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Ethiopia Task Analysis Study Report

For Medical Doctors, Health Officers, Nurses, Medical Laboratory Professionals, and Pharmacy Professionals

March 2015

msh Management Sciences for Health

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ETHIOPIAN MIDWIVES ASSOCIATION

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Ethiopian Anesthetists' Association

The Open University

This report is made possible by the generous support of the American people through the United States Agency for International Development (USAID) under the Cooperative Agreement AID-663-A-12-0008 "Strengthening Human Resources for Health (HRH) in Ethiopia." The contents are the responsibility of Jhpiego and do not necessarily reflect the views of USAID or the United States Government.

ETHIOPIA TASK ANALYSIS STUDY REPORT

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Acknowledgments

Jhpiego acknowledges the following individuals and institutions who contributed to the successful completion of this report:

- Dr. Damtew Woldemariam (Chief of Party, Strengthening Human Resources for Health [HRH]), Dr. Tegbar Yigzaw (Deputy Chief of Party, HRH), Daniel Dejene (Team Leader, HRH), and Samuel Mengistu (Technical Advisor, HRH) drafted and reviewed the report on medical doctors.
- Yodit Kidanemariam (Education and Training Advisor, HRH) and Assefa Bulcha (Education and Training Advisor, HRH) drafted and reviewed the report on health officers.
- Mihereteab Teshome (Team Leader, HRH) and Equlinet Misganaw (Education and Training Advisor, HRH) drafted and reviewed the report on nurses.
- Bekalu Assamnew (Learning Technology Advisor, HRH) and Endris Mekonnen (Senior Technical Advisor, Jhpiego) drafted and reviewed the report on medical laboratory professionals.
- Teferi Guji (Education and Training Advisor, HRH) and Ermias Mergia (Education and Training officer, HRH) drafted and reviewed the report on pharmacy professionals.
- Firew Ayalew (Research Team Leader, HRH), Girma Temam (Research Advisor, HRH), Muluneh Yigzaw (Research Advisor, HRH), and Tsigereda Bekele (Monitoring and Evaluation Advisor, HRH) conducted the data analysis, drafted the methodology, and reviewed the final report.
- Sharon Kibwana (Program Manager, HRH) reviewed the final report.
- The Ethiopian Medical Association, Public Health Officers Association, Nurses Association, Medical Laboratory Technologists Association, and Pharmacists Association provided technical input for the identification of task lists and selection of data collectors.

Jhpiego is grateful to all the health workers who participated in this study and to the Federal Ministry of Health and Regional Health Bureaus for their leadership and guidance.

Abbreviations

ADR	adverse drug reaction
AFB	acid-fast bacillus
APTS	auditable pharmaceutical transactions and services
ART	antiretroviral treatment
CPD	continuing professional development
FMHACA	Food, Medicine and Health Care Administration and Control Authority
FMOH	Federal Ministry of Health
FP	family planning
HO	health officer
HRH	Strengthening Human Resources for Health
IST	in-service training
MD	medical doctor
MLP	medical laboratory professional
NPS	narcotic and psychotropic drugs
PFSA	Pharmaceuticals Fund and Supply Agency
SCM	supply chain management
USAID	United States Agency for International Development
VEN	vital, essential, and nonessential

Executive Summary

Background

The Strengthening Human Resources for Health (HRH) project is a 5-year (2012–2017) bilateral cooperative agreement funded by the United States Agency for International Development (USAID), with an overall goal of improving the status of human resources for health in Ethiopia. Project objectives include improved human resources for health management; increased availability of midwives, anesthetists, health extension workers, and essential health workers; improved quality of training of health workers; and evidence generated to inform policies and practices related to human resources for health.

A task analysis study was conducted by the HRH project in March 2015 to determine needs and gaps in the education, practice, and competencies of five health care cadres: medical doctors (MDs), health officers (HOs), nurses, medical laboratory professionals (MLPs), and pharmacy professionals. The findings will be used to inform programmatic efforts to strengthen the education, practice, and regulation of these cadres and, in turn, strengthen professional services.

Objective

The main objective of the task analysis study was to identify the needs and gaps in the education, practice, and competence of HOs, nurses, MDs, pharmacy professionals, and MLPs.

Methods

This task analysis study employed a cross-sectional design to analyze tasks performed on the job by recently graduated health professionals (more than 6 months and less than 5 years in practice). A two-stage stratified cluster sample design was used to ensure representativeness of the data in the country. In the first stage, public health facilities (both hospitals and health centers) and regulatory or research organizations (pharmaceutical agencies, regulatory authorities, and research centers or institutions; hereinafter, "regulatory/research organizations") were selected. In the second stage, targeted health professionals were selected within the selected facilities and organizations.

All nine regions and two city administrations of Ethiopia were included in this study. The sample of public health facilities and targeted health professionals was selected randomly from lists of the respective sampling units and included:

- 198 MDs (general practitioners) from 66 public hospitals
- 224 HOs, 224 nurses, 224 MLPs, and 224 pharmacy professionals from 19 public hospitals and 93 health centers
- 25 MLPs from 5 regulatory/research organizations
- 15 pharmacy professionals from 3 regulatory/research organizations

This task analysis study measured three key elements related to each cadre's job tasks. The first one was frequency—how often the respondent performs a task in his/her work. Responses included daily, weekly, monthly, rarely, and never. The second element was criticality—how critical the performance of a task is in terms of patient/public health outcome. Responses included high, moderate, and low. The third element was performance—how well the health care worker believes that s/he is able to perform the task. Responses included proficient, competent, and not capable of performing.

The number of tasks analyzed per cadre was 222 (MDs), 189 (HOs), 184 (nurses), 178 (MLPs), and 151 (pharmacy professionals). Response data were analyzed using SPSS version 23 and computed frequencies and percentages.

Key Findings

Medical Doctors

- Frequency: Tasks related to internal medicine, pediatrics, and dermatology were reported to be performed frequently (at least weekly). In contrast, a substantial percentage of respondents reported never performing tasks related to gynecology/obstetrics (41.3%), basic laboratory tests (43.8%), dentistry (44.0%), and assessment, analysis, and research (45.2%).
- Criticality: All task categories were considered important by at least 95% of respondents.
- Performance: Gaps in competency were identified in tasks related to dentistry; basic laboratory tests; ophthalmology; assessment, analysis, and research; program management and leadership; and gynecology/obstetrics.

Health Officers

- Frequency: Tasks related to surgery, obstetrics and gynecology, other clinical services (psychiatry; eye, ear, nose, and throat; dentistry; ophthalmology; and dermatology), and public health were performed infrequently by a high percentage of HOs. Some tasks related to surgery and public health were never performed by a high percentage of HOs.
- Criticality: All task categories were classified as highly important (at least moderately critical) by at least 89.0% of HOs.
- Performance: A high percentage of HOs were not capable of performing tasks related to general clinical service delivery (specifically laboratory testing), surgery, public health (long-term family planning [FP]), gynecology, other clinical services (such as ophthalmology), and professional duties.

Nurses

- Frequency: Tasks in the nursing professionalism and ethics category were reported as the most frequently performed (by 79.4% of nurses). In contrast, clinical tasks related to critical and emergency nursing care were reported as frequently performed by the fewest nurses: 8.9% and 23.2%, respectively.
- Criticality: Tasks in all seven categories were perceived as highly important by more than 90% of nurses.
- Performance: Nearly half (46.6%) or more of nurses rated themselves not capable of performing 34 tasks, of which more than 70% (24 tasks) were related to critical nursing care.

Medical Laboratory Professionals

- Frequency: Out of the total of 12 task categories, five (basic medical laboratory science, urine and body fluid analysis, professional ethics, medical parasitology, and immunological and serological laboratory tasks) were performed highly frequently. The majority of MLPs never performed most of the tasks under the histopathology, molecular biology, clinical chemistry, microbiology, and hematology categories.
- Criticality: Tasks under urine and body fluid analysis were rated as the most critical tasks, while molecular biology laboratory tests rated as least important, chosen low importance by 45.0% of the participants.
- Performance: Almost all of the participants rated themselves not capable of performing tasks under the histopathology and molecular biology categories. More than 50% of the participants indicated that they were not capable of performing tasks related to clinical chemistry, medical microbiology, and hematology.

Pharmacy Professionals

- Frequency: The most frequently performed task categories are dispensing of medications, and professionalism and ethics. Dispensing tasks were performed at least weekly by 76% of pharmacy professionals.
- Criticality: At least 35% of participants rated every task as high criticality and 128 tasks were rated high criticality by at least 50% of the pharmacy professionals. Dispensing and pharmaceutical care tasks were the most important, each rated by 76% of participants as high criticality, followed by regulatory services (rated as high criticality by 70% of participants).
- Performance: One-fourth of the pharmacy professionals reported themselves as not capable of performing tasks in four categories: supply chain management (SCM), pharmaceutical care, drug information service, and regulatory services. Over 40% of pharmacy professionals reported they were not capable of performing 19 tasks under regulatory services, and 25%–45% of the respondents reported that they were not capable of performing 11 of the 14 pharmaceutical care tasks. Similarly, 25%–37% of the respondents reported that they were not capable of performing seven of the 10 drug information service tasks.

Program Implications

Medical Doctors

- In-service training (IST) packages should be developed and standardized to fill the competency gaps of practicing physicians identified by the task analysis study.
- The study findings can guide the formulation of licensing exam items before doctors are deployed to health facilities.
- Some critical tasks were not frequently performed by MDs. The in-service and pre-service training curricula should be checked with an eye to this finding and revised to address current gaps.

Health Officers

- Tasks with a combination of high criticality and low frequency, such as those related to surgery and public health, should be considered for IST, as this combination may imply that HOs have a lower chance of learning/improving their performance in these tasks because of reduced chances to practice.
- Tasks with a combination of high criticality and low performance (not capable to perform)—such as those related to surgery and public health (long-term FP)—need special attention during pre-service training; their coverage and focus in the pre-service training program should be investigated. These tasks can also be prioritized for IST and continued mentorship.

Nurses

- Highly critical and frequently performed tasks (i.e., professionalism/ethics, basic nursing care, and family health nursing) make up the main duties and responsibilities of nurses working at all levels and settings. Therefore, these tasks should receive more attention as pre-service and in-service curricula are developed and strengthened.
- Critical and emergency nursing care tasks were reported as less frequently performed in the work environment. Failure to perform these tasks in a timely manner may lead to serious consequences for the patient, and nurses need to be well prepared to handle these tasks. Therefore, there should be an organizational system and commitment to maintaining and continuously improving nurses' competence on these tasks.
- Clinical tasks that nurses reported as highly critical but perceived themselves as not capable to perform were, again, critical in that failure to perform them correctly or in a timely manner may lead to serious consequences for the patient. Nurses should be well prepared to handle these tasks; the tasks should receive more attention in pre-service nursing education curricula and should be priority areas for IST.

Medical Laboratory Professionals

- Tasks under the categories of basic medical laboratory science, professional ethics, and urine and body fluid analysis were reported as highly critical and frequently performed medical laboratory tasks. These tasks are the main duties and responsibilities of MLPs that many MLPs are expected to perform in their day-to-day activities. To produce competent MLPs that address the health care needs of Ethiopia, these categories and tasks should receive more attention in pre-service education curricula for MLPs.
- For tasks reported as less frequently performed but highly critical, there should be an organizational system and commitment to maintain and continuously improve MLPs' competence through continuing professional development (CPD) activities.
- Most participants indicated that they were not capable of performing critical tasks within the categories of histopathology, molecular biology, clinical chemistry, and hematology. This could be a danger to public health and requires careful attention in the development or revision of pre-service education curricula. These tasks should also be priority areas for IST.

Pharmacy Professionals

- Pharmaceutical care tasks were rated as highly critical by the majority of participants. However, respondents reported they never perform most of the pharmaceutical care tasks, and also rated themselves as not capable of performing tasks under this category. This necessitates a careful examination of the pre-service education curriculum's design and implementation in regard to content, coverage, adequacy of practical experience gained through practical attachments, and the number and competency of faculty in teaching and evaluating students.

- Respondents rated themselves as not capable of quantifying pharmaceutical needs and reconciling estimated needs with budget. Thus, pre-service education should be strengthened and on-the-job training and mentorship should be considered to improve the performance of pharmacy professionals on these tasks.
- Most pharmacy professionals perceived themselves as not capable of applying auditable pharmaceutical transactions and services (APTS). This could be because APTS is a newly introduced system and continuous on-the-job training and mentoring is required. APTS should also be addressed in the development or revision of the pre-service education curriculum.

Chapter 1
Background

Ethiopia faces a high burden of morbidity and mortality, largely from communicable diseases, nutritional disorders, and poor maternal and child health outcomes. The maternal mortality (676/100,000) and under-5 mortality (88/1,000) rates are unacceptably high, and only 10% of mothers deliver with a skilled birth attendant (Central Statistical Agency 2012). The lack of access to care necessitates an increase in the production and retention of qualified and competent health professionals including MDs, HOs, nurses, MLPs, and pharmacy professionals.

In response to this, the HRH project—which is a 5-year (2012–2017) bilateral cooperative agreement funded by USAID with an overall goal of improving the status of human resources for health in Ethiopia—has been implemented in the country. Project objectives include improving human resources for health management, increasing the availability of qualified and competent health professionals, improving quality of health professionals' education, and generating evidence for effective planning, development, and management of human resources for health. In order to achieve this goal, the Jhpiego-led consortium of Management Sciences for Health, Ethiopian Midwives Association, Ethiopian Association of Anesthetists, and the Open University provides support to the Government of Ethiopia by building local capacity to develop sustained systems for improving and monitoring the quality of education and IST, CPD, deployment, and licensure of health care providers.

Jhpiego's approach promotes a high-quality health workforce made up of well-prepared professionals who are able to perform the tasks required to meet health goals. In order to pursue this end, the HRH project conducted a task analysis study to document health professional practices by examining the actual work of recent graduates in the field.

Task analysis is defined as a method of collecting, classifying, and interpreting data based on people's performance at work (Althouse 2000). Task analysis results can be used in a variety of ways to inform priority-setting and decisions in such areas as resource allocation, staffing and job organization, skill development, and knowledge acquisition and needs for performance assurance. Task analysis is a methodology used to provide information about the current practice of a workforce cadre's work. The term was originally used in the early 20th century by industries and manufacturers to increase efficiency and productivity in their workforces (Copley 1923). Task analysis has been used in many health professions to analyze the gaps in education, practice, and competencies of health care workers (Reamy and Gedik 2001). The findings of task analysis can be used to prioritize the use of limited resources and to inform curricular revision or priorities for IST and professional development efforts. Additionally, the results of task analysis can be used for defining content areas of certification and licensure examinations (Reamy and Gedik 2001). In the United States, for instance, the National Council of State Boards of Nursing (2012) uses the task analysis approach to evaluate the national licensure exam.

Jhpiego has developed a modified task analysis for the context of international public health work in order to respond to a variety of country-specific needs, such as prioritizing curriculum content, reviewing and revising scope and standards of practice for a particular cadre, and updating licensure examinations. Task analysis can help characterize the reality of local practice by providing information that can then be used to ensure that the focus of education and training are logically linked to national needs.

Asynchronously developed curricula, job descriptions, and regulatory authorization can result in inconsistencies that make regulation of a profession difficult and unclear. This task analysis study was, therefore, conducted to analyze the tasks and identify gaps in the education, practice, and self-perceived competencies of recently graduated (between 6 months and less than 5 years in practice) MDs, HOs, nurses, MLPs, and pharmacy professionals in Ethiopia. The goal was to understand how and which tasks these health professionals were practically performing on the job, rather than relying only on curricula or national documents that might be outdated or irregularly revised. The findings of this study, which was conducted in March 2015, were expected to inform decisions in the Federal Ministry of Health (FMOH); Ministry of Education; the Food, Medicine and Health Care Administration and Control Authority (FMHACA); health science training institutions; professional associations; and other stakeholders in the education and practices of the target health professionals. The specific objectives of this task analysis study were:

- Analyze tasks undertaken by recently graduated HOs, nurses, MDs, pharmacy professionals (pharmacists and druggists), and MLPs (medical technologists and technicians).
- For each cadre, identify priority areas for strengthening pre-service and in-service training curricula, plan CPD, revise scope of practice, develop or improve licensure examination, and develop a mentorship program for new graduates.

Chapter 2
Methods

Study Design

This task analysis study employed a cross-sectional design to analyze the tasks performed on the job by recently graduated MDs (general practitioners), HOs, nurses, pharmacy professionals (both druggist and pharmacist), and MLPs serving at public health facilities. In addition, MLPs and pharmacy professionals working at regulatory/research organizations *(FMOH; Ethiopian Public Health Institute; Pharmaceuticals Fund and Supply Agency; Armauer Hansen Research Institute; and FMHACA) were included in the study.*

A two-stage stratified cluster sample design was used to ensure representativeness of the data in the country. In the first stage, public health facilities—both hospitals and health centers—and regulatory/research organizations were selected. In the second stage, targeted health professionals were selected within primary sampling units. The nine regions and two city administrations were considered as strata to improve precision (reducing sampling error) and public hospitals, health centers, and regulatory/research organizations were considered clusters. The sample of public health facilities and targeted health professionals was selected randomly from lists of the respective sampling units.

Sample Size and Sample Selection Procedures

The study was designed to provide nationally representative information for each of the five target health cadres: HOs, nurses, MDs, pharmacy professionals, and MLPs. Separate sample sizes were calculated for each cadre to provide reliable estimates in the country.

Sampling of Medical Doctors

The total estimated number of MDs (general practitioners) in 2013 that had work experience from 6 months to less than 5 years in public health facilities of Ethiopia was 1,431.

The sample size for this cadre was calculated with an assumption of 95% of level of confidence, maximum variability of attributes with proportion of 0.5 (assuming that level of job practice was considered 0.5 since there was no prior similar information), plus or minus 15 percentage points of relative errors (according to MEASURE Evaluation [Turner et al. 2001], a relative error of 10%–20% is acceptable), and design effect of 1.2 (a default value of 1.2 was used because there was no prior study with a similar health facility approach that could be used to estimate the design effect). Accordingly, the sample was calculated and yielded an adjusted sample size of 198 MDs after accounting for an anticipated nonresponse rate of 10%.

Considering available budget resources, samples of three MDs per hospital were optimum to be interviewed; this required a sample of 66 hospitals (198/3). Data collectors asked hospital managers to provide lists of MDs with work experience from 6 months to less than 5 years. Three names were randomly selected from the list if there were more than three MDs. If there were three or fewer MDs at the time of interviewing, all of them were invited to participate.

Sampling of Health Officers, Nurses, Medical Laboratory Professionals, and Pharmacy Professionals

The 2013 estimated total number of health professionals having work experience from 6 months to less than 5 years at public health facilities was 21,799 (nurses), 3,277 (HOs), 3,309 (MLPs), and 3,040 (pharmacy professionals).

Separate sample sizes were calculated for each target cadre to give reliable estimates at national level using the assumptions described above for MDs. This provided adjusted representative samples sizes of 224 nurses, 213 HOs, 213 MLPs, and 212 pharmacy professionals after accounting for an anticipated nonresponse rate of 10%. The study used the largest sample size (224) to obtain better survey precision for each target cadre serving at health facilities. In addition, the study invited 15 sample study pharmacy professionals and 25 sample MLPs from regulatory/research organizations purposively.

In consideration of resources and managing the data collection, the study invited two sample health professionals from each cadre per health facility and five each of sample MLPs and pharmacy professionals from regulatory/research organizations. Hence, the total sample included **112** (224/2) health facilities as well as five regulatory/research organizations (all that exist for pharmacy professionals and MLPs in Ethiopia, and three of which include both cadres). The sample 112 health facilities were allocated to each region's hospitals and health centers in proportion to the total number of health facilities in each region (Table 1). Therefore, 19 public hospitals and 93 health centers were sampled to invite HOs, nurses, MLPs, and pharmacy professionals to the study.

Data collectors asked health facility managers to provide lists of health professionals in the targeted cadres who had work experience from 6 months to less than 5 years. From each facility's list, two study participants from each cadre were selected randomly if there were more than two possible participants in that cadre; if there were two or fewer members of a cadre, all of them were interviewed. Similarly, from each regulatory/research organization, five medical laboratory/pharmacy professionals were selected randomly if there were more than five eligible; if not, all eligible participants were invited. If a selected facility lacked the number of health professionals needed to provide an adequate sample, the remaining sample spaces were filled from other facilities that had a high number of members of the targeted cadre or from nearby health facilities.

Sampling of Health Facilities and Regulatory/Research Organizations

As indicated in Table 1, the 66 sample hospitals from which MDs were invited and 112 sample health facilities (19 hospitals and 93 health centers) from which HOs, nurses, MLPs, and pharmacy professionals were invited were allocated to each region in proportion to the total number of hospitals and health centers in that region. A power allocation technique was used to allocate optimum sample health facilities into small strata (regions), as the number of health facilities per region ranges from 1 to 41. The 66 sample hospitals were randomly selected from a list of 127 and the 93 sample health centers, from a list of 3,100. Of the 66 sample hospitals from which MDs were invited, 19 hospitals were randomly subsampled for HOs, nurses, MLPs, and pharmacy professionals to be interviewed. MLPs and pharmacy professionals from all five of Ethiopia's regulatory/research organizations were invited to participate in the study as well (Table 2).

Table 1: Total and sampled health facilities, by region

Region	Total number of hospitalsa	Total number of health centersa	Number of hospitals sampled for medical doctors	Number of health facilities sampled for health officers, nurses, medical laboratory professionals, and pharmacy professionals	
				Number of hospitals subsampledb	Number of health centers sampled
Tigray	15	214	8	2	9
Afar	5	62	2	1	5
Amhara	19	801	10	3	18
Oromia	41	1,123	21	6	21
Somali	9	112	4	1	7
Benishangul-Gumuz	2	32	1	1	4
Southern Nations, Nationalities, and Peoples	21	642	11	3	16
Gambella	1	28	1	0	3
Harari	2	8	1	0	2
Addis Ababa/ Federal	11	62	6	2	5
Dire Dawa	1	16	1	0	3
Total	127	3,100	66	19	93

a. Source: Federal Ministry of Health. 2013. Health Sector Development Programme IV Annual Performance Report.

b. Subsample of hospitals in column "Number of hospitals sampled for medical doctors."

Table 2:Total and sampled pharmacy professionals and medical laboratory professionals (MLPs), by organization

Regulatory/research organization	Total population		Sample size	
	Pharmacy professionals	MLPs	Pharmacy professionals	MLPs
Federal Ministry of Health	13	31	5	5
Food, Medicine and Health Care Administration and Control Authority	60	5	5	5
Pharmaceuticals Fund and Supply Agency	147	5	5	5
Armauer Hansen Research Institute	0	67	0	5
Ethiopian Public Health Institute	0	14	0	5
Total	220	122	15	25

Inclusion Criteria

Participants included in the study were HOs, nurses, MDs (general practitioners), pharmacy professionals, and MLPs who were recent graduates and working in public health facilities and regulatory/research organizations during the survey. All targeted health professionals had a diploma or Bachelor of Science degree. For purposes of this study, recent graduates were defined as having work experience from 6 months to less than 5 years in health facilities. All health facilities included in the study were public hospitals and health centers. Five regulatory/research organizations that had MLPs and pharmacy professionals were included in the study.

Exclusion Criteria

Health professionals who were not in practice and those who had qualification with specialty or advanced degree were excluded from the study sample. Health professionals with less than 6 months or more than 5 years of experience were excluded from the study. Public health facilities that were located in hard-to-reach areas were also excluded from the study.

Development of Task Lists and Study Tools

The task analysis process involved a series of steps including developing draft task lists and validating the task lists. For each cadre, development of a task list and validation of the task list by a panel of national experts was completed in preparation for the study. Various documents such as scopes of practice, curricula, and other relevant guidelines were used to develop the task lists. Jhpiego organized validation workshops with subject matter experts for each cadre. Panels of MDs, HOs, nurses, MLPs, and pharmacy professionals were assembled to review and validate the respective task lists. The expert panels edited and revised the task lists and came up with 189 tasks for HOs, 184 for nurses, 222 for MDs, 151 for pharmacy professionals, and 178 for MLPs. The study tools included sociodemographic variables as well as task lists with three measurement variables:

3. **Frequency:** How frequently was the task performed? The response categories were:
    - Never: Respondent never performed task
    - Rarely: Respondent completed task less than once a month
    - Monthly: Respondent completed task once a month
    - Weekly: Respondent completed task less than once per day but at least once per week
    - Daily: Respondent completed task at least once per day
4. **Criticality:** How critical was the timely and effective performance of the task to patient and public health outcomes? The response categories were:
    - Low: Failure to complete task correctly or in a timely manner may result in a minimal impact on patient or public health
    - Moderate: Failure to complete task correctly or in a timely manner could lead to serious patient discomfort or short-term disability or a moderate impact on public health
    - High: Failure to complete task correctly or in a timely manner could lead to patient death or permanent disability or have a major impact on public health
5. **Performance:** How well did respondents feel that they were able to perform the task? Response categories were:

- Not capable: Respondent does not feel confident to perform the task without causing harm, if unsupervised
- Competent: Respondent is able to perform the task safely and effectively, although may ask for supervision from a more experienced provider
- Proficient: Respondent has some expertise and could supervise others in the task

The task lists for each cadre form the basis for the data collection tools (Annexes A–E).

Data Collection Procedures

The data collectors and supervisors were health workers recruited from the corresponding professional associations for MDs, HOs, nurses, pharmacy professionals, and MLPs. A 3-day data collectors training was held in Addis Ababa for 41 data collectors and 10 supervisors in March 2015. Study coordinators were Jhpiego Ethiopia technical experts and monitoring, evaluation, and research experts. The data collectors and supervisors trained on sample selection; data recording; data quality, storage, and safety; and ethical issues, including informed consent and confidentiality. Data collectors did exercises during training to ensure that they accurately understood the data collection methodology for this study, including sample selection, tools, consent script, and interviewing process.

Data collection took 15 working days. Basic biographical data were collected from each participant, including gender, age, type of facility, district, level of education program (college, university), qualification level (diploma, degree), year graduated, and time in service. This information was recorded on the individual data collection tool for each participant and each participant had a unique identifier number.

Data collectors explained tasks to study participants and let them rate each task across each of the three variables of frequency, criticality, and performance, as described above.

Data Management and Analysis

Data collectors returned completed and cleaned study tools to Jhpiego's office in Addis Ababa. The study team cleaned and verified the study tools before entering the data into a computer. Data was entered using EpiData version 2.0.2.28 and exported to SPSS version 23 for further analysis. Data was analyzed to generate descriptive statistics including percentages and frequencies for each task across the three measurement variables:

1. **Frequency:** Tasks under this variable were further categorized into:
    - Never
    - Low (rarely or monthly)
    - High (weekly or daily)

2. **Criticality:** Tasks under this variable were further categorized into:
    - Low importance
    - High importance (high or moderate criticality)

3. **Performance:** Tasks under this variable were further categorized into:
    - Not capable
    - At least competent (competent or proficient)

Ethical Considerations

The study protocol was shared with USAID and FMOH for their input, and the final protocol was submitted to the Johns Hopkins Bloomberg School of Public Health Institutional Review Board to obtain ethical approval. FMOH and Regional Health Bureaus provided support letters for conducting the interviews with selected health professionals working at public hospitals and health centers.

Protection of human subjects was assured by providing informed consent, by maintaining the confidentiality of study information, and by conducting proper data collector training. Verbal informed consent was obtained from each study participant.

Chapter 3
Results

Results for Medical Doctors

Sociodemographic Characteristics of Medical Doctors

Table 3 presents sociodemographic characteristics of MDs (general practitioners) participating in the study. One hundred ninety-one MDs from 66 public hospitals participated in the study, with a response rate of 96.5%. The majority of the participants were males (73.8%) and working at nonteaching hospitals (78.5%). Most participants were 29 years old or younger and with work experience of 6 months to 2 years (70.2%). Almost all participants were trained in and graduated from government universities.

Table 3: Sociodemographic characteristics of medical doctor participants

Characteristic	Number of participants (N = 191)	Percentage
Sex		
Male	141	73.8
Female	48	25.1
Missing	2	1.0
Age		
20–24	8	4.2
25–29	175	91.6
30–34	6	3.1
Missing	2	1.0
Type of hospital		
Nonteaching	150	78.5
Teaching	41	21.5
Hospital level		
Referral	56	29.3
Regional/zonal	69	36.1
District	66	34.6
Place of education		
Government university/college	190	99.5
Private university/college	1	0.5
Duration of work experience		
6 months to 2 years	134	70.2
> 2 years, < 5 years	57	29.8

Though 222 tasks were included in the MD task list and rated during data collection, only the 178 most relevant tasks were used for compilation of this report (see Annex A). The tasks were categorized into the following lists: basic laboratory tests; internal medicine; surgery; pediatrics; gynecology/obstetrics; psychiatry; ophthalmology; dermatology; ear, nose, and throat; dentistry; assessment, analysis, and research; program management and leadership; and community dimensions of practice, communication, advocacy, and collaboration.

Frequency of Performance

Table 4 shows the average frequency with which MDs performed tasks under each category. Tasks related to internal medicine, pediatrics, and dermatology were reported to be performed frequently (at least weekly). In contrast, a substantial percentage of respondents reported never performing tasks related to gynecology/obstetrics (40.7%), basic laboratory tests (43.8%), dentistry (44.0%), and assessment, analysis, and research (45.2%).

Table 4: Average frequency with which medical doctors perform tasks, by category

	Frequency of performance (N = 191)		
Task category	**Never (%)**	**Low (%)**	**High (%)**
Basic laboratory tests	43.8	20.6	35.6
Internal medicine	6.1	32.5	61.3
Pediatrics	13.4	32.7	53.9
Surgery	28.3	38.7	33.0
Gynecology/obstetrics	40.7	40.8	18.5
Psychiatry	28.9	63.5	7.6
Ophthalmology	37.4	49.2	13.4
Dermatology	4.4	38.6	57.1
Ear, nose, and throat	8.1	56.4	35.5
Dentistry	44.0	46.2	9.8
Assessment, analysis, and research	45.2	45.4	9.5
Program management and leadership	29.8	34.4	35.8
Community dimensions of practice, communication, advocacy, and collaboration	29.4	47.0	23.6

Perceived Criticality of Tasks

Table 5 shows the level of perceived importance, or criticality, of the task categories to public health outcomes. All categories of tasks were considered at least moderate criticality by at least 95% of MDs. Respondents perceive failure to accomplish the tasks correctly as possibly ending in serious complications and high impact on the public. This perception is desirable because it helps practitioners accomplish the tasks as expected.

Table 5: Average criticality of task categories as perceived by medical doctors

	Perceived importance (N = 191)	
Category	**Low (%)**	**High (%)**
Basic laboratory tests	2.8	97.2
Internal medicine	0.5	99.5
Pediatrics	0.1	99.9
Surgery	2.4	97.6
Gynecology/obstetrics	2.1	97.9
Psychiatry	1.2	98.8
Ophthalmology	1.3	98.7
Dermatology	2.1	97.9
Ear, nose, and throat	1.5	98.5
Dentistry	4.9	95.1
Assessment, analysis, and research	3.1	96.9
Program management and leadership	3.1	96.9
Community dimensions of practice, communication, advocacy, and collaboration	3.1	96.9

Perceived Competence in Performance

In order to identify competency gaps, respondents were asked to rate their level of competence to perform each task. As indicated in Table 6, categories of tasks where MDs identified gaps were gynecology/obstetrics, surgery, ophthalmology, dentistry, basic laboratory tests, and assessment, analysis and research.

Table 6: Average perceived competency of medical doctors, by task category

	Perceived competency (N = 191)	
Category	**Not capable (%)**	**Competent (%)**
Basic laboratory tests	22.3	77.7
Internal medicine	1.7	98.3
Pediatrics	1.4	98.6
Surgery	13.9	86.1
Gynecology/obstetrics	12.2	87.8
Psychiatry	9.3	90.7
Ophthalmology	16.3	83.7
Dermatology	1.1	98.9
Ear, nose, and throat	2.5	97.5
Dentistry	25.3	74.7
Assessment, analysis, and research	16.2	83.8
Program management and leadership	13.0	87.0
Community dimensions of practice, communication, advocacy, and collaboration	11.7	88.3

Competency gaps in gynecology and obstetrics: Table 7 lists tasks that a significant percentage of MDs rated themselves as never performing or not capable of performing. The majority of participants were not capable of performing tubal ligation (77.0%), vasectomy (82.7%), cesarean section (70.7%), and visual inspection with acetic acid (74.1%). About 35% of MDs were not capable to insert and remove implants, 19% to perform vacuum or forceps delivery, and 24% to perform manual vacuum aspiration for endometrial biopsy.

Table 7: Tasks related to gynecology/obstetrics that medical doctors never perform and are not capable of performing

Task	% not capable	% never performed
Insert and remove intrauterine device	39.3	79.1
Insert and remove implants	34.6	72.8
Perform tubal ligation	77.0	90.6
Perform vasectomy	82.7	95.3
Perform vacuum-assisted delivery	19.4	56.5
Apply low-lying forceps	19.9	60.7
Perform cesarean section	70.7	81.2
Perform visual inspection with acetic acid	74.1	89.5
Perform culdocentesis	58.1	81.7
Perform manual vacuum aspiration for endometrial biopsy	23.6	64.7

Competency gaps in surgery: As Table 8 depicts, a considerable proportion of the respondents were not able to perform appendectomy (73.3%), excisional biopsy (45.0%), or hydrocelectomy (41.4%). Relatedly, 83.8% of respondents never performed appendectomy, 70.7% never carried out excisional biopsy, and 67.0% never performed hydrocelectomy.

Table 8: Tasks related to surgery that medical doctors never perform and are not capable of performing

Task	% not capable	% never performed
Perform excisional biopsy	45.0	70.7
Perform excision of soft tissue mass	13.6	38.7
Perform arthrocentesis	23.0	44.5
Perform circumcision	23.6	49.7
Perform hydrocelectomy	41.4	67.0
Perform appendectomy	73.3	83.8

Competency gaps in ophthalmology and dentistry: Table 9 indicates the perceived competency and frequency with which MDs perform tasks related to ophthalmology and dentistry. The majority of participants never diagnose retinal detachment (82.7%) or glaucoma (61.8%), manage ophthalmic chemical burns (62.3%), or perform dental extraction (88.0%). Likewise, 58.1% of participants rated themselves not capable to diagnose retinal detachment and 69.1% rated themselves not capable to perform dental extraction.

Table 9:Tasks related to ophthalmology and dentistry that medical doctors never perform and are not capable of performing

Task	% not capable	% never performed
Diagnose retinal detachment	58.1	82.7
Diagnose glaucoma	33.5	61.8
Manage ophthalmic chemical burns	18.3	62.3
Diagnose and manage blepharitis	13.6	29.8
Perform dental extraction	69.1	88.0

Competency gaps in basic laboratory tests: Study participants were asked to rate their frequency and competence in performing and interpreting laboratory procedures. As depicted in Table 10, the majority of participants never performed and interpreted acid-fast bacillus (AFB) (71.2%), stool microscopy (64.9%), blood film (62.3%), and peripheral morphology (57.6%). About 42% of participants rated themselves not capable to perform and interpret AFB, 32.5% to perform and interpret stool microscopy, and 35.6% to perform and interpret peripheral morphology.

Table 10:Tasks related to basic laboratory tests that medical doctors never perform and are not capable of performing

Task	% not capable	% never performed
Perform and interpret acid-fast bacillus (AFB)	41.9	71.2
Perform and interpret stool microscopy	32.5	64.9
Perform and interpret blood film	30.9	62.3
Perform and interpret peripheral morphology	35.6	57.6

Competency gaps in public health and research: Participants were asked to rate their level of frequency and competence in performing public health and research tasks. As shown in Table 11, about 38.6% and 46.5% of participants reported that they never engaged in health management and research activities, respectively. Moreover, 17.5% of participants reported that they had no health management and leadership skills and 14.0% of them reported that they were not capable to do public health assessment and research activities.

Table 11:Tasks related to public health and research that medical doctors never perform and are not capable of performing

Task	% not capable	% never performed
Program management and leadership	17.5	38.6
Assessment and research	14.0	46.5
Communication, advocacy, and collaboration	12.6	23.9

Other performed tasks: The recently graduated MDs were asked to identify other tasks they often perform that were not in the list of tasks identified by the research team. About 62.8% of participants responded that they were performing additional tasks beside the tasks included in the questionnaire. A total of 186 additional tasks were reported. Among these, 84 (45.2%) of the tasks were related to managing different sections of the hospital, 62 (33.3%) were related to teaching, mentoring, and training medical students and other health care providers, and 38 (20.4%) of the tasks were related to working with and coordinating different committees inside their facility.

Results for Health Officers

Sociodemographic Characteristics of Health Officers

Data were collected from 213 HOs working at 19 public hospitals and 93 health centers with a response rate of 94.3%. The majority of respondents were from urban areas (74.2%). As shown in Table 12, the majority of respondents were male (62.4%), aged 25–29 (41%) years, and with more than 2 years' and less than 5 years' (61%) work experience. Most (61.5%) of the respondents had received a general education, while the rest (39.5%) were trained in the postbasic program (received a bachelor of science degree). Most (81.2%) of the respondents were educated at a government university or college.

Table 12: Sociodemographic characteristics of health officer participants

Characteristic	Number of participants (N = 213)	Percentage
Sex		
Male	133	62.4
Female	80	37.6
Age		
≤ 24 years	49	23.0
25–29 years	88	41.3
≥ 30 years	69	32.4
Missing	7	3.3
Facility type		
Hospital	61	28.6
Health center	152	71.4
Education		
First degree (postbasic)	82	38.5
First degree (general)	131	61.5
Place of education		
Government university/college	173	81.2
Private university/college	40	18.8
Duration of work experience		
6 months to 2 years	83	39.0
> 2 yrs, < 5 yrs	130	61.0

Frequency of Performance

As presented in Table 13, fewer than 50% of respondents frequently perform tasks in all categories except basic scientific foundations for clinical medicine and general clinical service delivery. Tasks related to basic scientific foundations for clinical medicine were frequently performed (at least weekly) by 82.6% of the respondents. The other frequently performed task category was general clinical service delivery, performed at least weekly by 50.2% of the respondents.

On the other hand, 31.8% or more of respondents reported never performing tasks related to surgery, obstetrics and gynecology, other clinical services (psychiatry; eye, ear, nose, and throat; dentistry; ophthalmology; dermatology), and public health.

Table 13: Average frequency with which health officers perform tasks, by category

		Frequency		
Category	**Number of tasks**	**Never**	**Low**	**High**
Professional duties	15	29.5	27.0	43.5
Basic scientific foundations for clinical medicine (biomedical and behavioral sciences)	11	1.8	15.5	82.6
General clinical service delivery	34	29.4	20.4	50.2
Internal medicine	15	18.0	55.8	26.2
Obstetrics and gynecology	29	31.8	53.0	15.3
Pediatrics and child health	7	13.2	43.4	43.4
Surgery	13	40.4	47.8	11.8
Other clinical services (psychiatry; eye, ear, nose, and throat; dentistry; ophthalmology; dermatology)	20	32.3	52.4	15.3
Public health	45	41.1	41.9	17

Perceived Criticality of Tasks

Table 14 presents HOs' average perception of task category criticality. In terms of importance to patient and public health outcomes, all the task categories were classified as highly important (at least moderately critical) by at least 89.0% of the respondents. Tasks under internal medicine were classified as highly important by almost all (99.8%) of the respondents. Professional duties and tasks related to public health received the fewest ratings as highly important (89%).

Table 14: Average criticality of task categories as perceived by health officers

	Importance	
Task categories	**% low**	**% high**
Professional duties	11.0	89.0
Basic scientific foundations for clinical medicine (biomedical and behavioral sciences)	2.4	97.6
General clinical service delivery	10.6	89.4
Internal medicine	0.2	99.8
Obstetrics and gynecology	5.3	94.7
Pediatrics and child health	4.6	95.4
Surgery	6.1	93.8
Other clinical services (psychiatry; eye, ear, nose, and throat; dentistry; ophthalmology; dermatology)	5.3	94.7
Public health	11.0	89.0

Perceived Competence in Performance

As displayed in Table 15, there were 20 tasks that at least 32.7% of HOs rated themselves as not capable of performing. These tasks mainly fall under the categories of general clinical service delivery (specifically laboratory testing), surgery, public health (especially long-term FP), gynecology, other clinical services (such as ophthalmology), and professional duties. Providing a permanent FP method (86.2%) and performing trichiasis/entropion correction surgery (80.1%) were the tasks the most respondents reported themselves not capable to perform.

Table 15: Top 20 tasks health officers rated themselves not capable to perform

Task	% not capable
Perform permanent family planning method	86.2
Perform trichiasis/entropion correction surgery of the upper eyelid to prevent blindness for trachoma complications	80.1
Prepare and examine a Gram-stained smear for common bacteria	76.3
Perform visual inspection with acetic acid to screen for cervical cancer	75.2
Stain the eye with fluorescein to check corneal abrasion	75.2
Perform manual vacuum extraction for endometrial biopsy	62.7
Perform and interpret peripheral morphology lab tests	62.6
Perform and interpret acid-fast bacillus (AFB) for TB	61.6
Perform lifesaving minor surgical procedures (tracheostomy, suprapubic puncture, etc.)	60.0
Perform dental extraction	59.3
Insert and remove intrauterine device	59.2
Collect appropriate specimen for culture	57.1
Perform and interpret thin and thick blood films lab tests	55.5
Perform and interpret stool microscopy	54.0
Perform lumbar puncture	52.6
Test and interpret a urine specimen for chemical constituents by using a multiple reagent strip test	43.4
Apply plaster of Paris	41.7
Insert and remove implants	37.4
Diagnose and manage minor surgical problems (lipoma, hydrocele)	36.7
Perform circumcision	32.7

Results for Nurses

Sociodemographic Characteristics of Nurses

Table 16 shows sociodemographic characteristics of the nurses who participated in the study. A total of 223 nurses participated, with an overall response rate of 99.5%. About 55% of nurses participating in this study were female, 66.8% had a diploma or technical vocational education and training, and 74.9% worked at health centers. Most respondents had between 2 and 5 years' work experience.

Table 16: Sociodemographic characteristics of nurse participants

Characteristic	Number of participants (N = 223)	Percentage
Sex		
Female	123	55.2
Male	100	44.8
Age in years		
≤ 24	75	33.6
25–29	110	49.3
≥ 30	38	17.0
Educational qualification		
Diploma/technical vocational education and training	149	66.8
Bachelor of Science degree	74	33.2
Type of health facility		
Hospital	56	25.1
Health center	167	74.9
Duration of work experience		
6 months to 2 years	66	29.6
> 2 yrs, < 5 yrs	157	70.4

Frequency of Performance

Seven categories of nursing tasks were included in this task analysis study. Table 17 presents the average frequency with which nurses perform tasks, by category. On average, tasks in the category of nursing professionalism and ethics were most frequently performed (79.4%), followed by tasks in basic nursing care/service (39.5%) and family health nursing care (32.7%). Basic nursing care and professionalism tasks are central to the practice of nursing and it is widely believed that they are important, yet missing, in current nursing practice. This task analysis study, however, found that providing basic nursing care in an ethical and professional manner was extremely frequently performed, with nurses routinely engaged in such practices at all levels and in all settings.

The task analysis study also found that family health nursing care tasks are frequently performed by nurses in Ethiopia. Unsurprisingly, tasks related to critical and emergency nursing care are less frequently performed in current nursing practice in Ethiopia.

Table 17: Average frequency with which nurses perform tasks, by category

		Never (%)	Low (%)	High (%)
Basic nursing care/service	68	26.6	34.0	39.5
Emergency nursing care	20	26.5	50.3	23.2
Critical nursing care	40	76.7	14.4	8.9
Family health nursing care	41	35.1	32.3	32.7
Nursing leadership, management, and governance	2	63.1	21.2	15.7
Nursing education and research	2	65.2	29.8	4.9
Nursing professionalism and ethics	11	7.9	12.7	79.4

Perceived Criticality of Tasks

Among the categories of nursing tasks analyzed, basic nursing care/service, family health nursing care, and critical nursing care account for more than 80% of the tasks. Table 18 presents perceived criticality of the task categories by nurses. Nursing tasks in all seven categories were, on average, perceived as highly important by more than 90% of nurses.

Table 18: Average criticality of task categories as perceived by nurses

Category of nursing tasks		Perceived importance	
	Number of tasks	Low (%)	High (%)
Basic nursing care/service	68	6.2	93.8
Family health nursing care	41	2.3	97.7
Critical nursing care	40	2.3	97.7
Emergency nursing care	20	1.1	98.9
Nursing professionalism and ethics	11	4.8	95.2
Nursing leadership, management, and governance	2	7.9	91.5
Nursing education and research	2	6.3	92.4

Perceived Competence in Performance

Table 19 shows 17 tasks (out of 184 total) that a majority of nurses (46.6% or more) rated themselves not capable of performing.

