Prototype Curriculum on Immunization for Nursing/Midwifery Schools in the WHO African Region

Acknowledgement

We wish to express our sincere thanks to all immunization partners for their technical and financial contributions.

Our profound gratitude goes particularly to the following organizations:

[Logos of various organizations]
PART 1: Introductory Commentaries and Technical Attachments on EPI Curriculum

PART 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students

2007

Revised and Approved by Consensus Workshop on EPI Curricula for Medical and Nursing/Midwifery Schools in the African Region in the WHO African Region for Nursing/Midwifery Schools

Prototype Curriculum on Immunization
List of Abbreviations (Covers Part 1 and Part 2)
Activity: relevant intervention to implement each strategy distributed in time and space in the workplan. It is a task or a set of interrelated tasks aimed at generating a product or a result.

Assessment: an examination of inputs, process, outputs of a project or programme conducted to measure performance and ascertain readiness and capacity to perform roles and responsibilities or achieve set objectives. It is linked to policies and systems under which the programme operates.

Checklist: a written list of key technical items to be checked during student assessment or during a supervisory visit.

Cold chain: a network of refrigerators, cold stores, freezers and cold boxes organized and maintained so that vaccines are kept at the right temperature to remain potent during vaccine orders and supplies, their transportation, storage and distribution from factory to the point of administration to the target population.

Combination vaccine: a vaccine consisting of several components or antigens (e.g. DPT or DPT-HepB).

Community surveillance: surveillance where the starting point is a health event occurring in the community and reported by a community worker or actively sought by investigators while health event is occurring in the community and reported by a health event occurring in the community and reported by a

Coverage: a measure of the extent to which the services rendered to a population have achieved the health service need.

Course facilitator: a person or an expert who has previous experience with the course and who facilitates and guides the learning process during the training course.

Course participant: a person nominated by the government or any other organization to participate in the training course who has fulfilled the criteria of selection established by the course organizers.

Dropout: a comparison of the number of children or women who start receiving immunization and the number who do not receive later doses for full immunization.

Effectiveness: the ability of a programme to produce desired results. Evaluation: a periodic assessment of overall programme aims and plans of evaluating the extent to which the programme has met its objectives.

Efficiency: the ability to produce desired results with a minimum expenditure of energy, time or resources.

Health manpower: the number of individuals available for, or undergoing training in, the different health occupations; the demographic characteristics of these individuals; their educational characteristics; the different health occupations; the different health occupations.

Job description: a written list of key technical items to be checked during student assessment or during a supervisory visit.

Job aid: a set of specific instructions for performing individual tasks, e.g., how to use the safe boxes to dispose of A-D syringes.

Job analysis: the process of describing a given job or position and assessing the duties, responsibilities, and organizational requirements of the job.

Job description: a written list of key technical items to be checked during student assessment or during a supervisory visit.

Learning process: the process of learning. Learning involves the acquisition of new knowledge and skills through practice and experience.

Lecture: a session in which a teacher presents information to a group of students.

Learning materials: any materials used to support the learning process, such as textbooks, handouts, and videos.

Learning outcomes: the expected results of a learning experience, such as knowledge, skills, and attitudes.

Learning strategies: the methods used to facilitate learning, such as discussion, problem-solving, and group work.

Learning: a process of acquiring new knowledge and skills through experience and practice.

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Health problems: malfunctions, anomalies, suffering of individuals and lapses in the health system. They are essentially divided into suffering or diseases, community problems and problems related to the operation of health services.

Health system: a set of individuals and organizations working for the improvement and protection of public health. In the African Region, decentralization, service integration and financing policies adopted under the health sector reform represent a challenge for the reorientation of immunization and other services.

Immunization coverage: the proportion of children vaccinated against a selected number of diseases. It is usually expressed in the form of an indicator or percentage of the target population.

Implementation: the act of actually undertaking an intended and planned course of action.

Indicator: a variable used to measure progress towards the achievement of targets and objectives. It is used to compare performance in terms of efficiency, effectiveness and results. It is also used to measure impact of interventions.

In-service training: a planned, formal training programme given after completion of basic training during his/her period of employment.

Leadership: the ability to direct the operation, execution, performance of an organization or group of people (e.g. EPI team) towards assigned goal and achieve definite results.

Learning objectives: the aim of any training process that provides new knowledge, skills and experiences that the course participant will acquire at the end of each module or course.

Lessons learnt: an end product of experiences, discussions and exchanges of ideas or the outcome of an ended project that can facilitate decision-making when similar situations or problems occur.

Medical education: the process of education and training that qualifies an individual to practice medicine. A number of different stages can be distinguished:

(a) Undergraduate education – period that begins when the student enters medical school and ends with the final examination for his/her basic medical qualification, or with the granting of his/her licence to practice. It comprises a pre-clinical and a clinical period.

(b) Graduate training – the phase of widening clinical experience and acquisition of basic clinical skills and knowledge. This stage normally leads to a full licence to practice.

(c) Postgraduate or professional training – is a post-basic training period designed to lead to competence in a chosen branch of medicine or surgery.

(d) Continuing medical education – designed to keep the knowledge and awareness of the practitioner, the knowledge and awareness of the practice current and to keephim/her in touch with new developments in medical theory and practice.

Medical school: includes all higher education (university-level) except in-service training – describes the process of medical education.
Missed opportunity: when a health worker fails to use every contact with women or caretakers to perform immunizations for children or women.

**MLM course:** Mid-level Management Course commonly conducted for programme managers at district or province level. This course is also beneficial as a refresher course for managers in service or for newly appointed managers at central level as it contains sufficient technical information on a specific programme.

**Monitoring:** A systematic and continuous process of examining data, procedures and practices to identify problems, develop solutions and guide interventions. Monitoring is conducted on a routine basis of program activities. The information collected is used to direct program activities on a continuous basis.

**Need:** A lack of something desirable and useful, a discrepancy or gap between the present situation and the desired or ideal solution.

**Norms:** Express what is desired encompassing such expressions as goals, objectives, policies and standards. They express the "scientifically" determined requirements in a given sector of health or programme. As a quantitative index, norms represent a middle point between extremes arrived at by research.

**Objective:** A quantifiable product or a positive change expected from implementation of a plan. It is the end result a programme, project or an institution seeks to achieve.

**On-the-job training:** Planned informal learning during the period of employment.

**Participatory training:** Engages learners in creative problem solving and provides opportunities for new forms of self-expression. By involving participants in a variety of new ways of learning, it enhances learners in creative problem solving and empowers learners to create new solutions.

**Performance:** The level of achievement of operational capacity of a programme, result of participation and learning. The result of a programme is measured in terms of improvement in the quality of health service delivery, which in turn increases the satisfaction of beneficiaries, which in turn increases the satisfaction of beneficiaries, which in turn increases their willingness to pay for health services.

**Performance review:** A formative assessment of an ongoing programme at mid-term or at the end of the scheduled cycle.

**Programme:** A coherent entity of related projects or services directed by a group of people to achieve specific objectives.

**Project:** A set of activities planned to achieve specific objectives by a group of people to achieve specific objectives.

**Performance appraisals:** Evaluation of the performance of a health worker in terms of operational capacity of a programme.

**Performance indicators:** A specific type of information that is available in the programme to evaluate the performance of health workers.

**Part I and 2 – Glossary**
Target audience:

For the purpose of this module, the target audience means a group of people or government-nominated individuals who may also include other people and representatives of partner organizations who have an interest in immunization programmes.

Task description:

An instruction document that gives technical details as to how the various tasks of the job should be performed.

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Chapter I – Introductory Commentaries and Technical Attachments

Part I: Introductory Commentaries and Technical Attachments on EPI Curriculum
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Part 1: Introductory Commentaries and Technical Attachments on EPI Curriculum

3 Attachments

Attachment 1: Immunization Systems and Operations
Attachment 2: Immunization Policies, Norms and Standards
Attachment 3: Immunization Strategies and Innovative Approaches
Attachment 4: Target Diseases for Immunization Programmes and Disease Surveillance
Attachment 5: Vaccinology and EPI Vaccines
Attachment 6: General Guidelines on Immunization Service Delivery and Vaccine Administration
Attachment 7: Training Modules and Other Reference Materials Related to Curriculum Content

4 List of Reference Documents

4.1 WHO/AFRO Reference Documents
4.2 WHO/HQ Publications and Reference Documents
4.3 Reference Documents from Member States
4.4 Other Reference Documents

3 Attachments
1.1 Training on Immunization in the African Region

Human resources, including immunization services, are central to managing and delivering health care to the population. Policy-makers, managers and pre-service training institutions are key players in ensuring that the performance of health workers improves after in-service training programs. However, several concerns have been expressed regarding the effectiveness of in-service training programs in improving the performance of health workers. "Available evidence shows that the performance of health workers improves after in-service training programs."

In the African Region, many health professional schools have revised their curricula during the past decade, making efforts to incorporate EPI into their teaching agendas. However, training needs assessments conducted during 2001-2005 pointed out that:

- Past EPI training activities were generally infrequent, under-funded and conducted on an ad-hoc basis.
- EPI content was either not outlined in the curricula or it was incomplete or outdated.
- Harmony between pre-service and in-service training was missing.
- Training activities were generally ineffective under Product and Practice.
- Lectures and hands-on lacked modern EPI training.
- Some institutions have expressed the need to develop Mid-level Management (MLM) modules.
- Reference materials and demonstration equipment were lacking.
- Pre-service training institutions have raised many questions about the content of EPI training modules.

The incorporation of EPI into undergraduate medical education is, therefore, a logical step toward improving and strengthening immunization service delivery. A systematic review of EPI curricula from medical schools in the African Region, conducted during 2005-2005, pointed out that:

- EPI training activities were generally infrequent, under-funded and conducted on an ad-hoc basis.
- EPI content was either not outlined in the curricula or it was incomplete or outdated.
- Reference materials and demonstration equipment were lacking.
- Some institutions have expressed the need to develop Mid-level Management (MLM) modules.
- Time allocated to EPI theory was inadequate and the practical sessions were not adequately supervised.
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- Harmony between pre-service and in-service training was missing.
- Lectures and hands-on lacked modern EPI training.
- Pre-service training institutions have raised many questions about the content of EPI training modules. This deficient situation requires a systematic revision of EPI curriculum for both medical and nursing/midwifery schools. To facilitate this exercise within countries, two EPI curriculum models were developed and tested. The models include:

1. A Model for Developing a Systematic Review of EPI Curriculum
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1.2.1 Immunization Programme Needs

Evidence from various health facility surveys and EPI reviews conducted during the past decade shows that the most important barriers to reaching every child in every district with immunization are: low awareness, fear of vaccination, vaccine refusal, vaccine malnutrition, vaccine administration errors, and vaccine scheduling. These barriers also affect the performance of national immunization programmes, which include immunization coverage, stockouts, and delays in vaccine delivery, leading to reduced coverage levels and quality of routine immunizations as well as implementing special immunization campaigns.

1.2.2 Perceived Needs in Training on Immunization Based on Training Needs Assessments (TNAs)

To enhance the performance of national immunization programmes, it is important to assess the current state of training needs and to identify new training needs in order to improve the effectiveness of immunization programmes. The Reaching Every District (RED) strategy adopted by GAVI provides a real opportunity to identify new training needs as well as to establish parameters and priorities for the development of EPI curriculum.

The objective of the TNA was to conduct training needs assessments (TNAs) in collaboration with UN Foundation and NESI, to enhance the performance of national immunization programmes, and to identify new training needs in order to improve the effectiveness of immunization programmes.
Data were collected from semi-structured interviews and from focus group discussions, workshops, observations at service delivery points and a desk review of records, including EPI training curricula. Previous EPI training initiatives targeted a wide range of personnel that included staff at national (central), regional (intermediate), district and peripheral levels, including national and district health workers, programme managers and local experts of district health management teams (DHMT).

For the majority of pre-service and in-service training institutions reviewed during the TNA, EPI content was either not outlined in the curricula or the content was incomplete or outdated. T ... institutions adapted WHO MLM modules, others were not on the WHO mailing list for receiving updated information on EPI.

... for students or supervision of the students on performance. Some training institutions lacked transport to reach their performance. For students or supervision of the students on performance. Some training institutions lacked transport to reach their performance.
Most of the national programme reviews and training needs assessment reports indicate that serious bottlenecks exist in and between pre-service and in-service training; for instance, teachers are not trained in modern EPI theory and practice and updated reference materials are lacking. Indeed, in many countries, national institutions have begun asking medical, nursing, midwifery and other health professional schools to increase the amount of time in their curricula for education of EPI. The International Council of Nurses (ICN) and International Confederation of Midwives (ICM) have advocated for:

- Widening the setting in which education takes place;
- Coordinating education with health services delivery;
- Using national health priorities to set the course for education;
- Developing curricula based on educational objectives.

Revisiting the technical content of the immunization course based on the technical content of the immunization course.

1.3 Objectives of the Curriculum

1.3.1 General Objective
To strengthen the teaching and learning of immunization within the existing curriculum for basic (pre-service) education programmes for doctors, nurses/midwives and other health professionals.

1.3.2 Specific Objectives
- Revising the technical content of the immunization course based on:
  - New developments in the programme
  - Immunization programmes’ norms and procedures
  - Competency profile of the graduates in immunization
- Updating the technical knowledge and skills of faculty/teachers.
- Developing curricula based on the technical content of the immunization course.
The competencies of immunization service providers are based on skills necessary to provide quality and safe immunization services to the target population. The core competencies are derived from a number of different training approaches to those introduced in the previous orientation. The competencies from this analysis may help HRD managers assess the competencies of immunization service providers.

2.1 Exit Profile and Core Competencies of a Medical Doctor for Immunization Activities at District Level

The DHMT team is responsible for all health activities in the district, including planning, organizing, implementing, monitoring, and evaluating immunization services. For this to be successful, the DHMT medical officer (MOH) or medical officer of health should have a certain degree of dynamics, showing not only planning, building, supervisory skills, etc.

The following competencies are summarized in Table 2.1.

<table>
<thead>
<tr>
<th>Pre-service/undergraduate training</th>
<th>Experience at work</th>
<th>Interaction with the community</th>
<th>Post-graduate training</th>
</tr>
</thead>
<tbody>
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<td>In-service or post-graduate training</td>
<td>Refresher courses, workshops, etc.</td>
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The DHMT team is responsible for all health activities in the district.

The conclusions from this analysis may help HRD managers apply different training approaches to those introduced in the previous orientation. The competencies of immunization service providers are based on skills necessary to provide quality and safe immunization services to the target population. The core competencies are derived from a number of different training approaches to those introduced in the previous orientation.

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### Table 2.1: Assessment of the Expected Knowledge, Attitudes and Skills in Immunization of a Graduated Medical Doctor and Medical Officer at Post Exit Profile of a Competency of a

**Knowledge in Immunization**

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Medical Doctor</th>
<th>Medical Officer at Post</th>
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</thead>
<tbody>
<tr>
<td>Theory and Research</td>
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<tr>
<td>Immunization coverage, lethargic schedule failures</td>
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<td></td>
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<tr>
<td>TPR (vaccination rate, missed opportunities)</td>
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<td></td>
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<tr>
<td>Vaccine management (cold chain, stock control, waste)</td>
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<tr>
<td>EPI (evidence, safety of vaccines, communication)</td>
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<tr>
<td>Immunization policy and strategies (outline, campaign, data, outreach); integrated with other programmes</td>
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<tr>
<td>Vaccine preventable diseases; eradication/elimination initiatives</td>
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<tr>
<td>Disease surveillance, case detection and notification system</td>
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<tr>
<td>Theoretical base of immunization (moral history of diseases, causative agents, immune response, types of immunity)</td>
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<tr>
<td>Skills in Immunization Management</td>
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<tr>
<td>Planning (multi-year and annual plans)</td>
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<tr>
<td>Budgeting and managing finances</td>
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<td>Monitoring and evaluating implementation of the plans</td>
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<tr>
<td>Supervisory skills (especially in supportive supervision)</td>
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<tr>
<td>Training skills (especially in supportive supervision)</td>
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<tr>
<td>Coordinating programme activities with other health interventions</td>
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<td>New vaccines and technologies</td>
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</table>

**Attitudes as a Medical Doctor and a Team Leader**

<table>
<thead>
<tr>
<th>Attitude</th>
<th>Medical Doctor</th>
<th>Medical Officer at Post</th>
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<tbody>
<tr>
<td>Ensuring the provision of high standard of care (task assignments, appraisal reports, feedback on performance, etc.)</td>
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<td>Making appropriate management decisions that match the available resources and timely decisions to be ethical and effective</td>
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<tr>
<td>Caring for the service user; counseling rather instructing immunization seekers</td>
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<tr>
<td>Being a communicator who is able to promote immunizations by effective health talks and advocacy</td>
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<tr>
<td>Being a community leader who can lead local health teams and advocate</td>
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<tr>
<td>Being a community worker who is able to promote immunizations by effective health talks and advocacy</td>
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<tr>
<td>Leaving a service that is comfortable and eradicating initiatives in work performance</td>
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<td>Applying good and promoting interpersonal relationships</td>
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<td>Being a community leader who gained local respect and trust</td>
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<td>Being able to organize/conduct surveys on immunization</td>
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<td>Ensuring performance measurement to ensure the reliability of targets and timelines to be efficient and effective</td>
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</table>

Scores X is for “Areas of work where more competency need to be gained”; XX for “Areas of work where sufficient competency already exists” and XXX for “Areas of work with high competency.”
Table 2.2

<table>
<thead>
<tr>
<th>Competencies in management</th>
<th>Knowledge, Attitudes and Skills in Immunization Activities</th>
<th>Exit Profile of a Graduated Nurse/Midwife/Community Health Nurse at Post</th>
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<td>Evaluate immunization achievement in the catchment area</td>
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<tr>
<td>Allocate the duties to the staff and make a weekly/monthly roster</td>
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<tr>
<td>Maintain discipline, teamwork and motivation among the staff</td>
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<td>Organize monthly staff meetings to discuss progress regarding immunization activities</td>
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<td>Ensure that immunization records are properly maintained and forwarded to the district headquarters on time</td>
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<td>Monitor vaccine usage as well as dropout rates</td>
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<tr>
<td>and morbidity trends of target diseases by maintaining up-to-date graphs and maps</td>
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<td>Identify available resources for immunization and request additional resources when needed</td>
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<td>Establish budgets for immunization for the catchment area and monitor monthly, quarterly and yearly</td>
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<td>Make regular, supportive supervision to verify whether immunization norms and standards are correctly applied in the field</td>
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**Chapter 2 – Competency Profile of Immunization Service Providers**

### Part 1: Introductory Commentaries and Technical Attachments on EPI Curriculum

#### Exit Profile of a Competency of Graduated Nurse/Nurse/Midwife/Com.H. Nurse at Post (HC)

- **Knowledge and Skills in Immunization**
  - Organize immunization sessions, both static and outreach/mobile
  - Explain to mothers the importance of immunizations, which immunizations are needed, their intervals, date and place of next vaccination, expected reactions, possible side effects and what to do about them
  - Ensure that all injection materials used for immunization are available and sterile
  - Ensure that vaccines and diluents to be used are not damaged or expired
  - Administer immunizations using the correct schedule and technique
  - Ensure good maintenance and daily monitoring (twice) of the cold chain
  - Keep an inventory of all immunization equipment and their repair status
  - Keep mother and child’s permanent registers accurately
  - Establish a tracking system to immunize defaulters
  - Keep accurate records of performed immunizations and vaccines received from the district – administered and those wasted
  - Ensure that all immunization records are properly prepared and forwarded to the district on time

- **Attitudes and Community Work.** The staff should include the ability to:
  - Be a communicator whose job is to promote immunizations by effective health talks and advocacy
  - Chair the sub-committee on health, include immunization in the sub-committee’s plan
  - Link with Village Development Committee on health matters and
  - Educate the community about the target diseases and the role of immunizations in preventing them
  - Care for service users; counselling, rather instructing immunization seekers
  - Treat the rumours on immunization seriously and give feedback to communities on your findings
  - Use self-assessment and peer-assessment principles in work performance

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<thead>
<tr>
<th>Competencies in performing immunizations</th>
<th>Score</th>
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<td>XX - Areas of work where more competency need to be gained</td>
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<td>XX - Areas of work where sufficient competency already exists</td>
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<td>XXX - Areas of work with high competency</td>
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**Knowledge, Attitudes, and Skills in Immunization**

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<th>Competencies</th>
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**Chapter 2 – Competency Profile of Immunization Service Providers**
2.3 Job Descriptions of National Immunization Programme Core Staff

2.3.1 National EPI Manager

Title: National EPI Manager

Rank: (As per national personnel nomenclature)

Identification of the post: (As per national personnel coding system)

Responsible to: (As per national health system organizational infrastructure)

Objective of the post: To plan, organize, coordinate and ensure implementation, monitoring and evaluation of national immunization programme

Responsibility: Under the supervision of the supervisor (head of unit, director or coordinator), the incumbent will be responsible for the following:

- To analyse and make decisions based on plans and programme development processes
- To monitor implementation and evolution of the programme adopting innovations and best practices
- To ensure quality and safety of immunizations performed
- To advise, orient, inspire and supervise the staff
- To communicate with the communities, stakeholders and partners to maximize resources for immunization and provide them with feedback on programme achievements.

Main Duties/Tasks: % of Work-time Needed (an example)

Periodic (sequential) tasks:
- Developing strategic and annual plans for immunization and budgeting for human, material and financial resources in line with national immunization policies and strategies; 10%
- Monitoring and supervising the programme to ensure targets are achieved and the quality and safety of immunization delivery are guaranteed; 20%
- Arranging quarterly or semi-annual meetings of the Interagency Coordinating Committee (ICC) as a secretariat of ICC; 5%
- Attending quarterly or semi-annual meetings of the Interagency Coordinating Committee (ICC) as a secretariat of ICC; 20%
- Making sure that the daily administration of the EPI unit is done effectively; 15%

Continuous tasks:
- Analysing incoming immunization coverage and surveillance data and making decisions on programmatic issues; 10%
- Acting as a technical advisor to the ministry or board of health on resources, recruitment, deployment of staff working in immunization programme; 5%
- Providing leadership and optimising the performance of the EPI team; 10%
- Ensuring day-to-day administration of the EPI unit; 10%
- Providing leadership and optimising the performance of the EPI team; 10%

Qualifications and Experience:
- Degree in public health or equivalent; extensive professional experience in managing public health programmes.
- Diploma in health management would be an advantage.

Chapter 2 – Competency Profile of Immunization Service Providers

Part 1: Introductory Commentaries and Technical Attachments on EPI Curriculum
2.3.2 Disease Surveillance Officer/Epidemiologist

Title: Disease Surveillance Officer/Epidemiologist

Rank: (As per national personnel nomenclature)

Identification of the post: (As per national personnel coding system)

Responsible to: (As per national health system organizational infrastructure. If working within EPI, he/she is responsible to national EPI manager)

Objective of the post:
To plan, organize, coordinate and ensure implementation of disease surveillance activities according to strategic and annual plan of action on immunization.

Responsibilities/Functions:
Under the supervision of the supervisor (head of unit, director or coordinator, national EPI manager), the incumbent will be responsible for the following:

- To ensure the collection, collation and analysis of disease surveillance data
- To ensure the smooth functioning of the reporting system on target diseases and immunization coverage rates
- To ensure timely response to target disease cases and outbreaks
- To train health workers on principles of disease surveillance.

Main Duties/Tasks

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<th>% of Work Time Needed (Example)</th>
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<tr>
<td>Analyse incoming immunization coverage and surveillance data in liaison with the Epidemiological Department and HMIS.</td>
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<td>Act as a technical advisor to the national EPI manager in matters concerning disease surveillance</td>
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<td>Establish a disease surveillance system of notifiable target diseases for epidemic preparedness, outbreak investigation and control. The system should also include AEFIs.</td>
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<td>Disseminate case definitions of target diseases among health workers to facilitate their early and accurate recognition and case management.</td>
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<tr>
<td>Establish monitoring and evaluation systems with special emphasis on disease surveillance activities according to pre-defined or flexible schedule of field visits and checklists.</td>
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<tr>
<td>Monitor and review progress to verify implementation of disease surveillance activities according to pre-defined or flexible schedule of field visits and checklists.</td>
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<td>Develop and implement the disease surveillance strategy that will include:</td>
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| • Identification of targets
| • Surveillance and early warning
| • Emergency and rapid response to verify implementation of disease surveillance activities according to pre-defined or flexible schedule of field visits and checklists. | 5% |
| • Development of programme indicators
| • Planned or ad hoc field supervision according to pre-defined or flexible schedule of field visits and checklists. | 5% |
| • Routine and sentinel reporting of target diseases
| • Active Case Finding (ACF) and EAFIs
| • Dissemination of case definitions of target diseases among health workers to facilitate their early and accurate recognition and case management. | 5% |

Chapter 2 – Competency Profile of Immunization Service Providers

Part 1: Introductory Commentaries and Technical Attachments on EPI Curriculum
2.3.3. Cold Chain Officer

**Title:** Cold Chain Officer

**Rank:** (As per national personnel nomenclature)

**Identification of the post:** (As per national personnel coding system)

**Responsible to:** national EPI manager

**Objective of the post:**

To plan, organize, co-ordinate and ensure smooth functioning of the cold chain system for the immunization programme

**Responsibilities/Functions:**

Under the supervision of the national EPI manager the incumbent is responsible for:

- Planning and monitoring of the EPI cold chain system in the country
- Ensuring functionality of the cold chain system
- Providing support and means for preventive and curative maintenance of the cold chain equipment
- Training of cold chain technicians at sub-national level.

**Main Duties/Tasks**

- Prepare a cold chain management plan to replace old equipment with the following sub-sections:
  - Cold chain rehabilitation plan to replace old equipment
  - Cold chain emergency plan
  - Plan for preventive and curative maintenance of the cold chain equipment;
- In liaison with the logistician, estimate cold chain equipment and supply needs and advise the EPI manager on selection of equipment with specifications approved by WHO/UNICEF;
- In relation with the logistician, estimate cold chain equipment needs and prepare cold chain equipment rehabilitation, repair and maintenance schedules.

**Qualifications and experience:**

- Diplomate/Associate with experience in refrigerating equipment
- Excellent computer skills and extensive experience in public health and disease surveillance would be an advantage.

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Chapter 2 – Competency Profile of Immunization Service Providers

Part 1: Introductory Commentaries and Technical Attachments on EPI Curriculum
2.3.4 Logistics Officer

**Title:** Logistics Officer (Logistician)

**Rank:** (As per national personnel nomenclature)

**Identification of the post:** (As per national personnel coding system)

**Responsible to:** National EPI manager

**Objective of the post:** To ensure the proper management of vaccines and injection materials, ordering and distribution of supplies, and providing transport for uninterrupted programme operations.

**Responsibilities/Functions:**

Under the supervision of the national EPI manager, the incumbent is responsible for the following:

- Estimating vaccine and injection material needs
- Determining quantities for ordering supplies according to storage capacities of the dry and cold stores and vaccine stock levels
- Managing the vaccine stock to prevent stockouts
- Ensuring a functional distribution system for supplies
- Monitoring use of vaccine and injection material to minimize vaccine wastage.

**Main Duties/Tasks**

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<td>Prepare a logistics plan as a component of overall EPI plan</td>
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<tr>
<td>In liaison with the national cold chain manager, estimate vaccine and other supply needs and advise the EPI manager on vaccine and injection material needs according to larger population to be immunized during the planning period</td>
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<td>Prepare a logistics plan for a component of overall EPI plan</td>
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<td>Conduct regular monitoring and stock inventory of vaccines and injection materials</td>
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<td>Provide regular reports to EPI manager on logistic needs and vaccine movement in and out of cold chain facilities</td>
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<td>Conduct regular quality assurance tests on stock and equipment</td>
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<td>Provide regular quality assurance tests on stock and equipment</td>
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<td>Carry out training of national and sub-national staff on vaccine handling, stock management, calculations of vaccine wastage rate, and logistics record keeping</td>
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<td>Carrying out any other programme activities assigned by the EPI manager</td>
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**Qualifications and experience:**

- Post-graduate diploma in public health or certificate or diploma in logistics management. Previous experience in logistics management is an advantage.

- Experience in logistics management is an advantage.
2.3.5 Communication/Social Mobilization/Health Promotion Officer

Title: Communication/Social Mobilization/Health Promotion Officer

Rank: (As per national personnel nomenclature)

Identification of the post: (As per national personnel coding system)

Responsible to: (As per national health system organizational infrastructure. If working within EPI, he/she is responsible to national EPI manager)

Objective of the post: To plan, organize, coordinate communication and public relation activities and strengthen the advocacy and community mobilization in favor of immunization

Responsibilities/Functions:

Under the supervision of the supervisor (head of unit, director or coordinator, national EPI manager), the incumbent is responsible for:

- Ensuring that EPI communication activities are effectively managed, implemented, monitored and evaluated
- Using communication skills for improved advocacy and social mobilization to maximize resources for immunization programs
- Facilitating formative research and use of research findings in immunization communication programming.

Main Duties/Tasks

- Prepare a communication plan as a component of overall EPI plan, with the following information:
  - Communication activities (training workshops, production of tools, assessments, etc.) addressing routine EPI, disease surveillance and SIAs
  - Activities to be undertaken in conjunction with major communication events such as national or world health days and launching ceremonies related to immunization
  - Activities to be undertaken in conjunction with the following information:
    - Disease surveillance and SIA
    - Communication activities (training workshops, etc.) addressing routine EPI
  - Plan and develop strategies to reach different target audience to be addressed, including strategies to: 10%

- Coordinate the designing, developing, pre-testing, procuring and distribution of educational materials and tools for the immunization program;

- Hold meetings and liaise with other ministries, immunization partners and with the media to communicate progress, best practices and updated information to the public in planning and implementing immunization activities to ensure that immunization messages are clear and relevant for the audience.

- Conduct monitoring of communication activities and establish set of indicators for measuring achievement of objectives and expected outcomes.

- Develop an integrated media network to plan and coordinate the release of press releases for the media in a way that aligns with the EPI communication plan and targets.

- Establish and maintain effective communication with all stakeholders to ensure the successful implementation of the immunization program.

- Conduct baseline surveys on knowledge, attitude and practice related to the immunization program.

- Carry out training of national and sub-national staff on communication techniques and strategies to reach different target audience to be addressed, including strategies to:

- Provide regular reports to EPI managers on progress and constraints and recommend ways to overcome them.

- Evaluate the impact of communication activities and the public relations and advocacy efforts.

Chapter 2 – Competency Profile of Immunization Service Providers

Part 1: Introductory Commentaries and Technical Attachments on EPI Curriculum
Carry out any other programme activities assigned by the EPI manager/supervisor.

Qualifications and experience:
Post-graduate diploma in public health or certificate in communication techniques. Excellent computer skills and some years' experience in statistical data processing and analysis would be an advantage.

### 2.3.6 Data Manager/Statistician

**Title:** Data Manager/Statistician

**Rank:** As per national personnel nomenclature

**Identification of the post:** As per national personnel coding system

**Responsible to:** As per national health system organizational infrastructure. If working within EPI, he/she is responsible to the national EPI manager. The incumbent will be responsible for:

#### Responsibilities/Functions:

- **Under the supervision of the supervisor:**
  - Extracting immunization and disease surveillance data from regular reports from health facilities.
  - Computer processing of the resultant data sets and establishing a computer database for regular reporting.

- **Producing regular data sets for monthly, quarterly and annual reports.**

- **Training health workers in data management using computers.**

- **Computerized data processing of the resultant data sets and establishing a computerized data base.**

- **Liaising with other departments, institutions and organizations (e.g. WHO, UNICEF) involving immunization and disease surveillance data from other countries.**

- **Carry out any other programme activities assigned by the EPI manager.**

### Qualifications and experience:

- Post-graduate diploma in statistics or computing. Excellent computer skills and some years' experience involving data processing and analysis would be an advantage.

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**Main Duties/Tasks % of Work Time Needed (an example)**

- **Establish computer database for data entry and processing as per established indicators using computer software (EPIinfo);** 10%

- **Collect EPI-related information from regular reports and process data through verification and validation of the report content;** 20%

- **Based on the established reporting procedures, estimate the completeness and timeliness of the reports;** 5%

- **Liaise with other departments, institutions and organizations (e.g. WHO, UNICEF) involving immunization and disease surveillance data from other countries;** 30%

- **Carry out any other programme activities assigned by the EPI manager.** 5%

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**Main Duties/Tasks % of Work Time Needed (an example)**

- **Prepare computerized data processing and establishment of a computerized database for regular reporting;** 10%

- **Carry out national data quality assurance (NDA) to improve quality;** 10%

- **Carry out national data quality assurance (NDA) to improve quality;** 10%

- **Carry out internal data quality analysis (DQA) to improve reliability and accuracy of the reporting data;** 10%

- **Carry out any other programme activities assigned by the EPI manager.** 10%
Introduction to Expanded Programme on Immunization

The Expanded Programme on Immunization (EPI) is a global programme for the control of childhood vaccine preventable diseases. Its goal is to eradicate poliomyelitis, eliminate tuberculosis, and control other vaccine-preventable diseases: diphtheria, whooping cough, tuberculosis, hepatitis B, Haemophilus influenza type b infection and others.

