

**GUIDE FOR THE INTRODUCTION OF
INTEGRATED DISEASE SURVEILLANCE
AND RESPONSE IN THE CURRICULA OF
HEALTH TRAINING INSTITUTIONS IN THE
WHO AFRICAN REGION**



REGIONAL OFFICE FOR

**World Health
Organization**

Africa

GUIDE FOR THE INTRODUCTION OF INTEGRATED DISEASE SURVEILLANCE AND RESPONSE IN THE CURRICULA OF HEALTH TRAINING INSTITUTIONS IN THE WHO AFRICAN REGION

Integrated Disease Surveillance Programme
Health Security and Emergencies Cluster

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ABBREVIATIONS

AFRO Regional Office for Africa

EPI Expanded Programme on Immunization

EVD Ebola virus disease

FELTP Field Epidemiological and Laboratory Training Programme

HIV human immunodeficiency virus

HMIS Health Management Information System

IDSR integrated disease surveillance and response

IHR International Health Regulations (2005)

IMCI integrated management of childhood illnesses

NGO nongovernmental organization

RC Regional Committee

SARS severe acute respiratory syndrome

WHO World Health Organization

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Executive Summary

In the last fifteen years, two major milestones, at both global and regional levels, have demonstrated the essential role of disease surveillance in Africa, through integrated disease surveillance and response (IDSR) and the International Health Regulations (IHR) 2005. Both major actions were intended to strengthen the capacities of Member States to develop functional capabilities for early detection and response to priority diseases, conditions and events that affect their populations.

The successful implementation of IDSR and IHR require a trained and competent workforce. The main strategy has been in-service training which has been hampered by insufficient numbers and high turnover of staff. One of the efficient and effective ways of increasing availability of trained human resources for IDSR is to incorporate IDSR into the curricula of institutions responsible for the training of pre-service health personnel. This includes public health schools, medical schools, schools of nursing, health training schools, veterinary schools, mid-level training colleges, field epidemiology training programmes among others. Inclusion of the IDSR modules in the pre-service curriculum will ensure that training will be tailored to job requirements and raise the reputation of the training. Most importantly, it will provide a reliable and continuous supply of a well trained workforce ready to be utilized for IDSR in the current challenge of raised public health events in the Region.

The overall objective of this guide is presented and highlights how to promote the incorporation of IDSR knowledge and skills into pre-service health training institutions and contribute to sustainability of national surveillance and response capacities within the African Region. The target group for this guide is discussed. A definition of the concepts of IDSR, the levels of health system expected to play a specific role in IDSR implementation are also defined. This is followed by a description of the training approaches.

The main steps for introducing IDSR into the curricula of health training institutions are also described. Other highlights include adaptation and validation of the Guide, training strategy and preparation of the implementation plans. The implementation of the plan as well as documentation of lessons learnt is also described. Monitoring and evaluation as well as sustainability are also discussed.

I. Context and rationale

In the last fifteen years, two major milestones, at both global and regional levels, have demonstrated the essential role of disease surveillance in Africa, through **integrated disease surveillance and response (IDSR)** and the **International Health Regulations (IHR) 2005**. Both major actions are intended to strengthen Member States develop functional capabilities for early detection and response to priority diseases, including conditions and events that affect their populations. The successful implementation of IDSR and IHR requires a trained and competent workforce. The strategy has been geared towards in-service training but this has been hampered by insufficient and high turnover of staff.

1. Integrated disease surveillance and response

The first milestone was the adoption of the Integrated Disease Surveillance (IDS) strategy, during the Forty-eighth session of the WHO Regional Committee for Africa that took place in September 1998 in Harare (Zimbabwe). Member States adopted resolution AFR/RC48/R2 calling for improved availability and use of surveillance data for public health decision-making at all levels of the national health system. Realizing the linkage of information and response action, the strategy was updated and renamed Integrated Disease Surveillance and Response, or IDSR. The comprehensive strategy aimed at strengthening capacities for detection, confirmation and response to suspected cases and outbreaks, and for use of information to predict and plan for public health events at all levels of the health system. The goal of a fully functional IDSR approach was to contribute to the reduction of morbidity, mortality, and disability caused by already known disease threats to the well-being of African communities. The IDSR strategy promotes development and implementation of integrated systems for detection, reporting, confirmation, investigation and response to surveillance data at all levels of the health system. IDSR initially targeted 19 priority communicable diseases and conditions.¹

