decision on specific prescriptions. For some, the new basis may be significant; for others, the patient’s condition remains decisive. In the updated record, they indicate what was saved, changed and canceled, then these changes are transmitted to the performers. This prevents a situation where a new plan has already been recorded in one system, and the other shift continues the same.

The transfer coordinator and the placement director receive the clinical conclusion to the extent necessary, but each checks their own conditions. One study could answer part of the medical question and leave the environmental question open. Therefore, the overall result is formulated narrowly: what knowledge has appeared and what decision has become possible thanks to it. This is the result that is suitable for further work.

After a change in treatment, a dated plan remains: which guidelines the doctor relies on, under what conditions the intervention is applied, what to observe, and who is responsible for the next step. The change accompanies P08 · p. 162, re-evaluation - P07

· p. 161. In G28 · p. 070 deals with the situation when a new problem appears during treatment.

28 Complications and undesirable effects

Navigation: NAV · p. 003 · Contents: OGL · p. 010

A new disorder during treatment is assessed as a separate task. The doctor checks whether it is related to the underlying disease, another disease, environmental exposure, care, or intervention. At the same time, the team provides the necessary assistance. The original version remains valid only to the extent that it explains new information.

Prepare observation in advance

When starting a significant intervention, the team records the initial state and expected outcome. The doctor determines what needs to be observed for safety; the nurse or other designated staff member confirms that such monitoring is feasible. If an important indicator cannot be obtained, the doctor takes this into account when choosing an intervention, consultation and level of care. The plan should have workable procedures instead of the general phrase “control whenever possible.”

A single reconciled list of prescriptions is maintained for the patient. This includes ongoing medications, self-administered medications, and post-admission changes. When changing institutions, combinations, tolerability and possible duplicates under different names are checked. Significant changes along with their reasons are conveyed to the next shift.

Act upon new violation

1. The observing staff member reports a new symptom, change in function, or suspected error. He indicates the time, previous events and actions already performed. Reporting a possible adverse effect does not require prior proof of causation.
2. The responsible physician assesses the urgency. If there is a threat to life, P02 · p. 156 is switched on. At the same time, the need to continue, suspend, replace or discontinue a specific intervention is considered; this decision takes into account the risk of termination itself.
3. The treatment team works with a specialized consultant to evaluate the timing of events, possible mechanisms, other explanations, and available research. An event occurring after a treatment is prescribed requires assessment, but the order in time does not establish the cause. The unusual nature of the reaction does not in itself exclude it.
4. A clinical pharmacist or designated specialist reviews the drug portion as necessary; Responsible for medical equipment - suitability and operation of the device within the scope of his authority. The team separates the clinical cause from the technical fault, without wasting time arguing about the ownership of the problem.

5. The responsible physician updates the plan and reports the necessary information to the provided security system. The protocol for the study intervention is the same. The patient receives an explanation of known facts, uncertainties, and follow-up. [26]

Prevent harm to the aid organization

With long-term treatment, additional care tasks arise. The team evaluates skin, nutrition, mobility, pain, sleep, orientation, and assistance with normal activities. For preventive interventions, the doctor separately checks the indications and contraindications. Their choice depends on the needs of the person, and not just on his participation in the overall incident.

The team is reviewing the need for devices and restrictions. Separate housing, difficult personnel protection, and communications disruptions can interfere with surveillance, feeding, and communication. The manager appoints an employee who will eliminate a specific obstacle and checks the result. Infection control remains one of the objectives of overall patient safety. [22, 23]

In the teaching example, marked weakness developed during treatment. The team considers the course of the illness, inadequate nutrition, medication effects, and other causes. It checks the care actually received, rather than relying only on the treatment-order sheet. Saying "it is all the unknown agent" does not complete the assessment.

After the debriefing, the physician updates the explanation of the condition, intervention decisions, and follow-up. If an organization error is identified, its correction is assigned to a separate person responsible. Medical information is transmitted via secure channels. For public review, only the data necessary to prevent repetition is used.

29 Medical resource shortages and patient transfer

Navigation: NAV · p. 003 · Contents: OGL · p. 010

A resource shortage is communicated through a task that cannot be completed. For example, an available bed does not solve the problem if there is no trained staff member or required supervision available. Limitations may also include oxygen, equipment, energy, medications, and transportation. The Medical Response Manager maintains an up-to-date understanding of what care each team can provide.

Acknowledge the limitation and request support

1. The attending physician determines which option the patient needs and how urgently. In the request, he describes the clinical need, the potential harm of waiting, and the care the team can continue on site in the meantime.
2. The shift manager checks the possibility of redistributing tasks, consulting and using the prepared reserve. Staff are not empowered to undertake complex interventions simply because of specialist shortages; acceptable actions within the preparation and an alternative route are considered.
3. The resource coordinator contacts the appropriate agencies or higher-level system. He conveys a specific need, a person’s condition and the characteristics of the

possible impact. If the agreement is delayed, the capabilities of the receiving party are checked again.

4. Authorized medical management in the event of systemic shortages activates the prescribed order of resource allocation. The reasons must be transparent, clinically and ethically sound, documented and reviewable. Decisions are not made on the basis of social utility, a person's background, or the convenience of his isolation. Ethical allocation issues are addressed in WHO outbreak guidance. [12]

Prepare the transfer

The doctor weighs the benefits of the move against the risk of the journey and determines the necessary support. The coordinator coordinates transport, personnel, resources and the host team. If the possible impact requires additional conditions, specialized services are included in the approval. The decision on the patient is made separately from the decision on the movement of the disputed material.

What is confirmed	Who is responsible	What does the next party get?
Clinical need and readiness for the chosen route	Sending doctor	Condition, dynamics, assistance and remaining risks
Path and escort capabilities	Medical Director of Transport	Requirements for observation and action when status changes
Ready to receive	Designated Host Team	Confirmation of place and time of transfer
Unfinished tasks	Case coordinator	Expected results and those responsible for communicating them

The WHO Emergency Care Toolkit contains patient referral, transfer and return tools; they help coordinate information between institutions. [36] The local form must remain available when the primary information system fails.

If the transfer is delayed or impossible

If the receiving party refuses, the coordinator writes down the reason and looks for the next option. The physician reviews available care and frequency of assessment. The manager informs the higher level exactly what resource is needed and why the delay is dangerous. The patient remains on the active task list until the team agrees on a further route.

If connection is lost, a pre-agreed reserve is used. In an autonomous environment, including a remote base or space mission, medical need is weighed against engineering feasibility and predetermined authority. Waiting risk and displacement risk are considered together; There is no universal answer for all circumstances.

In the training scenario, the nearest facility is available but does not have the required supervision. The coordinator looks for a suitable opportunity, and the sending team continues to provide available assistance. Acknowledgment of receipt is verified prior to scheduled dispatch; immediate rescue follows according to a separate prescribed procedure.

Training analysis R3: When there is not enough free space

A place was found in a nearby institution. The coordinator initially perceives the message as a readiness to accept the patient, but a clarifying conversation shows that there is no necessary observation opportunity there on the required shift. Two options arise - continue the agreed assistance on the spot or look for another route. A nearby hospital has the advantage of easy access; its limitation is related to the assistance itself after arrival.

The treating physician describes what capability the patient requires, how its absence affects care, and whether waiting is acceptable under the current plan. The coordinator transmits this request to the agencies, and the shift manager checks the available reserve. The decision is not replaced by a dispute about who is obliged to “take the patient”: the subject of agreement is certain assistance, accompanying conditions and a confirmed recipient.

Until a route is agreed upon, the dispatching team continues to provide available assistance and reassessment. The employee conducting the approval writes down the refusal, its basis and the next option. If the condition changes or a new opportunity arises, the transfer decision is reconsidered. Lack of space on the first call does not become a permanent conclusion that the transfer is impossible.

After approval, the entire transfer is checked: transport, escort, information and actual acceptance of the patient. The team separately evaluates what the departure of employees and the expenditure of resources means for the remaining people. As a result, the issue of one patient does not disappear from monitoring between institutions, and assistance to others remains responsible.

The handover is completed when the receiving team has explicitly accepted the patient and outstanding tasks. The dispatching team then checks the load and supplies for the remaining people. Once resources are restored, it also evaluates the impact of delays that have already occurred.

The resource allocation procedure should allow for immediate decisions without waiting for a lengthy meeting. To do this, the powers of the duty officer, the procedure for consultation and subsequent inspection are determined in advance. A decision made due to a lack of data retains the grounds and conditions for revision. The appearance of a resource or a change in need triggers a new assessment; the initial refusal does not become the patient's permanent status. The manager separately checks whether language, digital or transport barriers impede access to the review.

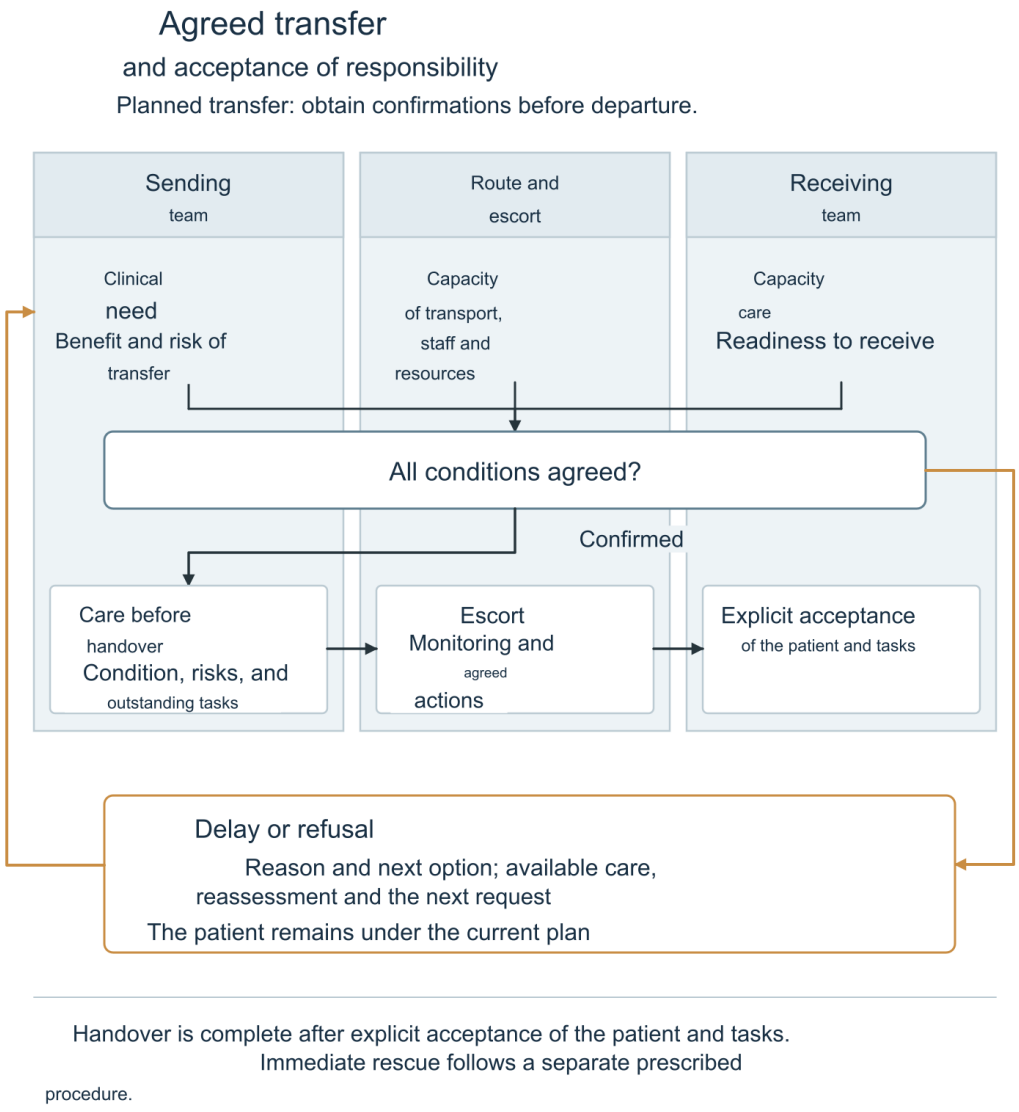


Figure 13. Agreed transfer and acceptance of responsibility

The scheme refers to an agreed planned transfer. Ongoing care and responsibility remain until confirmed acceptance of the patient and pending tasks; the delay requires a new decision. Direct rescue has a separate prescribed procedure.

30 Recovery and long-term follow-up

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After the acute stage, the person gradually moves on to other care tasks. He may be clinically stable and still require support with activities of daily living. Readiness for discharge and reasons for discontinuing precautions are also assessed separately. Follow-up must have a clear purpose, responsible agency, and review conditions. If the cause of the disease remains unknown, the team explains which decisions this limits and which can already be made.

Determine needs before handover

Before handover, the care team discusses the patient's ongoing symptoms and what has become difficult to do. This may concern movement, self-care, communication, memory and attention, emotional state, study or work. Recovery goals are compared to the person's previous life and their own priorities.

WHO considers the availability of quality rehabilitation as a task for the healthcare system. [34] In the proposed pathway, needs assessment begins as soon as the condition allows and continues after discharge. It does not come down to prescribing the same physical activity to all victims. The program is selected based on condition, tolerability and available evidence; new deterioration requires clinical reassessment.

Prepare a plan for further assistance

1. The attending physician writes a final note. It separately indicates established and suspected, complications, assistance provided, current prescriptions, limitations and unfinished studies. If the answer comes later, it is already known who will receive it and contact the patient.
2. The follow-up specialist accepts the tasks and agrees on an available method of re-evaluation. Its duration depends on the condition and the issue of observation. When there is no applicable biological deadline, the team explicitly explains what the next revision is based on.
3. The rehabilitation team works with the patient to formulate achievable goals and appropriate actions. The plan specifies the resources needed, how tolerability will be assessed, and indications when a load or other component should be reconsidered. Having a diagnosis does not replace a functional assessment.
4. The social coordinator checks the possibility of fulfilling the plan: medications, food, housing, transport, communications, assistance at home. The inability to independently attend an appointment requires a decision by the organization of care, and not a record of the patient’s hypothesized dishonesty.
5. The relevant transmission risk service separately formalizes the measures to be maintained and the conditions for changing them. The clinical statement alone does not confirm the safety of the premises, materials or all contacts. The further route is connected with P14 · p. 168.

Observation with a specific purpose

Each direction of observation answers a specific question: how the function is restored, whether a complication appeared later, how the treatment is tolerated, whether it is necessary to change living conditions. The results are compared with the initial state and the agreed goal. If observation no longer influences assistance, its scope is reviewed. A new question receives a person responsible and a further route.

Observation may reveal general patterns in the consequences of an incident, but clinical care and research data collection have different foundations. The purpose of using the information, access to it, and applicable consent procedures are explained. Refusal to participate in a study should not deprive a person of available medical support.

In the case study, a person is discharged after stabilization, but is unable to perform previous daily activities. The team will organize assistance and functional assessment, even if some of the control tests are normal. The opposite situation is also possible: a person feels better, but an unresolved clinical issue remains. The scope of follow-up is determined by this question, not by the general label “recovered.”

When completing a specific observation, the specialist explains the result and signs that require contact again. The person remains in clear contact. In case of a new acute deterioration, P02 · p. 156 applies; other changes are considered in an agreed upon clinical re-evaluation manner.

For remote monitoring, two things are tested: whether the method is suitable for the medical issue and whether the person can use it. The team will agree in advance on the reserve in case of loss of communication and the reason for an in-person inspection. If the patient does not respond, the coordinator follows the agreed communication procedure while maintaining confidentiality. What cannot be assessed remotely remains unassessed in the record and is taken into account in the next decision.



Figure 14. Return to everyday life

Daily activities, rest, nutrition, socializing, and work or school help describe individual recovery goals. The areas shown do not form a required sequence of stages; the scope of observation is determined by the specific issue.

31 Support for seriously ill patients, families and staff

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Relief of suffering, care and support for decisions are needed throughout the course of the disease. These challenges persist in the face of uncertainty, prolonged separate

placement, and the absence of a proven remedy against the cause. WHO includes palliative care and symptom relief in response to humanitarian emergencies. [35] Such assistance is determined by the needs of the person and can be combined with treatment aimed at recovery.

Ease current suffering

The responsible physician evaluates pain, difficulty breathing, anxiety, and other distressing symptoms, choosing appropriate care based on the condition and applicable guidelines. The nurse monitors effect and tolerability, supports care, and communicates ongoing needs. Specific prescriptions require clinical indications; the assumption of an unusual agent does not override the usual assessment of benefit and risk.

The team asks what is most important to the person right now: getting relief from a symptom, talking to loved ones, getting enough sleep, getting a clear explanation, or maintaining a practice that is meaningful to them. The answer helps you choose a specific action. Another specialist or assistant is involved with the consent of the patient and taking into account the necessary protection conditions.



Figure 15. Care and connection remain part of care

Care, comfort, and connection with the chosen loved one remain part of the care. The method of communication and the conditions of presence are coordinated with the person and the necessary protection.

Discuss the goals and limitations of assistance

1. The treating physician explains the known condition, possible options, and significant uncertainty. For important decisions, time is allocated, the necessary

specialists are involved, and understanding is checked. The forecast does not appear to be more accurate than the data allows.

2. The team ascertains the patient's preferences and available previously expressed decisions within the framework of applicable law. If a person is unable to participate, the established order of representation is used. Failure to respond does not automatically translate into consent to the experimental intervention.
3. The responsible clinical manager agrees on treatment goals and how they will be reviewed. Decisions to limit certain interventions have a specific medical and legal basis. They do not mean stopping care, symptom relief, and respectful treatment.
4. The communication coordinator maintains contact with the patient’s chosen loved ones within an acceptable amount of confidentiality. If in-person attendance is limited, an accessible alternative will be organized. The family knows who is reporting information and when to expect the next update.

Support loved ones during a difficult outcome

Severe impairment or death is reported by a trained staff member. He speaks clearly, leaves time for questions, and honestly explains what is known about the cause. Loved ones are told the next steps, the support available, and who is responsible. The handling of bodies and personal belongings is organized by competent services in accordance with identified hazards and local regulations.

In a training scenario, a family receives different explanations from several professionals. The clinical supervisor agrees on the factual summary and appoints a point of contact. Differences in expert opinion may remain, but they should be explained as differences of opinion rather than giving conflicting commands to the family.

Keep the team healthy

The manager organizes shifts, rest, conditions of protection and the opportunity to seek help in case of physical or emotional exhaustion. An employee must be able to communicate that they can no longer safely perform a task. Mutual support within a team is helpful, but adequate composition and access to professional support remain the responsibility of the organization.

After difficult decisions, an analysis is carried out taking into account the information available at the time and real limitations. Its purpose is to identify correctable causes and support further work. Medical and personal information is protected; public discussion should not become a search for blame based on an incomplete picture.

At the end of the medical journey, each person is left with the help and care they need, agreed goals and a clear connection with the team. The end of the emergency regime does not eliminate ongoing needs. The next part of the book addresses the overall event: how to set its boundaries, test explanations, and choose an informed response.

Part V. Investigation and counteraction

Chapters 32–42. How to move from a signal to a reasonable conclusion, elimination of the source and a medical remedy.

Clinical work answers the question of how to help a person now. The investigation gradually reveals what the cases have in common, what impact is possible and what conclusions are reliable enough for general measures. These areas exchange information while maintaining their own tasks. The patient's improvement does not in itself explain the origin of the event; a finding does not automatically select treatment.

This part traces the path from the description of observations to the decision to eliminate the consequences and the development of a medical product. The team first formulates a question, then checks the applicability of the data, compares explanations, and selects an action. Extensive cases show how an erroneous note, dependent reports, or inappropriate research can change the entire course of reasoning. Technical procedures are performed by specialized organizations; here the logic of setting and checking their tasks is discussed.

32 Case definition and exposure description

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What exactly is being investigated

The investigation begins with a general description of what the team is looking for. Such a description is called a case definition: from it, different employees should recognize events that require recording and analysis. The name of the agent may not yet be known. The definition will be refined as information becomes available. WHO envisages such a review; if the cause is unknown, toxicological, environmental and other explanations remain under consideration. [2]

Message, possible exposure, disease and identified cause are different information. Multiple messages may refer to the same person. Exposure may not result in symptoms, and similar symptoms may have different causes. Therefore, the categories “suspicious”, “probable” and “confirmed” are opened for a given event. They describe the basis for inclusion in the investigation. The urgency of helping a person is still assessed separately according to P02 · p. 156.

The operational definition specifies who or what is observed, what manifestations are considered, in what place and period. If the proposed cause is immediately made a requirement for inclusion, the team may miss cases that disprove it. Too broad criteria, on the contrary, will combine disparate messages. The investigation director explains what searches the current version is suitable for and what it might miss.

Record generation procedure

1. The epidemiological director, together with the clinician and relevant specialists, makes the initial determination. The team receives the criteria for inclusion, exclusion, and deferral, the start date of the version, and the name of the person responsible for updating it.

2. The Registrar assigns a case ID and checks for possible duplicates. Personal information is stored with appropriate access; operational summaries use only the necessary data. Result: One case does not become multiple events when transferred between institutions.
3. A trained interviewer will clarify the sequence of symptoms and possible exposures. He separately records the time of the event itself, the time of the message, and the person's confidence in the memory. The answers “not asked”, “unknown” and “person denies” retain different meanings.
4. The clinical and diagnostic supervisors complete the record with findings, noting the status of each finding. New information does not erase the original record: a history of changes is preserved, allowing you to reconstruct the progress of the investigation.
5. The investigation director regularly checks to see who the current case definition may have missed. When the criteria change, the director determines which previous entries should be revised and notifies all participating teams.

The WHO form T1, which is designed to investigate outbreaks of unknown cause and known diseases in unusual circumstances, can be adapted for the original record. It involves the joint work of different specialists. When customizing, keep the purpose of the questions and explain what each field means. [43]

How to describe impact

When describing the possible impact, the team specifies the source, route, period, location, and protection in place. If the period is unknown, it is not replaced by the time of registration of the accident. The interview is conducted calmly: the person may not remember events accurately, and this should be reflected in the recording. The completeness of the story does not become a condition for access to treatment.

Case study, fictitious situation. Following the incident, weakness was reported in the work building. The first version covers only shift employees. Then it becomes known about a sick visitor. The team expands the criteria and re-considers visitor requests, maintaining the previous version to properly understand early statistics. This is a basis for reconsidering coverage, not proof of a specific pathogen.

After changing the criteria, the number of registered cases may increase due to the registration procedure itself. The summary therefore notes changes in definition, availability of care and testing. The team passes the agreed upon definition, comparable records, and open questions to the next stage. G33 · p. 081 explains how to turn these questions into a diagnostic query; The general route of investigation is given in P06 · p. 160.

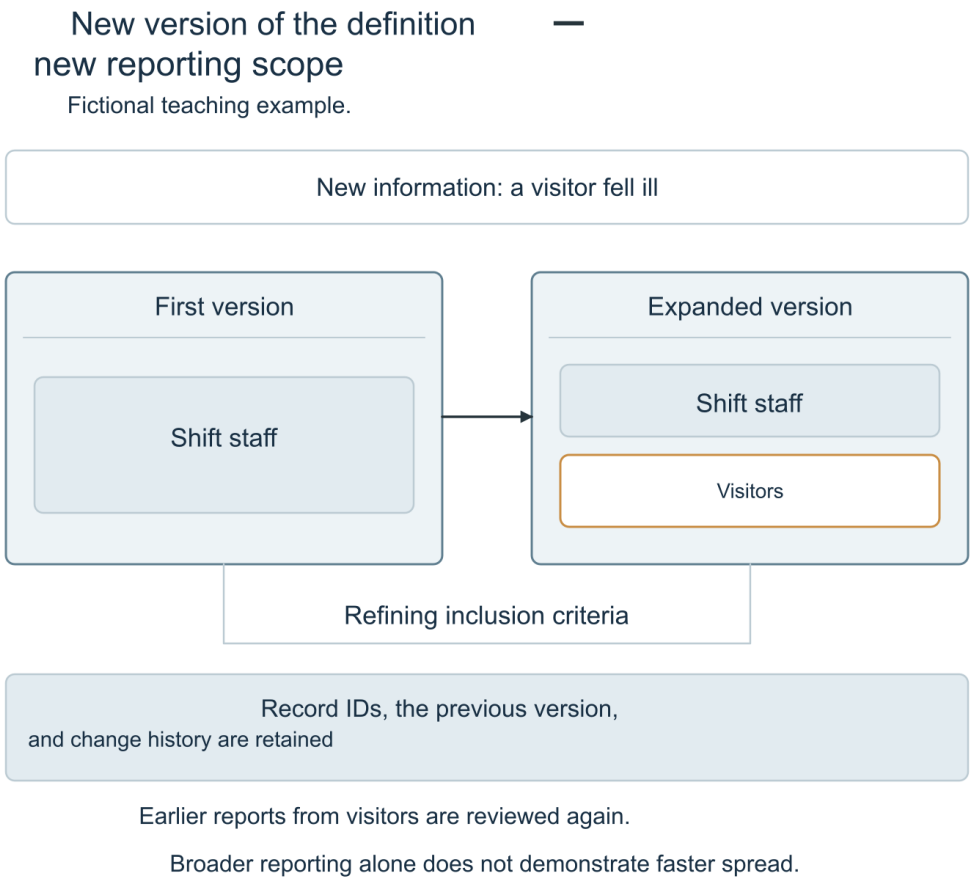


Figure 16. New version of the definition - new recordkeeping coverage
Case Study, Fictional Situation: The scope of the case definition is expanded from shift employees to employees and visitors. Early recordings retain the version; a change in registration does not in itself prove an increase in diffusion.

33 Diagnostic question and suitability of the method

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First decision, then research

Before the study, the leader names the decision for which an answer is needed. This could be a change in treatment, clarification of possible exposure, revision of a protective measure, or assessment of the suitability of a facility. One result can help in one task and be insufficient for another. A method based on a known factor also has limits: these are checked before using the answer to estimate the unknown hazard.

The reliability of a laboratory result depends on the entire effort: training of staff, documentation, execution of procedures, and communication of findings. The WHO laboratory quality guidelines consider these elements as one system. The specific requirements that apply are determined by the institution's standards and procedures. [44]

In the proposed system, a diagnostic request is a short agreement between the decision maker and the performer. They agree on the question, the limitations of the answer,

and the recipient in advance. This convention helps avoid a technically correct answer that cannot be applied to the current problem. While the team is waiting for the study, the necessary help on P05 · p. 159 continues.

Six request checks

1. The customer describes an observation, a working explanation, and a decision that may change. The request to “check everything” is replaced by a question with a clear purpose.
2. The laboratory manager checks whether the available methods are suitable for the subject and whether the institution has the necessary authority. If there is a lack of capacity, they will agree to contact another competent organization. An unavailable method remains an explicitly stated knowledge gap.
3. The quality specialist checks information about the received object, its identification and transmission history. He notes circumstances that may make the conclusion unreliable. The material handling itself is carried out according to the approved procedures of the relevant institution.
4. The clinical or subject matter expert discusses in advance what a supportive response, an opposing response, and an indeterminate result would mean. For each option, he names an action or issue for further consideration.
5. The customer and the laboratory manager agree on the deadline, transmission channel and reserve in case of delay. If the result significantly changes assistance or protection, the authorized recipient confirms that the message has been accepted.
6. The decision owner records how the response is used. If the plan survived, he explains why. Even after a patient has been transferred or a shift has ended, the late result must have a specific destination.

Limits of diagnostic conclusion

The conclusion should make it clear what was sought, how appropriate the method was to the question, and what limits the conclusion. The absence of a signal may mean that the factor being sought is missing or that the chosen approach does not answer a significant part of the question. The person responsible helps to distinguish between these situations. Further testing is ordered for the sake of a new decision, so the very fact of uncertainty does not require endless repetition of one study.

Three connections need to be separately assessed: whether the measurement is correct, whether it relates to the patient's condition, and whether it helps select an action. Even a reliably measured indicator may poorly explain a specific disease. The priority of additional research depends on whether it is likely to change a significant decision and whether the cost, delay and risk are justified. [1, 19]

Case study, fictitious situation. The team receives a negative response from a study targeting a limited list of known causes. The clinician maintains necessary support and elaborates on other explanations. The security manager reviews his measure based on individual source data. One response is not used as automatic permission to simultaneously discharge the patient and open the facility.

Tutorial R3: Diagnostic query as agreement

The hospital in case R3 requests an additional test. The initial wording is broad: "Rule out an unknown threat." The person performing the test cannot give a meaningful answer because neither the suspected cause nor the decision depending on the result has been specified. The leads discuss what must be learned for the next clinical step and narrow the question to an area in which the available method is genuinely informative.