In line with global targets set by the WHO, EPI has expanded its focus on immunization coverage to include disease surveillance and eradication/elimination activities. Today, EPI is a coordinated system of mass campaigns or mass immunization activities of mass campaigns (e.g. National Immunization Days - NIDs), incorporating new vaccines and supplemental immunization activities of mass campaigns (e.g. EPI).

EPI is facing new challenges such as carrying out programmatic activities and child mortality reduction.

Vaccine-preventable diseases remain one of the major causes of morbidity, disability and mortality in the African Region. Measles and neonatal tetanus in particular account for most of the deaths due to vaccine-preventable diseases. In particular, children under 5 years of age, among whom deaths recorded each year amount to about 1.1 million in Africa, represent the most vulnerable group in particular in the African Region. Meanwhile, deaths and mortality from vaccine-preventable diseases remain one of the major causes of morbidity, disability and mortality in the African Region.

EPI is therefore the following three orientations:

1. Achieve and sustain high immunization coverage among target populations (90% and above) for all vaccines included in the programme.
2. Establish reliable disease surveillance systems for detection of disease cases and outbreaks.
3. Based on the two previous strategies, implement disease control and eradication programs as needed.

The Global EPI has therefore the following three orientations:

< Accelerate disease control
< Strengthen their immunization surveillance systems
< Introduce new vaccines, new concepts and technological tools.

In line with global targets set by the WHO, EPI is a global programme for the control of childhood vaccine preventable diseases. The Expanded Programme on Immunization (EPI) is a global programme for the control of childhood vaccine preventable diseases.

Attachment 1: Immunization Systems and Operations
To achieve the regional immunization objectives defined in the strategic plan, the following areas of action are emphasised:

- **Immunization coverage:**
  - Achieve and maintain the highest possible coverage for DPT3 (as an indicator for all EPI vaccines) at district level;
  - Integrate vitamin-A supplementation into immunization programmes;

- **Disease control targets:**
  - Reduce cases of measles by 90%;
  - Mortality due to measles by 95%;
  - Eliminate neonatal tetanus and eradicate poliomyelitis;

- **Innovations:**
  - Provide necessary support to countries introducing new vaccines and technologies;
  - Provide support for logistics, cold chain and vaccine management;

- **Strengthening national capacities:**
  - To plan, implement and evaluate their programmes, EPI staff has to understand and manage those internal and external changes. It requires specific skills in problem solving, setting priorities, decision-making, managing time and human, financial and material resources.

The health system and the external environment form the framework within which the immunization services function. To plan, implement and evaluate functions, the EPI staff must take into account the influence of the health system and the external environment on the performance of the immunization programme. To achieve the regional immunization objectives defined in the strategic plan, the following areas of action are emphasised:

External Environment and Immunization Programmes

The health system is, therefore, one factor in the immunization services’ framework, and the external environment is another (Figure 3.1). The managers of immunization programmes should be aware of the influence of the health system and the external environment on the performance of the immunization programme. To achieve the regional immunization objectives defined in the strategic plan, the following areas of action are emphasised:

- **Immunization management staff:**
  - Understand and manage the internal and external changes. It requires specific skills in problem solving, setting priorities, decision-making, managing time and human, financial and material resources.

- **Health system:**
  - To plan, implement and evaluate functions, the EPI staff must take into account the influence of the health system on the performance of the immunization programme. The health system’s support includes providing necessary support to countrysides introducing new vaccines and technologies, reducing the cost of measures by 95% of national recurrent and capital costs, reducing the cost of measures by 99% of non-recurrent costs, and reducing the cost of measures by 90% of non-recurrent costs. Immunization programmes:
    - Integrate vitamin-A supplementation into the immunization programme
    - Achieve and maintain the highest possible coverage for DPT3 (as an indicator for all EPI vaccines) at district level;

- **External Environment:**
  - The immunization management staff should be able to understand and manage the internal and external changes. It requires specific skills in problem solving, setting priorities, decision-making, managing time and human, financial and material resources.

The health system and the external environment form the framework within which the immunization services function. To plan, implement and evaluate functions, the EPI staff must take into account the influence of the health system and the external environment on services and factor them into planning, implementation and evaluation.

**Figure 3.1:** Interrelationship among Immunization Systems, Health Sector and External Environment

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To decide on the strategy for introducing TT vaccination to women of reproductive age, some of the following external and internal factors have to be considered:

**External environment:**
- Has the target group, “women of reproductive age,” been well defined, and has the central statistical office in the country provided an estimate of its size?
- Will vaccination as a mass public health intervention be acceptable to the communities as a whole/certain population groups?
- What are the traditional beliefs and socio-cultural barriers to immunization of young women (e.g., related to rumors on infertility following vaccination)?
- Is the macro-economic climate in the country able to support an increase in the budget of the MOH or request a loan from the World Bank to accommodate additional costs born by this strategy?

**Health environment:**
- Has MOH prioritized the change in the health policy and the plan?
- Has MOH sufficient staff to implement the strategy change from immunizing pregnant women to women of reproductive age, which involves considerable growth in workload?
- Has MOH budgeted for purchase of additional vaccines and consumables to implement the strategy?
- What other programmes does the MOH intend to integrate with the proposed vaccination of women of reproductive age?

**Immunization systems:**
- Has EPI organized training of health personnel in the TT introduction policy change? Are training materials available?
- Has EPI calculated additional cold chain needs for storing TT vaccine?
- Has EPI introduced changes in immunization recording and reporting forms to accommodate additional doses of TT?
- Has EPI established close links with reproductive health programmes to benefit from their experience or share resources for supervision, monitoring, and evaluation?
- Has EPI sensitized communities and stakeholders on new approaches in TT immunization?

This example shows the close interrelation of the three systems that should be considered in decision-making.

**Immunization Operations**

The immunization system comprises five key immunization operations:

1. **Service delivery** covers strategies and activities to ensure provision of immunization services to target populations. Service delivery is exercised with pre-determined strategies depending on various situations and priorities in a country.
2. **Logistics** include delivery of vaccines and other equipment to the place of use, provision of transport, management of cold chain, and disposal of immunization waste (used syringes and needles, and discarded vaccine and other equipment to the place of use).
3. **Vaccine supply and quality** comprises forecasting vaccine needs, procuring vaccines, monitoring of vaccine quality, utilization and safety.
4. **Disease surveillance** includes monitoring of disease incidence, morbidity, and mortality, and reporting vaccine-related adverse events.
5. **Health strategy** involves identification of the target population, service delivery strategies, and monitoring and evaluation.

In the proposed vaccination of women of reproductive age, the MOH should be able to integrate with the MOH services that run in the country to support an increase in the budget of the MOH or request a loan from the World Bank to accommodate additional costs born by this strategy.
Supportive Components of Immunization Services

Supportive components of immunization services include planning, coordination, information collection, and sharing, collaboration with other partners, quality assurance, monitoring, management, including policymaking and standard setting, sustainable financing comprising budgeting, identifying funding sources, actions leading to increased allocation of financial resources, and advocacy, community management, sustainable financing, and institutional strengthening including staffing, training, supervision, and institutional support (including supply of technical information, support to research projects etc.).

Human and institutional resources strengthening includes planning, coordination, information collection, and sharing, collaboration with other partners, quality assurance, monitoring, management, including policymaking and standard setting, sustainable financing comprising budgeting, identifying funding sources, actions leading to increased allocation of financial resources, and advocacy, community management, sustainable financing, and institutional strengthening including staffing, training, supervision, and institutional support (including supply of technical information, support to research projects etc.).

Immunization operations are sustained through the following

- Advocacy and communications comprises programme support and Advocacy, community education on immunization and communication, supporting programmes, social mobilization, 5.

Chapter 3 – Attachment 1

Part 1: Introductory Commentaries and Technical Attachments on EPI Curriculum

Figure 3.2: Five Key Operations and Foundation Elements of Immunization Programmes

Programmes

Service delivery

Supervision

Quality

Supply & Logistics

Advocacy

Communications

Surveillance

Institutional resources

Human and institutional resources strengthening

Management

Sustainable financing

Supportive components of immunization services

Immunization programme management

Human and institutional resources strengthening

Advocacy and communications

Figure 3.2: Five Key Operations and Foundation Elements of Immunization Programmes
To ensure that the immunization programmes are in line with national health policies, formulated around the principle of primary healthcare, immunization policy as a component of the national healthcare system should be determined. The immunization policy is a consolidated national effort to ensure that the immunization programmes are in line with national health policies, formulated around the principle of primary healthcare. Immunization policies, norms and standards are essential for the success of immunization programmes. The following are the key principles and strategies that should be considered:

- **National Immunization Policies**:
  - **Objectives**:
    - To provide a technically sound basis for immunization procedures according to international standards and norms that countries have adapted to specific conditions.
    - To ensure that children and women receive good quality, safe and efficient vaccines for prevention of childhood killer diseases.
    - To ensure that disease eradication and elimination programmes, which include immunization and disease surveillance strategies, are carried out according to established norms and procedures.

- **Political commitment at national and community levels is crucial for EPI to make the programme visible and resourceful.** Political commitment can encourage national key stakeholders and international partners to participate and take ownership of the programme. It ensures sustainability of immunizations.

- **Global Policies on Immunization**:
  - **Global Immunization Campaigns**: To improve the quality of life for children and mothers, with the following objectives:
    - To ensure that disease eradication and elimination programmes are carried out according to established norms and procedures.
    - To ensure that disease eradication and elimination programmes are carried out according to established norms and procedures.
    - To ensure that disease eradication and elimination programmes are carried out according to established norms and procedures.

- **National Immunization Policies, Norms and Standards**

- **Part 1: Introductory Commentaries and Technical Attachments on EPI Curriculum**

  - To ensure that the immunization programmes are in line with national health policies, formulated around the principle of primary healthcare, immunization policy as a component of the national healthcare system should be determined. The immunization policy is a consolidated national effort to ensure that the immunization programmes are in line with national health policies, formulated around the principle of primary healthcare. Immunization policies, norms and standards are essential for the success of immunization programmes. The following are the key principles and strategies that should be considered:

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  - **National Immunization Policies, Norms and Standards**

- **Part 2: Immunization Programmes and Technical Attachments on EPI Curriculum**

  - To ensure that the immunization programmes are in line with national health policies, formulated around the principle of primary healthcare, immunization policy as a component of the national healthcare system should be determined. The immunization policy is a consolidated national effort to ensure that the immunization programmes are in line with national health policies, formulated around the principle of primary healthcare. Immunization policies, norms and standards are essential for the success of immunization programmes. The following are the key principles and strategies that should be considered:

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      - To ensure that children and women receive good quality, safe and efficient vaccines for prevention of childhood killer diseases.
      - To ensure that disease eradication and elimination programmes, which include immunization and disease surveillance strategies, are carried out according to established norms and procedures.

  - **Political commitment at national and community levels is crucial for EPI to make the programme visible and resourceful.** Political commitment can encourage national key stakeholders and international partners to participate and take ownership of the programme. It ensures sustainability of immunizations.

  - **Global Policies on Immunization**:
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      - To ensure that disease eradication and elimination programmes are carried out according to established norms and procedures.
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      - To ensure that disease eradication and elimination programmes are carried out according to established norms and procedures.
Currently, countries in the African Region and elsewhere continue their efforts to protect children from vaccine preventable diseases through EPI reaching all districts in a country, regardless of its geographical location. The Strategic Plan of the Programme, which sets the targets for the development of EPI services and includes measures to monitor progress, has been endorsed by the regional ministers and is a key document for defining strategies and actions needed to implement EPI in each country. The Plan reflects the characteristics and evolution of the Programme. It can be interpreted based on the following considerations:

- **Geographical considerations:**
  - EPI is a global programme, implemented by all countries in the world, developing and developed.

- **National coverage:**
  - In a single country, its goal is to reach every child in a country, even if a disease is endemic or rare. The Programme strives to achieve high coverage in all areas of the country.

- **Disease coverage:**
  - It covers and ensures protection from a wide range of diseases - six to ten and even more diseases in various countries. It is always "expanding," incorporating new vaccines and clinical trials. It may also "expand" to incorporate non-vaccine interventions such as vitamin-A supplementation.

- **Programme components:**
  - EPI "expands" from being just a vaccination programme to a child health Programme, which includes disease prevention and eradication, and health promotion and education.

General Norms and Guiding Principles for Programme Implementation

**Access and Equity**

- Immunization should be a priority component of district health services. A high immunization coverage is essential for ensuring the effective functioning of immunization programmes.
- Immunization services shall be provided at an integral part of the health services.
- Health workers, women's groups, and other health committees and community representatives should be involved in the design, implementation, and evaluation of immunization programmes.

Community participation and social mobilization

(a) Community is the main stakeholder and partner in any immunization programme be it routine EPI or National Immunization Days (NIDs). Therefore, all possible means should be employed to involve community members and community leaders in the Programme.

(b) The Programme must be developed with the participation of community leaders, village chiefs, religious leaders, parliamentarians, teachers, and women's groups.

Integrated approach

(a) Immunization services shall be provided as an integral part of the National Family Health Programme that will include prevention and control of childhood diseases, growth monitoring, information, education, and communication, and child health services.

(b) Immunization shall be a priority of all community health programmes and health services.

Population coverage

- Immunization coverage is measured by the percentage of children vaccinated at different ages.
- The Programme shall aim to achieve high coverage among all children in a country, including those in remote areas.
- Immunization coverage shall be assessed in a systematic manner.

National coverage

- Immunization coverage shall be assessed at the national level.
- The Programme shall be evaluated on the basis of the national coverage.
- Immunization coverage shall be assessed by all countries in the world, and the results shall be used to develop and improve the Programme.

Access and equity

- Immunization coverage shall be assessed at the national level.
- The Programme shall be evaluated on the basis of the national coverage.
- Immunization coverage shall be assessed by all countries in the world, and the results shall be used to develop and improve the Programme.

Globally, countries in the African Region and elsewhere continue to play a vital role in the implementation of EPI. The Programme has made significant progress in reducing the burden of vaccine-preventable diseases, and its success is due in large part to the commitment and dedication of health workers, community leaders, and other stakeholders.
Quality of services and safety considerations

(a) One of the important goals of any health service is to improve the quality of health care provision, including immunizations. The programme shall achieve this through regular training of field staff and their technical supervision, provision of necessary equipment and injection materials and monitoring and evaluation.

(b) The programme shall put under close surveillance the safety aspects of immunizations that involve human factors, such as the health worker, vaccine handling and procedures for vaccinations. Once again, training and regular supportive supervision shall be carried out to ensure safe immunization practices.

Coordination and leadership

(a) The coordination of the programme and all participating agencies and other partners, e.g. NGOs, shall rest with the ministries of health through regular meetings and various committees. A senior official in the Ministry of Health shall chair the Interagency Coordinating Committee (ICC) as a forum for key stakeholders and other partners. The ICC shall be chaired by the Ministry of Health and other partners, e.g. NGOs, shall form the various committees.

Regulatory issues relating to immunization

In the past, various countries of the African Region have issued a number of acts and regulations to guide public health, including provision of immunization services. Most of these are now considered provision of immunization services. Among these are now considered

Importance of health care provision. Where health care provision is not sufficient, it is important that health care provision is provided.

• Health care provider should be registered by the National Drug Registration Unit.
• These vaccines should conform to WHO and UNICEF standards.
• Immunization should be licensed by the National Drug Registration Unit.
• Important vaccines must be registered by the National Drug Registration Unit.
• All vaccines used for immunization should be available at all levels of the health care delivery system.

Chapter 3 – Attachment 2

Part 1: Introductory Commentaries and Technical Attachments on EPI Curriculum
The African regional immunization strategic plan for 2001-2005 on vaccines and immunization is focusing efforts on assisting countries to strengthen their immunization systems, accelerate immunizations and control vaccine-preventable diseases, and increase access to vaccines, immunization services and technologies. To achieve the regional objectives, the strategies described below are emphasized.

Immunization at Static Health Facilities (Fixed Strategy)

In principle, all health facilities in the country should provide immunization services as part of family health services provided by health workers who have received the required training in immunization. Additional care should be taken to keep the immunization sessions’ additional care provided in the same day of the week and in the same place (e.g., school). To maximize the success of these sessions in communities, health facilities should be held on the weekends, of even once a year depending on the available resources. Outreach visits are held periodically at intervals of one to two or three months, or even for a year. Immunizations can be held in locations of one to two or three months. Immunizations can be held in locations of one to two or three months.

Outreach visits are held periodically at intervals of one to two or three months. Immunizations can be held in locations of one to two or three months.

Outreach immunization services provide immunization and other health services to children and women. The purpose of outreach immunization is to provide immunization services to children and women who live outside a 5-10 km radius from a health facility. The locations are determined by the number of sessions per month and the number of outreach sessions. Each outreach session should be held on the same day of the week and in the same place (e.g., school). To maximize the success of these sessions in communities, outreach visits should be held on the weekends, of even once a year depending on the available resources. Outreach visits are held periodically at intervals of one to two or three months. Immunizations can be held in locations of one to two or three months.

Outreach services need good planning as they involve additional resources (transport and money). The immunization team may provide services additional to immunizations on an outreach visit. Outreach services need good planning as they involve additional resources (transport and money). The immunization team may provide services additional to immunizations on an outreach visit.

Immunization Delivery through Outreach Services

More outreach sessions are held on the weekends, of even once a year depending on the available resources. Outreach visits should be held on the weekends, of even once a year depending on the available resources. Outreach visits are held periodically at intervals of one to two or three months. Immunizations can be held in locations of one to two or three months. Immunizations can be held in locations of one to two or three months.

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including prevention, treatment and health promotion. The community should be involved in planning for the outreach programme. For best results, community leaders and caretakers should be consulted about dates and time of the sessions. They can also help mobilize the community to increase attendance.

Immunization Delivery by Mobile Teams

Some countries in the African Region with inadequate health services coverage, long distances between communities, and limited access to health services have adapted strategies to improve immunization coverage. Mobile teams can be a valuable tool in reaching remote and hard-to-reach areas.

Immunization Campaigns or Supplemental Immunization Activities (SIAs)

Because of special requirements of eradication/elimination programmes, such as those for poliomyelitis, measles and other diseases, SIAs are used to improve immunization coverage among large populations at risk. These exercises, taken through mobile teams to break the chain of transmission of diseases, take different forms of strategies, depending on the disease and target population.

SIAs for polio eradication include:

- National Immunization Days (NIDs) are designed to immunize all eligible children within a one-to-three/five-day period. The original intention was to use NIDs to reach children who had missed routine immunizations and to address gaps in coverage.
- Sub-national Immunization Days (SNIDs) are where NIDs are no longer required nationwide but where a specific area is to be targeted. For example, the districts along the border with a specific area are to be targeted.
- Mopping-up is specifically a house-to-house SNID in a focal area where polio transmission is thought to be occurring.

SIAs for measles control include:

- Keep-up approach reinforces routine immunizations and uses a mass approach to improve immunization coverage among large populations. It is a mass approach, with high coverage.
- Catch-up campaign when all children between 9 months and 14 years of age are vaccinated, regardless of vaccination status.
- Follow-up campaign when certain doses for all children between 9 months and 14 years of age are given, regardless of vaccination status.
- Mopping-up campaign when one dose for all children between 9 months and 14 years of age is given, regardless of vaccination status.

SIAs for other diseases include:

- Sub-national Immunization Days (SNIDs) are where NIDs are no longer required nationwide but where a specific area is to be targeted.
- Mopping-up is specifically a house-to-house SNID in a focal area where polio transmission is thought to be occurring.

Because of special requirements of eradication/elimination programmes, SIAs are used to improve immunization coverage among large populations at risk. These exercises, taken through mobile teams to break the chain of transmission of diseases, take different forms of strategies, depending on the disease and target population.
Neonatal tetanus (NT) is not a person-to-person disease. Therefore, SIAs to reduce the incidence of NT are simply TT campaigns among women of childbearing age to raise coverage. Usually, two doses 6–8 weeks apart are recommended. However, to achieve high coverage, mass campaigns are required, during which children under 6–59 months of age are routinely vaccinated, irrespective of their previous immunization or disease history. Such campaigns should not be isolated events but should be part of a long-term strategy, especially for diseases under eradication or elimination (poliomyelitis, neonatal tetanus, measles).

The early manifestations of vitamin A deficiency are multiple, including:
- Night blindness
- Xerophthalmia
- Bitot’s spots
- Keratomalacia
- Osteomalacia
- Dental enamel defects
- Loss of appetite
- Growth retardation
- Impaired physical and mental development
- Increased susceptibility to infections

Vitamin A deficiency is prevalent in developing countries, and its prevention and treatment are crucial. Currently, more than 20 countries have integrated vitamin A into their routine immunization programs.

Rationale for the Integration:
- Vitamin A deficiency (VAD) is a public health problem in developing countries.
- Currently, more than 42 countries have integrated vitamin A into their routine immunization programs.
- The target groups of the two interventions are within close range: children <2 years of age and women of child-bearing age (except for pregnant women who should not get vitamin-A supplement due to possible side effects on the unborn child).

Dosage:
- Children from 6–11 months should be given 100,000 IU of vitamin A.
- Subsequent doses of vitamin A should be given every 6 months up to 5 years of age.
- Children from 12–59 months should be given 200,000 IU of vitamin A.
- Breastfeeding mothers should be given 100,000 IU of vitamin A within 8 weeks of delivery.

Steps for the Dissemination of Vitamin A Supplementation:
- Vitamin A drops should be given to children 6–59 months of age.
- Subsequent doses of vitamin A should be given every 6 months up to 5 years of age.
- Vitamin A drops should be given to children 6–59 months of age.
- Breastfeeding mothers should be given 100,000 IU of vitamin A within 8 weeks of delivery.

Strategy of Integration of Child Health Care Interventions:
- Vitamin A supplementation should be provided to children 6–59 months of age as part of routine immunization services.
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Conclusion:
- The integration of vitamin A supplementation into routine immunization services is a cost-effective and sustainable approach to reducing vitamin A deficiency and improving child health outcomes.
New Challenges and Innovative Strategies in Immunization

The Global Immunization Vision and Strategy (GIVS) was developed in response to challenges to immunization. The strategy envisages the following developments in the coming decade:

- Protecting more people through immunization, especially target populations living in hard to reach areas;
- Offering immunizations to wider age groups;
- Fostering introduction of new vaccines in national immunization programmes;
- Integrating immunization with other life-saving health interventions: malaria control and nutrition, among others, to achieve rapid reduction in child mortality;
- Ensuring equitable distribution of vaccines and necessary funds to all countries.

Huge returns are expected as a result of GIVS, especially in fulfiling Millennium Development Goals on child mortality reduction (Goal 4). According to the strategy document, by 2015 immunization could be preventing 4-5 million child deaths per year.

The Reaching Every District (RED) Strategy was developed to achieve sustained and equitable access to good quality immunization services. The strategy includes the following components:

1. Monitoring for action – thorough monitoring of vaccination charts, maps for each district and community health staff;
2. Understanding links between community and service – regular meetings between community and health staff;
3. Undersecretariat supervision – on-site training by supervisors;
4. Re-establishing outreach vaccination – regular outreach visits to underserved communities.

In March 2003, the GAVI board revised the 80/80 goal, calling on all countries to have routine immunization coverage at 90% nationally and at least 80% in districts. This goal has since been revised by the GAVI board, calling on all countries to have routine immunization coverage at 90% nationally and at least 80% in districts by 2010. The strategy envisages the following developments in the coming decade:

1. Ensuring equitable distribution of vaccines and necessary funds to all countries;
2. Achieving rapid reduction in child mortality;
3. Integrating immunization with other life-saving health interventions: malaria control and nutrition, among others;
4. Fostering introduction of new vaccines in national immunization programmes;
5. Offering immunizations to wider age groups;
6. Population living in hard to reach areas;
7. Preceding more people through immunization, especially in rural and urban areas;
8. Developing innovative strategies to improve immunization coverage.

Global Immunization Vision and Strategy (GIVS)

Chapter 3 – Attachment 3

Part 1: Introductory Commentaries and Technical Attachments on EPI Curriculum
Measles is a highly infectious disease. It is caused by a virus and often occurs in epidemic proportions. Measles epidemics occur in conditions of overcrowding and poverty where large numbers of people are packed together in unventilated places. The transmission of the virus is facilitated by respiratory droplets from infected persons. The incubation period ranges from seven to 18 days. Measles continues to occur as the number of people susceptible to measles accumulates and reaches critical size. Children never immunized or vaccinated but failed to develop antibodies are more vulnerable. People who recover from measles are immune for the rest of their lives.

The complications of measles include severe diarrhea, dehydration, pneumonia, encephalitis, and death. The case fatality ratio is high, but the complications can vary depending on the immune status of the affected individual. Measles is a major cause of blindness among children in Africa.

Vaccination is the best way to prevent measles. The vaccine is given in two doses, with the first dose given at 9-12 months of age and the second dose at 15-18 months of age. The vaccine is highly effective, with over 90% efficacy in preventing disease.

Transmission

- Measles is transmitted through respiratory droplets.
- The virus is spread when an infected person coughs or sneezes.
- The incubation period is 14-19 days.

Preventing measles

- Vaccination is the most effective way to prevent measles.
- Measles vaccine is available in most countries.
- Babies should be vaccinated at 12-15 months of age.
- booster doses at 4-6 years of age.
Clinical case definition

- High fever, with cough, runny nose (coryza), watery, red eyes (conjunctivitis), which are sensitive to light;
- Appearance of generalised rash slightly raised spreading from the face. The rash disappears after about a week.

Confirmed measles is when the patient has these symptoms and laboratory tests show measles antibodies (IgM). Laboratory confirmation is used to verify that the outbreak is caused by measles.

Recommended type of surveillance

Surveillance of measles is an important activity as countries of the African Region are in the transition phase from its control to elimination. Surveillance should include the following:

- When detecting a measles case, the nurse in charge should immediately contact the DHMT for investigation and response;
- Routine reporting to Epidemiology Unit at MOH of all clinical cases within 48 hours by districts, by age and by vaccination status;
- Blood samples should be taken and sent to the laboratory for confirmation of the diagnosis;
- Investigation of outbreaks within 48 hours should be undertaken to determine the factors supporting the epidemic;
- Line listing of all cases should be prepared with information on age, sex, date of onset, vaccination status of patients;
- Zero reporting should be introduced, that is health workers check
  records of children under 5 years of age and if they do not find any measles cases in the
  health facility record, they should put “0” in the appropriate box of the reporting form. Health workers should never put “0” without checking the records or leaving the box blank.

Poliomyelitis

Poliomyelitis (polio) is an acute, highly infectious viral infection. There are three types (otherwise called serotypes) of polioviruses:
- Poliovirus type 1 is the usual cause of paralytic poliomyelitis.

Transmission of infection

- Transmission is primarily person-to-person via fecal-oral infection. The incubation period ranges from 3 to 5 days.
- Fecal-oral transmission is the common mode of transmission in households. Transmissibility is high in households where poor sanitation and contaminated water are present. The virus is spread by infected feces and can be transmitted through hands, food, and water.
- The virus invades the nervous system and can cause paralysis in severe cases of poliomyelitis, which may result in death.

Transmission of infection

- Transmission is primarily person-to-person via fecal-oral route.

Signs and symptoms

- The disease is characterised by sudden onset of fever followed by acute flaccid paralysis.
- Most cases of poliomyelitis are asymptomatic, but some patients experience flaccid paralysis (usually in the legs). Among those who develop symptoms, paralysis can occur in a matter of hours. It enters the body through the mouth and multiplies in the intestine. The incubation period ranges from 3 to 5 days. Initial symptoms include fever, vomiting, and diarrhea, followed by flaccid paralysis in severe cases.

Transmission of infection

- Transmission is primarily person-to-person via fecal-oral route.

Signs and symptoms

- The disease is characterised by sudden onset of fever followed by acute flaccid paralysis. Most cases of poliomyelitis are asymptomatic, but some patients experience flaccid paralysis (usually in the legs). Among those who develop symptoms, paralysis can occur in a matter of hours. It enters the body through the mouth and multiplies in the intestine. The incubation period ranges from 3 to 5 days. Initial symptoms include fever, vomiting, and diarrhea, followed by flaccid paralysis in severe cases.
Eradication of Polio: a challenge for Africa

All countries in the world have committed themselves to eradicate polio and certify its global eradication by 2005. Since the declaration and the launching of the polio eradication program in 1988, there have been increased efforts to achieve this goal. The Polio Eradication and Endgame Strategic Plan has been implemented to achieve this objective.

Clinical case definition

Any child <15 years of age with acute flaccid paralysis (AFP) or any person with paralytic illness suspected to be polio.

Recommended type of surveillance

A highly sensitive surveillance for AFP, including case investigation and specimen collection, is critical to detect wild poliovirus circulation, with the ultimate goal of polio-free certification in the remaining countries worldwide.

Neonatal Tetanus (NT)

African countries are committed to neonatal tetanus (NT) and maternal tetanus elimination by the year 2005. To achieve this goal, the following strategies need to be adapted:

- Increase routine immunization of children under one year of age;
- Conduct supplemental immunizations in high risk districts;
- Increase routine immunization coverage of women of childbearing age;
- Increase routine immunization coverage of mothers under 1 NT case per 1000 live births per year; and
- Neonatal tetanus is common in the environment. The germ is common in the environment. Neonatal tetanus (NT) occurs when a baby is delivered in unhygienic conditions, which can lead to tetanus infection.

WHO declared global elimination of NT by 2005 through the reduction of NT cases to less than 1 case per 1000 live births in every country, every year. WHO-declared global elimination of NT by 2005 through the reduction of NT cases to less than 1 case per 1000 live births in every country, every year. WHO-declared global elimination of NT by 2005 through the reduction of NT cases to less than 1 case per 1000 live births in every country, every year. WHO-declared global elimination of NT by 2005 through the reduction of NT cases to less than 1 case per 1000 live births in every country, every year. WHO-declared global elimination of NT by 2005 through the reduction of NT cases to less than 1 case per 1000 live births in every country, every year.
Transmission of infection

Transmission of infection occurs when:
- soil or dung enters a wound or cut

Signs and symptoms

The disease is characterized by involuntary painful spasms of muscles. Jaw muscles are often first affected. The face of the patient changes expression, which is known as risus sardonicus, ... muscle groups, giving a characteristic picture of neck stiffness, rigid abdomen, and difficulty breathing and swallowing.

Clinical case definition

Tuberculosis

Transmission takes place by airborne droplets that are produced by a person with Tuberculosis. overcrowded and poorly ventilated houses; feces of infected persons.

Recommended type of surveillance

Neonates usually develop feeding problems (cannot suck) having previously been feeding well. Other signs include communication problems (cannot speak), having difficulty breathing and swallowing.

Tuberculosis is a chronic bacterial infection caused by Mycobacterium tuberculosis. - Access surveillance for NT to be carried out in major hospitals; - Active surveillance for NT should be introduced at all levels; - Number of confirmed NT cases should be included in routine monthly reports; - Zero reporting should be zero at the DLM for further analysis; - Every single case of NT should be investigated by the nurse in charge of the health facility, and forms should be sent to the DHMT for further analysis; - Community surveillance should be initiated in remote areas where reporting is non-functional.
Signs and symptoms

The incubation period for TB is four to 12 weeks, but the infection may persist for months or years before the disease develops. Risk factors for getting TB are:

- Immunodeficiency due to HIV infection and clinical AIDS;
- Malnutrition;
- Chronic diseases, e.g. diabetes;
- Low access to health care, etc.

Most commonly, the disease affects lungs (pulmonary TB). In children it can cause severe meningitis, often ending with death. Other parts of the body, including bones, joints and brain can be infected by TB. The symptoms include:

- Persistent cough;
- Coughing up blood;
- Chest pain;
- Fever and night sweats.

People with TB must complete a course of curative therapy. The treatment is expensive and takes a long time: six to eight months depending on type of drugs taken (and still is called DOTS). This may lead to multi-drug-resistant TB, which is extremely difficult to treat, and it can spread to others.

Case definition

This is rather general due to multiple symptoms of the disease. Some of which are also common for other generalized infections. Any person with:

- History of cough for more than three weeks;
- Night sweats, general weakness, loss of weight;
- History of contact with a suspect or confirmed case of pulmonary tuberculosis;
- Person with:

  - History of contact with a suspect or confirmed case of pulmonary tuberculosis.

An ill child with:

- Signs suggesting meningitis or disease in the central nervous system that do not respond to antibiotic therapy for acute bacterial meningitis.

Recommended type of surveillance

- Respiratory disease;
- Diphtheria.

Diphtheria

Preventive measures include vaccination. The vaccine is given to children under 15 years of age. Diphtheria affects people of all ages, but mostly non-immunized children under 5 years of age. The disease is caused by Corynebacterium diphtheriae, a bacillus called "diphtheria bacillus."