Table 19: Nurses' perceived lack of capability, by task

Task	% not capable
Assist splenic aspiration	68.6
Assist bone marrow aspiration	66.8
Monitor spirometer	64.9
Assist bronchoscopy	64.1
Assist thoracentesis	63.2
Prepare, handle, and administer chemotherapeutic drug for cancer patient	62.8
Set up and monitor chest tube draining system	61.0
Apply cast (plaster of Paris)	59.9
Suture wound with metal clip	59.5
Assist lumbar puncture	58.3
Remove cast	54.5
Monitor nasoenteric decompression tube care after gastrointestinal surgery	53.4
Work as a scrub nurse	51.6
Work as a circulating nurse	48.4
Assist abdominal tap	48.0
Provide tracheostomy care	46.6
Perform oropharyngeal suction	46.6

Results for Medical Laboratory Professionals

Sociodemographic Characteristics of Medical Laboratory Professionals

A total of 228 MLPs participated in this task analysis study, with response rate of 95.8%. Table 20 presents their sociodemographic characteristics. There were more male participants (65.8%) than female. About 98% of participants were younger than 35 years and 95.2% of participants practiced in health care facilities, whereas the rest (4.8%) practiced at regulatory/research organizations. There were more medical laboratory technicians (60.1%) than degree graduates. One-fourth of the respondents were trained at private universities/colleges. More than three-fourths of the participants had work experience longer than 2 years and less than 5 years.

Table 20: Sociodemographic characteristics of medical laboratory professional participants

Characteristic	Number of participants (N = 228)	Percentage
Sex		
Male	150	65.8
Female	78	34.2
Age (n = 227)		
20–24	55	24.2
25–29	149	65.6
30–34	19	8.4
35 years and above	4	1.8
Facility/organization type		
Regulatory/research organizations	11	4.8
Hospital	71	31.1
Health center	146	64.0
Educational level		
Diploma	137	60.1
First degree (general)	70	30.7
First degree (postbasic)	21	9.2
Place of education		
Government university/college	172	75.4
Private university/college	56	24.6
Duration of work experience		
6 months to 2 years	46	20.2
> 2 years, < 5 years	182	79.8

Frequency of Performance

Table 21 shows average frequency of performance under each task category of medical laboratory science tasks. Out of the total of 12 task categories, five (basic medical laboratory science, urine and body fluid analysis, professional ethics, medical parasitology, and immunological and serological laboratory tests) were performed more frequently. The majority of the respondents never performed tasks under the histopathology, molecular biology, clinical chemistry, microbiology, immunohematology, and hematology categories. Often, tasks performed less frequently were those that require advanced medical laboratory equipment that is not usually available at the primary health care unit level.

Table 21: Average frequency with which medical laboratory professionals perform tasks, by category

Task category	Number of tasks	% frequency of performance		
		Never	Low	High
Histopathology	13	99.6	0.3	0.2
Molecular biology laboratory tests	9	98.9	1.2	0.9
Clinical chemistry	13	79.9	5.0	15.9
Hematology	32	78.6	6.0	15.2
Medical microbiology	28	75.8	5.5	18.9
Immunohematology	9	72.6	8.8	18.5
Medical parasitology	11	50.2	6.0	44.0
Immunological and serological laboratory tests	13	49.4	9.2	40.7
Health service management and laboratory quality assurance	10	47.6	32.8	20.6
Urine and body fluid analysis	7	36.5	11.1	52.2
Basic medical laboratory science	24	29.3	14.5	56.2
Professional ethics	9	27.0	19.7	53.3
Overall average	178	62.1	10.0	28.1

Perceived Criticality of Tasks

Table 22 shows average perceived criticality of medical laboratory science tasks under the 12 identified categories. Tasks under urine and body fluid analysis were rated as the most critical tasks, while molecular biology laboratory tests were rated as least important, chosen low criticality by 45.0% of the participants.

Table 22: Average criticality of task categories as rated by medical laboratory professionals

Category	Number of tasks	Criticality of performance	
		% low	% high
Urine and body fluid analysis	7	6.0	94.0
Professional ethics	9	9.2	90.9
Basic medical laboratory science	24	9.2	90.8
Immunohematology	9	10.7	89.3
Immunological and serological laboratory tests	13	13.5	86.5
Medical parasitology	11	13.7	86.3
Health service management and laboratory quality assurance	10	14.8	85.2
Clinical chemistry	13	15.7	84.3
Medical microbiology	28	22.3	77.7
Hematology	32	22.5	77.5
Histopathology	13	36.1	64.0
Molecular biology laboratory tests	9	45.0	55.0
Overall average	178	18.2	81.8

Perceived Competence in Performance

Table 23 shows MLPs' perceived competence to perform tasks, by category. At least 70% of participants rated themselves competent (that is, competent or proficient) at performing tasks under the categories of medical parasitology, health service management and laboratory quality assurance, immunological and serological laboratory tests, urine and body fluid analysis, basic medical laboratory science, and professional ethics. Almost all of the participants perceived themselves not capable on tasks under the histopathology and molecular biology laboratory tests categories. More than 50% of the participants indicated they were not capable of performing tasks related to clinical chemistry, medical microbiology, and hematology.

One of the main reasons for the poor performance of these tasks, as reported by 51% of participants, was lack of adequate learning opportunities and experiences during pre-service education. About 65% of participants mentioned lack of medical laboratory equipment and supplies—such as CD4 machines, hematology analyzers, chemistry analyzers, and reagents—as another major reason for the poor performance of tasks.

Table 23: Medical laboratory professionals' perceived lack of capability, by task category

Task category	Number of tasks	% not capable
Histopathology	13	90.5
Molecular biology laboratory tests	9	90.1
Clinical chemistry	13	57.4
Medical microbiology	28	56.5
Hematology	32	52.9
Immunohematology	9	41.1
Medical parasitology	11	29.1
Health service management and laboratory quality assurance	10	28.5
Immunological and serological laboratory tests	13	28.1
Urine and body fluid analysis	7	19.8
Basic medical laboratory science	24	17.8
Professional ethics	9	9.7

Table 24 shows the top 20 tasks study participants perceived themselves as not capable of performing unsupervised, all of which fell under the histopathology and molecular biology categories. More than 88.8% of participants reported themselves as not being capable to perform these tasks.

Table 24:Top 20 tasks medical laboratory professionals reported themselves not capable to perform

Task name	% not capable
Perform carbohydrates and lipids staining	92.1
Perform protein, nucleic acid, and amyloid staining	92.1
Perform hematoxylin staining	92.1
Perform connective tissue staining	91.6
Perform cloning	91.6
Perform in situ and DNA hybridization	91.6
Perform frozen section	91.1
Prepare routine and special stains	91.2
Embed surgical and autopsy tissue specimens in paraffin	91.1
Perform restriction fragment length polymorphism and single nucleotide polymorphism	91.1
Perform sequencing	90.8
Perform Southern and Western blotting	90.7
Operate rotary microtome to section paraffin-processed blocks of tissue	90.7
Perform cell concentration and fixation techniques	90.2
Process surgical and autopsy tissue specimens for histopathological techniques	90.2
Perform gel electrophoresis	90.2
Carry out mounting of stained slides	89.7
Perform DNA extraction	88.8
Perform eosin staining	88.8
Perform RNA extraction	88.8

Results for Pharmacy Professionals

Sociodemographic Characteristics of Pharmacy Professionals

A total of 235 pharmacy professionals participated in the task analysis study, with overall response rate of 98%. As indicated in Table 25, the majority of participants were male, younger than 30, working at health centers, and with more than 2 and less than 5 years of work experience at their current position.

Table 25: Sociodemographic characteristics of pharmacy professional participants

Characteristic	Number of participants (N = 235)	Percentage
Sex		
Male	169	71.9
Female	64	27.2
Missing	2	0.9
Age in years		
20–24	71	30.2
25–29	129	54.9
30–34	16	6.8
35–50	5	2.1
Missing	14	6.0
Type of facility/organization		
Hospital	71	30.2
Health center	150	63.8
Others (Food, Medicine and Health Care Administration and Control Authority; Federal Ministry of Health; Pharmaceuticals Fund and Supply Agency)	14	6.0
Level of education		
Diploma	132	56.2
Degree	103	43.8
Work experience/service		
6 months to 2 years	111	47.2
> 2 years and < 5 years	123	52.3
Missing	1	0.4

Frequency of Performance

Table 26 presents the average frequency of performance of pharmacy professional tasks by category. The most frequently performed categories of tasks were dispensing, and professionalism and ethics. Dispensing tasks were performed at least weekly, on average, by 76% of the respondents. Eleven tasks under this category are performed daily by at least 50% of participants. On average, 31.8% of respondents performed tasks under the professionalism and ethics category at least weekly. On average, 5.5% of SCM tasks were performed infrequently. Out of the 34 SCM tasks, only four tasks were performed at least weekly by at least 5% of the respondents; similarly, all SCM tasks were never performed by at least 70% of the respondents.

A substantial percentage of respondents reported never performing tasks under the categories of regulatory services (98.2%), compounding (95.5%), research and education (76.0%), and pharmaceutical care (72.4%).

Table 26: Average frequency with which pharmacy professionals perform tasks, by category

Task category	Number of tasks	Perceived frequency (%)		
		Never	Low	High
Professionalism and ethics	10	21.4	7.5	31.8
Dispensing	47	27.7	17.4	18.6
Supply chain management	34	85.6	5.2	2.1
Compounding	6	95.5	1.2	2.3
Pharmaceutical care	14	72.4	5.2	8.6
Drug information service	10	71.3	6.4	6.0
Pharmaceutical public health	5	41.4	19.3	9.9
Regulatory services	20	98.2	0.7	0.2
Research and education	5	76.0	10.7	1.3

Perceived Criticality of Tasks

Figure 1 shows perceived level of criticality of pharmacy professional tasks, grouped by category. On average, pharmaceutical care and dispensing tasks were considered the most important, rated by 76% of participants as high criticality, followed by regulatory services, rated by 70% of participants as high criticality. At least 35% of participants rated every task as high criticality and 128 tasks were rated as high criticality by at least 50% of the pharmacy professionals.

Figure 1: Criticality of task categories as rated by pharmacy professionals

Perceived Competence in Performance

Tasks which at least one-fourth of the respondents reported themselves as not capable of performing mainly fell under four categories: SCM, pharmaceutical care, drug information service, and regulatory services. Over 40% of the participants reported that they are not capable of performing 18 tasks under regulatory services, and 21%–45% of participants reported that they are not capable of performing all 14 pharmaceutical care tasks. Similarly, 17%–37% of the respondents reported they were not capable of performing all 10 drug information service tasks. Applying auditable pharmaceutical transactions and services (APTS) at the health facilities and using service delivery data for quantification of pharmaceutical needs were additional tasks pharmacy professionals rated themselves as not capable of performing (see Table 27).

Table 27: Top 34 tasks pharmacy professionals rated themselves not capable to perform

Task	% not capable
Conduct bioequivalence tests	67.5
Conduct current good manufacturing practice inspection	57.6
Regulate promotion and advertisement of pharmaceuticals	55.8
Issue marketing authorization	55.8
Perform dossier evaluation for product registration	55.4
Regulate medicine production	53.6
Conduct prelicensing inspection for pharmaceuticals manufacturing	53.4
Conduct prelicensing inspection of facilities for import and distribution	51.9
Conduct quality control tests for product registration	51.3
License pharmaceutical services	50.9
Conduct pharmacovigilance	50.9
Regulate import, distribution, and use of narcotic and psychotropic drugs and precursor chemicals	49.4
Regulate import and distribution of pharmaceuticals	48.5
Perform postmarketing surveillance	48.5
Perform drug use evaluation studies for appropriate action	45.1
Conduct prelicensing inspection of facilities for drug retail outlets	43.3
Apply auditable pharmaceutical transaction and services at health facility	42.3
Develop and implement patient-specific pharmaceutical care plan	41.4
Participate in the development of treatment guidelines	39.4
Evaluate drug information	36.8
Regulate drug retail outlets	35.9
Assess patient drug therapy needs	35.2
Take relevant patient history for pharmaceutical care	34.8

Task	% not capable
Monitor medication therapy	34.8
Perform medication reconciliation for selected patients	34.3
Evaluate patient therapeutic outcomes	33.5
Identify actual drug therapy problems	32.2
Document pharmaceutical care services	32.2
Prepare educational materials on medicines information (alerts, newsletters, brochures, posters, bulletins)	32.1
Identify reliable sources for drug information	30.0
Prepare query receiving and response forms	29.1
Use service delivery data to quantify pharmaceuticals needs	27.2
Document drug information requests and responses	25.2
Provide discharge medication counseling to inpatients or caregivers	24.8

Chapter 4
Program Implications

The study revealed tasks frequently performed by health professionals in their current practice. Highly important tasks and self-perceived level of competence in performance were identified to inform decision-makers for revising and developing curricula, scopes of practice, and licensure examinations. The task analysis used self-reported responses by participants; observation of actual practice was not done and is beyond the scope of this study. Therefore, these responses could be subject to under- or over-reporting due to inaccurate memory or bias toward social desirability.

Program Implications for Medical Doctors

FMOH is investigating ensuring the readiness of MDs before deployment so that they can provide safe, high-quality service. This readiness can be best ensured by administering a fair and valid licensing exam based on the results of this task analysis study. To this end, the blueprint of the first medical licensing exam has used the findings of this study.

IST packages are being developed and standardized to fill the competency gaps of practicing physicians. This process should go hand in hand with looking at the gaps identified by this study.

This study can also direct policy in defining general practitioners' scope of practice, which will help in deploying doctors to appropriate duty stations. Key findings recommend supporting staff members, monitoring medical practice, and initiating relevant policy discussions regarding medical practice.

Program Implications for Health Officers

Tasks with a combination of high criticality and low frequency, such as those related to surgery and public health, should be considered for IST, as this combination may imply that HOs have a lower chance of learning and/or improving their performance in these tasks because of the reduced chances to practice.

Tasks with a combination of high criticality and low performance (not capable to perform) ratings—such as those related to surgery and public health (long-term FP)—need special attention during pre-service training. Their coverage and focus in the pre-service training program should be investigated. They also can be areas of priority for IST and continued mentorship.

More specifically, based on the combination of high criticality and low performance, the following tasks were identified as priority tasks for consideration in improving pre-service education and IST of HOs.

- Prepare a research protocol and conduct operational research on health and health-related issues
- Perform lumbar puncture
- Perform manual vacuum aspiration for endometrial biopsy
- Interpret/read the result of X-ray investigation
- Manage diabetes mellitus
- Diagnose and manage diabetic ketoacidosis
- Perform instrumental/operative vaginal deliveries
- Prepare and use manual vacuum aspiration as diagnostic/therapeutic mechanism
- Conduct medical abortion

- Perform visual inspection with acetic acid to screen for cervical cancer
- Provide Integrated Management of Neonatal and Childhood Illness
- Perform lifesaving minor surgical procedures (tracheostomy, suprapubic puncture, etc.)
- Perform dental extraction
- Apply plaster of Paris
- Diagnose and manage minor surgical problems (lipoma, hydrocele)
- Perform circumcision
- Diagnose neoplastic diseases
- Perform trichiasis/entropion correction surgery of the upper eyelid to prevent blindness for trachoma complications
- Stain the eye with fluorescein to check corneal abrasion
- Diagnose and manage tonic-clonic seizures
- Manage substance abuse disorders
- Diagnose and manage depressive disorders
- Diagnose and manage anxiety disorders
- Perform permanent FP method
- Insert and remove intrauterine device
- Insert and remove implants
- Design interventions to prevent and control communicable and noncommunicable diseases
- Implement interventions to prevent and control communicable and noncommunicable diseases
- Implement appropriate preventive and control measures in disaster situations
- Act as food inspector in the process of safeguarding food products

In addition, it should be investigated whether the following tasks related to laboratory services should be retained in the HO scope of practice, as a high percentage of HOs rated these tasks less frequently performed, were not capable of performing them, and classified them as low criticality:

- Prepare and examine a Gram-stained smear for common bacteria
- Perform and interpret thin and thick blood films lab tests
- Perform and interpret peripheral morphology lab tests
- Perform and interpret AFB for TB
- Collect appropriate specimen for culture
- Test and interpret a urine specimen for chemical constituents by using a multiple reagent strip test
- Perform and interpret stool microscopy

Program Implications for Nurses

Highly critical and frequently performed tasks by nurses (i.e., professionalism/ethics, basic nursing care, and family health nursing) make up the main duties and responsibilities that are performed by the majority of nurses working at all levels and settings. Therefore, these tasks should receive more attention as pre-service and in-service curricula are developed and strengthened. In addition, it is important to keep these tasks in mind when reviewing the scope of nursing practice and creating a blueprint for Ethiopia's nursing licensure examinations to ensure that the examinations validly reflect actual, current nursing practice in the country.

Clinical tasks that were reported as less frequently performed in the work environment (i.e., critical and emergency nursing care) also had high criticality: failure to perform them correctly or in a timely manner may lead to serious consequences for the patient and there is a need for nurses to be well prepared to handle these tasks. Therefore, there should be an organizational system and commitment to maintaining and continuously improving competence in these task categories.

Clinical tasks that nurses reported as highly critical but perceived themselves as not capable to perform (i.e., critical and emergency nursing care) are—again—critical in that failure to perform them correctly or in a timely manner may lead to serious consequences for the patient. Nurses should be well prepared to handle these tasks; the tasks should receive more attention in pre-service nursing education curricula and should be priority areas for IST.

One of the main reasons reported by nurses for the poor performance of these tasks was lack of adequate learning opportunity and experience during pre-service education. Additional key reasons nurses cited for poor performance were lack of resources such as medical equipment and supplies; lack of management guidelines and protocols in the actual work environment; lack of an organizational system or commitment to maintain and continuously improve competence; and lack of or inefficient IST.

Program Implications for Medical Laboratory Professionals

Tasks under the categories of basic medical laboratory science, professional ethics, and urine and body fluid analysis were reported as highly critical and were frequently performed by MLPs. These tasks are the main duties and responsibilities of MLPs; and tasks under these categories should receive more attention in curricula in order to produce competent MLPs that address the health care needs of Ethiopia. It is crucial that current students of medical laboratory science receive stronger training to carry out these tasks as part of their pre-service education.

For tasks reported as less frequently performed in the work environment and highly critical to improve population health, there should be an organizational system and commitment to maintain and continuously improve competence, which could include CPD activities.

Most MLPs reported that they are not capable to perform high-importance tasks (high or moderate criticality) under the histopathology, molecular biology, clinical chemistry, and hematology categories. This puts the population in danger and requires careful attention in pre-service education curricula as well as prioritization in IST. In addition, lack of medical laboratory equipment and supplies is a key factor limiting retention of competency. Hence, the health sector should strengthen SCM to avoid frequent shortages of equipment and supplies.

Program Implications for Pharmacy Professionals

Selected pharmacy tasks performed at public health facilities (health centers and hospitals) and through regulatory/research organizations and the Pharmaceuticals Fund and Supply Agency were included in the study. Other areas of pharmacy practice, such as pharmaceutical manufacturing and community pharmacy, were not included. Findings of the study related to regulatory services should be interpreted with caution as the number of participants from organizations providing such services (Regional Health Bureaus and FMHACA) is too small to draw conclusions.

While dispensing is performed on a daily basis, other areas of practice with tasks that could be expected to be performed on a daily basis—especially pharmaceutical care, SCM, compounding, and drug information service—appear to be neglected. This calls for clearly delineating the scope of practice for druggists and pharmacists to properly address all pharmacy services expected to be provided at health facilities.

Pharmaceutical care tasks are rated as highly critical by a majority of respondents. This agrees with endeavors made by members of pharmacy professional associations in the past to make pharmacy education more clinical-oriented through repetitive curricular revisions. However, most respondents reported that they never perform most of the pharmaceutical care tasks, and many also rated themselves not capable of performing tasks under this category. Similarly, many pharmacy professionals reported never performing tasks under the drug information services category at health facilities; it is another category in which pharmacy professionals lack competency. For both task categories, these findings highlight the need to carefully examine the design and implementation of the pre-service education curriculum in terms of:

- Content
- Coverage
- Adequacy of experience gained through practical attachments
- Number and competency of faculty teaching and evaluating students

Moreover, these two areas should be considered for IST or CPD course design, as well for on-the-job mentorship to build the competency of professionals already deployed at health facilities.

In addition, respondents rated themselves as not capable in quantifying pharmaceutical needs and reconciling estimated needs with budget. Thus, pre-service education should be strengthened and on-the-job training and mentorship should be considered to improve the performance of pharmacy professionals on these SCM tasks. Another SCM task respondents perceived themselves as not capable of performing is applying APTS, a system designed by FMOH to improve availability of essential drugs by enhancing transparency and accountability in pharmaceutical services provided at health facilities. This could be because APTS is a newly introduced system and continuous on-the-job training and mentoring is required to improve professionals' performance with it. In addition, APTS should be addressed in the pre-service education curriculum. Because lack of training was cited as the main reason for not providing compounding services at health facilities, this skill should also be considered for IST/CPD courses.

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Annex A: Task Lists for Medical Doctors

	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
	Basic laboratory tests											
1	Interpret complete blood count	2.1	0.5	0	6.8	90.6	0.5	8.4	91.1	0	9.9	90.1
2	Perform and interpret blood film	62.3	17.3	4.2	5.2	11.0	2.1	28.3	69.6	30.9	41.4	27.7
3	Perform and interpret peripheral morphology	57.6	23.6	5.2	3.1	10.5	3.1	34.0	62.8	35.6	42.4	22.0
4	Perform and interpret random blood sugar	12.6	17.8	8.9	17.8	42.9	0.5	7.9	91.6	2.6	13.1	84.3
5	Perform and interpret dipstick for urine	35.6	25.7	8.4	9.4	20.9	2.1	31.9	66.0	12.6	29.3	58.1
6	Perform and interpret stool microscopy	64.9	16.2	3.7	2.1	13.1	7.3	49.2	43.5	32.5	42.9	24.6
7	Perform and interpret acid-fast bacillus (AFB) for TB	71.2	11.0	2.1	3.7	12.0	4.2	18.3	77.5	41.9	37.7	20.4
	Internal medicine											
8	Take and record an appropriate history	0.5	1.6	0	3.1	94.8	0	6.8	93.2	0.5	7.9	91.6
9	Perform and record complete physical examination	0	2.1	0.5	3.7	93.7	0	3.7	96.3	0.5	7.9	91.6
10	Make an initial assessment of a patient's problems and list differential diagnoses	0	0.5	0.5	1.6	97.4	0	6.8	93.2	0	12.6	87.4
11	Order pertinent investigation	0	0.5	0.5	1.6	97.4	0	4.7	95.3	0	8.9	91.1
12	Perform paracentesis	6.3	19.5	27.4	32.6	14.2	1.6	23.0	75.4	4.7	22.5	72.8
13	Perform thoracentesis	12.1	18.4	27.9	29.5	12.1	3.1	20.9	75.9	8.4	21.5	70.2
14	Perform lumbar puncture	23.7	30.5	21.6	16.8	7.4	0.5	7.9	91.6	3.7	29.8	66.5
15	Perform arthrocentesis	44.5	34.0	12.0	6.3	3.1	4.2	47.1	48.7	23.0	40.3	36.6
16	Interpret the results of X-ray investigation	2.1	3.1	4.7	17.8	72.3	0.5	14.1	85.3	3.7	56.5	39.8
17	Design a follow-up strategy of a patient's condition	0.5	2.1	5.8	8.4	83.2	1.0	8.9	90.1	0	22.5	77.5
18	Formulate a plan for discharge	2.1	2.1	2.1	11.6	82.1	1.1	21.6	77.4	0	16.9	83.1
19	Refer difficult medical illnesses or cases to the next level	0	4.7	13.1	31.9	50.3	0	6.8	93.2	0	15.7	84.3
20	Formulate a prognosis about the future events of an individual's health and illness	0.5	2.6	5.8	20.9	70.2	1.0	24.6	74.3	0.5	39.8	59.7
21	Diagnose and manage hypertensive urgency and emergency	2.6	7.3	21.5	40.3	28.3	0	2.1	97.9	0	24.1	75.9
22	Diagnose and manage upper gastrointestinal bleeding	5.2	25.7	35.6	17.3	16.2	0	2.1	97.9	0	42.4	57.6
23	Diagnose and manage myocardial infarction	14.1	43.5	23.6	9.4	9.4	0	2.6	97.4	2.6	60.2	37.2
24	Diagnose and manage status epilepticus	5.8	41.9	26.2	14.1	12.0	0	3.1	96.9	0.5	34.0	65.4
25	Diagnose and manage acute exacerbation of asthma	2.6	4.2	23.0	45.0	25.1	0	3.1	96.9	0	15.2	84.8
26	Diagnose and manage shock of different forms	2.6	4.2	18.3	45.0	29.8	0	1.6	98.4	0.5	26.2	73.3
27	Diagnose and manage diabetic ketoacidosis	3.1	8.4	25.7	41.9	20.9	0	1.0	99.0	0	18.3	81.7

	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
28	Diagnose and manage coma of different causes	3.1	16.2	28.3	32.5	19.9	0	1.0	99.0	1.0	47.1	51.8
29	Diagnose and manage cerebral malaria	8.4	30.9	30.4	15.2	15.2	0	1.0	99.0	0	17.3	82.7
30	Diagnose and manage organophosphate poisoning	9.9	36.1	25.1	15.7	13.1	0	2.1	97.9	2.6	30.4	67.0
31	Diagnose and manage acute severe meningitis	6.3	23.6	35.6	24.1	10.5	0	1.6	98.4	0	26.2	73.8
32	Diagnose different forms of stroke	6.3	28.3	32.5	19.4	13.6	0.5	5.2	94.2	2.1	49.2	48.7
33	Diagnose and manage hypertension	2.1	3.1	7.9	34.6	52.4	0	9.9	90.1	0	17.3	82.7
34	Diagnose and manage urinary tract infection	1.0	1.6	2.1	19.4	75.9	1.6	37.7	60.7	0	10.5	89.5
35	Diagnose and manage different forms of diabetes mellitus	2.6	6.3	14.7	40.8	35.6	0	11.0	89.0	0.5	19.9	79.6
36	Diagnose and manage bronchial asthma	2.6	4.7	17.3	39.8	35.6	0	17.3	82.7	0	13.1	86.9
37	Diagnose and manage congestive heart failure	3.7	6.3	19.9	40.8	29.3	0	3.1	96.9	0	31.4	68.6
38	Diagnose and manage chronic liver disease	5.3	16.3	32.6	25.8	20.0	0	16.8	83.2	1.1	33.7	65.3
39	Diagnose and manage anemia	1.1	3.2	14.7	30.5	50.5	0	9.5	90.5	0	22.6	77.4
40	Diagnose and manage chronic obstructive pulmonary disease	11.5	36.1	23.6	15.7	13.1	0.5	30.4	69.1	1.0	48.2	50.8
41	Diagnose and treat malaria	4.3	12.8	18.6	29.3	35.1	0	2.1	97.9	0	11.7	88.3
42	Diagnose and treat pulmonary and extrapulmonary TB	2.1	3.1	17.3	39.8	37.7	0	5.2	94.8	0.5	20.9	78.5
43	Offer an HIV test and counsel for HIV	5.8	14.1	10.5	17.8	51.8	1.0	18.8	80.1	0.5	20.4	79.1
44	Provide antiretroviral treatment (ART) and follow a patient on ART	21.5	20.4	15.7	12.6	29.8	0.5	14.7	84.8	1.0	25.1	73.8
45	Diagnose neoplastic diseases	7.4	45.3	27.9	9.5	10.0	1.1	23.7	75.3	4.7	57.4	37.9
	Surgery											
46	Perform excisional biopsy	70.7	16.2	7.3	2.6	3.1	6.8	41.4	51.8	45.0	37.2	17.8
47	Diagnose acute abdomen	2.1	8.9	23.0	37.2	28.8	0	2.1	97.9	0.5	24.1	75.4
48	Manage head injury	5.2	13.6	23.0	40.8	17.3	0	1.6	98.4	2.6	46.6	50.8
49	Diagnose and manage different forms of burn	3.7	30.9	40.8	14.1	10.5	0	8.4	91.6	2.1	33.0	64.9
50	Diagnose and manage fracture	4.2	9.4	23.0	39.3	24.1	0	9.4	90.6	2.1	52.9	45.0
51	Diagnose abdominal mass	3.2	27.4	33.2	22.1	14.2	0	32.1	67.9	0.5	42.1	57.4
52	Provide preoperative care in consultation with a surgeon	17.3	19.4	19.9	23.0	20.4	0.5	19.4	80.1	4.2	31.4	64.4
53	Provide postoperative care in consultation with a surgeon	22.0	21.5	17.3	19.4	19.9	0.5	17.3	82.2	3.1	32.5	64.4
54	Assist major surgical operations	33.5	25.1	14.7	15.7	11.0	8.9	37.7	53.4	4.7	44.2	51.1
55	Perform abscess drainage	16.2	23.6	26.2	19.4	14.7	0.5	23.6	75.9	4.7	29.3	66.0
56	Perform excision of soft tissue mass	38.7	27.2	16.8	10.5	6.8	5.2	56.5	38.2	13.6	45.5	40.8

	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
57	Perform circumcision	49.7	24.1	11.5	9.4	5.2	13.1	54.5	32.5	23.6	36.1	40.3
58	Apply plaster of Paris	18.3	27.2	23.6	20.4	10.5	1.0	24.6	74.3	2.6	35.1	62.3
59	Apply traction for fracture	42.9	26.7	15.2	9.9	5.2	1.0	24.1	74.9	12.0	44.0	44.0
60	Manage trauma	3.1	8.4	13.6	32.5	42.4	0	6.8	93.2	0.5	31.4	68.1
61	Perform hydrocelectomy	67.0	18.8	6.8	6.8	0.5	3.1	63.9	33.0	41.4	37.2	21.5
62	Perform appendectomy	83.8	8.9	4.2	2.6	0.5	0.5	12.0	87.4	73.3	19.4	7.3
	Pediatrics											
63	Take and record history of children from their parents	4.2	8.9	4.7	17.8	63.9	1.1	11.6	87.4	0.5	17.4	82.1
64	Perform and record physical examination of children	4.7	6.8	4.7	16.8	67.0	0.5	6.3	93.2	0	17.8	82.2
65	Examine children for their growth and development	6.3	13.6	10.5	20.4	49.2	0.5	18.8	80.6	1.6	24.1	74.3
66	Diagnose and manage children with protein-energy malnutrition	6.8	12.0	14.1	25.1	41.9	0	5.2	94.8	0	20.9	79.1
67	Diagnose and manage children with micronutrient deficiency	11.0	33.0	13.6	21.5	20.9	0	24.1	75.9	1.6	44.5	53.9
68	Diagnose and manage measles	11.0	39.8	17.8	17.3	14.1	0	5.2	94.8	0.5	20.9	78.5
69	Manage diarrhea and vomiting for children	5.8	7.9	2.6	20.9	62.8	0	0.5	99.5	0	12.6	87.4
70	Manage pneumonia in children	5.8	7.3	2.6	19.9	64.4	0	1.0	99.0	0	11.0	89.0
71	Manage childhood fever	5.8	8.9	4.2	22.0	59.2	0	4.7	95.3	1.0	17.3	81.7
72	Manage childhood convulsion	7.9	17.8	31.4	28.3	14.7	0	3.1	96.9	0.5	25.1	74.3
73	Diagnose and manage croup	13.1	40.8	25.7	12.0	8.4	0	5.2	94.8	1.0	26.2	72.8
74	Diagnose and manage HIV infection in children	14.7	35.6	25.7	9.4	14.7	0	9.4	90.6	1.6	26.7	71.7
75	Perform newborn resuscitation	24.1	33.0	13.6	13.6	15.7	0	3.1	96.9	1.6	32.5	66.0
76	Provide Expanded Programme on Immunization for children	66.5	16.2	5.2	2.6	9.4	0	27.2	72.8	9.4	38.7	51.8
	Gynecology/obstetrics											
77	Perform visual inspection with acetic acid	89.5	4.7	2.6	0.5	2.6	7.9	46.0	46.0	74.1	16.4	9.5
78	Perform culdocentesis	81.7	12.6	4.2	0.5	1.0	5.2	40.8	53.9	58.1	29.3	12.6
79	Perform manual vacuum aspiration for endometrial biopsy	64.9	19.9	7.3	4.2	3.7	5.2	27.7	67.0	23.6	42.4	34.0
80	Follow a pregnant mother on ART	34.6	26.7	14.1	10.5	14.1	0	18.4	81.6	2.6	30.9	66.5
81	Provide tetanus toxoid vaccination for women	68.6	17.3	5.2	2.1	6.8	0.5	27.7	71.7	9.9	41.4	48.7
82	Provide focused antenatal care	44.0	22.5	12.0	7.3	14.1	0	18.8	81.2	2.1	27.2	70.7
83	Take a comprehensive history from a pregnant mother	9.4	20.9	21.5	24.6	23.6	0.5	11.5	88.0	0.5	17.8	81.7
84	Perform a complete Leopold maneuver	12.0	24.6	20.4	20.9	22.0	0	19.9	80.1	0.5	18.8	80.6

	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
85	Provide postnatal care	39.3	22.5	13.1	5.8	19.4	0	17.3	82.7	1.0	23.6	75.4
86	Provide immediate newborn care	36.6	27.2	10.5	9.9	15.7	0	7.9	92.1	1.6	26.2	72.3
87	Assess and follow normal labor	43.5	22.5	9.4	9.4	15.2	0	9.4	90.6	1.0	20.4	78.5
88	Attend normal delivery	41.9	27.2	8.9	8.9	13.1	0	13.1	86.9	1.0	22.5	76.4
89	Actively manage third stage of labor	36.1	26.7	11.5	8.4	17.3	0	3.1	96.9	1.0	24.1	74.9
90	Detect and manage malpresentation/malposition	33.5	29.8	12.6	12.0	12.0	0	4.7	95.3	4.2	44.5	51.3
91	Diagnose and manage pre-eclampsia/eclampsia	14.7	39.8	18.3	15.7	11.5	0	2.6	97.4	1.6	22.5	75.9
92	Detect cord prolapse and take appropriate measures	46.8	28.9	7.9	6.3	10.0	0	1.6	98.4	4.2	40.5	55.3
93	Diagnose and manage nausea and vomiting in pregnancy (hyperemesis gravidarum)	7.3	24.6	28.8	25.1	14.1	0	16.8	83.2	0	16.2	83.8
94	Diagnose and manage premature rupture of membrane	29.3	30.4	16.8	13.1	10.5	0	8.9	91.1	0.5	24.6	74.9
95	Manage preterm labor	39.8	31.4	13.6	5.8	9.4	0	11.0	89.0	4.2	35.6	60.2
96	Diagnose and manage puerperal sepsis	19.4	37.2	24.6	10.5	8.4	0	3.7	96.3	1.6	21.5	77.0
97	Diagnose malaria in pregnancy	19.9	45.5	16.2	9.9	8.4	0	4.2	95.8	1.6	22.0	76.4
98	Diagnose diabetes in pregnancy	33.5	45.0	13.1	2.6	5.8	0.5	11.0	88.5	2.6	32.5	64.9
99	Detect and manage fetal distress	35.6	29.3	13.6	8.4	13.1	0	2.6	97.4	5.2	30.4	64.4
100	Diagnose obstructed/prolonged labor	37.2	31.9	10.5	10.5	9.9	0	1.6	98.4	4.2	31.4	64.4
101	Administer parenteral antibiotic for emergency obstetric condition	39.3	34.0	6.8	8.9	11.0	1.0	13.1	85.9	1.6	25.1	73.3
102	Administer uterotonic agents	38.7	31.4	8.4	6.8	14.7	0.5	10.5	89.0	2.1	24.7	73.2
103	Administer anticonvulsants	30.9	36.6	11.5	9.4	11.5	0.5	2.6	96.9	2.6	26.2	71.2
104	Remove placenta manually	42.4	35.1	9.9	6.3	6.3	0	5.8	94.2	4.2	41.9	53.9
105	Perform and repair episiotomy	47.6	26.2	8.4	8.9	8.9	0	17.8	82.2	2.1	24.6	73.3
106	Perform cesarean section	81.2	8.9	3.1	3.7	3.1	1.0	3.1	95.8	70.7	16.8	12.6
107	Diagnosis and manage pelvic inflammatory diseases	9.4	30.9	34.0	15.7	9.9	0	24.1	75.9	1.0	30.9	68.1
108	Diagnose and manage abnormal uterine bleeding	11.5	25.1	34.0	18.3	11.0	0	14.1	85.9	1.0	47.1	51.8
109	Diagnose and manage dysfunctional uterine bleeding	15.2	40.3	27.2	8.4	8.9	0	25.1	74.9	3.1	53.9	42.9
110	Diagnose and manage abortion	13.6	18.3	26.2	19.9	22.0	0	6.3	93.7	2.1	29.8	68.1
111	Diagnose myoma	17.8	47.1	22.5	7.3	5.2	3.7	41.4	55.0	1.6	50.3	48.2
112	Diagnose infertility	17.8	51.3	20.4	5.8	4.7	6.3	50.8	42.9	5.2	55.0	39.8
113	Manage sexual assault	20.9	43.5	18.8	7.9	8.9	1.0	25.7	73.3	6.3	48.7	45.0
114	Diagnose ectopic pregnancy	28.3	49.7	11.5	5.8	4.7	0	3.7	96.3	2.6	45.5	51.8

	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
115	Conduct medical abortion	47.1	27.2	11.5	5.2	8.9	6.8	23.0	70.2	3.7	35.6	60.7
116	Perform manual vacuum aspiration	36.6	24.1	15.7	15.2	8.4	1.0	9.4	89.5	2.6	37.2	60.2
117	Provide postabortion care	29.8	23.6	20.9	13.6	12.0	0.5	16.2	83.2	2.1	25.1	72.8
118	Perform vacuum-assisted delivery	56.5	22.0	9.9	6.8	4.7	0	16.2	83.8	19.4	47.6	33.0
119	Apply a low-lying forceps	60.7	19.4	12.0	3.1	4.7	0.5	18.3	81.2	19.9	54.5	25.7
120	Provide family planning counseling service	29.8	34.6	14.1	8.9	12.6	5.2	46.6	48.2	4.2	37.7	58.1
121	Provide contraceptive pills	40.8	29.3	12.6	8.4	8.9	6.3	56.0	37.7	2.1	36.1	61.8
122	Provide injectable contraceptives	61.8	17.8	7.3	5.2	7.9	6.8	57.6	35.6	8.9	40.3	50.8
123	Insert and remove implants	72.8	17.3	4.7	1.6	3.7	5.2	60.2	34.6	34.6	38.2	27.2
124	Insert and remove intrauterine device	79.1	13.6	2.1	2.6	2.6	6.8	61.3	31.9	39.3	41.4	19.4
125	Perform vasectomy	95.3	3.1	0	0.5	1.0	19.4	58.1	22.5	82.7	10.5	6.8
126	Perform tubal ligation	90.6	6.3	1.0	0.5	1.6	13.1	60.7	26.2	77.0	15.2	7.9
	Psychiatry											
127	Diagnose and manage bipolar disorders	32.5	45.5	15.7	3.7	2.6	1.6	46.1	52.4	9.9	64.9	25.1
128	Diagnose and manage depressive disorders like major depressive disorder	26.7	47.1	18.3	4.7	3.1	1.0	45.5	53.4	6.3	67.0	26.7
129	Diagnose and manage psychotic disorders like schizophrenia	27.7	53.4	13.1	3.1	2.6	0.5	44.0	55.5	7.9	66.5	25.7
130	Diagnose and manage anxiety disorders	23.0	50.3	18.8	5.2	2.6	1.6	51.3	47.1	7.3	63.9	28.8
134	Manage substance abuse disorders	34.6	45.0	9.9	4.7	5.8	1.0	43.5	55.5	15.2	63.4	21.5
	Ophthalmology											
135	Diagnose glaucoma	61.8	34.0	2.6	0.5	1.0	3.1	29.3	67.5	33.5	51.8	14.7
136	Diagnose and manage blepharitis	29.8	47.1	14.7	5.2	3.1	2.1	50.3	47.6	13.6	50.8	35.6
137	Diagnose and manage vitamin A deficiency in children	16.8	41.9	22.0	13.1	6.3	0	22.6	77.4	1.6	42.9	55.5
138	Manage ophthalmic chemical burns	62.3	30.9	4.2	1.0	1.6	0	19.5	80.5	18.3	57.1	24.6
139	Diagnose cataract	34.0	45.0	11.0	5.2	4.7	1.0	35.1	63.9	8.9	56.0	35.1
140	Diagnose red eye	17.3	31.4	26.2	17.3	7.9	2.1	42.4	55.5	6.8	46.6	46.6
141	Diagnose and manage conjunctivitis	5.8	22.5	26.2	31.4	14.1	0.5	34.0	65.4	1.6	27.2	71.2
142	Diagnose and manage trachoma	37.7	39.3	11.0	6.3	5.8	0.5	22.5	77.0	8.4	43.5	48.2
143	Diagnose retinal detachment	82.7	15.2	1.0	1.0	0	2.1	16.8	81.2	58.1	31.4	10.5
144	Detect visual impairment	25.7	47.6	18.3	5.2	3.1	1.0	28.8	70.2	12.0	55.0	33.0

	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
	Dermatology											
145	Diagnose and manage common skin infections like cellulitis, impetigo, and scabies	4.7	14.1	20.9	28.8	31.4	0	50.8	49.2	1.0	36.6	62.3
146	Diagnose and manage common allergic skin disorders like atopic and contact dermatitis	4.7	14.1	24.6	34.0	22.5	2.6	57.6	39.8	1.6	40.5	57.9
147	Diagnose and manage common fungal skin infections like different forms of Tineasis	3.7	16.2	25.7	30.9	23.6	3.7	61.3	35.1	0.5	41.6	57.9
	Ear, nose, and throat											
148	Diagnose and manage different forms of rhinitis	4.7	25.7	27.2	26.2	16.2	2.6	65.4	31.9	0.5	43.2	56.3
149	Diagnose and treat tinnitus	11.5	36.6	27.7	15.2	8.9	2.6	56.0	41.4	5.3	55.3	39.5
150	Diagnose and manage otitis media (acute and chronic)	1.6	13.6	26.2	41.4	17.3	0.5	23.6	75.9	0.5	28.4	71.1
151	Diagnose hearing loss	25.7	45.5	17.3	5.8	5.8	3.1	32.5	64.4	6.3	48.4	45.3
152	Diagnose and manage epistaxis	2.6	28.8	42.4	17.8	8.4	0	24.6	75.4	1.1	35.8	63.2
153	Diagnose and manage tonsillitis and peritonsillar abscess	2.6	16.8	30.4	28.8	21.5	0	23.6	76.4	1.6	35.8	62.6
	Dentistry											
154	Perform dental extraction	88.0	7.3	3.1	1.0	0.5	7.9	57.1	35.1	69.1	22.0	8.9
155	Diagnose and manage gingivitis	19.4	40.8	25.7	8.4	5.8	4.7	57.1	38.2	2.1	47.9	50.0
156	Diagnose and treat periodontitis	24.6	40.3	21.5	6.8	6.8	2.1	47.6	50.3	4.7	51.6	43.7
	Assessment, analysis, and research											
157	Assess community health status and factors influencing health in a community to ascertain determinants of health (e.g., quality, availability, accessibility, and use of health services; access to affordable housing)	27.2	37.7	17.8	5.2	12.0	3.1	46.6	50.3	11.1	62.6	26.3
158	Collect valid and reliable quantitative and qualitative data and information	55.3	32.1	6.3	3.2	3.2	3.2	53.7	43.2	16.8	62.1	21.1
159	Analyze and interpret quantitative and qualitative data	53.4	32.8	10.1	2.1	1.6	3.2	51.9	45.0	19.1	63.8	17.0
160	Apply ethical principles in accessing, collecting, analyzing, using, maintaining, and disseminating data and information	45.8	31.6	13.7	1.6	7.4	2.1	51.6	46.3	13.2	62.1	24.7
161	Use evidence in developing, implementing, evaluating, and improving policies, programs, and services	44.2	30.0	14.7	4.7	6.3	3.7	59.5	36.8	20.6	60.3	19.0
	Program management and leadership											
162	Contribute to development of organizational strategic plan (e.g., include measurable objectives and targets; incorporate community health improvement plan, workforce development plan, quality improvement plan, and other plans)	37.9	33.7	18.9	3.2	6.3	2.1	51.1	46.8	15.3	61.1	23.7
163	Implement organizational strategic plan	20.5	17.9	12.6	8.4	40.5	2.6	44.7	52.6	10.5	55.3	34.2
164	Develop program and/or project goals and objectives	45.3	26.8	14.2	7.4	6.3	2.1	56.3	41.6	20.5	58.4	21.1