Before executing a request, three possible responses are considered. If the data supports a particular version, the doctor will check its relevance to the patient's condition and review the associated prescriptions. If the data weaken the account within the capabilities of the method, attention will shift to other explanations. A vague answer will leave the question open; the team will then evaluate whether another available source of information will help. Neither option means stopping needed assistance during the discussion.

Then it turns out that the answer can come after an agreed transfer. If you specify only the department as the recipient, there is a risk: the result will be seen by an employee who is no longer responsible for the patient. The coordinator records the specific recipient and the order of transfer to the new team. If there is a delay, the doctor knows which issue remains unresolved and takes this into account in the plan.

The agreement turns out to be useful even after receiving the result. The executor communicates the restrictions, the doctor records the impact on treatment, and the person responsible for the transfer confirms that the information has been received. If the plan survived, the recording shows why. Such research can be useful even without an immediate change in treatment orders: it can justify maintaining the plan or eliminate unnecessary action if it answers the question posed.

This analysis shows the criteria for a good request. Its quality is determined by whether both parties can name the question, the limits of the answer, and the next action. The wording “extended examination carried out” without these connections communicates the amount of work, but leaves the next shift without an explanation for the decision.

Once agreed, the team has a clear request, method limitations, and a confirmed response route. If the question has changed, the request is updated. New clinical information is assessed according to P08 · p. 162; G35 · p. 086 helps sort out conflicting results.

34 Composition, biological activity and causation

Navigation: NAV · p. 003 · Contents: OGL · p. 010

Separating statements

Having received the message “threat detected,” the manager first clarifies what exactly has been detected. This may be an unusual structure, a recognized component, an observed activity, or an association with harm. These statements require different reasons. The name of the finding is useful for communication when all participants have the same understanding of the conclusion behind it.

The analysis describes the composition and structure within its capabilities. This information helps guide subsequent questions, but does not alone establish the ability to cause infection. The activity report reveals three things: what exactly was observed, how reliable it was, and what alternatives were tested. For a hypothetical extraterrestrial system, it is first discussed whether familiar concepts apply to it.

The book suggests dividing the conclusion into several statements. Everyone can have their own level of confidence. For example, the composition of a single component can be described reliably while its relationship to disease remains unknown. This allows you to use the acquired knowledge for a limited decision and see where further verification is needed.

Statement	What needs to be justified	What should not be automatically
Material present	Reliability of detection and attribution of the result to the object	That it causes observable disease
There is some activity	Meaning of observation and excluded alternatives	That activity is dangerous for humans
Factor associated with harm	The totality of clinical and other relevant data	That it is transmitted between people
Transfer possible	Suitable information about the route and circumstances	That every contact leads to illness
The measure reduces the danger	Result in specific conditions	That fitness extends to any environment

How is the assessment organized?

1. The diagnostic director writes what directly follows from the study. He preserves the limitations of the method and the quality of the original information.
2. The clinician compares the finding with the manifestations of the disease, their sequence and other possible causes. If the data do not agree, it directly indicates a discrepancy.
3. The epidemiologist compares the distribution of cases and possible exposures. Information about people without the disease and about different conditions is useful for assessment. He also checks to see if the conclusion is skewed by who was included in the comparison.
4. The environmental expert works with the engineer to verify that the proposed mechanism is appropriate for the design of the systems and the circumstances of the event. Common infrastructure can link multiple cases, even when transmission between individuals is not established.
5. The investigation director consolidates the findings and lists significant discrepancies. The management summary includes statements for which a basis can be given. For open questions, the following check is assigned.

Interdisciplinarity is especially important when the etiology is unknown: WHO recommends keeping hypotheses flexible and taking into account the context of the

event. [2] In the book, this recommendation is developed into a rule for separately recording the composition, the proposed mechanism of harm and the causal inference.

Checking the causal version

A working explanation must fit observations and stand up to comparison with plausible alternatives. The team compares the possible impact with the timing of the harm and takes into account the uncertainty of dates. Multiple consistent sources strengthen the conclusion as long as they do not repeat the same error. Retellings of the same original record in different reports remain the same basis.

Case study, fictitious situation. An unusual analytical signal was detected in the building and breathing complaints were recorded. The team simultaneously stores versions of the infectious process, the overall harmful effect, and the independent coincidence. Until a causal role is established, treatment is determined by the condition of the individuals and engineering measures by an assessment of plausible pathways of exposure.

Continuation of the analysis of R5: What is needed to check the cause

In chapter 4, the study city team found out that some of the messages were forwarding one story. A separate question now needs to be tested: can a common supply system explain the independent observations that have survived? The origin of the messages has been clarified, but the cause of the illness is still unknown.

The head of the investigation formulates what connection the version about water suggests. The engineer checks the facts related to the system, and the medical team checks the circumstances and conditions of people. The information is then compared by location, time and nature of possible impact. The important question is whether the proposed connection is consistent with observations, including those that so far contradict it.

The team has two temptations: accept the popular explanation before checking, or discard it completely after discovering forwarding. Both decisions would rely on information flow properties. The manager saves the version as being reviewed, identifies any missing information, and continues to compare it with other explanations. The lack of a ready answer does not prevent us from helping people and checking the necessary protective measures.

A useful result of this stage is a clarified question and coordinated work of specialists. The log shows which observations are truly independent, which causal relationship is being tested, and who should provide the following information. If they change the assessment of the source or area of impact, the team will reconsider the specific measure and explain to people the basis for the change.

After parsing, the team receives a map of statements: what the data supports and where the gaps remain. Suspected laboratory or extraterrestrial origin is recorded separately from the mechanism of harm and treatment choices. G35 · p. 086 continues to check the findings, and G36 · p. 088 translates information about the source into the task of eliminating it.

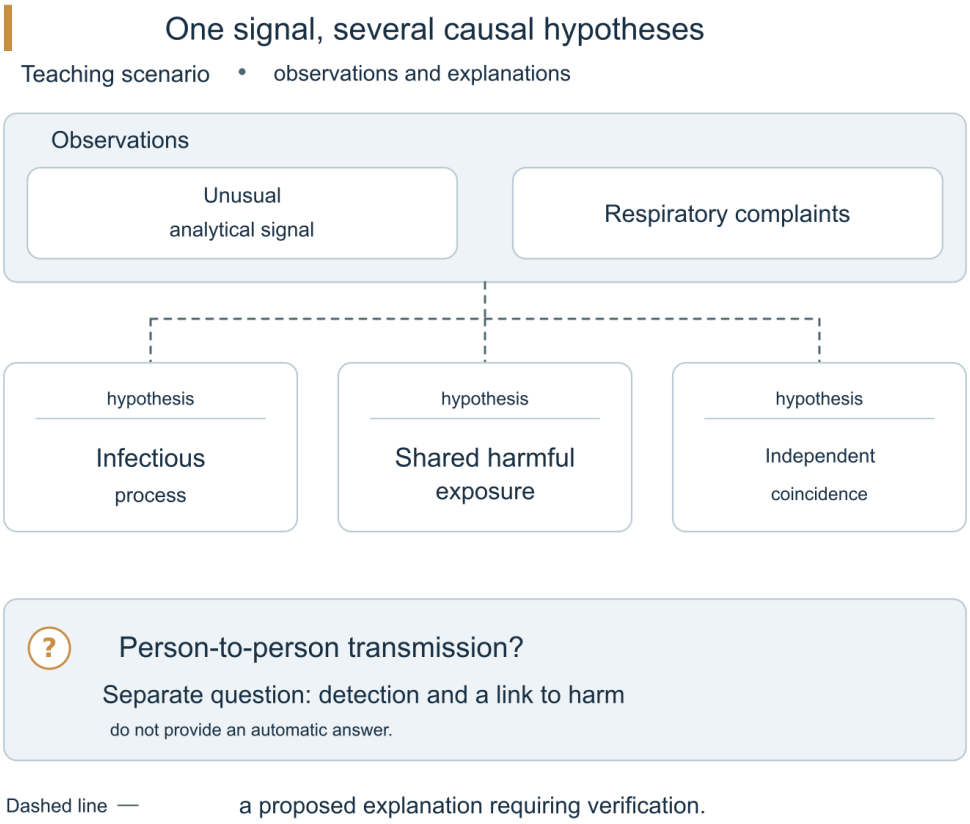


Figure 17. One signal, several causal versions

The case study retains several explanations for the unusual analytical signal and breathing complaints. Causality and the possibility of transmission between people are independent issues; The dotted line indicates the version that requires verification.

35 Confirming the conclusion and working with contradictions

Navigation: NAV · p. 003 · Contents: OGL · p. 010

Controversy as a reason to test the model

If two results disagree, the team first figures out what the difference is. There may be errors, differences in the capabilities of the methods, changes in the event over time, or heterogeneity of observations. An inconvenient answer is saved for analysis. The discrepancy itself does not decide which conclusion is correct and which part of the investigation needs to be reconsidered.

The leader assigns a debriefing, in which participants separate observations from explanations. First, they check whether the information relates to the same question, object and period. Quality and possible reasons for differences are then considered. Laboratory quality system documents help to reconstruct the origin of results and changes made. [44]

A review is considered independent only if it cannot repeat the same key error. Two performers can use one source, different programs can use one incorrect entry. Therefore, general dependencies are recorded next to the results, and matching conclusions are evaluated taking them into account.

Parse sequence

1. The data owner retains the original versions, time of receipt, and subsequent revisions. A controversial result receives the status “requires clarification”; it does not disappear from the log after more convenient output appears.

2. Subject matter experts check the comparability of issues, objects and conditions. Result: a description of what exactly the discrepancy is and what differences may be natural.

3. The quality team determines whether there are grounds to doubt the reliability of the information. If a defect is likely to affect other findings, the affected decisions and their owners are identified.

4. An independent expert or other competent group, when necessary and available, evaluates the key finding without the obligation to confirm the original version. The scope of the review is related to the consequences of the decision.

5. The investigation director selects a further question capable of distinguishing between explanations. The study is clarified or suspended if its continuation is unsafe or the result remains uninterpretable.

6. The response leader and clinical team review the affected actions. Assistance continues, and temporary measures receive clear reasons and a deadline for next consideration.

Dealing with Negative and Uncertain Results

Negative and indeterminate results report different things. The former may weaken a particular hypothesis if the study was suitable to test it. The second means that there is not enough data for the intended conclusion. The summary keeps these statuses separate and explains what issue they address.

The decision to perform additional verification takes into account the consequences of an error, the expected information content, and the cost of delay. When there is an immediate threat to life, the clinician follows the applicable medical route. In the event of a disputed authorization, the competent authority shall consider sufficient alternative measures. The inability to achieve absolute certainty does not provide an independent basis for an indefinite limitation. [12, 19]

Case study, fictitious situation. The two services report opposing findings about the premises. The analysis shows that the first assessed the suitability of short-term technical access, and the second assessed the possibility of permanent work. Initially, the apparent contradiction is associated with different tasks. The summary is corrected and the permission is formulated for a specific use.

Educational analysis R2: Where the contradiction arose

The Sever organization recorded the dispatch of a closed container, but there is no confirmation of receipt in the copy of the Bereg organization's log available to the sender. Various explanations are possible: the cargo is still on the way, the reception has not been completed, or the recording has not reached the required participant. While the location and responsibility are unknown, the problem concerns transmission

control. The disruption of the shell and the impact on humans due to this discrepancy have not been established.

The designated employee contacts the recipient through the established channel. The Bereg confirms the actual location of the container and the person responsible. The versions of the records are then compared. It turns out that the sender was displaying an old copy of the log. The first contradiction is resolved: the confirmed reception and location were not visible in the used version of the data.

After this, a separate decision remains regarding further use. The condition of the container and applicable conditions are assessed by a designated competent person. Correcting the log does not automatically grant such clearance. Two clear lines appear in the log: the location question is closed by the recipient’s confirmation; the question of further use has been transferred to the specified specialist.

To prevent recurrence, the team checks how participants know they are reading a live post and what happens if they lose connection. The fix is complete when the transmission check produces the correct result. In G47 · p. 119 this case is considered from the perspective of a laboratory organization, and in G58 · p. 147 - as a patch verification task.

When a significant finding is corrected, the person responsible notifies the people who have already made decisions based on it. The public notice explains the new basis and maintains confidentiality. After analysis, the current version, canceled conclusions, open questions and those responsible for the consequences are known. Clinical decisions are reviewed according to P08 · p. 162, approval conditions - according to P13 · p. 167.

36 Source, route of exposure and purpose of elimination

Navigation: NAV · p. 003 · Contents: OGL · p. 010

Which chain needs to be interrupted?

To eliminate a threat, the team determines what supports the possible impact. The source may be material, damaged equipment, or an ongoing process. The exposure pathway links the source to the person or environment. Once the supply stops, contamination may remain. Therefore, the tasks are divided and a testable result is selected for each. Compromised protection may require action before diseases appear.

While the cause is unknown, several explanations are stored on the working card. For each, known connections, assumptions, and information that could change the decision are noted. The risk assessment is associated with a specific activity, possible exposures and consequences, then updated with new data. This approach is included in the WHO risk assessment guidelines. [19] The origin of the material and liability issues are considered separately from identifying the source of exposure.

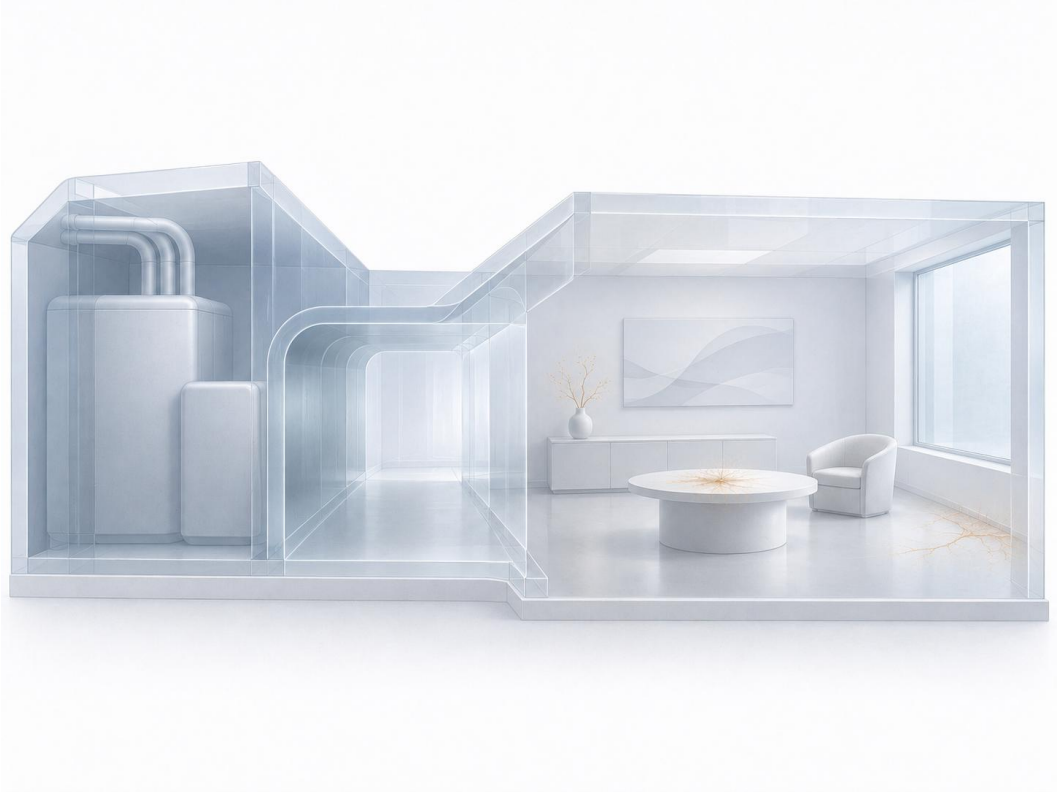


Figure 18. Source, path and residual trace

Conventional section of the supply unit, its connection with the premises and areas requiring inspection. The branched amber marks on the table and floor are artistic marks: their shape does not determine the nature of the material and does not confirm a biological cause. Discontinuation and assessment of residual impact require separate decisions.

Sequence of problem statement

1. The incident manager names the result of the work: what impact needs to be stopped and what function needs to be restored while still helping people. He appoints a person responsible and a time for review. Instead of the goal of “making everything safe,” the team describes the conditions for a specific object and its use.
2. The investigation manager, engineer, and environmental specialist map the sources and paths. It marks the boundaries of systems, connections, sequence of events and confidence in information. Unsurveyed areas remain designated as unknown. For the issues on which the intervention depends, responsible staff are assigned.
3. The engineer checks which functions depend on the affected node. Stopping it could change ventilation, water supply, communications or access to help. The engineer suggests a permissible shutdown, replacement of a function, or limited continuation of work. In the space environment, this consideration is included in the decision to maintain life support.
4. The medical director describes what exposure must be stopped to protect patients and staff, which groups require special routing, and what deterioration is likely to occur if delayed. Assistance to the victims continues as the investigation continues. Treatment of a specific individual is not dependent on the final identification of the environmental source.

5. The work manager compares options based on the expected effect, the ability to verify the result, the risk of transfer and available resources. He considers the consequences of both interventions and expectations. The selected plan indicates the boundaries of the work, requirements for the contractor, handling of generated waste and stopping conditions.
6. The Incident Commander approves the purpose and limitations. The person responsible for quality checks that the completion of the work can be confirmed by information independent of the contractor’s promise. If there is insufficient data, a limited reversible decision with a specified verification period is allowed; it cannot be described as final liquidation.

What is considered failure?

The plan is revised if exposure continues, another source is found, work interferes with a vital function, or the result cannot be verified. Before repeating the action, the team finds out the reason for the failure. By stopping a dangerous operation, it continues the necessary assistance and maintains available protective measures.

The review separately addresses four questions: whether supply has ceased, whether distribution has been limited, whether the remaining risk is consistent with the agreed use, and whether the necessary systems are in place. Each answer has its basis. Different specialists may be responsible for different results, but a common log links their decisions.

Case study, fictitious situation. The settlement replaced the damaged part of the supply system, but the unusual complaints continued. Repeated replacement does not eliminate the problem if the supply is higher up the system. The manager returns to the source map, checks the boundaries of the original version, and keeps alternative supplies within the approved plan.

By the end of this work, the purpose of the remediation, known and suspected connections, responsibilities and reasons for the revision have been agreed upon. In G37· p. 090 team selects the recovery method according to P09 · p. 163. If doubt concerns the very connection of the finding with the harm, return to G34 · p. 083.

37 Selecting and verifying environmental remediation

Navigation: NAV · p. 003 · Contents: OGL · p. 010

Suitability of the method for a specific object

The recovery method is chosen based on the environment, the expected mechanism of harm, and the future use of the object. A result obtained on a different material or under different conditions requires verification of applicability. WHO considers decontamination and waste in relation to risk assessment and working conditions. [1] For a hypothetical extraterrestrial nature, the applicability of terrestrial concepts remains a separate issue.

The plan specifically addresses cessation of supply, removal of hazardous material, reduction of hazardous activity, and return to desired function. Sometimes the justifiable outcome is replacing a component, temporary restriction, or changing the

purpose of an object. In this case, the team explains the consequences and assigns a further decision.

How the recovery plan is approved

1. The owner of the object describes how it is going to be used and what functions are needed for this. Medical premises, technical compartments and residential buildings may require different access conditions. The owner communicates infrastructure limitations, availability of reserves, and impact of shutdown. On this basis, the problem from G36 · p. 088 is refined.
2. A specialized specialist presents options and reasons for their applicability. For each, he notes confirmed, suspected, and conditions of possible unsuitability. Technical regimes are taken from approved professional procedures for a given object and hazard. If the evidence is insufficient, this gap remains part of the decision.
3. The engineer and medical director assess the possible harm of the work: damage to materials, equipment failure, impact on personnel, interruption of care. They check the subsequent maintenance of the systems and the route of the resulting materials. The variant that creates a new uncontrollable hazard is returned for processing.
4. The person responsible for quality, before starting work, determines what information and independent assessment will confirm the result. A separate performance report and a statement on the suitability of the environment will be required. The criteria are agreed upon in advance; Test limitations and their consequences are recorded in the plan.
5. The Incident Commander weighs options and approves the actor, resources, boundaries, suspension conditions, and how to change the plan. The presence of equipment does not in itself confirm the qualifications of the person responsible. The approval must take into account the authority to carry out the work and further disposal of the facility.

Execution and acceptance

Before starting, the work manager checks the readiness of people, communications, significant dependencies and reserves. If the condition is not met, he moves the beginning or changes the agreed volume. The record remains of who authorized the work and on what grounds.

During the work, the contractor records significant deviations, damage, unintended distribution of material and loss of control over the boundaries of the operation. In the event of such an event, he informs the manager and acts according to the prescribed stopping procedure. Unauthorized replacement of a method is not masked by the entry “equivalent procedure”. Renewal requires consideration of the cause and updating of the plan.

Acceptance compares the completed task with the state of the environment and the operation of systems. For each condition, appropriate reasons are used: appearance, hazard assessment results and equipment serviceability answer different questions. A significant discrepancy is recorded along with the person responsible and the deadline for the decision.

Case study, fictitious situation. After work in the compartment, the expected effect according to the agreed indicator was shown, but the tightness of an important unit was lost. The compartment is not accepted for previous use: an engineering malfunction creates its own risk. The decision may involve replacement of the assembly and a new limited clearance after inspection.

Tutorial: How to Compare Recovery Options

Assume that within case study R5 the team is considering returning one affected facility back to service. This is a conditional branch of analysis, and not a message about confirmed pollution of the city. The required function for the room is named and a list of conditions is defined that must be confirmed by specialists. Options are now being discussed: continue the temporary restriction while ensuring replacement of the service, restore the facility to its original operation, or allow a more limited use after appropriate review.

Each option has its own price. Continued restriction requires sustainable replacement of the service. Full recovery may require resources and time that are not currently available. Restricted use is only useful if it does not rely on untested areas and the team is able to enforce its conditions. The comparison is built around a specific function and impact, and not around the desire to declare the work completed as soon as possible.

The engineer checks technical dependencies; the medical director describes the consequences of interruption of care; the restoration specialist justifies the applicability of the options. The person responsible for quality determines what information will allow the result of each of them to be accepted. The manager compares these conclusions and writes down the selected scope along with the terms of the revision.

If the data supports only part of the conditions, the permissible next step may also be limited. The document indicates who is allowed to work and why, what function is currently provided differently, and what is required to expand access. This is superficially less definitive than saying “the object has been restored,” but it does give performers clear boundaries.

After execution, the result of the operation and the readiness of the systems are checked separately. Failure to comply with one mandatory condition returns the affected portion of the decision for review. Previously confirmed information is saved with an indication of the area to which it relates. This way acceptance shows what has actually been achieved and what work remains.

After the work, the contractor’s report, deviations, conclusion on functions and data for authorization were collected. The decision on the return of people is made by the authorized head of G38 · p. 093 and P13 · p. 167. The contractor's certificate of completion of the operation is included in this package, retaining its specific purpose.

38 Data quality and authorization decision

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Approval relates to specific use

authorization describes who, where, why and under what conditions can enter or return. Brief technical work and permanent residence require different reasons. A single site scan also does not automatically cover related premises and networks. Therefore, the intended use is determined before assessing the adequacy of the data.

EPA links data quality planning for pollution remediation to the decisions that data should support. [31] The book adopts the following principle: first, the decision and key uncertainty are formulated, then the necessary package of confirmations is determined. A single number of negative results for all objects is not established.

Contents of the decision package

The decision involves collecting information about the hazard, source elimination, environmental conditions, system health, and health monitoring. Each section indicates the origin of the data, the restrictions and the authorization condition that they support. Then they check the completeness of the decision questions: the volume of the report does not compensate for the absence of the required section or period.

Testable Question	What should a decision maker see?
Has the approved intervention been completed?	Completed actions, deviations, unresolved comments
Has the intended impact ceased?	Consistent data with designated limits
Is the infrastructure suitable?	Confirmation of functions for selected use
Are the conditions sufficiently covered?	Explanation of assessment boundaries and outstanding situations
Can deterioration be detected?	Work observation, message recipients, actions

Sequence of consideration

1. The owner of the clearance decision specifies the facility, intended users, and operating conditions. Together with the medical and engineering managers, he sets criteria that correspond to the consequences of an error. Requirements introduced after receiving the results are separately explained and go through the same approval process.
2. The quality officer checks the origin, completeness and relevance of the data, as well as significant discrepancies. He maintains the distinction between no information, a negative response, and an inappropriate method. The corrected conclusion is linked to the previous version so that the decision change can be restored.

3. An independent subject matter reviewer evaluates whether the information supports the requested clearance. Independence means the ability to challenge a conclusion without being held accountable for the success of the work performed. If resources are limited, determine and document an available method for such verification; its limitations are communicated to the decision owner.

4. Medical and engineering managers verify the ability to detect deterioration after authorization and change conditions in a timely manner. Favorable statistics on non-working help-seeking are not considered reliable observations. Special consideration is given to users for whom the consequences of residual exposure may be particularly severe.

5. The authorized principal authorizes the use, permits it with conditions, or defers it. He signs the basis and appoints someone responsible for the remaining risks. If deferred, indicates the specific gap, the method for eliminating it, the executor and the date of revision.

Limited Return Conditions

The facility can be opened in stages when the boundaries of each stage are clear, the necessary services are available, and the team is able to notice the deterioration and respond. The decision specifies the duration, permitted use, operations not yet available, and how to report problems. Changing these conditions requires a new assessment.

Case study, fictitious situation. The city has completed work on one building, but the connection to the overall supply system remains unclear. The building report does not confirm the suitability of the entire network and does not in itself authorize the use of the building depending on its condition. The authorized manager will only consider a limited permit after the supply has been demonstrated to be suitable for that use or the permitted activity has been demonstrated to be independent from the untested network. The rest of the uncertainty gets a separate task and owner.

Users receive a clear clearance document: which version is valid, what is allowed, and when revision is required. The impossible condition is corrected before the people return. For approval, P13 · p. 167 is used, for analyzing discrepancies - G35 · p. 086, to continue elimination - P09 · p. 163.

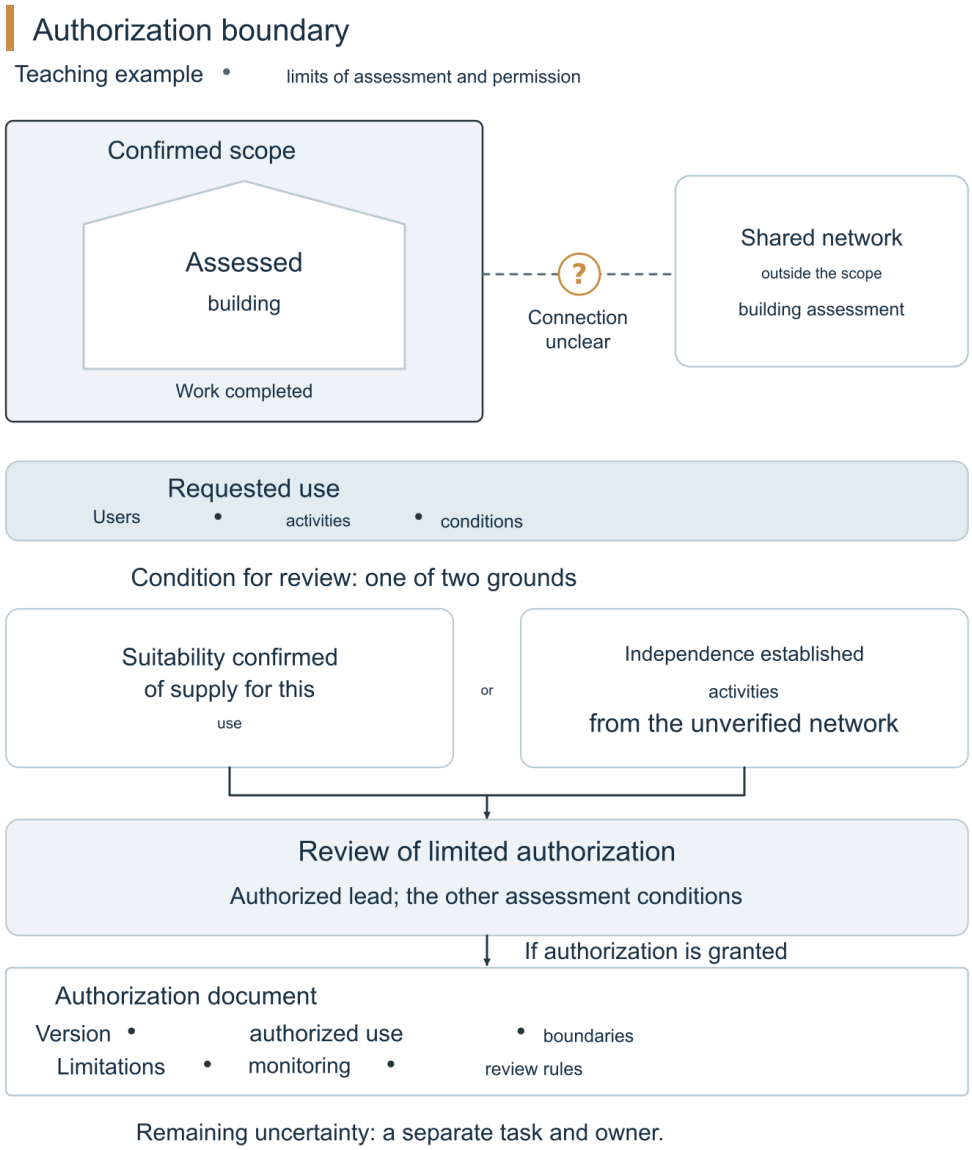


Figure 19. authorization limit

In the training example, the building inspection does not automatically cover the associated network. Limited authorization depends on the declared use and the demonstrated suitability of the supply or the reasonable independence of the activity from the untested network.