Diphtheria is a dangerous childhood disease caused by bacteria called Corynebacterium diphtheriae, which produce a toxin. The toxin can cause swelling of the neck, heart failure and breathing paralysis. Diphtheria is a dangerous childhood disease caused by bacteria called Corynebacterium diphtheriae, which produce a toxin. The toxin can cause swelling of the neck, heart failure and breathing paralysis.

Diphtheria is a dangerous childhood disease caused by bacteria called Corynebacterium diphtheriae, which produce a toxin. The toxin can cause swelling of the neck, heart failure and breathing paralysis.
Diphtheria is spread either by direct contact (skin to skin) or by droplets from the cough of nasal carriers who may be asymptomatic and immune. The transmission of diphtheria is increased in overcrowded and poor socio-economic conditions. Diphtheria can also affect the skin, which is common in Africa.

The incubation period is one to seven days. People infected with diphtheria usually become ill within two to four days, although the symptoms may not appear until six days have elapsed. Transmission is spread either by direct contact (skin to skin) or by droplets from the cough of nasal carriers who may be asymptomatic and immune.

An illness characterized by paroxysmal or paroxysms of coughing.

Whooping Cough (Pertussis)

This is a bacterial disease caused by Bordetella pertussis. The disease is transmitted from person to person by droplets when a person is coughing or sneezing. Pertussis spreads very easily from person to person in close proximity.

In African countries, the disease is most common where immunization coverage is low. The disease is most dangerous in children aged one year or less.

Transmission

Pertussis spreads very easily from person to person in close proximity. Pertussis is spread from person to person in droplets when a person is coughing or sneezing. Pertussis spreads very easily from person to person in close proximity.

Signs and symptoms

Initially, for about the first week, the child appears to have a common cold. The early symptoms include a dry cough, loss of appetite, and slight fever. Within two or three days, a bluish-white or grey membrane forms in the throat and tonsils. If there is bleeding, the tonsils become inflamed. The disease is transmitted from person to person by droplets when a person is coughing or sneezing.

Clinical case definition

An illness characterized by paroxysmal or paroxysms of coughing.

Recommended type of surveillance

Routine monthly reporting of the number of cases confirmed and probable cases; either of pneumonia or paroxysms of coughing.

Outbreaks to be investigated immediately and results reported to a higher level.
coughing attacks, which are particularly frequent at night. This stage usually lasts one to six weeks. In the third stage, the coughing gradually becomes less intense and stops in two to three weeks. There is usually a high fever during the illness.

The following complications are most probable in young infants:

- **Bacterial pneumonia** is the commonest and the cause of most deaths;
- Convulsions and seizures may occur due to inadequate oxygen supply to the brain;
- Inflammation of the middle ear and dehydration.

Antibiotics are not helpful in established whooping cough, except in treating complications such as pneumonia or otitis media. Plenty of fluids should be given to prevent dehydration.

Refer to hospital if child is dehydrated, unable to feed, breathlessness is present or complications are developed: pneumonia or otitis.

**Clinical case definition**

A person with a cough lasting at least two weeks with at least one of the following:

- Paroxysm (fits or burst) of coughing;
- Inspiratory whooping;
- Vomiting immediately after coughing.

**Recommended type of surveillance**

- Routine monthly reporting of the number of confirmed and suspected cases;
- Zero reporting to be established;
- All outbreaks to be investigated and laboratory confirmed;
- Routine monthly reporting of the number of confirmed and suspected cases;
- Reporting of complications and other events; pneumonia or otitis;
- A person with a cough lasting at least two weeks with at least one of the above symptoms should be reported.

**Hepatitis B**

The reasons for introducing hepatitis-B immunization are to prevent hepatitis B virus (HBV) infection of newborns (through mother-to-child transmission), which results in chronic liver disease later in life, and to save human lives and the work force.

Transmission

- The people have been infected, of whom 5-25% are chronic carriers of disease is highly endemic in Africa, by adulthood, between 60-90% of whom are infected. The proportion of viral hepatitis carriers is very young age. The infection in blood and in various body secretions, including saliva, semen and vaginal fluid. The primary routes of transmission are:
  - Perinatal (from mother to child), during birth, when contact with infected blood or secretions occurs.
  - Child to child, which occurs for a large proportion of cases.
  - Perinatal (from mother to child), during birth, when contact with infected blood or secretions occurs.

Hepatitis B is a highly infectious viral disease affecting a large proportion of children at a very young age. The virus is found in blood and in various body secretions, including saliva, semen and vaginal fluid. The primary routes of transmission are:

- Perinatal (from mother to child), during birth, when contact with infected blood or secretions occurs.
- Child to child, which occurs for a large proportion of cases.
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Transmission

The following complications are most probable in young infants:

- Pneumonia
- Bacterial meningitis
- Eschar
- Parotitis

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- Pneumonia
- Bacterial meningitis
- Eschar
- Parotitis
**Signs and symptoms**

The incubation period is 45-160 days (mean 120 days). Infection with HBV can cause both acute and chronic disease. Acute hepatitis B is similar to other types of acute viral hepatitis. Symptoms, which typically occur within the first several weeks, include fever, nausea, vomiting, loss of appetite, and jaundice. The disease results in the following complications:

- Acute hepatitis leading to liver failure and death;
- A carrier state with or without chronic hepatitis;
- A carrier state leading to liver cancer (hepatocellular carcinoma).

**Clinical case definition**

An acute illness that typically includes acute jaundice, dark urine, anorexia and extreme fatigue.

**Recommended type of surveillance**

- Zero reporting from each level;
- Renewed monthly reporting of aggregate data of suspected and confirmed cases;
- All outbreaks to be investigated immediately and confirmed serologically;
- Routine monthly reporting of aggregate data of suspected and confirmed cases.

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**Haemophilus Influenzae Type b (Hib) Infection**

**Transmission**


ty B (Hib) is an important cause of childhood meningitis and a major cause of bacterial pneumonia in infants and children less than five-years old in developing countries. The infection can be transmitted by children sharing objects that they have put into their mouths.

**Europe**

Infection can also be transmitted by children sharing objects that they have put into their mouths.

**Transmission**

- Studies have also shown that Hib accounts for up to one-quarter of cases of meningitis in developing countries.
- Hib disease is the leading cause of meningitis in children under five in many developing countries.
- The causative agent, Haemophilus influenzae type b, is one of six types of bacteria that cause all cases of meningitis in children under five.

**Seroprevalence**

- In the United States, Canada, New Zealand, and Australia, seroprevalence of Hib disease has been significantly reduced in children who have been vaccinated.
- The incidence of Hib disease has decreased in all countries since the introduction of Hib conjugate vaccines.
- In developed countries, meningitis accounts for the majority of Hib disease, whereas in developing countries acute respiratory infection, particularly pneumonia, is the most common clinical presentation.

**Compliance:**

- In many developing countries, Hib vaccine is included in the routine immunization schedule.
- In some countries, Hib vaccine is included in the routine immunization schedule as part of the Expanded Program on Immunization.
- The incidence of Hib disease has decreased in all countries since the introduction of Hib conjugate vaccines.
- In developed countries, meningitis accounts for the majority of Hib disease, whereas in developing countries acute respiratory infection, particularly pneumonia, is the most common clinical presentation.

**Signs and symptoms**

- Affected children may die immediately with antibiotics. Even with prompt treatment, 3-25% of patients develop chronic diseases. Bacterial meningitis is often underdiagnosed and unrecognized in infants and children under five-years old in developing countries. The bacterial Haemophilus influenzae type b (Hib) is an important cause of meningitis in children under five.

**Hib vaccine**

- Hib vaccine is available in many countries and is recommended for children under five years of age.
- In many developing countries, Hib vaccine is included in the routine immunization schedule as part of the Expanded Program on Immunization.
- In some countries, Hib vaccine is included in the routine immunization schedule as part of the Expanded Program on Immunization.
- The incidences of Hib disease have decreased in all countries since the introduction of Hib conjugate vaccines.
- In developed countries, meningitis accounts for the majority of Hib disease, whereas in developing countries acute respiratory infection, particularly pneumonia, is the most common clinical presentation.

**Conclusion:**

- Hib vaccine is available in many countries and is recommended for children under five years of age.
- In many developing countries, Hib vaccine is included in the routine immunization schedule as part of the Expanded Program on Immunization.
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**Part 1: Introductory Commentaries and Technical Attachments on EPI Curriculum**
Diseases caused by Hib are many, with a variety of signs and symptoms, ranging from less frequent manifestations of epiglottitis (inflammation of larynx and pharynx), osteomyelitis, arthritis, and meningitis to more serious ones like septic arthritis, septicemia, and meningitis. The disease is characterized by the sudden onset of fever, chills, headache, back and muscle pain, nausea, and vomiting. This may lead to delirium, seizures, and even death if untreated. Treatment is crucial to prevent permanent disabilities or death.

Clinical case definition
Bacterial meningitis is characterized by the acute onset of fever, headache, and stiff neck. Pneumonia is characterized by high fever, shallow and rapid breathing, and coughs. Meningitis and pneumonia are not specific for Hib disease alone; laboratory confirmation is essential (culture from CSF or blood).

Recommended type of surveillance
- Routine monthly reporting of aggregate data of confirmed cases;
- Sentinel surveillance sites (designated sites) to be established at all levels where laboratory services are developed;
- Zero reporting from sentinel sites.

Monitoring indicators
- Age-specific incidence rate;
- Percentage of cases in which Hib bacteria was identified from CSF or blood;
- Specialized incidence rate;
- Serological/typing studies to be conducted in all outbreaks.

Yellow Fever
Yellow fever is a viral disease endemic in 33 countries in tropical Africa and 11 countries in South America. The disease continues to be a public health concern, causing an estimated 200,000 to 400,000 cases and 20,000 to 30,000 deaths each year. The disease is transmitted by the bite of infected mosquitoes of the Aedes species, particularly Aedes aegypti. The disease is characterized by a high fever, headache, and muscular pains, followed by jaundice and a hemorrhagic syndrome. The case fatality rate is high, with up to 50% mortality in severe cases.

Transmission
There are two primary modes of transmission: sylvatic (occurring in forests) and urban or epidemic (occurring in urban areas). Sylvatic transmission begins when the mosquito vector (Aedes aegypti) feeds on infected, non-human primates and then feeds on people working or passing through the forest. Epidemic transmission occurs when infected people work in wooded areas and are fed on by mosquitoes in their homes, resulting in the spread of the virus to other people working or passing through the forest. The epidemic also occurs when infected people with live virus in their bloodstream return to urban areas and are fed on by mosquitoes in their homes, resulting in the spread of the virus to other people working or passing through the forest.

Signs and symptoms
The clinical symptoms of yellow fever range from mild, undifferentiated fever to severe illness, resulting in death from liver or kidney failure or from the consequences of severe hemorrhage. The clinical symptoms of yellow fever range from mild, undifferentiated fever to severe illness, resulting in death from liver or kidney failure or from the consequences of severe hemorrhage. Laboratory confirmation is essential for differential diagnosis of yellow fever.
Case definition

Suspected: A case with acute onset of fever followed by jaundice within two weeks of the onset of the first symptoms.

Confirmed: A suspected case that is laboratory-confirmed or epidemiologically linked to a laboratory-confirmed case or outbreak.

Recommended type of surveillance

- Routine monthly reporting of suspected and confirmed cases;
- Zero reporting by the sentinel (designated) reporting sites;
- Immediate reporting of suspected cases from the peripheral to the next levels;
- All suspected cases to be investigated immediately with blood samples taken for the laboratory;
- Case-based surveillance to be applied by countries at high risk of yellow fever.

Other Vaccine Preventable Diseases

Mumps

Mumps or parotitis epidemica is a viral infection primarily affecting the salivary glands. Although mostly a mild childhood disease, mumps can also affect adults, among whom it can lead to serious complications, including orchitis and pancreatitis. In hot climates, the disease is endemic throughout the year, whereas in temperate climates, incidence peaks in late winter.

All commercially available mumps vaccines are based on live, attenuated strains of the virus. Extensive use of these vaccines in industrialized countries has proved them safe and efficacious. Approximately 170 countries currently use mumps vaccine in their national immunization programmes. Where sustained vaccination has been achieved, the incidence of mumps has been significantly reduced. In some African countries, the incidence of mumps has been so low that the national immunization programme has been discontinued. Where sustained vaccination is not available, mumps vaccine is recommended for all children at 12 to 18 months of age.

Rubella

Rubella is a viral infection that primarily affects the salivary glands. Although mostly a mild childhood disease, rubella can also affect adults, among whom it can lead to serious complications, including orchitis and pancreatitis. In hot climates, the disease is endemic throughout the year, whereas in temperate climates, incidence peaks in late winter.

The control of mumps can be achieved through high routine coverage of mumps-containing vaccines. The first dose of mumps vaccine should be administered at the age of 12 to 18 months, and a second dose should be given at the age of 7 to 11 years. Children younger than 9 months of age should not be vaccinated. Where mumps vaccine is not available, mumps can be prevented by administering measles vaccine and, if necessary, rubella vaccine. In areas with high measles vaccination coverage, the combination of measles vaccine and mumps vaccine will provide adequate protection against mumps.

Rubella vaccination

Rubella vaccination is recommended for all children at the age of 12 to 18 months, and a second dose should be given at the age of 7 to 11 years. Children younger than 9 months of age should not be vaccinated. Where mumps vaccine is not available, mumps can be prevented by administering measles vaccine and, if necessary, rubella vaccine. In areas with high measles vaccination coverage, the combination of measles vaccine and mumps vaccine will provide adequate protection against mumps.

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In pregnant women, the virus infects the placenta and the developing foetus. Diagnosis of rubella requires laboratory confirmation using serological methods (to observe rubella IgM).

The primary purpose of rubella vaccination is to prevent the occurrence of congenital rubella infection including CRS, which is an important cause of deafness, blindness and mental retardation. The vaccines are highly protective and without significant adverse effects.

The currently licensed rubella vaccines in international use are based on the live attenuated virus propagated in human diploid cells and have proven to be safe and efficacious. Rubella vaccines can be presented in a monovalent form, bivalent combination with measles vaccine or mumps vaccine, or as trivalent measles-mumps-rubella vaccine (MMR).

Large-scale rubella vaccination during the last decade has drastically reduced or practically eliminated rubella and CRS in many developed countries and in some developing countries. For countries wishing to prevent the occurrence of congenital infection two approaches are recommended:

- Elimination of rubella and CRS through universal vaccination of infants, surveillance and assuring immunity in women of child-bearing age;
- Prevention of CRS only through immunization of adolescent girls

Wherever possible, vaccination during the first decade is desirable.

Rotavirus infection has a worldwide distribution and is the most common cause of severe diarrhoea in young children. Rotavirus infection is the most frequent cause of diarrhoea each year are attributed to rotavirus. Rotavirus causes an estimated 25% of all deaths due to diarrhoeal disease in children <5 years of age. More than 125 million cases of diarrhoea each year are attributed to rotavirus.

Rotavirus infection poses a worldwide distribution and is the most significant cause of severe diarrhoea in young children. About 90% of diarrhoea deaths occur in infants, whereas in the industrialized world most severe cases occur in the elderly. Vaccine candidates are under development, but no vaccine is yet licensed.

Pharyngococcal infection

Preventive strategies for pharyngococcal disease, which is highly contagious and causes severe disease in young children in developing countries, include antibiotic treatment and control of exposure to infected individuals. The primary purpose of neonatal vaccination is to prevent the occurrence of neonatal meningitis in newborns.
Extensive clinical trials are now underway with a new generation of pneumococcal vaccines being protein-polysaccharide combinations known as conjugate vaccines. These vaccines are likely to improve the herd immunity by preventing carriage of the bacteria in the nasopharynx and thus reduce the transmission of disease. The protective efficacy of vaccine in this population is currently being evaluated.

In view of the potential public health impact of successful vaccines against pneumococcal disease, WHO considers the development of safe, efficient and appropriately priced pneumococcal vaccines a high priority.

Disease Surveillance

Epidemiological surveillance collects data for describing and analysing health events focusing on diseases and outbreaks; it includes passive or routine surveillance and active surveillance. The passive surveillance includes the following actions:

- Notification of health events (diseases cases or outbreaks);
- Collection and consolidation of pertinent data;
- Routine analysis and preparation of reports;
- Feedback of information to persons providing data;
- Forwarding data to the next, more central level.

The health team or health worker carry out the active surveillance through regular visits to health facilities to look for cases of target diseases (e.g. neonatal tetanus or AFP cases) that were not referred to the health facility. The active surveillance may also include house-to-house visits to look for cases of target diseases through regular visits to health facilities. Data collected during passive and active surveillance should complement each other and, if a new case is confirmed or suspected, this should lead to case or outbreak investigation and response.

Integrated Disease Surveillance and Response (IDS)

Integrated Disease Surveillance and Response (IDS) approach for the countries. The objectives of IDS are to:

- Increase cost efficiency and save human and material resources.
- Use the same structures, personnel, transport and other resources.
- Use the same surveillance, maintenance, and quality assurance.

The increased efficiency and effectiveness of the surveillance system facilitate the performance of epidemic intelligence functions, especially in areas with health facilities that are not connected to the national electronic communication network. However, these increased efficiency and effectiveness are only possible if the ability to collect, record, and analyse data for the surveillance system is enhanced. The improved surveillance system has made it possible to improve the disease surveillance and disease response. Communities play an important role in the surveillance system. The surveillance surveillance includes the following actions:

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- Forwarding data to the next, more central level.
Example, surveillance activities for AFP can address surveillance needs of neonatal tetanus, measles and other diseases. Thus, health staff that routinely monitor AFP cases can also review clinic records for information about other priority diseases:

- Improve the flow of information between levels of the health system and between various programmes. In the IDSR system, information flows to more people and decision-makers, so joint supervision visits can be suggested to review EPI surveillance and disease reporting procedures for other diseases;
- Improve laboratory capacity in identification of various pathogens within and outside EPI;
- Enhance community participation in general surveillance activities, which will also benefit polio or NT surveillance;
- Contribute to epidemic preparedness, including forecasting, planning and stocking emergency vaccine supplies, oral rehydration solutions, antibiotics etc. for epidemic-prone diseases, including measles, meningitis, plague, viral haemorrhagic fevers, yellow fever;
- Epidemic-prone diseases: cholera, diarrhoea with blood (shigella), cholera, tetanus, meningitis, plague, viral haemorrhagic fevers, yellow fever;
- Others included for communication: poliomyelitis, diphtheria, malaria, meningitis, plague, viral haemorrhagic fevers, yellow fever.

Based on the above advantages, the WHO African Regional Office identified 19 diseases prevalent in the Region to be considered for the IDSR approach. These diseases are categorized into three groups that include most of the EPI target diseases:

- **Epidemic-prone diseases:** cholera, diarrhoea with blood (shigella), measles, meningitis, plague, viral haemorrhagic fevers, yellow fever;
- **Diseases targeted for eradication/elimination:** poliomyelitis, neonatal tetanus, dracunculiasis, leprosy;
- **Other diseases of public health importance:** diarrhoea in <5 children, pneumonia in <5 children, new AIDS cases, malaria, meningitis, plagues, viral haemorrhagic fevers, yellow fever.

Each country is encouraged to prioritize the diseases depending on their communicable diseases profile and keep the list to the minimum possible to ensure the system can manage it. In EPI, the IDSR approach will be implemented at these operational levels:

- Surveillance ofAFP,
- Disease reporting requirements and schedules,
- Surveillance ofAFP,
- Disease reporting requirements and schedules,
- Surveillance ofAFP,
- Disease reporting requirements and schedules,
- Surveillance ofAFP,
- Disease reporting requirements and schedules,
- Surveillance ofAFP,
- Disease reporting requirements and schedules.

The following activities should be considered:

**Central level:**
- Improve laboratory capacity to detect surveillance of various pathogens;

**District level:**
- Improve laboratory capacity to detect surveillance of various pathogens;

**Health facility level:**
- Improve laboratory capacity to detect surveillance of various pathogens;

**Community level:**
- Improve laboratory capacity to detect surveillance of various pathogens;
Ensure case and outbreak investigation of target diseases including laboratory confirmation of cases where applicable;

Give guidance to DHMT staff to define their catchment areas and target populations;

Publish EPI newsletter (or integrate it within MOH Family Health newsletter) to give feedback to the field staff on achievements of the programme and constraints.

DHMT level:

• Define DHMT catchment area and calculate the number of target populations to use as a denominator for estimating immunization coverage rates and other programme needs. This exercise is also useful for other target-oriented programmes (health care coverage, water and sanitation coverage etc);

• Monitor completeness and timeliness of target diseases reporting using three indicators: reporting completeness, timeliness and zero reporting;

• Conduct regular supervision of immunization and disease reporting procedures by health centres and private clinics and hospitals;

• Disseminate technical information on disease surveillance to field workers, emphasizing aspects indicated above;

• Conduct case and outbreak investigation of target diseases including collection of specimens for laboratory confirmation, where applicable;

• Provide information and articles on success stories to publish in the Epidemiological Newsletter;

• Give feedback to field staff on achievements of the programme by health centres.

Health clinic level:

• Define health centre catchment areas and calculate the number of target populations to use as a denominator for estimating immunization coverage rates and other needs;

• Send regular and timely reports to DHMT;

• Conduct regular self-audit of immunization and disease reporting procedures to see if they conform to MOH requirements;

• Send regular and timely reports to DHMT;

• Conduct regular audit of immunization and disease reporting procedures to ensure they conform to MOH requirements;

• Send regular and timely reports to DHMT;

• Refer to technical information on disease surveillance supplied by central or DHMT levels;

• Contribute regularly and maintain records of DHMT:

• Maintain health centre on DHMT principles;

• Prepare annual and zero reports.

Chapter 3 – Attachment 4
Part 1: Introductory Commentaries and Technical Attachments on EPI Curriculum
Immunity is the ability of the body to resist harmful disease organisms: the causative agents of infectious diseases. The onset of a disease is marked by the entry and multiplication of infectious agents in the body. Until typical signs and symptoms of the disease appear, patients remain in a sub-clinical state. The interval between exposure to an infectious agent and the onset of clinical symptoms is called the incubation period, which varies for different diseases (from a few hours to three weeks or more). For some diseases, e.g. leprosy, HIV infection, the incubation period may last several months or even longer.

Infectious disease may result in complete recovery or, if severe, may result in disability (e.g. paralysis in polio or blindness in measles) and even death. Measles, Hib infection and neonatal tetanus are recognized as "childhood killers". Other EPI target diseases may also result in disability (e.g. paralytic polio or blindness in measles) and may be fatal for an unvaccinated child.

Causative agents of infectious disease include microorganisms that enter the body through inhalation (tuberculosis, diphtheria, measles, whooping cough), ingestion (polio) or direct contact with the skin or open wounds (tetanus, hepatitis B). Infection (poisoning) of the body or tissue happens when microorganisms get into the body through an infected body fluid or body tissue.

Types of immunity

The human body develops various types of immunity. Our bodies have two lines of defense that protect us from pathogens: non-specific (or innate) immunity, which is the first-line protection against a vast number of harmful pathogens, and specific (or adaptive) immunity, which is the specific protection against particular pathogens. Non-specific immunity protects the body from a wide range of pathogenic invaders, while specific immunity is directed against specific pathogens.

For your children...

Immunity is the ability of the body to resist harmful disease organisms. The causative agents of infectious disease are microorganisms that enter the body through inhalation or direct contact with the skin or open wounds. Infection (poisoning) of the body or tissue happens when microorganisms get into the body through an infected body fluid or body tissue.

Part 1: Introductory Commentaries and Technical Attachments on EPI Curriculum
Attachment 5: Vaccinology and EPI Vaccines
Immunization and Types of Vaccines

After a vaccine has been administered, active immunity usually takes a few weeks to develop. Some vaccines need to be given in several doses (called "diphtheria or tetanus). When antibodies are produced in sufficient quantities, the infected person recovers and the body’s lymphocytes keep the memory of the organism for life. Next time the organism will attack them and protect the person from contracting the disease. He or she will not get ill again due to acquired natural immunity.

For example, if a child has had measles before and recovered, antibodies in his/her body will protect the child from getting the disease a second time; therefore, no further doses of the measles vaccine are needed for that child. Vaccines are divided into four categories:

a. Natural immunity: A person’s own immune system produces antibodies that protect a person from infection.

b. Man-made or artificial immunity: This is the type of immunity given through vaccine or immunoglobulin administration. A vaccine is made up of an organism or a toxin, which is either killed or live but has been attenuated (if it is an active vaccine) or killed (if it is a killed vaccine). Vaccines can be made with live vaccines (polio, BCG, measles), killed vaccines (pertussis vaccine) and toxoids (tetanus or diphtheria toxoids);

c. Herd immunity: This develops when a high proportion of the target population in the community has been immunized with live vaccines, usually 80% and more. A protective effect is developed as they are continuously being "infected" with the harmless (attenuated) virus from their vaccinated counterparts;

d. Passive immunity: "Borrowed" antibodies can protect a person temporarily. A newborn child’s blood contains protective antibodies against measles made by the mother (only if she has antibodies against measles). Measures made by the mother (only if she has antibodies against measles)

Immunization and Types of Vaccines

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Most of the vaccines in use today fall into one of three categories:

1. **Live-attenuated vaccines** are produced from original virulent strains of virus or bacteria that have been weakened, so that they cannot cause disease, but are able to provoke an immunologic response. This group includes viral vaccines (e.g., oral polio vaccine, vaccines against measles, mumps, rubella, yellow fever) and bacterial vaccines (e.g., BCG, vaccines against cholera, tularemia, etc.). Live vaccines (especially viral vaccines) produce a good and long-lasting immune response, although they still pose some risks. The pathogen used in a live vaccine may retain some pathogenicity or even revert to a virulent form and thus cause disease.

2. **Killed vaccines** contain microorganisms that have been treated (killed) by heat or chemicals, so they are no longer harmful but maintain their immunogenicity. Examples are some bacterial vaccines, such as tetanus toxoid (TT) used to immunize women in reproductive age, including pregnant women to prevent newborns from neonatal tetanus, and tetanus in injured persons. This toxoid is also a component of DPT vaccine widely used in childhood immunization.

3. **Sub-unit vaccines** include toxoids (inactivated toxins): examples are tetanus toxoid (TT) used to immunize women in reproductive age, including pregnant women to prevent newborns from neonatal tetanus, and tetanus in injured persons. This toxoid is also a component of DPT vaccine widely used in childhood immunization.

Vaccines can be a single preparation called **monovalent vaccine** or a combination of several antigens, called **polyvalent vaccines**.

**Vaccine Development and Research**

Vaccine development and research proceeds through discovery of the vaccine candidates, process engineering to improve the vaccine candidate, and finally, testing in clinical trials to establish its efficacy (whether a vaccine actually prevents diseases as intended). Vaccine candidates are developed by biotech companies and academic laboratories, and vaccines are approved by regulatory agencies. The success of a vaccine depends on its ability to induce immunity, its safety, and its effectiveness in preventing disease.

In low-income countries, however, vaccines are often produced by traditional methods such as the traditional method of using a live virus to produce a vaccine for smallpox. These traditional vaccines are less effective than modern vaccines and are not suitable for widespread use.

Vaccines are produced in many different ways, including the traditional method of using a live virus to produce a vaccine, the traditional method of using a killed virus to produce a vaccine, and the newer method of using a recombinant DNA vaccine. The choice of vaccine production method depends on the disease being targeted and the resources available.

**Chapter 3 – Attachment 5**

Part 1: Introductory Commentaries and Technical Attachments on EPI Curriculum
of these vaccines introduced in 1999, Tbl. 3.1 summarizes the general characteristics of these vaccines. Haemophilus influenzae type b (Hib) vaccine was licensed in 1999; b and yellow fever (for endemic countries) was added during 1999. Expanded programmes in some new and under-utilized vaccines: Hib and yellow fever (endemic countries) were added during 1999. Expanded programmes in some new and under-utilized vaccines: Hib and yellow fever (endemic countries) were added during 1999. Yellow fever vaccine (YFV) is a live, attenuated, viral vaccine. The six vaccines to be included in the Expanded Programme on Immunization (EPI) are: DTP (diphtheria, pertussis, tetanus), hepatitis B (HBV), poliomyelitis, Hib, yellow fever, and measles. The six vaccines to be included in the Expanded Programme on Immunization (EPI) are: DTP (diphtheria, pertussis, tetanus), hepatitis B (HBV), poliomyelitis, Hib, yellow fever, and measles.

A number of other new vaccines with major potential for controlling infectious diseases are at advanced stage of development. Among these are vaccines for malaria, dengue, leishmaniasis, shigella dysentery, and others. It is expected that all of these vaccines will be available for wide use during 2008-2009.

**Vaccines Used in National Immunization Programmes**

Since the inception of the Expanded Programme on Immunization (EPI), each vaccine has been selected because of safety, effectiveness, and reasonable price and the ability to combat childhood diseases of significant public health importance. The six vaccines to be included in the Expanded Programme on Immunization (EPI) are: DTP (diphtheria, pertussis, tetanus), hepatitis B (HBV), poliomyelitis, Hib, yellow fever, and measles. The six vaccines to be included in the Expanded Programme on Immunization (EPI) are: DTP (diphtheria, pertussis, tetanus), hepatitis B (HBV), poliomyelitis, Hib, yellow fever, and measles.

Chapter 3 – Attachment 5

**Part 1: Introductory Commentaries and Technical Attachments on EPI Curriculum**

To simulate vaccine research and development and to improve access to vaccines, W.H.O., UNICEF and other international organizations are providing technical assistance to developing countries. The Global Immunization Vision and Strategy (2006-2010) sets the goals for the future of immunization. The vision is to ensure that all children worldwide have access to a complete schedule of vaccines, with the goal of eliminating all preventable vaccine-preventable diseases. The strategy includes goals for increasing vaccine coverage, improving vaccine safety, and strengthening national immunization programmes.
<table>
<thead>
<tr>
<th>Vaccines (number of doses)</th>
<th>Type of Vaccines</th>
<th>Form</th>
<th>Vaccine Duration of Immunity</th>
<th>Efficacy (after primary series)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCG</td>
<td>Attenuated live virus</td>
<td>Freeze-dried</td>
<td>Unknown</td>
<td>75-86%</td>
<td>Prevents TB meningitis and miliary TB</td>
</tr>
<tr>
<td>Yellow Fever (1)</td>
<td>Attenuated live virus</td>
<td>Freeze-dried</td>
<td>Unknown</td>
<td>≥99%</td>
<td>Prevents TB meningitis and miliary TB</td>
</tr>
<tr>
<td>Hib (3)</td>
<td>Polyvalent linked</td>
<td>Liquid</td>
<td>≥95%</td>
<td>&lt;15 years</td>
<td>Prevents Hib meningitis</td>
</tr>
<tr>
<td>Yellow Fever (1)</td>
<td>Attenuated live virus</td>
<td>Freeze-dried</td>
<td>Unknown</td>
<td>≥99%</td>
<td>Prevents TB meningitis and miliary TB</td>
</tr>
<tr>
<td>Measles (1)</td>
<td>Attenuated live virus</td>
<td>Freeze-dried</td>
<td>Unknown</td>
<td>≥99%</td>
<td>Prevents mumps, rubella, and measles</td>
</tr>
<tr>
<td>Polio (3)</td>
<td>Attenuated live virus</td>
<td>Freeze-dried</td>
<td>Unknown</td>
<td>≥99%</td>
<td>Prevents poliomyelitis</td>
</tr>
<tr>
<td>Tetanus toxoid (3)</td>
<td>Toxoid</td>
<td>Liquid</td>
<td>≥95%</td>
<td>&lt;15 years</td>
<td>Prevents tetanus toxoid</td>
</tr>
<tr>
<td>Pertussis (3)</td>
<td>Toxoid</td>
<td>Liquid</td>
<td>≥95%</td>
<td>&lt;15 years</td>
<td>Prevents pertussis toxoid</td>
</tr>
<tr>
<td>Yellow Fever (1)</td>
<td>Attenuated live virus</td>
<td>Freeze-dried</td>
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</tr>
<tr>
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<td>Attenuated live virus</td>
<td>Freeze-dried</td>
<td>Unknown</td>
<td>≥99%</td>
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<tr>
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<td>Liquid</td>
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<td>&lt;15 years</td>
<td>Prevents pertussis toxoid</td>
</tr>
</tbody>
</table>

* Adapted from WHO/V&B/02.28 "Core Information for the Development of Immunization Policy", 2002 update.
Delivery of Immunization Services

a. All health facilities in countries shall provide immunization services as part of their routine family health activities at the first available opportunity to infants and women coming to the facility to seek services for whatever reason;
b. Hospitals, health centres/clinics/dispensaries shall organize immunization sessions daily or on specific days during the week agreed upon with the local community;
c. Outreach services shall be organized preferably monthly for widely dispersed populations falling within the catchment area of fixed health facilities;
d. Mobile clinics, expensive to maintain, shall be used selectively to reach remote communities or during mass campaigns.

The ministries of health in many countries have adopted the WHO policy guidelines to deliver immunization services to the children and women at specific ages to suit the local needs. Immunization services are integrated with other aspects of family and child health education and counseling.