	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
165	Implement policies, programs, projects, and services	16.9	14.8	18.0	9.5	40.7	2.1	48.1	49.7	8.5	61.9	29.6
166	Implement strategies for continuous quality improvement and performance management systems	18.4	19.5	21.1	13.7	27.4	2.6	47.9	49.5	10.5	56.3	33.2
167	Evaluate policies, programs, and services (e.g., outputs, outcomes, processes, procedures, return on investment)	42.6	23.7	19.5	6.8	7.4	3.7	52.1	44.2	22.1	52.6	25.3
168	Use evidence in developing, implementing, evaluating, and improving policies, programs, and services	44.2	30.0	14.7	4.7	6.3	3.7	59.5	36.8	20.6	60.3	19.0
169	Justify programs for inclusion in organizational budgets	50.0	31.4	16.5	0.5	1.6	6.4	61.7	31.9	18.1	63.3	18.6
170	Prepare proposals for funding (for, e.g., foundations, government agencies, corporations)	70.0	18.4	10.0	1.1	0.5	7.4	59.5	33.2	27.4	54.7	17.9
171	Apply the basic principles of communicable disease control and infection prevention in hospital and community settings	4.7	11.1	12.1	14.2	57.9	1.1	25.8	73.2	3.7	36.3	60.0
172	Provide team-based community service and patient care	18.4	15.3	8.9	11.1	46.3	2.1	33.7	64.2	5.3	42.1	52.6
173	Apply nationally recommended guidelines	1.6	3.7	5.8	6.3	82.6	0	26.3	73.7	2.6	24.7	72.6
174	Use national and regional surveillance, demographic, and epidemiologic data in health decisions	8.9	15.3	14.2	23.7	37.9	2.1	36.3	61.6	8.4	42.6	48.9
175	Lead health services and health care organizations	37.2	25.0	9.0	2.7	26.1	5.3	49.5	45.2	8.5	59.6	31.9
	Community dimensions of practice, communication, advocacy, and collaboration											
176	Communicate information to influence behavior and improve health (e.g., use social marketing methods, consider behavioral theories such as the Health Belief Model or Stages of Change Model)	24.2	27.9	16.3	12.6	18.9	1.6	50.0	48.4	12.6	53.7	33.7
177	Distinguish the roles and responsibilities of governmental and nongovernmental organizations in providing programs and services to improve the health of a community	15.4	29.8	23.4	10.6	20.7	4.3	56.4	39.4	10.1	56.4	33.5
178	Identify relationships that are affecting health in a community (e.g., relationships among health departments, hospitals, community health centers, primary care providers, schools, community-based organizations, and other types of organizations)	14.8	28.6	24.9	11.6	20.1	2.6	49.7	47.6	7.4	56.6	36.0
179	Advocate for policies, programs, and resources that improve health in a community (e.g., using evidence to demonstrate the need for a program, communicating the impact of a program)	26.5	31.2	19.6	11.1	11.6	2.6	54.0	43.4	12.7	55.0	32.3
180	Facilitate collaborations among partners to improve health in a community (e.g., coalition building)	30.1	26.9	22.0	7.5	13.4	2.7	55.9	41.4	10.2	57.5	32.3
181	Collaborate in community-based participatory research	65.6	23.3	7.9	1.1	2.1	4.8	63.5	31.7	16.9	63.5	19.6

Annex B: Task Lists for Health Officers

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
	A. Professional duties											
1	Participate in continuing professional development opportunities like on-the-job trainings, in-service training, and high-level education	7.5	77.0	9.4	5.2	0.9	11.7	51.6	36.6	0.9	62.0	37.1
2	Coordinate and/or provide continuing professional development services	41.3	39.4	8.5	8.5	2.3	15.0	54.9	30.0	4.2	62.9	32.9
3	Prepare a research protocol and conduct operational research on health and health-related issues	85.0	15.0	0.0	0.0	0.0	23.5	50.2	26.3	12.7	77.0	10.3
4	Actively participate and maintain membership in professional organization/association	85.4	11.7	2.3	0.0	0.5	20.2	51.6	28.2	7.0	67.6	25.4
5	Serve on technical working groups and committees at facility/ regional/national levels	20.7	13.1	26.8	29.6	9.9	11.3	46.9	41.8	0.9	62.9	36.2
6	Serve as a teacher/mentor and preceptor of health officers and/ or other health professionals	37.6	39.9	6.6	11.7	4.2	14.1	45.1	40.8	3.3	61.5	35.2
7	Maintain safe work environment (apply health and occupational safety precautions/methods of control)	2.3	11.3	12.7	25.4	48.4	3.3	28.2	68.5	0.5	51.6	47.9
8	Ensure infection prevention and patient safety standards	4.7	8.0	5.2	17.4	64.8	1.4	15.0	83.6	2.3	41.3	56.3
9	Maintain professional conduct in interacting with other health professionals	0.5	4.7	2.3	12.7	79.8	2.3	31.5	66.2	0.0	46.9	53.1
10	Comply with and/or ensure medicolegal and ethical requirements are respected	0.9	4.2	1.9	13.1	79.8	2.8	26.8	70.4	0.0	48.4	51.6
11	Demonstrate respect toward values/beliefs/rights of clients/ communities	0.9	2.8	0.0	5.2	91.1	3.3	25.4	71.4	0.0	43.7	56.3
12	Utilize intradisciplinary team approach to patient management and community interventions	1.9	9.9	8.0	28.6	51.6	1.9	37.6	60.6	0.5	52.6	46.9
13	Advise courts and police in medicolegal issues and interpretation of public health laws (health proclamations)	46.5	24.4	11.3	10.8	7.0	19.7	44.1	36.2	5.2	72.2	22.6
14	Certify and give testimony for procedures that are carried out under their disposal according to the medicolegal ethical standards and applicable laws/regulations	13.6	20.7	23.5	26.8	15.5	10.8	43.7	45.5	0.5	57.7	41.8
15	Participate in curriculum development of own and other health professionals	93.4	4.2	0.9	0.5	0.9	23.9	44.1	31.9	17.4	65.3	17.4
	B. Basic scientific foundations for clinical medicine (biomedical and behavioral sciences)											
16	Apply the knowledge of the normal function of the body (physiology) to medical practice	1.4	6.6	4.2	9.9	77.9	1.4	24.4	74.2	0.0	62.4	37.6
17	Apply the basic knowledge of normal structure of human body (anatomy) to medical practice	1.9	5.6	6.1	9.9	76.5	0.5	23.5	76.1	0.0	64.8	35.2
18	Apply the knowledge of embryology and histology (human life cycle, effect of growth, development and aging, etc.) to medical practice	3.8	15.5	8.0	27.2	45.5	2.8	32.4	64.8	0.0	74.2	25.8

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
19	Apply knowledge of molecular, cellular, and biochemical mechanisms that maintain the body's homeostasis to medical practice	4.7	12.2	14.6	16.9	51.6	5.2	31.9	62.9	3.3	68.5	28.2
20	Apply knowledge of abnormalities in body structure and function which occur in diseases and aging to clinical practice	2.3	8.5	6.1	14.1	69.0	2.8	26.8	70.4	0.9	64.8	34.3
21	Apply knowledge of the various disease causes (genetic, developmental, metabolic, toxic, infectious, autoimmune, neoplastic, degenerative, and traumatic) and their pathogenesis to clinical medicine	2.4	11.3	7.1	9.4	69.8	1.4	26.4	72.2	3.8	61.8	34.4
22	Apply knowledge of pharmacokinetics and pharmacodynamics to medical practice	1.4	1.4	5.7	11.3	80.2	1.4	12.7	85.8	0.5	63.5	36.0
23	Apply the principles and practice of rational therapy	0.9	1.9	4.2	10.8	82.1	0.5	15.2	84.4	0.5	55.2	44.3
24	Provide counseling and education on proper use of drugs to solve the emerging social, economic, and medical problems of drug use, misuse, and abuse	0.0	1.9	3.8	9.9	84.4	0.0	17.0	83.0	0.5	53.3	46.2
25	Apply social science principles, methods, and knowledge to medical practice	1.4	17.0	9.4	18.9	53.3	6.6	46.7	46.7	1.4	67.0	31.6
26	Apply psychological principles, methods, and knowledge to medical practice	0.0	11.9	7.6	14.3	66.2	3.8	38.1	58.1	1.0	64.3	34.8
	C. Clinical service delivery											
	C1. General											
27	Take and record an appropriate history	0.5	0.9	0.5	3.8	94.3	0.9	11.8	87.3	0.0	41.5	58.5
28	Perform and record a complete physical examination	1.4	10.8	2.4	13.2	72.2	0.5	15.6	83.9	0.0	46.4	53.6
29	Distinguish between normal and abnormal physical findings	0.5	0.9	2.8	4.7	91.0	0.0	13.3	86.7	0.0	50.5	49.5
30	Make an initial assessment of a patient's problems and make differential diagnosis	0.5	1.4	1.9	9.0	87.3	0.5	18.5	81.0	0.0	48.8	51.2
31	Order basic clinical/lab investigations (blood film, peripheral morphology, random blood sugar, dipstick for urine, stool microscopy, acid-fast bacillus [AFB])	0.5	3.3	0.9	7.5	87.7	1.4	11.4	87.2	0.0	41.2	58.8
32	Perform venous and capillary blood collection	16.6	28.9	10.0	22.3	22.3	15.6	42.2	42.2	2.8	59.7	37.4
33	Perform and interpret peripheral morphology lab tests	84.9	9.4	0.9	2.4	2.4	34.9	42.5	22.6	62.6	28.9	8.5
34	Perform and interpret thin and thick blood films lab tests	83.5	9.4	0.9	2.8	3.3	35.8	38.7	25.5	55.5	34.6	10.0
35	Perform and interpret random blood sugar lab test	58.5	20.3	8.5	7.5	5.2	24.1	41.0	34.9	31.3	44.5	24.2
36	Perform and interpret AFB for TB	86.3	5.2	3.3	2.8	2.4	32.5	36.3	31.1	61.6	28.0	10.4

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
37	Prepare and examine a Gram-stained smear for common bacteria	90.6	6.1	0.9	0.9	1.4	40.6	43.4	16.0	76.3	18.0	5.7
38	Interpret the test results of pregnancy	1.4	17.5	11.8	27.8	41.5	5.7	31.6	62.7	0.0	41.0	59.0
39	Interpret the test result of typhoid fever	6.6	12.3	8.5	21.2	51.4	1.4	21.7	76.9	0.5	41.0	58.5
40	Interpret the test result of syphilis	20.3	31.1	16.5	15.1	17.0	4.2	34.4	61.3	4.2	48.1	47.6
41	Collect appropriate specimen for culture	90.1	7.1	0.9	0.0	1.9	32.5	40.1	27.4	57.1	33.0	9.9
42	Test and interpret a urine specimen for chemical constituents by using a multiple reagent strip test	67.5	17.0	4.7	7.1	3.8	25.9	46.2	27.8	43.4	42.0	14.6
43	Perform and interpret stool microscopy	77.0	9.4	2.3	6.1	5.2	31.5	42.7	25.8	54.0	32.9	13.1
44	Perform lumbar puncture	85.4	14.6	0.0	0.0	0.0	13.6	41.8	44.6	52.6	41.3	6.1
45	Perform manual vacuum aspiration for endometrial biopsy	88.7	8.0	2.3	0.9	0.0	17.5	48.6	34.0	62.7	30.7	6.6
46	Order common radiologic diagnostic procedure like X-ray	31.9	16.4	16.4	15.5	19.7	4.7	42.7	52.6	5.2	59.6	35.2
47	Interpret/read the result of X-ray investigation	31.1	27.4	12.7	13.2	15.6	4.7	44.3	50.9	12.3	76.4	11.3
48	Prescribe/change order and/or administer medications to cure/ rehabilitate patients	0.5	4.2	2.3	5.6	87.3	0.5	11.3	88.3	0.0	46.5	53.5
49	Formulate a plan to manage patients	2.3	2.3	4.7	10.3	80.3	0.5	21.6	77.9	0.5	49.8	49.8
50	Undertake early diagnosis and provide basic treatment/ consultation/referral of difficult cases to the next higher level	0.9	6.6	10.8	25.4	56.3	0.0	11.7	88.3	0.5	43.7	55.9
51	Do follow-up with referred cases upon their return to ensure continuity of care	9.0	34.4	20.8	24.5	11.3	3.8	31.6	64.6	0.9	65.1	34.0
52	Document and maintain accurate, legible, and complete medical records	0.5	1.9	1.4	8.0	88.2	3.3	30.2	66.5	0.0	42.0	58.0
53	Ensure appropriate nursing care is provided to patients in need of health care	0.9	10.8	6.6	16.5	65.1	1.4	22.2	76.4	0.0	49.5	50.5
54	Train client/patient in performing the activities contributing to his/her recovery and rehabilitation	5.2	15.1	9.4	15.1	55.2	0.9	23.6	75.5	3.8	47.2	49.1
55	Diagnose emergency/acute medical and surgical needs	2.8	16.0	14.6	27.8	38.7	0.0	8.0	92.0	0.5	55.2	44.3
56	Manage common acute medical and surgical emergencies	9.9	19.3	11.3	27.8	31.6	0.0	7.5	92.5	11.8	54.2	34.0
57	Provide first aid for those in need	3.3	13.3	10.4	25.6	47.4	0.0	8.5	91.5	0.0	48.3	51.7
58	Conduct medical checkup and issue certificate	14.2	22.2	20.8	25.5	17.5	17.0	46.7	36.3	0.9	52.8	46.2
59	Admit and manage patients at inpatient department	11.8	19.8	13.2	34.0	21.2	0.5	15.1	84.4	0.5	54.7	44.8
60	Formulate a plan to discharge a patient according to established principles and best evidence	14.2	23.6	12.3	34.0	16.0	2.8	27.8	69.3	1.4	56.6	42.0

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
	C2. Internal medicine											
61	Diagnose and manage hypertension	2.4	15.1	20.8	34.9	26.9	0.5	4.7	94.8	0.0	47.2	52.8
62	Diagnose and manage hypertensive urgency and emergency	9.0	37.3	29.7	14.6	9.4	0.0	2.4	97.6	5.2	53.8	41.0
63	Diagnose diabetes mellitus	15.6	37.3	19.3	14.6	13.2	0.0	10.8	89.2	2.8	48.6	48.6
64	Manage diabetes mellitus	25.0	33.5	15.6	15.1	10.8	0.5	6.6	92.9	7.5	51.4	41.0
65	Diagnose and manage diabetic ketoacidosis	37.3	42.5	10.4	6.6	3.3	0.0	4.2	95.8	11.8	52.8	35.4
66	Diagnose and manage acute exacerbation of asthma	3.3	30.7	31.1	25.0	9.9	0.0	7.5	92.5	0.0	51.9	48.1
67	Diagnose and manage the different types of shocks	9.4	50.0	23.1	11.8	5.7	0.0	7.5	92.5	2.8	58.0	39.2
68	Diagnose and manage organophosphate poisoning	27.7	47.9	15.5	5.6	3.3	0.0	8.0	92.0	3.8	67.1	29.1
69	Diagnose acute severe meningitis	37.1	53.1	6.6	1.4	1.9	0.0	3.3	96.7	2.8	60.4	36.8
70	Manage acute severe meningitis	46.0	43.2	7.0	1.4	2.3	0.0	4.2	95.8	7.0	61.0	31.9
71	Diagnose and treat malaria	3.3	25.8	12.2	24.9	33.8	0.0	7.5	92.5	0.0	38.0	62.0
72	Diagnose and manage cerebral malaria	27.2	43.2	11.3	10.8	7.5	0.0	4.2	95.8	5.6	45.5	48.8
73	Diagnose and manage anemia	0.9	27.7	25.8	29.6	16.0	0.5	21.1	78.4	0.0	50.2	49.8
74	Diagnose and treat TB	5.6	30.0	35.2	20.2	8.9	0.0	11.3	88.7	1.9	47.9	50.2
75	Diagnose and treat HIV	20.3	35.8	19.8	9.4	14.6	0.9	11.8	87.3	5.7	54.2	40.1
	C3. Obstetrics and gynecology											
76	Provide focused antenatal care services	28.8	31.6	12.7	15.1	11.8	11.8	37.3	50.9	0.0	50.9	49.1
77	Diagnose and refer complicated cases of pregnancy	9.4	43.4	22.2	21.7	3.3	1.4	9.0	89.6	0.5	55.7	43.9
78	Assess and follow normal labor	14.7	29.9	14.7	31.8	9.0	6.6	23.2	70.1	0.5	46.4	53.1
79	Attend normal delivery	14.2	30.8	16.1	32.2	6.6	8.1	25.1	66.8	0.5	46.9	52.6
80	Perform instrumental/operative vaginal deliveries	52.6	28.4	10.9	7.6	0.5	4.7	20.9	74.4	27.5	46.9	25.6
81	Actively manage third stage of labor	13.3	35.1	15.6	29.4	6.6	6.6	10.9	82.5	0.5	49.8	49.8
82	Diagnose and manage pre-eclampsia/eclampsia	29.4	53.6	11.4	5.2	0.5	3.3	4.7	91.9	6.6	54.5	38.9
83	Detect cord prolapse	40.8	50.2	4.3	4.3	0.5	2.4	13.7	83.9	4.7	62.1	33.2
84	Administer uterotonic agents	23.2	39.3	11.8	21.3	4.3	3.8	26.5	69.7	6.1	50.0	43.9
85	Diagnose, resuscitate, and refer abnormal deliveries	13.7	45.0	21.3	18.5	1.4	2.4	7.6	90.0	0.0	60.7	39.3

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
86	Diagnose and manage malaria in pregnancy	33.2	43.1	9.0	11.4	3.3	2.4	9.0	88.6	2.8	49.3	47.9
87	Diagnose diabetes in pregnancy	53.6	41.2	2.8	1.4	0.9	2.4	17.1	80.6	6.2	55.9	37.9
88	Diagnose obstructed/prolonged labor	19.4	47.4	21.8	10.0	1.4	2.4	8.5	89.1	4.7	59.7	35.5
89	Administer parenteral antibiotic for emergency	12.4	42.4	15.7	18.1	11.4	2.9	12.9	84.3	0.0	53.8	46.2
90	Administer anticonvulsants	36.2	51.0	7.6	2.9	2.4	2.9	10.0	87.1	2.9	62.4	34.8
91	Remove placenta manually	29.0	50.0	13.3	7.6	0.0	2.9	13.8	83.3	2.9	59.5	37.6
92	Diagnose and provide resuscitation for asphyxiated newborns	28.6	53.8	10.0	6.7	1.0	2.9	8.6	88.6	3.3	63.3	33.3
93	Diagnose and manage pelvic inflammatory diseases	14.8	46.7	24.3	10.5	3.8	1.9	29.5	68.6	2.4	60.0	37.6
94	Diagnose and manage common abnormal uterine bleeding	11.4	48.1	25.2	10.0	5.2	2.9	13.3	83.8	1.9	62.4	35.7
95	Provide immediate newborn care	16.2	32.9	16.2	27.1	7.6	2.4	17.1	80.5	1.0	51.9	47.1
96	Provide tetanus toxoid vaccination	27.5	42.7	12.8	10.0	7.1	16.7	43.3	40.0	1.9	46.7	51.4
97	Diagnose ectopic pregnancy	60.0	35.7	2.4	1.0	1.0	3.8	18.1	78.1	7.6	67.6	24.8
98	Diagnose and refer complicated gynecologic cases	21.0	60.5	15.2	1.0	2.4	2.9	18.6	78.6	2.4	71.9	25.7
99	Provide comprehensive postnatal care	24.3	39.5	16.7	14.3	5.2	8.1	32.9	59.0	1.0	56.7	42.4
100	Prepare and use manual vacuum aspiration as diagnostic/ therapeutic mechanism	58.6	27.1	8.1	5.2	1.0	7.1	29.0	63.8	25.7	54.8	19.5
101	Conduct medical abortion	71.0	16.7	7.1	3.3	1.9	13.3	31.4	55.2	29.5	52.4	18.1
102	Provide postabortion care	36.0	41.2	13.7	7.6	1.4	4.8	23.3	71.9	11.4	55.7	32.9
103	Diagnose and manage cases of sexual assault	33.8	47.6	12.9	3.3	2.4	6.7	27.8	65.6	7.2	64.6	28.2
104	Perform visual inspection with acetic acid to screen for cervical cancer	94.3	5.2	0.5	0.0	0.0	12.9	38.1	49.0	75.2	21.9	2.9
	C4. Pediatrics and child health											
105	Take and record history from children and their parents	3.3	14.7	11.8	23.7	46.4	3.3	28.9	67.8	0.0	50.2	49.8
106	Examine children for their growth and development	7.1	19.0	10.4	25.1	38.4	2.8	29.4	67.8	0.5	51.7	47.9
107	Document normal growth and development of infants/children	8.5	20.4	14.7	23.2	33.2	6.2	36.4	57.4	0.5	52.6	46.9
108	Diagnose and manage children with protein-energy malnutrition	8.0	36.3	25.0	20.8	9.9	1.9	20.0	78.1	1.0	51.9	47.1
109	Diagnose and manage children with micronutrient deficiency	16.0	44.8	17.5	13.7	8.0	1.9	25.2	72.9	1.9	60.5	37.6
110	Provide Integrated Management of Neonatal and Childhood Illness	15.6	20.3	15.1	17.0	32.1	1.4	26.1	72.5	7.6	51.7	40.8
111	Provide Expanded Programme on Immunization for children	34.0	40.6	13.2	8.0	4.2	14.8	35.9	49.3	2.9	51.7	45.5

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
	C5. Surgery											
112	Perform abscess drainage	16.0	48.1	24.1	8.5	3.3	3.8	33.6	62.6	4.7	58.3	37.0
113	Perform circumcision	62.3	25.9	7.1	2.8	1.9	20.9	45.0	34.1	32.7	47.4	19.9
114	Apply plaster of Paris	81.6	13.2	2.8	0.9	1.4	10.4	48.3	41.2	41.7	46.0	12.3
115	Diagnose and manage minor trauma and injury	2.8	15.1	17.5	34.0	30.7	2.4	31.8	65.9	0.9	55.9	43.1
116	Remove foreign body	5.7	51.4	24.5	15.1	3.3	1.9	27.1	71.0	3.3	66.7	30.0
117	Perform dental extraction	89.6	7.5	1.9	0.9	0.0	13.4	50.7	35.9	59.3	37.3	3.3
118	Diagnose and manage minor surgical problems (lipoma, hydrocele)	54.7	36.8	5.2	2.4	0.9	9.0	49.0	41.9	36.7	53.3	10.0
119	Diagnose myoma	42.5	52.4	2.8	1.4	0.9	5.7	46.2	48.1	16.7	66.7	16.7
120	Diagnose neoplastic diseases	45.3	51.4	1.4	0.9	0.9	4.8	42.4	52.9	22.9	66.7	10.5
121	Diagnose acute abdomen	5.7	53.8	23.6	13.7	3.3	0.9	6.6	92.4	1.4	60.5	38.1
122	Diagnose upper gastrointestinal bleeding	23.1	55.2	14.2	4.7	2.8	1.4	13.7	84.8	3.3	64.5	32.2
123	Diagnose and manage minor fracture	10.9	45.0	25.1	14.2	4.7	1.4	31.4	67.1	4.3	74.8	21.0
124	Perform lifesaving minor surgical procedures (tracheostomy, suprapubic puncture, etc.)	84.4	15.6	0.0	0.0	0.0	3.8	12.9	83.3	60.0	36.2	3.8
	C6. Other clinical services (psychiatry; eye, ear, nose, and throat; dentistry; ophthalmology; dermatology)											
125	Diagnose and manage depressive disorders	32.1	60.8	4.7	1.9	0.5	3.8	41.2	55.0	12.3	74.9	12.8
126	Diagnose and manage bipolar disorders	51.9	44.8	2.8	0.5	0.0	5.2	46.4	48.3	19.0	72.5	8.5
127	Diagnose and manage anxiety disorders	33.5	60.4	4.2	1.9	0.0	5.2	40.8	54.0	11.4	73.0	15.6
128	Diagnose and manage psychotic disorders	33.0	58.5	7.1	0.9	0.5	2.4	40.8	56.9	13.7	73.0	13.3
129	Diagnose and manage tonic-clonic seizures	31.6	50.0	12.7	5.7	0.0	2.4	26.5	71.1	13.3	64.0	22.7
130	Manage substance abuse disorders	48.6	44.3	5.7	1.4	0.0	4.3	42.2	53.6	14.7	69.7	15.6
131	Counsel or give appropriate advice and guidance for the emotionally disturbed	15.6	58.0	14.2	6.6	5.7	2.4	36.5	61.1	4.3	66.4	29.4
132	Provide health education to the community in the prevention/ rehabilitation of mental health	48.6	31.6	12.7	4.7	2.4	6.6	48.8	44.5	7.6	63.5	28.9
133	Follow up patients taking psychotropic drugs in the community	54.2	31.1	9.0	4.2	1.4	6.7	37.1	56.2	8.5	70.1	21.3
134	Diagnose and manage conjunctivitis	2.8	22.6	19.8	38.7	16.0	2.8	31.8	65.4	0.5	50.2	49.3
135	Perform trichiasis/entropion correction surgery of the upper eyelid to prevent blindness for trachoma complications	92.9	4.7	1.4	0.0	0.9	9.5	30.5	60.0	80.1	16.1	3.8

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
136	Measure visual acuity	26.4	40.1	16.5	9.9	7.1	9.0	45.2	45.7	9.5	62.4	28.1
137	Stain the eye with fluorescein to check corneal abrasion	93.9	4.7	1.4	0.0	0.0	14.8	48.6	36.7	75.2	19.5	5.2
138	Diagnose and manage common skin infection	1.4	17.9	13.7	34.9	32.1	4.7	43.6	51.7	0.0	60.2	39.8
139	Diagnose and manage common allergic skin disorders	1.9	23.6	25.0	31.6	17.9	3.3	45.2	51.4	0.5	59.2	40.3
140	Diagnose and manage various forms of rhinitis	9.4	42.5	23.6	14.6	9.9	5.7	48.3	46.0	2.4	63.0	34.6
141	Diagnose and treat tinnitus	23.4	45.9	14.8	10.5	5.3	7.7	45.2	47.1	6.7	66.3	26.9
142	Diagnose and manage epistaxis	5.7	60.8	20.3	9.0	4.2	2.4	33.8	63.8	1.9	59.7	38.4
143	Diagnose and manage gingivitis	17.5	49.5	18.9	9.9	4.2	3.8	50.5	45.7	1.9	62.6	35.5
144	Diagnose and treat periodontitis	21.7	52.8	15.1	7.1	3.3	3.3	49.0	47.6	4.3	69.2	26.5
	D. Public health service delivery											
	D1. Nutrition											
145	Assess nutritional status of communities using different methods	43.4	28.8	16.5	7.5	3.8	2.8	44.5	52.6	1.9	64.0	34.1
146	Participate in nutritional planning to meet special needs.	60.8	25.9	9.4	1.9	1.9	7.1	45.0	47.9	4.7	71.1	24.2
147	Identify specific nutritional deficiencies of the community	39.6	34.4	16.5	5.7	3.8	2.4	38.1	59.5	2.4	68.6	29.0
	D2. Reproductive health											
148	Identify and manage unmet reproductive health needs in the community	40.3	30.3	15.2	9.5	4.7	4.3	50.5	45.2	2.4	70.5	27.1
149	Provide quality services pertinent to sexual/reproductive health service	14.2	40.1	21.2	13.2	11.3	5.7	43.6	50.7	2.4	70.1	27.5
150	Provide HIV counseling and testing services	7.5	16.0	11.3	17.9	47.2	3.8	23.2	73.0	0.9	47.9	51.2
151	Identify and manage sexually transmitted infections	3.3	20.8	25.5	28.3	22.2	0.9	19.4	79.6	0.5	50.7	48.8
152	Provide family planning (FP) counseling service	9.0	29.7	14.6	23.6	23.1	6.6	43.1	50.2	1.4	54.5	44.1
153	Provide pills as FP methods	20.8	37.3	18.4	13.7	9.9	16.6	48.8	34.6	0.5	51.2	48.3
154	Provide injectable FP method	22.2	32.1	18.9	14.6	12.3	14.7	47.9	37.4	3.3	49.3	47.4
155	Insert and remove intrauterine device	80.7	15.1	2.4	0.5	1.4	15.6	53.1	31.3	59.2	30.3	10.4
156	Insert and remove implants	53.8	29.7	9.0	5.7	1.9	13.3	53.1	33.6	37.4	40.8	21.8
157	Perform permanent FP method	95.3	4.3	0.5	0.0	0.0	26.2	51.0	22.9	86.2	11.0	2.9

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
	D3. Health information management											
158	Ensure data on health and health-related issues are collected from health institutions/communities/other sources	18.7	10.0	25.4	14.8	31.1	12.5	36.5	51.0	1.0	57.7	41.3
159	Analyze health and health-related data from health institutions/ communities/other sources	31.1	17.0	34.9	13.7	3.3	13.3	39.8	46.9	1.9	65.9	32.2
160	Communicate relevant data/report to the concerned bodies (woreda health office, Regional Health Bureau, etc.) and the community for decision/action	23.1	17.9	41.5	15.1	2.4	10.9	39.3	49.8	0.9	62.1	37.0
161	Utilize relevant data/report for decision-making	15.8	29.2	34.0	9.1	12.0	8.2	36.1	55.8	1.9	59.1	38.9
	D4. Health service management											
162	Contribute to the development/appraisal of health/health-related policies	51.9	20.8	11.3	3.3	12.7	12.3	48.8	38.9	14.7	62.6	22.7
163	Utilize the concept/components/strategies of primary health care to organize health programs at all levels	17.5	25.5	17.0	10.4	29.7	5.7	44.5	49.8	1.9	67.8	30.3
164	Plan for health service delivery and primary health care programs	25.5	32.1	25.9	7.5	9.0	6.6	45.5	47.9	0.9	64.9	34.1
165	Organize/coordinate/direct health service delivery and primary health care programs	32.5	20.8	18.4	12.3	16.0	8.1	46.0	46.0	1.4	67.8	30.8
166	Monitor and evaluate health service delivery and primary health care programs	32.5	19.8	25.0	13.2	9.4	6.6	49.8	43.6	2.8	68.2	28.9
167	Manage health offices/facilities/institutions	51.4	23.3	7.6	6.7	11.0	14.8	48.8	36.4	5.7	62.7	31.6
	D5. Community-based intervention (health promotion, disease prevention, and environmental health)											
168	Design and provide high-quality and culturally sensitive health education to individuals/family/community	19.3	30.2	24.5	11.3	14.6	4.7	48.3	46.9	1.9	63.5	34.6
169	Design appropriate preventive and control measures in disaster situations	71.7	20.8	4.2	2.4	0.9	4.7	33.6	61.6	6.6	72.5	20.9
170	Implement appropriate preventive and control measures in disaster situations	73.6	18.4	4.7	2.4	0.9	2.8	34.1	63.0	9.0	72.0	19.0
171	Supervise/take part in outbreak investigation and management	50.7	42.2	3.3	3.3	0.5	2.4	27.6	70.0	3.3	68.6	28.1
172	Direct/lead a team to control epidemics	60.8	33.0	3.3	1.9	0.9	2.4	35.1	62.6	4.7	70.6	24.6
173	Assess community health needs/priority problems using intradisciplinary team approaches or intervene on identified priority problems	41.5	35.4	16.0	6.1	0.9	3.3	41.2	55.5	5.2	70.6	24.2
174	Coordinate outreach health service programs	42.9	27.4	15.1	13.2	1.4	8.5	48.3	43.1	4.7	64.0	31.3
175	Take a lead in surveillance and control of diseases	48.1	29.2	11.3	10.8	0.5	5.7	41.7	52.6	5.2	69.7	25.1
176	Mobilize individuals/families or communities for health action	23.1	41.0	17.9	9.9	8.0	4.7	46.9	48.3	1.9	64.5	33.6

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
177	Conduct follow-up of cases upon their return to their home or community for continuity of appropriate care	35.4	33.0	17.9	9.9	3.8	4.7	42.7	52.6	3.3	63.5	33.2
178	Ensure safe water supplies/waste disposal facilities in the community	45.3	19.8	18.4	15.1	1.4	5.7	33.3	61.0	2.9	67.6	29.5
179	Investigate food-borne outbreaks	74.1	20.3	2.8	1.4	1.4	3.3	24.3	72.4	4.3	68.6	27.1
180	Assess the health condition of food employees and food handler	53.3	30.7	10.8	4.2	0.9	4.8	39.5	55.7	3.8	67.8	28.4
181	Act as food inspector in the process of safeguarding food products	72.6	20.3	5.2	1.9	0.0	9.0	47.1	43.8	9.0	69.2	21.8
182	Identify vectors of health importance	44.8	37.3	11.8	5.2	0.9	4.3	41.0	54.8	3.8	70.1	26.1
183	Introduce appropriate control measures for vectors that could have public health importance	47.2	35.4	12.3	3.8	1.4	3.8	44.8	51.4	6.2	66.8	27.0
184	Investigate accidents and occupational health hazards of particular relevance to environmental health	55.7	28.3	9.0	4.7	2.4	3.8	40.7	55.5	4.8	71.9	23.3
185	Introduce interventions to solve the health and safety problems encountered in industries, various occupations, and recreational areas	75.9	18.9	4.2	0.9	0.0	10.4	57.8	31.8	12.8	70.1	17.1
186	Apply health and safety precautions and methods of control	15.1	23.6	12.7	8.0	40.6	1.4	33.6	64.9	2.8	59.7	37.4
187	Contribute to national- and regional-level disease prevention and control campaigns	32.5	58.5	7.1	0.9	0.9	6.6	42.2	51.2	3.3	64.5	32.2
188	Design interventions to prevent and control communicable and noncommunicable diseases	49.1	28.8	12.7	6.6	2.8	4.3	39.8	55.9	10.9	63.5	25.6
189	Implement interventions to prevent and control communicable and noncommunicable diseases	25.0	30.7	16.5	9.4	18.4	3.8	32.2	64.0	9.5	54.0	36.5

Annex C: Task Lists for Nurses

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
	Basic nursing care/service											
1	Admit the patient	11.2	27.4	10.3	26.5	24.7	9.0	22.0	69.1	6.3	59.2	34.5
2	Transfer the patient	9.4	36.3	11.7	20.6	22.0	7.6	38.1	54.3	5.4	65.0	29.6
3	Discharge the patient	11.7	26.9	13.9	28.7	18.8	15.2	44.8	39.9	7.6	61.4	30.9
4	Provide care of the patient unit (bed, over-bed table, bedside table, etc.)	10.3	22.0	11.7	22.9	33.2	11.2	46.6	42.2	1.8	59.6	38.6
5	Provide care of hospital unit equipment (linen, forceps, jars, rubber, etc.)	12.1	12.6	6.3	21.1	48.0	5.8	31.4	62.8	3.6	51.6	44.8
6	Make the patient bed	18.0	26.6	7.7	19.8	27.9	10.4	55.4	34.2	2.3	55.0	42.8
7	Provide bathing (bed bath)	55.4	25.7	6.8	7.2	5.0	12.2	55.4	32.4	8.6	62.2	29.3
8	Provide mouth care	51.1	29.1	4.0	5.8	9.9	11.7	64.1	24.2	4.9	69.1	26.0
9	Provide back care (massage)	58.3	27.4	5.4	3.1	5.8	13.5	64.1	22.4	9.4	63.7	26.9
10	Provide perineal care	44.8	28.3	9.0	7.2	10.8	9.0	58.7	32.3	5.0	66.7	28.4
11	Provide hair care (cooping, shampooing, pedicles treatment, etc.)	57.4	31.8	2.7	3.6	4.5	13.5	63.2	23.3	5.8	66.8	27.4
12	Feed a helpless patient	32.4	37.8	7.2	8.1	14.4	5.0	32.9	62.2	4.1	57.2	38.7
13	Feed patient via nasogastric tube	50.9	25.2	5.4	10.4	8.1	2.3	20.7	77.0	12.6	56.8	30.6
14	Provide dry heat application (hot water bottle)	50.9	32.4	5.9	6.3	4.5	7.7	66.2	26.1	8.1	71.6	20.3
15	Provide moist heat application (sitz bath)	57.2	30.2	4.5	4.5	3.6	8.6	65.8	25.7	8.6	69.4	22.1
16	Provide moist cold compress	22.5	33.3	12.2	17.1	14.9	6.8	59.9	33.3	3.6	56.8	39.6
17	Provide dry cold compress (ice bag)	16.7	41.9	9.5	16.7	15.3	6.8	60.8	32.4	2.7	58.6	38.7
18	Measure body temperature	0.9	3.2	2.3	10.8	82.9	3.2	27.9	68.9	0.9	30.6	68.5
19	Measure blood pressure	0.5	1.8	0.5	7.2	90.1	2.7	18.5	78.8	0.9	27.9	71.2
20	Measure respiration	0.9	4.1	0.9	11.7	82.4	3.2	22.5	74.3	0.9	29.7	69.4
21	Assess pulse rate	2.3	2.7	1.4	11.7	82.0	3.2	25.7	71.2	0.9	31.5	67.6
22	Collect stool specimen	68.0	13.5	0.5	5.0	13.1	12.2	47.7	40.1	18.5	55.0	26.6
23	Collect urine specimen	63.1	17.6	1.4	4.1	14.0	11.3	45.9	42.8	17.6	55.0	27.5
24	Collect sputum specimen	69.8	14.0	2.3	6.8	7.2	11.3	42.8	45.9	19.8	55.9	24.3
25	Collect blood specimen	42.8	18.5	2.7	8.6	27.5	9.0	37.8	53.2	12.6	53.2	34.2
26	Insert and remove the rectal tube	50.0	32.0	5.4	8.6	4.1	3.6	38.7	57.7	23.4	55.0	21.6
27	Administer fluid into the rectum and sigmoid colon for cleansing, therapeutic, or diagnostic purposes (enema)	41.0	38.3	10.8	5.9	4.1	2.7	39.2	58.1	13.1	62.2	24.8

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
28	Pass a flatus tube	68.0	23.9	4.1	3.6	0.5	5.4	40.5	54.1	28.4	57.7	14.0
29	Insert and remove nasogastric tube	49.5	29.3	4.5	11.7	5.0	2.3	27.5	70.3	16.2	59.9	23.9
30	Insert and remove the straight urinary catheter	15.3	39.6	14.4	18.9	11.7	0.9	24.8	74.3	6.8	57.7	35.6
31	Insert a retention (indwelling) catheter	24.3	44.1	12.6	10.8	8.1	3.2	32.9	64.0	9.9	58.1	32.0
32	Administer oral medication	5.0	10.8	4.5	15.3	64.4	1.8	29.3	68.9	1.4	42.8	55.9
33	Administer rectal medications	8.6	40.1	10.4	15.8	25.2	3.2	45.0	51.8	2.7	55.9	41.4
34	Administer IV medication	1.3	15.7	7.2	29.1	46.6	0.9	17.5	81.6	1.3	39.5	59.2
35	Administer intramuscular medication	0	4.5	4.0	17.0	74.4	2.7	25.1	72.2	0.4	35.4	64.1
36	Administer subcutaneous medication	3.2	29.3	15.3	24.3	27.9	2.7	26.1	71.2	0.9	42.8	56.3
37	Administer intradermal medication	6.3	32.3	17.5	21.5	22.4	3.1	34.5	62.3	2.2	49.3	48.4
38	Administer topical medication	11.7	40.8	9.9	20.2	17.5	7.6	51.6	40.8	2.7	52.5	44.8
39	Administer ophthalmic medication	16.1	38.6	10.3	18.4	16.6	6.3	41.7	52.0	3.6	54.3	42.2
40	Administer ear medication	18.4	35.9	13.0	18.4	14.3	5.4	40.8	53.8	0.9	59.2	39.9
41	Administer vaginal medication	50.7	31.4	7.6	5.4	4.9	6.3	48.0	45.7	12.1	60.5	27.4
42	Administer inhalation medications (e.g., steam)	39.0	43.5	5.8	7.2	4.5	6.7	34.5	58.7	11.7	60.1	28.3
43	Manage kinked catheter	29.1	40.8	9.0	11.7	9.4	6.7	38.1	55.2	16.1	57.4	26.5
44	Manage incorrect IV needle placement	7.2	39.9	6.3	20.2	26.5	3.1	28.3	68.6	2.7	54.3	43.0
45	Manage IV clot formation	9.0	42.6	8.1	15.2	25.1	2.2	24.7	73.1	4.0	52.9	43.0
46	Manage intermittent infusion device (IV) insertion, maintenance, and drug administration	9.4	30.9	9.9	22.4	27.4	3.1	22.9	74.0	3.6	57.0	39.5
47	Develop and use the nursing process as framework for nursing care practice (care plan preparation and the like)	28.3	19.3	11.7	15.2	25.6	6.7	43.9	49.3	8.1	61.9	30.0
48	Provide postmortem care	35.0	48.4	9.0	4.9	2.7	12.6	56.1	31.4	9.0	64.1	26.9
49	Provide pressure ulcer care (bedsore care)	52.9	31.7	5.0	5.9	4.5	4.5	38.9	56.6	7.7	63.8	28.5
50	Dress clean wound	1.3	8.1	4.0	26.5	60.1	2.2	32.3	65.5	0.9	41.3	57.8
51	Dress septic wound	4.9	16.1	6.7	27.8	44.4	1.8	27.8	70.4	0.4	46.2	53.4
52	Dress wound with draining tube	34.5	33.6	8.1	12.6	11.2	2.7	33.6	63.7	13.0	60.1	26.9
53	Irrigate wound	13.1	27.0	12.2	17.6	30.2	1.4	39.2	59.5	6.8	56.8	36.5
54	Suture wound with stitches	3.6	21.6	14.4	32.0	28.4	2.3	28.8	68.9	3.2	48.6	48.2
55	Suture wound with metal clip	82.0	11.3	1.4	3.2	2.3	18.5	43.2	38.3	59.5	30.2	10.4
56	Remove stitches	5.0	22.1	14.0	35.1	23.9	3.2	45.0	51.8	4.1	49.1	46.8

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
57	Remove metal clip	83.8	9.5	0.5	3.2	3.2	20.3	43.2	36.5	60.2	29.4	10.4
58	Position patient in various positions	14.0	37.4	9.9	15.3	23.4	5.4	42.8	51.8	2.3	55.9	41.9
59	Turn the patient to a side-lying position	14.9	41.9	9.5	12.2	21.6	6.3	48.6	45.0	2.7	58.8	38.5
60	Move patient	19.8	41.4	7.2	12.6	18.9	8.1	53.6	38.3	2.7	58.6	38.7
61	Lift patient	24.4	39.8	7.2	13.6	14.9	8.6	54.1	37.3	3.2	63.5	33.3
62	Diagnose and manage common infectious diseases	4.9	12.1	7.2	16.1	59.6	0.9	25.6	73.5	2.7	60.5	36.8
63	Refer patients for further management when it is necessary	11.7	30.6	20.7	22.5	14.4	2.3	18.9	78.8	7.7	63.1	29.3
64	Participate in health education and promotion, disease prevention and control	2.2	8.5	10.3	26.9	52.0	4.5	39.9	55.6	1.3	51.6	47.1
65	Triage patient	37.3	21.4	5.5	8.6	27.3	8.6	42.7	48.6	10.0	64.5	25.5
66	Manage pain	0.9	6.0	3.2	11.1	78.8	1.8	38.7	59.4	1.8	49.3	48.8
67	Provide provider-initiated HIV counseling and testing	6.3	13.9	5.4	13.9	60.5	1.3	32.3	66.4	5.4	54.7	39.9
68	Perform passive range of motion exercises for patient unable to move	45.0	36.9	5.9	5.0	7.2	6.3	44.1	49.5	13.1	63.5	23.4
	Emergency nursing care											
69	Perform gastric lavage	59.9	24.3	3.6	7.7	4.5	2.7	24.3	73.0	23.9	51.8	24.3
70	Conduct emergency patient assessment (take history and perform physical examination)	3.2	16.7	8.1	19.9	52.0	2.3	22.6	75.1	2.3	57.5	40.3
71	Order the necessary lab investigation	4.1	10.8	9.5	18.0	57.7	2.3	30.6	67.1	2.7	52.7	44.6
72	Perform cardiopulmonary resuscitation	33.3	50.5	9.0	4.1	3.2	0.9	12.2	86.9	7.2	62.2	30.6
73	Provide first aid for patient with anaphylaxis	27.9	51.8	8.1	5.0	7.2	0.5	19.0	80.5	7.2	65.6	27.1
74	Provide first aid for patients with bleeding (applying direct pressure to wounds/pressure points)	1.3	29.6	12.6	23.8	32.7	0.4	8.1	91.5	1.8	51.6	46.6
75	Provide first aid for patients with burns—thermal, chemical, friction, electrical	11.2	51.1	17.9	13.0	6.7	0.4	9.4	90.1	5.4	61.9	32.7
76	Provide first aid for patient with choking/airway obstruction	30.9	49.8	11.2	3.6	4.5	0.4	5.4	94.2	10.8	61.9	27.4
77	Provide first aid for patients with drowning	60.0	34.5	1.8	0.9	2.7	1.4	9.5	89.1	22.8	58.9	18.3
78	Provide first aid for patient with envenomation (snake, spider, insect, and marine bites and stings)	25.1	57.0	9.9	5.8	2.2	1.3	12.6	86.1	12.1	64.6	23.3
79	Provide first aid for patient with environmental impact such as hypothermia, hyperthermia, dehydration, heat stroke	16.1	39.9	15.7	14.3	13.9	0.9	13.5	85.7	4.5	66.4	29.1