39 The profile of the required medical countermeasure

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From patient need to development challenge

Development begins with a need for help. The team finds out what decision the doctor cannot yet make or what result remains unattainable for the person. Prevention of the disease, recognition of the condition, reduction of severity, treatment of the complication, or restoration of function may be required. If the nature of the event is unknown, the defense mechanism remains to be elucidated. The name of the intended agent does not in itself determine the future product.

The target product profile describes what and for whom the product is needed, what properties it should have, at least in a minimally acceptable form, and what properties are desirable. This is the approach taken by WHO. [29] In the book, the profile links the clinical service, the researchers and the application organization: they agree on the required benefits, limitations and reasons for reconsidering the target.

How to create a profile

1. The medical director formulates an unmet need. He indicates who needs help, at what stage of the condition, what decision is currently available and what it does not achieve. The needs of people with severe illness and people with possible exposure without illness are recorded separately: they may require different products.
2. Clinicians work with representatives of affected groups to select meaningful outcomes. If a laboratory value is used instead of a human result, the team will justify the relationship between the two. For a diagnostic tool, actions after a positive, negative and uncertain answer are described in advance. They also check whether this next step is available to the patient.
3. The clinical director describes the site of application, available personnel, support, required response times and resources. Requirements are tested in real care conditions. The proven effect in a specialized center still requires assessment of applicability to a settlement where observation and delivery are arranged differently.
4. The person responsible for quality and supply determines the requirements for quality, transportation, storage, employee training and supply recordkeeping. He checks consumables and outage actions. Capabilities that have not yet been confirmed by the supplier are designated as unresolved requirements.
5. The development manager separates the minimum, without which the tool does not solve the problem, and the desired improvements. Each requirement has a basis and a method of evaluation. If the minimum is not reached, the team changes the intended use or terminates the direction. The reduced requirement is presented as a new decision with an explanation of the consequences for patients.
6. The authorized medical body approves the profile and update procedure. Researchers receive one working version. New information about a disease, available care, or conditions of use may require a different purpose; changes are not hidden inside the list of candidates.

Product inside the help route

The profile shows the place of the product in the aid: who chooses the application, what is tested, to whom the result is conveyed and who observes the consequences. The decision for the individual patient remains a clinical one. Available information and gaps are clearly noted for different groups of people. These gaps are addressed in research design and application settings.

Case study, fictitious situation. The lander requires a means to promptly determine the need to change the medical route. The candidate gives an accurate answer only after being delivered to a distant center. Its scientific value may remain, but it does not

satisfy the original operational needs of the crew. They revise the profile or look for another way to support the decision.

Training analysis R3: First determine the desired decision

The hospital in case R3 is discussing the future development program. The first sentence sounds like the name of the product: “We need a new rapid test.” The clinical team asks the following question: What decision would such a test improve? Possible tasks vary - to clarify a specific reason, support the choice of further assistance, or resolve a route issue. Until the task is chosen, the word “fast” has no clear practical meaning.

The team describes the current challenge: the physician needs to obtain a decision-appropriate answer in the conditions of a given institution. After this, it is clarified who will use the product, what supervision remains necessary and what will follow the different results. If a positive answer leads to an unavailable next step, the profile must take this deficiency into account. Otherwise, a technically successful product will leave the original medical problem unsolved.

Then the required and desirable properties are separated. In the educational model, it becomes mandatory to have an answer that can be applied to the chosen question and a feasible route after it. More convenient organization of work may be a desirable improvement. Specific indicators of accuracy, time and quality are determined by specialists for a given task; they receive a basis and a method of assessment. They are not assigned arbitrary round numbers for the sake of a complete table appearance.

A comparison with a remote community shows why one profile does not always fit all locations. In the hospital there is only one method of transmitting and discussing the result; in the settlement there may be other restrictions on communication, transportation and observation. Developers can choose different uses or explicitly limit the first use. These decisions are saved in the profile version to prevent the team from later expanding the product promise unnoticed.

At the end of the discussion, the program can be evaluated meaningfully: does the candidate meet the selected need and what properties still require verification? If the need itself has changed, the profile is revised before comparing directions. Already received data is saved, but future expenses are correlated with the new goal.

If the team demonstrates a technical achievement but cannot identify an improved patient or physician decision, it returns to the original need. The received data is saved. After this check, the profile has an owner, version, success criteria and failure conditions. G40 · p. 098 considers the selection of candidates, and P10 · p. 164 links the stages of medical development.



Figure 20. The exact answer is too far
Fictional case study: The crew requires a timely decision, but the diagnostic candidate's response is only available at a remote center. Scientific rigor and suitability for the current care pathway are assessed separately; The distance is shown conditionally.

40 Candidates and limits on extending results

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What is known about the candidate

A candidate is a tool or application that the team proposes to study. This could be an existing product, a new development, or a new application of a known product. A scientific hypothesis explains the interest in the referral, and the benefit to the patient for a new disease requires a separate assessment. Knowing about similar pathogens helps you select the right questions—this is the meaning of research priority, including the WHO approach to pathogen prioritization. [28]

For the candidate, the intended action, results of relevant studies, safety, quality and feasibility are separately described. The FDA reviews drug development through research, preclinical and clinical evaluation, regulatory review, and follow-up. [33] This description applies to the US system; powers in another jurisdiction are determined by its own authorities.

Order of comparison of directions

1. The program director matches the candidate with the profile from G39· p. 095. He indicates what need the direction can fill and what result will allow it to be verified. A candidate without a clear purpose returns to posing the question, even if its mechanism looks interesting.

2. The scientific team explains how the available data relate to the target disease and care setting. It lists significant differences between the system studied and future patients and evaluates how each difference might change the conclusion.
3. The Quality Assurance Officer reviews the provenance of the data, the completeness of the reports, the reliability of the methods, and the independence of the evidence. Multiple publications about the same sample are considered related information. Unavailable essential data remains a limitation of the decision.
4. Clinical and regulatory experts are assessing the basis for the next authorized step. They compare expected benefits, potential harms, available alternatives, and what question the study will answer. The status of the investigational product is reported separately from the status of the usual care product.
5. The program director and independent reviewers compare several areas, taking into account limited resources. Priority is given to the question that can improve the medical decision at an acceptable risk. Popularity, origin of funding and funds already spent are not independent proof of prospects.
6. The person responsible for the direction sets the next result to be checked and the stopping conditions. Reasons for discontinuation may include unacceptable benefit-risk ratio, insufficient quality, loss of ability to answer a question, or inadequacy of need. When changing direction, negative results and explanations for the choice are retained.

How not to overestimate intermediate success

Changes in the measured signal, biological indicator and human condition - different results. When an indicator is used instead of a clinical outcome, the relationship between them is substantiated. The remaining uncertainty is clearly communicated to clinicians, participants and the public. To compare directions, both favorable and unfavorable observations are saved.

Case study, fictitious situation. The drug under study changes a parameter associated with a perceived threat, but data on well-being, complications and safety are insufficient. The team maintains candidate status, clarifies the clinical question, and considers the appropriate next step. The announcement of a cure would be broader than the available evidence.

Case study: How to choose your next question about a candidate

After agreeing on the profile, the program receives two conditional offers. The first describes the indicator being measured better, but there remains a large gap between it and the benefit for the patient. For the second, there is less information, but a clear question about the clinically significant result is formulated. These are fictitious referrals without drug names or purported agents; they are needed to analyze research choices.

Having more measurements does not automatically solve the comparison. The quality officer will find out where the information came from and what the limitations of both proposals are. The clinical team matches them with the profile. Regulatory and ethical experts evaluate which next step is acceptable and capable of providing a useful

answer at an acceptable risk. At this stage, the team selects a research question while maintaining a distinction from treatment intent.

In the first direction, the next work may be devoted to checking whether the indicator relates to the desired result. If such a relationship cannot be assessed in the proposed way, additional measurements of the same type will not fill the main gap. The second area may lack initial safety or quality data. Then interest in the clinical task also does not allow the transition further. Each sentence has its own continuation condition.

The decision is written down so that another group can check it: what intended use is being considered, what is known, what is missing, and what outcome would change the status. If there is a lack of resources, the manager chooses a direction with an explanation of the alternatives and the cost of delay. Funds already spent are included in the program history, but do not replace the assessment of the next step.

Stopping the direction should also provide knowledge. The team saves the base and its associated data so that it does not later start the same path under a different name. This outcome is especially important in a long-term program: it allows decisions to be changed without losing accumulated experience and without declaring each intermediate effect as a found treatment.

Vaccines also require a separate assessment of safety, efficacy and quality; the procedure for their development and consideration is not limited to determining the composition of the threat. [30] Extraterrestrial origin does not allow us to promise in advance the applicability of vaccination or the timing of receipt of the product. Planning is based on achievable milestones and review conditions.

After the comparison, the program has the questions selected, a record of each candidate's reasons, and reasons for rejecting other options. The next stage involving people is considered in G41 · p. 101. While development continues, medical assistance and source elimination are carried out along their own routes.

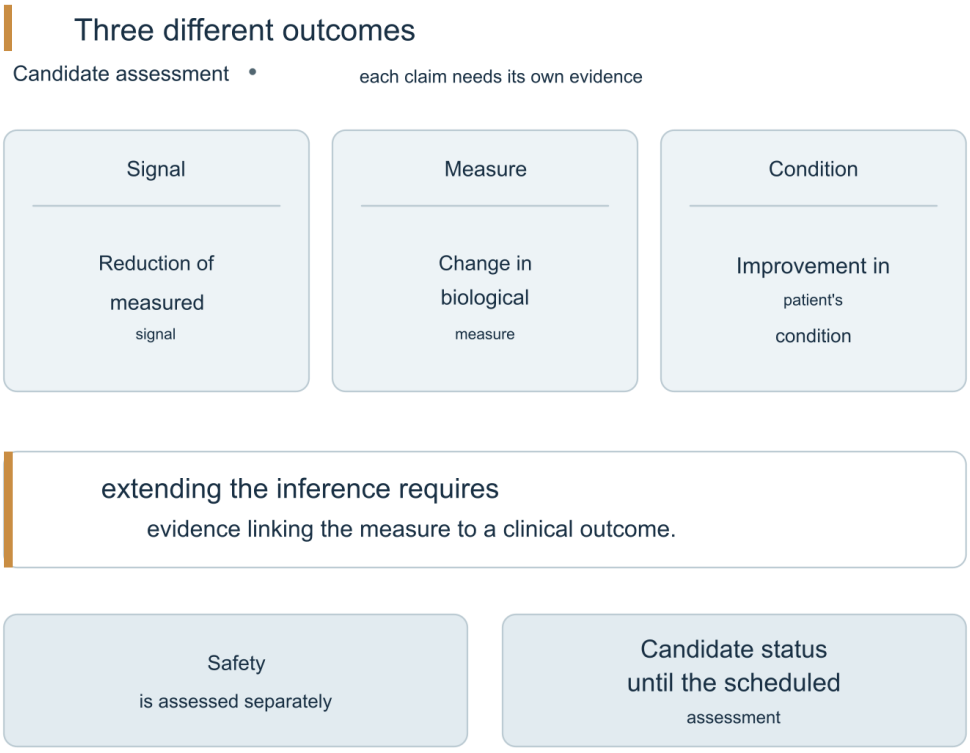


Figure 21. Three different results
The measured signal, the biological parameter and the patient's condition describe different results. Transferring a conclusion requires justification; safety is assessed separately. Until the required verification, the drug under investigation retains its candidate status.

41 Clinical research, ethics and independent oversight

Navigation: NAV · p. 003 · Contents: OGL · p. 010

What question does the research need to answer?

A study involving human subjects must address a significant medical question. Its design should allow obtaining data suitable for a decision at an acceptable risk. In an emergency situation, information content is especially important. A study whose design does not produce an interpretable answer wastes resources and exposes participants to risk without sufficient scientific benefit. WHO guidance 2024 links research quality to scientific validity, ethics and usefulness of the result. [26]

Before starting, the protocol defines participants, comparators, significant outcomes, safety assessment, analysis, and handling of incomplete data. Each change receives a reason, date and approval. If the research involves adaptation during the work, its conditions are described in advance. This makes it possible to differentiate an intended change from a lucky choice after reviewing the data.

Launch and execution sequence

1. The principal investigator formulates a question and checks to see if the team can answer it. To do this, the investigator evaluates the availability of participants,

resources, observation and comparison. If obtaining a meaningful result is unlikely, the design of the study is first changed.

2. The sponsor and quality manager ensure data processing, site preparation, product accounting and distribution of responsibilities. Significant conflicts of interest are identified before the start and taken into account when organizing supervision. The procedure for disclosing results should also preserve information that is inconvenient for the financing party.
3. An independent ethical committee and a competent regulator will carry out the required review. Their functions differ: ethical approval does not replace the necessary permission, and permission does not replace the researcher's responsibility for the participant. The expedited procedure preserves the meaningful review of significant risks and consent. [12]
4. The team explains to the participant the purpose, uncertainty, possible benefits and harms, alternatives and the right to terminate participation. The explanation is given in accessible language and understanding is checked, taking into account the possible pressure of dependence. If routine consent cannot be obtained, apply the applicable requirements and approved protocol.
5. The clinical team and independent review body consider safety and continuation of work within the scope of their authority. The treating specialist is responsible for direct care. Significant harm, serious loss of quality, or failure to obtain a response triggers the prescribed consideration of modification, suspension, or termination of the study.
6. The sponsor's designated registration and reporting representative ensures that the intervention trial is pre-publicly registered before the first participant is recruited, then keeps the record current and discloses the results as appropriate. Applicable national requirements are checked separately. [46] WHO standards view registration of interventional studies as a scientific and ethical responsibility. [45] Reporting negative and indeterminate results allows other programs to take into account what they have already learned.

Access to untested intervention

When discussing the study, the usual care available is explained to the person separately. It remains valid even if you refuse to participate. Prior to inclusion, follow-up and possible access to beneficial interventions are discussed, identifying only those commitments that the organization is able to meet.

MEURI is the WHO ethical framework for the controlled use of unregistered or investigational interventions outside a clinical trial in specified emergency circumstances. [27] Its use requires valid authority, justification, consent, monitoring and transmission of relevant data. The frame does not provide legal permission by itself; the possibility of proper research is considered separately.

Case study, fictitious situation. At a remote clinic, they suggest including only patients who can easily return for examination. Such an arrangement may exclude the most vulnerable people and distort the applicability of the result. Before launch, the team reviews surveillance support and is honest about remaining limitations.

Case Study R3: Exploring Inside a Working Hospital

Suppose a research proposal has been prepared for the hospital in case R3, which still needs to undergo the necessary reviews. The team wants to know whether the intervention being studied improves a specific significant outcome in a designated group. Before enrolling the first participant, it checks to see if the answer can be obtained in the facility setting while continuing routine care and required follow-up.

The first limitation is related to the composition of the participants. If only those who can easily return for screening are included, the data may be poorly representative of people who have difficulties with transport or care. Instead of implicit simplification, the team considers support for follow-up and honestly describes the remaining limitations of applicability. If essential conditions cannot be ensured, the project is revised before recruitment begins.

The second limitation concerns the total load. Research observation requires people and time. The department manager evaluates how these responsibilities combine with care for non-program patients. The sponsor and investigator will agree on the resources needed. Formal site consent does not confirm that all conditions will be available to each shift.

The third task is to talk with a person. They explain what help is available regardless of participation, what the research question is, and what is not yet known. Checking for understanding allows you to notice if a person considers participation to be a guarantee of recovery or a condition for maintaining routine care. The clarification becomes part of the inclusion decision, rather than a signature after a choice the team has already made.

During the study, a new adverse signal undergoes a prescribed safety assessment. The treatment team continues direct care while designated oversight participants consider program implications. Changes or termination of the study are recorded with reasons and further observation. The final report retains negative and uncertain results: they also answer the question for which people were asked to participate.

Before work begins, there must be an agreed protocol, necessary reviews, clear consent procedures, oversight and reporting. After completing the study, the team evaluates the answer received. The decision to implement broadly will require the next step described in G42 · p. 104 and P10 · p. 164.

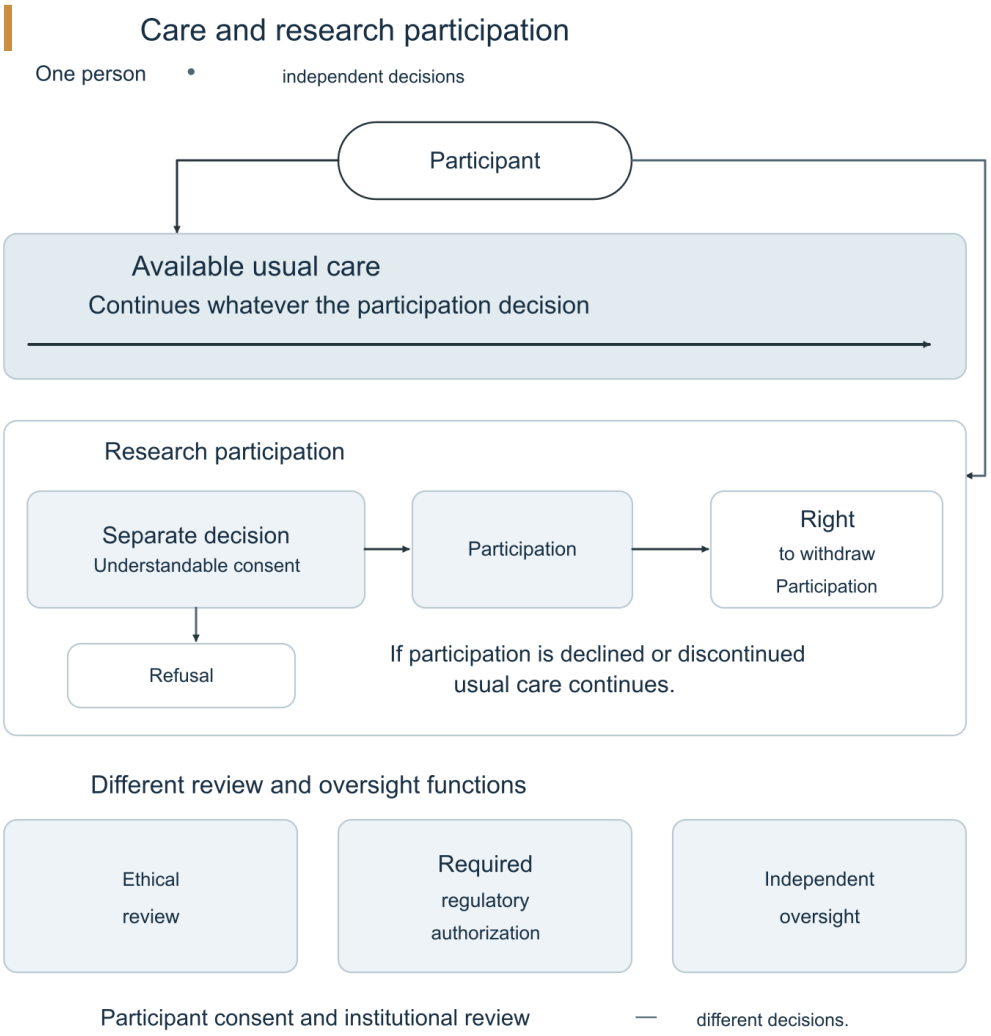


Figure 22. Help and participation in the study
Routine care and research participation have different rationales. Refusal or termination of participation does not interrupt available care; consent, independent oversight, ethical review, and required approvals remain independent.

42 Authorization of use, quality, and monitoring

Navigation: NAV · p. 003 · Contents: OGL · p. 010

Four stand-alone decisions

Scientific assessment of benefit, approval of use, clinical recommendation and product delivery are linked, but each decision has its own reasons and responsibilities. Before practical use, they find out which product is allowed, to whom, for what and under what conditions. The decision of one jurisdiction is considered within the limits of its powers.

The WHO emergency listing process evaluates certain products based on quality, safety, effectiveness and emergency need. The decision has conditions and subsequent obligations. [32] When planning use, check the current status of the product, the limitations of that status, and the requirements of the applicable jurisdiction.

Sequence of introduction into practice

1. The Regulatory Affairs Officer writes a record of the product's status: manufacturer, intended use, application groups, source of decision, restrictions, and current revision. Research use, normal authorized use and special regimes are indicated separately. The status is checked against the current decision, and not just against the old publication.
2. The body that approves the clinical guidelines determines the product's place among the available treatments. It evaluates whether the evidence relates to local patients, resources and pathways. The recommendations disclose the choice, necessary checks, monitoring and reasons for revision. For another group of patients, the applicability is reconsidered.
3. The person responsible for purchasing and quality confirms the origin and identity of the supply, required documents, handling conditions and traceability. He provides the ability to associate usage with a specific supply and perform a restriction or recall. If there is doubt about the quality, the controversial product is separated from those available for use according to the established procedure, preserving the medical route of patients.
4. The medical director reviews the facility's readiness: staff training, resources, and communicating problems to patients and recipients. If the necessary condition is not present, it is provided or another valid route is chosen. This turns having a supply into doable help.
5. The treating specialist compares the authorized prescription with the patient's condition and writes down the essential reasons for the choice. He explains the expected benefits, risks and monitoring. A change in status may require a new custom decision, even if the overall status of the product remains the same.
6. The safety watchdog and regulator receive and evaluate messages, compare them with other data and, if necessary, change the conditions of use. The FDA includes post-market surveillance of a drug product as part of its life cycle evaluation process. [33] The specific responsibilities of participants are determined by the applicable system.

Safety signal and decision change

An adverse event following use requires evaluation. The team considers the disease, other interventions, product quality, and similar messages. The order itself in time does not yet establish the cause, but assistance to the victim continues until the analysis is completed. Precautions and status changes are recorded along with reasons and responsibilities.

The restriction is communicated to purchasing, warehouse, clinical teams and affected patients to the extent necessary. The person in charge acknowledges receipt, arranges alternative assistance and verifies compliance. This feedback shows whether the update has reached the point where decisions were made.

Case study, fictitious situation. The product is approved for one group of patients with available observation. Another site does not have such surveillance, although it has the

same supply. The manager first provides the required conditions or transfer to a suitable service. The same product name does not eliminate the difference in terms.

Educational analysis R3: From permission to real help

Consider a conditional continuation of the program: a certain product has received approval for a designated group and under specified conditions. This tutorial thread does not assume that a remedy has actually been found for event R3. It shows the next organizational transition. The hospital receives the supply, but must still check its readiness for use.

The person responsible for quality confirms the supply information, the medical director confirms the training of employees and the necessary resources. It turns out that some of the required supervision is not available on all shifts. Until this issue is addressed, the product cannot be considered equally accessible to every eligible patient. The manager provides the condition or agrees on another acceptable route.

Later, clarification of application restrictions is received. It must change specific work activities: order verification, stock release, patient explanation, and follow-up. The coordinator confirms receipt with those affected by the change. If someone continues to use the old version, the team fixes that particular transmission gap.

Thus, the implementation ends not with the date of receipt of the boxes, but with a working route with responsibility, quality and feedback. Even after this, the issues of the source of the event, the environment and the recovery of people are assessed separately. This keeps medical development connected to the rest of the book's objectives.

After the introduction of the product, a clinical route is in place, the quality of supplies is confirmed and feedback is organized. The development of a drug or vaccine solves a specific medical problem. Investigation of the source, restoration of the environment and surveillance of people continue until their own tasks are completed. The following parts examine this general order in the context of a space mission and terrestrial locations.

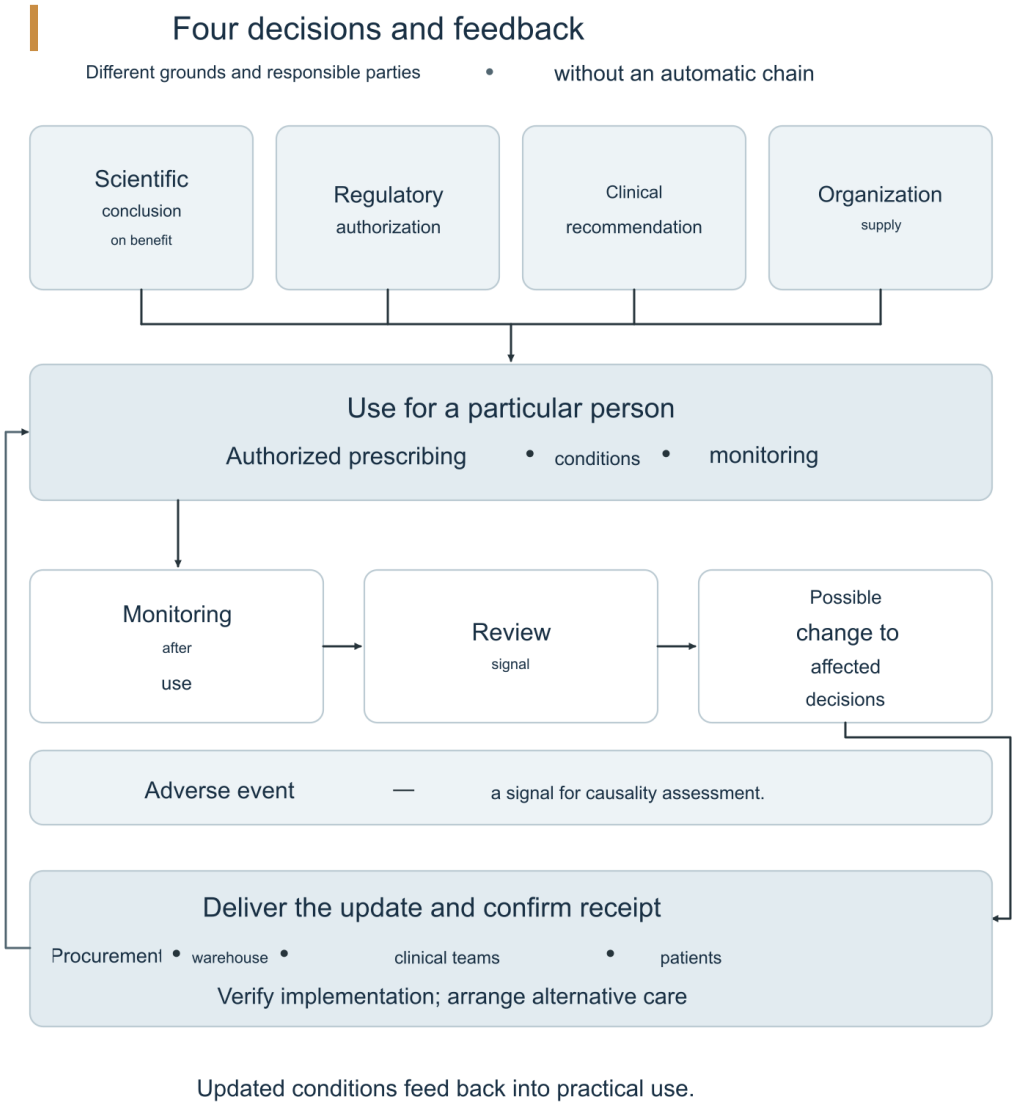


Figure 23. Four decisions and feedback

Scientific conclusion, approval, clinical recommendation and supply are not substitutes for each other. A safety signal may change the affected decision; the update should reach performers and patients with confirmation of receipt.

Part VI. Space missions and return

Chapters 43–46. How to take into account autonomy, closed life support and reception conditions.

Up to this point, the book has analyzed actions according to their purpose: to help a person, check an explanation, maintain a defense, evaluate the result. Now the same decisions have to be made in a specific place. In orbit, the usual advice to move to another room immediately raises a new question: will the crew still have air, communications and the ability to help the sick? Environmental constraints become part of any decision.

Space chapters follow the course of the mission: life on the station, work after landing, return and reception on Earth. They consider both common illnesses and technical failures and hypothetical events of unknown nature. For every crossing, it is important to preserve two things: assistance to people and a clear record of what is known about the material being transported.