The first edition of the IDSR Technical Guidelines (2001) was widely adopted and adapted in the 46 Member States of the WHO African Region. Although countries and their partners had invested substantial resources in building their capacities for detection and confirmation of public health threats, progress has been mixed with regard to meeting benchmarks of a coordinated and integrated public health surveillance system. For example, at the national level, all countries have established national surveillance structures and have identified priority diseases or conditions for surveillance. However, regarding emergency preparedness and response, only 24 out of 45 countries that completed the self-assessment questionnaire in 2010 on progress made towards the implementation of the IDSR strategy indicated that they had set up a management centre responsible for coordinating and controlling operations in case of an epidemic or other health emergencies. Additionally, the 2010 self-assessment reported that out of the 4386 health districts in 45 countries, 3801

(86%) had initiated implementation of the IDSR 12 months before the assessment, and several countries had begun including surveillance of noncommunicable diseases.¹

Although measures were taken to establish IDSR in countries at the national level, a number of challenges continue to affect implementation at the district level², notably:

- (a) inadequate personnel for managing IDSR programme and frequent turnover;
- (b) inadequately equipped and trained rapid response teams;
- (c) inadequate capacity for laboratory confirmation;
- (d) inadequate leadership and coordination mechanism;
- (e) non-functional epidemics and emergency management committees;
- (f) insufficient logistical and communication facilities;
- (g) insufficient and inconsistent use of IDSR core indicators for monitoring and assessing performance at all levels.

Some good practices were noted in the 2010 self-assessment, particularly on integration of surveillance and response resources. In fact, IDSR encourages the rational utilization of resources by integrating and channelling resources and processes for routine surveillance activities. Irrespective of the disease, surveillance activities use the same functions mainly alert, detection, notification, analysis and interpretation, feedback, intervention, monitoring/evaluation. These often use the same structures, the same procedures and the same personnel.

In addition, IDSR takes into account the "One World One Health" concept, a strategy that takes into account the health events interphase between human health, animal health and the ecosystem. In fact, 75% of the recent emerging or re-emerging diseases that have considerably affected human health are of animal origin (for instance, avian flu).² The "One World One Health" concept therefore highlights an inter-disciplinary, holistic and integrated approach to health threats. One Health involves integration and coordination of disease surveillance, investigation of epidemics and response activities conducted by professionals from different sectors. It reinforces the links among them for a more efficient and optimal use of often limited resources and advocates for rapid and efficient utilization of the capacities of the various sectors for more effective disease prevention and control.²

A well trained multidisciplinary workforce is essential for operating the IDSR system. The purpose of **Integrated Disease Surveillance and Response** is therefore to strengthen the entire public health surveillance system to enable timely detection, notification and response to any public health threats. A well trained and dedicated workforce is essential to the operation of a functional system that can detect and respond to leading causes of illness, death, and disability.

2. International Health Regulations (2005)

The second major milestone was the adoption of the International Health Regulations (IHR), on 23 May 2005, at the Fifty-eighth World Health Assembly in Geneva (Switzerland)³. IHR entered into force on 15 June 2007. It is a legally binding instrument, designed to assist States prevent the international spread of diseases, without interfering with international traffic and trade. It deals with all public health threats, international trade, emergence or re-emergence of diseases and, in particular, health emergencies of international importance. IHR (2005) emphasizes the strengthening of overall multisectoral national surveillance and response capacities and therefore concerns the entire national health system.² Hence, all countries are expected to develop human workforce for implementing IHR core capacity requirements, namely national legislation, coordination and NFP communications, surveillance, response, preparedness, risk communication, human resource capacity, laboratory, points of entry, zoonotic events, chemical events, radiation emergencies.

Subsequently, countries were supported to develop human resources through training on IHR implementation using various guidelines in the different domains. These were mainly on IHR points of entry, surveillance, laboratories, biosafety and biosecurity, field epidemiology and national legislation.⁴

Whereas some countries have made significant progress towards IHR implementation, it was also noted that many countries requested for an extension of the timeline for establishing their core capacities, which constitutes a real challenge, notably as regards legislation, points of entry, surveillance and action, laboratory capacities, human resources development and chemical/radiological safety.⁴

It is in light of the above-mentioned challenges, that a second edition of IDSR guidelines was developed in 2010.