A "fully immunized child" is one who has received BCG, measles, three valid doses of oral polio vaccine (OPV), DPT and HepB by the age of 12 months, OPV0 at birth or at first contact with the health worker and OPV1 should be given at 6 months, with an interval of four weeks between doses.

Routine immunization and the national immunization schedule

Target population groups for vaccination

For primary series of vaccinations:
- children under one year of age;
- Women of child-bearing age (15-45 years) with emphasis on pregnant women;
- For primary series of vaccinations, children under one year of age;
- Teenage girls for immunization against cervical cancer;
- Target population groups for vaccination:
- All health facilities in countries shall provide immunization services in schools, clinics, hospitals, and other health facilities. Immunization services are integrated with other aspects of family and child health education and counseling.

General Guidelines on Immunization Service Delivery and Vaccine Administration

Attachment 6: Immunization Service Delivery and Vaccine Administration
The recommended age should not be vaccinated unless in exceptional circumstances suggested by national authorities. Children vaccinated at ages younger or with shorter intervals between doses than those listed in Table 3.2 may not maintain protection against diseases. These doses are known as "non-valid".

Table 3.2: Infant vaccination schedule recommended by Expanded Programme on Immunization (EPI)

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Age</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Newborn</td>
<td>6 weeks</td>
<td>10 weeks</td>
<td>14 weeks</td>
<td>9 months</td>
</tr>
<tr>
<td>Measles</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yellow fever</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>Option A</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Polio</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| DPT, DT, TT and Hepatitis B vaccines should be administered together with the
| | | | |

Vaccine Administration

- DPT, DT, TT and Hepatitis B vaccines should be injected intramuscularly. The preferred site for intramuscular injection in infants is the antero-lateral aspect of the upper arm. If intramuscular injection is not possible, the deltoid may be used as an alternative site.
- Polio vaccine is an oral vaccine and is administered by mouth.
- BCG (vaccine against severe forms of infant tuberculosis) is administered subcutaneously in the left upper arm.

Diluents and reconstitution of vaccines

- The diluents supplied with some vaccines are specific for each vaccine, since they contain certain chemicals, which enhance, stabilize or protect reconstituted vaccine from deterioration during storage. Diluents for vaccines are specific for each vaccine.
- Vaccines should be administered intramuscularly in the left arm.
- All other orientations for administration are out of the normal time.

Older children, who are not vaccinated, should receive the missed doses. All other vaccination doses are given after 6 months of age. Two doses of BCG vaccine are recommended for infants born in areas with a high incidence of tuberculosis. Children vaccinated against severe forms of infant tuberculosis should be vaccinated after 6 months of age. Children vaccinated at 2 years of age or with shorter interval doses than those listed in Table 3.2 should not be vaccinated unless in exceptional circumstances suggested by national authorities.
Health workers should always check that the vaccines have been supplied with the correct diluent and report to a supervisor in case of an error. Only the diluent that is indicated for each type of vaccine should be used. Distilled water for clinical injections should not be used as a vaccine diluent.

The vaccinator should ensure that the volume of the diluent is correct so that proper number of doses per vial is obtained. For each vial of vaccine to be reconstituted, the process requires a sterile syringe and sterile needle to mix the powder in the vaccine vial or in the ampoule with the diluent. Reconstituted vaccine should be kept on ice to preserve its potency.

Reconstituted vaccines may become contaminated with staphylococcus and other organisms from improper handling. Once this happens, a chemical called a toxin is produced that may be deadly if ingested. It can cause severe shock, seizures in a vaccinated child and death. Once a vaccine that is produced has this happens, it should be discarded immediately.

Proper equipment and storage of vaccine and equipment

Proper storage of vaccine and equipment is important. Freezer, vaccine carrier, cold boxes, temperature monitors, refrigeration report tools etc. are essential for quality and safety. Cold chain and logistics

Cold chain and logistics

The cold chain is a system of people and equipment ensuring that potent vaccines reach from vaccine manufacturer to target population to be immunized. The vaccines for EPI are kept at +2 to +8°C. The vaccines are transported at +2 to +8°C to ensure that they are not refrigerated or frozen. These vaccines are kept for a short while before reconstitution and must be kept on ice.

Refrigeration and temperature of vaccines are monitored. If the volume of the diluent is correct, the diluent should be used. If not, the diluent should be discarded and a new one should be used. If the diluent is not correct, the diluent should be discarded and a new one should be used. If the diluent is not correct, the diluent should be discarded and a new one should be used. If the diluent is not correct, the diluent should be discarded and a new one should be used. If the diluent is not correct, the diluent should be discarded and a new one should be used. If the diluent is not correct, the diluent should be discarded and a new one should be used.
Interval between doses of same vaccine

DPT, OPV, TT, hepatitis-B vaccines require administration of more than one dose for development of an adequate antibody response. For these vaccines, the interval between doses must at least be four weeks. Giving doses of a vaccine at less than the recommended four weeks may lessen the antibody response. As previously mentioned, these doses are considered non-valid.

If a vaccine dose is given at less than the recommended four-week interval, it should not be counted as part of the primary series and should be repeated at the appropriate time (after four weeks or thereafter).

A longer-than-recommended interval between doses does not reduce final antibody response although it extends the time when the child is at risk of contracting the disease. When a child is vaccinated, the vaccination on the next occasion should be continued as if the usual interval had elapsed, and no extra dose is needed.

For all practical purposes, there is no maximum interval between doses of the same vaccine.

Simultaneous administration of vaccines and vitamin A

All EPI vaccines are safe and effective when administered simultaneously, that is, during the same vaccination session but at different sites. Simultaneous administration of vaccines and vitamin A improves the take of the vaccine and increases the effectiveness of the vaccination. EPI provides an excellent opportunity for vitamin-A supplementation to child immunization. A supplemental dose of vitamin A may be administered with measles vaccine during routine immunization or supplementary-dose-of-vitamin-A week.

For routine immunizations, two live vaccines can be administered as long as they are from different groups and one is given at least four weeks after the other. However, if these vaccines are the same, they can be given at any interval. EPI recommends that health workers should use every opportunity to mix different vaccines in one syringe before injection of using a multi-dose vial.

Contraindications to immunization

EPI recommends that health workers should use every opportunity to vaccinate eligible children and avoid so-called false contraindications. Based on numerous studies on this issue, the WHO confirms that there are few absolute or true contraindications to EPI vaccines.

The risk of delaying immunization because of lack of compliance or of false contraindications is much less than the risk of leaving an immunization gap. If a child is unvaccinated on the next occasion, it should be given in the same manner as if it had been missed.

All children between 9-59 months of age should be vaccinated for completion of the immunization schedule. The number of contacts required to complete the immunization schedule should be fewer at the same time if the child is eligible. This reduces different sites, thereby saving time and effort during the vaccination session. But an extra dose is needed if the interval between doses is less than the recommended four weeks.

Multiple vaccinations for instance BCG, OPV1, DTP1, and HepB1 should be given at the same time if the child is eligible. This reduces the number of contacts required to complete the immunization schedule. Multiple vaccinations for instance BCG, OPV1, DTP1, and HepB1 should be given at the same time if the child is eligible. This reduces the number of contacts required to complete the immunization schedule.

For routine immunizations, two viral vaccines can be given simultaneously, but if not, they should be separated by at least four weeks to avoid interference (scheduled doses of live viral vaccines can be given even within four weeks of a mass campaign).

If a vaccine dose is given at less than the recommended four-week interval, it should not be counted as part of the primary series and should be repeated at the appropriate time (after four weeks or thereafter).

A longer-than-recommended interval between doses does not reduce final antibody response although it extends the time when the child is at risk of contracting the disease. When a child is vaccinated, the vaccination on the next occasion should be continued as if the usual interval had elapsed, and no extra dose is needed.

For all practical purposes, there is no maximum interval between doses of the same vaccine.
In cases of immune deficiency diseases or individuals who are immunosuppressed due to malignancy, they should generally not receive live vaccines. However, all antigens except BCG and yellow fever should be given to children with symptomatic HIV/AIDS.

A severe adverse event following a dose of vaccine (anaphylaxis, collapse or shock, encephalitis or encephalopathy, or non-febrile convulsions) is a true contraindication to immunization. Vaccines containing whole cell pertussis component should not be given to children with an evolving neurological disease: uncontrolled epilepsy, progressive encephalopathy, or learning disability. The same vaccine should not be administered to an individual who had a severe adverse event following a dose of vaccine—either the one in question or any other vaccines containing the whole cell pertussis component. The use of vaccines should not be discontinued in individuals who have a history of jaundice after birth.

HIV infection and immunization

- Routine EPI vaccines should be given to individuals with known or suspected asymptomatic HIV infection.
- Individuals with known or suspected asymptomatic HIV infection should receive all EPI vaccines as early in life as possible, according to the immunization schedule.

Indications

- History of jaundice after birth.
- Multiple neurological conditions, such as cerebral palsy and Down's Syndrome.
- Chronic diseases of the heart, lung, kidney and liver.
- Dermatitis of the face or localized skin infection.
- Treatment with antibiotics, low dose corticosteroids.
- Childhood diseases.
- Malnutrition.
- Allergy.
- Warm, wet ambience with fever > 38ºC.
- Atopic diathesis with upper respiratory infection or diarrhea.

Contraindications that are not contraindications to immunization:

- Minor illnesses such as upper respiratory infection or diarrhea:
  - Minor illnesses such as upper respiratory infections.
  - Low-grade fever.
  - Mild respiratory infections.
  - Other minor illnesses.
  - Diarrhoea.

- Allergy, asthma.
- Malnutrition.
- Child being breastfed.
- Treatment with antibiotics, low dose corticosteroids.
- Dermatoses, eczema or localized skin infection.
- Chronic diseases of the heart, lung, kidney and liver.
- Stable neurological conditions, such as cerebral palsy and Down's Syndrome.
- History of jaundice after birth.
- Persons with a history of encephalitis or encephalopathy.

False contraindications

- Live vaccines should not be given to individuals who are immunosuppressed due to HIV/AIDS.
- Live vaccines should not be given to individuals with HIV/AIDS.
- Live vaccines should not be given to individuals who are immunosuppressed or to individuals who have had a severe adverse event following a dose of vaccine (anaphylaxis, collapse or shock, encephalitis or encephalopathy, or non-febrile convulsions) when receiving a previous dose.

- The same vaccine should not be administered to an individual who had a severe adverse event following a dose of vaccine—either the one in question or any other vaccines containing the whole cell pertussis component. The use of vaccines should not be discontinued in individuals who have a history of jaundice after birth.

- History of jaundice after birth.
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- Malnutrition.
- Allergy.
- Warm, wet ambience with fever > 38ºC.
- Atopic diathesis with upper respiratory infection or diarrhea.

Contraindications that are not contraindications to immunization:

- Minor illnesses such as upper respiratory infection or diarrhea:
  - Minor illnesses such as upper respiratory infections.
  - Low-grade fever.
  - Mild respiratory infections.
  - Other minor illnesses.
  - Diarrhoea.

- Allergy, asthma.
- Malnutrition.
- Child being breastfed.
- Treatment with antibiotics, low dose corticosteroids.
- Dermatoses, eczema or localized skin infection.
- Chronic diseases of the heart, lung, kidney and liver.
- Stable neurological conditions, such as cerebral palsy and Down's Syndrome.
- History of jaundice after birth.
- Persons with a history of encephalitis or encephalopathy.
Because of the risk of early and severe measles infection, these infants may receive a dose of standard measles vaccine at six months of age and the second dose at nine months.

Individuals with symptomatic HIV infection (e.g., AIDS) can receive BCG and yellow fever (if required). However, they should be vaccinated in consultation with their HIV care provider.

New policy on opened vials of vaccines to be used in subsequent sessions

The EPI will adopt the new WHO policy on opened multi-dose vials of vaccines. The new policy on the use of opened multi-dose vials of vaccines applies to vaccine vials for use in both static and outreach vaccination sessions, in different sites, over several days. The new policy does not change the normal procedures for handling vaccines such as BCG and measles (and other freeze-dried or lyophilised vaccines) that must be reconstituted. 

Missed opportunities

A missed opportunity occurs when a child or woman who is eligible for vaccination visits a health facility but is not vaccinated by the health staff. To reduce missed opportunities and provide vaccination at every health visit, a missed opportunity occurs when a child or woman who is eligible for vaccination visits a health facility but is not vaccinated by the health staff.

Missed opportunities

Dropout rates

The EPI will adopt the new WHO policy on opened multi-dose vials of vaccines. The new policy on opened multi-dose vials of vaccines is a comparison of the number of children who started receiving immunizations with the number who do not receive further doses for full immunization expressed in percentages. Dropout rate (DOR) is a comparison of the number of children who started receiving immunizations with the number of children who do not receive further doses for full immunization expressed in percentages.
This indicator is used for measuring the level of utilization of immunization services. Dropout rates are calculated by comparing the number of infants that started receiving immunizations to the number of infants who received all needed doses of vaccines.

In the example of DPT1 - measles, let us see how the dropout rate (%) is calculated:

\[
\text{DPT1 administered} - \text{Measles vaccine administered} \\
\text{DPT1 administered} \\
\times 100 \\
\]

After analysing population data, immunization coverage and dropout level, you need to interpret them and answer the following specific questions:

- How does the immunization coverage compare with the objectives?
- How does the coverage compare with the figures of the previous period?
- Judging from DPT1 coverage, what is the situation relating to physical access to immunization services?
- Do vaccines administered at the same age have the same coverage levels (OPV3, DPT3 and HepB)?
- Which are the most disadvantaged communities regarding their access to immunization services and coverage?
- Do infants who received all needed doses of vaccines have the same coverage levels as those who did not?
- Do all those who have access continue to use the services?
- Do infants who have access continue to use the services?
- Judging from DPT1 coverage, what is the situation relating to physical access to immunization services?
- How does the coverage compare with the figures of the previous period?
- How does the immunization coverage compare with the objectives?

After analysing population data, immunization coverage and dropout rates, the following information should be recorded on the child’s growth monitoring and immunization cards.

Community Information and Participation:

- The health worker is responsible for informing caregivers about the reasons for immunization and the disease for which the child is vaccinated, the results of the child’s growth monitoring and the importance of keeping the vaccination card into adulthood.
- Health workers should also counsel on the progress of the child, including discussing the results of the child’s growth monitoring and giving advice on nutrition, home care, and early attendance at the health centre.

Health workers should encourage caregivers to return for the next dose and to continue to bring their children regularly for well-child sessions.

All sessions should be conducted in a friendly and continuous manner, ensuring that the child receives the necessary vaccinations, and informing caregivers about the possible side effects of the vaccines, the disease for which they are given, and what to do if they occur.

Health workers should also discuss the following information before leaving the health centre:

- The reasons for immunization and the disease for which the child is vaccinated
- The child’s growth monitoring
- Nutritional advice
- Home care
- Advice on early attendance at the facility in case of illness

The importance of keeping the vaccination card and its information up-to-date.

When and where the caregiver/patient should return for the next immunization session:

- The health worker is responsible for making sure that the parent has the following information before leaving the health centre:

In the example of DPT1 - measles, let us see how the dropout rate (%) is calculated:

\[
\text{DPT1 administered} - \text{Measles vaccine administered} \\
\text{DPT1 administered} \\
\times 100 \\
\]

This indicator is used for measuring the level of utilization of immunization services.

Health workers should encourage caregivers to return for the next dose and to continue to bring their children regularly for well-child sessions.

All sessions should be conducted in a friendly and continuous manner, so as not to discourage the caregivers/patients from returning.
T eachers may consult the most recent Directory of Vaccines and Biological Products (available at country WHO Office library) for detailed information. Those who have access to Internet can visit the site at http://www.vaccines.who.int to locate reference documents.

Attachment 7 contains lists of various reference and audio-visual materials, CD-ROMs and other software related to curriculum content. Most of these materials are available in national EPI units or WHO country offices.

Among reference courses in this attachment, two are directly related to this curriculum and constitute a basis for teaching immunization:

- **Immunization in Practice**
- **Mid-level Management Course for EPI Managers**

The teaching is easier when the student has his/her own copy of the modules. For this reason, it is worthwhile trying to obtain enough copies for the school library. For every student, the national or regional course Materials Office is a good source for obtaining enough copies of the various reference modules in this attachment, two are directly related to curriculum content.

### Expanded Modular Blocks: Full-course Option

**Mid-level Management (MLM) Course Modules for Various Options**

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<th>Block</th>
<th>Introduction to Immunization Programmes</th>
<th>Problem-solving Approach to Immunization Services Management</th>
<th>Role of the EPI Manager</th>
<th>Communication for Immunization Programmes</th>
<th>Planning Immunization Activities</th>
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</table>

**Reference:**
- Communication Handbook for Polio and Routine EPI
- Revised EPI Planning Guide

**Reference materials, CD-ROMs and other software related to curriculum content:**

- Teachers may consult the most recent Directory of Vaccines and Biological Products (available at country WHO Office library) for detailed information.
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<table>
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<tr>
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<td>Guide for Preparation of Supervisory Checklists for Disease Prevention and Control Activities at District Level, October 2003</td>
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| Other Training Tools and Guides: EPI training kit, course directors guide, manual for supervisors |

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</table>
Immunization in Practice – 2004 edition

"Immunization in Practice" is an eight-module WHO publication intended for health workers who regularly administer vaccines to women and children. The modules contain information on the following topics:

- Session planning
- Administration of immunizations
- Monitoring of immunization coverage
- Building community support for immunization

In particular, the manual deals with the logistics of vaccine transport, maintaining the cold chain, and monitoring immunization coverage.

Immunological Basis of Immunization

This is a series of eight distinct modules developed for a wide range of health workers and university lecturers to provide a conceptual basis of immunization in general and in relation with target diseases in particular.

Audio-visual materials

Information on each module includes a series of slides, posters, and audio-visual materials.

- Slides
- Posters
- Audio-visual materials
List of Reference Documents

4.1 WHO/AFRO Reference Documents

WHO/AFRO/CN/01/09, 2001
WHO/AFRO/CN/01/09, 2001
WHO/AFRO/CN/01/09, 2001

An In-Depth Analysis of Training Needs Assessment Studies – WHO AFR/VIRO, November 2007

WHO/AFRO Reference Documents

WHO/AFRO/CN/01/09, 2001
WHO/AFRO/CN/01/09, 2001
WHO/AFRO/CN/01/09, 2001

A. Background

B. Objectives

C. Methodology

D. Results

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Strengthening the Teaching on Immunization in Basic (pre-service) Education Programmes for Nurses and Other healthProfessionals. WHO/TRAM/97.01, 1997


Tuberculosis Control in Medical Schools. WHO/TB/98.236. Also available at www.who.int/gtb/publications, 1998


WHO-recommended Standards for Surveillance of Selected Vaccine-preventable Diseases. WHO/V&B/03.01, 1999


1997 General Nurse Training Three-year Course Curriculum. MOHGW.


1996 Practical Procedure Training Book for Medical Assistants. PO.B. Dar Es Salaam, Tanzania, 1988


WHO-Recommended Standards for Surveillance of Selected Vaccine-preventable Diseases. WHO/V&B/03.01, 1999


Public Health Nursing: Pre-service Education. 3rd edition. Uganda, 1990


A Guide for Training Teachers of Health Workers. AMREF. Nairobi, Kenya

General Nurse Training Three-year Course Curriculum. MOHGW.


Practical Procedure Training Book for Medical Assistants. PO.B. Dar Es Salaam, Tanzania, 1988


AT Nursing/Midwifery Schools in the African Region

EPI Prototype Curriculum for Teaching a Course on Immunization

PART 2
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Introduction

The prototype curriculum in section 2 "Content Topics" with sub-topics outlines details of a course of study designed to assist medical students to learn the tasks involved in management and provision of immunization services. Students who complete this course should be able to:

- Plan and manage immunization services integrated with other health programmes;
- Conduct immunization sessions, including outreach sessions;
- Conduct disease surveillance;
- Communicate effectively with stakeholders;
- Promote immunization activities in the community.

The curriculum structure includes the following information:

- The title of the curriculum topic (T).
- The name and number of the lesson (L).
- Lesson objective outlines the aim and goal of the lesson.
- Time allocation indicates approximate time required to cover the lesson.
- Specific sub-topics under each major topic highlight the content elements that the lesson covers.
- Learning outcomes state key results of the lesson for each content topic.
- Teaching/learning methods column refers to a variety of pedagogical methods – lectures, role-plays, simulation, etc.
- Teaching/learning materials/media column specifies pedagogical resources for use by students, including immunization programme materials, course modules, didactic materials, samples of immunization items, etc.
- Reference sources specify the source, chapters, and titles in the reference documents and modules.

Sections 3-7 of the curriculum contain guidelines regarding organization of practical sessions and field placements with samples of projects and teacher observation checklists. There are 17 content topics (7.1-7.5) related to programme planning, monitoring, supervision, and evaluation. Sections 8-12 and annexes 1 and 2 provide guidelines on implementing the curricular plan, evaluating, and improving the curriculum. The curriculum includes a section on student assessment with answers to assist teachers in student assessment. Examination questions with answers include tests in student assessment, with samples of questions and teacher observation checklists. The curriculum includes a section on immunization programme operations providing vital information on immunization programme operations and highlights organizational frameworks and field placement of the students.
Content Topics (Ts) of the Curriculum

Lesson objective:

Provide key information on immunization goals and operations, relationship with health system and external environment

Time allocation:

Classroom session: Theory - 45 minutes
Practicals - 0
Field placement - 0

Learning methods:

Teaching
Practical
Field
Teaching

Assessment:

Students will be able to:

1. Describe the role and relationship of the external environment and health system with the immunization programme
2. Outline five key immunization operations
3. Describe the components of immunization services

Media/materials:

Introductory lecture by teacher
Individual reading by students
Questions and answers
Brainstorming

Supportive services:

EPI MLM Course (WHO/AFRO) - Hard copy or CD
National vaccination training manual
Mid-level Management Course in the African Region
Answers to sample examination questions in Section 7, T-1, Nos 1-2

Part 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students

a. Introduction to EPI
b. External environment and immunization programmes
c. Immunization operations
d. Supportive components of immunization services

1. Describe the role and relationship of the external environment and health system with the immunization programme
2. Outline five key immunization operations
3. Describe the components of immunization services

EPI MLM Course
National vaccination training manual
Mid-level Management Course in the African Region
Answers to sample examination questions in Section 7, T-1, Nos 1-2
Lesson objective: Provide information, discuss and explain the role of EPI policies, global and national goals, norms and standards

Time allocation:
- Classroom session: Theory - 30 minutes
- Field placement - 0

Learning/enabling objectives:
- Students will be able to:
  - Describe the aims and objectives of national immunization policies
  - Describe the three main goals of global immunization policies
  - List health related goals among the United Nations Millennium Development Goals
  - Interpret the following general norms and guiding principles on immunization:
    - Community participation
    - Integration of immunization with other child health services
    - Accessibility and equity
    - Quality and safety of immunizations
    - Programme coordination and leadership
    - Role of the National Regulatory Authority
    - Rights and responsibilities of service users

Media/materials:
- National immunization/child health policy documents
- Immunization Policy. WHCONPV/95.03. Rev.1.
- AFRO MLM course Module 2 Chapter 4 "National immunization programme development: steps for policy formulation"
- "Immunization Policies, Norms and Standards" - Attachment 2 in Part 1 of this document
- Answers to sample examination questions in Section 7, T-2, Nos 1-3

Sub-topics:
- Immunization Policies, Norms and Standards
# Lesson objective:
Explain EPI service delivery current and innovative strategies (GIVS, RED etc.) and underline the need for integrated delivery of services

## Time allocation:

<table>
<thead>
<tr>
<th>Classroom session: Theory</th>
<th>Practicals</th>
<th>Field placement</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 minutes</td>
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</table>

## Learning/enabling objectives:

At the end of the session, students will be able to:

1. **Describe the fixed strategy**
2. **Describe the advantages and limitations of the fixed strategy**
3. **Describe the outreach strategy**
4. **Describe the advantages and limitations of the outreach strategy**
5. **Describe the mobile strategy**
6. **Describe the advantages and limitations of the mobile strategy**
7. **Describe the types of campaign strategy and when to apply them**
8. **Describe the advantages and limitations of campaigns**
9. **Describe the integration strategy**
10. **Describe the advantages and limitations of service integration**

## Sub-topics:

<table>
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<tr>
<th>Media/materials</th>
<th>Session placement</th>
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## Additional resources:

- National, regional and global immunization policies
- Wall map showing catchment areas (health facilities and outreach sites)
- Documents on national, regional and global immunization policies
- Global Immunization Vision and Strategy 2006-2015 (GIVS) and explain what is new in it
- Decode GIVS and explain what is new
- Decode RED and describe the need for integrated or federated delivery of services
- Innovate strategies: Health care services
- Describe the types of campaigns and strategies and when to apply them

## Learning/teaching methods:

- Introductory lecture
- Group work
- Discussion
- Demonstration of poster/map by EPI manager
- Questions and answers
- Brainstorming
- Students分组完成样本考试中的问题第7章, T-3, No. 1-3

## Attachment:

- Module 5: "Planning Immunization Services"
- Module 6: "Holding an Immunization Session"
- Immunization in Practice: Module 5: "Planning Immunization Services"
- Module 6: "Holding an Immunization Session"

## Notes:

- National Immunization or child health policy documents
- Attachment 3 of this document: "Immunization Strategies and Innovative Approaches"
### Lesson objective:
Introduce target diseases and their health burden in African countries and explain the role of integrated disease surveillance.

### Time allocation:
- **Classroom session:** Theory and role-play - 90 minutes
- **Practicals:** 0 minutes
- **Field placement:** 1 week

### Learning/enabling objectives:
1. **Teaching/Teaching/Practicum**
2. **Reference Material:**
   - Immunization in Practice: Module 1: "Target Diseases"
   - Handout Enhanced Programme Implementation Volume: New vaccine introduction into national EPI.
   - NES/WHO AFRO.2005. Section on Epidemiology of vaccine-preventable diseases
   - WHO-Recommended standards for surveillance of selected vaccine-preventable diseases. WHO/V&F/03.01
   - Answers to sample examination questions in Section 7, T-4, Nos 1-7

3. **Teaching methods:***
   - Field placement
   - Individual reading by students
   - Questions and answers
   - Role-play

### Field placement:
- **Field placement:** 1 week to designated health facility
- **Project work:** on disease surveillance
- **Homework:** on surveillance tools

### Current textbooks:
- Current textbooks on infectious diseases
- National and WHO publications
- Videos on vaccine-preventable diseases
- Slides on EPI target diseases
- Handout on role-play
- Map of catchment area
- Specimen collection kits

### Field placement:
- **Field placement:** 1 week to designated health facility
- **Project work:** on disease surveillance (as described in section 5)
- **Homework:** on field placement

### Sub-topics:
- **1. Other vaccines:***
  - Polio
  - Yellow fever
  - Tetanus
  - Influenza
  - Mumps
  - Rubella
  - Rotavirus disease
  - Pneumococcal disease

- **2. Integrated Disease Surveillance:**
  - Surveillance (active, passive, community surveillance)
  - Description of surveillance tools
  - Use of surveillance in epidemic preparedness and response
  - Advantages of integrating different surveillance systems under IDSR

### Learning methods:
- **Introductions:**
  - Field placement
  - Individual reading by students
  - Questions and answers
  - Role-play

### Field placement:
- **Field placement:** 1 week
  - Conduct a project on disease surveillance (as described in section 5)

### Grade level:
- Grade 10

### Assessment:
- **Written examination:**
  - At the end of the session
  - A checklist for overall performance of clinical tasks

### Chapter 2 – Content Topics (Ts) of the Curriculum

**Part 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students**
<table>
<thead>
<tr>
<th>Sub-topics</th>
<th>Learning/enabling objectives: At the end of the session, students will be able to:</th>
<th>Teaching/learning methods</th>
<th>Teaching/media/materials</th>
<th>Practicum</th>
<th>Field placement</th>
<th>Reference source</th>
<th>Student assessment</th>
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<tbody>
<tr>
<td></td>
<td>Participate in specimen collection and dispatch to laboratory</td>
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<td>Attachment 4 in</td>
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<td>Explain the role of disease recording and reporting</td>
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<td>Interpret AFP (Acute flaccid paralysis) rate as a key polo surveillance indicator</td>
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<td>Complete a monthly surveillance report</td>
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</table>

**Chapter 2 – Content Topics (Ts) of the Curriculum**
Lesson objective:
Introduce fundamentals of vaccinology; describe/demonstrate current EPI vaccines and discuss future vaccine development

Time allocation:
Classroom session: Theory - 45 minutes
Introduce fundamentals of vaccinology: Describe the mechanisms of their action, vaccines and other drugs in terms of their differences between vaccines and other vaccines. Describe the vaccines of the future.

Learning/enabling objectives:
At the end of the session, students will be able to:

<table>
<thead>
<tr>
<th>Learning methods</th>
<th>Teaching objectives</th>
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<tbody>
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</tbody>
</table>

- **a. Immunity:** a general overview
- **b. Immunization and types of vaccines**
  - Monovaccines and combination vaccines
  - Live and killed vaccines
  - Bacterial and viral vaccines
  - Sub-unit vaccines (Toxoids, Polysaccharides, etc.)
- **c. Vaccine development and research**
- **d. Vaccines used in national immunization programmes**

Describe types of immunity:

List different types of vaccines:
- Monovaccines and combination vaccines
- Live and killed vaccines
- Bacterial and viral vaccines
- Sub-unit vaccines (Toxoids, Polysaccharides, etc.)
- Liquid vaccines and lyophilised (dry) vaccines

List most common new vaccines; characterize vaccine of the future (ideal vaccine)

Describe differences between vaccines and other drugs in terms of their mechanism of action, requirements for storage and transportation, and other characteristics of their action. Describe the vaccines of the future.

<table>
<thead>
<tr>
<th>Media/materials</th>
<th>Session placement</th>
<th>Practical placement</th>
<th>Field placement</th>
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</thead>
<tbody>
<tr>
<td>Lecture handouts</td>
<td>Training modules</td>
<td>Vaccine posters</td>
<td>Sample vaccines</td>
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</tbody>
</table>

Lecture:

- Individual reading by students
- Questions and answers
- Brainstorming
- Demonstration of vaccine samples

Practical:

- Lecture
- Lecture handouts

Field placement:

- Lecture
- Training modules
- Vaccine posters
- Sample vaccines

Programmes

- Immunization in Practice. Module 2: "The Vaccines"
- National training manuals

Attachment 5 in Part 1 of this document: "Vaccinology and EPI vaccines"

Answers to sample examination questions in Section 7, T-5, Nos 1–5
### Topic 6: Immunization Service Delivery and Vaccine Administration

#### Topic-6.1 (T-6.1): General Guidelines for Vaccine Administration

**Lesson objective:**
Provide information on EPI target groups and immunization schedules; explain and discuss validity of vaccine doses and ability of the human body to respond simultaneously to several antigens/vaccines.

**Time allocation:**
Classroom session: Theory - 45 minutes

**Lesson objective:**
Provide information on EPI target groups and Immunization schedules; explain validity of vaccine doses and ability of the human body to respond simultaneously to several antigens/vaccines.

<table>
<thead>
<tr>
<th>Sub-topics</th>
<th>Assessment</th>
<th>Source</th>
<th>Session</th>
<th>Teaching methods</th>
<th>Field Placement</th>
<th>Precept</th>
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</thead>
<tbody>
<tr>
<td>a. Target groups for immunization programmes in the African Region/country</td>
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<td>b. Immunization schedule recommended by WHO and the country:</td>
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<td>b. a) what vaccines children should have before their 1st birthday (fully immunized child-FIC);</td>
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<td>b. b) when to give TT to women and period of protection after birth</td>
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<td>b. c) what is “valid”, “non-valid” dose?</td>
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<td>b. For each vaccine, state the number of doses and quantity to be given; the optimal age for each dose and the interval</td>
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<td>b. c) Specify the minimum interval between doses of the same vaccine</td>
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<td>b. d) State target groups for immunization in</td>
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**Learning/enabling objectives:**

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<th>Teaching methods</th>
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<td>b. Simultaneous administration of vaccines administered</td>
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<td>b. f) What is “valid”, “non-valid” dose?</td>
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<td>b. g) For each vaccine, state the number of doses and quantity to be given, the optimal age for each dose and the interval</td>
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<td>b. h) Specify the minimum interval between doses of the same vaccine</td>
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</table>

**Handouts/Enhanced:**

- Module: Immunization
  - NRM: 7.1-6.1, Nos 1-8
  - Lecture materials
  - Additional questions in section 2, and 6

- Precept: Notes
  - Immunization in the

**References:**

- Chapter 2 – Content Topics (Ts) of the Curriculum
- Part 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students

**Modules:**

- 2, 5 and 6: National training manuals
- Training modules
- Individual teaching
- Lecture handouts

**Courses:**

- 4. Basic Groups for Immunization
- Handouts/Enhanced
Lesson objective:
Demonstrate administration techniques for each vaccine and vitamin A; safe injection practices; health worker-client interaction during session.