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
80	Provide first aid for patient with injuries and crush fractures (control any external bleeding and cover any wounds, secure and support any suspected fractures, etc.)	13.1	41.4	21.6	13.1	10.8	0.9	18.5	80.6	6.3	67.1	26.6
81	Splint and/or immobilize the fracture	24.4	47.5	13.6	9.5	5.0	1.8	24.9	73.3	10.0	65.6	24.4
82	Provide first aid for patients with medical conditions (e.g., asthma)	4.9	42.2	21.5	19.7	11.7	0	9.0	91.0	3.1	63.2	33.6
83	Provide first aid for patient with poisoning and toxic substances	16.8	54.1	15.5	9.1	4.5	0	8.2	91.8	5.5	67.3	27.3
84	Monitor blood glucose level	60.5	17.9	7.2	5.8	8.5	0.9	22.4	76.7	35.9	45.7	18.4
85	Administer oxygen by mask	49.8	28.3	5.8	7.2	9.0	0.9	7.2	91.9	20.6	58.3	21.1
86	Administer oxygen by catheter	61.4	17.5	4.9	8.5	7.6	0.9	9.4	89.7	26.0	55.2	18.8
87	Provide first aid for patients with altered and loss of consciousness	16.2	56.3	13.1	9.5	5.0	1.8	12.2	86.0	5.0	70.6	24.4
88	Remove foreign body	9.0	59.2	16.1	11.2	4.5	1.8	26.9	71.3	6.7	64.6	28.7
	Critical nursing care											
89	Manage external fixation of patient with fracture (checking neurovascular, edema, sensation, movement, etc.)	61.5	27.6	3.2	4.1	3.6	4.1	28.1	67.9	28.5	58.4	13.1
90	Provide stump and prosthesis care	79.7	17.6	2.3	0	0.5	4.5	36.9	58.6	40.1	53.6	6.3
91	Perform colostomy care	72.5	18.0	4.5	1.8	3.2	1.4	31.5	67.1	32.0	52.7	15.3
92	Apply cast (plaster of Paris)	82.4	12.2	2.3	2.7	0.5	2.7	26.6	70.7	59.9	32.4	7.7
93	Remove cast	77.9	15.8	3.6	2.3	0.5	2.7	35.6	61.7	54.5	36.5	9.0
94	Prepare, handle, and administer chemotherapeutic drug for cancer patient	93.7	4.5	0.4	0.4	0.9	5.4	23.3	71.3	62.8	30.9	6.3
95	Perform gastric aspiration to withdraw fluid or gas	67.6	20.7	4.1	6.3	1.4	4.5	28.4	67.1	31.7	50.7	17.6
96	Provide tracheostomy care (tracheal suctioning, endotracheal tube care, etc.)	85.2	10.3	0.9	1.8	1.8	2.7	20.6	76.7	46.6	44.4	9.0
97	Assist endotracheal intubation	88.3	9.4	0.4	0.9	0.9	2.7	22.4	74.9	59.5	33.8	6.8
98	Assist bronchoscopy	94.2	4.0	0.4	0.9	0.4	1.8	26.9	71.3	64.1	31.4	4.5
99	Assist lumbar puncture	86.1	10.3	0.9	0.9	1.8	3.6	27.4	69.1	58.3	37.2	4.5
100	Assist bone marrow aspiration	95.1	4.0	0	0.4	0.4	4.5	30.5	65.0	66.8	29.1	4.0
101	Assist splenic aspiration	96.4	1.8	0.4	0.9	0.4	3.6	32.3	64.1	68.6	27.4	4.0
102	Assist thoracentesis	87.4	9.4	0.9	1.8	0.4	1.3	30.9	67.7	63.2	30.9	5.8
103	Assist abdominal tap	78.0	13.5	3.6	2.2	2.7	1.3	30.0	68.6	48.0	43.0	9.0
104	Transfuse blood and blood products	78.0	9.4	5.4	4.9	2.2	0.9	12.6	86.5	43.0	42.2	14.8

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
105	Set up and operate mechanical ventilator	67.7	16.6	4.5	2.2	9.0	3.1	22.9	74.0	43.0	42.6	14.3
106	Monitor spirometer	89.7	7.2	0.9	0.4	1.8	3.1	33.2	63.7	64.9	30.6	4.5
107	Set up and monitor chest tube draining system	85.2	10.3	2.7	0.4	1.3	2.2	22.9	74.9	61.0	31.8	7.2
108	Perform oropharyngeal suction	77.1	15.2	4.0	2.7	0.9	1.3	21.5	77.1	46.6	44.8	8.5
109	Perform oral and parenteral rehydration of the child	16.6	36.3	12.1	14.8	20.2	0	19.3	80.7	7.2	64.6	28.3
110	Manage severe acute malnutrition	20.2	35.9	18.4	10.3	15.2	0.4	13.5	86.1	13.9	55.6	30.5
111	Monitor incubator	84.8	9.4	0.9	2.2	2.7	4.9	19.7	75.3	58.7	31.8	9.4
112	Monitor phototherapy machine	98.2	0.9	0	0.0	0.9	5.4	33.8	60.8	77.9	17.1	5.0
113	Administer pediatric antiretroviral treatment	80.3	9.0	2.2	4.0	4.5	0.9	23.8	75.3	61.0	28.7	10.3
114	Assist umbilical catheterization	95.5	3.6	0.4	0	0.4	1.8	28.3	70.0	78.9	15.7	5.4
115	Assist intraosseous needle insertion	98.2	0.9	0.4	0	0.4	2.7	34.1	63.2	78.9	16.6	4.5
116	Exchange blood transfusion (e.g., Rh+)	94.6	3.2	0.9	0.5	0.9	0.5	20.3	79.3	75.7	18.9	5.4
117	Provide preoperative nursing care	78.5	11.7	1.3	1.8	6.7	0	22.0	78.0	32.7	54.7	12.6
118	Work as a scrub nurse (setting up the surgical field, maintaining sterility of the surgical field, prepping, draping, and surgical counts)	90.1	7.2	0.4	0	2.2	1.3	23.3	75.3	51.6	44.4	4.0
119	Work as a circulating nurse	91.0	4.0	1.3	0.4	3.1	3.1	28.7	68.2	48.4	45.3	6.3
120	Create and maintain a sterile field	67.1	14.9	2.3	5.0	10.8	0.9	24.3	74.8	32.0	51.4	16.7
121	Perform sterile technique (opening sterile techniques, wrapping sterile items, pouring sterile solution, opening and putting on sterile gloves)	60.1	15.7	1.8	4.9	17.5	0.9	22.9	76.2	29.1	49.8	21.1
122	Clean, disinfect, and sterilize medical equipment	26.0	17.5	3.6	18.4	34.5	0	17.5	82.5	9.9	60.1	30.0
123	Use personal protective equipment (gown, gloves, goggles, mask, respirator, etc.)	26.0	8.5	2.7	3.1	59.6	0	19.3	80.7	9.4	54.3	36.3
124	Perform surgical count	83.3	7.7	0	0.9	8.1	2.7	20.7	76.6	41.4	41.4	17.1
125	Assist anesthesia	84.3	10.2	0.9	1.9	2.8	2.8	26.9	70.4	55.3	35.3	9.3
126	Perform patient positioning	69.1	18.9	1.8	3.2	6.9	3.7	28.1	68.2	37.8	48.4	13.8
127	Provide postoperative care (prepare anesthetic bed, monitor vital sign, input, output, etc.)	75.3	11.2	2.7	2.7	8.1	1.3	18.8	79.8	26.5	57.4	16.1
128	Monitor nasoenteric decompression tube care after gastrointestinal surgery (monitor tube patent, suction, detect complication, etc.)	83.0	12.1	1.3	1.3	2.2	1.8	24.3	73.9	53.4	39.5	7.2
	Family health nursing care											
129	Counsel women for family planning methods	16.1	13.9	7.2	13.0	49.8	8.1	41.3	50.7	4.5	48.9	46.6
130	Provide oral contraceptive methods	18.8	17.9	9.9	14.8	38.6	7.6	48.4	43.9	4.0	51.6	44.4

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
131	Provide injectable contraceptive methods	20.2	19.3	8.1	13.5	39.0	6.3	48.0	45.7	6.7	49.3	43.9
132	Insert and remove Norplant (contraceptive implant)	60.1	14.3	4.9	9.9	10.8	6.7	52.0	41.3	48.4	30.5	21.1
133	Insert and remove intrauterine device	83.3	6.8	3.6	3.2	3.2	7.7	50.5	41.9	68.9	20.7	10.4
134	Conduct rapid initial evaluation at the first contact with a pregnant woman	22.9	26.5	8.1	12.1	30.5	1.8	38.6	59.6	10.3	61.4	28.3
135	Manage the identified problems/disease or any of the danger signs in pregnancy accordingly	22.0	29.1	7.6	11.7	29.6	0.9	18.8	80.3	10.8	63.2	26.0
136	Conduct a physical and obstetric examination	25.6	24.2	8.5	13.5	28.3	1.3	31.8	66.8	10.8	66.8	22.4
137	Order the necessary laboratory tests	20.2	24.7	7.2	14.3	33.6	3.1	31.8	65.0	8.1	64.1	27.8
138	Take personal, obstetric, and medical history	22.4	24.2	8.1	9.9	35.4	1.8	30.5	67.7	8.1	67.7	24.2
139	Offer HIV test and counsel woman on mother-to-child transmission of HIV	22.4	25.1	6.7	8.1	37.7	1.8	24.7	73.5	9.0	58.7	32.3
140	Provide iron and folic acid, mebendazole/ albendazole, tetanus toxoid according to the protocol	22.4	21.1	7.6	13.5	35.4	1.8	31.4	66.8	9.0	57.4	33.6
141	Counsel the client in any of the reasons to seek immediate medical care	19.3	25.6	6.7	11.2	37.2	1.8	29.6	68.6	7.6	60.5	31.8
142	Perform abdominal examinations	21.1	26.9	7.2	10.3	34.5	1.8	38.6	59.6	10.3	65.9	23.8
143	Perform vaginal examination	27.4	30.9	12.6	16.1	13.0	2.2	35.9	61.9	13.5	65.0	21.5
144	Use partograph to monitor labor progress	35.4	22.9	10.3	17.0	14.3	2.7	29.6	67.7	21.5	57.0	21.5
145	Assist the woman to have a safe and clean birth	20.7	27.5	14.4	19.4	18.0	0.9	25.7	73.4	9.5	65.8	24.8
146	Perform active management of third stage of labor	24.2	29.1	14.3	18.8	13.5	0.9	14.8	84.3	10.8	64.1	25.1
147	Deliver baby in face presentation	62.3	30.9	1.3	3.1	2.2	1.8	20.2	78.0	51.1	39.9	9.0
148	Deliver baby with a vacuum	71.7	19.3	4.0	3.6	1.3	1.3	18.4	80.3	61.4	30.9	7.6
149	Deliver baby in breech position	67.7	27.8	0.9	1.8	1.8	1.8	16.1	82.1	61.4	33.2	5.4
150	Deliver baby with forceps	89.2	9.9	0.4	0.4	0.0	6.3	19.3	74.4	78.5	19.7	1.8
151	Perform bimanual compression of the uterus	61.9	25.1	4.5	5.4	3.1	4.0	32.3	63.7	49.8	42.6	7.6
152	Make episiotomy and repair	41.3	35.0	8.5	10.3	4.9	1.8	31.4	66.8	26.0	59.2	14.8
153	Perform manual removal of placenta	41.3	35.9	8.5	9.4	4.9	1.3	16.1	82.5	29.6	58.7	11.7
154	Repair first- and second-degree tear	50.5	36.5	6.3	4.5	2.3	2.3	23.4	74.3	36.9	51.4	11.7
155	Provide essential newborn care (dry baby, cord care, vitamin K, eye ointment, etc.)	22.1	30.2	14.0	17.1	16.7	0.9	23.0	76.1	8.6	64.0	27.5
156	Perform newborn resuscitation	26.5	41.7	13.0	10.3	8.5	0.9	9.9	89.2	15.2	63.2	21.5
157	Provide postabortion care	63.7	22.9	4.0	5.4	4.0	0	17.5	82.5	46.2	41.3	12.6

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
158	Decontaminate all reusable instruments in 0.5% chlorine solution	13.5	17.0	6.3	18.8	44.4	0.4	22.0	77.6	7.6	52.9	39.5
159	Sterilize or use high-level disinfection for all reusable instruments	11.7	14.3	9.0	22.0	43.0	0	19.7	80.3	6.7	53.4	39.9
160	Perform care related to prevention of mother-to-child transmission after delivery	38.3	28.8	8.6	10.8	13.5	0.5	28.4	71.2	27.0	50.0	23.0
161	Assess, classify, and treat the sick young infant from birth up to 2 months using Integrated Management of Neonatal and Childhood Illness	28.3	25.6	6.3	14.3	25.6	0.4	27.4	72.2	19.3	52.9	27.8
162	Assess, classify, and treat the sick young infant from 2 months to 5 years	24.2	21.5	7.2	12.6	34.5	0.4	27.8	71.7	16.1	55.2	28.7
163	Monitor growth and development of child	20.6	25.6	9.9	9.4	34.5	1.3	37.2	61.4	11.7	55.2	33.2
164	Provide vaccination for child	18.8	27.4	12.1	13.0	28.7	1.3	26.5	72.2	7.2	53.8	39.0
165	Manage cold chain	27.8	24.7	8.5	6.3	32.7	0.4	29.6	70.0	16.1	53.8	30.0
166	Perform anthropometric measurement	22.9	22.0	5.8	12.6	36.8	3.6	42.2	54.3	11.2	57.4	31.4
167	Prepare and administer maintenance fluid	18.4	30.0	7.6	21.5	22.4	0.9	21.1	78.0	8.1	64.6	27.4
168	Nebulize child with epinephrine	74.3	20.7	3.2	0.5	1.4	2.7	25.7	71.6	57.5	32.6	10.0
169	Perform infant feeding	35.9	29.1	6.7	9.9	18.4	0.4	27.4	72.2	11.7	68.2	20.2
	Nursing leadership, management, and governance											
170	Lead and manage nursing care service (function as a head nurse matron, director, unit coordinator, etc.)	57.8	17.9	0.9	4.0	19.3	8.5	57.0	34.5	17.5	60.1	22.4
171	Participate in and contribute to policy development	68.3	19.5	4.1	1.8	6.3	7.2	53.8	38.9	20.4	67.0	12.7
	Nursing education and research											
172	Participate/be involved in teaching and assessment of nursing students	48.9	39.9	1.8	4.0	5.4	7.6	52.0	40.4	16.6	64.1	19.3
173	Participate in nursing research	81.6	17.5	0.4	0	0.4	4.9	57.4	37.7	33.2	59.6	7.2
	Nursing professionalism and ethics											
174	Respect the human rights, values, customs, and spiritual beliefs of the individual, family, and community in providing care	0	3.6	1.3	5.4	89.7	4.9	43.5	51.6	1.8	61.9	36.3
175	Demonstrate professional values such as respectfulness, responsiveness, compassion, trustworthiness, and integrity	0.4	2.7	2.7	13.5	80.7	3.1	43.0	53.8	0.9	64.6	34.5
176	Hold in confidence personal information and use judgment in sharing this information	0.9	4.0	0.4	11.7	83.0	3.1	35.9	61.0	1.8	53.4	44.8
177	Practice according to applicable standards for nursing practice, code of ethics	0	6.3	1.3	14.8	77.6	2.7	32.3	65.0	0.9	66.2	32.9

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
178	Work collaboratively with others and sustain a collaborative and respectful relationship with coworkers in nursing and other fields to meet the health care needs of individuals and communities (teamwork)	0.4	1.3	1.8	12.1	84.3	3.1	32.7	64.1	1.8	56.1	42.2
179	Provide accurate, sufficient, and timely information in a culturally appropriate manner on which to base consent for care and related treatment	0	5.8	5.4	15.2	73.5	4.5	36.9	58.6	0.9	63.1	36.0
180	Be accountable for actions and decisions at all times	0	5.0	2.3	8.1	84.7	2.7	38.7	58.6	0.9	63.5	35.6
181	Actively participate and maintain membership in nursing professional association	76.2	16.6	3.1	0.4	3.6	16.6	45.7	37.7	21.1	68.2	10.8
182	Recognize the ethical issues of nursing practices and functions within legal and ethical framework with responsibility and accountability for own practice	0.9	7.7	2.7	17.6	71.2	3.6	37.8	58.6	1.8	70.9	27.3
183	Identify learning needs and seek opportunities for improvement	1.3	17.0	13.0	16.6	52.0	4.0	42.2	53.8	1.8	72.6	25.6
184	Maintain knowledge of current policies and procedures	6.7	21.5	13.9	11.2	46.6	4.5	44.4	51.1	6.7	71.7	21.5

Annex D: Task Lists for Medical Laboratory Professionals

Task no.	Task name	Frequency						Criticality			Performance		
		Number responding	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
	Professional duties												
1	Function within legal and ethical framework with responsibility and accountability for his or her own practice	228	0.0	0.4	0.4	1.8	97.4	0	19.8	80.2	0	47.6	52.4
2	Maintain professional conduct in interactions with coworkers, patients, and other parties and instill in others a sense of responsibility and compassion	228	0.0	0.4	0.9	2.6	96.0	0.4	20.3	79.3	0	43.2	56.8
3	Respect privacy and confidentiality of all medical and personal information acquired in the course of providing professional services	228	0.0	0.4	0.4	0.9	98.2	0	13.7	86.3	0	35.2	64.8
4	Communicate effectively	227	0.0	0.4	0.0	7.5	92.0	2.2	17.3	80.5	0.9	46.0	53.1
5	Promote and advocate for the importance of the medical laboratory science profession	228	7.5	39.2	13.7	21.1	18.5	11.9	51.1	37.0	1.8	61.9	36.3
6	Coordinate or provide continuing professional development activities like in-service training, on-the-job training, etc.	228	59.5	22.0	5.3	4.4	8.8	9.7	48.0	42.3	21.6	58.6	19.8
7	Actively participate in medical laboratory professional associations	225	81.3	16.5	0.9	0.0	1.3	24.6	41.1	34.4	33.5	50.4	16.1
8	Participate in professional committees at organizational/regional/national levels	228	52.0	13.2	17.6	13.2	4.0	22.5	48.9	28.6	16.8	58.8	24.3
9	Act as clinical preceptor or instructor, including but not limited to facilitation of learning and assessment activities	226	42.7	40.9	4.9	5.8	5.8	11.1	52.9	36.0	12.4	57.8	29.8
	Basic medical laboratory science												
10	Create safe work environment	229	0.0	0.9	1.3	6.1	91.7	0.9	15.8	83.3	0.4	42.1	57.5
11	Apply infection prevention standards	229	0.9	0.4	0.4	3.1	95.2	0	9.2	90.8	0.4	41.2	58.3
12	Collect clinical and nonclinical specimens for analysis	229	2.6	2.2	0.4	1.8	93.0	0	12.8	87.2	0.0	42.3	57.7
13	Store clinical and nonclinical specimens for analysis	229	31.1	21.1	8.3	14.9	24.6	10.5	45.2	44.3	6.1	54.4	39.5
14	Transport clinical and nonclinical specimens for analysis	229	37.7	14.9	9.6	25.9	11.8	4.4	40.5	55.1	7.5	50.7	41.9
15	Prepare clinical and nonclinical specimens for analysis	229	2.2	0.9	1.3	2.2	93.4	0.9	18.5	80.6	0.0	44.2	55.8
16	Perform inspection of functionality of instruments in the laboratory	229	1.8	3.5	1.3	8.3	85.1	2.2	24.2	73.6	1.8	53.3	44.9
17	Calibrate laboratory instrument and equipment	228	58.1	13.2	7.9	7.5	13.2	6.6	43.2	50.2	37.9	43.2	18.9
18	Operate laboratory instrument and equipment	229	2.6	0.9	0.4	1.8	94.3	1.3	18.4	80.3	2.6	50.9	46.5
19	Run preventive maintenance of laboratory equipment	228	3.1	0.9	1.3	4.0	90.7	3.5	24.2	72.2	1.8	47.1	51.1

Task no.	Task name	Frequency						Criticality			Performance		
		Number responding	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
20	Perform curative maintenance of laboratory equipment to the level of medical laboratory professionals	228	62.1	20.3	4.0	2.6	11.0	13.7	38.3	48.0	54.2	30.8	15.0
21	Record and interpret laboratory results	229	1.3	1.3	0.0	0.0	97.4	0	19.4	80.6	0.4	36.4	63.2
22	Document and authorize the issue of laboratory results	229	2.2	0.9	0.0	0.9	96.1	2.6	27.3	70.0	0.4	38.2	61.4
23	Provide consultation to other health professionals concerning details and limitations of laboratory procedures	229	7.9	36.4	15.4	19.3	21.1	3.5	42.1	54.4	6.6	56.6	36.8
24	Perform verification of and/or validate test methods using quality control materials	229	33.3	8.3	4.4	32.9	21.1	5.3	32.5	62.3	25.9	42.1	32.0
25	Participate in the preparation of appropriate national test menu	227	76.1	13.3	3.1	2.2	5.3	38.5	31.9	29.6	50.2	37.3	12.4
26	Participate in acquisition and storage of biological wastes	229	14.9	4.4	2.2	4.4	74.1	13.2	13.6	73.2	13.6	33.8	52.6
27	Participate in acquisition and storage of nonclinical, toxic, and radioactive wastes	229	66.2	11.0	1.8	0.4	20.6	26.8	31.1	42.1	43.9	31.1	25.0
28	Transport and dispose of biological wastes	226	25.3	9.3	8.0	9.8	47.6	4.0	18.2	77.8	13.3	44.4	42.2
29	Transport and dispose of nonclinical, toxic, and radioactive wastes	229	74.6	5.3	2.2	0.0	18.0	26.4	31.7	41.9	46.7	32.2	21.1
30	Train personnel in the operation of instruments and equipment	229	43.0	40.4	3.9	3.1	9.6	10.5	42.5	46.9	20.3	52.9	26.9
31	Train personnel in the performance of laboratory methods and quality control procedures and the application of safety measures	229	43.9	28.9	6.6	5.3	15.4	7.0	39.5	53.5	18.4	56.1	25.4
32	Design, develop, and undertake research activities	229	78.9	15.4	3.5	0.9	1.3	28.5	41.7	29.8	53.5	37.7	8.8
33	Use laboratory information system and application software to manage data	228	33.0	3.1	4.4	3.5	55.9	10.1	28.6	61.2	20.7	51.1	28.2
	Service delivery: molecular biology laboratory tests												
34	Perform DNA extraction	222	99.1	0.0	0.0	0.5	0.5	41.1	30.9	28.0	88.8	8.8	2.3
35	Perform RNA extraction	222	99.5	0.0	0.0	0.0	0.5	41.1	31.9	27.1	88.8	9.3	1.9
36	Perform polymerase chain reaction including reverse transcription polymerase chain reaction	222	95.9	0.9	0.0	0.0	3.2	35.1	29.3	35.6	87.0	10.2	2.8
37	Perform gel electrophoresis	222	99.5	0.0	0.0	0.0	0.5	45.4	26.3	28.3	90.2	8.4	1.4
38	Perform Southern and Western blotting	222	99.5	0.0	0.0	0.0	0.5	46.3	25.4	28.3	90.7	7.9	1.4
39	Perform in situ and DNA hybridization	222	99.5	0.0	0.0	0.0	0.5	46.8	24.9	28.3	91.6	6.5	1.9
40	Perform restriction fragment length polymorphism and single nucleotide polymorphism	221	99.5	0.0	0.0	0.0	0.5	47.5	24.0	28.4	91.1	7.5	1.4

Task no.	Task name	Frequency						Criticality			Performance		
		Number responding	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
41	Perform cloning	222	99.5	0.0	0.0	0.0	0.5	49.3	22.9	27.8	91.6	6.5	1.9
42	Perform sequencing	204	98.5	0.5	0.0	0.0	1.0	52.1	20.2	27.7	90.8	6.6	2.6
	Service delivery: immunological and serological laboratory tests												
43	Prepare serial dilution of serum specimen in serology laboratory	228	77.1	9.3	4.0	4.0	5.7	17.6	47.1	35.2	37.9	45.4	16.7
44	Perform and interpret immunoassays	227	74.8	2.7	1.8	1.3	19.5	24.8	36.7	38.5	53.5	26.1	20.4
45	Carry out serological tests for the diagnosis of syphilis	227	12.8	4.0	4.4	8.4	70.4	3.5	24.8	71.7	3.5	46.9	49.6
46	Carry out laboratory test for febrile diseases (e.g., Widal, Weil-Felix tests)	228	12.3	1.8	2.6	4.4	78.9	5.3	25.1	69.6	2.6	41.4	55.9
47	Perform laboratory test for poststreptococcal infections (streptolysin O and antistreptolysin O identification)	228	79.3	11.0	1.3	3.1	5.3	18.5	42.7	38.8	39.6	41.4	18.9
48	Perform laboratory test for toxoplasmosis diagnosis	223	95.9	3.6	0.0	0.0	0.5	27.1	35.7	37.1	57.5	34.8	7.7
49	Perform laboratory test for Helicobacter pylori	228	13.7	7.9	7.0	12.8	58.6	4.0	39.6	56.4	4.0	44.9	51.1
50	Perform serologic tests for diagnosis of HIV infection	227	15.0	15.5	14.2	10.2	45.1	0.4	12.8	86.8	3.5	36.1	60.4
51	Perform serologic tests for diagnosis of hepatitis viruses infection	226	29.8	9.3	6.2	6.7	48.0	3.5	16.4	80.1	6.2	42.9	50.9
52	Perform serologic tests for infectious mononucleosis	223	98.2	0.9	0.5	0.0	0.5	38.5	36.7	24.9	74.7	20.8	4.5
53	Perform laboratory monitoring tests of antiretroviral treatment, such as viral load and CD4	228	63.9	1.3	2.6	5.7	26.4	7.5	21.6	70.9	44.1	32.6	23.3
54	Perform laboratory test for the diagnosis of autoimmune disease (systemic lupus erythematosus, thyroid diseases, rheumatoid arthritis) using acute-phase reactants	228	61.2	11.0	3.1	6.2	18.5	18.5	42.3	39.2	37.4	40.5	22.0
55	Perform serological tests to screen for pregnancy	228	8.4	0.0	2.6	4.0	85.0	5.7	15.4	78.9	1.3	35.2	63.4
	Service delivery: medical microbiology												
56	Apply appropriate disinfection and sterilization techniques	229	17.5	3.5	2.2	7.5	69.3	3.1	16.2	80.7	9.2	49.1	41.7
57	Prepare and store reagents used in microbiology laboratory	229	47.4	7.0	13.2	4.4	28.1	10.1	35.1	54.8	25.9	43.4	30.7
58	Prepare and store culture media	229	98.7	0.0	0.0	0.0	1.3	20.6	38.6	40.8	67.1	26.8	6.1
59	Prepare and store biochemical tests	228	98.2	0.4	0.0	0.0	1.3	22.0	40.5	37.4	69.2	26.0	4.8
60	Prepare and store equipment and materials for microbiological tests	228	45.4	6.6	8.8	4.8	34.4	10.6	36.6	52.9	28.2	45.4	26.4

Task no.	Task name	Frequency						Criticality			Performance		
		Number responding	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
61	Prepare microbiological smears	228	12.3	1.8	3.5	10.1	72.2	2.6	11.5	85.9	6.2	41.4	52.4
62	Perform fixation of microbiological smears	227	10.2	0.9	4.4	11.1	73.5	1.8	11.5	86.7	5.3	40.7	54.0
63	Perform examination of unstained preparations like wet mount, potassium hydrochloride preparation for fungi identification	228	64.8	15.4	5.3	3.1	11.5	14.1	45.4	40.5	34.4	47.1	18.5
64	Perform methylene blue staining techniques	228	52.4	1.8	0.4	4.4	41.0	19.9	27.0	53.1	31.9	39.8	28.3
65	Perform India ink preparation	225	95.5	1.3	0.4	0.0	2.7	35.3	31.3	33.5	66.1	25.4	8.5
66	Perform differential staining techniques of Gram stain	227	50.9	19.5	8.4	7.5	13.7	10.6	35.4	54.0	22.6	50.9	26.5
67	Perform differential staining techniques of acid-fast stain	228	11.0	0.4	4.4	10.1	74.0	0.9	7.5	91.6	4.0	38.8	57.3
68	Perform complex staining techniques of flagella	228	97.4	0.4	1.3	0.0	0.9	44.2	29.6	26.1	82.4	13.2	4.4
69	Perform complex staining techniques of capsule	228	98.7	0.4	0.4	0.0	0.4	44.4	29.8	25.8	82.3	12.8	4.9
70	Perform complex staining techniques of spore staining	227	98.2	0.9	0.4	0.0	0.4	44.6	28.6	26.8	82.7	13.3	4.0
71	Perform inoculation of microbiological specimen in appropriate culture media	228	97.8	0.0	0.9	0.0	1.3	26.1	37.6	36.3	73.1	22.5	4.4
72	Perform incubation of inoculated media in appropriate atmosphere	227	98.2	0.0	0.4	0.0	1.3	26.4	37.9	35.7	73.1	22.0	4.8
73	Identify colony characteristic of a culture	227	97.8	0.4	0.0	0.0	1.8	28.3	33.2	38.6	76.4	19.6	4.0
74	Perform bacterial count	228	93.8	0.9	0.0	0.0	5.3	28.6	34.4	37.1	73.9	18.6	7.5
75	Perform and read appropriate biochemical test for identification of microorganism	228	96.5	1.3	0.0	0.0	2.2	25.0	35.3	39.7	77.9	17.7	4.4
76	Perform germ tube test	228	98.2	0.9	0.0	0.0	0.9	38.1	33.2	28.7	83.2	13.7	3.1
77	Perform antimicrobial susceptibility tests	228	99.1	0.0	0.0	0.0	0.9	22.8	29.0	48.2	77.4	19.5	3.1
78	Perform viral culture (cell culture)	226	100.0	0.0	0.0	0.0	0.0	42.8	28.8	28.4	87.1	10.3	2.7
79	Perform collection and storage of microbiological specimen important to public health	228	76.2	9.7	1.8	0.4	11.9	13.8	37.5	48.7	51.8	39.8	8.4
80	Transport microbiological specimen important to public health	228	81.1	11.9	1.8	4.4	0.9	14.7	42.4	42.9	54.9	37.2	8.0
81	Perform examination of microbiological specimen important to public health	228	88.5	3.5	0.4	0.9	6.6	22.3	34.4	43.3	68.6	23.5	8.0
82	Perform TB culture	228	98.7	0.0	0.0	0.0	1.3	25.4	19.2	55.4	82.7	13.7	3.5
83	Perform TB drug susceptibility test	225	96.4	0.0	1.8	0.9	0.9	24.3	19.4	56.3	83.9	12.6	3.6

Task no.	Task name	Frequency						Criticality			Performance		
		Number responding	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
	Service delivery: medical parasitology												
84	Prepare reagents used in parasitology	227	35.4	4.0	2.2	1.3	57.1	4.9	28.3	66.8	17.3	39.8	42.9
85	Perform fecal wet mount and examine microscopically	228	5.3	0.0	1.8	0.0	93.0	3.5	18.9	77.5	0.9	34.4	64.8
86	Carry out stool concentration techniques	228	91.2	5.7	0.0	0.9	2.2	18.5	44.5	37.0	37.4	47.1	15.4
87	Prepare permanent smear for the identification of intestinal protozoa	228	81.5	1.3	0.0	0.4	16.7	31.0	29.2	39.8	59.5	23.8	16.7
88	Prepare blood smear	228	5.3	3.5	1.8	3.5	85.9	0	11.5	88.5	0.9	36.1	63.0
89	Prepare buffy coat smear	228	96.0	1.8	0.9	0.0	1.3	27.4	41.6	31.0	59.7	31.4	8.8
90	Stain blood smear	228	5.7	3.5	1.8	3.1	85.9	0.4	6.6	93.0	0.0	38.8	61.2
91	Stain blood buffy coat smear	228	98.7	0.4	0.4	0.0	0.4	28.6	43.2	28.2	62.6	29.1	8.4
92	Identify medically important parasites from different specimen sources	227	6.6	3.1	2.2	1.8	86.3	0.9	15.0	84.1	1.8	44.7	53.5
93	Determine parasitic load	226	34.2	21.8	1.8	5.3	36.9	7.1	37.3	55.6	15.1	51.6	33.3
94	Perform modified acid-fast stain and others for intestinal opportunistic parasite	227	92.0	4.4	0.9	0.4	2.2	27.9	43.8	28.3	65.0	24.3	10.6
	Service delivery: hematology and histopathology												
95	Prepare Wright stain	228	76.2	11.5	1.8	1.8	8.8	18.1	46.3	35.7	34.8	45.4	19.8
96	Prepare Giemsa stain	228	30.8	4.8	2.2	1.8	60.4	7.0	20.7	72.2	12.4	41.2	46.5
97	Prepare Leishman stain	227	95.6	1.8	0.0	0.0	2.7	39.4	29.2	31.4	76.0	17.3	6.7
98	Prepare panoptic stains	228	99.6	0.0	0.0	0.0	0.4	45.6	26.5	27.9	85.4	10.2	4.4
99	Prepare anticoagulants	228	85.9	1.8	1.8	1.8	8.8	26.4	35.7	37.9	62.8	23.9	13.3
100	Prepare red blood cell dilution fluid	228	94.3	2.2	0.9	0.0	2.6	31.7	32.2	36.1	64.8	27.3	7.9
101	Prepare white blood cell dilution fluid	228	80.2	4.8	1.3	2.6	11.0	22.9	35.7	41.4	48.0	31.7	20.3
102	Prepare platelet dilution fluid	228	96.5	2.2	0.0	0.0	1.3	31.3	33.9	34.8	64.3	28.2	7.5
103	Prepare reticulocyte dilution fluid	228	99.1	0.4	0.0	0.0	0.4	32.6	36.6	30.8	69.6	24.7	5.7

Task no.	Task name	Frequency						Criticality			Performance		
		Number responding	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
104	Prepare 0.1N hydrochloride for hemoglobin determination	228	74.4	8.8	1.8	3.1	11.9	19.4	35.7	44.9	38.8	38.8	22.5
105	Perform hematological stain	228	31.7	15.0	2.6	2.6	48.0	3.1	36.6	60.4	14.1	50.7	35.2
106	Perform manual differential count	228	50.2	22.9	5.7	5.3	15.9	6.2	46.3	47.6	17.2	53.7	29.1
107	Perform manual total white blood cell count	227	54.9	19.0	5.3	3.5	17.3	8.4	32.3	59.3	16.8	47.8	35.4
108	Perform manual platelet count	227	97.3	2.2	0.0	0.4	0.0	25.9	33.9	40.2	58.5	33.5	8.0
109	Perform manual hematocrit level determination	227	38.5	6.6	3.1	2.2	49.6	2.2	25.7	72.1	5.8	46.0	48.2
110	Perform manual erythrocyte sedimentation rate	227	37.6	8.8	4.4	6.2	42.9	13.3	37.6	49.1	7.5	47.3	45.1
111	Perform manual reticulocyte count	227	96.9	1.8	0.0	0.4	0.9	28.6	42.0	29.5	63.6	30.7	5.8
112	Determine hemoglobin level	227	27.9	8.0	3.5	1.8	58.8	3.1	19.0	77.9	8.0	42.5	49.6
113	Calculate red cell indices	227	76.5	5.3	0.4	0.9	16.8	17.0	37.5	45.5	40.4	39.5	20.2
114	Identify abnormal morphology of stained peripheral blood smear	227	61.5	16.4	3.5	4.4	14.2	14.2	43.6	42.2	32.0	45.3	22.7
115	Perform hematological tests using hematological analyzers	227	57.5	3.1	1.8	2.2	35.4	6.7	28.0	65.3	33.8	37.8	28.4
116	Perform counting of CD4+ using FACS count	227	68.6	0.4	1.3	2.7	27.0	7.1	28.0	64.9	40.4	36.9	22.7
117	Perform examination of lupus erythematosus cells	226	99.1	0.4	0.0	0.0	0.4	39.0	34.1	26.9	84.4	12.9	2.7
118	Perform examination of bone marrow smear	226	96.0	3.6	0.0	0.4	0.0	34.2	31.1	34.7	81.2	14.8	4.0
119	Perform osmotic fragility test of red cells	227	99.6	0.0	0.0	0.0	0.4	49.1	25.4	25.4	86.2	11.6	2.2
120	Carry out identification of hematological cell markers	226	98.2	1.3	0.0	0.0	0.4	35.6	35.1	29.3	82.5	14.8	2.7
121	Determine bleeding time of patient	227	97.3	0.9	0.0	0.0	1.8	28.7	35.9	35.4	73.7	21.9	4.5
122	Perform analysis of clot retraction time	227	99.6	0.0	0.0	0.4	0.0	30.8	34.4	34.8	79.6	16.9	3.6
123	Perform analysis of prothrombin time	227	98.2	0.4	0.4	0.0	0.9	21.9	37.5	40.6	75.6	19.6	4.9
124	Perform analysis of thrombin time	227	99.1	0.0	0.0	0.0	0.9	23.2	36.6	40.2	77.3	18.7	4.0
125	Perform analysis of partial prothrombin time	227	98.2	0.0	0.4	0.0	1.3	23.2	36.6	40.2	76.9	18.2	4.9
126	Perform analysis of activated partial prothrombin time	226	98.2	0.4	0.4	0.0	0.9	24.2	37.2	38.6	79.0	16.1	4.9

Task no.	Task name	Frequency						Criticality			Performance		
		Number responding	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
	Service delivery: immunohematology												
127	Prepare percent red cell suspension	209	88.0	4.8	1.4	1.9	3.8	16.6	35.6	47.8	58.3	31.6	10.2
128	Carry out blood grouping	229	7.5	1.3	3.1	4.8	83.3	0.9	11.0	88.2	0.9	32.5	66.7
129	Perform antiglobulin testing (Coombs test)	229	94.7	2.2	0.9	0.0	2.2	13.3	41.2	45.6	58.8	32.0	9.2
130	Perform cross-matching and antibody screening	229	67.1	3.1	5.7	8.8	15.4	8.3	24.6	67.1	32.9	40.4	26.8
131	Participate in selection of appropriate blood donor for transfusion using donor selection criteria	229	83.3	6.6	2.6	1.8	5.7	11.8	29.4	58.8	48.2	35.5	16.2
132	Collect blood from donor	229	80.3	10.1	3.9	0.9	4.8	11.8	30.3	57.9	41.2	42.1	16.7
133	Preserve and store blood from donors	229	77.2	7.9	3.9	3.9	7.0	11.4	26.8	61.8	40.8	38.6	20.6
134	Perform screening of blood for transfusion for transmissible diseases such as hepatitis viruses B and C, HIV, and syphilis	229	75.9	9.2	5.7	3.1	6.1	7.5	18.9	73.7	31.1	40.8	28.1
135	Prepare and store blood components	222	79.6	4.1	3.6	2.3	10.4	15.1	26.0	58.9	57.5	21.7	20.8
	Service delivery: histopathology												
136	Preserve various histopathological specimens	222	98.6	0.9	0.5	0.0	0.0	34.0	35.4	30.6	86.0	12.1	1.9
137	Process surgical and autopsy tissue specimens for histopathological techniques	222	99.5	0.0	0.5	0.0	0.0	35.4	33.0	31.6	90.2	7.9	1.9
138	Embed surgical and autopsy tissue specimens in paraffin	222	99.5	0.0	0.5	0.0	0.0	35.3	34.8	30.0	91.1	7.0	1.9
139	Operate rotary microtome to section paraffin-processed blocks of tissue	222	100.0	0.0	0.0	0.0	0.0	35.3	33.3	31.4	90.7	7.5	1.9
140	Perform frozen section	222	99.5	0.0	0.0	0.0	0.5	35.4	35.0	29.6	91.1	6.5	2.3
141	Perform cell concentration and fixation techniques	222	99.5	0.0	0.0	0.0	0.5	34.8	34.8	30.4	90.2	6.5	3.3
142	Prepare routine and special stains	222	98.6	0.5	0.0	0.0	0.9	35.3	34.8	30.0	91.2	7.0	1.9
143	Perform hematoxylin staining	222	100.0	0.0	0.0	0.0	0.0	36.7	33.3	30.0	92.1	6.0	1.9
144	Perform eosin staining	222	100.0	0.0	0.0	0.0	0.0	37.1	33.7	29.3	88.8	9.3	1.9
145	Perform connective tissue staining	221	100.0	0.0	0.0	0.0	0.0	37.4	34.0	28.6	91.6	5.6	2.8
146	Perform protein, nucleic acid, and amyloid staining	222	100.0	0.0	0.0	0.0	0.0	37.1	32.7	30.2	92.1	6.0	1.9

Task no.	Task name	Frequency						Criticality			Performance		
		Number responding	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
147	Perform carbohydrates and lipids staining	222	100.0	0.0	0.0	0.0	0.0	37.6	31.7	30.7	92.1	6.0	1.9
148	Carry out mounting of stained slides	221	99.1	0.9	0.0	0.0	0.0	37.6	32.2	30.2	89.7	8.4	1.9
	Service delivery: clinical chemistry												
149	Perform pipette calibrations (forward and backward)	228	78.9	7.5	1.8	3.1	8.8	13.3	39.8	46.9	53.5	34.5	11.9
150	Perform standardization of clinical chemistry tests	229	74.6	3.5	3.1	3.1	15.8	17.2	27.8	55.1	55.1	30.0	15.0
151	Prepare working solutions for clinical chemistry analyses	228	70.5	4.0	4.8	5.7	15.0	15.9	30.5	53.5	46.7	32.9	20.4
152	Perform glucose measurement	229	36.0	4.4	2.2	6.1	51.3	1.8	19.3	78.9	15.4	43.6	41.0
153	Perform renal function test (creatinine, urea, and uric acid)	229	70.2	2.2	2.2	2.6	22.8	9.7	22.9	67.4	44.9	33.5	21.6
154	Perform protein analysis (i.e., total protein and albumin)	229	82.9	3.1	0.4	3.1	10.5	11.0	41.0	48.0	52.9	33.9	13.2
155	Perform lipid profile tests (cholesterol, triglyceride), high- and low-density lipoprotein cholesterol)	229	77.6	3.1	1.3	5.7	12.3	11.9	36.1	52.0	53.3	32.2	14.5
156	Perform liver function test (aspartate transaminase, alanine transaminase, bilirubin, etc.)	229	71.1	1.8	2.2	2.6	22.4	11.0	23.3	65.6	47.6	32.6	19.8
157	Perform measurement of clinically important enzymes like amylase, lactate dehydrogenase, and creatine kinase	229	90.8	2.6	1.3	1.8	3.5	17.6	37.0	45.4	64.3	27.8	7.9
158	Perform testing of clinically significant electrolytes	229	93.0	0.0	1.3	0.4	5.3	20.0	26.2	53.8	69.9	22.1	8.0
159	Perform hormonal assays like thyroid function test and free thyroid	229	97.4	0.4	0.0	0.0	2.2	21.1	33.9	44.9	76.7	18.5	4.8
160	Perform measurement of clinically significant tumor markers	229	98.2	0.4	0.0	0.0	1.3	25.7	33.2	41.2	82.4	15.0	2.6
161	Perform analysis of toxins in clinical specimen	229	97.8	0.4	0.0	0.9	0.9	27.8	31.3	41.0	83.3	14.1	2.6
	Service delivery: urine and body fluid analysis												
162	Perform physical examination of urine	229	9.2	3.5	3.1	3.5	80.7	8.3	19.7	71.9	1.8	38.2	60.1
163	Perform chemical examination of urine	229	6.1	2.2	2.6	2.6	86.4	0.4	20.2	79.4	1.3	36.8	61.8
164	Perform physical examination of body fluids (cerebrospinal, amniotic, synovial, seminal, etc.)	229	72.8	11.0	3.5	8.3	4.4	11.0	35.5	53.5	41.2	41.2	17.5
165	Perform chemical examination of body fluids (cerebrospinal, amniotic, synovial, seminal, etc.)	229	75.0	11.4	3.5	6.6	3.5	8.8	37.3	53.9	43.4	40.8	15.8
166	Perform microscopic examination of urine	229	6.1	0.9	2.6	4.8	85.5	0.9	21.5	77.6	2.2	39.5	58.3

Task no.	Task name	Frequency						Criticality			Performance		
		Number responding	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
167	Perform microscopic examination of body fluid specimen	225	67.9	13.4	4.0	7.6	7.1	10.3	33.6	56.1	38.8	40.2	21.0
168	Differentiate microscopic features in normal and pathological condition (stained preparations, organized sediment, unorganized sediment, and parasites)	228	18.1	10.1	7.0	3.5	61.2	2.2	34.8	63.0	9.7	54.2	36.1
	Health service management and laboratory quality assurance												
169	Conduct a strategic and policy analysis for formulating and translating strategic health plans, objectives, and operations	229	76.3	10.1	5.7	2.2	5.7	23.2	44.3	32.5	55.7	35.1	9.2
170	Plan, monitor, manage, and supervise laboratory service	228	22.9	14.5	26.9	9.7	26.0	5.7	45.4	48.9	12.8	58.6	28.6
171	Play managerial role in peripheral and district laboratories, other health care systems (Federal Ministry of Health, Regional Health Bureau, other health offices, etc.), and private health institutions	229	61.0	12.3	4.4	3.1	19.3	26.8	37.3	36.0	35.5	47.8	16.7
172	Participate in the design of standardized laboratory	229	41.7	32.0	11.0	3.9	11.4	21.1	40.4	38.6	31.7	47.1	21.1
173	Prepare and revise manuals, standard operating procedures, and protocols and communicate to relevant personnel	229	33.8	31.1	17.1	4.4	13.6	9.6	34.6	55.7	18.4	62.3	19.3
174	Establish and monitor laboratory quality assurance programs and activities to ensure the accuracy of laboratory results	227	28.3	15.0	18.1	13.3	25.2	5.7	27.8	66.5	18.5	55.1	26.4
175	Perform selection, procurement, and distribution of laboratory commodities and equipment	228	47.6	36.1	11.0	2.6	2.6	8.8	34.8	56.4	16.3	59.0	24.7
176	Initiate and participate in laboratory internal quality audit	228	37.4	15.4	18.5	16.3	12.3	9.7	44.9	45.4	25.2	49.1	25.7
177	Participate in human resource management	228	60.4	10.6	8.8	7.5	12.8	17.2	41.4	41.4	25.6	57.7	16.7
178	Participate in laboratory accreditation process	228	66.1	11.0	8.4	2.2	12.3	20.3	35.2	44.5	44.9	41.8	13.3