The second edition that was developed following the Fifty-sixth session of the WHO Regional Committee for Africa that took place in Addis Ababa (Ethiopia), in 2006, takes into account IHR and comprises 44 priority diseases, conditions and public health events that^{2, 5}:

- (a) fall under IHR international requirements (smallpox, poliomyelitis due to wild poliovirus, human flu due to a new virus subtype, SARS);
- (b) have a high potential to cause epidemics with serious public health consequences, due to their capacity to spread rapidly at the international level (cholera, plague, yellow fever and haemorrhagic fevers of viral origin);
- (c) are among the main causes of morbidity and mortality in the African Region (malaria, pneumonia, diarrhoeal diseases, tuberculosis, and HIV/AIDS); are among the priority noncommunicable diseases in the Region (high blood pressure, diabetes, mental health and malnutrition);
- (d) can be controlled and prevented efficiently to address the public health problems they cause (onchocerciasis and trypanosomiasis);

- (e) are part of intervention programmes supported by WHO in view of their prevention, control, eradication or elimination [Expanded Programme on Immunization (EPI), integrated management of childhood illnesses (IMCI)].

3. Capacity building on IDSR/IHR

As of September 2015, 41 out of 47 countries¹ had adapted the second edition of the IDSR Technical Guidelines and 32 (70%) had adapted training materials to their respective national contexts, whereas 25 countries had conducted, at the national level, the training of trainers for the revised IDSR¹. The adoption of the IDSR strategy has brought about significant positive effects on the organization of surveillance activities. Hence, the existence, at all health system levels, of a foundational surveillance system has facilitated the understanding, mastery and implementation of IDSR standard principles. Similarly, the integration of surveillance activities has enabled the utilization of the resources of funded programmes to reinforce and improve the surveillance of neglected diseases.

Also, based on the second edition of the IDSR Technical Guidelines, on-line training materials (eLearning) were developed, tested, finalized and are being launched widely. That notwithstanding, IDSR implementation is facing numerous challenges including insufficient trained personnel on the IDSR strategy, which constitutes a major threat for IDSR implementation in countries. Also, inadequate distribution of human resources, migration of trained professionals and the lack of IDSR training of young graduates assigned to districts constitutes a serious impediment to IDSR implementation. In a large number of health districts, the trained human resources to ensure the proper and efficient implementation of IDSR are insufficient. This situation has hampered the achievement of expected surveillance results and has thus contributed to the late detection and notification of cases, inadequate preparedness and response and delay in the appropriate response to public health events. These weaknesses contribute to the recurrent outbreaks of preventable diseases in the Region, for example cholera and Ebola virus disease (EVD) that is currently affecting West Africa. Unless this situation is addressed, it may in the long run jeopardize not only surveillance accomplishments, but also the overall performance of the health systems of African countries.

One of the efficient and effective ways of increasing availability of trained human resources for IDSR is to incorporate IDSR into the curricula of institutions responsible for the training of pre-service health personnel. Despite the adoption of IDSR as a strategy for improving capabilities for disease surveillance by all countries in the African Region, IDSR is not yet part of the curricula of most health training programmes and institutions. Among them are public health schools, medical schools, schools of nursing, health training schools, veterinary schools, mid-level training colleges, field epidemiology training programmes etc. In addition, time allotted to surveillance in public health and medical colleges ranges from a single

¹ A new Member State included (South Sudan)

lecture to limited series of lectures in existing courses. Hence, graduates from these institutions do not enter service with sufficient knowledge in the principles of and strategies for implementing IDSR as it links to their clinical, public health work and their leadership roles. This initiative seeks to improve the inclusion of the public health function of disease surveillance and response in pre-service training² institutions. Consequently, after being recruited by private or public health structures, they cannot implement IDSR, a situation which is evidently in contrast with the clinical training delivered in health training institutions.