Time allocation:
Classroom session: Theory and simulation - 60 minutes
Practicals: 3 hours

Learning objectives:
At the end of the course, students will be able to:
- Demonstrate administration technique for each vaccine and vitamin A; safe injection practices; health worker-client interaction during session.
- Indicate age of the child and doses of vitamin A to be given.

Sub-topics:
- Administration of BCG
- Administration of Polio, DPT and other combination vaccines
- Administration of Measles, Yellow fever
- Administration of Vitamin A

Additional materials:
- Lecture handouts
- Training modules for demonstration and simulation
- Expired vaccine vials
- Expired diluent
- AD syringes
- Foil
- Ice pack
- Appropriate objects for injection simulation (e.g. fruit)
- Safety box
- Scissors
- Vitamin-A capsules

Practicals for demonstrations to conduct at nearby clinic or at departmental facility

Module 2: "The Vaccines"
National training modules of the host country

Attachment 6 in Part 1 of this document: General Guidelines on Immunization Delivery and Vaccine Administration

Answers to sample examination questions in Section 7, T-6.2, Nos 1-7

Observation of students during simulated practice
Lesson objective:
Explain the role of CC; demonstrate CC equipment; interpret stock control system, Opened vial policy and results of VVM, and shake test

Time allocation:
Classroom session: Theory and demonstrations - 90 minutes
Practicals - 0
Field placement - ½ week

Learning objectives:
At the end of the course, students will be able to:
- Describe the cold chain system
- Select appropriate cold chain equipment
- Load and use the refrigerator/freezer
- Read, record and interpret the refrigerator temperature
- Handle cold chain emergencies
- List health worker tasks for cold chain maintenance
- Interpret WHO policy on the use of opened vial multi-dose vaccines
- Interpret Vaccine Vial Monitor (VVM) changes
- Master the technique of shake test
- Describe causes of vaccine wastage
- List methods of estimating vaccine needs
- Define when to order vaccines

Media/materials session placement
- Educational lecture: Theory
- Individual reading: Students
- Questions and answers: Students and their instructor
- Individual feedback on exercises
- Demonstration at classroom and by the Cold Chain Manager at National/Sub-national Vaccine Store during field placement
- Lecture handouts
- Training modules, videos, slides
- Demonstration at National/Sub-national vaccine store of:
  - Refrigerators and freezers
  - Cold room
  - Vaccine carriers/cold boxes
  - Ice packs
  - Cold chain indicators
  - Vaccine vial monitor (VVM)
  - Thermometers
  - Temperature monitoring chart
  - Injection equipment
  - Vaccine supply record and movement forms

Field placement
- Conduct a project: Calculation of annual vaccine needs and vaccine stock levels for health facility X (as described in section 5, module 6, exercise 12)

Field placement No. 1: half-week
- at National/Sub-national vaccine store

Topic 6.3 (T-6.3): Cold Chain (CC) and Vaccine Handling; logistics Support

Chapter 2 – Content topics (Ts) of the Curriculum

Part 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students
Lesson objective:
Present safety as a central topic in immunization; describe AEFIs and response strategies; demonstrate some of important safety practices

Time allocation:
Classroom session: Theory and role-play - 90 minutes
Practicals - 0
Field placement - 0

Learning objectives:
At the end of the course, students will be able to:
- Describe requirements for safe immunization
- Describe how to use safety boxes
- Explain adverse events following immunization (AEFI) and the appropriate actions to be taken (reporting, investigation, public information, etc.)
- Explain advantages of AD (auto-disable) syringes versus sterilizable material
- Demonstrate safe injection practices
- Describe how to use safety boxes
- Describe requirements for safe disposal of immunization waste

Sub-topic: Immunization Safety

Practice and assessment

Students will be able to:

- Describe requirements for safe immunization
- Describe how to use safety boxes
- Explain adverse events following immunization (AEFI) and the appropriate actions to be taken (reporting, investigation, public information, etc.)
- Explain advantages of AD (auto-disable) syringes versus sterilizable material
- Demonstrate safe injection practices
- Describe how to use safety boxes
- Describe requirements for safe disposal of immunization waste

Lesson objectives:

- Present safety as a central topic in immunization
- Describe AEFIs and response strategies
- Demonstrate some of important safety practices

Chapter 2 – Content Topics (Ts) of the Curriculum

Topic 6.4 (T-6.4): Immunization Safety
# Lesson objective:

Demonstrate steps in preparation of vaccination session for outreach visits and observe level of accomplishment by students.

## Time allocation:

<table>
<thead>
<tr>
<th>Classroom session: Theory and simulation</th>
<th>Field placement</th>
<th>Total</th>
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<tbody>
<tr>
<td>60 minutes</td>
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</table>

## Learning objectives:

In the end of the course students will be able to:

1. Describe the steps involved in organizing an immunization session.
2. Estimate the number of immunization sessions needed.
3. Evaluate the need for immunization sessions.
4. Demonstrate the preparation of an immunization session.
5. Maintain vaccines at the correct temperature.
6. Protect vaccines during transport.

### Sub-topic:

How to Organize an Immunization Session

**Learning methods:**

- Introduction by teacher
- Individual reading by students
- Questions and answers
- Demonstration and simulation:
  - "Preparing an outreach immunization session"

**Materials and equipment needed:**

- Vaccine carrier
- Ice packs
- Thermometer
- Expired vaccine vials
- Expired diluent
- Safety box

**Practicals to conduct at nearby clinic or at departmental facility for 1 hour**

- Immunization in Practice

**Module 6:**

- "Holding an Immunization Session"

**National immunization manual**

**Answers to sample examination questions in Section 7, T-6.5, Nos 1-6**

**Observation of students during practice**

---

### Case Study:

A 6-year-old child needs to be vaccinated against measles, mumps, and rubella. The child's parents are concerned about the side effects of the vaccines. How can the health care provider ensure the parents' peace of mind and address their concerns effectively?

---

**Chapter 2 - Content Topics (Ts) of the Curriculum**

- Part 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students
Lesson objective:
Demonstrate steps in conducting a vaccination session in outreach settings; highlight key messages to caregiver/parent

Time allocation:
Classroom session and role-play - 90 minutes
Practicals - 6 hours (1 day)
Field placement - 1 week

Learning objectives:
At the end of the course, students will be able to:

- Conduct an immunization session
- Identify key messages to caregivers

<table>
<thead>
<tr>
<th>Sub-topic</th>
<th>Learning objectives</th>
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<tbody>
<tr>
<td>Practical session</td>
<td>Conduct an immunization session</td>
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<tr>
<td>Practical session</td>
<td>Identify key messages to caregivers</td>
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</tbody>
</table>

Media/materials session placement

- Immunization cards
- Vaccine carrier
- Ice packs
- Thermometer
- Scales and growth charts
- Safety box
- Disposable needles
- Disposal bags
- Immunization manual

Practicals for demonstration to conduct at nearby clinic or at departmental facility for 6 hours

Field placement No. 3: 1 week at designated health facility

Conduct a project "Reaching every district (RED) strategy in the catchment area" (as described in section 5)

Immunization in Practice.

Module 6: "Holding an Immunization Session"

National vaccination manual
Section on Vaccinating with combined vaccines

Answers to sample examination questions in Section 7, T-6.6, Nos 1-4
Observation during role-play
Observation during field placement
Results in assessment
Performance of tasks
Test questions and answers

Topic-6.6 (T-6.6): Conducting an Immunization Session

Chapter 2 – Content Topics (Ts) of the Curriculum
### Topic-6.7 (T-6.7): Communication for Immunization Programmes

#### Lesson objective:
Introduce the topic of communication as part of immunization operations and underline the role of communities in support of immunization.

#### Time allocation:
- Classroom session: Theory and role-play - 90 minutes
- Practicals - 0
- Field placement - ½ week

#### Learning objectives:
At the end of the course, students will be able to:

<table>
<thead>
<tr>
<th>Sub-topic</th>
<th>Introductory lecture:</th>
<th>Teaching methods:</th>
<th>Teaching materials:</th>
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</thead>
<tbody>
<tr>
<td>a. The role of immunization and misinformation on...</td>
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<tr>
<td>b. Let key messages to parents</td>
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<td>c. Provide information on...</td>
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<td>d. The community’s role</td>
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<td>e. Immunization activities with...</td>
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<td>f. After immunization session</td>
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<td>g. Immunization in practice, Module 8: Building community support for immunization</td>
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</table>

#### Resources:
- Immunization in Practice, Module 8: "Building Community Support for Immunization"
- National training manual on immunization
- Answers to sample examination questions in Section 7, T-6.7, Nos 1-5
- Observation of students during role-play
- Observation during field placement
- Results in assessment checklist
- Form for overall performance of tasks

#### Programs:
- Introductory lecture:
  - Teacher
- Individual reading by students
- Questions and answers
- Role-play (4): “We are communicators for immunization”

#### Training modules:
- Manuals on communication
- Local posters and pamphlets on immunization
- Communication equipment
- Field placement No. 4: ½ week

#### Activities:
- “Meeting with the community and community-based organizations”
- “Interviews with community members” (as described in section 5)

#### Further Reading:
- AFRO MLM Course Module 3: “Communication for Immunization Programmes”
- Immunization in Practice, Module 8: “Building Community Support for Immunization”
- National training manual on immunization
- Answers to sample examination questions in Section 7, T-6.7, Nos 1-5
- Observation of students during role-play
- Observation during field placement
- Results in assessment checklist
- Form for overall performance of tasks
Lesson objective:
Introduce problem solving as a key concept in the modern management practices; define the profile and the role of an EPI manager.

Time allocation:
Classroom session - 45 minutes
Practicals - 0
Field placement - 0

Learning objectives:
At the end of the course, students will be able to:
- Describe the main steps of the problem solving process to immunization service management.
- Describe the role, responsibilities and qualities of a national EPI manager.
- Explain the role of “team building” in optimizing EPI Unit outputs.

Teaching/Teaching/Practicum Reference Student

Sub-topics

a. Problem-solving approach as a key to programme management
b. The role of the EPI manager

c. Problem-solving approach as a key to programme management

Learning objectives:
- Describe the main steps of the problem solving process to immunization service management.
- Describe the role, responsibilities and qualities of a national EPI manager.
- Explain the role of “team building” in optimizing EPI Unit outputs.

Teaching/Teaching/Practicum Reference Student

Sub-topics

a. Problem-solving approach as a key to programme management
b. The role of the EPI manager

c. Problem-solving approach as a key to programme management

Learning objectives:
- Describe the main steps of the problem solving process to immunization service management.
- Describe the role, responsibilities and qualities of a national EPI manager.
- Explain the role of “team building” in optimizing EPI Unit outputs.
Lesson objective:
Introduce planning and budgeting as a basis for sustainability of health programmes including EPI; present the concept of micro-planning.

Time allocation:
Classroom session and simulation - 90 minutes
Practicals - 0
Field placement - 0

Learning objectives:
At the end of the course, students will be able to:
- Describe the concept of the micro-plan
- Describe the role of the micro-plan in programme management
- Develop a plan for immunization services
- Identify sources of financial resources

Sub-topics:
1. Planning immunization activities
2. Financial management and sustainability

Classroom session divided into:
- Introductory lecture
- Simulation: Group work to develop micro-plans

Training modules:
- Manuals: AFRO MLM Course
- Textbooks: Immunization in Practice, Module 5: "Planning Immunization Activities at National, Provincial and District Levels"
- National training manuals and planning guidelines
Lesson objective: Explain and interpret “supportive” and “integrated” approaches in supervision; arrange role-play to demonstrate its various styles.

Time allocation:

| Classroom session: Theory and role-play | 60 minutes |

**Learning objectives:**

- a. The role of supervision in programme management
- b. Supervisory visit/styles
- c. Supportive and integrated supervision

Describe the aim/objectives and main benefits of supervision. Describe different supervisory styles. Outline advantages of supportive supervision. Explain why integrated supervision is more applicable for the African context. List the main questions of a supervisory checklist. Design a supervisory report. Let the students write a level report on a district supervision visit. Supervision is more applicable for the African context. The main advantages of supervision. List the questions for a supervisory checklist. Design a supervisory report. Let the students write a level report on a district supervision visit.

**Supervision styles: Supportive and integrated.**

<table>
<thead>
<tr>
<th>Supervision styles</th>
<th>Supportive</th>
<th>Integrated</th>
<th>Mixed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose</td>
<td>Focus on improvement</td>
<td>Focus on achievement</td>
<td>Balanced</td>
</tr>
<tr>
<td>Techniques</td>
<td>Feedback, coaching</td>
<td>Feedback, coaching</td>
<td>Feedback, coaching</td>
</tr>
<tr>
<td>Assumptions</td>
<td>Client is competent</td>
<td>Client is competent</td>
<td>Client is competent</td>
</tr>
<tr>
<td>Emphasis</td>
<td>Improvement</td>
<td>Performance</td>
<td>Improvement and performance</td>
</tr>
</tbody>
</table>

**Module 1:**

- Introductory lecture: teacher
- Individual reading by students
- Questions and answers
- Role-play (5) "I am appointed as a supervisor at district level"

**Module 2:**

- Supervision training manuals
- Supervisory checklist
- A copy of a recent supervisory report from the EPI Unit
- Supervisory manual
- Supervisory checklist
- Training modules:
  - Training
  - Teaching methods
  - Learning methods
  - Media/materials

**Module 3:**

- The role of supervision in programme management
- Supervision checklist
- Supervisory report
- Anticipated problems
- Supervisory techniques
- Supervisory styles

**Supervision checklist:**

<table>
<thead>
<tr>
<th>Sub-topics</th>
<th>Learning objectives: At the end of the course, students will be able to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module 1:</td>
<td></td>
</tr>
<tr>
<td>Module 2:</td>
<td></td>
</tr>
<tr>
<td>Module 3:</td>
<td></td>
</tr>
</tbody>
</table>

**Supervision checklist:**

- Supervisory visit: Focus on improvement.
- Supervisory techniques: Feedback and coaching.
- Supervisory styles: Supportive and integrated.

**Supervision checklist:**

- Supervisory visit: Focus on performance.
- Supervisory techniques: Feedback and coaching.
- Supervisory styles: Supportive and integrated.

**Supervision checklist:**

- Supervisory visit: Balanced.
- Supervisory techniques: Feedback and coaching.
- Supervisory styles: Supportive and integrated.

**Supervision checklist:**

- Supervisory visit: Focus on achievement.
- Supervisory techniques: Feedback and coaching.
- Supervisory styles: Supportive and integrated.

**Supervision checklist:**

- Supervisory visit: Focus on improvement.
- Supervisory techniques: Feedback and coaching.
- Supervisory styles: Supportive and integrated.

**Supervision checklist:**

- Supervisory visit: Focus on performance.
- Supervisory techniques: Feedback and coaching.
- Supervisory styles: Supportive and integrated.

**Supervision checklist:**

- Supervisory visit: Balanced.
- Supervisory techniques: Feedback and coaching.
- Supervisory styles: Supportive and integrated.
Lesson objective:

Introduce health information collection & management process; key monitoring indicators and tools; analysis and use of generated data.

Time allocation:

Classroom session: Theory - 60 minutes. Practicals - 0 minutes. Field placement - 1 week.

Learning objectives:

At the end of this lesson, students will be able to:

1. Describe the process of monitoring and improvement of health services.
2. Analyze the results of monitoring programs.
3. Identify information sources for monitoring routine immunization.
4. Select key indicators for monitoring and measuring progress.
5. Collect immunization data by target group, type, dose, and month.
6. Prepare an immunization monitoring chart.
7. Calculate immunization coverage rates for different vaccines.
8. Calculate dropout rates (DOR) between vaccines.
9. Describe ways to reduce DOR.
10. Analyze and interpret collected information; provide feedback to those who supplied data.
11. Use the results of monitoring to adjust actions and improve program performance.

Sub-topics:

- Field placement - 1 week
- Practicals - 0 minutes
- Classroom session: Theory - 60 minutes

Chapter 2 – Content Topics (Ts) of the Curriculum

<table>
<thead>
<tr>
<th>Topic</th>
<th>Sub-topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.4</td>
<td>Monitoring of Immunization Program and Data Management</td>
</tr>
</tbody>
</table>
### Lesson objective:
Present and discuss evaluation process and steps to conduct it; outline follow up measures to implement its recommendations.

**Time allocation:**
- Classroom session: Theory - 60 minutes
- Practical session: 0
- Field placement: 0

**Learning objectives:**
- At the end of the course, students will be able to:
  - Describe the purpose of evaluation/assessment of immunization programmes.
  - Formulate the objectives of the programme.
  - Describe the purpose of evaluation/assessment.
  - Explain steps for conducting an evaluation/assessment:
    - Collect data
    - Analyse data (use SWOT method)
    - Interpret data
    - Prepare report with findings and recommendations.

**Teaching/learning methods:**
- Lecture
- Individual reading by students
- Questions and answers
- Lecture Handouts
- Training modules

**References:**
- Auxiliary fluoride
- Module 23: “Conducting Assessment of the Immunization Programme”
- Module 7: “Monitoring and using your data”
- National training materials
- Answers to sample examination questions in Section 7, T-7.5, Nos 1-5
How to Use This Curriculum

3.1 General Outlines

This is a generic curriculum to fill the gaps in the existing curriculum for immunization identified during training needs assessments conducted in the Region. This curriculum is designed to re-orient basic education of medical students to community health needs and to fill the gaps in the existing curriculum for immunization identified during training needs assessments conducted in the Region. It is desirable that where possible the topics be taught as a unit. In this way, classroom activities can prepare students for practicals where they can immediately practice their newly-learned skills. EPI can also be taught in a staggered manner with Community Health, Paediatrics, Microbiology, and other relevant departments.

According to the generic curriculum model, approximately 30 hours are required to cover all 17 content topics, including practicals and four weeks for field attachments as shown in the following table:

<p>| Part 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students |</p>
<table>
<thead>
<tr>
<th>Topic (T)</th>
<th>Lecture</th>
<th>Demonstrations</th>
<th>Role-Plays</th>
<th>Simulations</th>
<th>Practical Field Placements</th>
<th>Field Observations</th>
<th>Preclinical Field (n, 1)</th>
<th>Preclinical Field (n, 2)</th>
<th>Preclinical Field (n, 3)</th>
<th>Preclinical Field (n, 4)</th>
<th>Preclinical Field (n, 5)</th>
<th>Preclinical Field (n, 6)</th>
<th>Preclinical Field (n, 7)</th>
<th>Preclinical Field (n, 8)</th>
<th>Preclinical Field (n, 9)</th>
<th>Preclinical Field (n, 10)</th>
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</thead>
<tbody>
<tr>
<td>T-1</td>
<td>Immunization systems and operations</td>
<td>45 min</td>
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<tr>
<td>T-2</td>
<td>Immunization policies/standards</td>
<td>30 min</td>
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<tr>
<td>T-3</td>
<td>Immunization service delivery strategies and innovative approaches</td>
<td>90 min</td>
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<tr>
<td>T-4</td>
<td>Target diseases for immunization and disease surveillance</td>
<td>90 min</td>
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<tr>
<td>T-5</td>
<td>Immunological basis for vaccination and current vaccines</td>
<td>45 min</td>
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<tr>
<td>T-6.1</td>
<td>General guidelines for vaccine administration</td>
<td>45 min</td>
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<tr>
<td>T-6.2</td>
<td>How to administer EPI vaccines and vitamin A</td>
<td>60 min</td>
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<tr>
<td>T-6.3</td>
<td>Cold chain and vaccine handling: Logistics support</td>
<td>90 min</td>
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<tr>
<td>T-6.4</td>
<td>Immunization safety</td>
<td>45 min</td>
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<tr>
<td>T-6.5</td>
<td>How to organize an immunization session</td>
<td>60 min</td>
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<tr>
<td>T-6.6</td>
<td>Conducting an immunization session</td>
<td>90 min</td>
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<td>T-6.7</td>
<td>Communication for immunization</td>
<td>90 min</td>
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<tr>
<td>T-7.1</td>
<td>Introduction to programme management</td>
<td>45 min</td>
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<tr>
<td>T-7.2</td>
<td>Planning immunization activities and financial management</td>
<td>45 min</td>
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<td>T-7.3</td>
<td>Supervision by programme managers</td>
<td>90 min</td>
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<tr>
<td>T-7.4</td>
<td>Monitoring of immunization programme and data management</td>
<td>60 min</td>
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<tr>
<td>T-7.5</td>
<td>Evaluation of immunization programmes</td>
<td>60 min</td>
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<tr>
<td>T-7.6</td>
<td>Communication on immunization</td>
<td>90 min</td>
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<tr>
<td>T-7.7</td>
<td>Conduct a session on immunization</td>
<td>90 min</td>
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<tr>
<td>T-7.8</td>
<td>We now conduct an outreach session</td>
<td>60 min</td>
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<tr>
<td>T-7.9</td>
<td>A culture of safe and effective vaccine administration</td>
<td>90 min</td>
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<tr>
<td>T-7.10</td>
<td>How to administer EPI vaccines and vitamin A</td>
<td>45 min</td>
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<tr>
<td>T-7.11</td>
<td>Immunological basis for vaccination and current vaccines</td>
<td>90 min</td>
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<tr>
<td>T-7.12</td>
<td>Target diseases for immunization and disease surveillance</td>
<td>90 min</td>
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<tr>
<td>T-7.13</td>
<td>Immunization service delivery strategies and innovative approaches</td>
<td>45 min</td>
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</tbody>
</table>
The main purpose of the curriculum is to ensure that after training, students are capable of fulfilling all the objectives of the curriculum. However, there may not be enough time to add all topics to cover essential areas of the immunization program. If all topics cannot be covered during the students’ training, some topics may be suggested to students for home reading and can be covered during practicals or field placements. Some topics may be suggested to students for home reading and also can be covered during practicals or field placements. Provide as much time as possible for practical work (exercises, demonstrations and role-plays). At least 50% of time should be allocated to practical work. This curriculum promotes the concept of learning students in realistic settings, requiring teachers and students to deal with problems as they occur in a real situation. Inclusion of these suitable teaching locations in the curriculum (Table 3.1) also can be covered during practicals or field placements.

### Table 3.1

<table>
<thead>
<tr>
<th>Priority Content Topics</th>
<th>Suitable Teaching Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-1: Introduction to program management</td>
<td>Classroom, Practical, Field</td>
</tr>
<tr>
<td>T-2: Immunization strategies and innovative approaches</td>
<td>Classroom, Practical, Field</td>
</tr>
<tr>
<td>T-3: Immunization service delivery</td>
<td>Classroom, Practical, Field</td>
</tr>
<tr>
<td>T-4: Target diseases and disease surveillance</td>
<td>Classroom, Practical, Field</td>
</tr>
<tr>
<td>T-5: Immunological basis for vaccination and current vaccines</td>
<td>Classroom, Practical, Field</td>
</tr>
<tr>
<td>T-6: Cold chain and vaccine management</td>
<td>Classroom, Practical, Field</td>
</tr>
<tr>
<td>T-7: Conducting an immunization session</td>
<td>Classroom, Practical, Field</td>
</tr>
<tr>
<td>T-8: Immunization safety</td>
<td>Classroom, Practical, Field</td>
</tr>
</tbody>
</table>

**Chapter 3 - How to Use This Curriculum**

**Part 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students**
3.2

Curriculum Design for Various Categories of Nursing/Midwifery Professions

The participants at the Consensus Workshop on EPI Curriculum Prototypes for Medical and Nursing/Midwifery Schools (Douala, Cameroon, on 13-17 March 2006) considered that all topics in the proposed curriculum are important for teaching students for nursing/midwifery professions. At the same time, they recommended taking into account the differences in depth and time allocation for training of at least two categories of students: State Registered Nurse/Midwife and Enrolled Nurse/Midwife. They have also noted that any other advanced level above Registered Nurses/Midwives will undergo training with the same content as for Registered Nurses or Midwives. Based on these deliberations, a pattern of course schedule was proposed (Table 3.2)
<table>
<thead>
<tr>
<th>Content Topics (T)</th>
<th>Theory</th>
<th>Practical session</th>
<th>Field placement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immunization systems and operations</td>
<td>45</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Immunization policies/standards</td>
<td>30</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Immunization service delivery strategies and guidelines</td>
<td>60</td>
<td>60</td>
<td>3 hours</td>
</tr>
<tr>
<td>Immunization safety</td>
<td>90</td>
<td>90</td>
<td>6 hours</td>
</tr>
<tr>
<td>How to organize immunization session</td>
<td>60</td>
<td>60</td>
<td>6 hours</td>
</tr>
<tr>
<td>Conducting an immunization session</td>
<td>60</td>
<td>60</td>
<td>6 hours</td>
</tr>
<tr>
<td>Introduction to programme management</td>
<td>60</td>
<td>60</td>
<td>6 hours</td>
</tr>
<tr>
<td>Evaluation of immunization programmes</td>
<td>60</td>
<td>60</td>
<td>6 hours</td>
</tr>
<tr>
<td>How to administer EPI vaccines and vitamin A</td>
<td>60</td>
<td>60</td>
<td>6 hours</td>
</tr>
<tr>
<td>General guidelines for vaccine administration</td>
<td>60</td>
<td>60</td>
<td>6 hours</td>
</tr>
<tr>
<td>Immunological basis/current</td>
<td>45</td>
<td>45</td>
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<tr>
<td>Targeted diseases and disease surveillance</td>
<td>60</td>
<td>60</td>
<td>6 hours</td>
</tr>
<tr>
<td>Immunization policies/standards</td>
<td>30</td>
<td>30</td>
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</tr>
<tr>
<td>Immunization systems and operations</td>
<td>45</td>
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</tbody>
</table>

Total time allocation to EPI

- 1.1 Introduction to programme management
- 1.2 Planning and financial management
- 1.3 Supervision by programme managers
- 1.4 Monitoring and data management
- 1.5 Evaluation of immunization programmes
- 1.6 Communication for immunization
- 1.6.1 Conducting an immunization session
- 1.6.2 How to organize immunization session
- 1.6.3 Cold chain and vaccine handling and logistics support
- 1.6.4 Immunization safety
- 1.6.5 Targeted diseases and disease surveillance
- 1.6.6 Concluding an immunization session
- 1.6.7 How to administer EPI vaccines and vitamin A
- 1.6.8 General guidelines for vaccine administration
- 1.6.9 Immunological basis/current
- 1.6.10 Introduction to programme management

Chapter 3 – How to Use This Curriculum
Practicals and How to Organize Them

Practical sessions serve as an essential complement to teaching/learning activities that may include short visits and demonstrations at nearby health facilities or outpatient clinics. When organizing a visit, the following factors should be taken into consideration:

- **Is the visit for observation by students or for practicing?**
- **Location (distance) of the visit site;**
- **Number of students involved;**
- **Capacity of the health facility to accommodate students without interfering with routine activities of the facility;**
- **Availability of qualified health facility staff to assist during the visit;**
- **Whether the facility has necessary supplies and equipment relevant to the objectives of the visit;**
- **Whether the facility has the relevant activity the students are supposed to attend during the day of the visit (e.g., immunization session);**
- **Possibility of combining visits with other programmes related to EPI (e.g., IMCI).**

When conducting a practical session, it is helpful for students to have a checklist to assist them in their observations or practicing. The teacher should try to organize the session as soon as possible after the visit and give feedback to the students immediately. The following steps should be followed:

1. **Prepare the students:** Provide a brief overview of the visit and objectives. Ensure that students are aware of the goals and expected outcomes.
2. **Conduct the visit:** During the visit, students should observe and note down observations and questions.
3. **Post-visit discussion:** After the visit, students should discuss their observations and ask questions. The teacher should facilitate this discussion and clarify any doubts.
4. **Review and evaluation:** Summarize the visit and evaluate its effectiveness. Ask students to reflect on their learning experiences.

In the generic curriculum charts, several practical sessions are proposed to reinforce practicing specific tasks related to some priority areas of the immunization programme. A description of each visit is provided to help educators plan and implement these sessions effectively. The sessions are designed to be flexible and adaptable to different settings and student needs.
Practical Session 1: How to administer EPI vaccines and vitamin A (T-6.2)

Objectives of the session are:
- to display current EPI vaccines and their diluents;
- to observe conditions of these vaccines and their reconstitution techniques, if applicable;
- to observe the administration of EPI vaccines and vitamin A;
- to observe waste disposal practice after injection.

Allocated time: 3 hours

Prerequisite knowledge:
- Topics "General guidelines for vaccine administration", "How to administer vaccines" on the curriculum chart; "Immunization in Practice" module 2 (vaccines) and Attachment 6 in Part 1 of this document on general guidelines for vaccine administration.

Precautionary knowledge:
- To observe waste disposal practice after injection.
- To observe the administration of EPI vaccines and vitamin A.
- To observe conditions of these vaccines and their reconstitution technique, if applicable.
- To display current EPI vaccines and their diluents.

Objectives of the session are:
- After the visit, discuss with students their findings and observations. Ask them to describe any problems they encountered during the visit and summarize.
- Ensure that students record their observations on administration of each vaccine and vitamin A as well as waste disposal after injection.
- During the immunization session:
  - Make sure that student groups follow the pre-arranged rotation to give all groups an opportunity to observe all tasks being executed by health workers.
  - Ask supervisor how to arrange the student groups to work so as to cause as little disturbance to health facility's routine activities as possible.
  - Ask students to write down their observations to be discussed after the visit.
  - Accompany students to the health facility.
  - Inform the health facility or outpatient department about objectives of the visit.

Teacher’s tasks:
- And Attachment 6 in Part 1 of this document on general guidelines for vaccine administration.
- follows "General guidelines for vaccine administration", "How to administer vaccines" on the curriculum chart, "Immunization in Practice" module 2 (vaccines) and Attachment 6 in Part 1 of this document on general guidelines for vaccine administration.
Practical Session 2: How to organize an immunization session (T-6.5)

Objective of the session is to observe:

- the preparations of an immunization session

Allocated time:
1 hour

Prerequisite knowledge:
- Topics "General guidelines for vaccine administration", "Preparing for an outreach session" on the curriculum chart, "Immunization in Practice" modules 2 (vaccines) and 5 (planning immunization sessions), and Attachment 6 in Part 1 of this document.

Teacher’s tasks:
- Inform the health facility or outpatient department about objectives of the visit;
- Prepare a checklist on the visit based on the objectives of the session to be used by students;
- Accompany students to the health facility;
- Ask supervisor how he/she wants the student groups to work so as to cause as little disturbance to the health centre routine activities as possible;
- Ask students to write down their observations to be discussed after the visit using the checklist you have prepared in advance (see a sample below);
- Ensure that students use the checklists to record their observations on the health workers’ performance;
- Make sure that student groups follow the pre-arranged rotation to give all groups an opportunity to observe tasks being executed by health workers during preparations of the immunization session;
- Ask students to describe any problems they encountered during the visit and summarize the session.

Chapter 4 – Practicals and How to Organize Them

Part 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students
**Sample Checklist for Practical Session 2**

**Practical session topic:** Organizing an immunization session  
**Health Facility:**  
**Student name:**  
**Date of visit:**

<table>
<thead>
<tr>
<th>Procedures to be performed by health facility staff</th>
<th>Done</th>
<th>Not done</th>
<th>N.A.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Prepare all necessary immunization cards/registers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Prepare sufficient vaccines (and diluents if applicable) checking expiry dates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Create work stations, provides sufficient tables/chairs for staff and clients</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Assign staff to stations, explains their tasks and provides necessary supplies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Prepare sufficient infection equipment and ensures their sterility/cleanliness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Prepare sufficient equipment for infection waste (e.g. safety boxes)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Prepare sufficient equipment to manage injection waste and provide necessary supplies</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Chapter 4 – Practicals and How to Organize Them**

Part 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students
Practical Session 3: Conducting an immunization session (T-6.6)

Objectives of the session are to observe how health workers:

- prepare and conduct an immunization session;
- interact with the caretaker/parent;
- administer vaccines;
- act after vaccination is performed.

Allocated time: 6 hours

Prerequisite knowledge:
- Topics "General guidelines for vaccine administration", "Preparing for an outreach session", "How to administer vaccines" and "Conducting an immunization session" on the curriculum chart; "Immunization in Practice" modules 2 (vaccines), 5 (planning immunization sessions), 6 (holding an immunization session); and Attachment 6 in Part 1 of this document.

Teacher’s tasks:
- Inform the health facility about objectives of the visit;
- Prepare a checklist on the visit based on the objectives of the session to be used by students;
- Accompany students to the health facility;
- Ask students to write down their observations to be discussed after the visit using the checklists you have prepared in advance (see sample below);
- During the visit, ask the health facility supervisor to describe the organization of the immunization session;
- Ask the supervisor how/where the student groups to work so as to cause as little disturbance to the health centre routine activities as possible;
- Ensure that student groups follow the pre-arranged rotation to give all groups an opportunity to observe all tasks being executed by health workers;
- Before the visit, discuss with students their findings recorded on the checklists, ask them to describe any problems they encountered during the visit and summarize the session.