43 Orbital station and closed life support

Navigation: NAV · p. 003 · Contents: OGL · p. 010

Why the station’s condition influences every decision

At the station, the crew uses a common habitat. If a compartment is temporarily closed, necessary rooms, equipment, or supplies may become unavailable. Therefore, the commander evaluates the perceived danger simultaneously with the consequences of the chosen measure for life and helping people. The available options depend on the specific mission device. NASA medical support requirements include preparations for evacuation and post-return assistance [6].

Illness, an unusual instrument reading, loss of material retention, or failure of protection may trigger the evaluation. The first actions are described in P01 · p. 155, P02 · p. 156 and P04 · p. 158, short scenario - in S1 · p. 171. Until the cause is determined, the team considers common illness, environmental exposure, instrument malfunction, and a combination of events. An unusual signal in itself does not confirm an extraterrestrial origin.



Figure 24. Orbital station as a total habitable volume

Fictional station: Human assistance, engineering checks, and return options depend on the overall habitable environment. The layout and transparent shells are conventional; specific decisions are determined by the mission architecture.

In Figure 24, trace the relationship between the work compartment and the place where people live. The transparent shell allows you to see the proximity of functions, but does not show a proven diagram of their independence. Before restricting access, the engineer must answer what services and avenues of assistance will be affected. It is this question that connects the image with the commander's decision.

Who helps the person and who checks the station

The commander appoints those responsible for medical and engineering assessments, determines priorities and transmits confirmed information to Earth. The medical officer in charge assesses the urgency of the condition, arranges available care and requests consultation. The engineer checks the protective functions and explains what will change under the proposed operating mode. The ground team attracts specialists and coordinates supplies, docking and possible reception of the crew.

The first record indicates the time of observation, the location of people, known movements of equipment and the state of systems. This information helps check possible connections. If the movement history is incomplete, a gap is indicated as such. A record of being in the general compartment does not establish that this is where the exposure occurred.

The commander suspends associated non-essential operations if they may increase the impact not yet assessed. Before changing life support, the engineer reviews the implications and applicable station procedure. Commands like “turn off all circulation”

cannot be transferred from the general reference book to a specific device: their consequences depend on the craft’s design.

Choosing between staying and moving

Before moving, the team weighs the urgency, the expected assistance at the destination, and the difficulties of the journey. It finds out what new contacts will arise and how vital functions will be maintained on the road. Person, equipment and material may need different routes; permission for one of them applies only to the specified task.

To decide on return, mission management receives a medical assessment of the crew, information about the possibilities of assistance on board, time until external assistance, the condition of the ship and readiness for reception. The authorized mission structure collates this data. The perceived risk of transmission is taken into account when preparing the route and the receiving team; the need for rescue remains an independent basis for the decision.

Training analysis R1: Two signals at the Sfera station

Six people live on the fictional Sfera station. An unusual monitoring signal has appeared in the work compartment; one of the crew members later reported feeling unwell. There are two observations in the log. The team doesn't yet know if they are connected by a common cause. For the commander, the practical question is what actions can be continued while the check is underway, and how to maintain care for the sick person.

Two options are being brought up for discussion: temporarily limit non-essential work in the compartment or continue it under supervision. The first option reduces the number of new actions in an unclear situation, but may deprive the crew of the necessary resource. The second preserves the work, but requires sufficient grounds to consider it acceptable. The engineer first clarifies what systems the housing module depends on and what functions the limitation will actually affect. The medical responsible person evaluates the person separately. Without these two assessments, the choice would be only the name of the measure.

In this training case, the check allows the commander to suspend non-essential work in the bay while maintaining essential station functions. The decision is recorded along with the grounds and conditions for the review. Both observations and the issue for which consultation is needed are communicated to ground control. The message does not infer a single cause.

Later, the engineer discovers that one measurement channel has failed. This is an important change: the original signal can no longer be used as reliable evidence of environmental change. However, the person still needs medical evaluation. The commander reviews the technical basis for the limitation, and the medical officer maintains his task. If the team had immediately lumped the two events into one “confirmed case,” the explanation for the glitch might have mistakenly closed the medical case as well.

The following check clarifies the technical fault. The question of the work compartment moves on to assessing its suitability for a particular job; The decision about a person's

condition rests with the medical team. Sharing does not require pretending that everything has already been explained. The log shows which uncertainty has been removed and which remains. The book will return to these two decisions in chapter 55.

How to continue working without connection with the Earth

If Earth is unavailable, the commander uses pre-approved autonomous authority. A local copy of the plan should explain the priorities for preserving life, the conditions for transition to reserve, the limitations of experiments, and the procedure for subsequent transfer of the log. The decision note notes that consultation was unavailable and what information had to be assessed on board.

Before completing the stage, the team reviews information about the status of people and the operation of critical systems, assigns a person responsible for monitoring, and records the next action. Access to the compartment, resumption of the experiment, docking and return require separate decisions according to P13 · p. 167. The remaining issues and events in which the decision must be immediately reconsidered are transferred to the next shift.

44 Lander, external work and remote base

Navigation: NAV · p. 003 · Contents: OGL · p. 010

Three connected spaces

After landing, the team works with three spaces at once: the vehicle, the external platform and the habitable base. As you move between them, access to help and the load on systems changes; Material may move along with people and equipment. Therefore, the order of transitions is prepared before the exit. It distributes the powers of the commander, medical officer, engineer and planetary protection specialist.

COSPAR (Committee on Space Research) policy distinguishes between mission types and Solar System bodies; it also contains principles for manned exploration of Mars. For a specific mission, experts determine which provisions are applicable. These documents do not provide a single ready-made instruction for any comet, planet or base. There is also no scientifically proven universal treatment protocol after contact with extraterrestrial life. [3, 4].

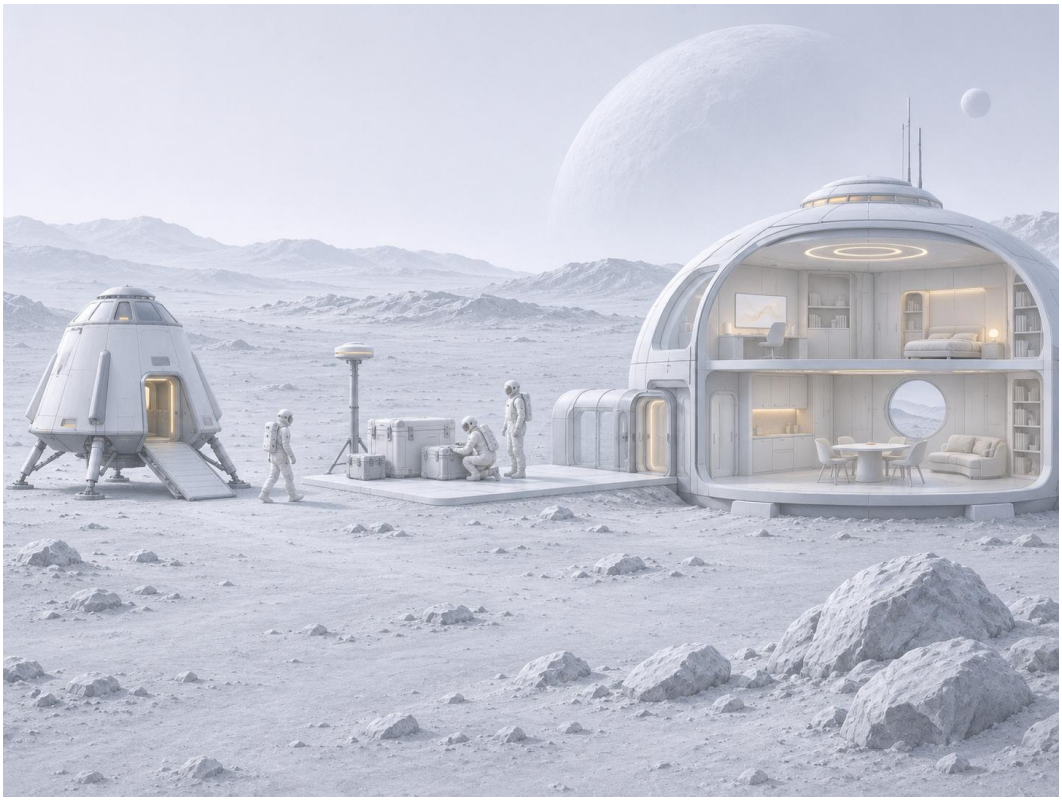


Figure 25. Vehicle, external platform and habitable base

The simulated vehicle, external operating platform and habitable base show three different mission spaces. The artistic cut opens up the residential functions; the order of transitions and technical conditions are established for a specific mission.

Preparing transitions and first response

Before leaving, the work manager explains the purpose, appoints someone responsible for recording participants, and indicates the conditions for terminating the operation and the route of return. The engineer checks facilities and emergency procedures. The medical responsible person determines what assistance can be provided in case of injury or deterioration of the condition. The person responsible for scientific activity designates the permitted actions with the material within the approved program.

Having noticed an unusual event, the participant reports the place, time, observed signs and condition of people. Further actions are chosen according to P01 · p. 155 and S2 · p. 172. If a person urgently needs help, the team applies a prepared rescue plan. He is not required to first find out the nature of the object or complete the investigation.

The commander suspends non-essential actions that could extend the transfer of material whose effects have not yet been assessed. The engineer checks available return routes and their impact on the habitat. The movement history notes what has already gone inside, what has remained outside, and where information is missing. The procedure for processing equipment is taken from suitable proven procedures: its choice depends on the design, material and compatibility of the equipment.

Limiting Resources

At a remote base, any measure consumes limited supplies and time. For the selected option, the team determines which resource will be depleted first, who monitors its status, and when another option will be needed. If people are asked to limit contact, the air, water, energy, access to care and suitability of the place where they will stay are simultaneously checked.

When communication latency is high, the team uses delegated authority and local directories. In a message to Earth, it separately indicates the facts, working explanations and the issue that needs to be resolved. Having received the answer, the person in charge compares it with the current state of the person and the systems: during the exchange, the initial conditions could have changed.

Decision	Who evaluates	What needs to be confirmed
Continue external work	Work manager and commander	Purpose of work, suitable conditions and feasible termination procedure
Move the victim	Medical Responsible and Commander	Urgency, route, assistance on the way and reception
Transfer equipment or material	Designated specialized service	Permitted purpose of transfer, history of the item and confirmed conditions of acceptance
Resume the scientific program	Mission leadership	Analysis of the event and fulfilled authorization conditions

Time-based decision

In the training example, after returning the equipment, an unusual coating was discovered. Its origin is still unknown. The team records the movement history, restricts associated unnecessary transfers and requests a specialist assessment. When choosing a further action, the engineer checks compatibility with critical equipment. Trying to remove plaque at random can create additional failure before the original cause becomes clear.

It is useful to compare two plans that appear equally cautious on the surface. The first suggests waiting for an external conclusion, leaving people in the chosen place. The second involves waiting, but connects it in advance with a reserve of resources and the ability to move to a prepared reserve. Only the second one explains what to do if the answer is delayed. The entry should contain an observable wait limit and a person who will announce the transition, rather than a vague promise to “wait for specialists.”

After receiving new data, the commander first checks which issue it relates to. A finding on equipment may change how it is used, without authorizing removal of the material from the planet. Information about the participant's condition may change the urgency of return without authorizing the scientific program. This way, time, resource and subject matter remain linked throughout the mission.

The stage can be transferred to the next team when the available actions, their performers and the conditions for revision are named. Permission to resume outside work applies to this work; returning the material to Earth requires its own decision. Its

preparation continues in chapter 45, where the received data is transferred along with the limits of their applicability.

45 Return of the crew and samples collected by robots

Navigation: NAV · p. 003 · Contents: OGL · p. 010

Who and what is accepted on Earth

When returning, you need to decide what kind of assistance the crew needs, whether the device is working, what is the status of the materials and whether the ground side is ready to receive it. These questions have different performers and reasons. Applicable planetary protection requirements vary by mission. For example, NASA NPR 8715.24 refers to NASA robotic extraterrestrial missions; its limited sample return provisions cannot be automatically transferred to any manned flight [4, 5].

For the crew, the medical team assesses the need for assistance and the ability to receive it after landing. Evacuation and reception are being prepared as part of the medical support for mission [6]. If a person needs urgent help, this fact is reflected in the medical decision. The unclear status of the accompanying material is stored in a separate record.



Figure 26. Two returns - different reception items

Two independent training scenarios: on the left - the crew is received by the medical team; on the right is the reception of a closed unmanned capsule with material. The statuses of the person, the apparatus and the material are assessed separately. The panels do not define a common area or uniform order for all missions.

Before the decision to return

Mission leadership determines who is involved in the decision and the applicable return conditions. The medical team communicates the people's condition, assistance needed, and transportation restrictions. The engineering team confirms information about the device and critical systems. The planetary protection specialist presents the material requirements and data on their implementation. The ground coordinator checks the receiving services, resources, communications and alternate route.

For each item of transfer, a passport is issued: what is being transferred, where it came from, who was responsible for it, and what events could change its condition. Unresolved questions and missing entries are noted directly. Even a standard fit does not make up for the unknown part of the history of the material.

The route is discussed for both the normal and disrupted course of events. What will change if the site is unavailable, the connection is lost, the person becomes worse, or the actual state of the device differs from the transmitted one? Where possible, options are agreed upon in advance. The receiving party must be able to honestly report the unavailability of a declared resource so that the mission has time to reconsider the plan.

Transfer at the border of organizations

Responsibility passes after confirmation of the specific receiving person. The log contains the time of transmission, the state of people and systems, the measures in force and the immediate task. Medical information is transmitted via a secure clinical channel to the extent necessary for assistance. A separate cargo record does not replace patient handover.

If boarding or reception deviates from the plan, the manager activates the agreed emergency procedure. Local services receive a clear description of the hazards and their tasks. The discovery, research and processing of unknown material is entrusted only to authorized, trained groups with suitable conditions.

In the training example, the craft landed normally, but there was a gap in the material containment system record. The ground crew continues to receive people according to the medical plan. A separate check is assigned for the material; an incomplete record is transferred to the person responsible. A successful landing solved one problem, but did not answer the question of the condition of the contents.

Reasons for authorization and follow-up

Before work, the team agrees on the criteria for future authorization: what exactly is planned to be done, what information is needed and who will check its quality. Take into account the condition of systems and independent verification to the extent required by the requirements. One negative result only answers its research question; absence of symptoms describes a person's condition at the time of assessment. The decision on the entire return requires a combination of relevant grounds.

After reception, those responsible for medical observation, storage of records and further evaluation of the material are appointed. For each direction, the reason for revision is indicated: a new disease, an updated history, a system failure, or a result

that changes the conclusion. Scientific work and medical observation are completed separately, as explained in chapter 55.

If the current rules do not cover the proposed mission, its organizers contact the competent authorities and relevant specialists in advance. This chapter helps frame questions for such consideration. Authority and permissions are established accordingly before the mission is carried out.

46 Unknown object on Earth

Navigation: NAV · p. 003 · Contents: OGL · p. 010

What is known from the first message

An unknown object may be found after a fall, an emergency landing, or cargo movement. Sometimes its history is entirely unavailable. Appearance cannot establish its origin or its ability to cause disease. The initial assessment retains several possible hazard categories: physical, chemical, radiological, and biological. WHO's approach to risk assessment covers different hazards regardless of their source [19].

The eyewitness uses P01 · p. 155 and S3 · p. 173: informs emergency services what he sees and whether there are victims, avoids unnecessary approach and independently carrying an object. Assistance to a person is organized taking into account the safety of the place and the training of the participant providing it. The message can be complemented by a photograph taken from an already safe position; you don't need to get close to take it.

Actions of arriving services

The first response manager takes control, organizes assistance and engages relevant services. The medical team evaluates people according to their condition. Hazard experts report what they can conclude and what issues still need testing. The identified owner of the facility or mission representative provides documents; the team matches them with the item found.

Competent authorities determine access taking into account observed conditions, terrain, population and infrastructure. They evaluate possible exposure pathways and then set boundaries and permitted actions. The universal distance for any unknown object is not specified here. With new data, the manager revises the decision and retains its basis.

According to the local plan, the manager organizes places of assistance, management and specialized work. Prepared services select appropriate schemes, protection and technical actions. The log records the service entry into the restricted area and the transfer of responsibility so that the subsequent team can restore progress.



Figure 27. Location of discovery of an unknown object

Location of detection of an unknown fragment: helping a person, coordinating and assessing an object are performed as different tasks. The conventional plot does not establish the origin or danger of the object.

People, information and evidence

The person in charge confidentially clarifies with people the place and time of presence, observed circumstances, symptoms and contact information. He explains where to go if things get worse and who will report new findings. In this case, a distinction is made between proximity to the object, possible exposure and established infection. The absence of complaints also has its limits: it does not in itself complete the impact assessment.

Specialists are responsible for handling the object and associated materials. Preservation of evidence is consistent with the task of rescue. If an offense is suspected, the powers of medical and law enforcement participants are delimited in advance. Receipt of assistance does not depend on the person’s consent to interrogation or research [12].

In the training example, an eyewitness reports eye irritation, and online the object is already referred to as “alien spore.” The manager confirms only the discovery and the assessment that has begun. The doctor examines the person’s condition and possible exposure. The public message explains the current steps, how to get help, and where to get the next update. The origin of the item remains an open question.

Transfer and completion

Before the transfer of the object, the receiving organization confirms its authority, suitable conditions and readiness to be responsible for the next work. If the verified

history indicates that space material is being returned, mission officials and applicable planetary protection requirements are involved [4, 5]. The word “cosmic” in an eyewitness report does not in itself establish these requirements.

Further work diverges in several directions: assistance and observation - P03 · p. 157 and P07 · p. 161, establishing nature - P06 · p. 160, source elimination - P09 · p. 163, territory authorization - P13 · p. 167. The removal of an object only completes its movement. The manager checks who has been assigned the remaining tasks: helping people, assessing traces of exposure, and identifying associated movements.

Part VII. Locations on Earth

Chapters 47–54. How to adapt general decisions to infrastructure, population and event size.

On Earth, external help is usually more accessible, but the number of dependent people and organizations can be much larger. The laboratory has a documented flow of materials; the hospital is obliged to continue treatment; settlement depends on transportation; the city is connected by networks to neighboring territories. These differences determine who to include in the decision and which consequences to examine first.

The chapters in this part can be read as a comparison of conditions. With the same report of illness, the hospital first distributes assistance, the transport team prepares the transfer, and the community checks the ability to receive support before the weather worsens. General cards are retained, but each local task receives its own executor, resources and clear result.

47 Laboratory, production, storage and transportation

Navigation: NAV · p. 003 · Contents: OGL · p. 010

Where does the loss of control test begin?

In a laboratory, production or storage environment, a signal could be an employee's illness, a packaging failure, a security failure, an recordkeeping discrepancy, or an unknown location of the material. The manager first finds out what kind of deviation was observed. Job security and material access control are related, but address different issues. The assessment must cover both directions within the powers of the participants [1, 7].

The team arranges for people to be assisted and, if safe to do so, stops associated non-essential activities. Trained personnel stop equipment according to local instructions. The examination of unknown material requires a separate risk assessment, appropriate capabilities and a validated procedure. An organizational review of an event does not give the employee permission to initiate such a review on their own.

Five parallel directions

1. The shift supervisor records the deviation: time of discovery, operations affected, and source of the report. He separates the observed fact from the suspected cause.
2. The medical officer in charge assesses the need for urgent care and possible exposure. Employees receive route P02 · p. 156 or P03 · p. 157; seeking help does not await disciplinary proceedings.
3. A safety specialist and an engineer check the protective functions and permissible mode of the object. They list operations that can continue and operations that are suspended.
4. The person responsible for materials and quality verifies the movement of batches, samples, equipment and waste. He names recipients and transactions for verification, separately noting yet unclear connections.

5. The authorized manager notifies the necessary services in accordance with the applicable procedure. He appoints those responsible for investigation, helping people, communication and restoration of work.



Figure 28. Complex with different operations and responsibilities

Laboratory work, production, storage, reception and dispatch require separate assessment and responsibility. Reconciliation of documents clarifies the boundaries of discrepancies; Amber accents do not indicate an identified hazard.

Figure 28 is useful to read as several areas of responsibility. Reception confirms that the item has actually been received; storage is responsible for the conditions of stay; work area - for a permitted operation; dispatch - for the agreed transfer. Between sites, the history and name of the next person in charge must be preserved. The transparent cut combines them into one building, but does not make their checks interchangeable.

How to restore material history

The team maintains records of process, maintenance, access and transfers along with source and time. By correcting the error, it leaves it possible to read the previous entry. Gathering information does not require entrusting an untrained person with carrying suspicious material or taking samples. Acceptable actions are determined by a qualified team.

In production, they check which batches and recipients are actually associated with the deviation. Authorized persons will organize temporary retention, recall and information, taking into account applicable regulations and supply implications. As the story becomes more precise, the scope of measures changes. The coincidence of release time does not establish the same danger of all [19] products.

Training analysis R2: Where is the container located

The organization Sever sent a sealed container to the organization Bereg. The copy of the log available to the sender contains no confirmation of receipt. Neither a breach of the casing nor exposure of people has been established. Two questions now need answers: where the container actually is and who is responsible for it. Its properties and further use will be assessed separately.

The sender could immediately declare it lost or simply resend the document. The first option is ahead of fact checking; the second leaves the same uncertainty. The person in charge chooses direct confirmation through the established channel. The recipient provides the actual location and names the person who accepted the task. The transfer control gap now disappears, although the container's suitability assessment has not yet been completed.

Upon reconciliation, it turns out that the sender opened an old copy of the journal. The actual recording existed, but was not included in his working picture. This explains the discrepancy between the documents. The manager saves both versions, the reconciliation time and the recipient's confirmation. The appointed specialist separately checks the grounds for further use of the container within his competence. Correction of a record does not translate into a conclusion about the content.

The team is also addressing a broader question: did the log flaw affect other programs? If yes, the check extends to them due to an recordkeeping error. If not, this reason to limit the scope of the inspection is also recorded. Later, in chapter 58, this case will serve as an example of correcting the procedure. A simple reminder to “read the documents carefully” will not explain why the old copy appeared to be valid.

Resumption of work

Before resumption, the recovery manager reviews the protective functions, the procedure, the training of people and the quality of the inspection performed. Outcome criteria and data limitations are determined prior to interpretation [31]. If a problem is corrected but the underlying cause remains, the plan must take into account the possibility of recurrence. The approval is specific to the specific operation and material.

The operation remains suspended if a significant common cause of failure has not been corrected, trained personnel are not available, or necessary controls are not available. Independent functions are considered separately: their continuation requires its own foundation. To check the barrier, use P04 · p. 158, to establish the cause - P06 · p. 160, for the decision on authorization - P13 · p. 167.

48 Hospital, long-term care and congregate living

Navigation: NAV · p. 003 · Contents: OGL · p. 010

The institution is obliged to continue assistance

The hospital must help the people associated with the new event and continue treating the remaining patients. A long-term care facility adds another responsibility: it is the permanent place of residence for its residents. Therefore, any protective measure is checked for compatibility with emergency care, usual treatment, nutrition, care and

communication with loved ones. The urgency of care is determined by the person's condition, taking into account the estimated risk of transmission separately.

Standard precautions provide the basis for preventing infections in the care setting. Additional measures are selected taking into account the expected transmission route and circumstances [22, 23]. While the cause is unknown, the local medical team will set a temporary order and reasons for its revision. The engineer checks the suitability of the premises and air systems [15]. The name of the new zone must correspond to its real capabilities.

Local responsibility

1. The senior clinician organizes the urgency assessment and initial care. For each person in need, he determines a responsible doctor, a place of assistance and supervision. If it gets worse, the team immediately moves to P02 · p. 156.
2. The infection preventionist suggests an order of interactions and flows based on the current working hypothesis. Staff receive clear instructions for patients, visitors and specific procedures.
3. The engineer and operations check whether the selected premises are suitable for the task. They communicate the limitations and resources needed; critical systems are changed only in a prescribed manner.
4. The facility coordinator provides people and supplies. Before expanding a new direction, he checks who will continue the remaining vital functions.
5. The person responsible for the transfer coordinates movements within the institution and between organizations. The receiving team receives the necessary information and confirms readiness.

Disagreements between specialists need to be translated into a specific issue. For example, a doctor explains the need for additional care space, and an engineer explains why the selected room is not suitable for the planned task. The leader decides on another location, resource or route. Administrative renaming of a premises does not change its technical capabilities.

How to maintain your usual support

A person with dementia, hearing loss, limited mobility or ongoing support needs may find it difficult to adjust to a new location. The team prepares in advance a clear explanation, assistance with movement and the necessary support. The possibility of the presence of an accompanying person is assessed according to the circumstances and available protection. If visits are limited, the person is provided with a working connection and the measure [12] is revised.

Staff should know who to report symptoms, possible exposure, and shortages. The manager plans replacement taking into account qualifications and actual workload. Before transferring an employee to another department, the transfer of tasks and possible event connections are checked. The mere presence of a surname in the new schedule does not mean that the vacated duty has been accepted by someone.

Case Study R3: Free Room and Available Help

People connected by a common place of stay are admitted to the district hospital. One needs urgent assessment; the other's condition is still stable. The possibility of a common cause is investigated and other patients continue to receive usual care. The manager is offered to use an additional ward. There is space on the building plan, but a trained team is already providing care for dependent patients.

Two options are being discussed. You can quickly expand admissions within the hospital by redistributing staff. You can maintain the current workload and agree on external support or transfer of some patients. The first option seems faster, until it is taken into account what kind of help will be left without the person responsible. The second will require coordination and time; it cannot be considered available until confirmed by the receiving party. Both options are assessed along with people's clinical urgency.

The coordinator asks the senior clinician to name the necessary support functions, and the heads of departments to confirm the performers. This way it becomes clear which responsibilities can be transferred, which require strengthening and which cannot yet be removed from the working team. The engineer simultaneously checks the suitability of the chamber. The decision to expand is made only within the limits of the capabilities actually provided; support is requested for the missing part and a different route is agreed upon.

Then new information emerges that requires testing the original explanation for one patient's condition. This changes his clinical plan, but does not change the hospital's responsibilities to others. The coordinator maintains separate records of treatment, possible case connections and department provision. All three directions are transferred to the next shift so that a change in diagnosis does not lose the unresolved supply or care task.

Success in this case is visible in the person: he received the appropriate help, and the necessary care for another patient continued. The number of beds prepared does not in itself show this. As the hospital returns to normal operations, it will also review pent-up needs; this stage is discussed in chapter 57.



Figure 29. Hospital and long-term care: care must continue
On the left is a hospital admission and ongoing routine care; on the right is long-term care living space, mobility support, nutrition and connection with loved ones. The new assessment task must retain the necessary help functions.

Figure 29 compares two purposes served by a space. Hospital intake helps assess the urgency and choose where to treat. In long-term care, a person continues to live, eat, move around and communicate. When a new measure is introduced, it is useful to mentally go through the day with him: who will help carry out the usual actions and which service is responsible for each gap that arises?

Several different termination decisions

Clinical discharge, termination of individual restrictions, opening of the premises and closure of the incident are justified separately. The discharged person is given a continuation plan, clear instructions, and a contact for questions. The authorized manager authorizes the use of the premises after the necessary checks. authorization is issued through P13 · p. 167, and deferred assistance and remaining needs are included in the plan P14 · p. 168.

49 Village, island, expedition and remote settlement

Navigation: NAV · p. 003 · Contents: OGL · p. 010

Distance changes the organization of care

In a remote location, it is important whether the resource can be used on time. This is affected by weather, transport, communications, the arrival of specialists and the ability of the local team to continue working. If one person juggles several

responsibilities, his illness can immediately disrupt care, supplies and management. Such dependencies are clarified in advance and a replacement is prepared in case of delay in external support.

The WHO emergency risk management framework includes community preparedness, health resilience and service collaboration [37]. For a settlement, this means an early division of tasks: what the team is capable of doing now and what already requires an external participant. Volunteers are assigned work within the limits of their training.



Figure 30. Remote settlement and help window

Remote river community: local team, aid station, communications, resources and dock support assistance when external transport availability is limited. Weather and distance affect its organization.

In Figure 30, the connection between the pier, the aid station and the supplies is important. The arrival of transport gives results only when the cargo is accepted, delivered and available to those who need it. For a person, the path of help can begin at home and end far beyond the boundaries of the settlement. This entire sequence should be checked, including feedback from the recipient.

First organizational actions

1. The local manager and deputy contact the medical and territorial services. They tell participants who makes decisions when a connection is lost and where the current record of events is located.
2. A medical professional or available care dispatcher assesses the urgency of people's conditions. For a critical event, a specific route is determined, even if the cause of the event has not yet been established.