II. Justification

The introduction of IDSR into curricula will be a strong advantage not only for training institutions, but also for the entire health systems of countries in the Region. In fact, training will be better tailored to job requirements in terms of epidemiological surveillance, and improve the understanding and awareness of public health surveillance in the rolling out of IDSR implementation activities by trained professionals. At the same time, the inclusion of an IDSR component in pre-service curriculum will raise the reputation of the training institutions and expand opportunities for partnerships at local, national, and global levels. Most importantly, the introduction of IDSR into the curricula of training institutions will provide a reliable and continuous supply of a well trained workforce ready to be utilized for IDSR in the current challenge of raised public health events in the Region. This method will reduce the time taken in providing the needed in-service continuing training and will ensure graduates of health training institutions come to their postings understanding that disease surveillance is an essential competency for their success. It will evidently generate savings and enable the channelling of the scarce available resources to activities other than training.

² The expression “**in-service training**” refers to training of persons already employed, e.g. health providers working in the public or private sector.

“**Pre-service**” refers to activities which take place before a person takes up a job which requires specific training, i.e. before a person ‘enters service’. In reality, courses for graduates, in addition to those for undergraduates, are ‘pre-service courses’ if they provide the competence needed to perform new ‘services’.

In this document, the expression “**pre-service training**” is used to refer to any structured activity aimed at developing or reinforcing knowledge and skills before a health care professional enters public health service or private practice.

III. Objectives:

The overall objective of this guide is to promote the incorporation of IDSR knowledge and skills into the curricula of pre-service health training institutions and contribute to the sustainability of national surveillance and response capacities within the African Region.

The specific objectives for strengthening pre-service training are to:

- (a) establish national standards and procedures for incorporation of IDSR into the curricular of training institutions in the African Region using existing training materials;
- (b) adapt existing IDSR training modules to the pre-service curricula;
- (c) enable graduates from training institutions to acquire knowledge and skills of implementing IDSR;
- (d) provide a reliable, ongoing supply of health staff who come into service with foundational knowledge of public health surveillance and response through the IDSR framework;

IV. Target groups

The information and recommendations contained in this Guide target the following:

- (a) Training institutions:
 - Directors, deans and heads of animal and human health training institutions
- (b) Ministry of Health and/or Education:
 - Disease surveillance officers at all levels of the health system
 - National IDSR and IHR (2005) focal points
 - District health management teams
 - Officers in-charge of Health facilities
- (c) Professional and regulatory bodies
- (d) Development partners

V. Definition of IDSR concepts²

The Integrated Disease Surveillance and Response Technical Guidelines (2010) present an overall vision of integrated disease surveillance and response. All levels of the health system are involved in surveillance and response to priority diseases, conditions and public health events. Surveillance activities comprise the following eight interdependent and interrelated core functions.

- (a) **Identification of cases and public health events:** use standard case definitions to identify priority diseases, conditions and public health events.
- (b) **Notification:** report suspected priority diseases, conditions and public health events to the higher level. If it is an epidemic-prone disease, an event which may constitute a health emergency of international importance or a disease targeted for elimination or eradication, the case or event should be investigated immediately and a detailed report submitted. For events to be notified in accordance with IHR, use the decision instrument (Annexe 2) to identify events which may constitute a health emergency of international importance.
- (c) **Analysis and interpretation of results:** compile and analyse data to show trends. Compare the information with those of previous periods and synthesize results.
- (d) **Investigation and confirmation of suspected cases, epidemics and health events:** ensure that the case, epidemic or event is confirmed, preferably by laboratory. Gather evidence on the likely causes of the epidemic or event and use the information to take appropriate prevention or control measures.
- (e) **Preparedness:** take early measures, before an epidemic or public health event, to enable a rapid response and to ensure that the required materials and equipment are available for immediate action.
- (f) **Response:** coordinate and mobilize resources to implement the appropriate public health measures at all levels.
- (g) **Feedback:** encourage future cooperation by providing feedback about the outcomes of investigations and interventions to the different levels that transmitted data and reported case or events, as well as to partners.
- (h) **Assessment and improvement of surveillance systems:** assess the efficacy of surveillance and response systems in terms of timeliness, quality of data, preparedness, detection of thresholds, case management and overall performance. Correct the identified gaps and improve the system.