Annex E: Task Lists for Pharmacy Professionals

		Frequency					Criticality			Performance		
Task no.	Task name	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
	A. Professionalism and ethics											
1	Pursue lifelong professional learning	3.4	15.8	4.3	35	41.5	4.7	32.1	63.2	2.6	68.8	28.6
2	Actively participate in professional associations	82.1	14.5	0.4	1.7	1.3	15	49.6	35.5	12.8	66.2	20.9
3	Advocate for pharmacy profession	16.2	21.8	12.8	25.6	23.5	12.4	52.6	35	7.3	56.8	35.9
4	Practice within legal and ethical framework	1.3	3.0	1.3	2.2	92.2	2.6	15.1	82.3	1.3	40.5	58.2
5	Maintain professional conduct in interactions with coworkers, patients, caregivers, and the community	0.4	0.9	1.3	3.4	94	0.9	32.5	66.7	0.4	42.3	57.3
6	Recognize and respect the cultural differences, beliefs, and values of patients	0.4	2.1	0	1.7	95.7	4.7	27.4	67.9	1.3	37.6	61.1
7	Participate in policy dialogue in relation to the profession	69.1	20.6	3.9	2.6	3.9	11.5	46.6	41.9	18.8	58.5	22.6
8	Maintain confidentiality of information acquired in the course of providing professional services	0.9	0.9	0.4	1.7	96.2	2.6	25.6	71.8	0.4	33.8	65.8
9	Collaborate with other health professionals to provide high quality health care service	1.3	3.0	1.7	7.3	86.8	3	29.5	67.5	0	44.0	56.0
10	Expose unethical practice in the profession by fellow professionals or others	38.9	35.0	6.8	0.9	18.4	6.8	26.9	66.2	6.4	43.2	50.4
	B. Supply chain management services											
11	Process registration of products with Food, Medicine and Health Care Administration and Control Authority (FMHACA)	98.7	0.9	0	0.4	0	2.6	25.5	71.9	28.8	62.7	8.6
12	Process import permit (purchase order approval) with FMHACA	97.4	1.7	0.9	0	0	2.6	33.8	63.6	26.2	67.4	6.4
13	Select pharmaceuticals for procurement	80.3	13.7	5.2	0.9	0	0.9	17.7	81.5	9.0	56.2	34.8
14	Use consumption data to forecast national/regional pharmaceuticals needs	87.6	7.7	4.3	0.4	0	2.2	25.4	72.4	11.6	57.5	30.9
15	Use morbidity data to forecast national/regional pharmaceuticals needs	93.6	4.3	2.1	0	0	5.1	42.1	52.8	23.4	62.1	14.5
16	Use service data to forecast national/regional pharmaceuticals needs	93.6	3.8	2.6	0	0	11.9	41.3	46.8	26.4	62.6	11.1
17	Reconcile quantifications made based on different data	90.6	6.0	3.0	0.4	0	1.7	40.2	58.1	17.9	64.5	17.5
18	Conduct VEN (vital, essential, and nonessential) analysis to reconcile quantified amount with budget	89.4	6.0	3.8	0	0.9	1.3	23	75.7	11.1	63.4	25.5

		Frequency					Criticality			Performance		
Task no.	Task name	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
19	Conduct ABC analysis	91.0	6.4	2.1	0	0.4	3	41.9	55.1	18.4	66.2	15.4
20	Prepare product specifications for procurement	83.4	9.4	6.8	0.4	0	0.9	27.7	71.5	10.2	61.7	28.1
21	Conduct inspection for good dispensing practice and current good manufacturing practice to prepare suppliers list	92.3	3.0	2.1	0.4	2.1	2.6	37.4	60	30.2	56.6	13.2
22	Set lead time based on stock analysis and consumption rate	88.5	5.1	5.5	0.9	0	1.3	41.7	57	16.6	65.5	17.9
23	Set criteria to select appropriate suppliers for procurement	90.6	4.7	4.3	0.4	0	1.3	44.3	54.5	14.5	70.5	15
24	Conduct dossier evaluation	96.6	2.6	0	0.4	0.4	1.7	32.5	65.8	53.0	41.5	5.6
25	Determine stock levels	80	6.4	7.2	4.7	1.7	1.7	30.2	68.1	11.6	51.3	37.1
26	Perform clearance of imported products of FMHACA and customs	98.3	1.3	0.4	0	0	3.4	48.5	48.1	37.0	57.4	5.5
27	Conduct inspection of procured health commodities	84.3	7.7	6.4	0.9	0.9	0.9	28.5	70.6	12.8	54	33.2
28	Receive procured health commodities using goods receiving voucher (model 19)	78.7	8.5	7.2	4.3	1.3	1.3	40	58.7	4.7	39.1	56.2
29	Apply appropriate store classification and arrangement system	77.4	8.9	5.1	4.3	4.3	2.6	46.4	51.1	3.4	42.1	54.5
30	Dejunk and organize storage spaces	77.0	7.7	6.8	4.3	4.3	3.0	43.0	54.0	3.8	44.3	51.9
31	Store all products per the manufacturer's label	74.8	6.8	4.3	2.1	12.0	3.0	16.2	80.8	3.8	38.9	57.3
32	Use cold chain/refrigerators to maintain cold storage for vaccines and other products requiring cold storage	77.8	2.6	0.9	0	18.8	0.9	7.7	91.5	3.8	37.9	58.3
33	Handle NPS (narcotic and psychotropic drugs) per the national guideline	85.9	2.6	1.7	0.9	9.0	1.3	13.7	85.0	5.1	49.6	45.3
34	Use bin cards and stock cards, or electronic database, to monitor stock status	73.9	6.0	6.8	5.6	7.7	1.7	28.2	70.1	3.0	40.6	56.4

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
35	Maintain stock records	78	7.3	6.5	3.4	4.7	2.2	34.1	63.8	4.3	41.6	54.1
36	Apply "first expiry, first out" at store during arrangement and distribution	74.8	4.3	5.1	1.3	14.5	0	17.9	82.1	3.0	36.3	60.7
37	Use goods issuing voucher (model 22) to distribute pharmaceuticals	82.8	2.6	8.6	2.1	3.9	3.4	39.7	56.8	4.3	41.5	54.3
38	Conduct physical inventory	77.8	15.8	4.3	1.3	0.9	3.4	42.5	54.1	5.2	45.7	49.1
39	Prepare pharmaceuticals logistics data	82.5	9.4	6.8	0.9	0.4	3.4	50.6	45.9	10.7	59.7	29.6
40	Report defective or substandard medicines to the appropriate authority	86.8	8.5	3.0	0.9	0.9	3.0	34.2	62.8	9.4	51.7	38.9
41	Dispose pharmaceuticals that are expired or unfit for use per the national guideline	87.2	11.1	0	0.4	1.3	0	29.9	70.1	9.8	54.3	35.9
42	Coordinate supply management services	85.9	9.0	3.4	0.4	1.3	5.1	40.6	54.3	25.6	50.9	23.5
43	Monitor the performance of the pharmaceutical logistics system	85.9	7.7	1.7	2.1	2.6	6.0	45.7	48.3	22.2	62.8	15
44	Evaluate the performance of the pharmaceutical logistics system	86.8	8.1	4.3	0	0.9	7.3	47.0	45.7	28.6	57.3	14.1
	C. Hospital pharmacy services											
	C1. Dispensing of medications											
45	Verify prescription orders to ensure legality and completeness	7.3	0.9	0.4	0.9	90.6	0.9	6.4	92.8	0.9	26.8	72.3
46	Interpret the prescription to ensure the prescribed drug is for the mentioned diagnosis	9.8	4.7	0	2.6	83	0	8.1	91.9	2.1	38.3	59.6
47	Interpret prescription to rule out contraindications	7.2	2.6	3.4	2.6	84.3	0.4	5.1	94.5	2.1	42.1	55.7
48	Interpret prescription to rule out drug interactions	7.3	3.0	1.7	3.8	84.2	0.9	7.7	91.5	3.8	41.5	54.7
49	Correct prescription errors through effective communication with the prescriber	6.4	5.5	5.1	17	66.0	0.9	9.8	89.4	1.3	38.3	60.4
50	Perform course-of-therapy packaging in the dispensary	32.5	6.4	6.4	13.7	41.0	10.3	37.2	52.6	6	36.8	57.3
51	Label medicines to be dispensed with appropriate information	7.3	3.4	0.9	2.1	86.3	1.3	8.5	90.2	1.7	25.2	73.1
52	Provide medication use counseling on dispensed medications that meets the needs of individual patients	6.4	1.7	1.7	2.1	88.1	0	8.5	91.5	2.1	34.9	63

		Frequency					Criticality			Performance		
Task no.	Task name	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
53	Keep record of each dispensed product for each patient by completing the prescription registration book	23.9	6.8	0.4	4.3	64.5	9.8	42.1	48.1	2.6	31.1	66.4
54	Keep record of dispensed medications for each patient attending antiretroviral treatment and other chronic care clinics on patient medication profile card	46.6	4.7	2.1	7.3	39.3	3.8	29.5	66.7	7.7	44.6	47.6
55	File dispensed prescription papers	9.9	2.1	3.4	4.7	79.8	5.6	43.2	51.3	1.3	26.5	72.2
56	Arrange medication products and other health commodities properly at outpatient and ward/inpatient dispensaries	10.6	4.3	14	23.8	47.2	4.3	45.1	50.6	1.3	30.6	68.1
57	Handle NPS in the dispensaries per the national guideline	40.0	6.8	3.4	5.1	44.7	1.3	19.6	79.1	3.8	41.3	54.9
58	Select appropriate products for the hospital/health center	20.9	57	19.1	1.3	1.7	0.4	19.6	80.0	2.1	45.5	52.3
59	Select and make available emergency drugs in the health facility	17.4	32.8	16.2	7.2	26.4	0.4	9.8	89.7	1.3	38.5	60.3
60	Use consumption data to quantify pharmaceuticals needs for the hospital/health center	23.4	54.9	17.4	1.7	2.6	0.4	23.8	75.7	4.7	45.1	50.2
61	Use morbidity data to quantify pharmaceuticals needs for the hospital/health center	63.4	29.4	6.0	0.9	0.4	6.4	41.3	52.3	17.9	58.3	23.8
62	Use service delivery data to quantify pharmaceuticals needs for the hospital/health center	74.0	14.0	10.6	0.9	0.4	14.5	41.3	44.3	27.2	50.6	22.1
63	Determine stock levels for the health facility	18.8	29.5	26.1	15	10.7	1.7	32.5	65.8	4.3	45.3	50.4
64	Conduct VEN analysis to reconcile quantification results with procurement budget	39.7	47.0	9.8	2.1	1.3	1.3	23.9	74.8	9.4	49.6	41.0
65	Conduct ABC analysis to reconcile quantification results with budget for procurement	55.1	34.6	6.4	2.6	1.3	3.4	39.7	56.8	19.2	51.3	29.5
66	Reconcile VEN and ABC analysis results	59.2	31.3	6.9	1.3	1.3	2.6	40.2	57.3	22.3	50.6	27.0
67	Prepare product specifications for procurement	21.8	59.4	16.2	1.3	1.3	1.3	26.9	71.8	3.8	47.9	48.3
68	Procure medications and other health commodities from Pharmaceuticals Fund and Supply Agency (PFSA)	28.2	60.7	9.8	0.4	0.9	2.6	24.9	72.5	4.3	38.5	57.3
69	Procure medications and other health commodities from other sources (other than PFSA)	39.3	56.4	3.4	0.4	0.4	7.3	32.5	60.3	5.1	45.7	49.1
70	Inspect procured health commodities	16.2	60.3	17.9	2.1	3.4	2.1	20.9	76.9	2.6	40.6	56.8
71	Receive procured health commodities using goods receiving voucher (model 19)	25.6	40.6	21.4	6.0	6.4	1.7	38.5	59.8	2.1	29.9	67.9

		Frequency					Criticality			Performance		
Task no.	Task name	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
72	Apply appropriate store classification and arrangement systems	20.5	26.1	18.4	14.5	20.5	3.0	46.2	50.9	3.0	35.0	62.0
73	Dejunk and organize storage spaces	19	31.5	17.2	14.2	18.1	3.9	37.9	58.2	2.6	32.3	65.1
74	Store all products per the manufacturers label	10.8	17.7	12.9	9.9	48.7	2.6	21.1	76.3	0.9	27.2	72.0
75	Use cold chain/refrigerators to maintain cold storage for vaccines and other products requiring cold storage	15.9	6.5	0.4	3.4	73.7	0	5.2	94.8	1.3	24.1	74.6
76	Keep NPS per the national guideline in the store	47.0	8.6	1.3	4.3	38.8	0.9	17.0	82.2	4.8	36.1	59.1
77	Use bin cards and stock cards, or electronic database, to monitor stock status	10.8	3.9	21.2	18.6	45.5	2.6	30.6	66.8	2.6	27.6	69.8
78	Apply "first expiry, first out" at store and dispensary	6.0	5.6	3.9	7.3	77.2	0	15.5	84.5	0.9	24.6	74.6
79	Use internal facility report and resupply form to request supply of pharmaceuticals from store	15.9	6.5	49.1	19.4	9.1	2.2	35.3	62.5	3.0	30.6	66.4
80	Use internal facility report and resupply form to distribute pharmaceuticals within facilities	34.0	3.4	37.9	16.2	8.5	2.1	34.9	63.0	4.3	35.3	60.4
81	Use report and requisition form to report consumption to request resupply from PFSA	34.0	42.1	19.1	2.1	2.6	1.3	25.1	73.6	6.4	37	56.6
82	Use goods issuing voucher (model 22) to issue pharmaceuticals to sections within a health facility	32.3	9.4	30.2	15.7	12.3	1.3	40.4	58.3	3.8	32.8	63.4
83	Conduct physical inventory of health commodities at dispensary and store	13.2	40.6	27.4	10.3	8.5	1.7	44	54.3	0	38.0	62.0
84	Report defective or substandard products to the appropriate authorities	45.5	32.8	14.5	3.8	3.4	0.9	27.7	71.5	5.1	46.0	48.9
85	Maintain transaction and consumption records of pharmaceuticals	18.8	22.2	21.4	5.6	32.1	1.7	47	51.3	4.7	42.7	52.6
86	Prepare aggregated logistics report	38.9	36.8	21.8	1.3	1.3	3	50.9	46.2	7.3	54.3	38.5
87	Dispose of damaged and expired products per the national disposal guideline	41.9	50	6.4	0.4	1.3	0.4	31.2	68.4	6.4	50.9	42.7
88	Use logistics management information system to support the management of essential pharmaceuticals	32.8	17.4	14.9	12.8	22.1	2.1	45.5	52.3	9.4	53.2	37.4
89	Apply Integrated Pharmaceuticals Logistics System	21.5	10.3	15	11.2	42.1	1.7	32.2	66.1	12	36.8	51.3
90	Apply auditable pharmaceutical transactions and services at health facility	83.8	3.4	0.9	1.7	10.2	6.4	51.3	42.3	42.3	45.7	12.0
91	Coordinate supply chain management services at health facility level	39.3	26.1	11.1	5.6	17.9	3.0	45.9	51.1	13.7	50	36.3

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
	C2. Compounding of extemporaneous preparations											
92	Verify the compounding order	95.2	1.7	1.3	0	1.7	2.2	43.9	53.9	17.9	69.9	12.2
93	Ensure availability and assemble ingredients and equipment correctly	93.5	1.7	1.7	0	3.0	4.7	48.7	46.6	17.7	67.2	15.1
94	Compound extemporaneous products following the standard operating procedure	94.8	2.6	0.4	0	2.2	3.0	39.2	57.8	22.4	63.8	13.8
95	Pack extemporaneous products using appropriate packaging material	95.7	1.7	0.4	0	2.2	3.4	36.6	59.9	16.4	56.9	26.7
96	Label extemporaneous products following the standard operating procedure	95.7	1.7	0.4	0	2.2	3.4	33.6	62.9	14.7	54.3	31.0
97	Maintain records of compounded preparations	96.5	0.9	0.4	0	2.2	6.6	49.3	44.1	14.6	58.4	27.0
	C3. Pharmaceutical care											
98	Take relevant patient history for pharmaceutical care	70.8	6.0	1.7	3.4	18	0.9	20.2	79.0	34.8	47.6	17.6
99	Assess patient drug therapy needs	63.5	7.7	1.3	4.3	23.2	0.9	14.2	85.0	35.2	42.5	22.3
100	Identify actual drug therapy problems	57.9	8.2	1.7	5.2	27.0	0.9	14.6	84.5	32.2	43.8	24
101	Develop and implement patient-specific pharmaceutical care plan	76.7	5.2	0.9	4.3	12.9	1.3	20.7	78	41.4	43.5	15.1
102	Monitor medication therapy	70.4	8.2	2.6	4.3	14.6	0.9	18.1	81	34.8	48.1	17.2
103	Evaluate patient therapeutic outcomes	71.2	9.0	3.0	6	10.7	1.3	21	77.7	33.5	50.2	16.3
104	Perform medication reconciliation for selected patients	74.2	6.0	3.0	3.9	12.9	0.4	26.2	73.4	34.3	41.6	24
105	Identify adverse drug reaction (ADR)	50.6	26.2	3.9	4.3	15	0.4	12.4	87.1	21.5	50.2	28.3
106	Use ADR reporting form to communicate ADR events in the facility to FMHACA	81.5	12.4	2.1	0.4	3.4	1.3	27.6	71.1	22	53.4	24.6
107	Coordinate ward pharmacy services	87.1	3.9		0.9	8.2	3.9	31.5	64.7	34.5	51.7	13.8
108	Perform unit dose dispensing at inpatient/ward pharmacy	87.1	3	0.4	0.9	8.6	4.7	30.2	65.1	31.9	39.2	28.9

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
109	Provide discharge medication counseling to inpatients or caregivers	69.2	6.4	0.9	6.8	16.7	1.7	20.9	77.4	24.8	47.9	27.4
110	Perform drug use evaluation studies for appropriate action	82.1	10.3	3.0	1.3	3.4	2.1	33	64.8	45.1	41.6	13.3
111	Document pharmaceutical care services to improve continuity and quality of care	71.8	5.6	2.1	6.0	14.5	2.6	36.1	61.4	32.2	45.9	21.9
	C4. Drug information services											
112	Prepare query receiving and response forms	86	3.8	1.7	2.6	6.0	12.8	43.4	43.8	29.1	53.8	17.1
113	Use query response forms	86.4	3.8	1.7	2.6	5.5	12.3	44.3	43.4	29.9	52.6	17.5
114	Identify reliable sources for drug information	71.8	10.7	3.4	5.1	9	7.3	34.6	58.1	30	54.1	15.9
115	Evaluate drug information	75.7	8.5	4.7	4.7	6.4	6	33.2	60.9	36.8	46.6	16.7
116	Prepare educational materials on medicines information (alerts, newsletters, brochures, posters, bulletins)	84.3	7.2	2.1	4.7	1.7	7.7	47.2	45.1	32.1	53.4	14.5
117	Provide accurate, appropriate, evidence-based, and timely drug information to patients	43.0	5.1	2.6	3.0	46.4	4.3	19.6	76.2	17.1	47.4	35.5
118	Provide accurate, appropriate, evidence-based, and timely drug information to health care professionals	43.4	20	11.5	11.9	13.2	3.8	27.7	68.5	17.9	54.7	27.4
119	Provide accurate, appropriate, evidence-based, and timely drug information to the public	55.6	14.5	12.4	11.1	6.4	5.1	35.9	59	19.2	48.3	32.5
120	Document drug information requests and responses	83.8	4.3	2.6	2.1	7.3	6.0	49.6	44.4	25.2	51.3	23.5
121	Coordinate drug information services	83.3	4.3	2.6	2.1	7.7	8.6	45.1	46.4	34.2	48.7	17.1
	C5. Pharmaceutical public health											
122	Participate in health promotion, disease prevention and control	31.9	34.0	14.0	12.8	7.2	2.6	40.4	57	5.5	58.3	36.2
123	Provide health education to patients in the health facility	33.3	25.6	17.5	18.4	5.1	3.4	44	52.6	6.4	48.3	45.3
124	Provide behavioral support to clients on substance addiction cessation	39.6	35.3	6.0	5.5	13.6	3.8	33.6	62.6	7.2	63	29.8
125	Participate in emergency preparedness, management, and rehabilitation	60	27.7	3.0	1.3	8.1	4.7	32.3	63	11.5	61.7	26.8
126	Participate in the prevention and containment of microbial resistance	42.3	23.1	7.3	10.3	17.1	0.4	21.8	77.8	7.7	56.4	35.9

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
	D. Regulatory services											
127	Conduct prelicensing inspection for pharmaceuticals manufacturing	99.6	0.4	0	0	0	2.1	19.7	78.2	53.4	43.6	3.0
128	Conduct prelicensing inspection of facilities for import and distribution	98.7	0.4	0.4	0.4	0	2.1	29.1	68.8	51.9	42.9	5.2
129	Conduct prelicensing inspection of facilities for drug retail outlets	97.4	1.7	0.4	0.4	0	1.3	23.6	75.1	43.3	40.8	15.9
130	License pharmaceutical services	98.3	1.3	0	0.4	0	3.4	35.3	61.2	50.9	41.4	7.8
131	Regulate medicine production	99.1	0.9	0	0	0	1.3	19.7	79	53.6	41.6	4.7
132	Regulate import and distribution of pharmaceuticals	96.6	1.3	0.4	0.4	1.3	1.7	32	66.2	48.5	45.5	6.1
133	Regulate import, distribution, and use of NPS and precursor chemicals	97.8	0.9	0.4	0	0.9	1.3	19.5	79.2	49.4	44.2	6.5
134	Regulate promotion and advertisement of pharmaceuticals	98.7	1.3	0	0	0	5.2	39.4	55.4	55.8	36.4	7.8
135	Regulate drug retail outlets	97.0	1.7	0.9	0.4	0	3.0	28.6	68.4	35.9	47.2	16.9
136	Conduct current good manufacturing practice inspection	98.7	1.3	0	0	0	2.6	28.6	68.8	57.6	37.7	4.8
137	Perform dossier evaluation for product registration	97.4	0.9	0	0.9	0.9	1.7	23.4	74.9	55.4	38.1	6.5
138	Conduct bioequivalence tests	100	0	0	0	0	3.0	30.3	66.7	67.5	29.9	2.6
139	Issue marketing authorization	98.3	0.4	1.3	0	0	1.3	32	66.7	55.8	40.7	3.5
140	Perform postmarketing surveillance	98.3	1.3	0.4	0	0	2.2	31	66.8	48.5	45.4	6.1
141	Conduct pharmacovigilance	98.3	1.3	0	0	0.4	2.6	33.5	63.9	50.9	44.8	4.3
142	Coordinate the development of formularies	96.9	3.1	0	0	0	3.5	43	53.5	45.2	48.7	6.1
143	Participate in the development of treatment guidelines	96.5	3.5	0	0	0	2.2	33.3	64.5	39.4	52.4	8.2
144	Coordinate the development of directives, proclamations, and policies governing the control of pharmacy service and pharmaceuticals	98.7	1.3	0	0	0	4.8	36.5	58.7	54.1	41.9	3.9
145	Conduct quality control tests for product registration	98.7	0.9	0.4	0	0	1.7	15.2	83	51.3	43.9	4.8

		Frequency					Criticality			Performance		
Task no.	Task name	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
146	Facilitate registration and licensure of pharmacy professionals	98.7	1.3	0	0	0	3.5	36.8	59.6	40.6	47.2	12.2
	E. Research and education											
147	Provide in-service training to health care providers	68.7	24.9	3.4	0.4	2.6	5.6	51.3	43.2	22.2	56.4	21.4
148	Provide on-the-job training to fellows	50.4	39.7	3.9	2.2	3.9	5.6	43.2	51.3	12.4	52.1	35.5
149	Participate in pre-service education of health care providers as an instructors or preceptor	70.8	24	1.7	0.9	2.6	10.3	49.1	40.6	23.5	58.5	17.9
150	Conduct research activities	94	6.0	0	0	0	11.1	45.3	43.6	47.6	45.1	7.3
151	Participate in pharmacy curriculum development and evaluation	96.1	3.9	0	0	0	12.4	41.0	46.6	43.2	50.9	6.0

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Federal Ministry of Health

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Jhpiego
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Ethiopia Task Analysis Study Report

For Medical Doctors, Health Officers, Nurses, Medical Laboratory Professionals, and Pharmacy Professionals

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Open University

This report is made possible by the generous support of the American people through the United States Agency for International Development (USAID) under the Cooperative Agreement AID-663-A-12-0008 "Strengthening Human Resources for Health (HRH) in Ethiopia." The contents are the responsibility of Jhpiego and do not necessarily reflect the views of USAID or the United States Government.

ETHIOPIA TASK ANALYSIS STUDY REPORT

For Medical Doctors, Health Officers, Nurses, Medical Laboratory Professionals, and Pharmacy Professionals

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Acknowledgments

Jhpiego acknowledges the following individuals and institutions who contributed to the successful completion of this report:

- Dr. Damtew Woldemariam (Chief of Party, Strengthening Human Resources for Health [HRH]), Dr. Tegbar Yigzaw (Deputy Chief of Party, HRH), Daniel Dejene (Team Leader, HRH), and Samuel Mengistu (Technical Advisor, HRH) drafted and reviewed the report on medical doctors.
- Yodit Kidanemariam (Education and Training Advisor, HRH) and Assefa Bulcha (Education and Training Advisor, HRH) drafted and reviewed the report on health officers.
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- Firew Ayalew (Research Team Leader, HRH), Girma Temam (Research Advisor, HRH), Muluneh Yigzaw (Research Advisor, HRH), and Tsigereda Bekele (Monitoring and Evaluation Advisor, HRH) conducted the data analysis, drafted the methodology, and reviewed the final report.
- Sharon Kibwana (Program Manager, HRH) reviewed the final report.
- The Ethiopian Medical Association, Public Health Officers Association, Nurses Association, Medical Laboratory Technologists Association, and Pharmacists Association provided technical input for the identification of task lists and selection of data collectors.

Jhpiego is grateful to all the health workers who participated in this study and to the Federal Ministry of Health and Regional Health Bureaus for their leadership and guidance.

Abbreviations

ADR	adverse drug reaction
AFB	acid-fast bacillus
APTS	auditable pharmaceutical transactions and services
ART	antiretroviral treatment
CPD	continuing professional development
FMHACA	Food, Medicine and Health Care Administration and Control Authority
FMOH	Federal Ministry of Health
FP	family planning
HO	health officer
HRH	Strengthening Human Resources for Health
IST	in-service training
MD	medical doctor
MLP	medical laboratory professional
NPS	narcotic and psychotropic drugs
PFSA	Pharmaceuticals Fund and Supply Agency
SCM	supply chain management
USAID	United States Agency for International Development
VEN	vital, essential, and nonessential

Executive Summary

Background

The Strengthening Human Resources for Health (HRH) project is a 5-year (2012–2017) bilateral cooperative agreement funded by the United States Agency for International Development (USAID), with an overall goal of improving the status of human resources for health in Ethiopia. Project objectives include improved human resources for health management; increased availability of midwives, anesthetists, health extension workers, and essential health workers; improved quality of training of health workers; and evidence generated to inform policies and practices related to human resources for health.

A task analysis study was conducted by the HRH project in March 2015 to determine needs and gaps in the education, practice, and competencies of five health care cadres: medical doctors (MDs), health officers (HOs), nurses, medical laboratory professionals (MLPs), and pharmacy professionals. The findings will be used to inform programmatic efforts to strengthen the education, practice, and regulation of these cadres and, in turn, strengthen professional services.

Objective

The main objective of the task analysis study was to identify the needs and gaps in the education, practice, and competence of HOs, nurses, MDs, pharmacy professionals, and MLPs.

Methods

This task analysis study employed a cross-sectional design to analyze tasks performed on the job by recently graduated health professionals (more than 6 months and less than 5 years in practice). A two-stage stratified cluster sample design was used to ensure representativeness of the data in the country. In the first stage, public health facilities (both hospitals and health centers) and regulatory or research organizations (pharmaceutical agencies, regulatory authorities, and research centers or institutions; hereinafter, "regulatory/research organizations") were selected. In the second stage, targeted health professionals were selected within the selected facilities and organizations.

All nine regions and two city administrations of Ethiopia were included in this study. The sample of public health facilities and targeted health professionals was selected randomly from lists of the respective sampling units and included:

- 198 MDs (general practitioners) from 66 public hospitals
- 224 HOs, 224 nurses, 224 MLPs, and 224 pharmacy professionals from 19 public hospitals and 93 health centers
- 25 MLPs from 5 regulatory/research organizations
- 15 pharmacy professionals from 3 regulatory/research organizations

This task analysis study measured three key elements related to each cadre's job tasks. The first one was frequency—how often the respondent performs a task in his/her work. Responses included daily, weekly, monthly, rarely, and never. The second element was criticality—how critical the performance of a task is in terms of patient/public health outcome. Responses included high, moderate, and low. The third element was performance—how well the health care worker believes that s/he is able to perform the task. Responses included proficient, competent, and not capable of performing.

The number of tasks analyzed per cadre was 222 (MDs), 189 (HOs), 184 (nurses), 178 (MLPs), and 151 (pharmacy professionals). Response data were analyzed using SPSS version 23 and computed frequencies and percentages.

Key Findings

Medical Doctors

- Frequency: Tasks related to internal medicine, pediatrics, and dermatology were reported to be performed frequently (at least weekly). In contrast, a substantial percentage of respondents reported never performing tasks related to gynecology/obstetrics (41.3%), basic laboratory tests (43.8%), dentistry (44.0%), and assessment, analysis, and research (45.2%).
- Criticality: All task categories were considered important by at least 95% of respondents.
- Performance: Gaps in competency were identified in tasks related to dentistry; basic laboratory tests; ophthalmology; assessment, analysis,

Health Officers

- Frequency: Tasks related to surgery, obstetrics and gynecology, other clinical services (psychiatry; eye, ear, nose, and throat; dentistry; ophthalmology; and dermatology), and public health were performed infrequently by a high percentage of HOs. Some tasks related to surgery and public health were never performed by a high percentage of HOs.
- Criticality: All task categories were classified as highly important (at least moderately critical) by at least 89.0% of HOs.
- Performance: A high percentage of HOs were not capable of performing tasks related to general clinical service delivery (specifically laboratory testing), surgery, public health (long-term family planning [FP]), gynecology, other clinical services (such as ophthalmology), and professional duties.

Nurses

- Frequency: Tasks in the nursing professionalism and ethics category were reported as the most frequently performed (by 79.4% of nurses). In contrast, clinical tasks related to critical and emergency nursing care were reported as frequently performed by the fewest nurses: 8.9% and 23.2%, respectively.
- Criticality: Tasks in all seven categories were perceived as highly important by more than 90% of nurses.
- Performance: Nearly half (46.6%) or more of nurses rated themselves not capable of performing 34 tasks, of which more than 70% (24 tasks) were related to critical nursing care.

Medical Laboratory Professionals

- Frequency: Out of the total of 12 task categories, five (basic medical laboratory science, urine and body fluid analysis, professional ethics, medical parasitology, and immunological and serological laboratory tasks) were performed highly frequently. The majority of MLPs never performed most of the tasks under the histopathology, molecular biology, clinical chemistry, microbiology, and hematology categories.
- Criticality: Tasks under urine and body fluid analysis were rated as the most critical tasks, while molecular biology laboratory tests rated as least important, chosen low importance by 45.0% of the participants.
- Performance: Almost all of the participants rated themselves not capable of performing tasks under the histopathology and molecular biology categories. More than 50% of the participants indicated that they were not capable of performing tasks related to clinical chemistry, medical microbiology, and hematology.

Pharmacy Professionals

- Frequency: The most frequently performed task categories are dispensing of medications, and professionalism and ethics. Dispensing tasks were performed at least weekly by 76% of pharmacy professionals.
- Criticality: At least 35% of participants rated every task as high criticality and 128 tasks were rated high criticality by at least 50% of the pharmacy professionals. Dispensing and pharmaceutical care tasks were the most important, each rated by 76% of participants as high criticality, followed by regulatory services (rated as high criticality by 70% of participants).
- Performance: One-fourth of the pharmacy professionals reported themselves as not capable of performing tasks in four categories: supply chain management (SCM), pharmaceutical care, drug information service, and regulatory services. Over 40% of pharmacy professionals reported they were not capable of performing 19 tasks under regulatory services, and 25%–45% of the respondents reported that they were not capable of performing 11 of the 14 pharmaceutical care tasks. Similarly, 25%–37% of the respondents reported that they were not capable of performing seven of the 10 drug information service tasks.

Program Implications

Medical Doctors

- In-service training (IST) packages should be developed and standardized to fill the competency gaps of practicing physicians identified by the task analysis study.
- The study findings can guide the formulation of licensing exam items before doctors are deployed to health facilities.
- Some critical tasks were not frequently performed by MDs. The in-service and pre-service training curricula should be checked with an eye to this finding and revised to address current gaps.

Health Officers

- Tasks with a combination of high criticality and low frequency, such as those related to surgery and public health, should be considered for IST, as this combination may imply that HOs have a lower chance of learning/improving their performance in these tasks because of reduced chances to practice.
- Tasks with a combination of high criticality and low performance (not capable to perform)—such as those related to surgery and public health (long-term FP)—need special attention during pre-service training; their coverage and focus in the pre-service training program should be investigated. These tasks can also be prioritized for IST and continued mentorship.

Nurses

- Highly critical and frequently performed tasks (i.e., professionalism/ethics, basic nursing care, and family health nursing) make up the main duties and responsibilities of nurses working at all levels and settings. Therefore, these tasks should receive more attention as pre-service and in-service curricula are developed and strengthened.
- Critical and emergency nursing care tasks were reported as less frequently performed in the work environment. Failure to perform these tasks in a timely manner may lead to serious consequences for the patient, and nurses need to be well prepared to handle these tasks. Therefore, there should be an organizational system and commitment to maintaining and continuously improving nurses' competence on these tasks.
- Clinical tasks that nurses reported as highly critical but perceived themselves as not capable to perform were, again, critical in that failure to perform them correctly or in a timely manner may lead to serious consequences for the patient. Nurses should be well prepared to handle these tasks; the tasks should receive more attention in pre-service nursing education curricula and should be priority areas for IST.

Medical Laboratory Professionals

- Tasks under the categories of basic medical laboratory science, professional ethics, and urine and body fluid analysis were reported as highly critical and frequently performed medical laboratory tasks. These tasks are the main duties and responsibilities of MLPs that many MLPs are expected to perform in their day-to-day activities. To produce competent MLPs that address the health care needs of Ethiopia, these categories and tasks should receive more attention in pre-service education curricula for MLPs.
- For tasks reported as less frequently performed but highly critical, there should be an organizational system and commitment to maintain and continuously improve MLPs' competence through continuing professional development (CPD) activities.
- Most participants indicated that they were not capable of performing critical tasks within the categories of histopathology, molecular biology, clinical chemistry, and hematology. This could be a danger to public health and requires careful attention in the development or revision of pre-service education curricula. These tasks should also be priority areas for IST.

Pharmacy Professionals

- Pharmaceutical care tasks were rated as highly critical by the majority of participants. However, respondents reported they never perform most of the pharmaceutical care tasks, and also rated themselves as not capable of performing tasks under this category. This necessitates a careful examination of the pre-service education curriculum's design and implementation in regard to content, coverage, adequacy of practical experience gained through practical attachments, and the number and competency of faculty in teaching and evaluating students.
- Respondents rated themselves as not capable of quantifying pharmaceutical needs and reconciling estimated needs with budget. Thus, pre-

service education should be strengthened and on-the-job training and mentorship should be considered to improve the performance of pharmacy professionals on these tasks.

- Most pharmacy professionals perceived themselves as not capable of applying auditable pharmaceutical transactions and services (APTS). This could be because APTS is a newly introduced system and continuous on-the-job training and mentoring is required. APTS should also be addressed in the development or revision of the pre-service education curriculum.

Chapter 1
Background

Ethiopia faces a high burden of morbidity and mortality, largely from communicable diseases, nutritional disorders, and poor maternal and child health outcomes. The maternal mortality (676/100,000) and under-5 mortality (88/1,000) rates are unacceptably high, and only 10% of mothers deliver with a skilled birth attendant (Central Statistical Agency 2012). The lack of access to care necessitates an increase in the production and retention of qualified and competent health professionals including MDs, HOs, nurses, MLPs, and pharmacy professionals.

In response to this, the HRH project—which is a 5-year (2012–2017) bilateral cooperative agreement funded by USAID with an overall goal of improving the status of human resources for health in Ethiopia—has been implemented in the country. Project objectives include improving human resources for health management, increasing the availability of qualified and competent health professionals, improving quality of health professionals' education, and generating evidence for effective planning, development, and management of human resources for health. In order to achieve this goal, the Jhpiego-led consortium of Management Sciences for Health, Ethiopian Midwives Association, Ethiopian Association of Anesthetists, and the Open University provides support to the Government of Ethiopia by building local capacity to develop sustained systems for improving and monitoring the quality of education and IST, CPD, deployment, and licensure of health care providers.

Jhpiego's approach promotes a high-quality health workforce made up of well-prepared professionals who are able to perform the tasks required to meet health goals. In order to pursue this end, the HRH project conducted a task analysis study to document health professional practices by examining the actual work of recent graduates in the field.

Task analysis is defined as a method of collecting, classifying, and interpreting data based on people's performance at work (Althouse 2000). Task analysis results can be used in a variety of ways to inform priority-setting and decisions in such areas as resource allocation, staffing and job organization, skill development, and knowledge acquisition and needs for performance assurance. Task analysis is a methodology used to provide information about the current practice of a workforce cadre's work. The term was originally used in the early 20th century by industries and manufacturers to increase efficiency and productivity in their workforces (Copley 1923). Task analysis has been used in many health professions to analyze the gaps in education, practice, and competencies of health care workers (Reamy and Gedik 2001). The findings of task analysis can be used to prioritize the use of limited resources and to inform curricular revision or priorities for IST and professional development efforts. Additionally, the results of task analysis can be used for defining content areas of certification and licensure examinations (Reamy and Gedik 2001). In the United States, for instance, the National Council of State Boards of Nursing (2012) uses the task analysis approach to evaluate the national licensure exam.

Jhpiego has developed a modified task analysis for the context of international public health work in order to respond to a variety of country-specific needs, such as prioritizing curriculum content, reviewing and revising scope and standards of practice for a particular cadre, and updating licensure examinations. Task analysis can help characterize the reality of local practice by providing information that can then be used to ensure that the focus of education and training are logically linked to national needs.

Asynchronously developed curricula, job descriptions, and regulatory authorization can result in inconsistencies that make regulation of a profession difficult and unclear. This task analysis study was, therefore, conducted to analyze the tasks and identify gaps in the education, practice, and self-perceived competencies of recently graduated (between 6 months and less than 5 years in practice) MDs, HOs, nurses, MLPs, and pharmacy professionals in Ethiopia. The goal was to understand how and which tasks these health professionals were practically performing on the job, rather than relying only on curricula or national documents that might be outdated or irregularly revised. The findings of this study, which was conducted in March 2015, were expected to inform decisions in the Federal Ministry of Health (FMOH); Ministry of Education; the Food, Medicine and Health Care Administration and Control Authority (FMHACA); health science training institutions; professional associations; and other stakeholders in the education and practices of the target health professionals. The specific objectives of this task analysis study were:

- Analyze tasks undertaken by recently graduated HOs, nurses, MDs, pharmacy professionals (pharmacists and druggists), and MLPs (medical technologists and technicians).
- For each cadre, identify priority areas for strengthening pre-service and in-service training curricula, plan CPD, revise scope of practice, develop or improve licensure examination, and develop a mentorship program for new graduates.

Chapter 2
Methods

Study Design

This task analysis study employed a cross-sectional design to analyze the tasks performed on the job by recently graduated MDs (general practitioners), HOs, nurses, pharmacy professionals (both druggist and pharmacist), and MLPs serving at public health facilities. In addition, MLPs and pharmacy professionals working at regulatory/research organizations *(FMOH; Ethiopian Public Health Institute; Pharmaceuticals Fund and Supply Agency; Armauer Hansen Research Institute; and FMHACA) were included in the study.*

A two-stage stratified cluster sample design was used to ensure representativeness of the data in the country. In the first stage, public health facilities—both hospitals and health centers—and regulatory/research organizations were selected. In the second stage, targeted health professionals were selected within primary sampling units. The nine regions and two city administrations were considered as strata to improve precision (reducing sampling error) and public hospitals, health centers, and regulatory/research organizations were considered clusters. The sample of public health facilities and targeted health professionals was selected randomly from lists of the respective sampling units.

Sample Size and Sample Selection Procedures

The study was designed to provide nationally representative information for each of the five target health cadres: HOs, nurses, MDs, pharmacy professionals, and MLPs. Separate sample sizes were calculated for each cadre to provide reliable estimates in the country.

Sampling of Medical Doctors

The total estimated number of MDs (general practitioners) in 2013 that had work experience from 6 months to less than 5 years in public health facilities of Ethiopia was 1,431.

The sample size for this cadre was calculated with an assumption of 95% of level of confidence, maximum variability of attributes with proportion of 0.5 (assuming that level of job practice was considered 0.5 since there was no prior similar information), plus or minus 15 percentage points of relative errors (according to MEASURE Evaluation [Turner et al. 2001], a relative error of 10%–20% is acceptable), and design effect of 1.2 (a default value of 1.2 was used because there was no prior study with a similar health facility approach that could be used to estimate the design effect). Accordingly, the sample was calculated and yielded an adjusted sample size of 198 MDs after accounting for an anticipated nonresponse rate of 10%.

Considering available budget resources, samples of three MDs per hospital were optimum to be interviewed; this required a sample of 66 hospitals (198/3). Data collectors asked hospital managers to provide lists of MDs with work experience from 6 months to less than 5 years. Three names were randomly selected from the list if there were more than three MDs. If there were three or fewer MDs at the time of interviewing, all of them were invited to participate.

Sampling of Health Officers, Nurses, Medical Laboratory Professionals, and Pharmacy Professionals

The 2013 estimated total number of health professionals having work experience from 6 months to less than 5 years at public health facilities was 21,799 (nurses), 3,277 (HOs), 3,309 (MLPs), and 3,040 (pharmacy professionals).

Separate sample sizes were calculated for each target cadre to give reliable estimates at national level using the assumptions described above for MDs. This provided adjusted representative samples sizes of 224 nurses, 213 HOs, 213 MLPs, and 212 pharmacy professionals after accounting for an anticipated nonresponse rate of 10%. The study used the largest sample size (224) to obtain better survey precision for each target cadre serving at health facilities. In addition, the study invited 15 sample study pharmacy professionals and 25 sample MLPs from regulatory/research organizations purposively.

In consideration of resources and managing the data collection, the study invited two sample health professionals from each cadre per health facility and five each of sample MLPs and pharmacy professionals from regulatory/research organizations. Hence, the total sample included **112** (224/2) health facilities as well as five regulatory/research organizations (all that exist for pharmacy professionals and MLPs in Ethiopia, and three of which include both cadres). The sample 112 health facilities were allocated to each region's hospitals and health centers in proportion to the total number of health facilities in each region (Table 1). Therefore, 19 public hospitals and 93 health centers were sampled to invite HOs, nurses, MLPs, and pharmacy professionals to the study.

Data collectors asked health facility managers to provide lists of health professionals in the targeted cadres who had work experience from 6 months to less than 5 years. From each facility's list, two study participants from each cadre were selected randomly if there were more than two possible participants in that cadre; if there were two or fewer members of a cadre, all of them were interviewed. Similarly, from each regulatory/research organization, five medical laboratory/pharmacy professionals were selected randomly if there were more than five eligible; if not, all eligible participants were invited. If a selected facility lacked the number of health professionals needed to provide an adequate sample, the remaining sample spaces were filled from other facilities that had a high number of members of the targeted cadre or from nearby health facilities.

Sampling of Health Facilities and Regulatory/Research Organizations

As indicated in Table 1, the 66 sample hospitals from which MDs were invited and 112 sample health facilities (19 hospitals and 93 health centers) from which HOs, nurses, MLPs, and pharmacy professionals were invited were allocated to each region in proportion to the total number of hospitals and health centers in that region. A power allocation technique was used to allocate optimum sample health facilities into small strata (regions), as the number of health facilities per region ranges from 1 to 41. The 66 sample hospitals were randomly selected from a list of 127 and the 93 sample health centers, from a list of 3,100. Of the 66 sample hospitals from which MDs were invited, 19 hospitals were randomly subsampled for HOs, nurses, MLPs, and pharmacy professionals to be interviewed. MLPs and pharmacy professionals from all five of Ethiopia's regulatory/research organizations were invited to participate in the study as well (Table 2).