3. The Supply Coordinator checks critical inventory, flow and delivery. In the request, he specifies what is required, where to deliver it, who will accept it, and what will happen if there is a delay.
4. The transport coordinator checks the possibility of people being removed and help arriving. He confirms the crew, the route and the receiving organization, and also finds out under what conditions transportation will become unavailable.
5. The resident support person identifies those who need ongoing medications, nursing care, translation, or assistance with information. These needs include supply and distribution of responsibilities.

Simple records and trust

The local team selects a record that can be maintained even under heavy load: event, time, person responsible, action completed, and unmet need. If there is no network, the agreed offline method is used. When the connection is restored, the records are verified by source and time so that the re-received message does not become the second case in the record.

In a small settlement, a person can be identified by several details even without publishing his name. Therefore, in a public message they leave information necessary for protection and assistance. An authorized representative explains what is known, acknowledges gaps, and provides a time for the next update. The choice of measures takes into account the ability of people to seek help, the consequences of restrictions and the necessary support [12, 13].

Educational analysis R4: Kedrovoe is waiting for help

In the fictional Kedrovoye, there is only one medical worker. Several cases of illness have been reported; the connection between them has not yet been established. At the same time, the carrier warns about deteriorating route availability. There are people in the settlement who, regardless of the new event, need constant medicine and care. The team's task is to maintain assistance until the next reliable message about transport.

The first suggestion is to wait for the reason to be clarified and then send a single request. The second is to confirm medical urgency, routine supply requirements, and possible transportation now. Waiting may reduce the number of clarifications, but leaves weather dependence unanswered. The team chooses the second order. The medical worker conveys clinical questions, the supply coordinator conveys a specific list of needs, and the transport representative conveys a request for available route options.

The carrier's response does not yet equate to confirmed acceptance of the patient. Therefore, the coordinator separately contacts the receiving organization, reports the necessary assistance and checks its readiness. At the same time, he finds out who will accept the cargo in Kedrovoye if the delivery takes place. Missing confirmations remain open journal entries even after the email has already been sent.

Weather changes the availability of the original route. The team checks the new option against the current state of people and supplies. If the previous plan can no longer be carried out, the manager informs all participants in the transition and requests a

decision for a specific shortage: medical support, transportation, replacement or supplies. It does not turn the lack of transport into a medical conclusion that the wait is acceptable.

Once support is confirmed, the local team checks to see if it has reached people. Delivery of routine medications and care may require a separate provider while the health care provider is occupied with a new event. Kedrovoye completes the next stage with a well-known plan of care and remaining questions about the cause of the ailment. These questions continue to be tested without stopping ordinary life.

When to bring in external help and how to delegate remaining tasks

The basis for external assistance is a specific lack of capacity: the team cannot provide the necessary surveillance, care, communications or supplies. This need is communicated without waiting for mass disease. If control or resources fail, use P12 · p. 166, when expanding the event - P11 · p. 165.

Before lifting measures, medical reasons and the availability of necessary services are checked. The returning transport must still provide delivery and care. The absence of messages is assessed taking into account the communication performance. By P14 · p. 168 is assigned a contact for monitoring and support, and local residents are included in the analysis of the implementation of instructions.

50 School, workplace and public event

Navigation: NAV · p. 003 · Contents: OGL · p. 010

General assessment and miscellaneous responsibilities

School, workplace and event bring people together for a certain activity, after which they disperse. But the responsibilities to the child, employee and visitor are different. The team considers length of stay, interactions, access to care, and the impact of job changes. The number of people present alone is not enough to select a measure.

The WHO Mass Event Tool helps map hazards, conditions, risk mitigation measures and preparedness to respond [40]. It asks questions to evaluate a specific event. The decision to cancel is made by the authorized team, taking into account the circumstances; This tool does not set a general numerical threshold for any meetings. The school and employer also check applicable local requirements.

General procedure

1. The manager or organizer checks the signal, appoints a person responsible for communication with services and his deputy. Participants are informed who is hosting the event.
2. A health worker or called service assesses people's urgency and arranges help. Medical information is retained within the required circle of participants.
3. The security officer and the operations department check the premises and routes. Proposed changes must maintain fire safety, rescue access and environmental suitability.

4. The manager and the competent sanitary service determine temporary measures. For each, the purpose, activities affected, resources, and basis for revision are identified.
5. The communications coordinator explains to participants where to get help, schedule changes, and where to report errors in information received.

Features of the three places

At school, an adult is responsible for the child until the agreed release to an authorized chaperone or medical team. The plan takes into account nutrition, medications, mobility support, and accessible explanation. When activities change, determine how instruction and necessary support will continue. Parents receive the guidance they need without sharing other children's personal medical information.

The workplace reviews tasks and connections between shifts, contractors, transportation, and common areas. The employer explains how to report problems and ensures that protective measures are in place. Absence pay, replacement and support are determined by applicable law and the organization's terms and conditions. If there are not enough people to work, the person in charge conveys to the manager the specific shortage and its consequences.

For a mass event, stopping a program requires its own plan. The organizer will coordinate exit, transport and assistance, including support for people with mobility difficulties. The security service checks the availability of routes and their capacity. Ads should help people complete the plan; Unauthorized blocking of exits is unacceptable.

In the training example, the general impact message refers to one room of the complex. The coordinator provides assistance and checks what activities link this room to others. Based on the data received, the authorized team determines the scope of temporary changes. When expanding a measure, it must explain what new relationship changed the original estimate.



Figure 31. Three meeting places - three different responsibilities
From left to right: school - the child remains with an adult until the agreed transfer; work - communication between the employee and the manager and available help; the event is an accessible outlet with support for a participant with limited mobility.

Continue or cancel

New information about the disease population or mechanism, lack of care, and the inability to implement agreed measures require reconsideration. Before resumption, the manager confirms the specific conditions and readiness of the personnel. Families, staff and visitors are explained what has changed. The main routes are P01 · p. 155, P02 · p. 156, P11 · p. 165 and P13 · p. 167; Providing for people under restrictions is discussed in Chapter 19.

51 Train, ship, plane, airport and port

Navigation: NAV · p. 003 · Contents: OGL · p. 010

Moving object and receiving area

During an event in transport, the operator, crew, medical service, terminal owner and authorities at the place of arrival interact. They need a designated coordinator so that assistance is not interrupted at the boundary of authority. WHO guidelines for ships and air transport provide for agreement on assessment and response between participants [38, 39].

The vehicle commander makes decisions within the limits of his authority and traffic rules. The medical assessment is carried out by an available qualified service, if necessary through an established remote consultation channel. Sanitary decisions are

consistent with the safety of flight, navigation or train movement and with the operating instructions of the operator.

Miscellaneous restrictions

Place	Significant limitation	What needs to be agreed upon in advance
airplane	Limited in-flight assistance options; decisions are related to flight safety	Communication channel for crew and ground services; procedure for admission by the medical team
Vessel	Duration of transition; dependence on port reserves and capabilities	Available assistance on board, supplies, coordinated reception and transfer of patients
Train	Relationship between the route and the infrastructure and capabilities of stations	Place of organized meeting of services, access to the carriage and transfer of responsibility
Airport or port	Large flows of people, transfers and distribution in different directions	Service Coordinator, Waiting Assistance and Traceable Communications



Figure 32. Board, path and host place

From left to right, top to bottom: confined space of the aircraft; living environment of the vessel; train at the agreed meeting place; waiting and support in the terminal. Space constraints and people's needs determine the organization of care.

Event Actions

1. The crew accepts the message and provides available assistance within the limits of preparation. The responsible commander is relayed information about the urgency of the condition and the observed circumstances.
2. The commander notifies the operator and the necessary services through the established channel. The point of arrival should learn about the need for assistance and possible exposure before transferring people.
3. The medical coordinator will agree on the receiving team, the meeting location and the course of action if the condition worsens. He verifies that the help offered is actually available.
4. The operator and the competent service clarify the necessary information about the route and participants. Data is transferred to authorized recipients for a specific purpose in compliance with information security rules.
5. The arrival coordinator confirms readiness and conducts the handover. Their further routes are explained to the patient, accompanying persons and other travelers. Material objects are transferred separately.

Waiting also requires support

During delays, people need water, food, toilets, regular medications and connection with loved ones. The coordinator takes into account unaccompanied children, people with disabilities, the need for transfer and continued treatment. In the announcement, he explains the current procedure and timing of the new message while maintaining medical confidentiality.

In the training example, the receiving site reports that the agreed upon medical care has become unavailable. The operator, commander and medical coordinator check for another valid arrival option. Until it is agreed upon, an open task with a responsible person remains in the journal. A departmental dispute does not relieve the obligation to continue helping people on the move.

Completion of the transport part

For international movements, those responsible will check the current national regulations and the applicable edition of the International Health Regulations [14]. 2016 Guides help organize collaboration in your field; legal requirements are checked against valid documents.

Transfer of the patient, release of luggage, further use of transport and termination of individual restrictions are formalized by separate decisions. An authorized person will allow a re-flight after the necessary checks. The remaining observation is transmitted via P14 · p. 168, urgent assistance is provided by P02 · p. 156, resource shortage - according to P12 · p. 166.

52 City, water, food chains and connected networks

Navigation: NAV · p. 003 · Contents: OGL · p. 010

City boundary is not equal to impact boundary

The city is connected to other areas by water, food supplies, transport, jobs, medical care and waste removal. Therefore, one signal may relate to a separate party or network node, and events in different areas may have a common dependence. Analysts check actual connections. The administrative map helps distribute powers, but does not in itself explain distribution.

The city team takes on tasks that exceed the capabilities of a single facility: interaction of services, distribution of scarce resources, conservation of assistance and information to residents. These functions include surveillance, communication, and coordination of medical capabilities [10]. The general order in the book is given by U0 · p. 169 and P11 · p. 165.

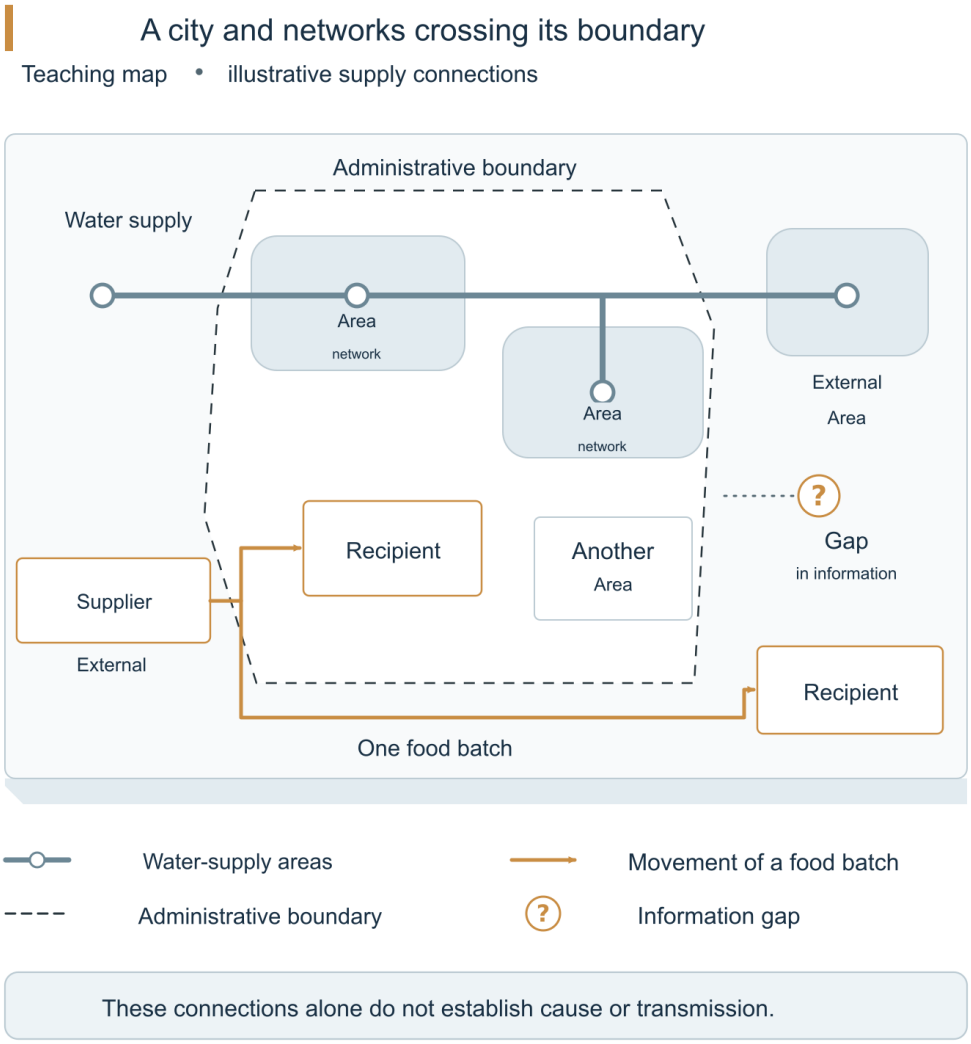


Figure 33. The city and the networks that cross its borders

A conventional map divides the administrative border, the sections of the network served and the movement of a specific food batch. Highlights follow the connections shown; the knowledge gap remains unknown. The diagram does not confirm real distribution.

The work procedure of the city team

1. The Analytical Manager consolidates messages with source, timing, and degree of confirmation. He distinguishes between observations, assumptions and missing information, and also identifies duplicate entries.
2. Network operators show real connections and service limitations. They explain who is dependent on the intended source and who will be affected by the proposed measure.
3. The medical coordinator checks the workload and availability of care. He maintains emergency treatment routes and routinely needed care during an investigation.
4. The Supply and Social Support Coordinator will arrange for replacement of limited services. Residents must have a feasible way to meet basic needs.

5. The authorized manager makes an interim decision and orders a review. He indicates the action, the person in charge, the territory and the confirmed security.

Water supply and food connections

The water safety plan links supply risk assessment to supplier and supervisory performance [42]. In the event of an event, the operator and the competent services clarify the affected part of the system and the permissible use of water. Residents are explained specific actions and available alternatives. For unknown contamination, one home treatment method cannot be considered suitable in advance; The system mode is changed by specialists.

In the food chain, the manufacturer, batch, transportation, storage and recipients are checked. Established communication with the party helps determine the scope of measures. Operators and authorities will agree to withhold, withdraw, notify and restore supplies as appropriate. If necessary, veterinary and environmental services are involved as part of the “One Health” interaction [18].

Educational analysis R5: Two regions and one version online

In the educational city, reports of illness came from two districts. An explanation through water has appeared online, but there is no initial evidence of this connection yet. The hospital and residential buildings continue to need supplies. The city team assigns message review, medical needs assessment and network operator contact.

A broad measure for both areas and a more limited measure testing specific links are being discussed. The choice cannot be made only by the number of messages: it is not known how many independent observations there are behind them. The analyst checks the sources and time, the medical coordinator clarifies the need for help, the operator reports the real boundaries of service. If a competent assessment requires an immediate protective measure, it is introduced with an indication of the basis and security, leaving the question of the reason open.

The check shows that some of the messages from the same area are repeated transmissions from the same source. Independent observations remain in another area. This changes the pattern of appeals, but does not yet establish the waterway of exposure. The team corrects the number of messages and clarifies where further evaluation is required. The decision about a specific section of the network is based on profile data, and medical care for people continues based on their condition.

The public update explains what exactly has changed: some messages appeared to be duplicates; for others, verification continues. If the scope of the measure is revised, the new action and the reason for the change are named. Residents receive one valid source of updates. Acknowledging a correction preserves the ability to check the progress of a decision and helps distinguish new information from hearsay.

The coordinator separately checks the consequences of current restrictions. Has the hospital received the supplies it needs? Is a replacement available for people who have difficulty getting to the pickup location? Is help lost in houses on the border of the service area? These responses determine the feasibility of the measure. Even if the cause of the event is not yet clear, the team can correct a specific security failure.

Checking the result

The city summary should show the outcome for residents: whether water, medicine, assistance, and verifiable updates are available. To do this, those in charge confirm execution on site. Before the final assessment, the team determines what data is needed and how detailed it should reflect the situation for the decision [31] to be made.

Measures are reviewed by function and area. A single node fix is evaluated along with its dependencies; confirmed independence may allow the removal of unnecessary restrictions. For authorization, P13 · p. 167 is used, for remaining needs - P14 · p. 168. Loss of a critical service requires P12 · p. 166 even when no new cases have been identified.

53 Region, country and international interaction

Navigation: NAV · p. 003 · Contents: OGL · p. 010

Common goal under different conditions

The region and the country coordinate the work of the territories, provide rare resources and organize external interaction. Local teams implement decisions in their own conditions. The overall goal must take into account the different capabilities of medicine, transport and facilities. Therefore, the on-site manager reports what exactly is preventing implementation; the central level decides whether to support or change the task.

The overall summary differentiates between reports, confirmed cases, calls for help and people under surveillance. The Think Tank publishes the definitions used and notes changes to them. If the new formulation changes the numbers, the limits of comparison with the previous summary are explained nearby. The disagreement among experts is retained as a specific issue for further consideration.



Figure 34. One country, different opportunities for help

Conditional geography compares different possibilities of transport, communication and assistance. Shared goals require achievable local goals and committed teams; the image does not represent actual national boundaries or the distribution of resources.

Task distribution

1. The regional or national leader sets overall goals and authority. He determines what the center decides, what is left to local teams, and how conflicts are resolved.
2. The Risk Assessment Center collates data from areas and industries. Management gets a picture of sources, gaps and possible next steps.
3. The Mutual Aid Coordinator checks the capabilities of dispatched teams and equipment. The recipient confirms the need, location, supplies and working conditions.
4. Those responsible for international relations send notifications and requests through established channels. For each significant message, the addressee and confirmation of receipt are stored.
5. The Public Communications Coordinator explains current measures, available assistance and assessment changes. He communicates the grounds and procedure for the next review.

International obligations

For international notification, the state assesses the event according to the scheme of Annex 2 IHR (International Health Regulations). If the event is notifiable, Article 6 provides for the transmission of information to WHO through the National IHR Contact Point within 24 hours of assessment of the health information. Those responsible check

the applicable edition and status of amendments - they are given in addition 1 of the consolidated text 2026 of the year [14].

Provisional notification may be required until the origin of the event is definitively determined. In this case, unknown information is identified directly, separating the medical and epidemiological assessment from the political versions. International traffic restrictions are considered according to the applicable rules, taking into account the rationale, consequences and needs of travelers [14].

Resources and trust

Help is distributed according to need and ability to use it. Good reporting in one territory does not negate the needs of another, where communication is disrupted. The coordinator determines the consequences of the delay, the required support package, and the responsible recipient. Personal data is transferred for a legitimate purpose in accordance with the established access procedures.

In the training example, the region has requested equipment, but does not have a trained team. The coordinator clarifies what function needs to be provided, then agrees on support, training or other available method. The public summary distinguishes between departure, arrival and start of work. These states allow people to understand when help will actually become available [13].

Let's return to the city from the analysis of R5. After eliminating duplicates, the total number of messages decreased, but this does not provide grounds to automatically reduce the entire request for help. Independent surveillance is being maintained in one area, and the hospital is still operating at the same capacity. The regional coordinator matches each requested function with its current need. This way, correcting statistics does not turn into a mechanical reduction of resources.

If another territory has not sent a report due to loss of communication, the center separately restores contact and checks its position. An empty row in a table remains a knowledge gap. The distribution decision contains not only the final amount of assistance, but also questions that need to be checked at the next exchange.

Exiting emergency mode

When measures are relaxed, the territories, functions and reasons for the changes are indicated. Emergency management transfers monitoring, treatment of consequences, restoration of supplies and financial obligations to permanent organizations. Recipients acknowledge these tasks. The successes of some territories are taken into account along with the continuing needs of others. The transfer is processed according to P14 · p. 168, specific authorizations - according to P13 · p. 167.

54 Agriculture, Wildlife and Territories

Navigation: NAV · p. 003 · Contents: OGL · p. 010

The signal may appear outside of human medicine

The signal may first appear in animals, plants, or environmental conditions. It may require a joint assessment before people are reported to be sick, although the unusual

nature of the observations does not yet prove a common cause. The One Health approach links the health of people, animals and the environment [18]. WOAH addresses preparedness of veterinary services and interdepartmental communication in emergency situations [41].

Each specialist maintains his own area of decision: veterinary, phytosanitary, environmental or clinical. The general leader ensures the exchange of information and coordinates actions. In testing the connections between the farm, the natural area and the settlement, it relies on actual movement and impact; Geographical proximity alone is not sufficient for a general explanation.



Figure 35. Economy, nature and settlement in one landscape

The landscape unites the economy, the natural environment and the settlement as areas of joint assessment. Amber circles represent isolated observations rather than proven transport pathways; actual connections and competencies of specialized services are established separately.

Organization of assessment

1. The owner of the farm, an employee of the natural area or an eyewitness transmits the location, time and description of the observation via an established channel. For the sake of clarifying the message, he does not independently come into contact with suspicious material.
2. The competent veterinary, phytosanitary or environmental authority evaluates the signal. It appoints a person in charge and determines the appropriate professional method for further verification.
3. The medical coordinator assesses the possible exposure of people. If necessary, workers and residents are provided with assistance and observation routes.

4. The Business Relations Coordinator verifies records related to the event regarding animals, products, feed, water, workers and transport. He highlights connections for testing and marks remaining gaps.
5. The authorized manager will agree on temporary measures and provisions. He sets out the boundaries of the restriction, the conditions for the care of the animals, the support for the people and the basis for the review.

Measures with consequences for the living environment

The movement of animals, handling of products and interference in the territory are permitted by the competent authorities after assessment. An unknown signal in itself does not justify mass destruction of animals or damage to habitats. If a special measure is necessary, the professional plan takes into account legality, animal welfare, worker safety and environmental consequences.

While farm operations are limited, animal care, supplies, and worker protection must continue. In the author’s model of the book, these tasks are included in the plan along with a mechanism of organizational and material support that is permissible under local law. Specific grounds and payments are determined by authorized bodies. People are explained where to report a problem and how to get the help provided.

In a case study, residents submit photographs of unusual finds in a natural area. The service clarifies the places, times and sources, after which it organizes a qualified inspection. In a public post, it explains a safe way to report a new sighting. When recording, a distinction is made between independent finds and repeated transfers of the same photograph.

Recovery has several deadlines

Medical, veterinary and environmental tasks may be completed at different times. The absence of new sick people does not answer all questions about the state of the environment. Material found in the environment, in turn, requires an assessment of meaning for people. The criteria relate to the planned use of land, water, products and facilities.

Before resuming activities, specialized services check the necessary conditions and order observation. Individual performers are assigned to care for animals, support workers and restore the farm. Possible impact on people is through P03 · p. 157, work with the source - through P09 · p. 163, approval - through P13 · p. 167, further support through P14 · p. 168.

Part VIII. Authorization, recovery, and learning

Chapters 55–60. How to check the result, correct the failure and remain prepared.

After the first successful actions, a new temptation arises: to call the entire event completed. However, the person may still require assistance, the premises may be suitable for only part of the work, and normal services may remain unavailable. In the last part of the book, each result gets its own question and test.

First, it is necessary to determine what exactly is permitted and on what grounds. Then, prepare a response to the new signal, restore routine services, and test corrections. This ends the individual response and begins the next period of responsibility. Participants should receive a clear record of which tasks are closed, which are ongoing, and who is responsible for them.

55 Authorization for people, facilities, materials, and areas

Navigation: NAV · p. 003 · Contents: OGL · p. 010

What does permission to return to work mean?

authorization is permission to perform a certain action under specified conditions. Can the person return to their job? Is it possible to use the premises again, transfer material or open the area for the chosen activity? In each case, the subject and boundaries of the decision are named. Therefore, medical discharge, cancellation of an individual measure, and closure of an organizational incident may occur at different times.

Before testing, the team determines what result will be sufficient for a decision. Data quality requirements depend on the question they are intended to answer [31]. A negative result is assessed taking into account the suitability of the method, the history of the examination and its limitations. This allows you to understand how much of the rationale it actually supports.

Four separate decisions

Item	Lead responsible	What is the decision based on?
Man	Treatment team and authorized service as appropriate	Condition, need for assistance, associated risk assessment, operating conditions
Premises or equipment	Authorized person for authorization with the owner of the facility, technical service and hazard specialist	Work performed, source and residual impact assessment, serviceability of systems, suitability for stated use
Material	Authorized specialized organization	Identity, history, terms of transfer and limits of acceptable use
Territory or environment	Competent authority with subject matter experts	Sources and pathways of impact, representativeness of data, purpose of the territory

Sometimes one trained participant can perform several roles. Even then, he writes down the reasons for each decision separately. The suitability of ventilation requires technical assessment, the patient's condition requires medical assessment. Combining responsibilities does not transform one type of professional conclusion into another.



Figure 36. Four independent clearances
The authorization of a person, premises or equipment, material and territory is issued on its own grounds. For each, the responsible person, permitted use, restrictions and revisions are indicated; one decision does not replace the others.

How authorization decisions are made

The task owner describes the action to be resolved and collects the necessary evidence. The check person responsible transmits the results along with restrictions and deviations from the plan. The inspector compares them with pre-established criteria and sorts out contradictions; the degree of its independence must correspond to the significance of the decision. The authorized person then specifies the permitted use, conditions, review period or event, and who is responsible for monitoring.

The result may be authorization within the stated limits, authorization with conditions, retention of the limitation, or recognition of insufficient data. In the latter case, the manager determines the temporary order and method of obtaining the missing information. He simultaneously checks the assistance, the basic needs of the people and the proportionality of the measure. These conditions are part of the ethical rationale for the restrictions [12].

Tutorial R1: How to complete two different checks

At the Sfera station, an independent check clarified the malfunction of the measurement channel. The team returns to the question of the work compartment: can the specified operation be performed there if the systems state is confirmed? The medical officer continues to evaluate the crew member who reported feeling unwell. These questions have different bases and may receive answers at different times.

One suggestion is to remove all associated restrictions after explaining the signal. Another is to save them until the medical evaluation is fully completed. Both proposals link the two objectives too broadly. The commander asks the specialists to indicate what information confirms or limits the proposed work in the compartment. If all the conditions for the specific use of the compartment are confirmed, including the necessary technical conditions and an assessment of the possible impact, the corresponding permit can be issued separately. Medical observation of the person continues for its own reasons.

The clearance record identifies the operation, the test results used, any remaining restrictions, and the person responsible for surveillance. If only the equipment check conditions are confirmed, the entry does not automatically allow the entire scientific program to resume. If there is insufficient information, the manager indicates the permissible temporary activity and the issue that must be resolved next.

Completion is reported to each recipient for their task. The crew receives clear instructions about access and operation. Ground medical team - information about ongoing assistance to the person. The next shift sees which basis has changed and why. In this case, the book does not require a final explanation of all events by one cause: it requires a reasonable conclusion to each decision, preserving the remaining responsibilities.

The same logic works in a hospital or warehouse. The inspected premises may remain unsuitable for previous activities due to lack of water or personnel. Then the permission is limited to secured use. The question “can I open it?” it becomes more precise when it is added: for what work, for whom and under what conditions.

How to report results

The permission message explains what is allowed, from when and under what conditions. It identifies the person responsible for the issues and lists the remaining restrictions. If the decision concerns one area or operation, this should be clear to a person who reads only the message without opening the entire package of documents.

Along with the decision, signs for re-evaluation are transmitted: a new disease, a change in data, a system failure or a detected error. The operations service confirms that it has accepted the observation. P13 · p. 167 issues a specific permit, P14 · p. 168 -

subsequent period. Until the person responsible is appointed after opening and has confirmed the task, the transfer remains incomplete.

56 Repeated event after measures are removed

Navigation: NAV · p. 003 · Contents: OGL · p. 010

How to understand the meaning of a new signal

After discovery, a new disease, research result, or technical deviation may appear. The cause may be the same or independent: a preserved source, a new introduction, an unaccounted path of influence, a change in a person’s condition, a method error or an event of a different nature. The team checks the versions against the relevant data. Repetition itself does not explain which previous decision required change.

The duty officer first determines the urgent task: helping a person by P02 · p. 156 or checking the protective function according to P04 · p. 158. The reasons are being clarified in parallel according to P06 · p. 160. The incident number can be clarified later; it should not delay the necessary action. When the cause is unknown, competing infectious and noninfectious explanations remain [2].

Comparison with previous decision

The attendant associates the new signal with the previous event, maintaining its own time and source. The permitting officer raises the rationale: what was permitted, for what use, and with what restrictions. Experts check which initial condition has changed, is no longer met, or has not been sufficiently studied.

The team compares the actual work with the authorization conditions. Have the regime and load changed, have new dependencies appeared? The doctor separately evaluates the patient's condition, new influences, other possible causes and undesirable effects of treatment. The engineer checks the serviceability, maintenance and reliability of the technical signal.