Immunization session

After the visit, discuss with students their findings recorded on the checklists. Ask them to describe any problems they encountered during the visit and summarize the session.
### Procedures to be performed by Health Facility Staff:

<table>
<thead>
<tr>
<th>Number</th>
<th>Procedure</th>
<th>Done</th>
<th>Not Done</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fill in any other child (or woman) arrival at table</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Collect data (if applicable) using sterile procedure and cold chain</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Use one sterile needle and one sterile syringe for each injection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Administer antigen vaccine first if an injection is also to be given</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Take care of vaccines during immunization (cold conditions, out of sunlight)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Explain about the vaccines to be given, side effects, what to do about them</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Follow the EPI guidelines on contraindications to avoid missed opportunities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Ensure the client's waiting time is kept to a minimum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Approach clients with confidence and courtesy (greeting, talking, etc.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Identify the child/women to receive the immunizations as per schedule</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Prepare sufficient vaccines and diluents (check expiry dates)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Prepare sufficient equipment for injection waste (e.g. safety boxes)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Prepare sufficient equipment and ensure their sterility/cleanliness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Assign staff to stations that takes place and provides necessary supplies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Create work stations, provides sufficient tables/chairs for staff/chairs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Estimate the number of children and mothers for the session</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Prepare all necessary immunization cards/registers</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Date of Visit:

Insert the date of the visit here.

### Check for Practical Session 3:

**Student Name:**

**Health Facility:**

**Practical Session Topic:** Organizing and conducting an immunization session

---

**Chapter 4 – Pracitcals and How to Organize Them**

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**Part 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students**
Chapter 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students

Part 2

218. Aspirate the vaccine into the syringe and prepare the appropriate injection site.

219. Insert needle at correct angle: i/m. - 90º; s/c - 45º; i/dermal - parallel with skin.

220. Inject total dose and withdraw the needle.

221. Provide TT immunization to women when appropriate.

222. Thank the client and tell them when to return with the child or for themselves.

223. Answer any questions from clients.

224. Dispose used syringe, needle into the safety box without recapping needle.

225. Take appropriate measures when injury happens (e.g. finger prick).

226. Properly dispose reconstituted vaccines after the session (or after 6 hours).

227. Return vials of unused or expired vaccines to fridge and mark "Use First.

228. Thank the staff and discuss with them any need for follow-up activities.

229. Make arrangements for the next session.

Part 1

22. Thank the client and tell them when to return with the child or for themselves.

221. Provide TT immunization to women when appropriate.

222. Thank the client and tell them when to return with the child or for themselves.

223. Answer any questions from clients.

224. Dispose used syringe, needle into the safety box without recapping needle.

225. Take appropriate measures when injury happens (e.g. finger prick).

226. Properly dispose reconstituted vaccines after the session (or after 6 hours).

227. Return vials of unused or expired vaccines to fridge and mark "Use First.

228. Thank the staff and discuss with them any need for follow-up activities.

229. Make arrangements for the next session.
Fieldwork Placement of Students

Fieldwork placement enables students to practice skills and attitudes by working as a trainee alongside a qualified health worker. At the start of each fieldwork period, students need to have a clear understanding of why they are being assigned to a specific health worker. One of the key objectives of each placement is to allow students to develop the necessary skills and knowledge they need to work in the health sector. A selection of five key topics has been made for fieldwork placement of students relating to immunization, as shown below:

<table>
<thead>
<tr>
<th>Fieldwork Placement Topic for Fieldwork Placement</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-4.4 Monitoring and Data Management</td>
<td>1 week</td>
</tr>
<tr>
<td>T-4.7 Communication for Immunization Programs</td>
<td>½ week</td>
</tr>
<tr>
<td>T-6.6 Conducting an Immunization Session</td>
<td>1 week</td>
</tr>
<tr>
<td>T-6.7 Conducting an Immunization Session</td>
<td>½ week</td>
</tr>
<tr>
<td>T-7.4 Target Diseases and Disease Surveillance</td>
<td>1 week</td>
</tr>
<tr>
<td>T-7.5 Triage, Discharge and Disease Surveillance</td>
<td>1 week</td>
</tr>
</tbody>
</table>

Learning objectives listed under each of these five topics form the bases for the selection of placement sites to meet these objectives. The selection process will include the following considerations:

- The type of health facility that can best meet the objectives of the curriculum (health centre, district hospital or outpatient clinic);
- Distance of the site from the training institution;
- Number of sites to be selected. This will depend on the number of students in the group and the capacity of the health facility to absorb these numbers. If the capacity is low, two or more sites could be selected;
- Availability of immunization equipment and supplies at the health facility;
- Availability of qualified staff (trained on immunization) if the number of students is large;
- Number of sites to be selected. This will depend on the number of students and the capacity of the health facility to absorb these numbers.

For the final selection of site/s, a visit to the health facility can be made to verify the quality of the site and the maximum number of students that can be placed at the site. For the site selected, a health facility can be selected that is appropriate for the students and their needs.

Apart from student assessment, responsible supervision and the selection of assessment methods for the students and cooperation planning should be made. Inclusion of the visit, a health facility can be selected that is appropriate for the students and their needs.

Fieldwork placement enables students to practice skills and readiness for real-life situations. The fieldwork process will include the following steps for the section of placement sites needed to meet these objectives. Learning objectives listed under each of these topics form the bases for the selection of placement sites needed to meet these objectives.

Fieldwork placement enables students to practice skills and readiness for real-life situations. The fieldwork process will include the following steps for the section of placement sites needed to meet these objectives. Learning objectives listed under each of these topics form the bases for the selection of placement sites needed to meet these objectives.
Fieldwork Placement 1: Target diseases for immunization and disease surveillance (T-4)

Objectives of the session are to enable students to practice skills in data collection and analysis for disease surveillance by:

- reviewing and extracting relevant surveillance information from patients’ registers;
- preparing disease maps and graphs;
- analysing and interpreting disease trends.

Allocated time: 1 week

Prerequisite knowledge:

- Sub-Topic 1 on the curriculum chart in section 1.4 Using Attachment 4 in Part 1 of this document; Mid-Level Management Course, Module 20, annexes G and H. Technical Guidelines for Integrated Disease Surveillance and Response, WHO/AFRO.

Field supervisor’s tasks:

- Review with students the objectives of the assignment;
- Assign tasks to students. For example:
  - Students A and B look for suspected/confirmed cases of neonatal tetanus in patient register;
  - Students C and D look for suspected/confirmed cases of polio in patient register;
  - Students E and F ask the health facility to provide monthly reports for a complete year (past year) and prepare graphs to interpret seasonal variations of a disease. Include other data related to transmission of the disease you have selected, etc.
- Ask other colleagues in the health facility to cooperate with students and provide necessary information, reports and patient registers to accomplish the objectives of the session;
- Review with students the objectives of the assignment;
- Make sure that all students are clear about how to extract the facts that they have been assigned;
- Exercize how disease surveillance is conducted at this health centre;
- Review with students the objectives of the session;
- Ask other colleagues in the health facility to cooperate with students and provide necessary information, reports and patient registers to accomplish the objectives of the session;
- Field supervisor’s tasks:
  - Review with students the objectives of the assignment;
  - Assign tasks to students. For example:
    - Students C and D look for suspected/confirmed cases of polio in patient register;
    - Students A and B look for suspected/confirmed cases of measles in patient register;
    - Ask other colleagues in the health facility to cooperate with students and provide necessary information, reports and patient registers to accomplish the objectives of the session;
  - Review with students the objectives of the assignment;
  - Make sure that all students are clear about how to perform the tasks that they have been assigned;
  - Observe students’ work and make notes for the assessment;
  - After the session, discuss with students their findings. Ask them to describe any problems they encountered during the visit. Share with them your assessment results and summarize the session.

Fieldwork Placement 2 - Fieldwork Placement of the Students

Chapter 5 - Fieldwork Placement of the Students
A Sample Project in Relation to T-4: Target diseases for immunization and disease surveillance

Project Title: Measles Profile in District X

Steps to proceed for the preparation of the project:

1. Give a title to the project: for example "Measles in District X"
2. Give the number of cases for the past 5-10 years in the district:
3. Give the number of cases for the past 5-10 years in the district:
4. Give the title to the project: for example "Measles in District X"
5. Prepare a curve showing the trends of measles cases during the period you have covered (5 or more years):
6. Give the geographic distribution of measles cases by dots for the past one or more years using a distinct map. Show different colour dots for cases in different years.
7. Give a monthly distribution of measles cases for at least last three years.
8. Give sex distribution of measles cases for at least last three years.
9. Give age distribution of measles cases using the following scale: 1'1-49', 5-149', 15' and above:
10. Give the proportion of children among cases that have been immunized against measles.
11. Review analysis and interpret above data and prepare a short conclusion of the study.

Chapter 5 – Fieldwork Placement of the Students

Part 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students
Fieldwork Placement 2: Cold chain and vaccine management (T-6.3)

Objectives of the field placement for cold chain and vaccine management are:

- To understand the role of vaccine store, where the vaccines come from, and how they are distributed from the store;
- To become familiar with different pieces of equipment for the cold chain and explain how they operate;
- To see and understand how vaccine stock management is carried out, and the use of various forms to record vaccine movement in and out of store;
- To become familiar with different pieces of equipment for the cold chain and know how they operate;
- To understand the role of vaccine store, where the vaccines come from, and how they are distributed from the store;
- To become familiar with different pieces of equipment for the cold chain and explain how they operate;
- To see and understand how vaccine stock management is carried out, and the use of various forms to record vaccine movement in and out of store.

Allocated time: ½ week

Prerequisite knowledge:

- Topic "Cold Chain and Vaccine Management. Logistics Support" on the curriculum chart;
- "Immunization in Practice" module 3 (cold chain);
- "Mid-level Management Course for EPI Managers" modules 8 (cold chain management) and 9 (vaccine management).

Field supervisor’s tasks:

- Inform the main vaccine store management about objectives of the session;
- Prepare a checklist on refrigerator loading by vaccines to be used by students during the visit;
- Accompany students to the vaccine store;
- Ask students to write down their observations to be discussed after the visit using the checklist you have prepared in advance (see sample below);
- Inform the main vaccine store management about objectives of the session;
- Prepare a checklist on refrigerator loading by vaccines to be used by students during the visit;
- Ask the principal storekeeper:
  - to describe the role of vaccine store, where the vaccines come from, how they are distributed from the store;
  - to explain principles of vaccine stock management including minimum, maximum and reserve stock levels;
  - to discuss the role of vaccine store, where the vaccines come from, how they are distributed from the store;
  - to demonstrate the different pieces of equipment for the cold chain and explain how they operate;
  - to demonstrate vaccine recording forms and registers for the follow up of vaccine movement;
  - to demonstrate principles of vaccine stock management including minimum, maximum and reserve stock levels;
  - to discuss the role of vaccine store, where the vaccines come from, how they are distributed from the store;
- Ask other students in the group to make observations using the checklist for refrigerator loading prepared by you in advance.

Chapter 5 – Fieldwork Placement of the Students
Part 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students
Ensure that student groups follow the pre-arranged rotation to give all groups an opportunity to observe all tasks being executed by the staff of the vaccine store.

After the visit, discuss with students the visit and their findings recorded on the checklists (peer review) and ask them to describe any problems they encountered during the visit and summarize the session.

Ensure that students use the checklists to record their observations on their classmates’ performance:

- Vaccine storage

Make sure that student groups follow the pre-arranged rotation to give all groups an opportunity to observe all tasks being executed by the staff of the vaccine store.

Next page:
Sample Checklist for Fieldwork Placement 2

Session topic: Cold Chain and Vaccine Management

Health Facility:

Student name: Date of Visit:

Refrigerator loading procedures to be performed by students at the vaccine store during the visit:

Done Not done N/A

13. Make a special box marking it “Reserve” for opened vials of liquid vaccines returned from field according to compartment when needed.

12. Load the second middle shelf with diluents to keep them cold before they can be taken to the freezing compartment when needed.

11. Load the second middle shelf with diluents to keep them cold before reconstitution.

10. Leave free space among vaccine boxes and between boxes and walls of refrigerator for free air movement.

9. Load on second middle shelf and close to the door BCG, DPT, Hib and HepB vaccines with shorter expiry dates.

8. Load first close to posterior wall (on the first middle shelf with BCG, DPT, Hib and HepB vaccines with longer expiry dates after the expiry date.

7. Check the expiry dates of OPV when needed.

6. Leave free space among vaccine boxes and between boxes and walls of refrigerator for free air movement.

5. Load on upper shelf (under the freezing compartment) and close to the door OPV and measles vaccines with.

4. Load first close to posterior wall (on upper shelf (under the freezing compartment) OPV and measles vaccines

3. Check the expiry dates of OPV and measles vaccines.

2. Load injections in the freezing compartment to keep them cooled.

1. Check the last refrigerator temperature reading to assure it is within the "safe range".

Refrigerator loading procedures to be performed by students at the vaccine store during the visit:

Date of Visit: 

Heath Facility: 

Student name: Cold Chain and Vaccine Management
A Sample Project in Relation to T-6.3: Cold Chain and Vaccine Management

**Project Title:** Calculation of annual vaccine needs and various stock levels for health facility X.

The steps to follow in preparing for the project are in the following tables. The student should get initial (basic) data, such as number of target children, and make calculations filling the empty boxes. After completing this project discuss the results with your supervisor and focal point for cold chain/vaccine management.

**Calculation of Annual Vaccine Needs for a Health Facility**

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Children</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Doses</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Wastage Factor</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Desired/Target</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>coverage rate</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Schedule</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Immunization Doses in the 0-1 months</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>0-1 months Children</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BCG</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>OPV</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DTP</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Measles</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

**Calculation of Quantity to be Used During Supply Period**

<table>
<thead>
<tr>
<th></th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total doses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Duration of storage (in months)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total doses required for a given period</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Quarter</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>(number)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BCG</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>OPV</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DTP</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Measles</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Chapter 5 – Fieldwork Placement of the Students**

Part 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students
## Determination of Minimum Stock

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Total Doses Required</th>
<th>Reserve Stock (%)</th>
<th>Minimum Stock (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCG</td>
<td>( \ldots ) doses ( x ) 25%</td>
<td>( \ldots ) doses ( x ) 25%</td>
<td>( \ldots ) doses ( x ) 25%</td>
</tr>
<tr>
<td>OPV</td>
<td>( \ldots ) doses ( x ) 25%</td>
<td>( \ldots ) doses ( x ) 25%</td>
<td>( \ldots ) doses ( x ) 25%</td>
</tr>
<tr>
<td>DTP</td>
<td>( \ldots ) doses ( x ) 25%</td>
<td>( \ldots ) doses ( x ) 25%</td>
<td>( \ldots ) doses ( x ) 25%</td>
</tr>
<tr>
<td>Measles</td>
<td>( \ldots ) doses ( x ) 25%</td>
<td>( \ldots ) doses ( x ) 25%</td>
<td>( \ldots ) doses ( x ) 25%</td>
</tr>
</tbody>
</table>

## Determination of Maximum Stock

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Total Doses Required</th>
<th>Reserve Stock (%)</th>
<th>Maximum Stock (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCG</td>
<td>( \ldots ) doses ( + ) ( \ldots ) doses ( x ) 25%</td>
<td>( \ldots ) doses ( + ) ( \ldots ) doses ( x ) 25%</td>
<td>( \ldots ) doses ( + ) ( \ldots ) doses ( x ) 25%</td>
</tr>
<tr>
<td>OPV</td>
<td>( \ldots ) doses ( + ) ( \ldots ) doses ( x ) 25%</td>
<td>( \ldots ) doses ( + ) ( \ldots ) doses ( x ) 25%</td>
<td>( \ldots ) doses ( + ) ( \ldots ) doses ( x ) 25%</td>
</tr>
<tr>
<td>DTP</td>
<td>( \ldots ) doses ( + ) ( \ldots ) doses ( x ) 25%</td>
<td>( \ldots ) doses ( + ) ( \ldots ) doses ( x ) 25%</td>
<td>( \ldots ) doses ( + ) ( \ldots ) doses ( x ) 25%</td>
</tr>
<tr>
<td>Measles</td>
<td>( \ldots ) doses ( + ) ( \ldots ) doses ( x ) 25%</td>
<td>( \ldots ) doses ( + ) ( \ldots ) doses ( x ) 25%</td>
<td>( \ldots ) doses ( + ) ( \ldots ) doses ( x ) 25%</td>
</tr>
</tbody>
</table>

## Calculation of Quantities to be Ordered

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Maximum Stock - Quantity in Stock = Stock to be Ordered</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCG</td>
<td>( \ldots ) doses ( - ) ( \ldots ) doses ( = ) ( \ldots ) doses</td>
</tr>
<tr>
<td>OPV</td>
<td>( \ldots ) doses ( - ) ( \ldots ) doses ( = ) ( \ldots ) doses</td>
</tr>
<tr>
<td>DTP</td>
<td>( \ldots ) doses ( - ) ( \ldots ) doses ( = ) ( \ldots ) doses</td>
</tr>
<tr>
<td>Measles</td>
<td>( \ldots ) doses ( - ) ( \ldots ) doses ( = ) ( \ldots ) doses</td>
</tr>
</tbody>
</table>
Fieldwork Placement 3: Conducting an Immunization Session (T-6.6)

Objectives of the field placement to conduct immunization sessions are to observe how the students:

- prepare and conduct an immunization session;
- interact with the caretaker/parent;
- administer vaccines;
- act after vaccination is performed.

Allocated time:
1 week

Prerequisite knowledge:
Topics “General guidelines for vaccine administration”, “Preparing for an outreach session”, “How to administer vaccines” and “Conducting an immunization session” on the curriculum chart; “Immunization in Practice” modules 2 (vaccines), 5 (planning immunization sessions) and 6 (holding an immunization session); and Attachment 6 in Part 1 of this document.

Field supervisor’s tasks:
- Inform the health facility about objectives of the field attachment;
- Prepare a checklist based on these objectives to be used by field supervisor for student assessment (see a sample below);
- Accompany students to the immunization site;
- Ask students to observe immunization sessions;
- Ask the immunization team staff to describe the organization of the immunization session at this site;
- Ask the students to write down their observations to be discussed at the end of field attachment using the same checklists you have prepared (peer assessment);
- Inform the health facility about objectives of the field attachment.

Field supervisor’s tasks:

Field supervisor’s tasks:

Visits and summarizes the results of field attachment:
- After the visit, discuss with students your and their findings recorded on the checklists. Ask them to describe any problems they encountered during the visit and summarize the results of field attachment;
- Ask students to conduct immunization session under your (or vaccination team) supervision during the last 2-3 days of the field attachment;
- Ask students to observe immunization sessions;
- Ask students to write down their observations to be discussed at the end of field attachment using the same checklists you have prepared (peer assessment);
- Prepare a checklist based on these objectives to be used by field supervisor for student assessment (see a sample below);
- Inform the health facility about objectives of the field attachment.

Fieldwork Placement 3: Conducting an Immunization Session (T-6.6)
### A Sample Checklist for Fieldwork Placement

**Practical Session Topic:** Organizing and conducting an immunization session

**Health Facility:**

**Student Name:**

**Date of Visit:**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Done</th>
<th>Not Done</th>
<th>N.A.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Prepare all necessary immunization cards/registers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Estimate the number of children for the session</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Identify the child/women to receive the immunizations as per schedule</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Approach clients with confidence and courtesy (greeting, talking, etc.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Provide sufficient equipment for injection waste (e.g., safety boxes)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Prepare sufficient equipment and ensure their sterilization/cleanliness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Prepare sufficient equipment for injection waste (e.g., safety boxes)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Ensure the clients' waiting time is kept to a minimum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Administer oral vaccines first if an injection is also to be given</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Follow the EPI guidelines on contraindications to avoid missed opportunities</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Procedures to be Performed by Student:**

- Prepare all necessary immunization cards/registers
- Estimate the number of children and mothers for the session
- Prepare all necessary immunization cards/registers
- Identify the child/women to receive the immunizations as per schedule
- Approach clients with confidence and courtesy (greeting, talking, etc.)
- Provide sufficient equipment for injection waste (e.g., safety boxes)
- Ensure the clients' waiting time is kept to a minimum
- Administer oral vaccines first if an injection is also to be given
- Follow the EPI guidelines on contraindications to avoid missed opportunities

**Student Name:**

**Date of Visit:**

**Health Facility:**
40. Aspirate the vaccine into the syringe and prepares appropriate injection site

41. Insert needle at correct angle: i/m.-90º; s/c-45º; i/dermal-parallel with skin

42. Inject total dose and withdraws the needle

43. Provide TT immunization to women when appropriate

44. Thank the client and tell when/where to return with the child or for herself

45. Answer any questions of clients

46. Dispose used syringe needle into the safety box without recapping needle

47. Take appropriate measures when injury happens (e.g. finger prick)

48. Properly dispose of reconstituted vaccines after the session (or after 6 hours)

49. Return vials of unused or liquid vaccines to fridge and mark „use first”

50. Thank the staff and discuss with them any need for follow-up activities

51. Make arrangements for the next session

Chapter 5 – Fieldwork Placement of the Students

Part 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students
A Sample Project in Relation to T-6.6: Conducting an Immunization Session

**Project Title:** Reaching Every District (RED) strategy in the catchment area

This is a strategy to increase immunization coverage in the district and it applies equally at health facility level. The project aims to verify how the five operational components of the RED strategy are implemented at health facility level. Students should do a survey in collaboration with the supervisor to find out achievements and gaps and what can be done to meet the challenges.

### The Matrix Below Will Help the Student Collect Local Data, Analyze and Interpret Findings

<table>
<thead>
<tr>
<th>Outreach vaccinations</th>
<th>Supportive supervision</th>
<th>Links with the community</th>
<th>Monitoring for action</th>
<th>Planning and management of resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are vaccines, infusion materials available for outreach visits?</td>
<td>Is there a supervision checklist to check RED implementation?</td>
<td>Is community informed about RED strategy?</td>
<td>What is the DPT3 coverage in the community/HF catchment area?</td>
<td>Is there an annual plan/microplan for the current year?</td>
</tr>
<tr>
<td>Are visits made as per plan?</td>
<td>Are visits made as per plan?</td>
<td>Are visits made as per plan?</td>
<td>Has the HF reliable transport to make supervisory visits?</td>
<td>Has the HF reliable transport to make outreach visits?</td>
</tr>
<tr>
<td>Is there a plan for supervision at HF?</td>
<td>Is there a plan for supervision at HF?</td>
<td>Is there a plan for outreach visits at HF?</td>
<td>Are health workers trained in RED strategy?</td>
<td>Are health workers trained in RED strategy?</td>
</tr>
</tbody>
</table>

### What Has the Health Facility (HF) Done in Response to This Component?

- The first question in the table can be modified as follows: "Are health workers trained in RED strategy?"
- The table allows students to conduct outreach vaccine sessions.
- The matrix below will help the student collect local data, analyze and interpret findings. For example, students should do a survey in collaboration with the supervisor to find out achievements and gaps and what can be done to meet the challenges.

**Project Theme:** Reaching Every District (RED) Strategy in the Catchment Area

**Part 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students**
Fieldwork Placement 4: Communication for Immunization (T-6.7): Interview with community members

Objective of the session:
To enable students to practice skills related to communicating activities with a community.

Allocated time:
½ week

Prerequisite knowledge:
- Topic on the curriculum chart in section T-6.7 "Communication for Immunization Programmes";
- AFRO MLM Course Module 3: "Communication for Immunization Programmes";
- Immunization in Practice, Module 8: "Building Community Support for Immunization";
- national training manual on immunization.

Field supervisor's tasks:
This attachment is different from previous field attachments. It involves community-based interviews rather than student observations. The supervisors task is to ensure that the students are clear about how to perform the tasks they have been assigned.

1. Make sure that all students are clear about how to perform the tasks they have been assigned.
2. Accompany students to the community.
3. Inform the health facility and the community about objectives of the field visit (it will be more appropriate if the supervisor makes a pre-visit to the community where the students will carry out their interviews and discuss the purpose of the exercise).
4. Depending on the size of the student group, divide the group into sub-groups of two or three students and assign them interviews with the above respondents.
5. In advance, short interview questionnaires for the following respondents: mother's community leader, community health worker, NGO person (see samples of all questionnaires below).
6. Upon completion of the interviews, inform the health facility and the community about the objectives of the field visit.
7. After the students have ended their interviews, debrief with the health facility and health centre staff.
8. After the visit, review the interview questionnaires.
9. Accompany students to the community.

This attachment is different from previous field attachments. It involves community-based interviews rather than student observations. The supervisors task is to ensure that the students are clear about how to perform the tasks they have been assigned.

Field supervisor's tasks:

Immunization:

- Communicating for Immunization Programmes: Immunization in Practice, Module 8: "Building Community Support for Immunization";
- Communicating for Immunization Programmes: AFRO MLM Course Module 3: "Communication for Immunization Programmes";
- Immunization in Practice, Module 8: "Building Community Support for Immunization";

Pre-requisite knowledge:

Allocated time:
½ week

To enable students to practice skills related to communicating activities with a community.

Objective of the session:
Sample questionnaires for students:

1. Interview mothers with questions such as:
   - Do you think immunizations are useful?
   - What diseases are prevented by immunization?
   - Do you spend long hours waiting for injections in the area and where you should return for other injections?
   - What will make it easier for you to take your child for immunization?

2. Interview with the community leader (community head, teacher, etc.) with questions such as:
   - Does the health clinic give you feedback on immunization in your community?
   - In which way do you support immunizations in your area?
   - What are your methods of communication with the community?
   - Do you have suggestions on how to improve immunization coverage in the area?

3. Interview with the community health worker (VHW) with questions such as:
   - Community leaders of your community?
   - Health workers at the clinic?
   - What other support do you receive from?
   - Have you been trained by health workers on immunizations?
   - What do you do to promote immunization in the community?

4. Interview with the health worker at the health center with questions such as:
   - In your view, what should be done to improve immunization in your community?
   - In which way do you support health workers to immunize more children in this area?
   - Does the health clinic give you feedback on immunization in your community?

5. Interview with the local NGO in the area with questions such as:
   - Do you receive regular feedback on what is happening in immunization in this community?
   - In which way do you support immunizations in this community?
   - What do you do to support immunizations in this community?

Chapter 5 - Fieldwork Placement of the Students
Chapter 5 – Fieldwork Placement of the Students

Fieldwork Placement 5: Monitoring and data management (T-7.4)

Objective of the session:
To enable students to practice skills related to data collection, analysis and interpretation using immunization monitoring chart as a tool

Allocated time: 1 week

Precursur knowledge:

Preparatory steps:

Supervisors' tasks:

Prerequisites knowledge:


Fieldwork Placement 5: Monitoring and data management (T-7.4)

Part 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students

Fieldwork Placement 5: Monitoring and data management (T-7.4)

Allocated time: 1 week

Precursur knowledge:

Preparatory steps:

Supervisors' tasks:

Prerequisites knowledge:


Fieldwork Placement 5: Monitoring and data management (T-7.4)

Allocated time: 1 week

Precursur knowledge:

Preparatory steps:

Supervisors' tasks:

Prerequisites knowledge:


Fieldwork Placement 5: Monitoring and data management (T-7.4)

Allocated time: 1 week

Precursur knowledge:

Preparatory steps:

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Prerequisites knowledge:


Fieldwork Placement 5: Monitoring and data management (T-7.4)

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Fieldwork Placement 5: Monitoring and data management (T-7.4)

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Fieldwork Placement 5: Monitoring and data management (T-7.4)

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Fieldwork Placement 5: Monitoring and data management (T-7.4)

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Precursur knowledge:

Preparatory steps:

Supervisors' tasks:

Prerequisites knowledge:


Fieldwork Placement 5: Monitoring and data management (T-7.4)

Allocated time: 1 week

Precursur knowledge:

Preparatory steps:

Supervisors' tasks:

Prerequisites knowledge:
Project Title: Reported data verification/validation

This project aims to develop skills in verification of data incoming or outgoing from the health facility or district health office. This project is more suitable for the district fieldwork placement as there are many health facilities reporting to the district health office. It can also be used in health facility sites with slight modification, especially where there are some sub-centres, health posts and other sub-units reporting to the major health centre. This is a sensitive project and the student should always work in collaboration with the supervisor.

Steps to proceed for the preparation of the project:
1. Ask supervisor to provide you with monthly reports received from health facility for the last year for disease notification and immunization;
2. Start your study by checking the completeness of reporting. The completeness of reporting for the particular period is calculated on the total number of reports expected (denominator) and the number of reports received (nominator) from health centres or sub-centres. This proportion is expressed by percentage. If reports are not complete for a district, the cumulative immunization coverage figure will drop and will not reflect the true situation.
3. Timeliness of reports. When reports arrive from the field to district health office, an assessment of the timeliness of the reporting should be assessed. Check dates reports were sent to the district office or health centre to calculate the proportion (%) of the reports that have been received within the deadline for the reporting period out of all expected reports for the same period. Monitoring timeliness is very important. Late reports hinder timely responses to outbreaks or other problems.
4. Check the accuracy of the report and verify if all parts of the reporting form are filled in.
5. Check whether the reports received are for the particular period under review (particular month for which reports are supposed to be sent).
6. The report should be clearly structured to include all the data and information. It should be sent to the senior management of the health units and verify if they make sense. Some tips:

- Compare BCG vaccination figures with the number of live births (hospital, clinic and at home) — former should not be more than the latter.
- Check the number of vaccinations figures (actual or latest month for which reports are supposed to be sent).
- After completing your work, review the results with your supervisor.

Chapter 5 – Fieldwork Placement of the Students

Part 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students

A Sample Project in Relation to T-7.4: Monitoring and Data Management
6. Student Assessment/Evaluation Options

6.1 Diagnostic Evaluation/Assessment

This consists of various types of evaluations to be carried out at different stages of the course.

- The course begins with a diagnostic evaluation to assess students' prior knowledge and interest in the subject.
- Teachers may ask students questions such as:
  - What are the target diseases for the immunization programme?
  - Which target diseases are being eradicated globally?
  - Can you list at least three vaccines used for immunization?
  - Which administrative unit in the Ministry of Health is responsible for managing the immunization programme in our country?

During this question-answer session, the teacher will make an initial assessment of the group as a whole and identify some students showing particular interest in the subject.

6.2 Formative Evaluation/Assessment

This course also applies formative assessment of students' learning processes during daily lessons, which reinforces the lesson content.

Some formative assessment tools include:
- Assessment checklists to be used by the teacher while observing students during field placements.
- Sample examination questions presented in the next section, which can be used for both summative and formative evaluation.
- Exercises designed to bring students closer to real-life situations.
- Case studies assigned to students during their field placements.

The curriculum offers various chapters on the principles of formative assessment and summative evaluation, which reinforce the learning processes during daily lessons, and enhance students' learning. This course also applies formative assessment of the students' learning processes during daily lessons, which reinforces the lesson content.

The course concludes with a diagnostic evaluation of its different stages, and the results are used to improve future teaching strategies.
Part 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students

The student record book is a formative assessment tool used by the teacher or fieldwork placement supervisor to record, review, and summarize student achievements during the course of study based on formative assessment results recorded in a student record book. It contains a list of tasks assigned to the student, along with markers of achievement. The record book helps in assessing the actual achievements of each individual student. At the end of the course, a summative (global) evaluation is proposed to assess the overall achievement of each student.