Each level of health system is expected to play a specific role in IDSR implementation. The different levels are:

- (a) **Community level** – it is the lowest level in surveillance system .comprises persons who provide basic services in villages: skilled birth attendants, community health workers, village health workers or persons considered as such, community leaders (religious heads, traditional chiefs or political leaders), primary school teachers, veterinary officers, pharmacists and traditional healers.
- (b) **Health care facility level** - its definition is specific to countries. In the context of IDSR, health care facilities are institutions (public, private, NGO, government agencies, military health services or labour health services) with outpatient and/or hospitalization services. Health care facility is the reporting unit of health surveillance data.

- (c) **District, regional or provincial level** – is the intermediate administrative unit, generally with a population of 100 000 to 300 000 inhabitants. Some countries may have two intermediate levels, for instance district and regional or provincial.
- (d) **National level** - in many countries, it is the central authority that defines policies and allocates resources. In the context of IDSR, it is the national level that reports to WHO all cases of priority diseases and events that may constitute a public health concern, using the IHR decision instrument.

Integration: consists in the harmonization of the different methods, software, data collection forms, standards and case definitions, so as to generate coherent information and optimize the efforts of the different programmes and actors involved in disease prevention and control. Where possible, countries should use a common notification form, the same data entry method for the different diseases and the same communication methods. Training and supervision should be integrated. Countries should use the same feedback channel and should share equipment (computers, vehicles, etc.).

Coordination consists in effectively working and acting together for a rational and efficient use of the limited available resources, for instance the Health Management Information System (HMIS) and the different disease-related control programmes. It is therefore necessary to share information, plan, and control and assess actions jointly in order to provide decision-makers and all relevant stakeholders in the Region and in countries accurate, coherent and reliable data and information. Where possible, IDSR should indeed involve full time coordination of surveillance activities and joint interventions (planning, implementation, control and evaluation). To facilitate coordination and collaboration, a body or intersectoral and multidisciplinary committee should be set up to coordinate activities at the national, provincial/regional and district levels. The body would be responsible for the coordination of surveillance activities, in close collaboration and in synergy with health emergencies management committees.

VI. Description of the training approaches

The guide provides instructions and suggestions for the teaching of training modules in line with the Technical Guidelines for Integrated Disease Surveillance and Response in the African Region, Second Edition.

The training is intended for medical, nursing, veterinary, para-medical, public health, epidemiology, health information, health management, and health education among others. The components of disease surveillance courses, where they exist, will form the basis for the introduction of aspects dealing with integrated disease surveillance and response in the different schools. All efforts will be made to include the seven (7) IDSR training modules.

Each module comprises PowerPoint slides, exercises, documents and exercises with answers. The IDSR instructor's guide is available in print and in electronic versions.

Students will be provided knowledge and skills with examples and practical exercises. Every effort will be made with Ministry of Health and other relevant stakeholders to provide the trainees with hands-on field based experience in surveillance and outbreak response activities.

At the end of the programme, students would have had a better knowledge of IDSR Technical Guidelines and will be able to implement them correctly by the end of their training. Therefore, the training should preferably be provided at an appropriate time depending on countries and institutions and will be examinable.

An instructor's guide has been developed and provides a complete set of ready-to-use training materials for the better understanding and utilization of IDSR tools. The training programme is designed for students to work in disease surveillance and response areas in health facilities and health management offices.

The following is already available: IDSR Technical guidelines for reading assignments or for developing lectures. IDSR Training modules include presentation of information, examples and practice opportunities including case studies and short answer exercises using real data and information. Emphasis is on student participation and small group collaboration.

VII. Main steps for introduction of IDSR into the curricula of health training institutions

The main steps for introduction of IDSR into the curricular of health training institutions in the African Region are summarized below as follows:

(a) Advocacy for the introduction of IDSR into curricula

WHO, in collaboration with the Ministry of Health, will sensitize training institutions for introducing IDSR into the curricula.

(b) Establishing a multi-sectoral task force

National authorities are encouraged to establish a multi-sectoral task force involving all relevant stakeholders. The task force should comprise national experts from the higher education and public health sectors, representatives of ministries concerned, as well as professional and regulatory bodies. The role of the task force will be to coordinate the introduction of IDSR into the curricula of training institutions. WHO, in collaboration with the Ministry of Health, will support the multi-sectoral task force. (see Annexe 1)

(c) Enrolling/recruiting training institutions

All training institutions will be eligible for enrolment/recruitment. The task force will facilitate the identification of potential health training institutions for the introduction of the IDSR in the training curricula.