The temporary measure is related to the likely route of harm and the available data. The size of the previous event does not automatically determine the size of the new response. If a manager imposes a broad restriction, he indicates the basis, the provision of people and the nearest revision.

Checking the decision without hiding the error

The discovered error of the previous conclusion is directly reflected in the journal and reported to the participants whose actions depended on it. The old version is retained, and the current decision is corrected. The explanation distinguishes between an error in the initial data, an incorrect application of the method, a violation of the work order, and a change in conditions after a reasoned decision.

In the training example, the signal was repeated after the section was opened. The test showed that the actual load differs from that for which suitability was confirmed. The team clarifies the authorization range and technical conditions. The previous result still makes sense for the tested mode, but does not automatically answer the question about the new one.

In the analysis of R5, some of the city messages turned out to be repeated forwarding. If a similar message appears after updating the summary, it is important for the reviewer to maintain the possibility of two explanations: this is another old record or a new independent observation. The same wording is not enough to make a choice. He clarifies the source and time, and the person's medical need is assessed regardless of which record the call is assigned to.

If it is an old message, the analyst corrects the recordkeeping and provides a link to the original entry. If the observation is new, the team determines whether it changes the rationale for the current measure. This order protects both from re-counting and from missing a new event. In both cases, a record of the check performed is left, which can be understood by the next participant.

When the consequences are significant or the team is too attached to its previous conclusion, an independent reviewer is brought in to review. He needs background data and an opportunity to express disagreement. The appointment of another commission is useful only together with the conditions for such verification.

Closing the repeated review cycle

After re-evaluation, the team writes down the working explanation, modified decisions, and who is responsible for the next tasks. If new information does not change the authorization, it maintains the basis for that conclusion. If the question remains open, indicates what information can change the action and who should receive it.

The detected gap is transferred to the analysis of chapter 58 and checked by studying the chapter 59. The fix must address the cause found. Additional coordination is only meaningful if it helps identify or close the gap and does not unduly delay assistance.

57 Restoring aid, infrastructure and livelihoods

Navigation: NAV · p. 003 · Contents: OGL · p. 010

How to prepare the return of regular services

Routine medical care, water, food, training, transportation, and access to needed support must be maintained during the response. The Health EDRM framework links recovery to the provisioning and resilience of systems [37]. In the author’s model of the book, recovery is assigned a leader, resources, and verifiable results before other areas are completed.

People may still have needs after the administrative incident has ended: continued treatment, assistance with mobility, care, support after losing a job, or fear of returning. The plan also includes those who did not have a confirmed disease, but lost access to a necessary service.

Priority based on need and dependency

The coordinator finds out for whom and what kind of break now creates the greatest harm. The medical service identifies missed care and the need to continue treatment. Engineers check the infrastructure. Social and community services clarify needs for

care, housing, communication and access to identified support. From this information, the recovery order is formed.

Before a service opens, staff, supplies, equipment and the route by which people will be able to use it are checked. Provide treatment in case of complications. If the workload increases significantly, the previous assessment of suitability is revised: working with a small group does not yet confirm the ability to serve everyone.

The owner of each task specifies a dependency on another service. For example, a person will be able to get an appointment only after transport is restored; Continued treatment may depend on the supply and storage conditions of the drug. The coordinator links these tasks and checks the transfer between organizations.



Figure 37. Returning services to everyday life

Medical care, food supply, transportation and water supply are shown through accessibility for different people. Recovery requires ongoing services and support for daily tasks; the opening of a building does not in itself confirm that restoration has been completed.

In Figure 37, trace the path of the service to a specific person. The machine must deliver food to the desired address; an open aid station must be accessible to the visitor; a working network - to provide the required object. The image suggests checking the end link. It is there that it often becomes noticeable that the formally completed work has not yet given the expected result.

Medical and social continuation

The duration of observation and the content of rehabilitation are determined according to the needs of the person. WHO considers rehabilitation as part of healthcare; its

inclusion in the plan requires an available service and task transfer [34]. This transition is discussed in detail in chapter 30.

The person receives a clear plan for continued assistance: who to contact, how to sign up, what documents are needed, and what to do if things worsen. The team checks to see if he can take advantage of this plan. When faced with obstacles due to distance, language, disability or expense, it identifies the problem and looks for a feasible option within the available system.

Training analysis of R3 and R4: How to check the recovery

In the district hospital from the analysis R3, the load of the new event decreases. The manager can release some of the temporarily allocated resources. Before returning to the previous schedule, the coordinator finds out what routine care has been delayed, which staff are still overworked and who needs continued treatment. The available space in the schedule must meet a specific unmet need.

The two possible orders appear equally complete at the report level. The first returns all units to their previous mode on the selected date. The second compares the priority with actual needs and dependencies. If transportation is not available for some patients, booking an appointment without addressing this issue will not complete their journey. The coordinator links medical and transportation services and obtains confirmation of an available option for those who need help earlier.

In Kedrovoye, the settlement in case study R4, transportation has resumed. This allows you to deliver support, but you still need to confirm the acceptance of the cargo and transfer to people. The local coordinator reviews routine medications and care, and the health worker reviews outstanding care pathways. Weather conditions no longer block the path, but the possible lack of a person to carry the necessary items home remains a challenge in its own right.

To complete the transfer, both teams draw up a short list of remaining commitments. The permanent service accepts each of them along with the resource, contact and revision condition. If there is no recipient, the task remains in current management. The end date of the special regime does not erase it from the log.

The results are checked for separate groups of people. The average availability of a service may appear good until those who need assistance use it. Therefore, the coordinator clarifies whether the help has reached the recipient and what obstacle remains. This question connects restoration to everyday life, not just the execution of a repair or organizational plan.

Metrics and transfer completion

Recovery is measured by access to critical services, remaining needs, resilience of supply, and ability to respond to a new signal. The number of completed jobs is used in conjunction with checking the result for people. The data is divided into the necessary groups so that the overall indicator does not hide those who are still denied access.

The emergency team transfers responsibilities to permanent services with confirmation of resources, responsibilities and review. Unfulfilled obligations remain until they are transferred or completed. Residents are explained what services are available, what

else is limited and where to go. Clarity, timeliness and recognition of uncertainty are included in the principles of risk communication [13].

58 Analysis of the incident and verification of corrections

Navigation: NAV · p. 003 · Contents: OGL · p. 010

Purpose of analysis

Analysis helps to understand the course of the event and select corrections. The team determines which decisions helped, where the plan diverged from execution, and what will reduce the likelihood of recurrence. The WHO post-event debriefing guide suggests participatory structured training [17]. The necessary legal investigations, medical examination and technical examination are carried out on their own grounds.

Observations are retained during the response, if this does not interfere with assistance. Performers, managers and host organizations participate in the analysis; involve affected people if necessary. For discussion, information is provided in the amount appropriate to the task. Personal health information is not made public simply because a general meeting is held.

Restoring the painting

The coordinator restores the sequence: message, transmission, decision, action, confirmation and result. Those responsible provide the original records and explain what was known at the time of selection. Information obtained later helps verify the decision. However, they cannot retroactively be made available to the participant from the outset.

When analyzing a deviation, the team finds out whether the required step was foreseen and understood by the person responsible, whether he had enough authority and resources, and whether there was confirmation of completion. If the step is completed, check why it did not produce the expected result. These questions help distinguish between planning failure, lack of preparation, lack of provision, and misattribution of the hazard.

Human action is considered together with working conditions. Liability for willful misconduct remains, but the term “human error” does not explain unavailable communications, incompatible equipment, or unclear authority. The corrective plan must address the identified cause.

Correction Plan

Field	What needs to be explained
Observed gap	What action, condition or result diverged from expectation?
Hypothesized cause	Explanation based on records and evidence
Change	What changes in a process, resource, or authority
Owner and term	Who enforces it and when?
Checking the result	What observable action or result will confirm the correction
Residual constraint	What has not yet been fixed and how it is taken into account

Training analysis R2: Why the old entry remained valid

Let us return to the handover between Sever and Bereg. The container's location was confirmed; the discrepancy arose from an old copy of the log. It would then be easy to do no more than remind the employee to use current documents. But the review must establish why the working arrangements allowed an old copy to be accepted as current and why the discrepancy went undetected during the handover.

The coordinator arranges the recordings in time and asks both parties to reproduce the path available to them. He distinguishes between the time of actual reception, the time the entry was made and the time when the sender was able to see it. Staff explain which source was considered current. Parsing requires precisely these conditions; The latest corrected version by itself no longer shows the cause of the problem.

The team compares the two fixes. The first thing is to resend the instructions. The second is to clarify the source of the current record, identify the outdated copy and secure the confirmation of receipt with the backup contact. Distribution may help familiarization, but without verification it leaves it unclear whether the next participant will be able to distinguish between the versions. The manager selects a change that addresses the identified gap and assigns a review owner.

In a safe exercise, the participant is given a training message about the transmission and the unavailability of the main source. The observer checks to see if the user has found the latest information, received confirmation via the backup path, and saved any unfinished questions. If a person again stops at the old copy, the correction point remains open. It is closed after demonstrating the desired action under conditions similar to the detected failure.

The final entry distinguishes between an recordkeeping correction and a decision on the suitability of the container. The first relates to the transfer of information. The second remains with the appointed specialist and is based on its own grounds. This way, the analysis improves the process without replacing professional conclusions with a convenient general phrase “the violation has been eliminated.”

From agreement to proof

Once the plan is approved, an independent reviewer or designated quality officer evaluates its implementation. The critical change must be demonstrated under conditions consistent with the identified failure. If equipment is purchased, they also

check the possibility of its use: a trained operator, consumables and availability at the right time.

When closing the item, record the proof of the result, the date and the remaining restrictions. If correction is delayed, the manager determines a temporary measure and acceptable activities. Open critical tasks are transferred to new management explicitly, along with their consequences.

The results are sent to chapter 59 for verification by teaching and to chapter 60 for updating instructions. The correction is considered implemented after the work has been changed and the result has been confirmed. The report captures the basis for these changes and helps you check what remains to be done.

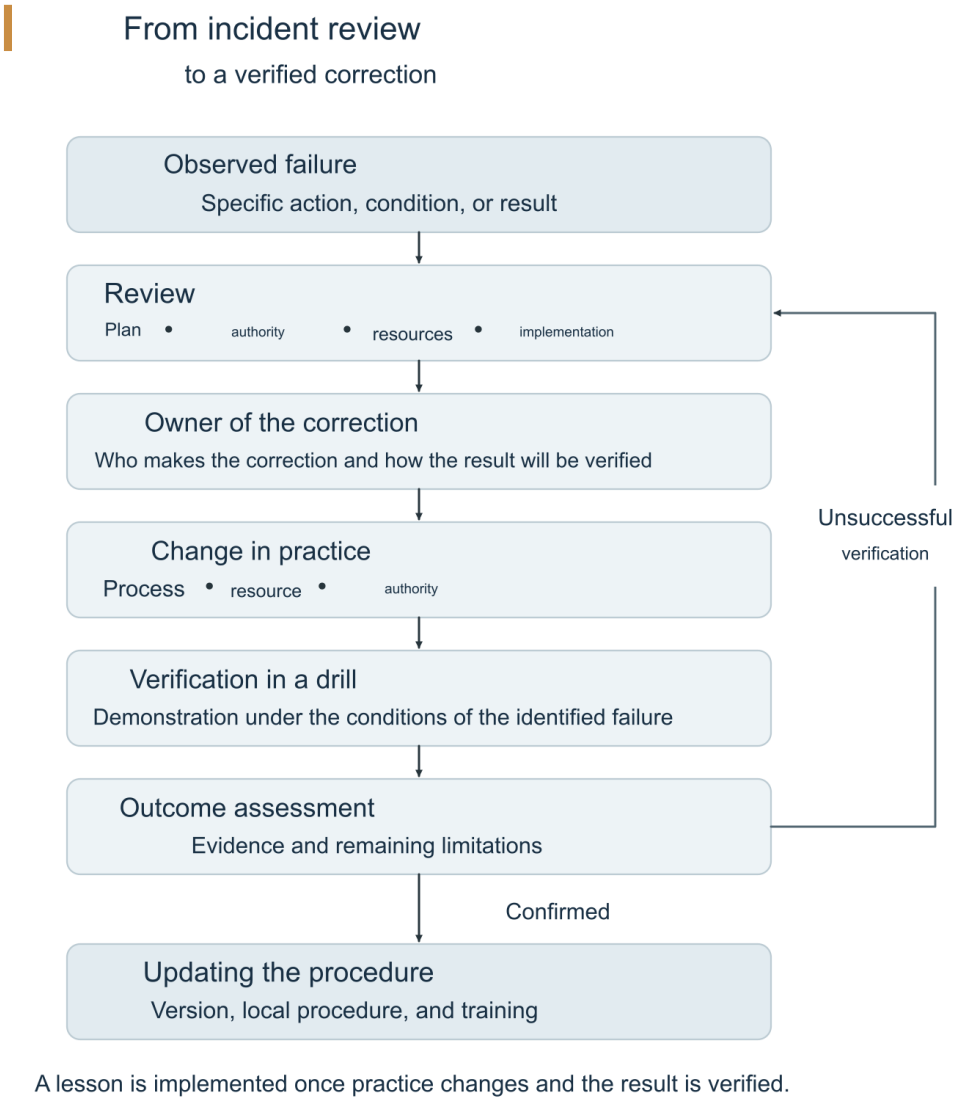


Figure 38. From incident analysis to proven fix

The diagram links the incident review to the owner of the fix, changing the practice, checking the result, and updating the instructions. If the check does not confirm the fix, the issue remains open; The contents combine chapters 58–60.

59 Drills, independent assessment, AI, and automation

Navigation: NAV · p. 003 · Contents: OGL · p. 010

What is tested by teaching?

The exercise shows whether real participants can detect a problem, select a route, complete a task, and transfer responsibility within given constraints. WHO uses simulation exercises to test plans, capabilities and interactions [16]. This book encourages you to test individual cards and the transitions between them using safe learning data, without dangerous material.

The organizer sets the goal and observable criteria. Participants receive initial information, then a new condition: the connection is unavailable, the person's condition has changed, or the receiving service has failed. The observer checks whether participants revised the decision and saved unfinished tasks.

Organization of inspection

The leader ensures a safe training environment and clearly distinguishes between drill messages and real alarms. Observers record actions without prompting and have the right to stop the exercise if there is real danger. Participants use commonly available materials. The person responsible for the plan accepts the results and assigns corrections.

Real constraints are chosen for verification: night shift, replacement of a manager, lack of a digital copy, or shortage of a specific resource. Complexity is added so that the discovered gap can be explained. Failure of all capabilities simultaneously without an available decision says little about which individual barrier needs to be improved.

The observer evaluates action selection, transfer confirmation, retention of assistance, and timely communication of capacity shortages. Urgent tasks take time into account, but check which mandatory actions have been completed during this period. The organization sets goals and indicators for its conditions.

How to check the clarity of the book itself

For a separate exercise, the participant is given a short message from the case R4: there are sick people in the settlement, and the carrier warns about the deterioration of the route. He has access to a book and a local list of contacts. The observer asks to see the first section found and to explain what the participant will do in their role. It is important to hear his own understanding before prompting the card code.

Then they report that the host organization has not yet confirmed readiness. They check whether the participant noticed the incomplete transmission, to whom he sent the question and what he saved in the recording. If he quickly found the page, but understood the sent message as a completed reception, the navigation would only partially work. Corrections may be required by wording, example, or local procedure.

After the exercise, the reader notes unclear words and places where an external explanation was needed. The editor checks them in context and clarifies the text, maintaining accuracy. This analysis allows us to improve the accessibility of the book

based on the observable difficulty, and not on the general impression that “everything is written clearly.”

Place of AI

In the proposed system, AI helps to find a section, compare versions, check the completion of the form and prepare a draft message. For the result, the source, time and responsible person are preserved. The user should be able to open the source document and see what information the system is missing.

Clinical treatment orders, permission to reopen a facility, and technical commands require the appropriate authority and procedures. Before using an automatic system in a critical or controlled function, its suitability and approval conditions are checked. The model described here serves as a proposal for local design; the status of a specific instrument must be confirmed separately.

In the tutorial example, the search returns the desired card from the outdated edition. The participant checks the version, opens the valid source and reports a search defect. The reviewer evaluates the entire path to the applicable document, including the opportunity to notice an error, and not just the coincidence of the card name.

Automation with failure monitoring

Before implementing automation, the team describes the input information, permitted actions and application boundaries. It defines how to notice an error and fall back on a network loss, corrupted record, or inconsistent data. An external message may contain extraneous instructions; they should not change the authority of the system and the procedure for approving the decision.

The project provides for a log, access control, revocation of permitted actions, and work according to verified local instructions in case of failure. The independent reviewer uses data appropriate to the task, including cases with missing information. After a version change, the reviewer rechecks the affected features.

The result of the exercise is transferred to the analysis of the chapter 58: what was accomplished, where the gap occurred and how the correction will be confirmed. The capability of the system is assessed by the required function and the established limits of its operation. The use of AI is captured as part of the design of the process, not as proof of readiness.

60 Updating the book and checking local instructions

Navigation: NAV · p. 003 · Contents: OGL · p. 010

How to maintain current instructions

The book helps link actions, decision bases, and work notes. For practical work, the organization prepares local instructions: names those responsible, contacts, resources, equipment, current clinical guidelines and technical procedures. Then it tests whether real people are able to carry out this order in their own conditions.

Local instructions have a date, version number, sources, and history of significant changes. A permanent code links the card to the desired section when pages change. After layout, links and printed numbers are checked.

Who is responsible for the content

The editor is responsible for definitions, structure, and searching. A peer reviewer reviews the factual basis. The owner of the local instruction confirms the performers and resources, the authorized manager confirms the scope and authority. The training officer checks that participants understand the change and can perform the affected activities.

Medical, engineering, scientific and legal issues require appropriate verification. In case of disagreement, write down the subject of the dispute, positions and the basis for the decision made. The editor may make the explanation shorter, but must preserve the conditions on which the conclusion depends and significant ambiguity.

Events to review

The reason for an update may be new guidance, a changed norm, equipment, team composition or partner, as well as an identified failure, an exercise, or data that change the original assumption. The document owner schedules a periodic review based on the scope and rate of change. Sections may require different review frequencies.

When checking a source, the publisher, current version, purpose, and status of the document are determined. The date of the web page is checked against the date of the manual itself. The WHO recommendation, national requirement and COSPAR policy serve different functions. For international interaction, the IHR and local authorities applicable to the state are checked [14].

If a key source is retracted or the basis is refuted, the editor identifies the affected provisions and issues a notice. Users receive an explanation of the practical change: what to do differently now, from when and who is responsible for the transition. The new full version saves this entry in history.

How to get the local version working

Before implementation, those responsible review roles, resources, clarity of transitions, compatibility of technical procedures, and clinical applicability. The teaching shows the execution and transfer of tasks. In the passport, the instructions retain unresolved restrictions. Readiness status refers to verified actions under specified conditions.

In the case study, the receiving medical center has changed. The editor has updated the contact, but the program manager still needs to confirm suitable assistance, transportation and reception procedures. A test call shows the availability of communication. The readiness of a particular route is confirmed by all associated participants.

How to stay consistent with updates

After the changes, the editor goes through the entire path: situation, card, chapter, working form and backlink. He checks the sources and removes obsolete required

actions from the live version. Previous editions are archived with a clear indication of their status. Paper kits are updated along with digital kits.

Editorial review confirms the text and navigation in its field. The organization separately records professional verification of local activities, teachings and credentials. Such a record allows the next participant to understand what he can rely on and what issue still needs to be resolved. The book maintains a connection from the first message to the confirmed result of a specific task.

At the beginning of an event, the participant often only has access to a fragment of information. Gradually, it turns into a verifiable story: who observed, what decided, what changed and to whom the task was handed over. The completeness of history does not mean that all unknowns have disappeared. It means that the remaining issues are visible and everyone is assigned responsibility.

Therefore, completing a job always turns to the next person. The patient needs a clear route for further assistance, the operational service needs working conditions, and the researcher needs the boundaries of the conclusion reached. When everyone has received the necessary information and confirmed their task, the achieved result can be saved. On this basis, readiness for a new event is built.

Action cards and short scenarios

This section is intended for searching for a specific task. The card names the launch condition, performers, upcoming actions and the next transition. Full explanations and detailed cases are in the chapters; the link in the text leads to the corresponding place.

First signal	P01 · p. 155
urgent help	P02 · p. 156
possible impact	P03 · p. 157
security violation	P04 · p. 158. Clinical route and its revision - P05 · p. 159, P07 · p. 161 and P08 · p. 162. Establishing the cause - P06 · p. 160
eliminating the source	P09 · p. 163
development of the tool	P10 · p. 164.
External support	P11 · p. 165
resource failure	P12 · p. 166
specific authorization	P13 · p. 167
observation and completion	P14 · p. 168. The general organization of the answer is U0 · p. 169. Brief scenarios S1 · p. 171–S7 · p. 177 follow the cards and help take into account the location of the event.

P01 First signal

Full cycle card • project route • NAV · p. 003

When to open. An unusual condition, possible exposure, abnormal reading, or unknown material has been detected. The cause and connection of the observations have not yet been established. One significant event is enough to start checking.

For whom. Eyewitness, duty officer, site manager or commander. Special actions are performed by designated specialists within the limits of training and authority.

Do it now. Communicate the observed facts, verify the need for urgent assistance, and assign the recipient of the next decision.

1. The person who finds it tells the place, time, what exactly happened, who may need help and how to contact him. The facts are separated from the version of the cause. Confirmation: a specific duty officer accepted the message; A shipping mark alone is not enough.
2. The duty officer checks for immediate danger to people. If necessary, starts P02 · p. 156; in the event of a possible violation of protection, it opens P04 · p. 158 in parallel. Confirmation: assistance has been called, and those arriving have been informed of the circumstances of the possible impact.
3. The authorized manager appoints primary roles and a deputy for U0 · p. 169. Related optional activities are suspended where this reduces the intended impact and does not impair rescue. Confirmation: performers understand their tasks and the report channel.
4. The subject matter expert compares the information with the normal state of the object and checks for alternative explanations, including instrument error or a non-biological cause. Independent experiments with the material are not required. Confirmation: a list of confirmed facts, hypotheses and significant gaps has been compiled. [2, 19]
5. The information officer informs affected people of current activities, access to assistance, and when the next update will occur. A ledger records who reviews each open question and when revision is required. [13]

Transition. Possible contact without symptoms - P03 · p. 157; establishing the cause - P06 · p. 160; exceeding local capabilities - P11 · p. 165. When refuting a signal, the manager documents the basis and corrects the public message. The review will not be extended without specifying the unresolved issue and how it will be reviewed.

P02 Urgent care

Full cycle card • project route • NAV · p. 003

Open: heavy breathing, loss of consciousness, convulsions, rapid deterioration after suspected exposure. The list is not exhaustive; doubt about urgency requires contacting a medical service.

Goal: limit additional exposure and begin assistance. This is the author's organizational card; medical actions are carried out according to training and current protocols. [20]

For a person without medical training

1. Eyewitness - assess immediate danger. If the delay is dangerous, first move safely away from the source, then call for help. Do not enter a suspicious area without preparation and protection. Result: actions do not increase the number of victims.
2. Witness - call for help. Report location, number of victims, observed disturbances and possible impact; separate facts from assumptions. Result: The dispatcher understands the medical urgency and danger to the arrivals.
3. Witness - follow the dispatcher and the skills you have learned. Don't wait for the name of the agent for available first aid. Record changes and actions taken. Do not prescribe your own drug regimen; do not collect suspicious material for delivery to the hospital.

For the medical team

Protective measures begin with first contact, along with triage and urgent care. Specifying measures by a specialist does not mean waiting without basic protection. [22, 23]

4. Triage Officer - determine urgency. Use an approved tool. IITT - Interagency Integrated Triage Tool - is intended for institutions; a special mass admission scheme is used when needs exceed normal assistance capacity. [21]
5. Clinical supervisor - organize stabilization. Systematically assess vital signs, perform necessary interventions, and verify response. Assign surveillance performers, signs of urgency, and time for reassessment. [20]
6. The person responsible for protection is to agree on measures. Involve infection control; for probable non-infectious exposure - a toxicologist and a specialist in the relevant hazard. Consider the safety of staff and other patients. [22,23]
7. Doctor - check the sufficiency of capabilities. If necessary, coordinate with the receiving team and transfer while continuing assistance. Communicate the patient's condition, exposure, interventions, and response; obtain explicit confirmation of acceptance of responsibility.

Exit: a responsible doctor, place of care and observation are assigned; the next route is P05 · p. 159. Any deterioration will reactivate P02 · p. 156. Sending a message or transport does not in itself complete the transfer of the patient.

P03 Possible exposure without symptoms

Full cycle card • project route • NAV · p. 003

When to open. There is information about possible contact or a breach of protection, but the person has not yet reported illness. Simply being nearby does not establish exposure or infection.

For whom. Medical Service, Biosafety and Epidemiological Assessment Specialist; the victim participates in the collection of information and coordinated observation.

Do it now. Record the circumstances of the encounter, provide a medical assessment, and establish a clear route to contact if a change in condition occurs.

1. The medical responsible person receives the message and ascertains available information about the time or window of contact, location, protective conditions and current condition. Unknown circumstances are also recorded. Confirmation: the person has received the contact of the responsible service and the next step.
2. The specialized team evaluates plausible impact pathways and the quality of the input data. Contact, contamination of the object and disease are considered separately. Validation: The observation category has a rationale; assumption of origin is not a substitute for risk assessment. [1, 19]
3. A medical specialist determines the need for examination, consultation and other measures, taking into account the specific situation and characteristics of the person. Self-prevention with medications is not included in this card. Confirmation: the treatment order and its review are assigned to a competent specialist.
4. The responsible medical service agrees on the method of observation, signs of urgent treatment and reserve in case of unavailability of communication. The calendar period is established according to the applicable data; There is no single deadline for an unknown threat. Confirmation: a person can explain in his own words where to go if things get worse.
5. The authorized body, if the restriction is justified, determines its purpose and revision; supplies provide essential medications, food and communications. Data is available only to participants who need it for a task. Confirmation: The intervention is feasible and does not replace access to health care. [12]

Transition. New symptoms or worsening - P02 · p. 156 or P05 · p. 159 on urgency; new diagnostic result - P06 · p. 160 and P08 · p. 162. The weakening of a specific measure is considered under P13 · p. 167. Uncertainty requires re-evaluation and consideration of alternatives, rather than an automatic indefinite limitation.

P04 Barrier violation

Full cycle card • project route • NAV · p. 003

When to open. The provided protection is damaged, the reliability of control is lost, or a possible impact beyond the accepted limit is detected. The type of agent may remain unknown.

For whom. Incident Commander, Engineer in Charge, Biosafety or Planetary Protection Specialist, Medical Service.

Do it now. Check people and vital signs; determine which barriers actually work and which transmissions require revision.

1. The discoverer reports the violation and safely terminates the associated optional operation within the scope of its preparation. Acknowledgment: signal received; Personnel do not attempt to independently investigate or eliminate unknown material.
2. The medical officer in charge checks the need for assistance and possible contacts. Urgent cases are sent to P02 · p. 156, possible exposure without symptoms - according to P03 · p. 157. Confirmation: assistance has not been delayed by engineering investigation.
3. The engineer evaluates available operating modes, connections between systems, and resource constraints. Changes in ventilation, power supply or division of compartments are carried out according to the site plan. Confirmation: Human, fire and life safety implications are considered prior to reconfiguration.
4. A specialized specialist clarifies the boundaries of the expected exposure and the transmission history. Confirmation: the work map shows confirmed connections, possible connections and gaps; the administrative boundary is not accepted as a proven physical boundary.
5. The supervisor assigns acceptable routes of assistance and necessary restrictions on unnecessary transfers. For each barrier, the owner, conditions of applicability and verification method are indicated. Confirmation: the receiving party is notified before the scheduled transfer; rescue actions have a separate procedure. [1, 11]
6. The Security Action Officer reviews common security dependencies. Confirmation: A single power, sensor, or communications failure is not misrepresented as multiple independent failures.

Transition. Insufficient resources or communication - P12 · p. 166; going beyond the capabilities of the object - P11 · p. 165; organization of source elimination - P09 · p. 163. The resumption of a specific operation requires a decision under P13 · p. 167. The features of the station are specified according to S1 · p. 171, external work of the apparatus - according to S2 · p. 172, laboratories - according to S4 · p. 174.

P05 Primary clinical management

Full cycle card • project route • NAV · p. 003

Open: urgency assessed; an initial plan is required when the cause of illness or suspected impact is unknown. In an unstable state, P02 · p. 156 operates simultaneously.