### Chapter 6 - Student Assessment/Evaluation Options

#### Summative Evaluation

<table>
<thead>
<tr>
<th>Task</th>
<th>Date</th>
<th>Signature of Teacher/Supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>26. Takes appropriate measures when injury happens.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27. Properly disposes of reconstituted vaccines after 6 hours.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28. Returns vials of unused or opened liquid vaccines to the session (or after 6 hours).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29. Takes appropriate measures when injury happens (e.g. finger prick).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

At the end of the course, a summative (global) evaluation is proposed to assess the overall achievement of each student. If the student passes, the teacher signs the book and the teacher performance is evaluated by the evaluator or fieldwork placement supervisor. If the student fails, the errors are explained to the student, and the teacher signs the book and the teacher performance is evaluated by the evaluator or fieldwork placement supervisor.
This section of the curriculum presents sample examination questions and exercises with an answer guide. The examination questions and exercises are designed to assist the teacher in assessing the students' written knowledge and exercises with an answer guide. The objective of each common element of the curriculum is to take the user directly to the answers, which saves time and makes the reference much easier.
Chapter 7 – Sample Examination Questions and Exercises in the Curriculum

Part 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students

7.1 Sample Examination Questions and Answers

T-1: Immunization Systems and Operations

Learning/Teaching Objectives Questions/Tasks/Exercises Answers

1. What are the global or regional orientations of immunization programmes?

Question 1

To achieve and sustain high immunization coverage among target population (90% and above) for all vaccines
To establish reliable disease surveillance for detection of disease cases and outbreaks and ensure adequate response
Based on the above strategies to implement disease control, based on the above strategies to implement disease control,

Question 2

Immunization operations are: service delivery; logistics; vaccine supply and quality; disease surveillance; advocacy
Immunization operations are: service delivery; logistics; vaccine supply and quality; disease surveillance; advocacy

Question 3

Describe goals and orientations of immunization programmes globally, in the African Region and in host country
Describe goals and orientations of immunization programmes globally, in the African Region and in host country

Question 4

Describe the role and relationship of external environment and health system with immunization programme
Describe the role and relationship of external environment and health system with immunization programme

Question 5

Outline five key immunization operations and three supportive components of immunization programme
Outline five key immunization operations and three supportive components of immunization programme
### Chapter 7: Sample Examination Questions and Exercises in the Curriculum

#### T-2: Immunization Policies, Norms and Standards

<table>
<thead>
<tr>
<th>Question 3</th>
<th>Learning Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>To ensure that immunizations and disease surveillance remain part of routine health activities are carried out with established norms and standards.</td>
<td>Community participation;</td>
</tr>
<tr>
<td>To ensure good quality, safe and effective immunizations.</td>
<td>Integration of immunization with other child health services</td>
</tr>
<tr>
<td>To provide technically sound basis for immunization.</td>
<td>Accessibility and equity</td>
</tr>
<tr>
<td>Integrated with immunizations.</td>
<td>Rights and responsibilities of service</td>
</tr>
<tr>
<td>3. What are the most suitable programmes that can be integrated with immunizations?</td>
<td>Authority of the national regulatory</td>
</tr>
<tr>
<td>e. WHO</td>
<td>Program coordination and leadership</td>
</tr>
<tr>
<td>d. Ministry of Health</td>
<td>Quality and safety of immunizations</td>
</tr>
<tr>
<td>c. Donor community</td>
<td>Accessibility and equity</td>
</tr>
<tr>
<td>b. Ministry of Planning</td>
<td>National Immunization Policies</td>
</tr>
<tr>
<td>a. All stakeholders</td>
<td>Community participation</td>
</tr>
<tr>
<td>2. Who should coordinate national immunization services?</td>
<td>Building blocks for immunization:</td>
</tr>
<tr>
<td>A. The correct answer:</td>
<td>National Immunization Policies</td>
</tr>
<tr>
<td>1. What are the objectives of national immunization policies?</td>
<td>Integration of immunization with other health services</td>
</tr>
<tr>
<td>Users</td>
<td></td>
</tr>
</tbody>
</table>

**Answers**

<table>
<thead>
<tr>
<th>Question 1</th>
<th>Question 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What are the objectives of national immunization policies?</td>
<td>d</td>
</tr>
<tr>
<td>2. Who should coordinate national immunization services?</td>
<td>a</td>
</tr>
<tr>
<td>3. What are the most suitable programmes that can be integrated with immunizations?</td>
<td>e</td>
</tr>
</tbody>
</table>

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**Note:** The table continues on the next page and includes more detailed questions and answers.
Question 1

Describe the fixed, outreach, mobile and campaign strategies, their advantages and limitations.

### Fixed strategy
**Advantages:**
- Ensures sustainability, quality and availability of services

**Disadvantages:**
- Coverage of remote areas may not be ensured, good results depend on level of motivation of users

### Outreach strategy
**Advantages:**
- Brings services closer to “hard-to-reach” people, contributes to equity in health

**Disadvantages:**
- High cost due to need for transport and per diem for staff, in rainy season outreach visits may be disrupted, additional care is needed for the cold chain

### Mobile strategy
**Advantages:**
- Brings services closer to “hard-to-reach” people, contributes to equity in health

**Disadvantages:**
- Transport of vaccines and other injection materials is costly due to need for transport and per diem for staff, in rainy season outreach visits may be disrupted, additional care is needed for the cold chain

### Campaign strategy
**Advantages:**
- Ensures high coverage in a short time, interrupts circulation of the causative agent, promotes increased awareness

**Disadvantages:**
- High cost of the campaign, campaigns may also attract health workers from their day-to-day activities, due to increased workload during a short period, the quality of immunizations may be compromised

Question 2

**GIVS** - Global Immunization Vision and Strategy

- Introduction of more vaccines into immunization programmes (against rotavirus and pneumococcal infection, malaria, HIV/AIDS and tuberculosis)
- Offering immunizations to children beyond one year of age

**RED** - Rights, Equality and Development
- Gender
- Access
- Equity
- Quality
- Coverage

### RED components

<table>
<thead>
<tr>
<th>Question</th>
<th>Learning Objectives</th>
<th>Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4. What does &quot;Gender&quot; mean in RED?</td>
<td>Gender aspects of RED and describe the strategic approaches.</td>
</tr>
<tr>
<td></td>
<td>5. What does &quot;Access&quot; mean in RED?</td>
<td>Describe the fixed, outreach, mobile and campaign strategies. Their advantages and limitations and how they contribute to equity in health.</td>
</tr>
<tr>
<td></td>
<td>6. What does &quot;Equity&quot; mean in RED?</td>
<td>Describe the fixed, outreach, mobile and campaign strategies. Their advantages and limitations and how they contribute to equity in health.</td>
</tr>
<tr>
<td></td>
<td>7. What does &quot;Quality&quot; mean in RED?</td>
<td>Describe the fixed, outreach, mobile and campaign strategies. Their advantages and limitations and how they contribute to equity in health.</td>
</tr>
<tr>
<td></td>
<td>8. What does &quot;Coverage&quot; mean in RED?</td>
<td>Describe the fixed, outreach, mobile and campaign strategies. Their advantages and limitations and how they contribute to equity in health.</td>
</tr>
</tbody>
</table>

Chapter 7 - Sample Examination Questions and Exercises in the Curriculum
Question 3

RE D - Reaching Every District. The 5 strategic components are:
- Establishing outreach services; supportive supervision
- Re-establishing outreach services; supportive supervision
- Re-establishing outreach services; supportive supervision
- Re-establishing outreach services; supportive supervision
- Re-establishing outreach services; supportive supervision

Learning/Teaching Objectives | Questions/Tasks/Exercises | Answers
--- | --- | ---

Chapter 7 - Sample Examination Questions and Exercises in the Curriculum
1. List the target diseases that can be prevented by immunization.

2. Describe three ways in which a newborn baby becomes infected with tetanus.

3. What are the advantages of integrated disease surveillance?

4. Why are case definitions of target diseases important?

5. Which target diseases are under eradication or elimination in Africa?

6. What should you do to be prepared for an epidemic of target diseases?

7. What is AFP? (Tick a correct answer):
   a. Activity for poliomyelitis
   b. Africa fights poliomyelitis
   c. Acute flaccid paralysis
   d. Action for prevention
   e. Antigen forming particles

Part 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students

Chapter 7 - Sample Examination Questions and Exercises in the Curriculum

Question 1: Target Diseases for Immunization and Disease Surveillance

- Compile a monthly surveillance report for the health facility visited.
- Key points: Include events, activities, and observations.

Question 2: Describe the role of diseases recording and reporting in disease surveillance.

- Explain the role of disease recording and reporting in disease surveillance.

Question 3: Explain the role of disease recording and reporting in disease surveillance.

- Describe the disease surveillance roles and responsibilities.

Question 4: Describe the role of disease recording in epidemic disease surveillance.

- Define and describe the role of disease recording in epidemic disease surveillance.

Question 5: Assess the burden of target diseases for African countries and for the host country.

- Complete a monthly surveillance report for the health facility visited.

Question 6: Describe the signs and case definition for each target disease.

- List the target diseases that can be prevented by immunization.

Question 7: Outline diseases surveillance concepts.

- Describe the role of surveillance in epidemic preparedness and response.

Answers

Learning/Teaching Objectives

Questions/Tasks/Exercises

Answers/Exercises

Chapter 7 - Sample Examination Questions and Exercises in the Curriculum
### Questions and Exercises

#### Part 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students

**Chapter 7** - Sample Examination Questions and Exercises in the Curriculum

<table>
<thead>
<tr>
<th>Learning Objectives</th>
<th>Questions/Tasks/Exercises</th>
<th>Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Differentiate vaccines from other drugs</td>
<td><img src="image" alt="" /></td>
<td><img src="image" alt="" /></td>
</tr>
<tr>
<td>List vaccines used in national immunization programmes</td>
<td><img src="image" alt="" /></td>
<td><img src="image" alt="" /></td>
</tr>
<tr>
<td>Characterize vaccine of the future (ideal vaccine)</td>
<td><img src="image" alt="" /></td>
<td><img src="image" alt="" /></td>
</tr>
<tr>
<td>List most common new vaccines</td>
<td><img src="image" alt="" /></td>
<td><img src="image" alt="" /></td>
</tr>
<tr>
<td>Differentiate antigens from other substances</td>
<td><img src="image" alt="" /></td>
<td><img src="image" alt="" /></td>
</tr>
<tr>
<td>Outline immunity in relation to immunization</td>
<td><img src="image" alt="" /></td>
<td><img src="image" alt="" /></td>
</tr>
</tbody>
</table>

**T-5: Immunological Basis for Immunization and Current Vaccines**

### Question 1

Describe characteristics of an “ideal vaccine”:

- c. Diligent, durable, and highly effective
- a. Durable, dependable, and highly effective

**Question 2**

Which diseases does the DPT vaccine protect against?

| a. Diphtheria, polio and tetanus |
| b. Diphtheria, pertussis and tetanus |
| **c.** Diphtheria, pertussis and tuberculosis |

**Question 3**

List the types of vaccines and give examples:

1. **Monovalent vaccines**:
   - OPV (Sabin), BCG and vaccines against measles, mumps, rubella, yellow fever, and polio.

2. **Combination vaccines**:
   - DPT, DT, polio vaccines.

3. **Live-attenuated vaccines**:
   - OPV (Sabin), BCG and vaccines against measles, mumps, rubella, yellow fever, and polio.

4. **killed vaccines**:
   - Killed polio (Salk) and pertussis vaccines.

5. **Sub-unit vaccines**:
   - Toxoids (tetanus or diphtheria toxoids) and acellular vaccines (acellular pertussis vaccine).

6. **Viral vaccines**:
   - OPV and vaccines against measles, mumps, rubella, yellow fever, and polio.

7. **Bacterial vaccines**:
   - Vaccines against cholera, pertussis.

8. **Liquid vaccines**:
   - DPT, polio vaccines.

9. **Lyophilised (dry) vaccines**:
   - BCG, measles vaccine.

10. **Combination vaccines**:
    - DPT, DT, polio (with 1,2,3 serotypes).

**Question 4**

Describe different types of immunity:

- b. Specific (developed by antigen, e.g. by vaccines) and non-specific (developed by antigen, e.g. by vaccines and non-specifically).

**Question 5**

Outline immunity in relation to immunization:

- a. Cell-mediated, adaptive and humoral
- b. Cellular, genetic and humoral
- c. Inhibitory, adaptive and humoral

**Question 6**

Describe different types of immunity and give examples:

- a. Specific (developed by antigen, e.g. by vaccines) and non-specific.
- b. Specific (developed by antigen, e.g. by vaccines and non-specifically).
- c. Specific (developed by antigen, e.g. by vaccines, and non-specifically).

**Question 7**

Outline immunity in relation to immunization:

- a. Cell-mediated, adaptive and humoral
- b. Cellular, genetic and humoral
- c. Inhibitory, adaptive and humoral

**Question 8**

Describe different types of immunity and give examples:

- a. Specific (developed by antigen, e.g. by vaccines) and non-specific.
- b. Specific (developed by antigen, e.g. by vaccines and non-specifically).
- c. Specific (developed by antigen, e.g. by vaccines, and non-specifically).

**Question 9**

Describe different types of immunity and give examples:

- a. Specific (developed by antigen, e.g. by vaccines) and non-specific.
- b. Specific (developed by antigen, e.g. by vaccines and non-specifically).
- c. Specific (developed by antigen, e.g. by vaccines, and non-specifically).
1. Describe immunization schedule recommended by WHO

2. A two-month old child is brought to the immunization session for the first time. He has not yet received any vaccine. Which vaccine should the health worker give him at this first visit? (Tick the correct answer):
   a. DPT, measles, OPV  
   b. DPT, OPV, BCG  
   c. BCG  
   d. DPT and OPV  
   e. DPT and measles

3. What are the target populations for EPI in the African Region?

4. Who is a “fully immunized child” (FIC)?

5. What is the minimum interval between DPT1 and DPT2? (Tick the correct answer):
   a. two weeks  
   b. three weeks  
   c. four weeks  
   d. six weeks

6. Simultaneous administration of several vaccines (Tick the correct answer):
   a. is harmful, not recommended  
   b. can disturb development of immunity against each vaccine, not recommended  
   c. produces as good immunity against each vaccine as the use of single vaccines, recommended injection

7. Why we should give five doses of TT to women?

8. The first dose of TT in pregnancy should be given: (Tick the correct answer)
   a. when foetal movements are felt  
   b. as early as possible in pregnancy  
   c. as early as possible during the 2nd trimester  
   d. at least 2 weeks before expected delivery

---

**Question 1**

Schedule with traditional EPI vaccines

- At birth: BCG, OPV
- 6 weeks: DPT1, OPV1
- 10 weeks: DPT2, OPV2
- 14 weeks: DPT3, OPV3
- 9 months: measles

**Question 2**

- 6 months: measles
- 12 months: OPV3, OPV4, OPV5
- 12 weeks: DTP1, OPV, Hib
- 16 weeks: DTP1, OPV, Hib

**Question 3**

- 1st dose: 0.1 ml
- 2nd dose: 0.5 ml

**Question 4**

- A child who completed his/her primary vaccination series

**Question 5**

- c

**Question 6**

- c

**Question 7**

- Experience and studies have shown that the human body can successfully develop immune responses to 10-12 antigens at a time. Because of this, giving multiple vaccines simultaneously can produce the same immunity as giving the vaccines individually.

**Question 8**

- Giving TT early in pregnancy, even during the 1st trimester, will not harm the foetus. It will increase woman’s chances to receive 2 doses of TT before delivery and ensure infant’s protection against neonatal tetanus.
1. Indicate at least three conditions that the health worker should discard the vaccine or the diluent:

- When vaccine is expired
- When liquid vaccine has been frozen
- When label of vaccine or diluent is detached

2. BCG is administered (Tick the correct answer):
   - a. orally
   - b. by intradermal injection
   - c. by intramuscular injection
   - d. by subcutaneous injection

3. DPT vaccine should be given (Tick the correct answer):
   - a. intramuscularly in the upper thigh
   - b. intramuscularly in the upper arm
   - c. subcutaneously in the upper thigh
   - d. subcutaneously in the upper arm

4. What is the correct dose of measles vaccine (Tick the correct answer):
   - a. 0.05 ml
   - b. 0.5 ml
   - c. 1 ml
   - d. 1.5 ml

5. A sterile syringe and sterile needle should be used (Tick the correct answer):
   - a. for the next child if the needle is changed between children
   - b. until all the vaccine in the syringe is finished
   - c. for all the vaccines but for one child only
   - d. for one injection only

6. How full should a safety box be loaded with used needles:
   - a. 100%
   - b. 75%
   - c. 50%
   - d. for one injection only

7. Name two infections that may be transmitted through the use of non-sterile needles and syringes:
   - HIV infection
   - Hepatitis B and other hepatitis of viral origin

8. Check conditions of vaccines and diluent before use
9. Reconstitute vaccines as appropriate
10. Administer the vaccine at correct site, using the correct technique (oral or by injection: intradermal, subcutaneous, intramuscular)
11. Maintain sterile technique throughout vaccine administration
12. Apply correct waste disposal practice after injection

T.6.2: How to Administer EPI Vaccines and Vitamin A

Learning/Teaching Objectives

- Identify at least three conditions that the health worker should discard the vaccine or the diluent
- Follow the correct steps to administer BCG, measles, and DTP vaccines
- Dispose of used needles and syringes correctly

Questions/Tasks/Exercises

- Question 1: When vaccine is expired, the correct answer is: a. 0.05 ml
- Question 2: BCG is administered by: b. intradermal injection
- Question 3: DPT vaccine should be given: c. intramuscularly in the upper thigh
- Question 4: Measles vaccine dose: d. 1.5 ml
- Question 5: Sterile syringe and needle: d. for one injection only
- Question 6: Safety box loading: b. 75%
- Question 7: Infections transmitted through non-sterile needles: a. HIV infection, hepatitis B

Answers

- Question 1: When vaccine is expired
- Question 2: BCG is administered by intradermal injection
- Question 3: DPT vaccine should be given intramuscularly in the upper thigh
- Question 4: Measles vaccine dose: 1.5 ml
- Question 5: Sterile syringe and needle: for one injection only
- Question 6: Safety box loading: 75%
- Question 7: Infections transmitted through non-sterile needles: HIV infection, hepatitis B

Chapter 7 - Sample Examination Questions and Exercises in the Curriculum
1. Describe the cold chain system from the time the vaccine leaves the manufacturer to the time it reaches the target child or woman.

2. List types of cold chain equipment, monitors and vaccine stock management forms.

3. List the factors used for the calculation of vaccine storage capacity of the cold chain.

4. Which of the EPI vaccines are damaged if frozen? (Tick the correct answer): a. OPV b. DPT c. BCG d. Measles e. TT f. HepB.

5. What is the maximum temperature for storage of EPI vaccines in a health centre? (Tick the correct answer): a. at +4ºC b. at +6ºC c. at -2ºC d. at +8ºC e. at +10ºC f. at +12ºC.

6. The “shake” test (Tick the correct answer): a. is used to thoroughly mix reconstituted measles vaccine. b. will reactivate vaccine that has passed the expiry date. c. will indicate if DPT or TT have been frozen. d. will reactivate DPT or TT that have been frozen. e. is used to mix different vaccines in a single vial. f. is used before the injection to mix sediment in the vial which has the active component of the vaccine.

7. One morning after a two-day holiday, you checked the vaccine refrigerator and find that it is not working. What must you do immediately?

8. List six important rules to be followed when you store vaccines in a refrigerator at the health centre.
Question 10

What is the vaccine wastage rate? (Tick the correct answer):

a. a rate showing proportion of vaccines received from
   manufacturer against amount of vaccines ordered.

b. a rate showing how much vaccine has been used
   during an immunization session.

c. it is an amount (proportion) of vaccine lost for various
   reasons: poor vaccination technique, cold chain break-
   down and irregularly changeable colour from light to dark.

WVM is a heat-sensitive device for vaccine vials, which
   when exposed to heat for a certain time and
   condition, will gradually and irreversibly change
   from light to dark. VVM is a heat-sensitive device for vaccine vials, which
   changes colour when exposed to heat for a certain time and
   condition, will gradually and irreversibly change
   from light to dark.

Question 11

From the list below, select at least four key items
needed to forecast your measles vaccine needs for the
next year:

a. total population of the country for the next year
b. number of measles cases in the current year
c. number of mothers/caretakers who refuse to bring
   their children for measles vaccination

f. number of doses required for measles immunization
   as per national immunization schedule

h. estimated number of contra-indications for measles
   vaccination during the next year

i. desired level of measles immunization coverage
   for the next year

12. Which of the vaccines mentioned below can be used
   beyond 6 hours or in subsequent immunization
   sessions if certain conditions are met (expiry date has
   not passed, vaccine was stored in a good cold chain, VVM
   passed, vial was stored in a good cold chain, VVM
   passed, vial was stored in a good cold chain, VVM
   passed)?

   a. OPV
   b. Measles
   c. BCG
   d. DPT
   e. TT
   f. HepB

   c. If there are no frozen ice packs in the freezer or the
     temperature is above +8ºC, the vaccines cannot be used as they may be damaged, and the
     supervisor should be informed immediately.

Question 8

The answer should include six of the following rules:

- Keep vaccines on the top and middle shelves of the main
  compartment.
- Stock vaccines in such a way that air can circulate
  between the boxes.
- Keep plastic bottles of water or spare ice packs on
  the lower shelf of the main compartment.
- Keep the diluent of measles vaccine and BCG in
  the main compartment with the vaccines because when
  worm diluent is used for reconstitution, the vaccine will
  quickly lose its potency.
- Keep a special box in the main compartment for
  vaccines returned from immunization sessions.
- Freeze ice packs and ice cubes in the freezer.
- Keep a special box in the main compartment for
  vaccines returned from immunization sessions.
- Keep vaccines on the top and middle shelves of the
  main compartment.
- Keep the dilution of measles vaccine and BCG in
  the main compartment with the vaccines because when
  worm diluent is used for reconstitution, the vaccine will
  quickly lose its potency.
- Keep plastic bottles of water or spare ice packs on
  the lower shelf of the main compartment.
- Stock vaccines in such a way that air can circulate
  between the boxes.
- Keep vaccines on the top and middle shelves of the
  main compartment.

The answers should include six of the following rules:

- Keep vaccines on the top and middle shelves of the main
  compartment.
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- Keep plastic bottles of water or spare ice packs on
  the lower shelf of the main compartment.
- Stock vaccines in such a way that air can circulate
  between the boxes.
- Keep vaccines on the top and middle shelves of the
  main compartment.

Question 9

VVM is a heat-sensitive device for vaccine vials, which
   gradually and irreversibly changes colour from light to dark
   when exposed to heat for a certain time and
   condition. VVM is a heat-sensitive device for vaccine vials, which
   changes colour when exposed to heat for a certain time and
   condition, will gradually and irreversibly change
   from light to dark.
the end of each vaccination session or after 6 hours.

- (Standard note: Vials of these vaccines must be discarded at the end of each vaccination session or after 6 hours.)

Handling vaccines such as DTP, Hepatitis B vaccines, and others must be done carefully to prevent contamination. In the case of multi-dose vials, vaccines may be used for a maximum of 30 minutes. After this, all vaccines must be discarded. Global policy introduces a change for opened vials of OPV, DTP, T, Hepatitis B vaccines. Multi-dose vials of these vaccines, from which one or more doses of vaccines have been removed during an immunization session, may be used for a maximum of 30 minutes. After this, all vaccines must be discarded.

Question 12: a, d, e, and f.
Question 1
List factors affecting the quality of vaccines
(e.g. contamination, heat, freezing of liquid vaccines, etc.)

Question 2
Provide basic information on vaccine diluents

Question 3
Describe safe injection practices

Question 4
State contra-indications to immunization

Question 5
Describe adverse events following immunization (AEFI), causes of AEFIs and the appropriate action to be taken (reporting, investigation, public information, etc.)

Question 6
Explain advantages of AD (auto-disable) needles versus sterilizable material

Question 7
Describe how to use safety boxes

Question 8
Describe adverse events following immunization

Question 9
Provide basic information on vaccine diluents

Question 10
List factors affecting the quality of vaccines

Learning/Teaching Objectives

Answers

4. Tick the true contraindications to immunizations from the following list:
   a. minor illness with fever <38ºC
   b. malnutrition
   c. HIV infection
   d. HIV infection with symptoms (AIDS) for BCG
   e. HIV infection with symptoms (AIDS) for EPI vaccines except for BCG
   f. child being breastfed
   g. history of jaundice after birth
   h. the vaccine whose previous dose caused severe adverse event

5. What are the causes of adverse events following immunization (AEFI)?

6. Describe actions to be taken when AEFI occurs.

7. Is the abscess at injection site a normal side effect after immunization or an AEFI?
1. List all the materials necessary for an outreach immunization session.

<table>
<thead>
<tr>
<th>Category</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaccine carrier/cold box, ice packs</td>
<td></td>
</tr>
<tr>
<td>Injection equipment</td>
<td>AD syringes/needles for injections, syringes for reconstitution of dry</td>
</tr>
<tr>
<td></td>
<td>vaccines, sterile forceps, safety box</td>
</tr>
<tr>
<td>Equipment and medicine for other tasks</td>
<td>weighing scale, rope and bag, scissors, vitamin-A capsule, paracetamol</td>
</tr>
<tr>
<td>Health education materials:</td>
<td></td>
</tr>
<tr>
<td>Children's clinic cards, tally sheets,</td>
<td></td>
</tr>
<tr>
<td>book, box, etc.</td>
<td></td>
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</tbody>
</table>

2. Estimate the average number of immunization sessions to be held per month/week.

- Children 0-11 months: estimated range: 3-4%
- Pregnant mothers: estimated range: 3-4%
- Women of child-bearing age: estimated range: 3-4%
- Children 12-11 months: estimated range: 3-4%

3. Calculate the annual target population for children <1 year of age if your health centre covers a population of 8,000 people.

\[
\text{Annual target population} = \left( \frac{8,000}{100} \right) \times 3 = 240
\]

4. Your target population of children <1 year is 250. Each child will come to your health centre for vaccination four times (for DPT1, DPT2, DPT3 and measles vaccine). How many immunization sessions should you hold per month in your health centre?

\[
\text{Immunization sessions per month} = \left( \frac{250 \times 4}{12} \right) = 4 \text{ sessions per month}
\]

5. At the end of a morning immunization session, which usually lasts more than 6 hours, any remaining reconstituted vaccine should be:

- Thrown away and a new vial opened for the afternoon session or the following day.
- Covered with foil to keep out contamination and used for the afternoon session or the following day.
- Carefully marked and put in the "return" box in the refrigerator.

6. How should vaccines be kept cold at an immunization session?

- In a cap with ice cubes or on a frozen ice pack.
- Inside the closed vaccine carrier in the shade.
- In a 2°C-8°C refrigerator and used for the afternoon session of the following day.
- Covered with foil to keep out contamination and used for the afternoon session of the following day.
- Thrown away and a new vial opened for the afternoon session or the following day.

7. How should vaccines be kept cold at an immunization session? (Tick the correct answer):

- 6.1 Opened vaccine vial if that is being used.
- 6.2 Unopened vaccine vial if that is being used.

8. What are the common estimates of proportions of target populations to be vaccinated?

- Children 0-11 months: estimated range: 3-4%
- Pregnant mothers: estimated range: 3-4%
- Women of child-bearing age: estimated range for various countries: 20-25%
- Children 12-11 months: estimated range: 3-4%

Questions/Tasks/Exercises Answers

- Question 1: Discuss the importance of vaccination.
- Question 2: Estimate the number of immunization sessions needed for the target population.
- Question 3: Calculate the number of vaccines required for the target population.
- Question 4: Plan the logistics for vaccine distribution.
- Question 5: Discuss the ethical considerations in vaccination.
- Question 6: Evaluate the impact of vaccination on public health.
- Question 7: Create a campaign to increase vaccination rates.
- Question 8: Analyze the data on vaccination coverage.

Learning objectives:

- T-6.5: How to Organize an Immunization Session
- T-6.6: How to Conduct an Immunization Session
- T-6.7: How to Evaluate an Immunization Session

Chapter 7 - Sample Examination Questions and Exercises in the Curriculum
1. List three points you should remember when choosing a suitable immunization site for an outreach immunization session:

- Find a site with space.
- Find a site with enough light.
- Find a site with a private area.

2. List at least five activities to be undertaken by the health worker in conducting an immunization session:

- Greet the mother/caretaker.
- Ask the child if there are any symptoms or sickness.
- Examine the child and treat if appropriate.
- Weigh the child and give nutritional advice.
- Check immunizations given to the child and the immunization card.

3. While checking vaccination cards of three children, the nurse noted the following dates for DPT immunizations:


Which of these three children have successfully completed their DPT immunizations with valid doses of each vaccine?

4. What are the five key messages that the health worker should tell the mother/caretaker each vaccine?

- When all doses of each vaccine have been administered.
- Which doses are missing.
- What to do if the child has symptoms after vaccination.
- What to do if any side effects occur.
- What to do if the child does not have the immunization card.

<table>
<thead>
<tr>
<th>Question 1</th>
<th>Question 2</th>
<th>Question 3</th>
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<tbody>
<tr>
<td>1. List three points you should remember when choosing a site.</td>
<td>1. List three points you should remember when choosing a site.</td>
<td>1. List three points you should remember when choosing a site.</td>
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<tr>
<td>Find a site with space.</td>
<td>Find a site with enough light.</td>
<td>Find a site with a private area.</td>
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<tr>
<td>Find a site with enough light.</td>
<td>Find a site with a private area.</td>
<td>Find a site with space.</td>
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<tr>
<td>Find a site with enough light.</td>
<td>Find a site with a private area.</td>
<td>Find a site with space.</td>
</tr>
</tbody>
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<tr>
<th>Question 4</th>
<th>Question 5</th>
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<tbody>
<tr>
<td>4. Which doses of DPT are missing from each child?</td>
<td>5. What should the health worker do if the child has symptoms after vaccination?</td>
</tr>
<tr>
<td>First child: DPT1- 3/1/2004, DPT2- 26/1/2004, DPT3- 26/2/2004.</td>
<td>When the child has symptoms, the health worker should visit them at home.</td>
</tr>
</tbody>
</table>

Chapter 7 - Sample Examination Questions and Exercises in the Curriculum

Part 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students

T-6.6: Conducting an Immunization Session

Learning/Teaching Objectives

- Give key messages to the caretaker after vaccination.
- Make proper records on performance.
- Safely discard used materials.
- Immunize women and children according to the immunization schedule.
- Screen each client and identify correct action.
- Register new attendees.
- Organize work areas and still decorate site.
- Check and maintain the refrigerator in the work area.
- Arrange a site for an immunization session.

Questions/Tasks/Exercises

Answers

1. List three points you should remember when choosing a site.
2. List at least five activities to be undertaken by the health worker in conducting an immunization session.
3. While checking vaccination cards of three children, the nurse noted the following dates for DPT immunizations.
4. What are the five key messages that the health worker should tell the mother/caretaker each vaccine?
5. Which doses of DPT are missing from each child? What should the health worker do if the child has symptoms after vaccination?
The second and third children have successfully completed their DPT series. The second child received his DPT3 after more than 3 months of DPT2 but no interval between doses of the same vaccine. The immunization of the first child is not completed; the DPT2 was not valid because it had been given in less than the required 4-week interval (the minimum interval)

### Question 3
How the side effects can be treated?

### Question 4
4.1 The date and time of the next immunization
4.2 The place of the next immunization
4.3 The number of visits a child still needs to be fully immunized/women needs to complete her TT series
4.4 The date and time of the next immunization

<table>
<thead>
<tr>
<th>Learning/Teaching Objectives</th>
<th>Questions/Task/Exercises</th>
<th>Answers</th>
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</table>
1. What is the role of communication in immunization?

Communication is among key components of immunization activities. It promotes awareness, acceptance and demand for immunization, enhances communication skills of health workers, informs sessions on the need for vaccines and introduces information to users (on dates, place of immunization, etc.).

2. What are the burning issues in immunization that communication can address or intervene?

- Addressing high dropout from immunization
- Addressing hard-to-reach populations through RED strategy
- Involving communities in disease surveillance (community surveillance)
- Immunization campaigns (SIAs, NIDs)
- Immunization safety, AEFI

3. What can the community contribute in communication for immunization?

- Providing communication tools (e.g. radio, PA equipment)
- Providing community volunteers
- Providing community volunteers in money or kind to community
- Providing communication sites to address the community

4. What are the barriers and challenges for communication in immunization?

- Insufficient information to users (on dates, place of immunization sessions, on side effects of vaccines)
- Poor communication skills of health workers
- Ineffective message on immunization
- Lack of community involvement in planning
- Confusing messages on immunization

5. Mark “false” or “true” against each of the following communication messages:

a. Immunization can help your child gain in body weight (false)
b. One sterile syringe and one sterile needle for each injection (true)
c. Polio vaccine can prevent your child from all kind of disabilities (false)
d. Immunization is effective but still a few immunized children can get the disease (true)
e. Be wise, immunize! (true)
f. A child cannot avoid measles (false)
g. If your child is fully immunized, he/she will be the best student in the school in future (false)
h. TT immunization to you will save your baby from neonatal tetanus and measles (true)

Describe the role of Interagency Coordination Committee in communication and advocacy.

Describe how to handle rumors on immunization session.

List key messages to caregivers after immunization session.

Provide information on immunization to groups and to individuals.

Plan immunization activities with the community.

Factors to be considered when planning on immunization.

Modular a community for immunization.

Describe the role and importance of communication in immunization.

Describe the role and importance of communication in immunization programs.

Chapter 7 - Sample Examination Questions and Exercises in the Curriculum
Resistance to immunization among certain population groups ("refusers")

- Lack of communication materials in local languages
- Rumours about immunizations, etc.
- Frequent missed opportunities for immunization
- Resistance to immunization among certain population

**Question 5**

```
"a" - false  "b" - true  "c" - false  "d" - true  "e" - true  "f" - false  "g" - false  "h" - false
```
1. Explain why management training is important to run immunization programmes.

The management training improves planning, monitoring and evaluation of immunization programmes. It also contributes to effective coordination and communication among all players involved. It is especially useful to newly appointed managers and teachers at training institutions.

2. List at least five problems/constraints which can affect the execution of the immunization programmes.

- Lack of human/financial resources
- Vaccine stockout
- Cold chain failure
- Lack of training of staff
- Low motivation of staff
- High dropout rate
- Inaccessibility of populations among children

3. What are the general steps in the problem-solving process? Link them with the immunization programme.

The problem-solving cycle:

- Step 1: Identify the problem (low DPT3 coverage)
- Step 2: Document the problem (DPT3 < 30%)
- Step 3: Involve others (call for ICC meeting)
- Step 4: List possible solutions (1-more funds; 2-more staff)
- Step 5: Choose the best solution (more outreach)
- Step 6: Implement (act on outreach)
- Step 7: Evaluate the results (60% DPT3)

4. List the titles of at least five officials in the health system who are involved in management of immunization programmes in your country.