Table 1: Total and sampled health facilities, by region

Region	Total number of hospitalsa	Total number of health centersa	Number of hospitals sampled for medical doctors	Number of health facilities sampled for health officers, nurses, medical laboratory professionals, and pharmacy professionals	
				Number of hospitals subsampledb	Number of health centers sampled
Tigray	15	214	8	2	9
Afar	5	62	2	1	5
Amhara	19	801	10	3	18
Oromia	41	1,123	21	6	21
Somali	9	112	4	1	7
Benishangul-Gumuz	2	32	1	1	4
Southern Nations, Nationalities, and Peoples	21	642	11	3	16
Gambella	1	28	1	0	3
Harari	2	8	1	0	2
Addis Ababa/ Federal	11	62	6	2	5
Dire Dawa	1	16	1	0	3
Total	127	3,100	66	19	93

a. Source: Federal Ministry of Health. 2013. Health Sector Development Programme IV Annual Performance Report.

b. Subsample of hospitals in column "Number of hospitals sampled for medical doctors."

Table 2:Total and sampled pharmacy professionals and medical laboratory professionals (MLPs), by organization

Regulatory/research organization	Total population		Sample size	
	Pharmacy professionals	MLPs	Pharmacy professionals	MLPs
Federal Ministry of Health	13	31	5	5
Food, Medicine and Health Care Administration and Control Authority	60	5	5	5
Pharmaceuticals Fund and Supply Agency	147	5	5	5
Armauer Hansen Research Institute	0	67	0	5
Ethiopian Public Health Institute	0	14	0	5
Total	220	122	15	25

Inclusion Criteria

Participants included in the study were HOs, nurses, MDs (general practitioners), pharmacy professionals, and MLPs who were recent graduates and working in public health facilities and regulatory/research organizations during the survey. All targeted health professionals had a diploma or Bachelor of Science degree. For purposes of this study, recent graduates were defined as having work experience from 6 months to less than 5 years in health facilities. All health facilities included in the study were public hospitals and health centers. Five regulatory/research organizations that had MLPs and pharmacy professionals were included in the study.

Exclusion Criteria

Health professionals who were not in practice and those who had qualification with specialty or advanced degree were excluded from the study sample. Health professionals with less than 6 months or more than 5 years of experience were excluded from the study. Public health facilities that were located in hard-to-reach areas were also excluded from the study.

Development of Task Lists and Study Tools

The task analysis process involved a series of steps including developing draft task lists and validating the task lists. For each cadre, development of a task list and validation of the task list by a panel of national experts was completed in preparation for the study. Various documents such as scopes of practice, curricula, and other relevant guidelines were used to develop the task lists. Jhpiego organized validation workshops with subject matter experts for each cadre. Panels of MDs, HOs, nurses, MLPs, and pharmacy professionals were assembled to review and validate the respective task lists. The expert panels edited and revised the task lists and came up with 189 tasks for HOs, 184 for nurses, 222 for MDs, 151 for pharmacy professionals, and 178 for MLPs. The study tools included sociodemographic variables as well as task lists with three measurement variables:

3. **Frequency:** How frequently was the task performed? The response categories were:
    - Never: Respondent never performed task
    - Rarely: Respondent completed task less than once a month
    - Monthly: Respondent completed task once a month
    - Weekly: Respondent completed task less than once per day but at least once per week
    - Daily: Respondent completed task at least once per day
4. **Criticality:** How critical was the timely and effective performance of the task to patient and public health outcomes? The response categories were:
    - Low: Failure to complete task correctly or in a timely manner may result in a minimal impact on patient or public health
    - Moderate: Failure to complete task correctly or in a timely manner could lead to serious patient discomfort or short-term disability or a moderate impact on public health
    - High: Failure to complete task correctly or in a timely manner could lead to patient death or permanent disability or have a major impact on public health
5. **Performance:** How well did respondents feel that they were able to perform the task? Response categories were:

- Not capable: Respondent does not feel confident to perform the task without causing harm, if unsupervised
- Competent: Respondent is able to perform the task safely and effectively, although may ask for supervision from a more experienced provider
- Proficient: Respondent has some expertise and could supervise others in the task

The task lists for each cadre form the basis for the data collection tools (Annexes A–E).

Data Collection Procedures

The data collectors and supervisors were health workers recruited from the corresponding professional associations for MDs, HOs, nurses, pharmacy professionals, and MLPs. A 3-day data collectors training was held in Addis Ababa for 41 data collectors and 10 supervisors in March 2015. Study coordinators were Jhpiego Ethiopia technical experts and monitoring, evaluation, and research experts. The data collectors and supervisors trained on sample selection; data recording; data quality, storage, and safety; and ethical issues, including informed consent and confidentiality. Data collectors did exercises during training to ensure that they accurately understood the data collection methodology for this study, including sample selection, tools, consent script, and interviewing process.

Data collection took 15 working days. Basic biographical data were collected from each participant, including gender, age, type of facility, district, level of education program (college, university), qualification level (diploma, degree), year graduated, and time in service. This information was recorded on the individual data collection tool for each participant and each participant had a unique identifier number.

Data collectors explained tasks to study participants and let them rate each task across each of the three variables of frequency, criticality, and performance, as described above.

Data Management and Analysis

Data collectors returned completed and cleaned study tools to Jhpiego's office in Addis Ababa. The study team cleaned and verified the study tools before entering the data into a computer. Data was entered using EpiData version 2.0.2.28 and exported to SPSS version 23 for further analysis. Data was analyzed to generate descriptive statistics including percentages and frequencies for each task across the three measurement variables:

1. **Frequency:** Tasks under this variable were further categorized into:
   - Never
   - Low (rarely or monthly)
   - High (weekly or daily)

2. **Criticality:** Tasks under this variable were further categorized into:
   - Low importance
   - High importance (high or moderate criticality)

3. **Performance:** Tasks under this variable were further categorized into:
   - Not capable
   - At least competent (competent or proficient)

Ethical Considerations

The study protocol was shared with USAID and FMOH for their input, and the final protocol was submitted to the Johns Hopkins Bloomberg School of Public Health Institutional Review Board to obtain ethical approval. FMOH and Regional Health Bureaus provided support letters for conducting the interviews with selected health professionals working at public hospitals and health centers.

Protection of human subjects was assured by providing informed consent, by maintaining the confidentiality of study information, and by conducting proper data collector training. Verbal informed consent was obtained from each study participant.

Chapter 3
Results

Results for Medical Doctors

Sociodemographic Characteristics of Medical Doctors

Table 3 presents sociodemographic characteristics of MDs (general practitioners) participating in the study. One hundred ninety-one MDs from 66 public hospitals participated in the study, with a response rate of 96.5%. The majority of the participants were males (73.8%) and working at nonteaching hospitals (78.5%). Most participants were 29 years old or younger and with work experience of 6 months to 2 years (70.2%). Almost all participants were trained in and graduated from government universities.

Table 3: Sociodemographic characteristics of medical doctor participants

Characteristic	Number of participants (N = 191)	Percentage
Sex		
Male	141	73.8
Female	48	25.1
Missing	2	1.0
Age		
20–24	8	4.2
25–29	175	91.6
30–34	6	3.1
Missing	2	1.0
Type of hospital		
Nonteaching	150	78.5
Teaching	41	21.5
Hospital level		
Referral	56	29.3
Regional/zonal	69	36.1
District	66	34.6
Place of education		
Government university/college	190	99.5
Private university/college	1	0.5
Duration of work experience		
6 months to 2 years	134	70.2
> 2 years, < 5 years	57	29.8

Though 222 tasks were included in the MD task list and rated during data collection, only the 178 most relevant tasks were used for compilation of this report (see Annex A). The tasks were categorized into the following lists: basic laboratory tests; internal medicine; surgery; pediatrics; gynecology/obstetrics; psychiatry; ophthalmology; dermatology; ear, nose, and throat; dentistry; assessment, analysis, and research; program management and leadership; and community dimensions of practice, communication, advocacy, and collaboration.

Frequency of Performance

Table 4 shows the average frequency with which MDs performed tasks under each category. Tasks related to internal medicine, pediatrics, and dermatology were reported to be performed frequently (at least weekly). In contrast, a substantial percentage of respondents reported never performing tasks related to gynecology/obstetrics (40.7%), basic laboratory tests (43.8%), dentistry (44.0%), and assessment, analysis, and research (45.2%).

Table 4: Average frequency with which medical doctors perform tasks, by category

	Frequency of performance (N = 191)		
Task category	**Never (%)**	**Low (%)**	**High (%)**
Basic laboratory tests	43.8	20.6	35.6
Internal medicine	6.1	32.5	61.3
Pediatrics	13.4	32.7	53.9
Surgery	28.3	38.7	33.0
Gynecology/obstetrics	40.7	40.8	18.5
Psychiatry	28.9	63.5	7.6
Ophthalmology	37.4	49.2	13.4
Dermatology	4.4	38.6	57.1
Ear, nose, and throat	8.1	56.4	35.5
Dentistry	44.0	46.2	9.8
Assessment, analysis, and research	45.2	45.4	9.5
Program management and leadership	29.8	34.4	35.8
Community dimensions of practice, communication, advocacy, and collaboration	29.4	47.0	23.6

Perceived Criticality of Tasks

Table 5 shows the level of perceived importance, or criticality, of the task categories to public health outcomes. All categories of tasks were considered at least moderate criticality by at least 95% of MDs. Respondents perceive failure to accomplish the tasks correctly as possibly ending in serious complications and high impact on the public. This perception is desirable because it helps practitioners accomplish the tasks as expected.

Table 5: Average criticality of task categories as perceived by medical doctors

	Perceived importance (N = 191)	
Category	**Low (%)**	**High (%)**
Basic laboratory tests	2.8	97.2
Internal medicine	0.5	99.5
Pediatrics	0.1	99.9
Surgery	2.4	97.6
Gynecology/obstetrics	2.1	97.9
Psychiatry	1.2	98.8
Ophthalmology	1.3	98.7
Dermatology	2.1	97.9
Ear, nose, and throat	1.5	98.5
Dentistry	4.9	95.1
Assessment, analysis, and research	3.1	96.9
Program management and leadership	3.1	96.9
Community dimensions of practice, communication, advocacy, and collaboration	3.1	96.9

Perceived Competence in Performance

In order to identify competency gaps, respondents were asked to rate their level of competence to perform each task. As indicated in Table 6, categories of tasks where MDs identified gaps were gynecology/obstetrics, surgery, ophthalmology, dentistry, basic laboratory tests, and assessment, analysis and research.

Table 6: Average perceived competency of medical doctors, by task category

	Perceived competency (N = 191)	
Category	**Not capable (%)**	**Competent (%)**
Basic laboratory tests	22.3	77.7
Internal medicine	1.7	98.3
Pediatrics	1.4	98.6
Surgery	13.9	86.1
Gynecology/obstetrics	12.2	87.8
Psychiatry	9.3	90.7
Ophthalmology	16.3	83.7
Dermatology	1.1	98.9
Ear, nose, and throat	2.5	97.5
Dentistry	25.3	74.7
Assessment, analysis, and research	16.2	83.8
Program management and leadership	13.0	87.0
Community dimensions of practice, communication, advocacy, and collaboration	11.7	88.3

Competency gaps in gynecology and obstetrics: Table 7 lists tasks that a significant percentage of MDs rated themselves as never performing or not capable of performing. The majority of participants were not capable of performing tubal ligation (77.0%), vasectomy (82.7%), cesarean section (70.7%), and visual inspection with acetic acid (74.1%). About 35% of MDs were not capable to insert and remove implants, 19% to perform vacuum or forceps delivery, and 24% to perform manual vacuum aspiration for endometrial biopsy.

Table 7: Tasks related to gynecology/obstetrics that medical doctors never perform and are not capable of performing

Task	% not capable	% never performed
Insert and remove intrauterine device	39.3	79.1
Insert and remove implants	34.6	72.8
Perform tubal ligation	77.0	90.6
Perform vasectomy	82.7	95.3
Perform vacuum-assisted delivery	19.4	56.5
Apply low-lying forceps	19.9	60.7
Perform cesarean section	70.7	81.2
Perform visual inspection with acetic acid	74.1	89.5
Perform culdocentesis	58.1	81.7
Perform manual vacuum aspiration for endometrial biopsy	23.6	64.7

Competency gaps in surgery: As Table 8 depicts, a considerable proportion of the respondents were not able to perform appendectomy (73.3%), excisional biopsy (45.0%), or hydrocelectomy (41.4%). Relatedly, 83.8% of respondents never performed appendectomy, 70.7% never carried out excisional biopsy, and 67.0% never performed hydrocelectomy.

Table 8: Tasks related to surgery that medical doctors never perform and are not capable of performing

Task	% not capable	% never performed
Perform excisional biopsy	45.0	70.7
Perform excision of soft tissue mass	13.6	38.7
Perform arthrocentesis	23.0	44.5
Perform circumcision	23.6	49.7
Perform hydrocelectomy	41.4	67.0
Perform appendectomy	73.3	83.8

Competency gaps in ophthalmology and dentistry: Table 9 indicates the perceived competency and frequency with which MDs perform tasks related to ophthalmology and dentistry. The majority of participants never diagnose retinal detachment (82.7%) or glaucoma (61.8%), manage ophthalmic chemical burns (62.3%), or perform dental extraction (88.0%). Likewise, 58.1% of participants rated themselves not capable to diagnose retinal detachment and 69.1% rated themselves not capable to perform dental extraction.

Table 9: Tasks related to ophthalmology and dentistry that medical doctors never perform and are not capable of performing

Task	% not capable	% never performed
Diagnose retinal detachment	58.1	82.7
Diagnose glaucoma	33.5	61.8
Manage ophthalmic chemical burns	18.3	62.3
Diagnose and manage blepharitis	13.6	29.8
Perform dental extraction	69.1	88.0

Competency gaps in basic laboratory tests: Study participants were asked to rate their frequency and competence in performing and interpreting laboratory procedures. As depicted in Table 10, the majority of participants never performed and interpreted acid-fast bacillus (AFB) (71.2%), stool microscopy (64.9%), blood film (62.3%), and peripheral morphology (57.6%). About 42% of participants rated themselves not capable to perform and interpret AFB, 32.5% to perform and interpret stool microscopy, and 35.6% to perform and interpret peripheral morphology.

Table 10: Tasks related to basic laboratory tests that medical doctors never perform and are not capable of performing

Task	% not capable	% never performed
Perform and interpret acid-fast bacillus (AFB)	41.9	71.2
Perform and interpret stool microscopy	32.5	64.9
Perform and interpret blood film	30.9	62.3
Perform and interpret peripheral morphology	35.6	57.6

Competency gaps in public health and research: Participants were asked to rate their level of frequency and competence in performing public health and research tasks. As shown in Table 11, about 38.6% and 46.5% of participants reported that they never engaged in health management and research activities, respectively. Moreover, 17.5% of participants reported that they had no health management and leadership skills and 14.0% of them reported that they were not capable to do public health assessment and research activities.

Table 11: Tasks related to public health and research that medical doctors never perform and are not capable of performing

Task	% not capable	% never performed
Program management and leadership	17.5	38.6
Assessment and research	14.0	46.5
Communication, advocacy, and collaboration	12.6	23.9

Other performed tasks: The recently graduated MDs were asked to identify other tasks they often perform that were not in the list of tasks identified by the research team. About 62.8% of participants responded that they were performing additional tasks beside the tasks included in the questionnaire. A total of 186 additional tasks were reported. Among these, 84 (45.2%) of the tasks were related to managing different sections of the hospital, 62 (33.3%) were related to teaching, mentoring, and training medical students and other health care providers, and 38 (20.4%) of the tasks were related to working with and coordinating different committees inside their facility.

Results for Health Officers

Sociodemographic Characteristics of Health Officers

Data were collected from 213 HOs working at 19 public hospitals and 93 health centers with a response rate of 94.3%. The majority of respondents were from urban areas (74.2%). As shown in Table 12, the majority of respondents were male (62.4%), aged 25–29 (41%) years, and with more than 2 years' and less than 5 years' (61%) work experience. Most (61.5%) of the respondents had received a general education, while the rest (39.5%) were trained in the postbasic program (received a bachelor of science degree). Most (81.2%) of the respondents were educated at a government university or college.

Table 12: Sociodemographic characteristics of health officer participants

Characteristic	Number of participants (N = 213)	Percentage
Sex		
Male	133	62.4
Female	80	37.6
Age		
≤ 24 years	49	23.0
25–29 years	88	41.3
≥ 30 years	69	32.4
Missing	7	3.3
Facility type		
Hospital	61	28.6
Health center	152	71.4
Education		
First degree (postbasic)	82	38.5
First degree (general)	131	61.5
Place of education		
Government university/college	173	81.2
Private university/college	40	18.8
Duration of work experience		
6 months to 2 years	83	39.0
> 2 yrs, < 5 yrs	130	61.0

Frequency of Performance

As presented in Table 13, fewer than 50% of respondents frequently perform tasks in all categories except basic scientific foundations for clinical medicine and general clinical service delivery. Tasks related to basic scientific foundations for clinical medicine were frequently performed (at least weekly) by 82.6% of the respondents. The other frequently performed task category was general clinical service delivery, performed at least weekly by 50.2% of the respondents.

On the other hand, 31.8% or more of respondents reported never performing tasks related to surgery, obstetrics and gynecology, other clinical services (psychiatry; eye, ear, nose, and throat; dentistry; ophthalmology; dermatology), and public health.

Table 13: Average frequency with which health officers perform tasks, by category

		Frequency		
Category	**Number of tasks**	**Never**	**Low**	**High**
Professional duties	15	29.5	27.0	43.5
Basic scientific foundations for clinical medicine (biomedical and behavioral sciences)	11	1.8	15.5	82.6
General clinical service delivery	34	29.4	20.4	50.2
Internal medicine	15	18.0	55.8	26.2
Obstetrics and gynecology	29	31.8	53.0	15.3
Pediatrics and child health	7	13.2	43.4	43.4
Surgery	13	40.4	47.8	11.8
Other clinical services (psychiatry; eye, ear, nose, and throat; dentistry; ophthalmology; dermatology)	20	32.3	52.4	15.3
Public health	45	41.1	41.9	17

Perceived Criticality of Tasks

Table 14 presents HOs' average perception of task category criticality. In terms of importance to patient and public health outcomes, all the task categories were classified as highly important (at least moderately critical) by at least 89.0% of the respondents. Tasks under internal medicine were classified as highly important by almost all (99.8%) of the respondents. Professional duties and tasks related to public health received the fewest ratings as highly important (89%).

Table 14: Average criticality of task categories as perceived by health officers

	Importance	
Task categories	**% low**	**% high**
Professional duties	11.0	89.0
Basic scientific foundations for clinical medicine (biomedical and behavioral sciences)	2.4	97.6
General clinical service delivery	10.6	89.4
Internal medicine	0.2	99.8
Obstetrics and gynecology	5.3	94.7
Pediatrics and child health	4.6	95.4
Surgery	6.1	93.8
Other clinical services (psychiatry; eye, ear, nose, and throat; dentistry; ophthalmology; dermatology)	5.3	94.7
Public health	11.0	89.0

Perceived Competence in Performance

As displayed in Table 15, there were 20 tasks that at least 32.7% of HOs rated themselves as not capable of performing. These tasks mainly fall under the categories of general clinical service delivery (specifically laboratory testing), surgery, public health (especially long-term FP), gynecology, other clinical services (such as ophthalmology), and professional duties. Providing a permanent FP method (86.2%) and performing trichiasis/entropion correction surgery (80.1%) were the tasks the most respondents reported themselves not capable to perform.

Table 15: Top 20 tasks health officers rated themselves not capable to perform

Task	% not capable
Perform permanent family planning method	86.2
Perform trichiasis/entropion correction surgery of the upper eyelid to prevent blindness for trachoma complications	80.1
Prepare and examine a Gram-stained smear for common bacteria	76.3
Perform visual inspection with acetic acid to screen for cervical cancer	75.2
Stain the eye with fluorescein to check corneal abrasion	75.2
Perform manual vacuum extraction for endometrial biopsy	62.7
Perform and interpret peripheral morphology lab tests	62.6
Perform and interpret acid-fast bacillus (AFB) for TB	61.6
Perform lifesaving minor surgical procedures (tracheostomy, suprapubic puncture, etc.)	60.0
Perform dental extraction	59.3
Insert and remove intrauterine device	59.2
Collect appropriate specimen for culture	57.1
Perform and interpret thin and thick blood films lab tests	55.5
Perform and interpret stool microscopy	54.0
Perform lumbar puncture	52.6
Test and interpret a urine specimen for chemical constituents by using a multiple reagent strip test	43.4
Apply plaster of Paris	41.7
Insert and remove implants	37.4
Diagnose and manage minor surgical problems (lipoma, hydrocele)	36.7
Perform circumcision	32.7

Results for Nurses

Sociodemographic Characteristics of Nurses

Table 16 shows sociodemographic characteristics of the nurses who participated in the study. A total of 223 nurses participated, with an overall response rate of 99.5%. About 55% of nurses participating in this study were female, 66.8% had a diploma or technical vocational education and training, and 74.9% worked at health centers. Most respondents had between 2 and 5 years' work experience.

Table 16: Sociodemographic characteristics of nurse participants

Characteristic	Number of participants (N = 223)	Percentage
Sex		
Female	123	55.2
Male	100	44.8
Age in years		
≤ 24	75	33.6
25–29	110	49.3
≥ 30	38	17.0
Educational qualification		
Diploma/technical vocational education and training	149	66.8
Bachelor of Science degree	74	33.2
Type of health facility		
Hospital	56	25.1
Health center	167	74.9
Duration of work experience		
6 months to 2 years	66	29.6
> 2 yrs, < 5 yrs	157	70.4

Frequency of Performance

Seven categories of nursing tasks were included in this task analysis study. Table 17 presents the average frequency with which nurses perform tasks, by category. On average, tasks in the category of nursing professionalism and ethics were most frequently performed (79.4%), followed by tasks in basic nursing care/service (39.5%) and family health nursing care (32.7%). Basic nursing care and professionalism tasks are central to the practice of nursing and it is widely believed that they are important, yet missing, in current nursing practice. This task analysis study, however, found that providing basic nursing care in an ethical and professional manner was extremely frequently performed, with nurses routinely engaged in such practices at all levels and in all settings.

The task analysis study also found that family health nursing care tasks are frequently performed by nurses in Ethiopia. Unsurprisingly, tasks related to critical and emergency nursing care are less frequently performed in current nursing practice in Ethiopia.

Table 17: Average frequency with which nurses perform tasks, by category

		Never (%)	Low (%)	High (%)
Basic nursing care/service	68	26.6	34.0	39.5
Emergency nursing care	20	26.5	50.3	23.2
Critical nursing care	40	76.7	14.4	8.9
Family health nursing care	41	35.1	32.3	32.7
Nursing leadership, management, and governance	2	63.1	21.2	15.7
Nursing education and research	2	65.2	29.8	4.9
Nursing professionalism and ethics	11	7.9	12.7	79.4

Perceived Criticality of Tasks

Among the categories of nursing tasks analyzed, basic nursing care/service, family health nursing care, and critical nursing care account for more than 80% of the tasks. Table 18 presents perceived criticality of the task categories by nurses. Nursing tasks in all seven categories were, on average, perceived as highly important by more than 90% of nurses.

Table 18: Average criticality of task categories as perceived by nurses

Category of nursing tasks		Perceived importance	
	Number of tasks	Low (%)	High (%)
Basic nursing care/service	68	6.2	93.8
Family health nursing care	41	2.3	97.7
Critical nursing care	40	2.3	97.7
Emergency nursing care	20	1.1	98.9
Nursing professionalism and ethics	11	4.8	95.2
Nursing leadership, management, and governance	2	7.9	91.5
Nursing education and research	2	6.3	92.4

Perceived Competence in Performance

Table 19 shows 17 tasks (out of 184 total) that a majority of nurses (46.6% or more) rated themselves not capable of performing.

Table 19: Nurses' perceived lack of capability, by task

Task	% not capable
Assist splenic aspiration	68.6
Assist bone marrow aspiration	66.8
Monitor spirometer	64.9
Assist bronchoscopy	64.1
Assist thoracentesis	63.2
Prepare, handle, and administer chemotherapeutic drug for cancer patient	62.8
Set up and monitor chest tube draining system	61.0
Apply cast (plaster of Paris)	59.9
Suture wound with metal clip	59.5
Assist lumbar puncture	58.3
Remove cast	54.5
Monitor nasoenteric decompression tube care after gastrointestinal surgery	53.4
Work as a scrub nurse	51.6
Work as a circulating nurse	48.4
Assist abdominal tap	48.0
Provide tracheostomy care	46.6
Perform oropharyngeal suction	46.6

Results for Medical Laboratory Professionals

Sociodemographic Characteristics of Medical Laboratory Professionals

A total of 228 MLPs participated in this task analysis study, with response rate of 95.8%. Table 20 presents their sociodemographic characteristics. There were more male participants (65.8%) than female. About 98% of participants were younger than 35 years and 95.2% of participants practiced in health care facilities, whereas the rest (4.8%) practiced at regulatory/research organizations. There were more medical laboratory technicians (60.1%) than degree graduates. One-fourth of the respondents were trained at private universities/colleges. More than three-fourths of the participants had work experience longer than 2 years and less than 5 years.

Table 20: Sociodemographic characteristics of medical laboratory professional participants

Characteristic	Number of participants (N = 228)	Percentage
Sex		
Male	150	65.8
Female	78	34.2
Age (n = 227)		
20–24	55	24.2
25–29	149	65.6
30–34	19	8.4
35 years and above	4	1.8
Facility/organization type		
Regulatory/research organizations	11	4.8
Hospital	71	31.1
Health center	146	64.0
Educational level		
Diploma	137	60.1
First degree (general)	70	30.7
First degree (postbasic)	21	9.2
Place of education		
Government university/college	172	75.4
Private university/college	56	24.6
Duration of work experience		
6 months to 2 years	46	20.2
> 2 years, < 5 years	182	79.8

Frequency of Performance

Table 21 shows average frequency of performance under each task category of medical laboratory science tasks. Out of the total of 12 task categories, five (basic medical laboratory science, urine and body fluid analysis, professional ethics, medical parasitology, and immunological and serological laboratory tests) were performed more frequently. The majority of the respondents never performed tasks under the histopathology, molecular biology, clinical chemistry, microbiology, immunohematology, and hematology categories. Often, tasks performed less frequently were those that require advanced medical laboratory equipment that is not usually available at the primary health care unit level.

Table 21: Average frequency with which medical laboratory professionals perform tasks, by category

Task category	Number of tasks	% frequency of performance		
		Never	Low	High
Histopathology	13	99.6	0.3	0.2
Molecular biology laboratory tests	9	98.9	1.2	0.9
Clinical chemistry	13	79.9	5.0	15.9
Hematology	32	78.6	6.0	15.2
Medical microbiology	28	75.8	5.5	18.9
Immunohematology	9	72.6	8.8	18.5
Medical parasitology	11	50.2	6.0	44.0
Immunological and serological laboratory tests	13	49.4	9.2	40.7
Health service management and laboratory quality assurance	10	47.6	32.8	20.6
Urine and body fluid analysis	7	36.5	11.1	52.2
Basic medical laboratory science	24	29.3	14.5	56.2
Professional ethics	9	27.0	19.7	53.3
Overall average	178	62.1	10.0	28.1

Perceived Criticality of Tasks

Table 22 shows average perceived criticality of medical laboratory science tasks under the 12 identified categories. Tasks under urine and body fluid analysis were rated as the most critical tasks, while molecular biology laboratory tests were rated as least important, chosen low criticality by 45.0% of the participants.

Table 22: Average criticality of task categories as rated by medical laboratory professionals

Category	Number of tasks	Criticality of performance	
		% low	% high
Urine and body fluid analysis	7	6.0	94.0
Professional ethics	9	9.2	90.9
Basic medical laboratory science	24	9.2	90.8
Immunohematology	9	10.7	89.3
Immunological and serological laboratory tests	13	13.5	86.5
Medical parasitology	11	13.7	86.3
Health service management and laboratory quality assurance	10	14.8	85.2
Clinical chemistry	13	15.7	84.3
Medical microbiology	28	22.3	77.7
Hematology	32	22.5	77.5
Histopathology	13	36.1	64.0
Molecular biology laboratory tests	9	45.0	55.0
Overall average	178	18.2	81.8

Perceived Competence in Performance

Table 23 shows MLPs' perceived competence to perform tasks, by category. At least 70% of participants rated themselves competent (that is, competent or proficient) at performing tasks under the categories of medical parasitology, health service management and laboratory quality assurance, immunological and serological laboratory tests, urine and body fluid analysis, basic medical laboratory science, and professional ethics. Almost all of the participants perceived themselves not capable on tasks under the histopathology and molecular biology laboratory tests categories. More than 50% of the participants indicated they were not capable of performing tasks related to clinical chemistry, medical microbiology, and hematology.

One of the main reasons for the poor performance of these tasks, as reported by 51% of participants, was lack of adequate learning opportunities and experiences during pre-service education. About 65% of participants mentioned lack of medical laboratory equipment and supplies—such as CD4 machines, hematology analyzers, chemistry analyzers, and reagents—as another major reason for the poor performance of tasks.

Table 23: Medical laboratory professionals' perceived lack of capability, by task category

Task category	Number of tasks	% not capable
Histopathology	13	90.5
Molecular biology laboratory tests	9	90.1
Clinical chemistry	13	57.4
Medical microbiology	28	56.5
Hematology	32	52.9
Immunohematology	9	41.1
Medical parasitology	11	29.1
Health service management and laboratory quality assurance	10	28.5
Immunological and serological laboratory tests	13	28.1
Urine and body fluid analysis	7	19.8
Basic medical laboratory science	24	17.8
Professional ethics	9	9.7

Table 24 shows the top 20 tasks study participants perceived themselves as not capable of performing unsupervised, all of which fell under the histopathology and molecular biology categories. More than 88.8% of participants reported themselves as not being capable to perform these tasks.

Table 24:Top 20 tasks medical laboratory professionals reported themselves not capable to perform

Task name	% not capable
Perform carbohydrates and lipids staining	92.1
Perform protein, nucleic acid, and amyloid staining	92.1
Perform hematoxylin staining	92.1
Perform connective tissue staining	91.6
Perform cloning	91.6
Perform in situ and DNA hybridization	91.6
Perform frozen section	91.1
Prepare routine and special stains	91.2
Embed surgical and autopsy tissue specimens in paraffin	91.1
Perform restriction fragment length polymorphism and single nucleotide polymorphism	91.1
Perform sequencing	90.8
Perform Southern and Western blotting	90.7
Operate rotary microtome to section paraffin-processed blocks of tissue	90.7
Perform cell concentration and fixation techniques	90.2
Process surgical and autopsy tissue specimens for histopathological techniques	90.2
Perform gel electrophoresis	90.2
Carry out mounting of stained slides	89.7
Perform DNA extraction	88.8
Perform eosin staining	88.8
Perform RNA extraction	88.8

Results for Pharmacy Professionals

Sociodemographic Characteristics of Pharmacy Professionals

A total of 235 pharmacy professionals participated in the task analysis study, with overall response rate of 98%. As indicated in Table 25, the majority of participants were male, younger than 30, working at health centers, and with more than 2 and less than 5 years of work experience at their current position.

Table 25: Sociodemographic characteristics of pharmacy professional participants

Characteristic	Number of participants (N = 235)	Percentage
Sex		
Male	169	71.9
Female	64	27.2
Missing	2	0.9
Age in years		
20–24	71	30.2
25–29	129	54.9
30–34	16	6.8
35–50	5	2.1
Missing	14	6.0
Type of facility/organization		
Hospital	71	30.2
Health center	150	63.8
Others (Food, Medicine and Health Care Administration and Control Authority; Federal Ministry of Health; Pharmaceuticals Fund and Supply Agency)	14	6.0
Level of education		
Diploma	132	56.2
Degree	103	43.8
Work experience/service		
6 months to 2 years	111	47.2
> 2 years and < 5 years	123	52.3
Missing	1	0.4

Frequency of Performance

Table 26 presents the average frequency of performance of pharmacy professional tasks by category. The most frequently performed categories of tasks were dispensing, and professionalism and ethics. Dispensing tasks were performed at least weekly, on average, by 76% of the respondents. Eleven tasks under this category are performed daily by at least 50% of participants. On average, 31.8% of respondents performed tasks under the professionalism and ethics category at least weekly. On average, 5.5% of SCM tasks were performed infrequently. Out of the 34 SCM tasks, only four tasks were performed at least weekly by at least 5% of the respondents; similarly, all SCM tasks were never performed by at least 70% of the respondents.

A substantial percentage of respondents reported never performing tasks under the categories of regulatory services (98.2%), compounding (95.5%), research and education (76.0%), and pharmaceutical care (72.4%).

Table 26: Average frequency with which pharmacy professionals perform tasks, by category

Task category	Number of tasks	Perceived frequency (%)		
		Never	Low	High
Professionalism and ethics	10	21.4	7.5	31.8
Dispensing	47	27.7	17.4	18.6
Supply chain management	34	85.6	5.2	2.1
Compounding	6	95.5	1.2	2.3
Pharmaceutical care	14	72.4	5.2	8.6
Drug information service	10	71.3	6.4	6.0
Pharmaceutical public health	5	41.4	19.3	9.9
Regulatory services	20	98.2	0.7	0.2
Research and education	5	76.0	10.7	1.3

Perceived Criticality of Tasks

Figure 1 shows perceived level of criticality of pharmacy professional tasks, grouped by category. On average, pharmaceutical care and dispensing tasks were considered the most important, rated by 76% of participants as high criticality, followed by regulatory services, rated by 70% of participants as high criticality. At least 35% of participants rated every task as high criticality and 128 tasks were rated as high criticality by at least 50% of the pharmacy professionals.

Figure 1: Criticality of task categories as rated by pharmacy professionals

Perceived Competence in Performance

Tasks which at least one-fourth of the respondents reported themselves as not capable of performing mainly fell under four categories: SCM, pharmaceutical care, drug information service, and regulatory services. Over 40% of the participants reported that they are not capable of performing 18 tasks under regulatory services, and 21%–45% of participants reported that they are not capable of performing all 14 pharmaceutical care tasks. Similarly, 17%–37% of the respondents reported they were not capable of performing all 10 drug information service tasks. Applying auditable pharmaceutical transactions and services (APTS) at the health facilities and using service delivery data for quantification of pharmaceutical needs were additional tasks pharmacy professionals rated themselves as not capable of performing (see Table 27).

Table 27: Top 34 tasks pharmacy professionals rated themselves not capable to perform

Task	% not capable
Conduct bioequivalence tests	67.5
Conduct current good manufacturing practice inspection	57.6
Regulate promotion and advertisement of pharmaceuticals	55.8
Issue marketing authorization	55.8
Perform dossier evaluation for product registration	55.4
Regulate medicine production	53.6
Conduct prelicensing inspection for pharmaceuticals manufacturing	53.4
Conduct prelicensing inspection of facilities for import and distribution	51.9
Conduct quality control tests for product registration	51.3
License pharmaceutical services	50.9
Conduct pharmacovigilance	50.9
Regulate import, distribution, and use of narcotic and psychotropic drugs and precursor chemicals	49.4
Regulate import and distribution of pharmaceuticals	48.5
Perform postmarketing surveillance	48.5
Perform drug use evaluation studies for appropriate action	45.1
Conduct prelicensing inspection of facilities for drug retail outlets	43.3
Apply auditable pharmaceutical transaction and services at health facility	42.3
Develop and implement patient-specific pharmaceutical care plan	41.4
Participate in the development of treatment guidelines	39.4
Evaluate drug information	36.8
Regulate drug retail outlets	35.9
Assess patient drug therapy needs	35.2
Take relevant patient history for pharmaceutical care	34.8

Task	% not capable
Monitor medication therapy	34.8
Perform medication reconciliation for selected patients	34.3
Evaluate patient therapeutic outcomes	33.5
Identify actual drug therapy problems	32.2
Document pharmaceutical care services	32.2
Prepare educational materials on medicines information (alerts, newsletters, brochures, posters, bulletins)	32.1
Identify reliable sources for drug information	30.0
Prepare query receiving and response forms	29.1
Use service delivery data to quantify pharmaceuticals needs	27.2
Document drug information requests and responses	25.2
Provide discharge medication counseling to inpatients or caregivers	24.8

Chapter 4
Program Implications

The study revealed tasks frequently performed by health professionals in their current practice. Highly important tasks and self-perceived level of competence in performance were identified to inform decision-makers for revising and developing curricula, scopes of practice, and licensure examinations. The task analysis used self-reported responses by participants; observation of actual practice was not done and is beyond the scope of this study. Therefore, these responses could be subject to under- or over-reporting due to inaccurate memory or bias toward social desirability.

Program Implications for Medical Doctors

FMOH is investigating ensuring the readiness of MDs before deployment so that they can provide safe, high-quality service. This readiness can be best ensured by administering a fair and valid licensing exam based on the results of this task analysis study. To this end, the blueprint of the first medical licensing exam has used the findings of this study.

IST packages are being developed and standardized to fill the competency gaps of practicing physicians. This process should go hand in hand with looking at the gaps identified by this study.

This study can also direct policy in defining general practitioners' scope of practice, which will help in deploying doctors to appropriate duty stations. Key findings recommend supporting staff members, monitoring medical practice, and initiating relevant policy discussions regarding medical practice.

Program Implications for Health Officers

Tasks with a combination of high criticality and low frequency, such as those related to surgery and public health, should be considered for IST, as this combination may imply that HOs have a lower chance of learning and/or improving their performance in these tasks because of the reduced chances to practice.

Tasks with a combination of high criticality and low performance (not capable to perform) ratings—such as those related to surgery and public health (long-term FP)—need special attention during pre-service training. Their coverage and focus in the pre-service training program should be investigated. They also can be areas of priority for IST and continued mentorship.

More specifically, based on the combination of high criticality and low performance, the following tasks were identified as priority tasks for consideration in improving pre-service education and IST of HOs.

- Prepare a research protocol and conduct operational research on health and health-related issues
- Perform lumbar puncture
- Perform manual vacuum aspiration for endometrial biopsy
- Interpret/read the result of X-ray investigation
- Manage diabetes mellitus
- Diagnose and manage diabetic ketoacidosis
- Perform instrumental/operative vaginal deliveries
- Prepare and use manual vacuum aspiration as diagnostic/therapeutic mechanism
- Conduct medical abortion

- Perform visual inspection with acetic acid to screen for cervical cancer
- Provide Integrated Management of Neonatal and Childhood Illness
- Perform lifesaving minor surgical procedures (tracheostomy, suprapubic puncture, etc.)
- Perform dental extraction
- Apply plaster of Paris
- Diagnose and manage minor surgical problems (lipoma, hydrocele)
- Perform circumcision
- Diagnose neoplastic diseases
- Perform trichiasis/entropion correction surgery of the upper eyelid to prevent blindness for trachoma complications
- Stain the eye with fluorescein to check corneal abrasion
- Diagnose and manage tonic-clonic seizures
- Manage substance abuse disorders
- Diagnose and manage depressive disorders
- Diagnose and manage anxiety disorders
- Perform permanent FP method
- Insert and remove intrauterine device
- Insert and remove implants
- Design interventions to prevent and control communicable and noncommunicable diseases
- Implement interventions to prevent and control communicable and noncommunicable diseases
- Implement appropriate preventive and control measures in disaster situations
- Act as food inspector in the process of safeguarding food products

In addition, it should be investigated whether the following tasks related to laboratory services should be retained in the HO scope of practice, as a high percentage of HOs rated these tasks less frequently performed, were not capable of performing them, and classified them as low criticality:

- Prepare and examine a Gram-stained smear for common bacteria
- Perform and interpret thin and thick blood films lab tests
- Perform and interpret peripheral morphology lab tests
- Perform and interpret AFB for TB
- Collect appropriate specimen for culture
- Test and interpret a urine specimen for chemical constituents by using a multiple reagent strip test
- Perform and interpret stool microscopy

Program Implications for Nurses

Highly critical and frequently performed tasks by nurses (i.e., professionalism/ethics, basic nursing care, and family health nursing) make up the main duties and responsibilities that are performed by the majority of nurses working at all levels and settings. Therefore, these tasks should receive more attention as pre-service and in-service curricula are developed and strengthened. In addition, it is important to keep these tasks in mind when reviewing the scope of nursing practice and creating a blueprint for Ethiopia's nursing licensure examinations to ensure that the examinations validly reflect actual, current nursing practice in the country.

Clinical tasks that were reported as less frequently performed in the work environment (i.e., critical and emergency nursing care) also had high criticality: failure to perform them correctly or in a timely manner may lead to serious consequences for the patient and there is a need for nurses to be well prepared to handle these tasks. Therefore, there should be an organizational system and commitment to maintaining and continuously improving competence in these task categories.

Clinical tasks that nurses reported as highly critical but perceived themselves as not capable to perform (i.e., critical and emergency nursing care) are—again—critical in that failure to perform them correctly or in a timely manner may lead to serious consequences for the patient. Nurses should be well prepared to handle these tasks; the tasks should receive more attention in pre-service nursing education curricula and should be priority areas for IST.

One of the main reasons reported by nurses for the poor performance of these tasks was lack of adequate learning opportunity and experience during pre-service education. Additional key reasons nurses cited for poor performance were lack of resources such as medical equipment and supplies; lack of management guidelines and protocols in the actual work environment; lack of an organizational system or commitment to maintain and continuously improve competence; and lack of or inefficient IST.

Program Implications for Medical Laboratory Professionals

Tasks under the categories of basic medical laboratory science, professional ethics, and urine and body fluid analysis were reported as highly critical and were frequently performed by MLPs. These tasks are the main duties and responsibilities of MLPs; and tasks under these categories should receive more attention in curricula in order to produce competent MLPs that address the health care needs of Ethiopia. It is crucial that current students of medical laboratory science receive stronger training to carry out these tasks as part of their pre-service education.

For tasks reported as less frequently performed in the work environment and highly critical to improve population health, there should be an organizational system and commitment to maintain and continuously improve competence, which could include CPD activities.

Most MLPs reported that they are not capable to perform high-importance tasks (high or moderate criticality) under the histopathology, molecular biology, clinical chemistry, and hematology categories. This puts the population in danger and requires careful attention in pre-service education curricula as well as prioritization in IST. In addition, lack of medical laboratory equipment and supplies is a key factor limiting retention of competency. Hence, the health sector should strengthen SCM to avoid frequent shortages of equipment and supplies.

Program Implications for Pharmacy Professionals

Selected pharmacy tasks performed at public health facilities (health centers and hospitals) and through regulatory/research organizations and the Pharmaceuticals Fund and Supply Agency were included in the study. Other areas of pharmacy practice, such as pharmaceutical manufacturing and community pharmacy, were not included. Findings of the study related to regulatory services should be interpreted with caution as the number of participants from organizations providing such services (Regional Health Bureaus and FMHACA) is too small to draw conclusions.

While dispensing is performed on a daily basis, other areas of practice with tasks that could be expected to be performed on a daily basis—especially pharmaceutical care, SCM, compounding, and drug information service—appear to be neglected. This calls for clearly delineating the scope of practice for druggists and pharmacists to properly address all pharmacy services expected to be provided at health facilities.

Pharmaceutical care tasks are rated as highly critical by a majority of respondents. This agrees with endeavors made by members of pharmacy professional associations in the past to make pharmacy education more clinical-oriented through repetitive curricular revisions. However, most respondents reported that they never perform most of the pharmaceutical care tasks, and many also rated themselves not capable of performing tasks under this category. Similarly, many pharmacy professionals reported never performing tasks under the drug information services category at health facilities; it is another category in which pharmacy professionals lack competency. For both task categories, these findings highlight the need to carefully examine the design and implementation of the pre-service education curriculum in terms of:

- Content
- Coverage
- Adequacy of experience gained through practical attachments
- Number and competency of faculty teaching and evaluating students

Moreover, these two areas should be considered for IST or CPD course design, as well for on-the-job mentorship to build the competency of professionals already deployed at health facilities.

In addition, respondents rated themselves as not capable in quantifying pharmaceutical needs and reconciling estimated needs with budget. Thus, pre-service education should be strengthened and on-the-job training and mentorship should be considered to improve the performance of pharmacy professionals on these SCM tasks. Another SCM task respondents perceived themselves as not capable of performing is applying APTS, a system designed by FMOH to improve availability of essential drugs by enhancing transparency and accountability in pharmaceutical services provided at health facilities. This could be because APTS is a newly introduced system and continuous on-the-job training and mentoring is required to improve professionals' performance with it. In addition, APTS should be addressed in the pre-service education curriculum. Because lack of training was cited as the main reason for not providing compounding services at health facilities, this skill should also be considered for IST/CPD courses.