Responsible: designated attending physician; in case of multiple teams, a single clinical leader. This is the author's order of organization of decisions, not a universal treatment for an unknown agent.

1. Doctor - identify the leading problems. Describe the impairment, severity and necessary support measures. The name of the suspected pathogen does not replace the description of the condition. Result: a working clinical statement for the entire team.
2. Doctor and nurse - collect background information. Record the dynamics of symptoms, possible contacts, diseases, medications, allergies, age and pregnancy. Indicate the source and reliability of the information; designate missing data as unknown.
3. Doctor - consider alternatives. Assess infectious, toxic and other relevant causes; highlight those that are dangerous to miss. Result: working hypotheses with reasons and questions to test.
4. The doctor and laboratory manager agree on the diagnosis. For the study, identify the question, limitations, accessibility, and outcome-dependent decision. Do not delay necessary urgent assistance; laboratory activities are performed according to separate approved procedures.
5. Physician - select current guidelines. Check syndrome, age, patient characteristics and resources; record the source and version. Empirical therapy should be prescribed according to indications with a plan for review. The unknown does not justify the use of all available remedies. [24,25]
6. The person responsible for protection is to coordinate the placement. For an infection hypothesis, involve an infection control specialist; in case of other danger - an appropriate expert. Determine protection measures and conditions for their revision. [22,23]
7. Doctor - explain the plan to the patient. Discuss goals, uncertainty, and upcoming revisions; check understanding. If necessary, provide transfer or the participation of a representative as required by the rules. The result: a clear, agreed route for help.

Output: signed initial plan, responsible person, observation and evaluation time according to P07 · p. 161. Every significant treatment order has a purpose; unfinished issues are transferred to the next shift. Unproven interventions are identified separately and undergo appropriate clinical, ethical and regulatory review. The word “emergency” does not replace the permitted procedure.

P06 Establishing the nature and cause

Full cycle card • project route • NAV · p. 003

Open: an unusual disease, a group of similar cases, an unexpected analytical signal or a suspicion of a dangerous effect. Assistance and protective measures continue in parallel. This is the author's organizational model based on WHO principles. [1, 2, 19]

Responsibility: the response manager appoints the head of the investigation, clinical, epidemiological and laboratory responsible; attracts subject matter experts. For each decision, an executor and a deputy are determined.

1. Check the signal - the head of the investigation. Compare messages, background and data quality. Result: list of confirmed observations and open questions; urgent action continues.
2. Identify the case - epidemiologist and clinician. Set criteria for time, place, condition and impact. Result: working definition with version; changes are accompanied by an explanation.
3. Compare hypotheses - interdisciplinary team. Consider infectious, toxic, chemical, environmental, and mixed causes. Result: reasons, contradictions and missing data for each version. [2]
4. Approve diagnostic questions - clinical and laboratory supervisors. Indicate which decision depends on the result, the suitability of the method and the safe capabilities of the person responsible. Result: resolved plan with priorities.
5. Compare evidence - the head of the investigation. Integrate clinical, epidemiological, analytical and environmental information. Result: Separate estimates of detection, activity, causal role, and transmission.
6. Update Measures - Response Manager. Assign actions and next review. Result: A record of known facts, uncertainties, and who is responsible.

Stop a particular study if safe conditions are not available, the method is unsuitable, or unreliable data makes the work unsafe or the result is uninterpretable. Significant contradictions require revision of the hypothesis. Help continues; detection does not equal causation; a negative result is limited by the capabilities of the method.

Output: P08 · p. 162 - clinical interpretation and clarification of treatment; P09 · p. 163 - source; P10 · p. 164 is a medical countermeasure. Interim decisions are accompanied by reasons, restrictions and conditions for revocation.

P07 Repeated clinical assessment

Full cycle card • project route • NAV · p. 003

Open: A review has been scheduled, a major intervention has been performed, results have been received, or the condition has changed. In case of urgent danger, P02 · p. 156 is immediately applied.

Responsible: duty or attending physician; the nurse communicates changes in a timely manner. This is the author's documentation procedure. The frequency of monitoring is determined by the condition, treatment, and current recommendations; There is no single interval for all unknown diseases.

1. Nurse and doctor - compare the condition with the initial one. Assess leading disorders, new symptoms, functionality and tolerability of care. Record changes and their duration. The absence of complaints is not a substitute for observation in a person who is unable to fully communicate about the condition.
2. Doctor - check the results of the interventions. Compare the purpose of each significant prescription, the actual response, and possible undesirable effects. Note the lack of expected improvement. Result: continuation of treatment has a clear basis.
3. Doctor - review the working diagnosis. Consider the dynamics, alternative causes, complications and consequences of treatment. In sepsis, re-evaluation and revision of empirical therapy are part of patient management. [24,25]
4. The doctor and diagnostic specialist evaluate the results. Check relevance to the clinical question, limitations of the method, and consistency of the data. A negative result from one test does not exclude any biological hazard. Contradictions require explanation, not selective ignorance.
5. Doctor - check level of care. Assess monitoring capacity, team workload, and availability of necessary interventions. If there is insufficient opportunity to appoint someone responsible for the transfer and agree on the receiving team. The result: the need for more assistance turns into action.
6. The team is to update the plan and explanation to the patient. Communicate what has been established and what remains unknown. Significant changes in treatment should be registered according to P08 · p. 162. Assign the following control and grounds for an immediate unscheduled inspection.

Output: changes, decision, reasons and next control are recorded. When handing over a shift, unfinished research and activities are clearly listed; the receiving employee confirms responsibility. Improvement in condition, readiness for discharge, and cessation of isolation measures are considered separately. Stability is not a reason to automatically cancel all types of surveillance.

P08 Revising treatment in light of new data

Full cycle card • project route • NAV · p. 003

Open: results, diagnosis, condition or recommendations have changed; intolerance has been identified or an unproven intervention is being considered.

Responsible: the attending physician, for a complex decision - a consultation with specialized specialists. This is the author's order of revision; It does not provide a universal drug regimen for an unknown threat.

1. Doctor - formulate a change. Indicate the new information, its reliability, and the decision it affects. Distinguish between patient observation, research hypothesis, and accepted clinical recommendation. Result: clear basis for revision.
2. Doctor and diagnostic specialist - check compliance. Assess whether the result explains the disease pattern and changes the likelihood of causes. Detection of material does not in itself determine treatment. If there are any discrepancies, indicate the necessary clarifications while continuing to provide assistance.
3. Treatment team - review interventions. Choose continuation, modification, narrowing or termination according to indications. Check drug combinations, organ function, comorbidities and tolerability. SSC 2026 provides for review of antimicrobial therapy based on the cause and dynamics of the disease. [24,25]
4. Doctor - determine the status of novelty. Distinguish between standard of care, a clinical trial, and the exceptional use of an unproven intervention outside of a trial. Establish applicable authorization and supervision procedures. Result: experimental status is not hidden by a routine treatment order. [26,27]
5. The doctor and patient agree on the change. Explain expected benefits, significant risks, uncertainties and alternatives. Ensure an appropriate consent process; the patient's inability to participate requires a statutory procedure.
6. Doctor and nurse - assign control. Determine the expected response, signs of harm, reasons for stopping or increasing the intervention, and timing of assessment. Update treatment orders for the entire team; Conflicting treatment orders must be reconciled immediately.

Control boundary: Necessary care continues regardless of study participation. Refusal of research intervention does not deprive you of appropriate assistance. A single improvement is not enough to declare a product a standard: a reliable assessment of benefit and risk is required, preferably comparative, taking into account evidence acceptable for a particular situation. [26,27]

Outcome: a single updated plan that is understandable to the patient and the team; a review has been assigned for P07 · p. 161. The reasons for the decision, the version of the manual used, and any outstanding issues are retained.

P09 Eliminating the source and consequences of contamination

Full cycle card • project route • NAV · p. 003

Open: ongoing hazardous exposure, contamination, or preparation for returning the facility to service. This is the author's recovery management model; specific work is carried out by authorized specialists according to the approved plan. [11, 18, 19, 31]

Responsibility: The response leader appoints the recovery leader. Medical, environmental and engineering experts determine the limits. The authorization authority for operation is called in advance; verification of the result is whenever possible independent of the performers.

1. Identify the problem - recovery manager. Distinguish between source, route of exposure, contaminated environment and resulting damage. Result: diagram of the boundaries of the known and the unknown; questions about the nature of the threat are sent to P06 · p. 160.
2. Set a goal - authorization authority and subject matter experts. Indicate the intended use: residence, work, technical access or other. Result: completion criteria established prior to selection of work method.
3. Check dependencies — engineering and environmental leads. Assess connected rooms, utility systems, equipment, waste, and possible reintroduction of the material. Result: a list of areas and functions for joint review.
4. The recovery manager approves the plan. Compare the suitability of approaches, evidence base, compatibility with the subject and secondary consequences. Result: permitted work, performers, resources, quality control and reasons for stopping.
5. Perform the work by an authorized contractor. Register implementation, deviations and new circumstances. Result: auditable log; the fact of processing does not mean that security has been achieved.
6. Check the result - the verification team and the authorization authority. Assess the quality and limitations of the evidence. Result: permission, refusal or conditional authorization with supervision and grounds for suspension. [31]

Stop work: new uncontrolled source, unusable data, security breach, unintended harm or re-contamination. The decision is returned to the appropriate stage; changes in conditions are communicated to affected people.

Output: The document specifies the object, the use, the criteria met, the uncertainty, and the person responsible for monitoring. To check the authorization, go to P13 · p. 167, for observation and completion - to P14 · p. 168. “Nothing found” without subject, place, time and verification restrictions is not enough.

P10 Developing a medical countermeasure

Full cycle card • project route • NAV · p. 003

Open: Available diagnostic, preventive or treatment options are insufficient or their suitability is unknown. This is the author's model of research decisions; the card does not prescribe an experimental treatment. [26, 28, 29, 30, 32]

Responsibility: the medical director determines the need, the scientific director coordinates the research. The ethics committee, regulator and research organization act within the scope of their authority. The manufacturer is responsible for quality; medical system - for application.

1. Determine the result - the medical director and user representatives. Clarify the problem, population, and significant outcomes. Result: product profile with necessary and desirable characteristics, conditions of availability and application. [29]
2. Evaluate decisions - clinical expert group. Check recommendations and applicability of evidence. Result: informed options and gaps; a known drug is not automatically declared effective against a new threat.
3. Select priorities - scientific expert advice. Compare the reasons for candidates, expected benefits, risks and information content of the study. The result: a transparent rationale for resource allocation.
4. Prepare the basis - an authorized research organization. Obtain the necessary preliminary data and quality documentation under permitted conditions. Result: package for independent review.
5. Review the proposed study — the researcher, ethics committee, and regulator. Check the scientific rationale, consent, participant protection, monitoring, and stopping rules. Result: an authorized, informative protocol or a reasoned refusal. [26]
6. Determine the mode of application - regulator with independent experts. Consider benefits, harms, uncertainty and quality. The result: a decision with a specific purpose, conditions and subsequent obligations. [30, 32]
7. Monitor the application - medical system, manufacturer and regulator. Track results, safety and delivery. Result: updating recommendations, limiting or discontinuing use based on new significant data.

Suspend transition: unacceptable harm, insufficient justification, impossibility of a reliable response, or quality defects. A candidate is not equivalent to an proven treatment; emergency status does not cancel control.

Output: For the remedy, the evidence, the resolved goal, and the unresolved issues are indicated. Current assistance for P05 · p. 159 and source elimination according to P09 · p. 163 continue. The date of availability of the vaccine is not promised in advance.

P11 Event expansion

Full cycle card • project route • NAV · p. 003

When to open. There are plausible connections between several sites or areas, significant external risk is expected, or local capabilities are no longer sufficient. There is no need to wait for a final agent determination to request assistance.

For whom. Incident commander, territorial competent authority, medical and epidemiological services, supply and information officer.

Do it now. Submit a confirmed summary, formulate a specific request, and receive confirmation of task allocation.

1. The local leader describes known events, suspected connections, open tasks, and a resource that limits assistance. Confirmation: The receiving service knows what support is needed, where and for what function.
2. The territorial manager confirms coordination, assigns responsibility and establishes the boundaries of authority. Confirmation: Local rescue and relief efforts continue; conflicting orders are identified and resolved.
3. The epidemiology team agrees on a working case definition and minimum data set. Confirmation: distinguishes between new events, repeated messages, delays in arrivals and changes in recordkeeping rules. At appropriate signals, veterinary and environmental services are activated. [2, 18]
4. Medical management and supply distribute assistance according to actual need and the recipient's ability to use it. Confirmation: The preparedness of receiving facilities, the availability of other urgent health services and the provision of care for affected people are known. [10]
5. The National Authorized Party, where applicable, will arrange for assessment and international notification of the State's version of the IHR. Confirmation: the owner of the notification and further exchange of information is assigned. [14]
6. The information officer publishes agreed actions, access to assistance, and material unknowns. Confirmation: people understand what measures apply to their situation; The public summary does not reveal unnecessary personal information. [13]

Transition. For settlement, S5 · p. 175 is used, cities - S6 · p. 176, countries - S7 · p. 177. Failures of critical functions require P12 · p. 166. Measures are revised by territory and function through P13 · p. 167, since the administrative scale of management does not impose the same risk on all residents.

P12 Control or resource failure

Full cycle card • project route • NAV · p. 003

When to open. The leader is unavailable, communication is lost, the digital system is not working, a critical resource is running out, or rescue requires an urgent change in plan.

For whom. Commander, designated deputy, duty leader, medical and engineering responsible. The powers of autonomous action are established in advance by the local plan.

Do it now. Maintain assistance and vitals, declare active control, and transfer to available reserve.

1. The appointed deputy assumes duties in accordance with the established procedure and communicates this to available participants. Acknowledgment: Every critical task has a known owner. If there is a gap in authority, the competent party is immediately requested; Emergency care continues within the legitimate scope of staff functions.
2. Medical and engineering officials separately determine the immediate threat to people and the state of life support. Confirmation: The available functions, the limiting resource, and the conditions under which further waiting becomes unacceptable are known.
3. The manager suspends unnecessary tasks that consume a scarce resource or require unavailable control. Confirmation: freed up resources are allocated to specific critical functions; decisions do not create the unconfirmed appearance of a threat being contained.
4. The communications manager launches the prepared reserve and checks its functionality. The leading log uses a local record with the time and author of the decision. Confirmation: Available participants receive the same up-to-date summary, and cloud service failure does not stop management.
5. The medical director, together with the command, assesses the need to transfer people or evacuate. Confirmation: the risk of waiting, the route and the readiness of available host assistance are taken into account. The transportation of controversial material is considered separately from the rescue of a person.
6. The restored host confirms further tasks and authority. Confirmation: Accumulated decisions, unknowns and incomplete actions are transferred, and missing information is designated as gaps. [9]

Transition. Urgent assistance - P02 · p. 156; external support - P11 · p. 165; review of broken barriers - P04 · p. 158. After the restoration of resources, restrictions are not lifted automatically: the suitability of a particular regime is checked through P13 · p. 167.

P13 Checking authorization and removing a specific measure

Full cycle card • project route • NAV · p. 003

When to open. It is necessary to allow access, resume work, transfer material, complete special surveillance, revise an event-related measure, or lift a territorial restriction. Completed processing or the absence of new messages does not in itself close the issue.

The current frequency of clinical monitoring is changed by the responsible physician according to P07 · p. 161. Legal assessment is required in applicable cases, especially when limiting rights.

For whom. An authorized person making the relevant decision, specialized medical and engineering specialists, the necessary independent expertise.

Do it now. Name the specific action that is supposed to be allowed and check the sufficiency of the grounds for it.

1. The decision owner defines the subject of the clearance, the people affected, the purpose of the measure being maintained, and their authority. Confirmation: Medical supervision, access to premises and transfer of material are considered separately.
2. The profile group provides information about the source, the actions performed, and the result of the check. Validation: Limitations of methods, quality of observation, and unexplained signals are noted. A negative research result does not allow drawing conclusions about threats that the method is not capable of assessing.
3. An engineer or medical supervisor checks the readiness of the corresponding function for the proposed mode. Confirmation: suitability has been confirmed under the required conditions; the fact of repair, completed course or treatment does not replace the evaluation of the result.
4. The security officer, and if necessary the legal team, consider the consequences of continuing the measure, less restrictive alternatives that are sufficient, and the need for an independent opinion. Confirmation: uncertainty is not used as the sole basis for an infinite limitation. [12, 19]
5. The authorized person records the permitted action, remaining restrictions, residual uncertainty and conditions for re-enforcement. Confirmation: implementers and affected people have received the same decision and know where to report changes in the situation.
6. The designated monitoring service confirms that the intended monitoring is indeed available after a mode change. Confirmation: there is a person responsible, a communication channel and a certain point of revision.

Transition. New impact - P03 · p. 157 or P04 · p. 158; human deterioration - P02 · p. 156; unconfirmed result of source elimination - P09 · p. 163. For follow-up and control closure, P14 · p. 168 is applied. If the decision is postponed, it is indicated what information or conditions are needed for a new consideration and who is responsible for obtaining them.

P14 Monitoring and closure

Full cycle card • project route • NAV · p. 003

When to open. The acute stage has been stabilized, some measures have been lifted, it is necessary to organize the subsequent management of people, restore functions and complete emergency management.

For whom. Medical leadership, incident manager, surveillance, infrastructure and social support. Each party covers only its area of responsibility.

Do it now. Separate results for people, source, community and environment; assign owners to the remaining tasks.

1. The medical team transmits a plan for further care and monitoring, taking into account the condition of each person. Confirmation: the receiving specialist, necessary follow-up calls and signs of urgent return for help are known. The periods are determined by the clinical situation, and not by a single period for an unknown disease.
2. The Source and Infrastructure Owner lists the authorizations granted and the restrictions that remain. Confirmation: The suitability of premises, equipment, water or materials is not automatically inferred from the recovery of individuals.
3. The territorial surveillance service determines the further collection of essential information and the route for checking new signals. Confirmation: control has resources and clear boundaries; the absence of communication is not taken as the absence of events.
4. Social and health services are assessing remaining needs, including access to routine treatment, rehabilitation and vital supplies. Confirmation: unresolved consequences have been received by the implementers and recourse options are available to affected people.
5. The authorized leader documents the end of the emergency regime and transfer to permanent services. Confirmation: recipients accepted tasks; the cessation of the headquarters does not mean the cessation of necessary assistance or supervision.
6. The designated debriefing organizer analyzes the initial readiness, information available at the time of decisions, actual actions and consequences. Fixes receive an owner, resource, due date, and progress check. Updated cards are delivered to points of use. [17]

Transition. New deterioration of a person - P02 · p. 156 or P07 · p. 161; new signal in the environment - P01 · p. 155 and P06 · p. 160; violation of the established authorization - P13 · p. 167. Reactivation of the response is provided in advance. The public summary message separates completed tasks, remaining limitations, and questions for which research is ongoing.

U0 General protocol

Trigger condition. Reliable reporting of a possible hazardous exposure, barrier failure, unusual illness with a plausible relationship of events, or significant environmental deviation. One serious incident may be sufficient reason; waiting for a few sick people is not necessary.

Goal. Provide assistance, prevent expansion of impact and establish a controlled review of what is happening. Suspicion is not declared to confirm the origin or mechanism of the threat.

Sequence of decisions

1. The person who finds it reports a signal. Conveys the place, time, observed fact, immediate danger to people and an accessible method of feedback. Non-essential activities with the suspected source are stopped if it can be done safely. Result: the signal was received by a specific person on duty, and not just sent.
2. The duty officer will arrange immediate assistance. In the event of a threat to life, initiates the standard emergency procedure and calls the appropriate service. Warns arrivals of possible exposure. Result: the request for assistance was accepted, a route that was safe under the existing conditions was determined. Verification of origin does not delay assistance.
3. The authorized manager takes control. Appoints medical, engineering and specialized responsible persons, a deputy and a journal keeper. Result: participants know the leader, the boundaries of their tasks and a backup communication channel.
4. An engineer assesses the condition of the object. Verifies vital functions and intended safety systems against available documentation. Configuration changes are performed only within the limits of preparation and staffing plan. Result: working systems, failures and limiting resource are known.
5. The specialized team builds a preliminary impact map. Notes confirmed and possible contacts, availability of information, alternative causes and boundaries of the unknown. Result: a working model with explicitly specified confidence. The verification begins based on available data, without independently opening the unknown material.
6. The manager chooses temporary measures. For each measure, records the purpose, basis, person responsible, required resources, action limit and revision condition. Result: decisions made can be implemented and verified. Restriction of access to the facility, medical isolation and monitoring of possible exposure are formalized separately.
7. The person responsible for external interaction receives assistance. Notifies the competent authorities under the current plan; transmits a specific request for resources or expertise and receives confirmation. Result: the receiving party, the amount of assistance and the terms of the transfer are known. If local capabilities are exceeded, this action is performed immediately, in parallel with the others.

8. Supply ensures decisions are implemented. Organizes water, food, necessary medications, communications, transportation and shifts. The medical group maintains access to other urgent care. Result: protective measures do not leave people without the necessary living conditions.
9. The information officer issues a message. Indicates knowns, unknowns, required actions, access to help, and next update time. Result: people understand what to do now and where to go. The format is consistent with the principles of crisis communication; When a recommendation changes, the reason is explained. [13]
10. The manager conducts a review. Receives an updated assessment of harm, status of barriers, resources, and collateral consequences. Fixes a decision to strengthen, change, maintain or weaken measures. Result: every effective measure has a current basis and a next point of verification.
11. The authorized body ends the regime. Determines what actions are allowed, what restrictions remain in place, who monitors residual risk, and what signals will trigger the response again. Result: recovery, follow-up and review with corrections are completed.

The help, object evaluation and notification steps can run in parallel. The transfer of people or materials depends on the readiness of the receiving party, except for direct rescue actions, the procedure for which is provided separately. Neither logging nor waiting for a staff meeting should delay emergency care.

Brief Card Information

The first page of the local instructions contains the launch, first actions, leader and deputy, medical contact, conditions for stopping the operation and reserve without communication. The following pages contain the basis for decisions, resources, submission forms, and recovery criteria. The length of the first card is tested during exercises: a person must find the desired action in conditions of fatigue.

An atlas of brief scenarios

The scenarios complement P01–P14 and U0 · p. 169 local restrictions. Medical, engineering, and laboratory activities are performed by trained professionals following approved facility procedures.

S1 Orbital station

Launch. Possible material retention failure, associated unusual symptoms, or reasonable contamination signal. The orbit itself does not prove extraterrestrial origin.

The main conflict. The separation of modules can affect air, water, energy, medical care and rescue; the crew and station are assessed jointly.

1. The commander receives the signal, suspends associated non-essential activities, and assigns roles. Result: the available crew knows the mode and channel of the report.
2. The flight medical specialist evaluates urgency, infectious, chemical and engineering causes; If available, consults with the ground medical team. Result: options for assistance have been identified.
3. The life support engineer checks the connections of life systems and the normal modes that preserve habitability. Result: The impact of barriers on people and resources is assessed.
4. The person responsible for the safety of biological work draws up a contact map of people, equipment, cargo and systems. Result: established, probable and unknown connections are separated.
5. The commander justifies restrictions on unnecessary movements. Result: everyone is taken into account, medical routes and rescue exceptions are determined.
6. The ground flight director reviews connections, cargo and support. Result: Receiving teams are made aware of the risk and challenges; rescue docking is separated from unloading.
7. The medical director suggests assistance or evacuation; the command checks feasibility. Result: transportation and receiving medical care are coordinated during evacuation. If the onboard capabilities are exceeded, it is planned taking into account the mission. [6]
8. When communications are lost, the commander or designated deputy uses previously delegated authority. Result: local log is preserved, critical decisions are autonomous; the report is transmitted after communication is restored.

Escalation. New impact outside the border, deterioration of people, unreliable control or resource shortages require a review of the regime and rescue.

Recovery. Medical and engineering managers justify each renewed action. The absence of symptoms does not permit the transfer of loads; people and materials are assessed separately.

Needed in advance. Life support map, deputy, communication reserve, medical routes and autonomy limits.

S2 A lander on a planet or comet

Launch. Unexpected contact with material, damage to the protective barrier of external equipment, or symptoms following possible exposure. The initial conditions for the Moon, Mars, a comet and an icy world are different.

The main conflict. The return of a person to the habitable volume may carry external material; delay in rescue can directly threaten life. This conflict must be resolved before the expedition.

1. The external operations manager stops unnecessary research and initiates routine actions to preserve the lives of the crew. Confirmation: people are accounted for, communication status and available resources are known.
2. The commander of the vehicle organizes assistance and safe completion of the exit according to a predetermined scenario. Confirmation: Rescue efforts are not delayed to preserve scientific material.
3. The designated planetary protection officer records contact points, affected items, possible disruptions, and subsequent transfers. Confirmation: sufficient history has been saved to review future operations.
4. An engineer and a medical specialist, each in their own field, evaluate the condition of equipment and people. Confirmation: Device damage, environmental influence and possible biological cause are distinguished.
5. The commander suspends unnecessary research and transfers of controversial material to residential areas or other devices. Confirmation: the next transfer has a responsible person and justification; Emergency movement of a person is regulated by a medical and rescue plan.
6. The head of the mission organizes the assessment of the following stages: continuation of stay, flight, connection, return and reception. Confirmation: inventory, available routes and connectivity have been taken into account; the status of the material is not accepted as the status of the entire crew.
7. An independent expert panel, when available, reviews the basis for reopening. Confirmation: decisions and remaining unknowns are recorded. For an autonomous expedition, a replacement procedure is determined in advance.

Escalation. Repeated contact, loss of transmission history, damage to containment systems, new casualties or threat to life support.

Recovery. It is justified separately for scientific work, equipment movement and crew movement. The universal calendar period does not replace such an assessment.

Needed in advance. Disturbed exit scenarios, the role of planetary protections, controlled material sites, autonomous powers and agreed upon reception conditions. COSPAR provisions for manned Mars include specific preparations for possible contact and assigned responsibilities. Their extension to other bodies requires a separate justification. [4]

S3 An object landed or fell to Earth

Launch. Planned return of materials with special conditions, violation of the landing plan, or detection of an unknown object. The danger of these events is assessed separately.

Planned return

1. The mission operator confirms in advance the readiness of the landing, the receiving organization, the medical service and those responsible for the materials. Each side confirms its task.
2. The ground operations manager reviews evidence of the condition of the containment systems and deviations from plan. The decision to continue or change the operation is documented.
3. The medical director organizes the reception of the crew; the person responsible for the materials separately coordinates the transfer of cargo. The readiness of each direction is confirmed independently.
4. The competent approval authority allows the next stage of handling of the material after a specialized and independent assessment, indicating the remaining restrictions. Related NASA requirements apply to limited sample return on robotic missions. [5]

Unplanned event

1. The eyewitness maintains a distance, reports the place and circumstances; does not touch, open or transport the object independently. In the event of injury or threat to life, calls for emergency assistance and follows the dispatcher's instructions.
2. The responding supervisor assesses credible threats, including fire, debris, fuel, and toxic substances. Rescue and access restrictions are appropriate to the situation.
3. The medical service transmits the circumstances of the impact to the receiving institution and organizes assistance. Readiness for reception is confirmed; the suspicion is not declared to be an established infection.
4. The specialty team determines further evaluation and services needed. The authority to act with the object and the requirements for the next stage are recorded. Eyewitnesses do not collect samples.
5. The information officer explains access boundaries, public actions, and communication channels, separating facts from origins.

Escalation. Reasonable exposure beyond the current boundary, unknown movements of items, impossibility of safe reception or exceeding the capacity of services.

Recovery. Restrictions on access, movement of objects and medical supervision are lifted separately. Cosmic origin in itself does not prove an infectious danger.

Needed in advance. Coordination of the operator, emergency services, healthcare and the receiving organization; emergency landing options and contacts outside of working hours.

S4 Possible laboratory leak

Launch. Reporting possible exposure, loss of retention, erroneous transfer of material, or associated illness. The initiation of the defense does not depend on proof of the artificial origin of the agent.

1. The employee who discovers it reports via the emergency channel and acts according to the approved instructions of the laboratory. Confirmation: the duty officer accepted the message; the employee does not undertake independent research of the material.
2. The incident manager stops associated non-essential activities and controls access. Confirmation: affected operations are identified and access for competent assistance is maintained.
3. The medical staff assesses possible exposure and the care needed, even if symptoms are not yet present. Confirmation: Every known possible contact has received a medical assessment or an agreed route.
4. The engineer checks the condition of the protective systems according to the emergency plan. Confirmation: the current mode is not changed arbitrarily; actual failures have been identified.
5. The biosecurity specialist collects available records of the incident, transfers, and possible routes out of the facility. Confirmation: the original data is preserved and confirmed facts and assumptions are separately indicated.
6. The institution's authorized representative notifies external authorities of the applicable requirements and risk request. Confirmation: message received, external connection assigned. An institution's conflict of interest is reflected when an independent assessment is ordered.
7. The area assessment manager determines whether measures outside the laboratory are needed. Confirmation: Decisions for neighboring areas are based on potential impacts and resources, not just the name of the laboratory.
8. A trained specialized team carries out permitted work to eliminate the consequences within the framework of its clearance. Confirmation: the result is verified by a competent person; the list of necessary technical procedures is determined locally.