(d) Adapting and validating the Guide and training strategy

The Guide, training, materials and strategy, will be presented and discussed during a workshop that will bring together representatives from the training institutions, representatives of ministry of health and other relevant stakeholders. The process will include assessing how surveillance and response is currently taught, plan how to include the IDSR modules into the teaching curriculum and how to conduct practical exercises and how to assess the performance of the students. The IDSR training modules will be reviewed and adapted into the existing curricula by training institutions, taking into account the content of the Technical Guidelines. Appropriate orientation of the trainers on IDSR will be organized.

(e) Preparing the implementation plans

The task force will elaborate a national roadmap for the implementation of the process based on the generic roadmap in Annex 2. Each participating training institutions will plan the implementation as appropriate.

(f) Implementing the plan

WHO and stakeholders will encourage the relevant partners to provide additional resources for the implementation of proposed national plans and to provide Member States technical support for implementing the plan for introduction of IDSR into the curricula of training institutions.

(g) Documenting lessons learnt

The task force in the countries will facilitate internal periodic reviews to share experiences and document on the progress made. WHO will convene periodic regional consultations to discuss, share and document lessons learnt.

(h) Monitoring and evaluation

WHO and its partners will assist the ministries of health, training institutions and other stakeholders to develop the appropriate monitoring and evaluation tools. Each participating training institutions will assess and document the status of implementation of the plan.

VIII. Monitoring, evaluation and sustainability

WHO/AFRO in collaboration with Member States will monitor the extent to which planned activities have been implemented. The national task force in collaboration with the training institutions and other stakeholders will participate in the monitoring process. Periodic evaluations of the implementation of the plan will be conducted using the appropriate indicators. In addition, they will explore measures to ensure the sustainability of all the processes in the implementation of the plan.

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Annexes

Annexe 1: Terms of reference for the IDSR pre-service training Task Force

Mandate

The Task Force shall provide Ministry of Health, training institutions and other stakeholders with technical and professional advice and support in various aspects of implementation of the introduction of IDSR into pre-service curricula.

Terms of reference

Revise and amend the terms of reference periodically, in response to changing needs and new developments.

The proposed terms and conditions for operationalization of the training Task Force are as follows:

- (a) Membership:
 - Ministry of health, ministry of higher education, representatives of ministries concerned, professional and regulatory bodies, as well as development partners.
- (b) Roles and responsibilities:
 - Advocate curricular change;
 - Identify the training needs of trainers;
 - Coordinate adaptation of training materials;
 - Identify potential sources of funding for the implementation of the guide.
 - Develop appropriate monitoring and evaluation tools: identify impediments to better performance; formulate and implement corrective measure and re-evaluate performance;
 - Organize periodic visits;
 - Set up a joint team for the evaluation of training institutions;

Annexe 2: Roadmap for the implementation of the Guide

Activity	Timeline (Months)
Advocacy for the introduction of IDSR into curricula	M0
Establishment of a multi-sectoral task force	M3
Enrolment/recruitment of training institutions	M3
Adaptation and validation of the Guide and training strategy	M4
Preparation of the implementation plans	M5
Implementation of the plan	M7 – M10
Documentation of lessons learnt	M11
Monitoring and evaluation of the implementation plan	M12

Annexe 3: Training modules during last year of teaching of theoretical courses in medical or paramedical schools/ Mid-level (teaching hours)

The number of hours allocated are tentative.⁶

Introductory module: 1 hour

- Explaining IDSR
- Definition of IHR (2005)
- Explaining the 2010 revised IDSR Guidelines
- Definition of disease surveillance
- Description of surveillance functions

Module 1 with exercises: 4 hours

- Identifying priority diseases, conditions and events

Module 2 with exercises: 4 hours

- Notifying priority diseases, conditions and events

Module 3 with exercises: 6 hours

- Analysis and interpretation of data

Module 4 with exercises: 6 hours, 30 minutes

- Investigation and confirmation of suspected cases, epidemics and other major public health events

Module 5 with exercises: 4 hours, 30 minutes

- Preparedness against outbreaks and other public health events

Module 6 with exercises: 3 hours

- Control, assessment and improvement of surveillance and response

Module 7 with exercises: 2 hours, 30 minutes

- Supervision and observations