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Annex A: Task Lists for Medical Doctors

	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
	Basic laboratory tests											
1	Interpret complete blood count	2.1	0.5	0	6.8	90.6	0.5	8.4	91.1	0	9.9	90.1
2	Perform and interpret blood film	62.3	17.3	4.2	5.2	11.0	2.1	28.3	69.6	30.9	41.4	27.7
3	Perform and interpret peripheral morphology	57.6	23.6	5.2	3.1	10.5	3.1	34.0	62.8	35.6	42.4	22.0
4	Perform and interpret random blood sugar	12.6	17.8	8.9	17.8	42.9	0.5	7.9	91.6	2.6	13.1	84.3
5	Perform and interpret dipstick for urine	35.6	25.7	8.4	9.4	20.9	2.1	31.9	66.0	12.6	29.3	58.1
6	Perform and interpret stool microscopy	64.9	16.2	3.7	2.1	13.1	7.3	49.2	43.5	32.5	42.9	24.6
7	Perform and interpret acid-fast bacillus (AFB) for TB	71.2	11.0	2.1	3.7	12.0	4.2	18.3	77.5	41.9	37.7	20.4
	Internal medicine											
8	Take and record an appropriate history	0.5	1.6	0	3.1	94.8	0	6.8	93.2	0.5	7.9	91.6
9	Perform and record complete physical examination	0	2.1	0.5	3.7	93.7	0	3.7	96.3	0.5	7.9	91.6
10	Make an initial assessment of a patient's problems and list differential diagnoses	0	0.5	0.5	1.6	97.4	0	6.8	93.2	0	12.6	87.4
11	Order pertinent investigation	0	0.5	0.5	1.6	97.4	0	4.7	95.3	0	8.9	91.1
12	Perform paracentesis	6.3	19.5	27.4	32.6	14.2	1.6	23.0	75.4	4.7	22.5	72.8
13	Perform thoracentesis	12.1	18.4	27.9	29.5	12.1	3.1	20.9	75.9	8.4	21.5	70.2
14	Perform lumbar puncture	23.7	30.5	21.6	16.8	7.4	0.5	7.9	91.6	3.7	29.8	66.5
15	Perform arthrocentesis	44.5	34.0	12.0	6.3	3.1	4.2	47.1	48.7	23.0	40.3	36.6
16	Interpret the results of X-ray investigation	2.1	3.1	4.7	17.8	72.3	0.5	14.1	85.3	3.7	56.5	39.8
17	Design a follow-up strategy of a patient's condition	0.5	2.1	5.8	8.4	83.2	1.0	8.9	90.1	0	22.5	77.5
18	Formulate a plan for discharge	2.1	2.1	2.1	11.6	82.1	1.1	21.6	77.4	0	16.9	83.1
19	Refer difficult medical illnesses or cases to the next level	0	4.7	13.1	31.9	50.3	0	6.8	93.2	0	15.7	84.3
20	Formulate a prognosis about the future events of an individual's health and illness	0.5	2.6	5.8	20.9	70.2	1.0	24.6	74.3	0.5	39.8	59.7
21	Diagnose and manage hypertensive urgency and emergency	2.6	7.3	21.5	40.3	28.3	0	2.1	97.9	0	24.1	75.9
22	Diagnose and manage upper gastrointestinal bleeding	5.2	25.7	35.6	17.3	16.2	0	2.1	97.9	0	42.4	57.6
23	Diagnose and manage myocardial infarction	14.1	43.5	23.6	9.4	9.4	0	2.6	97.4	2.6	60.2	37.2
24	Diagnose and manage status epilepticus	5.8	41.9	26.2	14.1	12.0	0	3.1	96.9	0.5	34.0	65.4
25	Diagnose and manage acute exacerbation of asthma	2.6	4.2	23.0	45.0	25.1	0	3.1	96.9	0	15.2	84.8
26	Diagnose and manage shock of different forms	2.6	4.2	18.3	45.0	29.8	0	1.6	98.4	0.5	26.2	73.3
27	Diagnose and manage diabetic ketoacidosis	3.1	8.4	25.7	41.9	20.9	0	1.0	99.0	0	18.3	81.7

	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
28	Diagnose and manage coma of different causes	3.1	16.2	28.3	32.5	19.9	0	1.0	99.0	1.0	47.1	51.8
29	Diagnose and manage cerebral malaria	8.4	30.9	30.4	15.2	15.2	0	1.0	99.0	0	17.3	82.7
30	Diagnose and manage organophosphate poisoning	9.9	36.1	25.1	15.7	13.1	0	2.1	97.9	2.6	30.4	67.0
31	Diagnose and manage acute severe meningitis	6.3	23.6	35.6	24.1	10.5	0	1.6	98.4	0	26.2	73.8
32	Diagnose different forms of stroke	6.3	28.3	32.5	19.4	13.6	0.5	5.2	94.2	2.1	49.2	48.7
33	Diagnose and manage hypertension	2.1	3.1	7.9	34.6	52.4	0	9.9	90.1	0	17.3	82.7
34	Diagnose and manage urinary tract infection	1.0	1.6	2.1	19.4	75.9	1.6	37.7	60.7	0	10.5	89.5
35	Diagnose and manage different forms of diabetes mellitus	2.6	6.3	14.7	40.8	35.6	0	11.0	89.0	0.5	19.9	79.6
36	Diagnose and manage bronchial asthma	2.6	4.7	17.3	39.8	35.6	0	17.3	82.7	0	13.1	86.9
37	Diagnose and manage congestive heart failure	3.7	6.3	19.9	40.8	29.3	0	3.1	96.9	0	31.4	68.6
38	Diagnose and manage chronic liver disease	5.3	16.3	32.6	25.8	20.0	0	16.8	83.2	1.1	33.7	65.3
39	Diagnose and manage anemia	1.1	3.2	14.7	30.5	50.5	0	9.5	90.5	0	22.6	77.4
40	Diagnose and manage chronic obstructive pulmonary disease	11.5	36.1	23.6	15.7	13.1	0.5	30.4	69.1	1.0	48.2	50.8
41	Diagnose and treat malaria	4.3	12.8	18.6	29.3	35.1	0	2.1	97.9	0	11.7	88.3
42	Diagnose and treat pulmonary and extrapulmonary TB	2.1	3.1	17.3	39.8	37.7	0	5.2	94.8	0.5	20.9	78.5
43	Offer an HIV test and counsel for HIV	5.8	14.1	10.5	17.8	51.8	1.0	18.8	80.1	0.5	20.4	79.1
44	Provide antiretroviral treatment (ART) and follow a patient on ART	21.5	20.4	15.7	12.6	29.8	0.5	14.7	84.8	1.0	25.1	73.8
45	Diagnose neoplastic diseases	7.4	45.3	27.9	9.5	10.0	1.1	23.7	75.3	4.7	57.4	37.9
	Surgery											
46	Perform excisional biopsy	70.7	16.2	7.3	2.6	3.1	6.8	41.4	51.8	45.0	37.2	17.8
47	Diagnose acute abdomen	2.1	8.9	23.0	37.2	28.8	0	2.1	97.9	0.5	24.1	75.4
48	Manage head injury	5.2	13.6	23.0	40.8	17.3	0	1.6	98.4	2.6	46.6	50.8
49	Diagnose and manage different forms of burn	3.7	30.9	40.8	14.1	10.5	0	8.4	91.6	2.1	33.0	64.9
50	Diagnose and manage fracture	4.2	9.4	23.0	39.3	24.1	0	9.4	90.6	2.1	52.9	45.0
51	Diagnose abdominal mass	3.2	27.4	33.2	22.1	14.2	0	32.1	67.9	0.5	42.1	57.4
52	Provide preoperative care in consultation with a surgeon	17.3	19.4	19.9	23.0	20.4	0.5	19.4	80.1	4.2	31.4	64.4
53	Provide postoperative care in consultation with a surgeon	22.0	21.5	17.3	19.4	19.9	0.5	17.3	82.2	3.1	32.5	64.4
54	Assist major surgical operations	33.5	25.1	14.7	15.7	11.0	8.9	37.7	53.4	4.7	44.2	51.1
55	Perform abscess drainage	16.2	23.6	26.2	19.4	14.7	0.5	23.6	75.9	4.7	29.3	66.0
56	Perform excision of soft tissue mass	38.7	27.2	16.8	10.5	6.8	5.2	56.5	38.2	13.6	45.5	40.8

	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
57	Perform circumcision	49.7	24.1	11.5	9.4	5.2	13.1	54.5	32.5	23.6	36.1	40.3
58	Apply plaster of Paris	18.3	27.2	23.6	20.4	10.5	1.0	24.6	74.3	2.6	35.1	62.3
59	Apply traction for fracture	42.9	26.7	15.2	9.9	5.2	1.0	24.1	74.9	12.0	44.0	44.0
60	Manage trauma	3.1	8.4	13.6	32.5	42.4	0	6.8	93.2	0.5	31.4	68.1
61	Perform hydrocelectomy	67.0	18.8	6.8	6.8	0.5	3.1	63.9	33.0	41.4	37.2	21.5
62	Perform appendectomy	83.8	8.9	4.2	2.6	0.5	0.5	12.0	87.4	73.3	19.4	7.3
	Pediatrics											
63	Take and record history of children from their parents	4.2	8.9	4.7	17.8	63.9	1.1	11.6	87.4	0.5	17.4	82.1
64	Perform and record physical examination of children	4.7	6.8	4.7	16.8	67.0	0.5	6.3	93.2	0	17.8	82.2
65	Examine children for their growth and development	6.3	13.6	10.5	20.4	49.2	0.5	18.8	80.6	1.6	24.1	74.3
66	Diagnose and manage children with protein-energy malnutrition	6.8	12.0	14.1	25.1	41.9	0	5.2	94.8	0	20.9	79.1
67	Diagnose and manage children with micronutrient deficiency	11.0	33.0	13.6	21.5	20.9	0	24.1	75.9	1.6	44.5	53.9
68	Diagnose and manage measles	11.0	39.8	17.8	17.3	14.1	0	5.2	94.8	0.5	20.9	78.5
69	Manage diarrhea and vomiting for children	5.8	7.9	2.6	20.9	62.8	0	0.5	99.5	0	12.6	87.4
70	Manage pneumonia in children	5.8	7.3	2.6	19.9	64.4	0	1.0	99.0	0	11.0	89.0
71	Manage childhood fever	5.8	8.9	4.2	22.0	59.2	0	4.7	95.3	1.0	17.3	81.7
72	Manage childhood convulsion	7.9	17.8	31.4	28.3	14.7	0	3.1	96.9	0.5	25.1	74.3
73	Diagnose and manage croup	13.1	40.8	25.7	12.0	8.4	0	5.2	94.8	1.0	26.2	72.8
74	Diagnose and manage HIV infection in children	14.7	35.6	25.7	9.4	14.7	0	9.4	90.6	1.6	26.7	71.7
75	Perform newborn resuscitation	24.1	33.0	13.6	13.6	15.7	0	3.1	96.9	1.6	32.5	66.0
76	Provide Expanded Programme on Immunization for children	66.5	16.2	5.2	2.6	9.4	0	27.2	72.8	9.4	38.7	51.8
	Gynecology/obstetrics											
77	Perform visual inspection with acetic acid	89.5	4.7	2.6	0.5	2.6	7.9	46.0	46.0	74.1	16.4	9.5
78	Perform culdocentesis	81.7	12.6	4.2	0.5	1.0	5.2	40.8	53.9	58.1	29.3	12.6
79	Perform manual vacuum aspiration for endometrial biopsy	64.9	19.9	7.3	4.2	3.7	5.2	27.7	67.0	23.6	42.4	34.0
80	Follow a pregnant mother on ART	34.6	26.7	14.1	10.5	14.1	0	18.4	81.6	2.6	30.9	66.5
81	Provide tetanus toxoid vaccination for women	68.6	17.3	5.2	2.1	6.8	0.5	27.7	71.7	9.9	41.4	48.7
82	Provide focused antenatal care	44.0	22.5	12.0	7.3	14.1	0	18.8	81.2	2.1	27.2	70.7
83	Take a comprehensive history from a pregnant mother	9.4	20.9	21.5	24.6	23.6	0.5	11.5	88.0	0.5	17.8	81.7
84	Perform a complete Leopold maneuver	12.0	24.6	20.4	20.9	22.0	0	19.9	80.1	0.5	18.8	80.6

	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
85	Provide postnatal care	39.3	22.5	13.1	5.8	19.4	0	17.3	82.7	1.0	23.6	75.4
86	Provide immediate newborn care	36.6	27.2	10.5	9.9	15.7	0	7.9	92.1	1.6	26.2	72.3
87	Assess and follow normal labor	43.5	22.5	9.4	9.4	15.2	0	9.4	90.6	1.0	20.4	78.5
88	Attend normal delivery	41.9	27.2	8.9	8.9	13.1	0	13.1	86.9	1.0	22.5	76.4
89	Actively manage third stage of labor	36.1	26.7	11.5	8.4	17.3	0	3.1	96.9	1.0	24.1	74.9
90	Detect and manage malpresentation/malposition	33.5	29.8	12.6	12.0	12.0	0	4.7	95.3	4.2	44.5	51.3
91	Diagnose and manage pre-eclampsia/eclampsia	14.7	39.8	18.3	15.7	11.5	0	2.6	97.4	1.6	22.5	75.9
92	Detect cord prolapse and take appropriate measures	46.8	28.9	7.9	6.3	10.0	0	1.6	98.4	4.2	40.5	55.3
93	Diagnose and manage nausea and vomiting in pregnancy (hyperemesis gravidarum)	7.3	24.6	28.8	25.1	14.1	0	16.8	83.2	0	16.2	83.8
94	Diagnose and manage premature rupture of membrane	29.3	30.4	16.8	13.1	10.5	0	8.9	91.1	0.5	24.6	74.9
95	Manage preterm labor	39.8	31.4	13.6	5.8	9.4	0	11.0	89.0	4.2	35.6	60.2
96	Diagnose and manage puerperal sepsis	19.4	37.2	24.6	10.5	8.4	0	3.7	96.3	1.6	21.5	77.0
97	Diagnose malaria in pregnancy	19.9	45.5	16.2	9.9	8.4	0	4.2	95.8	1.6	22.0	76.4
98	Diagnose diabetes in pregnancy	33.5	45.0	13.1	2.6	5.8	0.5	11.0	88.5	2.6	32.5	64.9
99	Detect and manage fetal distress	35.6	29.3	13.6	8.4	13.1	0	2.6	97.4	5.2	30.4	64.4
100	Diagnose obstructed/prolonged labor	37.2	31.9	10.5	10.5	9.9	0	1.6	98.4	4.2	31.4	64.4
101	Administer parenteral antibiotic for emergency obstetric condition	39.3	34.0	6.8	8.9	11.0	1.0	13.1	85.9	1.6	25.1	73.3
102	Administer uterotonic agents	38.7	31.4	8.4	6.8	14.7	0.5	10.5	89.0	2.1	24.7	73.2
103	Administer anticonvulsants	30.9	36.6	11.5	9.4	11.5	0.5	2.6	96.9	2.6	26.2	71.2
104	Remove placenta manually	42.4	35.1	9.9	6.3	6.3	0	5.8	94.2	4.2	41.9	53.9
105	Perform and repair episiotomy	47.6	26.2	8.4	8.9	8.9	0	17.8	82.2	2.1	24.6	73.3
106	Perform cesarean section	81.2	8.9	3.1	3.7	3.1	1.0	3.1	95.8	70.7	16.8	12.6
107	Diagnosis and manage pelvic inflammatory diseases	9.4	30.9	34.0	15.7	9.9	0	24.1	75.9	1.0	30.9	68.1
108	Diagnose and manage abnormal uterine bleeding	11.5	25.1	34.0	18.3	11.0	0	14.1	85.9	1.0	47.1	51.8
109	Diagnose and manage dysfunctional uterine bleeding	15.2	40.3	27.2	8.4	8.9	0	25.1	74.9	3.1	53.9	42.9
110	Diagnose and manage abortion	13.6	18.3	26.2	19.9	22.0	0	6.3	93.7	2.1	29.8	68.1
111	Diagnose myoma	17.8	47.1	22.5	7.3	5.2	3.7	41.4	55.0	1.6	50.3	48.2
112	Diagnose infertility	17.8	51.3	20.4	5.8	4.7	6.3	50.8	42.9	5.2	55.0	39.8
113	Manage sexual assault	20.9	43.5	18.8	7.9	8.9	1.0	25.7	73.3	6.3	48.7	45.0
114	Diagnose ectopic pregnancy	28.3	49.7	11.5	5.8	4.7	0	3.7	96.3	2.6	45.5	51.8

	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
115	Conduct medical abortion	47.1	27.2	11.5	5.2	8.9	6.8	23.0	70.2	3.7	35.6	60.7
116	Perform manual vacuum aspiration	36.6	24.1	15.7	15.2	8.4	1.0	9.4	89.5	2.6	37.2	60.2
117	Provide postabortion care	29.8	23.6	20.9	13.6	12.0	0.5	16.2	83.2	2.1	25.1	72.8
118	Perform vacuum-assisted delivery	56.5	22.0	9.9	6.8	4.7	0	16.2	83.8	19.4	47.6	33.0
119	Apply a low-lying forceps	60.7	19.4	12.0	3.1	4.7	0.5	18.3	81.2	19.9	54.5	25.7
120	Provide family planning counseling service	29.8	34.6	14.1	8.9	12.6	5.2	46.6	48.2	4.2	37.7	58.1
121	Provide contraceptive pills	40.8	29.3	12.6	8.4	8.9	6.3	56.0	37.7	2.1	36.1	61.8
122	Provide injectable contraceptives	61.8	17.8	7.3	5.2	7.9	6.8	57.6	35.6	8.9	40.3	50.8
123	Insert and remove implants	72.8	17.3	4.7	1.6	3.7	5.2	60.2	34.6	34.6	38.2	27.2
124	Insert and remove intrauterine device	79.1	13.6	2.1	2.6	2.6	6.8	61.3	31.9	39.3	41.4	19.4
125	Perform vasectomy	95.3	3.1	0	0.5	1.0	19.4	58.1	22.5	82.7	10.5	6.8
126	Perform tubal ligation	90.6	6.3	1.0	0.5	1.6	13.1	60.7	26.2	77.0	15.2	7.9
	Psychiatry											
127	Diagnose and manage bipolar disorders	32.5	45.5	15.7	3.7	2.6	1.6	46.1	52.4	9.9	64.9	25.1
128	Diagnose and manage depressive disorders like major depressive disorder	26.7	47.1	18.3	4.7	3.1	1.0	45.5	53.4	6.3	67.0	26.7
129	Diagnose and manage psychotic disorders like schizophrenia	27.7	53.4	13.1	3.1	2.6	0.5	44.0	55.5	7.9	66.5	25.7
130	Diagnose and manage anxiety disorders	23.0	50.3	18.8	5.2	2.6	1.6	51.3	47.1	7.3	63.9	28.8
134	Manage substance abuse disorders	34.6	45.0	9.9	4.7	5.8	1.0	43.5	55.5	15.2	63.4	21.5
	Ophthalmology											
135	Diagnose glaucoma	61.8	34.0	2.6	0.5	1.0	3.1	29.3	67.5	33.5	51.8	14.7
136	Diagnose and manage blepharitis	29.8	47.1	14.7	5.2	3.1	2.1	50.3	47.6	13.6	50.8	35.6
137	Diagnose and manage vitamin A deficiency in children	16.8	41.9	22.0	13.1	6.3	0	22.6	77.4	1.6	42.9	55.5
138	Manage ophthalmic chemical burns	62.3	30.9	4.2	1.0	1.6	0	19.5	80.5	18.3	57.1	24.6
139	Diagnose cataract	34.0	45.0	11.0	5.2	4.7	1.0	35.1	63.9	8.9	56.0	35.1
140	Diagnose red eye	17.3	31.4	26.2	17.3	7.9	2.1	42.4	55.5	6.8	46.6	46.6
141	Diagnose and manage conjunctivitis	5.8	22.5	26.2	31.4	14.1	0.5	34.0	65.4	1.6	27.2	71.2
142	Diagnose and manage trachoma	37.7	39.3	11.0	6.3	5.8	0.5	22.5	77.0	8.4	43.5	48.2
143	Diagnose retinal detachment	82.7	15.2	1.0	1.0	0	2.1	16.8	81.2	58.1	31.4	10.5
144	Detect visual impairment	25.7	47.6	18.3	5.2	3.1	1.0	28.8	70.2	12.0	55.0	33.0

	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
	Dermatology											
145	Diagnose and manage common skin infections like cellulitis, impetigo, and scabies	4.7	14.1	20.9	28.8	31.4	0	50.8	49.2	1.0	36.6	62.3
146	Diagnose and manage common allergic skin disorders like atopic and contact dermatitis	4.7	14.1	24.6	34.0	22.5	2.6	57.6	39.8	1.6	40.5	57.9
147	Diagnose and manage common fungal skin infections like different forms of Tineasis	3.7	16.2	25.7	30.9	23.6	3.7	61.3	35.1	0.5	41.6	57.9
	Ear, nose, and throat											
148	Diagnose and manage different forms of rhinitis	4.7	25.7	27.2	26.2	16.2	2.6	65.4	31.9	0.5	43.2	56.3
149	Diagnose and treat tinnitus	11.5	36.6	27.7	15.2	8.9	2.6	56.0	41.4	5.3	55.3	39.5
150	Diagnose and manage otitis media (acute and chronic)	1.6	13.6	26.2	41.4	17.3	0.5	23.6	75.9	0.5	28.4	71.1
151	Diagnose hearing loss	25.7	45.5	17.3	5.8	5.8	3.1	32.5	64.4	6.3	48.4	45.3
152	Diagnose and manage epistaxis	2.6	28.8	42.4	17.8	8.4	0	24.6	75.4	1.1	35.8	63.2
153	Diagnose and manage tonsillitis and peritonsillar abscess	2.6	16.8	30.4	28.8	21.5	0	23.6	76.4	1.6	35.8	62.6
	Dentistry											
154	Perform dental extraction	88.0	7.3	3.1	1.0	0.5	7.9	57.1	35.1	69.1	22.0	8.9
155	Diagnose and manage gingivitis	19.4	40.8	25.7	8.4	5.8	4.7	57.1	38.2	2.1	47.9	50.0
156	Diagnose and treat periodontitis	24.6	40.3	21.5	6.8	6.8	2.1	47.6	50.3	4.7	51.6	43.7
	Assessment, analysis, and research											
157	Assess community health status and factors influencing health in a community to ascertain determinants of health (e.g., quality, availability, accessibility, and use of health services; access to affordable housing)	27.2	37.7	17.8	5.2	12.0	3.1	46.6	50.3	11.1	62.6	26.3
158	Collect valid and reliable quantitative and qualitative data and information	55.3	32.1	6.3	3.2	3.2	3.2	53.7	43.2	16.8	62.1	21.1
159	Analyze and interpret quantitative and qualitative data	53.4	32.8	10.1	2.1	1.6	3.2	51.9	45.0	19.1	63.8	17.0
160	Apply ethical principles in accessing, collecting, analyzing, using, maintaining, and disseminating data and information	45.8	31.6	13.7	1.6	7.4	2.1	51.6	46.3	13.2	62.1	24.7
161	Use evidence in developing, implementing, evaluating, and improving policies, programs, and services	44.2	30.0	14.7	4.7	6.3	3.7	59.5	36.8	20.6	60.3	19.0
	Program management and leadership											
162	Contribute to development of organizational strategic plan (e.g., include measurable objectives and targets; incorporate community health improvement plan, workforce development plan, quality improvement plan, and other plans)	37.9	33.7	18.9	3.2	6.3	2.1	51.1	46.8	15.3	61.1	23.7
163	Implement organizational strategic plan	20.5	17.9	12.6	8.4	40.5	2.6	44.7	52.6	10.5	55.3	34.2
164	Develop program and/or project goals and objectives	45.3	26.8	14.2	7.4	6.3	2.1	56.3	41.6	20.5	58.4	21.1

	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
165	Implement policies, programs, projects, and services	16.9	14.8	18.0	9.5	40.7	2.1	48.1	49.7	8.5	61.9	29.6
166	Implement strategies for continuous quality improvement and performance management systems	18.4	19.5	21.1	13.7	27.4	2.6	47.9	49.5	10.5	56.3	33.2
167	Evaluate policies, programs, and services (e.g., outputs, outcomes, processes, procedures, return on investment)	42.6	23.7	19.5	6.8	7.4	3.7	52.1	44.2	22.1	52.6	25.3
168	Use evidence in developing, implementing, evaluating, and improving policies, programs, and services	44.2	30.0	14.7	4.7	6.3	3.7	59.5	36.8	20.6	60.3	19.0
169	Justify programs for inclusion in organizational budgets	50.0	31.4	16.5	0.5	1.6	6.4	61.7	31.9	18.1	63.3	18.6
170	Prepare proposals for funding (for, e.g., foundations, government agencies, corporations)	70.0	18.4	10.0	1.1	0.5	7.4	59.5	33.2	27.4	54.7	17.9
171	Apply the basic principles of communicable disease control and infection prevention in hospital and community settings	4.7	11.1	12.1	14.2	57.9	1.1	25.8	73.2	3.7	36.3	60.0
172	Provide team-based community service and patient care	18.4	15.3	8.9	11.1	46.3	2.1	33.7	64.2	5.3	42.1	52.6
173	Apply nationally recommended guidelines	1.6	3.7	5.8	6.3	82.6	0	26.3	73.7	2.6	24.7	72.6
174	Use national and regional surveillance, demographic, and epidemiologic data in health decisions	8.9	15.3	14.2	23.7	37.9	2.1	36.3	61.6	8.4	42.6	48.9
175	Lead health services and health care organizations	37.2	25.0	9.0	2.7	26.1	5.3	49.5	45.2	8.5	59.6	31.9
	Community dimensions of practice, communication, advocacy, and collaboration											
176	Communicate information to influence behavior and improve health (e.g., use social marketing methods, consider behavioral theories such as the Health Belief Model or Stages of Change Model)	24.2	27.9	16.3	12.6	18.9	1.6	50.0	48.4	12.6	53.7	33.7
177	Distinguish the roles and responsibilities of governmental and nongovernmental organizations in providing programs and services to improve the health of a community	15.4	29.8	23.4	10.6	20.7	4.3	56.4	39.4	10.1	56.4	33.5
178	Identify relationships that are affecting health in a community (e.g., relationships among health departments, hospitals, community health centers, primary care providers, schools, community-based organizations, and other types of organizations)	14.8	28.6	24.9	11.6	20.1	2.6	49.7	47.6	7.4	56.6	36.0
179	Advocate for policies, programs, and resources that improve health in a community (e.g., using evidence to demonstrate the need for a program, communicating the impact of a program)	26.5	31.2	19.6	11.1	11.6	2.6	54.0	43.4	12.7	55.0	32.3
180	Facilitate collaborations among partners to improve health in a community (e.g., coalition building)	30.1	26.9	22.0	7.5	13.4	2.7	55.9	41.4	10.2	57.5	32.3
181	Collaborate in community-based participatory research	65.6	23.3	7.9	1.1	2.1	4.8	63.5	31.7	16.9	63.5	19.6

Annex B: Task Lists for Health Officers

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
	A. Professional duties											
1	Participate in continuing professional development opportunities like on-the-job trainings, in-service training, and high-level education	7.5	77.0	9.4	5.2	0.9	11.7	51.6	36.6	0.9	62.0	37.1
2	Coordinate and/or provide continuing professional development services	41.3	39.4	8.5	8.5	2.3	15.0	54.9	30.0	4.2	62.9	32.9
3	Prepare a research protocol and conduct operational research on health and health-related issues	85.0	15.0	0.0	0.0	0.0	23.5	50.2	26.3	12.7	77.0	10.3
4	Actively participate and maintain membership in professional organization/association	85.4	11.7	2.3	0.0	0.5	20.2	51.6	28.2	7.0	67.6	25.4
5	Serve on technical working groups and committees at facility/ regional/national levels	20.7	13.1	26.8	29.6	9.9	11.3	46.9	41.8	0.9	62.9	36.2
6	Serve as a teacher/mentor and preceptor of health officers and/ or other health professionals	37.6	39.9	6.6	11.7	4.2	14.1	45.1	40.8	3.3	61.5	35.2
7	Maintain safe work environment (apply health and occupational safety precautions/methods of control)	2.3	11.3	12.7	25.4	48.4	3.3	28.2	68.5	0.5	51.6	47.9
8	Ensure infection prevention and patient safety standards	4.7	8.0	5.2	17.4	64.8	1.4	15.0	83.6	2.3	41.3	56.3
9	Maintain professional conduct in interacting with other health professionals	0.5	4.7	2.3	12.7	79.8	2.3	31.5	66.2	0.0	46.9	53.1
10	Comply with and/or ensure medicolegal and ethical requirements are respected	0.9	4.2	1.9	13.1	79.8	2.8	26.8	70.4	0.0	48.4	51.6
11	Demonstrate respect toward values/beliefs/rights of clients/ communities	0.9	2.8	0.0	5.2	91.1	3.3	25.4	71.4	0.0	43.7	56.3
12	Utilize intradisciplinary team approach to patient management and community interventions	1.9	9.9	8.0	28.6	51.6	1.9	37.6	60.6	0.5	52.6	46.9
13	Advise courts and police in medicolegal issues and interpretation of public health laws (health proclamations)	46.5	24.4	11.3	10.8	7.0	19.7	44.1	36.2	5.2	72.2	22.6
14	Certify and give testimony for procedures that are carried out under their disposal according to the medicolegal ethical standards and applicable laws/regulations	13.6	20.7	23.5	26.8	15.5	10.8	43.7	45.5	0.5	57.7	41.8
15	Participate in curriculum development of own and other health professionals	93.4	4.2	0.9	0.5	0.9	23.9	44.1	31.9	17.4	65.3	17.4
	B. Basic scientific foundations for clinical medicine (biomedical and behavioral sciences)											
16	Apply the knowledge of the normal function of the body (physiology) to medical practice	1.4	6.6	4.2	9.9	77.9	1.4	24.4	74.2	0.0	62.4	37.6
17	Apply the basic knowledge of normal structure of human body (anatomy) to medical practice	1.9	5.6	6.1	9.9	76.5	0.5	23.5	76.1	0.0	64.8	35.2
18	Apply the knowledge of embryology and histology (human life cycle, effect of growth, development and aging, etc.) to medical practice	3.8	15.5	8.0	27.2	45.5	2.8	32.4	64.8	0.0	74.2	25.8

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
19	Apply knowledge of molecular, cellular, and biochemical mechanisms that maintain the body's homeostasis to medical practice	4.7	12.2	14.6	16.9	51.6	5.2	31.9	62.9	3.3	68.5	28.2
20	Apply knowledge of abnormalities in body structure and function which occur in diseases and aging to clinical practice	2.3	8.5	6.1	14.1	69.0	2.8	26.8	70.4	0.9	64.8	34.3
21	Apply knowledge of the various disease causes (genetic, developmental, metabolic, toxic, infectious, autoimmune, neoplastic, degenerative, and traumatic) and their pathogenesis to clinical medicine	2.4	11.3	7.1	9.4	69.8	1.4	26.4	72.2	3.8	61.8	34.4
22	Apply knowledge of pharmacokinetics and pharmacodynamics to medical practice	1.4	1.4	5.7	11.3	80.2	1.4	12.7	85.8	0.5	63.5	36.0
23	Apply the principles and practice of rational therapy	0.9	1.9	4.2	10.8	82.1	0.5	15.2	84.4	0.5	55.2	44.3
24	Provide counseling and education on proper use of drugs to solve the emerging social, economic, and medical problems of drug use, misuse, and abuse	0.0	1.9	3.8	9.9	84.4	0.0	17.0	83.0	0.5	53.3	46.2
25	Apply social science principles, methods, and knowledge to medical practice	1.4	17.0	9.4	18.9	53.3	6.6	46.7	46.7	1.4	67.0	31.6
26	Apply psychological principles, methods, and knowledge to medical practice	0.0	11.9	7.6	14.3	66.2	3.8	38.1	58.1	1.0	64.3	34.8
	C. Clinical service delivery											
	C1. General											
27	Take and record an appropriate history	0.5	0.9	0.5	3.8	94.3	0.9	11.8	87.3	0.0	41.5	58.5
28	Perform and record a complete physical examination	1.4	10.8	2.4	13.2	72.2	0.5	15.6	83.9	0.0	46.4	53.6
29	Distinguish between normal and abnormal physical findings	0.5	0.9	2.8	4.7	91.0	0.0	13.3	86.7	0.0	50.5	49.5
30	Make an initial assessment of a patient's problems and make differential diagnosis	0.5	1.4	1.9	9.0	87.3	0.5	18.5	81.0	0.0	48.8	51.2
31	Order basic clinical/lab investigations (blood film, peripheral morphology, random blood sugar, dipstick for urine, stool microscopy, acid-fast bacillus [AFB])	0.5	3.3	0.9	7.5	87.7	1.4	11.4	87.2	0.0	41.2	58.8
32	Perform venous and capillary blood collection	16.6	28.9	10.0	22.3	22.3	15.6	42.2	42.2	2.8	59.7	37.4
33	Perform and interpret peripheral morphology lab tests	84.9	9.4	0.9	2.4	2.4	34.9	42.5	22.6	62.6	28.9	8.5
34	Perform and interpret thin and thick blood films lab tests	83.5	9.4	0.9	2.8	3.3	35.8	38.7	25.5	55.5	34.6	10.0
35	Perform and interpret random blood sugar lab test	58.5	20.3	8.5	7.5	5.2	24.1	41.0	34.9	31.3	44.5	24.2
36	Perform and interpret AFB for TB	86.3	5.2	3.3	2.8	2.4	32.5	36.3	31.1	61.6	28.0	10.4

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
37	Prepare and examine a Gram-stained smear for common bacteria	90.6	6.1	0.9	0.9	1.4	40.6	43.4	16.0	76.3	18.0	5.7
38	Interpret the test results of pregnancy	1.4	17.5	11.8	27.8	41.5	5.7	31.6	62.7	0.0	41.0	59.0
39	Interpret the test result of typhoid fever	6.6	12.3	8.5	21.2	51.4	1.4	21.7	76.9	0.5	41.0	58.5
40	Interpret the test result of syphilis	20.3	31.1	16.5	15.1	17.0	4.2	34.4	61.3	4.2	48.1	47.6
41	Collect appropriate specimen for culture	90.1	7.1	0.9	0.0	1.9	32.5	40.1	27.4	57.1	33.0	9.9
42	Test and interpret a urine specimen for chemical constituents by using a multiple reagent strip test	67.5	17.0	4.7	7.1	3.8	25.9	46.2	27.8	43.4	42.0	14.6
43	Perform and interpret stool microscopy	77.0	9.4	2.3	6.1	5.2	31.5	42.7	25.8	54.0	32.9	13.1
44	Perform lumbar puncture	85.4	14.6	0.0	0.0	0.0	13.6	41.8	44.6	52.6	41.3	6.1
45	Perform manual vacuum aspiration for endometrial biopsy	88.7	8.0	2.3	0.9	0.0	17.5	48.6	34.0	62.7	30.7	6.6
46	Order common radiologic diagnostic procedure like X-ray	31.9	16.4	16.4	15.5	19.7	4.7	42.7	52.6	5.2	59.6	35.2
47	Interpret/read the result of X-ray investigation	31.1	27.4	12.7	13.2	15.6	4.7	44.3	50.9	12.3	76.4	11.3
48	Prescribe/change order and/or administer medications to cure/ rehabilitate patients	0.5	4.2	2.3	5.6	87.3	0.5	11.3	88.3	0.0	46.5	53.5
49	Formulate a plan to manage patients	2.3	2.3	4.7	10.3	80.3	0.5	21.6	77.9	0.5	49.8	49.8
50	Undertake early diagnosis and provide basic treatment/ consultation/referral of difficult cases to the next higher level	0.9	6.6	10.8	25.4	56.3	0.0	11.7	88.3	0.5	43.7	55.9
51	Do follow-up with referred cases upon their return to ensure continuity of care	9.0	34.4	20.8	24.5	11.3	3.8	31.6	64.6	0.9	65.1	34.0
52	Document and maintain accurate, legible, and complete medical records	0.5	1.9	1.4	8.0	88.2	3.3	30.2	66.5	0.0	42.0	58.0
53	Ensure appropriate nursing care is provided to patients in need of health care	0.9	10.8	6.6	16.5	65.1	1.4	22.2	76.4	0.0	49.5	50.5
54	Train client/patient in performing the activities contributing to his/her recovery and rehabilitation	5.2	15.1	9.4	15.1	55.2	0.9	23.6	75.5	3.8	47.2	49.1
55	Diagnose emergency/acute medical and surgical needs	2.8	16.0	14.6	27.8	38.7	0.0	8.0	92.0	0.5	55.2	44.3
56	Manage common acute medical and surgical emergencies	9.9	19.3	11.3	27.8	31.6	0.0	7.5	92.5	11.8	54.2	34.0
57	Provide first aid for those in need	3.3	13.3	10.4	25.6	47.4	0.0	8.5	91.5	0.0	48.3	51.7
58	Conduct medical checkup and issue certificate	14.2	22.2	20.8	25.5	17.5	17.0	46.7	36.3	0.9	52.8	46.2
59	Admit and manage patients at inpatient department	11.8	19.8	13.2	34.0	21.2	0.5	15.1	84.4	0.5	54.7	44.8
60	Formulate a plan to discharge a patient according to established principles and best evidence	14.2	23.6	12.3	34.0	16.0	2.8	27.8	69.3	1.4	56.6	42.0

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
	C2. Internal medicine											
61	Diagnose and manage hypertension	2.4	15.1	20.8	34.9	26.9	0.5	4.7	94.8	0.0	47.2	52.8
62	Diagnose and manage hypertensive urgency and emergency	9.0	37.3	29.7	14.6	9.4	0.0	2.4	97.6	5.2	53.8	41.0
63	Diagnose diabetes mellitus	15.6	37.3	19.3	14.6	13.2	0.0	10.8	89.2	2.8	48.6	48.6
64	Manage diabetes mellitus	25.0	33.5	15.6	15.1	10.8	0.5	6.6	92.9	7.5	51.4	41.0
65	Diagnose and manage diabetic ketoacidosis	37.3	42.5	10.4	6.6	3.3	0.0	4.2	95.8	11.8	52.8	35.4
66	Diagnose and manage acute exacerbation of asthma	3.3	30.7	31.1	25.0	9.9	0.0	7.5	92.5	0.0	51.9	48.1
67	Diagnose and manage the different types of shocks	9.4	50.0	23.1	11.8	5.7	0.0	7.5	92.5	2.8	58.0	39.2
68	Diagnose and manage organophosphate poisoning	27.7	47.9	15.5	5.6	3.3	0.0	8.0	92.0	3.8	67.1	29.1
69	Diagnose acute severe meningitis	37.1	53.1	6.6	1.4	1.9	0.0	3.3	96.7	2.8	60.4	36.8
70	Manage acute severe meningitis	46.0	43.2	7.0	1.4	2.3	0.0	4.2	95.8	7.0	61.0	31.9
71	Diagnose and treat malaria	3.3	25.8	12.2	24.9	33.8	0.0	7.5	92.5	0.0	38.0	62.0
72	Diagnose and manage cerebral malaria	27.2	43.2	11.3	10.8	7.5	0.0	4.2	95.8	5.6	45.5	48.8
73	Diagnose and manage anemia	0.9	27.7	25.8	29.6	16.0	0.5	21.1	78.4	0.0	50.2	49.8
74	Diagnose and treat TB	5.6	30.0	35.2	20.2	8.9	0.0	11.3	88.7	1.9	47.9	50.2
75	Diagnose and treat HIV	20.3	35.8	19.8	9.4	14.6	0.9	11.8	87.3	5.7	54.2	40.1
	C3. Obstetrics and gynecology											
76	Provide focused antenatal care services	28.8	31.6	12.7	15.1	11.8	11.8	37.3	50.9	0.0	50.9	49.1
77	Diagnose and refer complicated cases of pregnancy	9.4	43.4	22.2	21.7	3.3	1.4	9.0	89.6	0.5	55.7	43.9
78	Assess and follow normal labor	14.7	29.9	14.7	31.8	9.0	6.6	23.2	70.1	0.5	46.4	53.1
79	Attend normal delivery	14.2	30.8	16.1	32.2	6.6	8.1	25.1	66.8	0.5	46.9	52.6
80	Perform instrumental/operative vaginal deliveries	52.6	28.4	10.9	7.6	0.5	4.7	20.9	74.4	27.5	46.9	25.6
81	Actively manage third stage of labor	13.3	35.1	15.6	29.4	6.6	6.6	10.9	82.5	0.5	49.8	49.8
82	Diagnose and manage pre-eclampsia/eclampsia	29.4	53.6	11.4	5.2	0.5	3.3	4.7	91.9	6.6	54.5	38.9
83	Detect cord prolapse	40.8	50.2	4.3	4.3	0.5	2.4	13.7	83.9	4.7	62.1	33.2
84	Administer uterotonic agents	23.2	39.3	11.8	21.3	4.3	3.8	26.5	69.7	6.1	50.0	43.9
85	Diagnose, resuscitate, and refer abnormal deliveries	13.7	45.0	21.3	18.5	1.4	2.4	7.6	90.0	0.0	60.7	39.3

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
86	Diagnose and manage malaria in pregnancy	33.2	43.1	9.0	11.4	3.3	2.4	9.0	88.6	2.8	49.3	47.9
87	Diagnose diabetes in pregnancy	53.6	41.2	2.8	1.4	0.9	2.4	17.1	80.6	6.2	55.9	37.9
88	Diagnose obstructed/prolonged labor	19.4	47.4	21.8	10.0	1.4	2.4	8.5	89.1	4.7	59.7	35.5
89	Administer parenteral antibiotic for emergency	12.4	42.4	15.7	18.1	11.4	2.9	12.9	84.3	0.0	53.8	46.2
90	Administer anticonvulsants	36.2	51.0	7.6	2.9	2.4	2.9	10.0	87.1	2.9	62.4	34.8
91	Remove placenta manually	29.0	50.0	13.3	7.6	0.0	2.9	13.8	83.3	2.9	59.5	37.6
92	Diagnose and provide resuscitation for asphyxiated newborns	28.6	53.8	10.0	6.7	1.0	2.9	8.6	88.6	3.3	63.3	33.3
93	Diagnose and manage pelvic inflammatory diseases	14.8	46.7	24.3	10.5	3.8	1.9	29.5	68.6	2.4	60.0	37.6
94	Diagnose and manage common abnormal uterine bleeding	11.4	48.1	25.2	10.0	5.2	2.9	13.3	83.8	1.9	62.4	35.7
95	Provide immediate newborn care	16.2	32.9	16.2	27.1	7.6	2.4	17.1	80.5	1.0	51.9	47.1
96	Provide tetanus toxoid vaccination	27.5	42.7	12.8	10.0	7.1	16.7	43.3	40.0	1.9	46.7	51.4
97	Diagnose ectopic pregnancy	60.0	35.7	2.4	1.0	1.0	3.8	18.1	78.1	7.6	67.6	24.8
98	Diagnose and refer complicated gynecologic cases	21.0	60.5	15.2	1.0	2.4	2.9	18.6	78.6	2.4	71.9	25.7
99	Provide comprehensive postnatal care	24.3	39.5	16.7	14.3	5.2	8.1	32.9	59.0	1.0	56.7	42.4
100	Prepare and use manual vacuum aspiration as diagnostic/ therapeutic mechanism	58.6	27.1	8.1	5.2	1.0	7.1	29.0	63.8	25.7	54.8	19.5
101	Conduct medical abortion	71.0	16.7	7.1	3.3	1.9	13.3	31.4	55.2	29.5	52.4	18.1
102	Provide postabortion care	36.0	41.2	13.7	7.6	1.4	4.8	23.3	71.9	11.4	55.7	32.9
103	Diagnose and manage cases of sexual assault	33.8	47.6	12.9	3.3	2.4	6.7	27.8	65.6	7.2	64.6	28.2
104	Perform visual inspection with acetic acid to screen for cervical cancer	94.3	5.2	0.5	0.0	0.0	12.9	38.1	49.0	75.2	21.9	2.9
	C4. Pediatrics and child health											
105	Take and record history from children and their parents	3.3	14.7	11.8	23.7	46.4	3.3	28.9	67.8	0.0	50.2	49.8
106	Examine children for their growth and development	7.1	19.0	10.4	25.1	38.4	2.8	29.4	67.8	0.5	51.7	47.9
107	Document normal growth and development of infants/children	8.5	20.4	14.7	23.2	33.2	6.2	36.4	57.4	0.5	52.6	46.9
108	Diagnose and manage children with protein-energy malnutrition	8.0	36.3	25.0	20.8	9.9	1.9	20.0	78.1	1.0	51.9	47.1
109	Diagnose and manage children with micronutrient deficiency	16.0	44.8	17.5	13.7	8.0	1.9	25.2	72.9	1.9	60.5	37.6
110	Provide Integrated Management of Neonatal and Childhood Illness	15.6	20.3	15.1	17.0	32.1	1.4	26.1	72.5	7.6	51.7	40.8
111	Provide Expanded Programme on Immunization for children	34.0	40.6	13.2	8.0	4.2	14.8	35.9	49.3	2.9	51.7	45.5