The answer should include five of the following:

- Lacks of human/financial resources
- Vaccine stockout
- Cold chain failure
- Inaccessibility of populations among children
- Lack of training of staff
- High dropout rate
- Low motivation of staff
- Inaccessible populations
- Episodes of AEFI
- Unvaccinated minors about vaccines
- Inadequate population
- Transport breakdown
- Health department
- Lack of community support
- Disease occurring among immunized children
- Overuse of an ART
- Lack of training of staff
- Lack of outreach
- Inadequate training in proven planning, monitoring and evaluation

Questions/Tasks/Exercises:

1. Explain why management training is important to run immunization programmes in your country.

2. What are the general steps in the problem-solving process? Link them with the immunization programme.

3. List at least five problems/constraints which can affect the execution of the immunization programmes.

4. List the titles of at least five officials in the health system who are involved in management of immunization programmes in your country.
Question 4

The answer should include five of the following officials:

- Minister of health
- Permanent secretary
- Directors of technical departments
- Head of human resources department
- Head of finance/administration department
- Head of MCH unit
- National EPI manager
- National cold chain manager
- National disease surveillance officer
- Head of HMIS
- Head of health administration department
- Head of human resources department
- Directors of technical departments
- Permanent secretary
- Minister of health

The answer should include five of the following officials:
1. Describe the steps in developing an immunization plan.

2. Qualify the following plans as “strategic” or “operational” and give your reasoning:
   b. District microplan to improve access to hard-to-reach communities for the 1st Quarter 2006
   c. Country EPI Plan, 2006-2010
   d. Country Cold Chain plan- 2006
   e. Financial sustainability plan- 2006-2010

3. List the basic criteria for selection of priorities in planning immunization activities. Use measles as an example.

4. What is “microplan”? (Tick the correct answer):
   a. it is a tiny fragment of a macroplan
   b. it is a plan to control a microorganism that causes EPI target diseases
   c. it is a detailed operational plan with clear indication of specific activities, responsible persons, resources, place and time of activities
   d. it is a plan that deals only with outreach visits to hard-to-reach areas

5. What should the EPI manager do to achieve financial sustainability? (Tick the correct answers):
   a. He/she should recruit a good finance officer in the EPI team
   b. He/she should prepare a sound strategic plan in consultation with stakeholders and partners
   c. He/she should exclude expensive vaccines from the immunization schedule to reduce programme cost being an important aspect of sustainability
   d. He/she should encourage the government to progressively contribute to programme cost (e.g. cost of vaccines) to achieve full ownership of the programme in future

---

**Learning Objectives**

- Describe the role of planning in programme management
- Describe the steps when developing an immunization plan
- Indicate source of financial resources for immunization services
- Describe how to develop an "operational" microplan to improve immunization
- Monitor the implementation of the plan
- Evaluate the success of the plan
- Quantify the resource required to achieve the plan
- Set goals and objectives
- Set priorities and strategies
- Develop the programme budget
- Evaluate the programme and budget
- Improve the programme and budget
- Develop an immunization plan
- Plan EPI immunization activities and financial management

**Chapter 7 - Sample Examination Questions and Exercises in the Curriculum**

**Part 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students**
1. Why supervision is necessary?
2. What are the benefits of a supportive supervision?
3. How is integrated supervision carried out?
4. Which are the elements of the supervision process?
5. Please indicate which style of supervision is represented in the following addresses by various supervisors? Use “D” for democratic style, “A” for autocratic, and “C” for causal styles against each request.

   a. Bring me your report on TT coverage that I have asked you to prepare during my last visit.
   b. You guys, you have asked me to explain how to calculate vaccine wastage rate. I am here for you!
   c. Why you did not include this measles case in your January report?
   d. I am sure you have accomplished the task we discussed together during my last visit.
   e. I have taken note on your needs for a new refrigerator. I will come back to you as soon as I find a solution to it.
   f. Bravo, nurse, work well done!

**Question 1**

- To ensure achievements of work objectives
- To assist health workers provide quality services
- To ensure uniformity of performance with established standards
- To identify specific needs in staff training, supplies, technical information, etc.
- To maintain the administrative and technical links between higher and lower level of health care system
- To discuss together during my last visit

**Question 2**

- Build skills
- Focuses on performance improvement through positive interaction between supervisor and supervisee
- Includes on-the-job training
- Includes feedback, both positive and negative
- Includes field-based feedback, which includes lesson learned

**Question 3**

Integrated supervision is carried out by well-trained multi-disciplinary teams, which include health workers, epidemiologists, and other experts, working together to ensure effective implementation of health programs. It strengthens internal relationships in the health system and promotes the sharing of knowledge and experiences among health workers.

**Question 4**

- Supervision plan
- Supervisory checklist
- Supervisory visit
- Supervisory report
- Supervisory visit

**Question 5**

- “a” - A
- “b” - C
- “c” - A
- “d” - D
- “e” - D
- “f” - C

Describe the aim/objectives and main benefits of supervision.

Comment on different supervision styles by supervisors.

Comment on the benefits of supportive supervision.

Explain why integrated supervision is more appropriate for the African countries.

List the main questions of a supervision checklist.

Design a supervisory report.

Describe the follow-up actions after the supervisory visit.

Describe the aims of a supervision report.
Identify information sources for monitoring immunization programmes.

1. List five information sources for monitoring routine immunization programmes.

- Population census data
- Child health card
- Immunization tally sheets
- Monthly immunization summary sheets
- Vaccine order forms
- Vaccine register/stock cards
- Outpatient and inpatient registers
- Supervisory reports
- Programme review reports
- Cluster sampling surveys
- Routine immunization reports
- Immunization report completeness and timeliness table
- Immunization report rate
- Routine immunization charts
- Vaccine stock movement
- Dissemination delay
- Districtwise showing of disease
- Number of new cases of disease
- Immunization monitoring chart

2. Which are the selection criteria for indicators?

- Pertinent
- Sensitive
- Specific
- Technically valid
- Feasible to collect
- Simple and understandable
- Verifiable

3. Review the following list and circle the item which is:

- Input indicator
- Process indicator
- Impact indicator

   a. DPT1 to DPT3 dropout rate
   b. Proportion of districts with EPI focal person
   c. Annual number of new cases of polio
   d. Proportion of countries with immunization safety plan
   e. Proportion of countries certified polio-free
   f. % of government funding for vaccine costs
   g. Vaccine wastage rate (%)
   h. <5 measles mortality rate
   i. Proportion of children immunized with DPT1

4. List five tools used for monitoring immunization programmes.

- Immunization monitoring chart
- Maps with location of disease cases
- Graphs/charts showing disease trends
- Target diseases database on age distribution
- Cold chain inventories
- Routine immunization reports
- Immunization report completeness and timeliness table
- Routine immunization reports
- Vaccine vial monitors
- Cold chain temperature monitoring chart
- Forms on vaccine stock movement

5. Describe the immunization monitoring chart.

- c. Proportion of children immunized with DPT1
- c.2 >5 measles mortality rate
- c.2 Vaccine wastage rate (%)
- b. Input indicator
- b.3 Proportion of countries with vaccination coverage data
- b.3 Annual number of new cases of polio
- Process indicator
- p.2 Proportion of districts with EPI focal person
- p.2: DPT1 to DPT3 dropout rate
- Impact indicator
- c.1: DPT1 coverage
- c.2: DPT2 coverage
- c.3: DPT3 coverage
- c.4: 80% DPT3
- c.5: 120% DPT1

6. You have 1,800 target children <1 year in your catchment area. At the end of year you analysed your data and found that you only vaccinated a proportion of them as ... is your DPT3 coverage? b. What is your DPT1 to DPT3 dropout rate? c. If your dropout rate is >10% what does it tell you?

T-7.4: Monitoring of Immunization Programme

Learning Objectives Questions/Tasks/Exercises Answers

Part 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students
Question 5

This chart is the most important monthly monitoring tool at the health facility and district levels. It shows whether DPT coverage is greater than 10% which is beyond acceptable level (10%).

Health staff should take appropriate action (defaulter DPT3) for DPT3 coverage (DPR) = (DPR1-DPR3) / DPR1 x 100 = 33%

DPT1 to DPT3 Dropout rate (DOR) = [DCPT1-DCPT3] / DPT3 coverage = (1200-100) / 1000 = 90%

Question 6

a. DPT3 coverage = 67%

b. DPT1 to DPT3 Dropout rate (DOR) = 33%

c. DOR is >10% which is beyond acceptable level (10%).

Health staff should take appropriate action (defaulter tracing) to reach more children for completing their DPT3 series.

Question 7

Health office chart should be on display in health facility and district

This chart is the most important monthly monitoring tool at all levels.
1. List preparatory activities for conducting an evaluation

2. Outline the content of the final report on programme

3. What is SWOT analysis?

4. Categorize the following statements under SWOT components: Strengths, Weaknesses, Opportunities and Threats:
   a. With approaching rainy season some of the selected districts for RED strategy may not be accessible.
   b. RED strategy has been introduced in 10 districts in the country and DPT3 coverage shows increasing trends in these districts.
   c. In 3 of the RED districts the local NGOs are not participating in activities saying that the indicators for measuring RED impact are not well defined.
   d. In the last meeting on the expansion of RED, some partners expressed interest to support it subject to government's request.
   e. The District Development Committee in newly selected districts already allocated a budget to support RED.
   f. In RED districts, the dropout rate for DPT1 to DPT3 has substantially decreased.
   g. EPI manager reported that army helicopters may be available to reach hard-to-reach villages for RED.
   h. There is only one health worker in 4 of newly selected districts to carry out activities.

5. Outline the content of the final report on programme

6. Develop measures for follow up of the implementation of recommendations

7. Describe the purpose of evaluation

---

**Answers**

1. Prepare report with findings and recommendations
   - Interpret data
   - Present findings (use SWOT technique)
   - Conclude data

2. What is SWOT analysis?
   - SWOT stands for Strengths, Weaknesses, Opportunities and Threats.

3. Outline the steps for conducting an evaluation
   - Select field visit sites
   - Identify needed resources
   - Develop data collection tools
   - Conclude basic information
   - Initiate and plan the evaluation

---

**Learning/Teaching Objectives Questions/Tasks/Exercises Answers**

**Chapter 7 – Sample Examination Questions and Exercises in the Curriculum**

**Part 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students**
Job card 1

Possible causes may include but are not limited to the following:

- District store was not supplied with vaccines from the province/central store;
- A transport breakdown or lack of fuel at higher levels prevented vaccines from being delivered in time;
- District cold chain officer/focal person did not make a timely order to replenish his/her vaccine stock;
- District cold chain officer/focal person did not know when to order vaccines;
- District cold chain officer/focal person was not trained in vaccine management, etc.

Possible solutions may include but are not limited to the following:

- Health worker should inform his/her immediate supervisor at district level about the problem;
- He/she may modify health facility plan to prioritise urgent immunizations (e.g. confirmed outreach sessions);
- If the reason for the vaccine shortage is the lack of training of the storekeeper, the district manager should ask for or arrange job training as soon as possible;
- District manager should bring this issue to the attention of the provincial/central level EPI manager.

Job card 2

Possible causes may include but are not limited to the following:

- Health worker did not make proper preparations for the outreach vaccination sessions regarding icepacks;
- He/she should have frozen all icepacks at least 10 hours in advance (he/she did not know that icepacks were not enough);
- Health centre should have frozen all icepacks at least 10 hours in advance (he/she did not know that icepacks were not enough);
- He/she should have frozen all icepacks at least 10 hours in advance (he/she did not know that icepacks were not enough);
- He/she should have frozen all icepacks at least 10 hours in advance (he/she did not know that icepacks were not enough).

Possible solutions may include but are not limited to the following:

- Ensure that the health facility is supplied with adequate quantity of icepacks;
- Train health worker on the use of icepacks for outreach sessions;
- Ensure that the health worker is supplied with adequate quantity of icepacks;
- Ensure that the health worker is supplied with adequate quantity of icepacks.

Exercise Answers

Chapter 7 – Sample Examination Questions and Exercises in the Curriculum

1.7.2 Exercises and Answers

Exercises 6 in MLM module 8 referred to in T-6.3: Cold Chain and Vaccine Handling
Exercise Answers as per items

1. False (however, if FIC is not available, DPT3 can substitute for it)
2. First line: True, second line: False
3. False
4. True
5. True
6. False
7. False

Exercises 3 in MLM module 2 referred to in T-7.1:
Introduction to Programme Management
AFRO Mid-level Management Course for EPI Managers.
Module 2, Section 3. Exercise 3: List the qualities of an EPI manager you wish to see in your team as a leader of your team.
Exercises 5 in MLM module 20 referred to in T-7.5:
Evaluation of Immunization Programmes
AFRO Mid-level Management Course for EPI Managers.
Module 20, Section 4, Item 4.7. Exercise 5: Ask participants to answer (tick) the following "true" or "false" questions.
Using Active Teaching/Learning Methods

The teaching/learning methods and techniques recommended in this curriculum comprise the problem-solving approach and other participatory methods and techniques. The objectives of the training based on the problem-solving approach are to motivate participants to learn and assist them to develop efficient reasoning skills, develop self-tuition skills, and improve their interpersonal relations. This method requires more resources and better preparation.

A detailed description of the problem-solving approach is presented in Module 1 of the MLM course entitled “Problem Solving Approach to Immunization Services Management.”

Discussions

To accompany teacher’s lecture and video-episodes, transparencies, slides, and video-tapes are used. The advantage of lectures is that they reach a large number of students. However, they do not promote active learning of practice or concept.

Role-playing followed by group discussions

Demonstrations and practical exercises

Exercises followed by group discussions

Discussions

Lecture with audio-visual presentations

Simulations

Problem-solving, performance, and critical thinking are other important elements in the training. The success of the training depends on the ability of the teacher and the trainees to apply the concepts and information effectively. It helps to familiarize the concepts and information with more resources and technical equipment.

Simulations: Performed, discussed, and video-episodes. The advantage of lectures is that they reach a large number of students. However, they do not promote active learning practice or concept.

Part 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students

(c) Immunization of a child (e.g., vaccines by injection)

In the course of certain lessons, the students may be asked to resolve real problems or perform actions related to immunization activities.

Simulations

Performance: The simulation and higher good points of shortcomings of the students’ performance are discussed. By performing a short group simulation, the teacher will lead a short group discussion. After the simulation, the teacher will encourage the students to develop their knowledge and skills. If the teacher observes how students apply their knowledge and skills, he or she should ask the students to explain, for example, the role of a health worker having students conduct the anti-immunization vaccination before performing the health worker duties.

This method implies that students play the role of a person in a situation that may occur when performing health worker duties. The advantage of lecture is that they reach a large number of students.

Discussions

Role-playing followed by group discussions

Demonstrations and practical exercises

Exercises followed by group discussions

Discussions

Lecture with audio-visual presentations

Simulations
Practical sessions and field placements are important components of the active teaching/learning process. These sessions provide learning through practice. Field visits and placements develop qualities of observation and decision-making. They provide learning through practice. Field visits and placements are essential for the development of skills. After the students complete their visits or field placements, the teacher should reassemble them and ask each group to briefly summarize their findings. The teacher should reassemble them and ask each group to ask questions about practical application of skills. The teacher should then reassemble them and ask each group to develop questions about practical application of skills.
The teacher who is teaching immunization should have the following background and qualities:

- Had recent training in immunization (within the last three years), preferably in the EPI Mid-level Management Course and immunization service delivery;
- Has a thorough knowledge and understanding of immunization programmes, including:
  - Programme's global, regional and national goals and strategic objectives;
  - Programme strategies and policy orientations. This should include both the national and recent global strategies and policies (e.g., GIs, RED, etc.);
  - Immunization programme norms and standards;
- Master active teaching methodology including simulations, role-play, individual and group discussions, demonstrations, audio-visual display and others;
- Be familiar with problem-solving approach and apply it in his/her teaching;
- Is able to correctly interpret immunization management process in his/her teaching to medical students—future managers of immunization or other child health care programmes;
- Has the pedagogical and communication skills required to teach a complex programme such as immunization. The skills required include:
  - Preparing appropriate lesson plans for each Component of the course;
  - Preparing appropriate lesson plans for each Component that are not listed in the course;
  - Preparing appropriate lesson plans for each Component that are not covered in the course;
  - Preparing appropriate lesson plans for each Component that are not yet covered in the course;
  - Has a thorough knowledge and understanding of immunization programmes, including structure, delivery, and evaluation in the EPI Mid-level Management Course and related course (within the last three years).
A number of conditions can support or hamper teaching/learning as regards the course on immunization. The answer “yes” to the following questions will ensure proper teaching of immunization in training schools.

Do the deans, teachers, administrators and staff at field-placement sites support the new changes in teaching immunization?

Does the teaching in immunization correspond with what is taught in other related courses (epidemiology, immunology, paediatrics, community health, etc.)?

Are necessary resources and equipment available for teaching (course materials in sufficient quantities, demonstration materials, reference literature, audio-visual equipment)?

Were all relevant teachers trained in modern immunization theory and practice? Did the training prepare teachers to use active training methods to teach immunization?

Were tutors/staff at field-placement sites trained in modern immunization theory and practice (e.g. in EPI MLM or Immunization in Practice course)?

Otherwise students themselves, observe students in role-plays in small groups and encourage feedback. Are appropriate in use to practice a skill, the teacher will be able to provide prompt and feedback, for example, if role-plays encourage individual feedback, he or she will need to select another large for the teacher to evaluate written exercises and also give large for the teacher to evaluate written exercises and also give large for the teacher to select an alternative. If class is too large the teacher will need to select an alternative. If class is too large the teacher will need to select an alternative.

Is the teaching environment supportive for training (optimal classroom size, enough light and space, less noise, etc.)?

Are there a proper balance of time between theoretical teaching and immunization programme as outlined in the curriculum?

Is time allocation sufficient to cover key priority areas of programmes?

Does the teaching for field visits or field placements of students have sufficient supply of vaccines, AD syringes, safety boxes and other injection materials available for effect teaching (course community health care)?

Do the course’s teaching, administrative and staff at field-placement training schools support the new changes in teaching immunization?

Does the course on immunization include “yes” to the following questions will ensure proper teaching of immunization in following education will ensure proper teaching of immunization in regards the course on immunization. The answer “yes” to the following questions will ensure proper teaching of immunization in regards the course on immunization. The answer “yes” to the following questions will ensure proper teaching of immunization in regards the course on immunization.

A number of conditions can support or hamper teaching/learning as
The chart below illustrates the entire process of curriculum development in general terms. So far we have covered Steps I to V, the initial steps of the process.

The Immunization Working Group should include representatives of relevant teaching units, departments and the outpatient facility used for practice sessions and fieldwork placement, for practical sessions and fieldwork placement. The group should include representatives of different courses, departments and fieldwork placement units.

Sub-steps:

This section describes steps VI and VII with the following detailed.

### 11.1 Establishing a Focal Person and a Working Group for Introduction of the Curriculum

At the teaching-institution level, the appointment of a focal person for immunization training is essential. He or she should be an active teacher, trained in immunization management courses. The objectives of creating an Immunization Working Group within a teaching institution include:

- Encourage full participation of relevant staff in planning, implementing, reviewing and re-planning immunization teaching;
- Facilitate key activities for planning, preparing, implementing and reviewing immunization teaching;
- Coordinate immunization teaching between different courses, departments and fieldwork placement units.

The Immunization Working Group should include representatives of relevant teaching units, departments and the outpatient facility used for practical sessions and fieldwork placement. The group should include representatives from the departments of Child Health, Community Health, Infectious Diseases, Epidemiology, etc.
The proposed activities of the Immunization Working Group are as follows:

- Brief decision-makers within and outside the teaching institution on the status of development of the curriculum, which can be achieved through a national workshop to conceptualise the curriculum;
- Identify where and how immunization course may be incorporated into existing academic programmes;
- Develop a plan of action for introducing immunizations into relevant academic programmes;
- Train teachers and relevant staff at fieldwork placement sites;
- Develop/adapt materials for immunization teaching, learning and student assessment;
- Prepare sites for immunization practice;
- Coordinate immunization teaching between different teaching units/subunits;
- Monitor the progress according to the curriculum implementation plan.

11.2 Developing an Action Plan for Introduction and Implementation of the Curriculum

The plan for introducing EPI teaching should:

- Be tailored to the needs and resources of teaching institutions;
- List the key teaching units, departments and fieldwork placement sites that should be involved in EPI teaching;
- Identify feasible entry points for immunization within a relevant academic programme;
- Describe how students will be assessed for EPI knowledge and academic performance;
- Develop/adapt entry points for immunization within a relevant course that should be involved in EPI teaching;
- List the key teaching units, departments and fieldwork placement sites that should be involved in EPI teaching;
- Be included in the needs and resources of teaching institutions;
- Be evaluated in the needs and resources of teaching institutions.

Annex 1 presents an outline of the plan for introduction of the curriculum content.

Conducting a Consensus Workshop on the Curriculum Content

Annex 2 on implementation strategies and plan of action for EPI curriculum introduction for 2006-2010 has been developed by... Workshop on EPI Prototype Curricula for Medical and Nursing/Midwifery Schools. Douala, Cameroon, 13-17 March 2006.

11.3 Conducting a Consensus Workshop on the Curriculum Content

The plan for introducing EPI teaching should:

- Review the new/rewritten curriculum on immunization teaching;
- Identify where and how immunization course may be incorporated into existing academic programmes;
- Develop a plan of action for introducing immunizations into relevant academic programmes;
- Train teachers and relevant staff at fieldwork placement sites;
- Develop/adapt materials for immunization teaching, learning and student assessment;
- Prepare sites for immunization practice;
- Coordinate immunization teaching between different teaching units/subunits;
- Monitor the progress according to the curriculum implementation plan.

Annex 1 presents an outline of the plan for introduction of the curriculum content.

Chapter 11 - Introduction and Implementation of the Curriculum
Reach consensus about content and implementation of the new/revised curriculum; review and endorse the implementation plan of the curriculum developed by the Immunization Working Group. During this workshop, a small discussion group with representatives from various agencies can be formed to review various parts of the curriculum as well as the implementation plan and come up with suggestions. The rapporteurs will incorporate these suggestions and produce the final version of the curriculum and the implementation plan of action. It will be useful to approach some of these organizations and partners with project proposals using agency-specific formats. Once the curriculum and the plan of action is finalized, the EPI focal person and the Immunization Working Group should carry out advocacy within and outside the training institution among NGOs, including the private sector. This will be done by circulating the plan and the curriculum, requesting them to endorse these documents and support their implementation. Within the training institution, the following organizations and groups will be critical to the implementation process:

- The principal of the school
- Heads of relevant teaching units
- Immunization Working Group members
- Administrators and supervisors of the immunization practice
- Heads of relevant teaching units
- The principal of the school

Outside the training institution:
- Human Resource Department of the Ministry of Health
- Planning Department of the Ministry of Health
- Ministry of Higher Education
- Association of Nursing/Midwifery Schools
- Administration of Nursing/Midwifery Schools
- WHO, UNICEF
- Multilateral and bilateral partners, NGOs and private sector, etc.

It will be useful to approach some of these organizations and partners with project proposals using agency-specific formats. It will be useful to approach some of these organizations and partners with project proposals using agency-specific formats.
Monitoring and Evaluation of the Curriculum

12.1 Monitoring Process

The teaching staff needs to monitor the introduction of new curriculum. The objectives of monitoring in teaching are to:

- Assess whether teaching is being implemented according to the plan of action;
- Identify achievements and difficulties with new teaching;
- Specify actions needed to sustain achievements or overcome difficulties.

It is best to monitor teaching consistently throughout a year, term or course. Teachers themselves can monitor teaching. Additionally, immunization focal persons or working groups (both within and outside teaching institutions) may assist teachers in developing feasible methods and materials for monitoring.

Two main types of monitoring information can be collected:

- Quantitative data that includes suggestions from students and teachers on how to improve the content, methods and materials used for EPI teaching, and how many hours were spent on EPI teaching.
- Qualitative data that includes feedback from students on the immediate outcomes of teaching.

The following methods can be used to collect information:

1. The content of teaching. Does the content build on existing knowledge and abilities of students? Do students believe the new knowledge and skills are useful?
2. The context of teaching. How many hours were spent on EPI teaching? How many sessions were conducted? How are the resources used for EPI teaching? Are necessary resources and equipment available for teaching?
3. The process of teaching. How many students completed the course? How many hours were spent on EPI teaching? How many sessions were conducted? How many students demonstrated expected levels of knowledge and skills?
4. The immediate outcomes of teaching. Do students demonstrate expected levels of knowledge and skills?
Questionnaires can be developed and administered to measure student and teacher satisfaction with the content, context, process and outcome of teaching.

Observation of teachers and students. Teaching sessions can be observed and recorded. It is important for the observer to determine, in advance, what questions she/he wishes to answer about the teaching content, context and process.

Review the results of examinations. Reviewing the results of written and practical examinations will help teachers determine the extent to which the new teaching has achieved its learning objectives.

Once information is collected, teachers should review the results and identify needed actions. Teaching staff may individually monitor and adjust their own teaching, or they may work in teams to share achievements and constraints, and to brainstorm about actions needed to overcome difficulties.

12.2.12 Evaluation

Evaluation is concerned with the periodic assessment of the overall process and outcomes of immunization teaching. There are four types of evaluations to apply to teaching: evaluation of the process, final outcomes, effectiveness and impact.

1. Process refers to the changes made in the way an academic programme is taught, the methods and materials used, and how teachers and students respond to those methods and materials.

2. Outcomes refer to the final results of teaching, particularly in terms of student knowledge, attitudes and skills. Outcomes can be evaluated by asking the students whether they possess the expected competence at the end of a course. This evaluation will confirm whether graduates actually received the expected competence at examination at the end of a course. This evaluation will confirm whether graduates actually possessed the expected competence at examination at the end of a course. This evaluation will confirm whether graduates actually possessed the expected competence at examination at the end of a course. This evaluation will confirm whether graduates actually possessed the expected competence at examination at the end of a course.

3. Effectiveness assesses the ability of students to apply knowledge, attitudes and skills to their work after graduation (i.e. performance). It can be evaluated by finding out how well students are doing after they have left the teaching institution and started work.

4. Impact concentrates on improvements in the health status of a population that may or may not be related to changes in the health services of a country. It is concerned with improvements in the health status of a population that may or may not be related to changes in the health services of a country. It is concerned with improvements in the health status of a population that may or may not be related to changes in the health services of a country. It is concerned with improvements in the health status of a population that may or may not be related to changes in the health services of a country. It is concerned with improvements in the health status of a population that may or may not be related to changes in the health services of a country.
The performance evaluation involves the following methods for collecting information to measure and assess the graduates' performance in immunization:

- Direct observation of graduates on the job to see whether they are able to perform the skills they developed during the academic programme;
- Interviewing graduates through face-to-face interviews;
- Reviewing reports, presentations, plans, and other documentation prepared by the graduates;
- Reviewing statistical information in the programme areas under the graduates' responsibility and action to overcome difficulties they can resolve themselves;
- Interviewing supervisors of the graduates;
- Interviewing the community leaders or members within the graduate's service catchment area;
- Interviewing partners working with the graduates, etc.

The performance evaluation should occur after the graduates have had sufficient opportunity and time to apply their knowledge, attitudes, and skills on the job. For example: has the graduate... If yes, for how long? (The best time to apply the evaluation to an individual graduate is 3-6 months after graduation)

It is critical to share evaluation results with all interested parties, funding agencies, and relevant teaching institutions to demonstrate what was achieved and what is still needed. It is essential for teaching institutions to use evaluation results for strengthening their teaching. Teaching staff should review monitoring and evaluation data and take appropriate action to overcome difficulties they can resolve themselves. Some difficulties, however, may require broader action by several teaching institutions. Therefore, it is important to include new evaluation methods in the curriculum.

12.3 Revision of the Plan and the Curriculum Following the Evaluation

In the curriculum to revise the teaching institution's plan of action or introduce changes, additional resources and technical support and demonstration of the need for resources are critical. The use of evaluation results can also help to justify the use of teaching institution's resources and demonstrate the need for change. In order to better achieve the expected outcomes, clear priorities should be established, and an action plan should be developed and shared. It is important to monitor expected results and any additional resources required to achieve them. The aim of evaluation is not to produce a perfect process, but rather to ensure that the learning process is effective and efficient. Therefore, institutions should view evaluation as a learning process.

Institutions can also use evaluation results to strengthen their teaching through learning from their experiences and the experiences of others. The performance evaluation involves the following methods for collecting information to measure and assess the graduates' performance.
Outline Plan of Action for Introducing EPI into an Academic Programme

Annex

Part 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students

Introduction

Background information about the faculty or school, its students, its methods of teaching and its teaching programmes.

Description of the [insert name of the certificate, diploma or degree programme where EPI will first be introduced] Briefly describe the mission and objectives of the overall programme. Indicate the total number of years of study to complete the programme. Give a broad description of what students will know and be able to do after learning EPI (attach detailed list of learning objectives as an annex).

EPI Teaching/Learning Objectives

For each year of study, give the total number of hours of theory and the number of hours of clinical practice in child health.

EPI Placement of EPI Teaching within the [insert name of the certificate, diploma or degree programme where EPI will first be introduced]

Place the prerequisites, teaching departments, sub-departments and fieldwork experience sites where EPI teaching will be introduced. Give a broad description of what students will know and be able to do after learning EPI (attach detailed list of learning objectives as an annex).

Teaching, Learning and Assessment Materials Needed for EPI

List the primary materials used by teachers and students (including the major textbook and reference books used) to teach and learn child health. Indicate which of the existing materials need to be revised or be made compatible with EPI. Identify possible sources of funding and technical support. Describe what types of new materials should be developed or adapted. Estimate the cost of revising and developing materials, and of producing and distributing the materials.

Annexes

(Adapted from WHO/FCH/CAH/01.09)
Teaching and Learning Methods and Materials

For each year or term of teaching (e.g. theory, clinical practice, etc.), list the types of teaching and learning methods that might be used, and the types of teaching and learning materials that would be needed.

Student Assessment Methods and Materials

For each year or term of teaching, list the types of methods that might be used for student assessment (e.g. assignments, exercises, written examinations, observation of practical skills, etc.), and the types of materials that would be needed to assess student knowledge and skills in EPI.

Training Administrators, Teachers and Staff at Fieldwork Placement Sites

Describe what types of staff members will need training in EPI, and how they would be trained. Remember to include relevant staff from practice placement sites as well as teachers and administrators from the school.

Preparation of Clinical Training Sites

Describe what will be needed to prepare fieldwork placement sites for EPI teaching.

Monitoring and Evaluation

Explain how the teaching institution will monitor the implementation of the plan for introducing EPI teaching.

Budget

Estimate the cost for:
1. Training administrators, teachers and other staff;
2. Planning and coordination;
3. Developing and supplying required teaching, learning and student assessment materials.

Annexes – Annex 1

Part 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students
### Annex 1

**Part 2: EPI Prototype Curriculum for Teaching a Course on Immunization to Nursing/Midwifery Students**

#### A. CURRICULUM DEVELOPMENT
- Conducting situation analysis
- Establishing Immunization Working Group (WG)
- Recruiting a training expert
- Drafting the curriculum
- WG review meeting
- WG planning meeting
- Organizing a consensus workshop
  - New/revised curriculum developed
  - Consensus reached on the new curriculum
  - Implementation plan approved

#### B. INTRODUCTION
- Initiating advocacy for endorsement of the new curriculum
- Mobilizing resources
- Training of teachers/field supervisors
- Coordinating with department heads
- Duplicating training modules/Handouts
- Training of teachers/field supervisors
- Mobilizing resources
- Curriculum in use
  - New/revised curriculum endorsed
  - Resources mobilized as per plan
  - Teaching preparations completed

#### C. MONITORING/EVALUATION
- WG meeting on monitoring and evaluation tools & indicators
- Monitoring/review of teaching methods
- Conducting process and outcome evaluation
- Revising curriculum based on monitoring results
- Conducting evaluation of effectiveness of new curriculum
- Revising teaching methods
  - WG review meeting
  - WG planning meeting
  - Organizing a consensus workshop

#### Table: Implementation Plan

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<th>Activity</th>
<th>Expected Source</th>
<th>Expected Cost</th>
<th>Responsible for</th>
<th>Date (Deadline of) Implementation Plan</th>
<th>Implementation</th>
<th>Expected Results</th>
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<td>B. INTRODUCTION</td>
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<td>C. MONITORING/EVALUATION</td>
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### Implementation Strategies and Plan of Action for EPI Curriculum Introduction for 2006-2010

**Annex 2**

(Proposed by consensus workshop on EPI Prototype Curricula for Medical and Nursing/Midwifery Schools. Douala, Cameroon, 13-17 March 2006)

<table>
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<tr>
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**Coordinating and implementing agencies:**

NESI, UNICEF, ICE, WHO/MOH/WHO.