Escalation. Possible overrun, loss of transmission control, unknown number of contacts, or insufficient local resources.

Recovery. The cause of the failure has been eliminated or reliably limited, barriers have been checked, medical supervision has been organized, and the conditions of authorization have been approved by the competent party. Resumption of work is not resolved by simply reporting no symptoms.

Needed in advance. Instructions for reporting exposure, external contacts, independent verification, accessible medicine and secure logs. Local risk assessment and applicable biosafety and biosecurity guidelines are used for implementation. [1, 7]

S5 Village or isolated settlement

Launch. Unusual associated illnesses, suspected common source of concern, known exposure, or reported spread from a neighboring area.

1. The local duty officer or administration contacts the district medical and emergency service, appoints a coordinator and a deputy. Confirmation: a response has been received and tasks have been agreed upon before the arrival of specialists.
2. The medical responsible organizes an accessible way to contact and refer patients. Acknowledgment: Residents are not required to gather in one line to simply report symptoms; emergency assistance remains available.
3. The area focus group reviews the operational case definition, shared resources, and connections between events. Confirmation: water, food, contacts, animals and external travel are considered on a case-by-case basis, without automatically selecting one version.
4. Utilities assess the condition of the relevant infrastructure and prepare replacements if there are reasonable restrictions on its use. Confirmation: A ban on a specific water source is accompanied by the provision of a safe alternative.
5. The supply manager organizes the necessary medicines, food, assistance to people with limited mobility and communication with those who do not have the Internet. Confirmation: Addresses are assigned and deliveries are confirmed.
6. The authorized sanitary authority determines measures for specific groups and places. Confirmation: each measure has a basis, a review period and a route of assistance; the administrative boundary of the settlement is not automatically accepted as the impact boundary.
7. The coordinator maintains a short summary of resources and outstanding tasks, requesting assistance before critical functions are lost. Confirmation: The district has received the request and has assigned someone to handle it.

Escalation. Local medicine is overloaded, supplies are disrupted, there are related events outside the settlement or a significant veterinary or environmental signal.

Recovery. Source-specific risks are reviewed, help is available, surveillance actually works, restrictions are lifted in a targeted manner while feedback is maintained.

Needed in advance. Backup communications, transportation, list of residents with special needs while maintaining confidentiality and outside supply arrangements.

S6 City

Launch. Multiple connected sites, suspected exposure through shared infrastructure, strain on the medical network, or insufficient capacity in one area.

1. The authorized city manager creates a unified department with medical, engineering, logistics and information areas. Confirmation: the powers of the city and region have been agreed upon, and duplicate orders have been eliminated.
2. The epidemiological assessment manager agrees on case definitions and data transfer formats between sites. Confirmation: omissions, delays and changes in recordkeeping rules are known.
3. The city’s medical director distributes the flow of patients and the necessary resources, taking into account assistance for other diseases. Confirmation: Host institutions confirm their actual readiness.
4. Infrastructure managers assess affected networks and the impact of anticipated restrictions. Validation: Transport, water and energy changes do not create an untested failure cascade.
5. The specialized team maps likely connections between objects and determines which signals require verification. Confirmation: The map shows the quality of the data, and the absence of messages does not automatically mean there is no problem.
6. Authorities select measures taking into account the exposure route, burden and available alternatives. Confirmation: The purpose of each measure, the people affected and the next review date are published in a clear manner.
7. Supply and social services are supporting people with restrictions and critical staff. Confirmation: Medicines, food, housing if needed, shifts and transportation for vital functions are available.
8. The incident commander regularly reviews distribution, medical status, supply, and harm measures simultaneously. Validate: Decisions are based on the big picture, not just one convenient metric.

Escalation. Exceeding city capacity, multiple independent hotspots, proven cross-regional connections, or deterioration of critical services.

Recovery. Measures are canceled by objects and functions with control of return signals; hospitals and public utilities confirm that normal operations are possible.

Needed in advance. Unified information exchange system, reserve without digital communication, interhospital agreements, reserves and municipal assistance channels. Applicable preparedness areas are covered by the CDC's Public Health Capability Framework. [10]

S7 A country and international spread

Launch. Interregional connections, significant excess of local capacity, potential international spread, or an event with severe consequences and high uncertainty.

1. The national competent authority establishes the coordination structure and distribution of powers of the regions. Confirmation: local decisions do not stop awaiting every order from the center.
2. The national medical and epidemiological group agrees on definitions, minimum data sets and update procedures. Confirmation: The summary separates real situation changes from recordkeeping changes.
3. The Mutual Aid Coordinator directs resources to legitimate needs and uses. Confirmation: The recipient has confirmed not only delivery, but also the ability to use the resource.
4. The National IHR Focal Point will organize the assessment and necessary international notification of the applicable version of the rules. The general mechanism of Article 6 provides for notification to WHO within 24 hours of appropriate assessment of the event; This is not the time from the first symptom. The applicability of the amendments is checked for a specific state. [14]
5. Authorized transport and health authorities coordinate the reception of people, vehicles and materials at suitable points. Confirmation: Border decisions are related to the specific purpose of protection and the possibility of assistance, taking into account applicable law and necessary supplies.
6. Authorities with legal authority establish restrictions and review procedures. The legal and ethics team reviews necessity, proportionality, support for affected people and data protection. Validation: The grounds are verifiable and excessive measures can be challenged. [12]
7. National scientific coordination organizes the testing of competing explanations and the exchange of necessary data with relevant partners. Confirmation: uncertainty is clearly shown; Rapid response does not wait for the origin investigation to be completed.
8. The government and the competent authorities adopt a recovery plan with the participation of the regions and an independent assessment. Confirmation: emergency management has termination conditions, and the accumulated damage to the health and supply system receives those responsible for correction.

Escalation. Cross-border connections, lack of national resources, critical disruptions, significant environmental impacts, or new data that changes the assessment of the mechanism of harm.

Recovery. The national regime may not end simultaneously in different regions. International exchanges continue to the extent necessary to assess residual risk and comply with applicable responsibilities.

Needed in advance. Legal basis, distribution of powers, MSME contacts, mutual assistance mechanisms, inventory control and public reporting. The book does not create supranational power and does not replace existing laws.

Completed examples of work forms

One training case, R2, is examined below. The organization Sever sent a sealed container to the organization Bereg. The sender saw the dispatch entry but could not find confirmation of receipt. The recipient later confirmed the shipment's location; an old copy of the log caused the discrepancy. Neither a breach of the casing nor exposure of people has been established in the initial situation.

The entries show how to separate facts from assumptions and not extend the conclusion beyond the test. In real work, the organization uses its own identifiers, dates, signatures and secure channels. In the example, time is indicated in stages so that the case does not set universal response times.

Example of Form B: the first decision

Event and moment of recording. R2, first message about record mismatch. The journal manager opens a separate record and saves both received versions of the documents.

Observable facts. The entry available to the sender contains a shipping mark. There is no recipient confirmation in this copy. The actual location of the container and the receiving person in charge have not yet been confirmed.

Working explanations. The reception could take place without the timely transmission of the recording; the cargo could be delayed on the way; the sender may have opened an outdated copy. No version has been accepted as installed yet.

The decision and its purpose. The Transfer Coordinator contacts the designated recipient through an approved channel and requests confirmation of location, responsibility, and current record. Until agreement, the parties do not begin the next movement of cargo according to an unconfirmed entry.

People responsible. The Sever coordinator handles the inquiry. The duty recipient at Bereg checks the information on the receiving side. The log keeper preserves the replies and their receipt times. The manager resolves the conflict if the parties provide incompatible information.

Resource and dependence. A valid recipient contact and access to an up-to-date journal are required. If the main channel is unavailable, the coordinator uses the provided reserve; the lack of an answer remains an open problem.

Possible harm of the decision. Delay in further movement may disrupt the agreed schedule. The coordinator finds out the consequences of the expectation and communicates them to the manager. He doesn't silently cancel a review to keep up with the schedule.

Confirmation of the result. The recipient provides the physical location, his name or job ID, and the accepted task. Both parties match the same version of the record.

Revision condition. Response received; ID mismatch detected; there was information about a violation of the terms of treatment; communication did not take place by the agreed control point. Each of these events requires a new entry.

Why this post is useful. The next shift sees the specific question, the person responsible and the expected confirmation. The wording “cargo under control” would not have given the next shift this information.

Example of Form B: review after a response

New information. The Bereg duty officer confirmed the location of the container and presented a current reception record. Upon comparison, it turned out that Sever used an old copy of the log.

What has changed. The unknown location version is no longer supported by available information. The gap in the overall picture is explained by the inconsistency of versions. The old entry is retained as part of history; the correction is associated with a new confirmation.

Next decision. The coordinator completes the transfer reconciliation task. A designated specialist will separately assess the suitability of the container and the conditions for further use according to the applicable procedure. Proof of recordkeeping does not replace this assessment.

What else is required? The document manager reviews why the out-of-date copy appeared to be valid. The correction is considered completed after re-checking the transmission between the parties, including when the main channel is unavailable.

Example of Form C: confirmed handover

Sending party. The coordinator of the organization Sever. The receiving party is the appointed duty officer at Bereg who confirmed the shipment's location.

Subject of transfer. recordkeeping for actual reception and responsibility for the next assessment on the receiving side. Permission to make arbitrary use of the content is not included in this transfer.

What has already been accomplished. The parties matched the container ID and the current record. The reason for the previous discrepancy is described. The answer and a link to the current version of the journal are saved by both parties.

Open task. Bereg's specialist must complete the assessment of fitness for use and the conditions for the next action. Sever's head of document control checks how current versions are issued.

Recipient confirmation. “The container is at the receiving party. The person in charge has been appointed. The following estimation problem has been accepted. We will communicate the result through the agreed channel; We will report the change in circumstances separately.” In the real form, the time and ID of the confirming employee are recorded next to it.

If confirmation is not received. The submitting party keeps the task open, uses a backup contact, and notifies the manager of the delay. Marking the sent request does not close the transfer.

Example of Form F: which conclusions the data support

Testable question. Where is the cargo and who is responsible for the next step? This issue is separate from the assessment of the properties of the material and its suitability for use.

First observation. There was no confirmation of reception in the copy of the Sever log. Source is a specific version of a document. This observation supported the need for reconciliation, but did not yet make it possible to determine the actual location of the cargo.

New observation. The recipient confirmed the location and presented a valid entry. A comparison of versions explained why the sender saw a different picture.

Independence of information. Transmitted copies of the same entry are not considered separate confirmations. The parsing stores the origin of the document, the response of the actual recipient, and the result of the reconciliation.

Supported output. The reception has been confirmed, the person in charge on the Bereg side has been named. The recordkeeping gap has been eliminated for this transfer.

Unanswered question. The suitability of the material and the conditions for subsequent use are assessed separately. Reconciliation of documents does not establish the biological properties of the contents.

Action. Close the recipient search task, transfer the specialist assessment to the assigned specialist, and continue checking for version errors. A new signal about violation of the conditions of the call returns the event for re-evaluation.

Example of Form H: authorization pending specialist assessment

Subject of the decision. Is it possible to allow further use of the container for its intended purpose? This is the next question after a confirmed reception. The coordinator has completed the recordkeeping reconciliation; profile suitability assessment has not yet been completed.

Decision made. Registration of permission for further use is postponed until the required specialized conclusion is received. The authorized manager maintains the current handling arrangements and names the person responsible for preparing the missing information.

Base. The location and the host responsible are confirmed, the records are agreed upon. This information closes the recordkeeping gap, but does not answer the question of suitability for further use. The absence of a conclusion is noted as a gap in the basis of the decision; it does not appear to be a proven harm.

Next task. The designated Bereg subject matter expert carries out the prescribed assessment according to the applicable procedure and transmits the conclusion to the authorized manager. The coordinator clarifies the consequences of the wait for dependent work and communicates them to the supervisor.

Revision. The manager returns to authorization after receiving a conclusion, new information about the handling conditions or the occurrence of an agreed control point. If the required specialist is not available, the issue is escalated to a level capable of providing an assessment; the restriction is not extended without responsible and subsequent action.

Message to the performers. “Reception confirmed, reconciliation completed. The decision on further use awaits a profile conclusion. The current regime is maintained; the person responsible for the conclusion has been appointed.” The recipient confirms that he understands both different statuses.

Example of Form J: what has ended and what continues

People. The training manual does not state the effects on humans. This entry relates to available information; a new message is considered separately by the medical and specialized teams.

Transfer and recordkeeping. The location has been confirmed, the responsible person has been named, and the current record has been agreed upon. This part of the event is over.

Material and next use. The suitability assessment continues with a designated specialist. A general mark indicating the completion of the reconciliation does not change its status.

Documents and work organization. The reason for the discrepancy has been found. The person responsible for document flow corrects the issuance of versions and organizes a re-check of the transfer. The task remains open until the result of this check.

Observation. New information is sent to the intended recipient; upon transfer to permanent service, it confirms acceptance. The manager informs the parties of the status of individual tasks, rather than declaring all issues closed in one phrase.

How to check your own completed form

Read the entry as if you were on shift for the first time. It should make it clear what happened, what information is available, what was decided, and who is continuing the work. If understanding requires searching for the author, add the missing fact or condition of transmission.

A short entry can be complete. A long entry may hide the lack of a decision. The usefulness of the form is determined by whether another employee can continue the work and restore the basis of the choice. Blank onboarding forms follow in FORMS · p. 182.

Working forms

Form A: local-instruction specification

ID and version: _____

Object and scope: _____

Trigger condition: _____

Approving authority and legal basis: _____

Head and Deputy: _____

Medical service and reserve: _____

Engineering and profile expertise: _____

Main communication channel and reserve without network: _____

Minimum resources and limiting resource: _____

Responsibilities when connection is lost: _____

Condition for stopping a specific operation: _____

Condition for attracting the next level: _____

Who lifts the measures and on what basis: _____

Date of exercise and identified limitations: _____

Form B: decision record

Event time and ID: _____

Observed facts and sources: _____

Working hypothesis and significant uncertainty: _____

Decision and harm prevented: _____

Main responsible and executor: _____

Resource and dependence on other actions: _____

Deadline and method for confirming the result: _____

Collateral damage and measures to reduce it: _____

Reason and time of revision: _____

Actual result and next task: _____

Form C: handover of responsibility

Who transmits and who receives: _____

What is transferred and what powers are transferred: _____

State of people and critical systems: _____

Actions completed and evidence of completion: _____

Open tasks, unknown and limiting resources: _____

The following mandatory decision: _____

Time and method of confirmation of the receiving party: _____

What to do if the reception is not confirmed: _____

Form D: barrier specification

Which contact or transfer limits: _____

Conditions of applicability and known limitations: _____

Dependencies on power, communications, environment, and personnel: _____

How is a failure detected and who receives the signal: _____

What protection remains after a failure: _____

Who makes the following decision: _____

Date of inspection and supporting record: _____

Conditions for approval of local instructions for use

Before applying local guidance, the site manager reviews people and resources. The medical director confirms the availability of assistance and supervision. The engineer checks dependencies and emergency modes. A specialized specialist evaluates the premises about the nature of the threat, and the authorized body evaluates the grounds for restrictions. During the exercise, the team completes the sequence and transfers tasks to the receiving party.

The manual is ready for use when designated personnel understand their responsibilities, the necessary tools are available, and specific procedures have been verified for the site. The identified gap is recorded along with the person responsible for the correction. After correction, the part of the test that failed before is repeated.

Form E: treatment-decision record

For the medical team; stored in an accepted medical record system with restricted access.

Field	What to write down
Patient and responsible	Identifier, attending physician, receiving shift; available contacts

Field	What to write down
Clinical task	Severity, leading syndrome, significant patient characteristics
Working explanations	Confirmed conclusions, alternatives, significant unknowns
Selected Guide	Name, version, date of review, applicability, local adaptation
Decision	Purpose of intervention, basis, person responsible; treatment orders in medical records
Monitoring	How to assess benefits and harms; who is watching; signs of urgent review
Next revision	Date or event responsible for what to do if a doctor is unavailable
Transfer	Which is confirmed by the receiving team; what results are still expected?

Form F: evidence matrix

A separate entry is made for each significant finding. It shows what data supports the decision, what question remains open, and what needs to be tested next. An example based on the case R2 is given in EXAMPLES · p. 178.

Question	Record
What decision is being tested?	Specific treatment, protective measure, movement or authorization
What was observed?	Source, time, quality and traceability of data
What can the method establish?	Object of identification and limits of applicability
What is not established by this?	Viability, causation, transfer or other unanswered question
What explanations are competing?	Alternatives and data for each of them
How independent are the confirmations?	General prerequisites and possible common mistakes
What action should be taken?	The decision, its owner and the event for a new revision

Form G: source-removal plan

Boundaries and intended use of the property: _____

Source and significant pathways of exposure; degree of confirmation: _____

Goal of work and achievement criteria before the start of work: _____

Authorized executor; basis for choosing a specialized procedure: _____

Site Compatibility, Secondary Hazards, Life Support and Waste: _____

Critical dependencies, stopping conditions, reserve: _____

Who checks the quality and achievement of results: _____

Deviations and their impact on the conclusion: _____

Transfer to the decision on authorization according to P13 · p. 167: _____

Form H: a specific authorization decision

What is allowed, to whom, where and for what use: _____

Who is authorized to authorize; profile conclusions: _____

Criteria, findings and limitations of the review: _____

Residual risk and remaining measures: _____

Follow-up; responsible and resource: _____

Signals for suspension of authorization or new investigation: _____

Deadline for review and confirmation of notification to performers: _____

Form I: transition of a research program

Medical need and target group: _____

What is the status of the product now: candidate / investigational intervention / approved use with specified limits.

What data gives the right to consider the next stage: _____

What question remains open and what research can answer it: _____

Clinical, scientific, ethical and regulatory responsibilities: _____

Benefits, risks, quality and stopping rules: _____

Allowed / requires improvement / stopped; by whom and why: _____

Form J: summary of completion by workstream

Direction	Result and evidence	Owner and open issues
People and medical care	Condition, further treatment, observation, rehabilitation	Medical Director
Source and material	Eliminated, retained or uncertainty remains	Head of specialized work
Community transmission	Basis of assessment and performance of observation	Head of Epidemiologists
Environment and infrastructure	Permitted uses and conditions	Notified Body and Engineer
Animals, plants, ecosystems	Damage identified and follow-up	Veterinary/Environmental Service

Directions may have different statuses. Emergency control has already been transferred to a permanent service, and medical supervision continues; one zone is open for certain work, the other remains restricted. Each unfinished task retains its owner, resource, and revision condition.

Form K: checking navigation and currency

Card, version, intended reader: _____

Instructional introduction and required decision: _____

Search time, erroneous transitions, unclear wording: _____

Verified pages, internal links, paper and digital copies: _____

Changes to primary guidelines; who checked the applicability: _____

Corrections, Responsible, Recheck and Next Review Date: _____

Concepts and abbreviations

Definitions explain the use of words in the book. Detailed conditions and professional restrictions are given in the relevant chapters. Navigation symbols maintain the same meaning throughout the publication.

Agent. An object or factor to which a possible effect is attributed. In a biological context, this is, for example, a microorganism or a virus. Until the nature of the event is known, the word itself does not confirm a biological cause or indicate a source.

Barrier. A means or procedure that limits a certain effect. To evaluate a barrier, indicate its function, operating conditions, dependencies and failure sign. See G14 · p. 040.

Biological activity. The observed biological effect of an object under the conditions of a specific study. Discovering composition, activity, and causation with disease answers different questions. See G34 · p. 083.

Validation. Confirmation that a method or process is suitable for its intended purpose. The important question in the book is: is the chosen method capable of answering the question for which it is being used? See G33 · p. 081.

Verification. Checking compliance with specified requirements. The text next to it always indicates what exactly is being checked and on what basis the result is accepted.

Effects and exposure. Circumstances of possible contact with a hazardous factor. Possible effects are described separately from symptoms and established disease. See G21· p. 054 and G32· p. 079.

Recovery. Return of necessary functions: assistance, care, supplies, transport, operation of the institution. Different features may require different terms and conditions. See G57 · p. 144.

Hypothesis. A working explanation of observations that is compared with alternatives. In the book, a hypothesis is useful if it helps you choose the next question or action. See G9 · p. 029.

Diagnostic question. What the team wants to clarify through research and what can change the decision. Formulated before choosing a method. See G33 · p. 081.

Authorization. A decision permitting a specified activity or use for a particular person, facility, or material under stated conditions. The permission scope must be explicitly specified. See G38 · p. 093 and G55 · p. 140.

Decision Journal. Record the facts, reasons for choice, performers and conditions of review. Old versions are saved so that the decision change can be restored. See G6 · p. 024.

Pollution and contamination. The presence of unwanted material in an environment, surface, or object. Detection of contamination and identification of disease require different assessments. See G7 · p. 026.

Infection. Penetration of an infectious agent into the body with its subsequent development or reproduction. Contact with the agent or material on the body surface

does not establish infection. Clinical manifestations are assessed separately. See G7 · p. 026.[47]

Source. The place, object or process from which the impact under consideration begins. During the investigation, the source, route of exposure and harm caused are separately checked. See G36 · p. 088.

Candidate medical countermeasure. A test, drug, vaccine, or other product under development for which data still needs to be obtained and evaluated. The current status is clearly indicated. See G40· p. 098.

Clinical urgency. How quickly a person requires medical assessment and assistance based on their condition. This is a separate issue from the perceived risk of transmission. See G21 · p. 054.

Clinical study. A study involving human subjects to answer a pre-defined question about a medical intervention. Its organization, ethics and supervision are discussed in G41 · p. 101. [26]

Competing explanations. Several versions that can explain the observations. For each, supporting information, contradictions, and a question that could change the choice are indicated. See G9 · p. 029 and G35 · p. 086.

Critical function. Jobs whose loss poses a significant threat to people or the ability to continue necessary activities. Its significance is determined by the conditions of a particular object. See G18 · p. 047.

Local instructions. A procedure adapted to a specific organization: its employees, funds, powers, contacts and reserves. Preparation and testing are described in G3 · p. 018 and G60 · p. 151.

Monitoring. Repeated systematic observation of selected signs of a person's condition, environment or system. The plan specifies who is monitoring, why the information is collected, how often, and what change requires immediate action.

Directed treatment. Treatment, the choice of which is based on updated information about the cause of the condition and the applicability of the intervention to the patient. The transition is considered in G27 · p. 068.

Unknown etiology. The cause of the disease has not yet been established. This is a description of the boundary of knowledge from which clinical assessment and research continues. See G9 · p. 029 and G23 · p. 057.

Independent confirmation. A check that does not amount to repeating the same original message or common error. The degree of independence is assessed for a particular conclusion. See G35 · p. 086.

Neutralizing the threat. General designation of actions to eliminate hazardous exposure. In work chapters, the task is clarified: stop the source, interrupt the exposure path, restore the environment, or confirm the suitability of a specific use. See G36 · p. 088–G38 · p. 093.

Limiting resource. A resource, the lack of which first prevents the implementation of the necessary plan. It is indicated specifically: a trained employee, available assistance, system power, transportation or other resource.

Residual risk. A risk that remains after measures have been taken. The decision indicates the associated restrictions, monitoring and the person responsible for the review.

Transfer of responsibility. Coordinated transfer of a specific task to the receiving executor. It ends with confirmation of acceptance and understanding of the next action. See G5 · p. 021 and form C.

Planetary protection. An area of requirements and science policy concerned with the prevention of unwanted transfer of contamination during the exploration of celestial bodies and the recovery of materials. The areas of validity of specific documents are discussed in G12 · p. 035 and G45 · p. 114. [4, 5]

Traceability. The ability to reconstruct the origin of material, data or recording and the history of its transmission. Needed to evaluate output and correct errors. See G6 · p. 024 and G35 · p. 086.

Profile of the required tool. A description of who needs the medical product, for what purpose and under what conditions it should work. Helps to agree on the development goal before comparing candidates. See G39 · p. 095. [29]

Risk. Assessment of possible harm, taking into account the circumstances of the impact, its likelihood or uncertainty and the severity of the consequences. In the book, risk is always tied to a specific task and conditions, and not to one verbal designation of an event. The same hazard name does not mean the same risk in different situations.

Signal. An observation or report that requires evaluation. A signal has a source, a time, and a degree of confirmation. The signal may be erroneous; information about it still helps to reconstruct the course of the decision. See G4 · p. 019.

Syndrome. A collection of clinical manifestations that guides the physician toward a route of evaluation and care while the cause may remain unclear. See G23 · p. 057 and G25 · p. 063.

Medical triage. Distribution of priorities for assistance according to the condition of people and the professional assessment system used. When the state changes, priorities are revised. See G22 · p. 056.[21]

Revision condition. A pre-named event or milestone at which the responsible team re-evaluates the decision. For example, new data, deterioration or loss of a necessary resource.

Eliminating the source. Actions aimed at stopping further entry of the hazardous factor. The result of this work is checked separately from the suitability of the medium for the next use. See G36 · p. 088 and G37 · p. 090.

Escalation. Escalating an issue or task to a level where the necessary authority, knowledge, or resources are available. The request specifies the specific need, the consequences of the delay and the person responsible. Escalation does not interrupt ongoing assistance. See P11 · p. 165.

Etiology. The cause or origin of the disease. Clarifying the etiology and assessing the severity of the condition solve different problems.

Empirical tactics. Initial professional choice when information about the cause of the condition is incomplete. The basis for the selection, the applicable guidance, and the terms of the review must be stated. See G23 · p. 057 and G27 · p. 068.

Abbreviations in sources and chapters

BEC - Basic Emergency Care. WHO/International Committee of the Red Cross Basic Emergency Care training course for trained health professionals. See G22 · p. 056 and source [20].

IITT - Interagency Integrated Triage Tool. Interdepartmental medical triage tool. Its purpose and applicable forms are discussed in G22 · p. 056; the original tool is given in [21].

ICS - Incident Command System. System for organizing command during an incident. Used throughout the book to discuss roles and transfer of control; The powers of a particular organization are determined separately. [9]

IHR - International Health Regulations. The applicable wording and obligations are discussed in G53 · p. 135 with reference to the primary document [14].

MEURI - Monitored Emergency Use of Unregistered and Investigational Interventions. A framework for discussion of controlled emergency use of unproven interventions outside clinical trials. Its ethical purpose and legal limits are discussed in G41 · p. 101.[27]

TPP - Target Product Profile. Target profile of a medical product. The book uses the expression “profile of the required medical product.” See G39 · p. 095 and source [29].

WHO - World Health Organization. CDC - US Centers for Disease Control and Prevention. NIOSH - US National Institute for Occupational Safety and Health. FDA - US Food and Drug Administration. EPA - US Environmental Protection Agency. Their documents are applied in their own fields; Specific sources are listed in the bibliography.

NASA - National Aeronautics and Space Administration of the United States. COSPAR - Committee on Space Research. Documents on planetary protection and medical support for missions are used to indicate the limits of applicability. See G12 · p. 035, G43 · p. 108–G45 · p. 114.

Navigation codes used in this book

G — a full chapter; P — an action card; S — a brief location scenario; R — an extended teaching case; I — a figure. U0 · p. 169 denotes the overall incident-management procedure. FA · p. 182, FB · p. 182, and other codes beginning with F lead to the working forms.

NAV · p. 003 — navigation by situation; LOCATIONS · p. 004 — navigation by location; ROLES · p. 005 — navigation by responsibility or failed function; Contents · p. 010 — the table of contents. Reading guide · p. 007 leads to the introduction, Examples · p. 178 to completed forms, FORMS · p. 182 to blank templates, FIGURES · p. 192 to the figure index, and REFERENCES · p. 194 to sources.

Use codes and internal links to navigate to the desired section. After changing the local version, check your navigation again.

Index of illustrations

Each link leads to a picture next to the corresponding subsection. The chapters retain basic explanations and application conditions.

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01. Full response cycle chapter 1	I01 · p. 015
02. Roles, decisions and confirmed transfer chapter 5	I02 · p. 022
03. Different mechanisms of harm · chapter 7	I03 · p. 027
04. Preserved material and untested areas · chapter 11	I04 · p. 034
05. Unknown specimen under observation Chapter 12	I05 · p. 036
06. Four areas of joint surveillance Chapter 13	I06 · p. 038
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