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
	C5. Surgery											
112	Perform abscess drainage	16.0	48.1	24.1	8.5	3.3	3.8	33.6	62.6	4.7	58.3	37.0
113	Perform circumcision	62.3	25.9	7.1	2.8	1.9	20.9	45.0	34.1	32.7	47.4	19.9
114	Apply plaster of Paris	81.6	13.2	2.8	0.9	1.4	10.4	48.3	41.2	41.7	46.0	12.3
115	Diagnose and manage minor trauma and injury	2.8	15.1	17.5	34.0	30.7	2.4	31.8	65.9	0.9	55.9	43.1
116	Remove foreign body	5.7	51.4	24.5	15.1	3.3	1.9	27.1	71.0	3.3	66.7	30.0
117	Perform dental extraction	89.6	7.5	1.9	0.9	0.0	13.4	50.7	35.9	59.3	37.3	3.3
118	Diagnose and manage minor surgical problems (lipoma, hydrocele)	54.7	36.8	5.2	2.4	0.9	9.0	49.0	41.9	36.7	53.3	10.0
119	Diagnose myoma	42.5	52.4	2.8	1.4	0.9	5.7	46.2	48.1	16.7	66.7	16.7
120	Diagnose neoplastic diseases	45.3	51.4	1.4	0.9	0.9	4.8	42.4	52.9	22.9	66.7	10.5
121	Diagnose acute abdomen	5.7	53.8	23.6	13.7	3.3	0.9	6.6	92.4	1.4	60.5	38.1
122	Diagnose upper gastrointestinal bleeding	23.1	55.2	14.2	4.7	2.8	1.4	13.7	84.8	3.3	64.5	32.2
123	Diagnose and manage minor fracture	10.9	45.0	25.1	14.2	4.7	1.4	31.4	67.1	4.3	74.8	21.0
124	Perform lifesaving minor surgical procedures (tracheostomy, suprapubic puncture, etc.)	84.4	15.6	0.0	0.0	0.0	3.8	12.9	83.3	60.0	36.2	3.8
	C6. Other clinical services (psychiatry; eye, ear, nose, and throat; dentistry; ophthalmology; dermatology)											
125	Diagnose and manage depressive disorders	32.1	60.8	4.7	1.9	0.5	3.8	41.2	55.0	12.3	74.9	12.8
126	Diagnose and manage bipolar disorders	51.9	44.8	2.8	0.5	0.0	5.2	46.4	48.3	19.0	72.5	8.5
127	Diagnose and manage anxiety disorders	33.5	60.4	4.2	1.9	0.0	5.2	40.8	54.0	11.4	73.0	15.6
128	Diagnose and manage psychotic disorders	33.0	58.5	7.1	0.9	0.5	2.4	40.8	56.9	13.7	73.0	13.3
129	Diagnose and manage tonic-clonic seizures	31.6	50.0	12.7	5.7	0.0	2.4	26.5	71.1	13.3	64.0	22.7
130	Manage substance abuse disorders	48.6	44.3	5.7	1.4	0.0	4.3	42.2	53.6	14.7	69.7	15.6
131	Counsel or give appropriate advice and guidance for the emotionally disturbed	15.6	58.0	14.2	6.6	5.7	2.4	36.5	61.1	4.3	66.4	29.4
132	Provide health education to the community in the prevention/ rehabilitation of mental health	48.6	31.6	12.7	4.7	2.4	6.6	48.8	44.5	7.6	63.5	28.9
133	Follow up patients taking psychotropic drugs in the community	54.2	31.1	9.0	4.2	1.4	6.7	37.1	56.2	8.5	70.1	21.3
134	Diagnose and manage conjunctivitis	2.8	22.6	19.8	38.7	16.0	2.8	31.8	65.4	0.5	50.2	49.3
135	Perform trichiasis/entropion correction surgery of the upper eyelid to prevent blindness for trachoma complications	92.9	4.7	1.4	0.0	0.9	9.5	30.5	60.0	80.1	16.1	3.8

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
136	Measure visual acuity	26.4	40.1	16.5	9.9	7.1	9.0	45.2	45.7	9.5	62.4	28.1
137	Stain the eye with fluorescein to check corneal abrasion	93.9	4.7	1.4	0.0	0.0	14.8	48.6	36.7	75.2	19.5	5.2
138	Diagnose and manage common skin infection	1.4	17.9	13.7	34.9	32.1	4.7	43.6	51.7	0.0	60.2	39.8
139	Diagnose and manage common allergic skin disorders	1.9	23.6	25.0	31.6	17.9	3.3	45.2	51.4	0.5	59.2	40.3
140	Diagnose and manage various forms of rhinitis	9.4	42.5	23.6	14.6	9.9	5.7	48.3	46.0	2.4	63.0	34.6
141	Diagnose and treat tinnitus	23.4	45.9	14.8	10.5	5.3	7.7	45.2	47.1	6.7	66.3	26.9
142	Diagnose and manage epistaxis	5.7	60.8	20.3	9.0	4.2	2.4	33.8	63.8	1.9	59.7	38.4
143	Diagnose and manage gingivitis	17.5	49.5	18.9	9.9	4.2	3.8	50.5	45.7	1.9	62.6	35.5
144	Diagnose and treat periodontitis	21.7	52.8	15.1	7.1	3.3	3.3	49.0	47.6	4.3	69.2	26.5
	D. Public health service delivery											
	D1. Nutrition											
145	Assess nutritional status of communities using different methods	43.4	28.8	16.5	7.5	3.8	2.8	44.5	52.6	1.9	64.0	34.1
146	Participate in nutritional planning to meet special needs.	60.8	25.9	9.4	1.9	1.9	7.1	45.0	47.9	4.7	71.1	24.2
147	Identify specific nutritional deficiencies of the community	39.6	34.4	16.5	5.7	3.8	2.4	38.1	59.5	2.4	68.6	29.0
	D2. Reproductive health											
148	Identify and manage unmet reproductive health needs in the community	40.3	30.3	15.2	9.5	4.7	4.3	50.5	45.2	2.4	70.5	27.1
149	Provide quality services pertinent to sexual/reproductive health service	14.2	40.1	21.2	13.2	11.3	5.7	43.6	50.7	2.4	70.1	27.5
150	Provide HIV counseling and testing services	7.5	16.0	11.3	17.9	47.2	3.8	23.2	73.0	0.9	47.9	51.2
151	Identify and manage sexually transmitted infections	3.3	20.8	25.5	28.3	22.2	0.9	19.4	79.6	0.5	50.7	48.8
152	Provide family planning (FP) counseling service	9.0	29.7	14.6	23.6	23.1	6.6	43.1	50.2	1.4	54.5	44.1
153	Provide pills as FP methods	20.8	37.3	18.4	13.7	9.9	16.6	48.8	34.6	0.5	51.2	48.3
154	Provide injectable FP method	22.2	32.1	18.9	14.6	12.3	14.7	47.9	37.4	3.3	49.3	47.4
155	Insert and remove intrauterine device	80.7	15.1	2.4	0.5	1.4	15.6	53.1	31.3	59.2	30.3	10.4
156	Insert and remove implants	53.8	29.7	9.0	5.7	1.9	13.3	53.1	33.6	37.4	40.8	21.8
157	Perform permanent FP method	95.3	4.3	0.5	0.0	0.0	26.2	51.0	22.9	86.2	11.0	2.9

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
	D3. Health information management											
158	Ensure data on health and health-related issues are collected from health institutions/communities/other sources	18.7	10.0	25.4	14.8	31.1	12.5	36.5	51.0	1.0	57.7	41.3
159	Analyze health and health-related data from health institutions/ communities/other sources	31.1	17.0	34.9	13.7	3.3	13.3	39.8	46.9	1.9	65.9	32.2
160	Communicate relevant data/report to the concerned bodies (woreda health office, Regional Health Bureau, etc.) and the community for decision/action	23.1	17.9	41.5	15.1	2.4	10.9	39.3	49.8	0.9	62.1	37.0
161	Utilize relevant data/report for decision-making	15.8	29.2	34.0	9.1	12.0	8.2	36.1	55.8	1.9	59.1	38.9
	D4. Health service management											
162	Contribute to the development/appraisal of health/health-related policies	51.9	20.8	11.3	3.3	12.7	12.3	48.8	38.9	14.7	62.6	22.7
163	Utilize the concept/components/strategies of primary health care to organize health programs at all levels	17.5	25.5	17.0	10.4	29.7	5.7	44.5	49.8	1.9	67.8	30.3
164	Plan for health service delivery and primary health care programs	25.5	32.1	25.9	7.5	9.0	6.6	45.5	47.9	0.9	64.9	34.1
165	Organize/coordinate/direct health service delivery and primary health care programs	32.5	20.8	18.4	12.3	16.0	8.1	46.0	46.0	1.4	67.8	30.8
166	Monitor and evaluate health service delivery and primary health care programs	32.5	19.8	25.0	13.2	9.4	6.6	49.8	43.6	2.8	68.2	28.9
167	Manage health offices/facilities/institutions	51.4	23.3	7.6	6.7	11.0	14.8	48.8	36.4	5.7	62.7	31.6
	D5. Community-based intervention (health promotion, disease prevention, and environmental health)											
168	Design and provide high-quality and culturally sensitive health education to individuals/family/community	19.3	30.2	24.5	11.3	14.6	4.7	48.3	46.9	1.9	63.5	34.6
169	Design appropriate preventive and control measures in disaster situations	71.7	20.8	4.2	2.4	0.9	4.7	33.6	61.6	6.6	72.5	20.9
170	Implement appropriate preventive and control measures in disaster situations	73.6	18.4	4.7	2.4	0.9	2.8	34.1	63.0	9.0	72.0	19.0
171	Supervise/take part in outbreak investigation and management	50.7	42.2	3.3	3.3	0.5	2.4	27.6	70.0	3.3	68.6	28.1
172	Direct/lead a team to control epidemics	60.8	33.0	3.3	1.9	0.9	2.4	35.1	62.6	4.7	70.6	24.6
173	Assess community health needs/priority problems using intradisciplinary team approaches or intervene on identified priority problems	41.5	35.4	16.0	6.1	0.9	3.3	41.2	55.5	5.2	70.6	24.2
174	Coordinate outreach health service programs	42.9	27.4	15.1	13.2	1.4	8.5	48.3	43.1	4.7	64.0	31.3
175	Take a lead in surveillance and control of diseases	48.1	29.2	11.3	10.8	0.5	5.7	41.7	52.6	5.2	69.7	25.1
176	Mobilize individuals/families or communities for health action	23.1	41.0	17.9	9.9	8.0	4.7	46.9	48.3	1.9	64.5	33.6

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
177	Conduct follow-up of cases upon their return to their home or community for continuity of appropriate care	35.4	33.0	17.9	9.9	3.8	4.7	42.7	52.6	3.3	63.5	33.2
178	Ensure safe water supplies/waste disposal facilities in the community	45.3	19.8	18.4	15.1	1.4	5.7	33.3	61.0	2.9	67.6	29.5
179	Investigate food-borne outbreaks	74.1	20.3	2.8	1.4	1.4	3.3	24.3	72.4	4.3	68.6	27.1
180	Assess the health condition of food employees and food handler	53.3	30.7	10.8	4.2	0.9	4.8	39.5	55.7	3.8	67.8	28.4
181	Act as food inspector in the process of safeguarding food products	72.6	20.3	5.2	1.9	0.0	9.0	47.1	43.8	9.0	69.2	21.8
182	Identify vectors of health importance	44.8	37.3	11.8	5.2	0.9	4.3	41.0	54.8	3.8	70.1	26.1
183	Introduce appropriate control measures for vectors that could have public health importance	47.2	35.4	12.3	3.8	1.4	3.8	44.8	51.4	6.2	66.8	27.0
184	Investigate accidents and occupational health hazards of particular relevance to environmental health	55.7	28.3	9.0	4.7	2.4	3.8	40.7	55.5	4.8	71.9	23.3
185	Introduce interventions to solve the health and safety problems encountered in industries, various occupations, and recreational areas	75.9	18.9	4.2	0.9	0.0	10.4	57.8	31.8	12.8	70.1	17.1
186	Apply health and safety precautions and methods of control	15.1	23.6	12.7	8.0	40.6	1.4	33.6	64.9	2.8	59.7	37.4
187	Contribute to national- and regional-level disease prevention and control campaigns	32.5	58.5	7.1	0.9	0.9	6.6	42.2	51.2	3.3	64.5	32.2
188	Design interventions to prevent and control communicable and noncommunicable diseases	49.1	28.8	12.7	6.6	2.8	4.3	39.8	55.9	10.9	63.5	25.6
189	Implement interventions to prevent and control communicable and noncommunicable diseases	25.0	30.7	16.5	9.4	18.4	3.8	32.2	64.0	9.5	54.0	36.5

Annex C: Task Lists for Nurses

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
	Basic nursing care/service											
1	Admit the patient	11.2	27.4	10.3	26.5	24.7	9.0	22.0	69.1	6.3	59.2	34.5
2	Transfer the patient	9.4	36.3	11.7	20.6	22.0	7.6	38.1	54.3	5.4	65.0	29.6
3	Discharge the patient	11.7	26.9	13.9	28.7	18.8	15.2	44.8	39.9	7.6	61.4	30.9
4	Provide care of the patient unit (bed, over-bed table, bedside table, etc.)	10.3	22.0	11.7	22.9	33.2	11.2	46.6	42.2	1.8	59.6	38.6
5	Provide care of hospital unit equipment (linen, forceps, jars, rubber, etc.)	12.1	12.6	6.3	21.1	48.0	5.8	31.4	62.8	3.6	51.6	44.8
6	Make the patient bed	18.0	26.6	7.7	19.8	27.9	10.4	55.4	34.2	2.3	55.0	42.8
7	Provide bathing (bed bath)	55.4	25.7	6.8	7.2	5.0	12.2	55.4	32.4	8.6	62.2	29.3
8	Provide mouth care	51.1	29.1	4.0	5.8	9.9	11.7	64.1	24.2	4.9	69.1	26.0
9	Provide back care (massage)	58.3	27.4	5.4	3.1	5.8	13.5	64.1	22.4	9.4	63.7	26.9
10	Provide perineal care	44.8	28.3	9.0	7.2	10.8	9.0	58.7	32.3	5.0	66.7	28.4
11	Provide hair care (cooping, shampooing, pedicles treatment, etc.)	57.4	31.8	2.7	3.6	4.5	13.5	63.2	23.3	5.8	66.8	27.4
12	Feed a helpless patient	32.4	37.8	7.2	8.1	14.4	5.0	32.9	62.2	4.1	57.2	38.7
13	Feed patient via nasogastric tube	50.9	25.2	5.4	10.4	8.1	2.3	20.7	77.0	12.6	56.8	30.6
14	Provide dry heat application (hot water bottle)	50.9	32.4	5.9	6.3	4.5	7.7	66.2	26.1	8.1	71.6	20.3
15	Provide moist heat application (sitz bath)	57.2	30.2	4.5	4.5	3.6	8.6	65.8	25.7	8.6	69.4	22.1
16	Provide moist cold compress	22.5	33.3	12.2	17.1	14.9	6.8	59.9	33.3	3.6	56.8	39.6
17	Provide dry cold compress (ice bag)	16.7	41.9	9.5	16.7	15.3	6.8	60.8	32.4	2.7	58.6	38.7
18	Measure body temperature	0.9	3.2	2.3	10.8	82.9	3.2	27.9	68.9	0.9	30.6	68.5
19	Measure blood pressure	0.5	1.8	0.5	7.2	90.1	2.7	18.5	78.8	0.9	27.9	71.2
20	Measure respiration	0.9	4.1	0.9	11.7	82.4	3.2	22.5	74.3	0.9	29.7	69.4
21	Assess pulse rate	2.3	2.7	1.4	11.7	82.0	3.2	25.7	71.2	0.9	31.5	67.6
22	Collect stool specimen	68.0	13.5	0.5	5.0	13.1	12.2	47.7	40.1	18.5	55.0	26.6
23	Collect urine specimen	63.1	17.6	1.4	4.1	14.0	11.3	45.9	42.8	17.6	55.0	27.5
24	Collect sputum specimen	69.8	14.0	2.3	6.8	7.2	11.3	42.8	45.9	19.8	55.9	24.3
25	Collect blood specimen	42.8	18.5	2.7	8.6	27.5	9.0	37.8	53.2	12.6	53.2	34.2
26	Insert and remove the rectal tube	50.0	32.0	5.4	8.6	4.1	3.6	38.7	57.7	23.4	55.0	21.6
27	Administer fluid into the rectum and sigmoid colon for cleansing, therapeutic, or diagnostic purposes (enema)	41.0	38.3	10.8	5.9	4.1	2.7	39.2	58.1	13.1	62.2	24.8

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
28	Pass a flatus tube	68.0	23.9	4.1	3.6	0.5	5.4	40.5	54.1	28.4	57.7	14.0
29	Insert and remove nasogastric tube	49.5	29.3	4.5	11.7	5.0	2.3	27.5	70.3	16.2	59.9	23.9
30	Insert and remove the straight urinary catheter	15.3	39.6	14.4	18.9	11.7	0.9	24.8	74.3	6.8	57.7	35.6
31	Insert a retention (indwelling) catheter	24.3	44.1	12.6	10.8	8.1	3.2	32.9	64.0	9.9	58.1	32.0
32	Administer oral medication	5.0	10.8	4.5	15.3	64.4	1.8	29.3	68.9	1.4	42.8	55.9
33	Administer rectal medications	8.6	40.1	10.4	15.8	25.2	3.2	45.0	51.8	2.7	55.9	41.4
34	Administer IV medication	1.3	15.7	7.2	29.1	46.6	0.9	17.5	81.6	1.3	39.5	59.2
35	Administer intramuscular medication	0	4.5	4.0	17.0	74.4	2.7	25.1	72.2	0.4	35.4	64.1
36	Administer subcutaneous medication	3.2	29.3	15.3	24.3	27.9	2.7	26.1	71.2	0.9	42.8	56.3
37	Administer intradermal medication	6.3	32.3	17.5	21.5	22.4	3.1	34.5	62.3	2.2	49.3	48.4
38	Administer topical medication	11.7	40.8	9.9	20.2	17.5	7.6	51.6	40.8	2.7	52.5	44.8
39	Administer ophthalmic medication	16.1	38.6	10.3	18.4	16.6	6.3	41.7	52.0	3.6	54.3	42.2
40	Administer ear medication	18.4	35.9	13.0	18.4	14.3	5.4	40.8	53.8	0.9	59.2	39.9
41	Administer vaginal medication	50.7	31.4	7.6	5.4	4.9	6.3	48.0	45.7	12.1	60.5	27.4
42	Administer inhalation medications (e.g., steam)	39.0	43.5	5.8	7.2	4.5	6.7	34.5	58.7	11.7	60.1	28.3
43	Manage kinked catheter	29.1	40.8	9.0	11.7	9.4	6.7	38.1	55.2	16.1	57.4	26.5
44	Manage incorrect IV needle placement	7.2	39.9	6.3	20.2	26.5	3.1	28.3	68.6	2.7	54.3	43.0
45	Manage IV clot formation	9.0	42.6	8.1	15.2	25.1	2.2	24.7	73.1	4.0	52.9	43.0
46	Manage intermittent infusion device (IV) insertion, maintenance, and drug administration	9.4	30.9	9.9	22.4	27.4	3.1	22.9	74.0	3.6	57.0	39.5
47	Develop and use the nursing process as framework for nursing care practice (care plan preparation and the like)	28.3	19.3	11.7	15.2	25.6	6.7	43.9	49.3	8.1	61.9	30.0
48	Provide postmortem care	35.0	48.4	9.0	4.9	2.7	12.6	56.1	31.4	9.0	64.1	26.9
49	Provide pressure ulcer care (bedsore care)	52.9	31.7	5.0	5.9	4.5	4.5	38.9	56.6	7.7	63.8	28.5
50	Dress clean wound	1.3	8.1	4.0	26.5	60.1	2.2	32.3	65.5	0.9	41.3	57.8
51	Dress septic wound	4.9	16.1	6.7	27.8	44.4	1.8	27.8	70.4	0.4	46.2	53.4
52	Dress wound with draining tube	34.5	33.6	8.1	12.6	11.2	2.7	33.6	63.7	13.0	60.1	26.9
53	Irrigate wound	13.1	27.0	12.2	17.6	30.2	1.4	39.2	59.5	6.8	56.8	36.5
54	Suture wound with stitches	3.6	21.6	14.4	32.0	28.4	2.3	28.8	68.9	3.2	48.6	48.2
55	Suture wound with metal clip	82.0	11.3	1.4	3.2	2.3	18.5	43.2	38.3	59.5	30.2	10.4
56	Remove stitches	5.0	22.1	14.0	35.1	23.9	3.2	45.0	51.8	4.1	49.1	46.8

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
57	Remove metal clip	83.8	9.5	0.5	3.2	3.2	20.3	43.2	36.5	60.2	29.4	10.4
58	Position patient in various positions	14.0	37.4	9.9	15.3	23.4	5.4	42.8	51.8	2.3	55.9	41.9
59	Turn the patient to a side-lying position	14.9	41.9	9.5	12.2	21.6	6.3	48.6	45.0	2.7	58.8	38.5
60	Move patient	19.8	41.4	7.2	12.6	18.9	8.1	53.6	38.3	2.7	58.6	38.7
61	Lift patient	24.4	39.8	7.2	13.6	14.9	8.6	54.1	37.3	3.2	63.5	33.3
62	Diagnose and manage common infectious diseases	4.9	12.1	7.2	16.1	59.6	0.9	25.6	73.5	2.7	60.5	36.8
63	Refer patients for further management when it is necessary	11.7	30.6	20.7	22.5	14.4	2.3	18.9	78.8	7.7	63.1	29.3
64	Participate in health education and promotion, disease prevention and control	2.2	8.5	10.3	26.9	52.0	4.5	39.9	55.6	1.3	51.6	47.1
65	Triage patient	37.3	21.4	5.5	8.6	27.3	8.6	42.7	48.6	10.0	64.5	25.5
66	Manage pain	0.9	6.0	3.2	11.1	78.8	1.8	38.7	59.4	1.8	49.3	48.8
67	Provide provider-initiated HIV counseling and testing	6.3	13.9	5.4	13.9	60.5	1.3	32.3	66.4	5.4	54.7	39.9
68	Perform passive range of motion exercises for patient unable to move	45.0	36.9	5.9	5.0	7.2	6.3	44.1	49.5	13.1	63.5	23.4
	Emergency nursing care											
69	Perform gastric lavage	59.9	24.3	3.6	7.7	4.5	2.7	24.3	73.0	23.9	51.8	24.3
70	Conduct emergency patient assessment (take history and perform physical examination)	3.2	16.7	8.1	19.9	52.0	2.3	22.6	75.1	2.3	57.5	40.3
71	Order the necessary lab investigation	4.1	10.8	9.5	18.0	57.7	2.3	30.6	67.1	2.7	52.7	44.6
72	Perform cardiopulmonary resuscitation	33.3	50.5	9.0	4.1	3.2	0.9	12.2	86.9	7.2	62.2	30.6
73	Provide first aid for patient with anaphylaxis	27.9	51.8	8.1	5.0	7.2	0.5	19.0	80.5	7.2	65.6	27.1
74	Provide first aid for patients with bleeding (applying direct pressure to wounds/pressure points)	1.3	29.6	12.6	23.8	32.7	0.4	8.1	91.5	1.8	51.6	46.6
75	Provide first aid for patients with burns—thermal, chemical, friction, electrical	11.2	51.1	17.9	13.0	6.7	0.4	9.4	90.1	5.4	61.9	32.7
76	Provide first aid for patient with choking/airway obstruction	30.9	49.8	11.2	3.6	4.5	0.4	5.4	94.2	10.8	61.9	27.4
77	Provide first aid for patients with drowning	60.0	34.5	1.8	0.9	2.7	1.4	9.5	89.1	22.8	58.9	18.3
78	Provide first aid for patient with envenomation (snake, spider, insect, and marine bites and stings)	25.1	57.0	9.9	5.8	2.2	1.3	12.6	86.1	12.1	64.6	23.3
79	Provide first aid for patient with environmental impact such as hypothermia, hyperthermia, dehydration, heat stroke	16.1	39.9	15.7	14.3	13.9	0.9	13.5	85.7	4.5	66.4	29.1

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
80	Provide first aid for patient with injuries and crush fractures (control any external bleeding and cover any wounds, secure and support any suspected fractures, etc.)	13.1	41.4	21.6	13.1	10.8	0.9	18.5	80.6	6.3	67.1	26.6
81	Splint and/or immobilize the fracture	24.4	47.5	13.6	9.5	5.0	1.8	24.9	73.3	10.0	65.6	24.4
82	Provide first aid for patients with medical conditions (e.g., asthma)	4.9	42.2	21.5	19.7	11.7	0	9.0	91.0	3.1	63.2	33.6
83	Provide first aid for patient with poisoning and toxic substances	16.8	54.1	15.5	9.1	4.5	0	8.2	91.8	5.5	67.3	27.3
84	Monitor blood glucose level	60.5	17.9	7.2	5.8	8.5	0.9	22.4	76.7	35.9	45.7	18.4
85	Administer oxygen by mask	49.8	28.3	5.8	7.2	9.0	0.9	7.2	91.9	20.6	58.3	21.1
86	Administer oxygen by catheter	61.4	17.5	4.9	8.5	7.6	0.9	9.4	89.7	26.0	55.2	18.8
87	Provide first aid for patients with altered and loss of consciousness	16.2	56.3	13.1	9.5	5.0	1.8	12.2	86.0	5.0	70.6	24.4
88	Remove foreign body	9.0	59.2	16.1	11.2	4.5	1.8	26.9	71.3	6.7	64.6	28.7
	Critical nursing care											
89	Manage external fixation of patient with fracture (checking neurovascular, edema, sensation, movement, etc.)	61.5	27.6	3.2	4.1	3.6	4.1	28.1	67.9	28.5	58.4	13.1
90	Provide stump and prosthesis care	79.7	17.6	2.3	0	0.5	4.5	36.9	58.6	40.1	53.6	6.3
91	Perform colostomy care	72.5	18.0	4.5	1.8	3.2	1.4	31.5	67.1	32.0	52.7	15.3
92	Apply cast (plaster of Paris)	82.4	12.2	2.3	2.7	0.5	2.7	26.6	70.7	59.9	32.4	7.7
93	Remove cast	77.9	15.8	3.6	2.3	0.5	2.7	35.6	61.7	54.5	36.5	9.0
94	Prepare, handle, and administer chemotherapeutic drug for cancer patient	93.7	4.5	0.4	0.4	0.9	5.4	23.3	71.3	62.8	30.9	6.3
95	Perform gastric aspiration to withdraw fluid or gas	67.6	20.7	4.1	6.3	1.4	4.5	28.4	67.1	31.7	50.7	17.6
96	Provide tracheostomy care (tracheal suctioning, endotracheal tube care, etc.)	85.2	10.3	0.9	1.8	1.8	2.7	20.6	76.7	46.6	44.4	9.0
97	Assist endotracheal intubation	88.3	9.4	0.4	0.9	0.9	2.7	22.4	74.9	59.5	33.8	6.8
98	Assist bronchoscopy	94.2	4.0	0.4	0.9	0.4	1.8	26.9	71.3	64.1	31.4	4.5
99	Assist lumbar puncture	86.1	10.3	0.9	0.9	1.8	3.6	27.4	69.1	58.3	37.2	4.5
100	Assist bone marrow aspiration	95.1	4.0	0	0.4	0.4	4.5	30.5	65.0	66.8	29.1	4.0
101	Assist splenic aspiration	96.4	1.8	0.4	0.9	0.4	3.6	32.3	64.1	68.6	27.4	4.0
102	Assist thoracentesis	87.4	9.4	0.9	1.8	0.4	1.3	30.9	67.7	63.2	30.9	5.8
103	Assist abdominal tap	78.0	13.5	3.6	2.2	2.7	1.3	30.0	68.6	48.0	43.0	9.0
104	Transfuse blood and blood products	78.0	9.4	5.4	4.9	2.2	0.9	12.6	86.5	43.0	42.2	14.8

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
105	Set up and operate mechanical ventilator	67.7	16.6	4.5	2.2	9.0	3.1	22.9	74.0	43.0	42.6	14.3
106	Monitor spirometer	89.7	7.2	0.9	0.4	1.8	3.1	33.2	63.7	64.9	30.6	4.5
107	Set up and monitor chest tube draining system	85.2	10.3	2.7	0.4	1.3	2.2	22.9	74.9	61.0	31.8	7.2
108	Perform oropharyngeal suction	77.1	15.2	4.0	2.7	0.9	1.3	21.5	77.1	46.6	44.8	8.5
109	Perform oral and parenteral rehydration of the child	16.6	36.3	12.1	14.8	20.2	0	19.3	80.7	7.2	64.6	28.3
110	Manage severe acute malnutrition	20.2	35.9	18.4	10.3	15.2	0.4	13.5	86.1	13.9	55.6	30.5
111	Monitor incubator	84.8	9.4	0.9	2.2	2.7	4.9	19.7	75.3	58.7	31.8	9.4
112	Monitor phototherapy machine	98.2	0.9	0	0.0	0.9	5.4	33.8	60.8	77.9	17.1	5.0
113	Administer pediatric antiretroviral treatment	80.3	9.0	2.2	4.0	4.5	0.9	23.8	75.3	61.0	28.7	10.3
114	Assist umbilical catheterization	95.5	3.6	0.4	0	0.4	1.8	28.3	70.0	78.9	15.7	5.4
115	Assist intraosseous needle insertion	98.2	0.9	0.4	0	0.4	2.7	34.1	63.2	78.9	16.6	4.5
116	Exchange blood transfusion (e.g., Rh+)	94.6	3.2	0.9	0.5	0.9	0.5	20.3	79.3	75.7	18.9	5.4
117	Provide preoperative nursing care	78.5	11.7	1.3	1.8	6.7	0	22.0	78.0	32.7	54.7	12.6
118	Work as a scrub nurse (setting up the surgical field, maintaining sterility of the surgical field, prepping, draping, and surgical counts)	90.1	7.2	0.4	0	2.2	1.3	23.3	75.3	51.6	44.4	4.0
119	Work as a circulating nurse	91.0	4.0	1.3	0.4	3.1	3.1	28.7	68.2	48.4	45.3	6.3
120	Create and maintain a sterile field	67.1	14.9	2.3	5.0	10.8	0.9	24.3	74.8	32.0	51.4	16.7
121	Perform sterile technique (opening sterile techniques, wrapping sterile items, pouring sterile solution, opening and putting on sterile gloves)	60.1	15.7	1.8	4.9	17.5	0.9	22.9	76.2	29.1	49.8	21.1
122	Clean, disinfect, and sterilize medical equipment	26.0	17.5	3.6	18.4	34.5	0	17.5	82.5	9.9	60.1	30.0
123	Use personal protective equipment (gown, gloves, goggles, mask, respirator, etc.)	26.0	8.5	2.7	3.1	59.6	0	19.3	80.7	9.4	54.3	36.3
124	Perform surgical count	83.3	7.7	0	0.9	8.1	2.7	20.7	76.6	41.4	41.4	17.1
125	Assist anesthesia	84.3	10.2	0.9	1.9	2.8	2.8	26.9	70.4	55.3	35.3	9.3
126	Perform patient positioning	69.1	18.9	1.8	3.2	6.9	3.7	28.1	68.2	37.8	48.4	13.8
127	Provide postoperative care (prepare anesthetic bed, monitor vital sign, input, output, etc.)	75.3	11.2	2.7	2.7	8.1	1.3	18.8	79.8	26.5	57.4	16.1
128	Monitor nasoenteric decompression tube care after gastrointestinal surgery (monitor tube patent, suction, detect complication, etc.)	83.0	12.1	1.3	1.3	2.2	1.8	24.3	73.9	53.4	39.5	7.2
	Family health nursing care											
129	Counsel women for family planning methods	16.1	13.9	7.2	13.0	49.8	8.1	41.3	50.7	4.5	48.9	46.6
130	Provide oral contraceptive methods	18.8	17.9	9.9	14.8	38.6	7.6	48.4	43.9	4.0	51.6	44.4

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
131	Provide injectable contraceptive methods	20.2	19.3	8.1	13.5	39.0	6.3	48.0	45.7	6.7	49.3	43.9
132	Insert and remove Norplant (contraceptive implant)	60.1	14.3	4.9	9.9	10.8	6.7	52.0	41.3	48.4	30.5	21.1
133	Insert and remove intrauterine device	83.3	6.8	3.6	3.2	3.2	7.7	50.5	41.9	68.9	20.7	10.4
134	Conduct rapid initial evaluation at the first contact with a pregnant woman	22.9	26.5	8.1	12.1	30.5	1.8	38.6	59.6	10.3	61.4	28.3
135	Manage the identified problems/disease or any of the danger signs in pregnancy accordingly	22.0	29.1	7.6	11.7	29.6	0.9	18.8	80.3	10.8	63.2	26.0
136	Conduct a physical and obstetric examination	25.6	24.2	8.5	13.5	28.3	1.3	31.8	66.8	10.8	66.8	22.4
137	Order the necessary laboratory tests	20.2	24.7	7.2	14.3	33.6	3.1	31.8	65.0	8.1	64.1	27.8
138	Take personal, obstetric, and medical history	22.4	24.2	8.1	9.9	35.4	1.8	30.5	67.7	8.1	67.7	24.2
139	Offer HIV test and counsel woman on mother-to-child transmission of HIV	22.4	25.1	6.7	8.1	37.7	1.8	24.7	73.5	9.0	58.7	32.3
140	Provide iron and folic acid, mebendazole/ albendazole, tetanus toxoid according to the protocol	22.4	21.1	7.6	13.5	35.4	1.8	31.4	66.8	9.0	57.4	33.6
141	Counsel the client in any of the reasons to seek immediate medical care	19.3	25.6	6.7	11.2	37.2	1.8	29.6	68.6	7.6	60.5	31.8
142	Perform abdominal examinations	21.1	26.9	7.2	10.3	34.5	1.8	38.6	59.6	10.3	65.9	23.8
143	Perform vaginal examination	27.4	30.9	12.6	16.1	13.0	2.2	35.9	61.9	13.5	65.0	21.5
144	Use partograph to monitor labor progress	35.4	22.9	10.3	17.0	14.3	2.7	29.6	67.7	21.5	57.0	21.5
145	Assist the woman to have a safe and clean birth	20.7	27.5	14.4	19.4	18.0	0.9	25.7	73.4	9.5	65.8	24.8
146	Perform active management of third stage of labor	24.2	29.1	14.3	18.8	13.5	0.9	14.8	84.3	10.8	64.1	25.1
147	Deliver baby in face presentation	62.3	30.9	1.3	3.1	2.2	1.8	20.2	78.0	51.1	39.9	9.0
148	Deliver baby with a vacuum	71.7	19.3	4.0	3.6	1.3	1.3	18.4	80.3	61.4	30.9	7.6
149	Deliver baby in breech position	67.7	27.8	0.9	1.8	1.8	1.8	16.1	82.1	61.4	33.2	5.4
150	Deliver baby with forceps	89.2	9.9	0.4	0.4	0.0	6.3	19.3	74.4	78.5	19.7	1.8
151	Perform bimanual compression of the uterus	61.9	25.1	4.5	5.4	3.1	4.0	32.3	63.7	49.8	42.6	7.6
152	Make episiotomy and repair	41.3	35.0	8.5	10.3	4.9	1.8	31.4	66.8	26.0	59.2	14.8
153	Perform manual removal of placenta	41.3	35.9	8.5	9.4	4.9	1.3	16.1	82.5	29.6	58.7	11.7
154	Repair first- and second-degree tear	50.5	36.5	6.3	4.5	2.3	2.3	23.4	74.3	36.9	51.4	11.7
155	Provide essential newborn care (dry baby, cord care, vitamin K, eye ointment, etc.)	22.1	30.2	14.0	17.1	16.7	0.9	23.0	76.1	8.6	64.0	27.5
156	Perform newborn resuscitation	26.5	41.7	13.0	10.3	8.5	0.9	9.9	89.2	15.2	63.2	21.5
157	Provide postabortion care	63.7	22.9	4.0	5.4	4.0	0	17.5	82.5	46.2	41.3	12.6

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
158	Decontaminate all reusable instruments in 0.5% chlorine solution	13.5	17.0	6.3	18.8	44.4	0.4	22.0	77.6	7.6	52.9	39.5
159	Sterilize or use high-level disinfection for all reusable instruments	11.7	14.3	9.0	22.0	43.0	0	19.7	80.3	6.7	53.4	39.9
160	Perform care related to prevention of mother-to-child transmission after delivery	38.3	28.8	8.6	10.8	13.5	0.5	28.4	71.2	27.0	50.0	23.0
161	Assess, classify, and treat the sick young infant from birth up to 2 months using Integrated Management of Neonatal and Childhood Illness	28.3	25.6	6.3	14.3	25.6	0.4	27.4	72.2	19.3	52.9	27.8
162	Assess, classify, and treat the sick young infant from 2 months to 5 years	24.2	21.5	7.2	12.6	34.5	0.4	27.8	71.7	16.1	55.2	28.7
163	Monitor growth and development of child	20.6	25.6	9.9	9.4	34.5	1.3	37.2	61.4	11.7	55.2	33.2
164	Provide vaccination for child	18.8	27.4	12.1	13.0	28.7	1.3	26.5	72.2	7.2	53.8	39.0
165	Manage cold chain	27.8	24.7	8.5	6.3	32.7	0.4	29.6	70.0	16.1	53.8	30.0
166	Perform anthropometric measurement	22.9	22.0	5.8	12.6	36.8	3.6	42.2	54.3	11.2	57.4	31.4
167	Prepare and administer maintenance fluid	18.4	30.0	7.6	21.5	22.4	0.9	21.1	78.0	8.1	64.6	27.4
168	Nebulize child with epinephrine	74.3	20.7	3.2	0.5	1.4	2.7	25.7	71.6	57.5	32.6	10.0
169	Perform infant feeding	35.9	29.1	6.7	9.9	18.4	0.4	27.4	72.2	11.7	68.2	20.2
	Nursing leadership, management, and governance											
170	Lead and manage nursing care service (function as a head nurse matron, director, unit coordinator, etc.)	57.8	17.9	0.9	4.0	19.3	8.5	57.0	34.5	17.5	60.1	22.4
171	Participate in and contribute to policy development	68.3	19.5	4.1	1.8	6.3	7.2	53.8	38.9	20.4	67.0	12.7
	Nursing education and research											
172	Participate/be involved in teaching and assessment of nursing students	48.9	39.9	1.8	4.0	5.4	7.6	52.0	40.4	16.6	64.1	19.3
173	Participate in nursing research	81.6	17.5	0.4	0	0.4	4.9	57.4	37.7	33.2	59.6	7.2
	Nursing professionalism and ethics											
174	Respect the human rights, values, customs, and spiritual beliefs of the individual, family, and community in providing care	0	3.6	1.3	5.4	89.7	4.9	43.5	51.6	1.8	61.9	36.3
175	Demonstrate professional values such as respectfulness, responsiveness, compassion, trustworthiness, and integrity	0.4	2.7	2.7	13.5	80.7	3.1	43.0	53.8	0.9	64.6	34.5
176	Hold in confidence personal information and use judgment in sharing this information	0.9	4.0	0.4	11.7	83.0	3.1	35.9	61.0	1.8	53.4	44.8
177	Practice according to applicable standards for nursing practice, code of ethics	0	6.3	1.3	14.8	77.6	2.7	32.3	65.0	0.9	66.2	32.9

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
178	Work collaboratively with others and sustain a collaborative and respectful relationship with coworkers in nursing and other fields to meet the health care needs of individuals and communities (teamwork)	0.4	1.3	1.8	12.1	84.3	3.1	32.7	64.1	1.8	56.1	42.2
179	Provide accurate, sufficient, and timely information in a culturally appropriate manner on which to base consent for care and related treatment	0	5.8	5.4	15.2	73.5	4.5	36.9	58.6	0.9	63.1	36.0
180	Be accountable for actions and decisions at all times	0	5.0	2.3	8.1	84.7	2.7	38.7	58.6	0.9	63.5	35.6
181	Actively participate and maintain membership in nursing professional association	76.2	16.6	3.1	0.4	3.6	16.6	45.7	37.7	21.1	68.2	10.8
182	Recognize the ethical issues of nursing practices and functions within legal and ethical framework with responsibility and accountability for own practice	0.9	7.7	2.7	17.6	71.2	3.6	37.8	58.6	1.8	70.9	27.3
183	Identify learning needs and seek opportunities for improvement	1.3	17.0	13.0	16.6	52.0	4.0	42.2	53.8	1.8	72.6	25.6
184	Maintain knowledge of current policies and procedures	6.7	21.5	13.9	11.2	46.6	4.5	44.4	51.1	6.7	71.7	21.5

Annex D: Task Lists for Medical Laboratory Professionals

Task no.	Task name	Frequency						Criticality			Performance		
		Number responding	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
	Professional duties												
1	Function within legal and ethical framework with responsibility and accountability for his or her own practice	228	0.0	0.4	0.4	1.8	97.4	0	19.8	80.2	0	47.6	52.4
2	Maintain professional conduct in interactions with coworkers, patients, and other parties and instill in others a sense of responsibility and compassion	228	0.0	0.4	0.9	2.6	96.0	0.4	20.3	79.3	0	43.2	56.8
3	Respect privacy and confidentiality of all medical and personal information acquired in the course of providing professional services	228	0.0	0.4	0.4	0.9	98.2	0	13.7	86.3	0	35.2	64.8
4	Communicate effectively	227	0.0	0.4	0.0	7.5	92.0	2.2	17.3	80.5	0.9	46.0	53.1
5	Promote and advocate for the importance of the medical laboratory science profession	228	7.5	39.2	13.7	21.1	18.5	11.9	51.1	37.0	1.8	61.9	36.3
6	Coordinate or provide continuing professional development activities like in-service training, on-the-job training, etc.	228	59.5	22.0	5.3	4.4	8.8	9.7	48.0	42.3	21.6	58.6	19.8
7	Actively participate in medical laboratory professional associations	225	81.3	16.5	0.9	0.0	1.3	24.6	41.1	34.4	33.5	50.4	16.1
8	Participate in professional committees at organizational/regional/national levels	228	52.0	13.2	17.6	13.2	4.0	22.5	48.9	28.6	16.8	58.8	24.3
9	Act as clinical preceptor or instructor, including but not limited to facilitation of learning and assessment activities	226	42.7	40.9	4.9	5.8	5.8	11.1	52.9	36.0	12.4	57.8	29.8
	Basic medical laboratory science												
10	Create safe work environment	229	0.0	0.9	1.3	6.1	91.7	0.9	15.8	83.3	0.4	42.1	57.5
11	Apply infection prevention standards	229	0.9	0.4	0.4	3.1	95.2	0	9.2	90.8	0.4	41.2	58.3
12	Collect clinical and nonclinical specimens for analysis	229	2.6	2.2	0.4	1.8	93.0	0	12.8	87.2	0.0	42.3	57.7
13	Store clinical and nonclinical specimens for analysis	229	31.1	21.1	8.3	14.9	24.6	10.5	45.2	44.3	6.1	54.4	39.5
14	Transport clinical and nonclinical specimens for analysis	229	37.7	14.9	9.6	25.9	11.8	4.4	40.5	55.1	7.5	50.7	41.9
15	Prepare clinical and nonclinical specimens for analysis	229	2.2	0.9	1.3	2.2	93.4	0.9	18.5	80.6	0.0	44.2	55.8
16	Perform inspection of functionality of instruments in the laboratory	229	1.8	3.5	1.3	8.3	85.1	2.2	24.2	73.6	1.8	53.3	44.9
17	Calibrate laboratory instrument and equipment	228	58.1	13.2	7.9	7.5	13.2	6.6	43.2	50.2	37.9	43.2	18.9
18	Operate laboratory instrument and equipment	229	2.6	0.9	0.4	1.8	94.3	1.3	18.4	80.3	2.6	50.9	46.5
19	Run preventive maintenance of laboratory equipment	228	3.1	0.9	1.3	4.0	90.7	3.5	24.2	72.2	1.8	47.1	51.1

Task no.	Task name	Frequency						Criticality			Performance		
		Number responding	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
20	Perform curative maintenance of laboratory equipment to the level of medical laboratory professionals	228	62.1	20.3	4.0	2.6	11.0	13.7	38.3	48.0	54.2	30.8	15.0
21	Record and interpret laboratory results	229	1.3	1.3	0.0	0.0	97.4	0	19.4	80.6	0.4	36.4	63.2
22	Document and authorize the issue of laboratory results	229	2.2	0.9	0.0	0.9	96.1	2.6	27.3	70.0	0.4	38.2	61.4
23	Provide consultation to other health professionals concerning details and limitations of laboratory procedures	229	7.9	36.4	15.4	19.3	21.1	3.5	42.1	54.4	6.6	56.6	36.8
24	Perform verification of and/or validate test methods using quality control materials	229	33.3	8.3	4.4	32.9	21.1	5.3	32.5	62.3	25.9	42.1	32.0
25	Participate in the preparation of appropriate national test menu	227	76.1	13.3	3.1	2.2	5.3	38.5	31.9	29.6	50.2	37.3	12.4
26	Participate in acquisition and storage of biological wastes	229	14.9	4.4	2.2	4.4	74.1	13.2	13.6	73.2	13.6	33.8	52.6
27	Participate in acquisition and storage of nonclinical, toxic, and radioactive wastes	229	66.2	11.0	1.8	0.4	20.6	26.8	31.1	42.1	43.9	31.1	25.0
28	Transport and dispose of biological wastes	226	25.3	9.3	8.0	9.8	47.6	4.0	18.2	77.8	13.3	44.4	42.2
29	Transport and dispose of nonclinical, toxic, and radioactive wastes	229	74.6	5.3	2.2	0.0	18.0	26.4	31.7	41.9	46.7	32.2	21.1
30	Train personnel in the operation of instruments and equipment	229	43.0	40.4	3.9	3.1	9.6	10.5	42.5	46.9	20.3	52.9	26.9
31	Train personnel in the performance of laboratory methods and quality control procedures and the application of safety measures	229	43.9	28.9	6.6	5.3	15.4	7.0	39.5	53.5	18.4	56.1	25.4
32	Design, develop, and undertake research activities	229	78.9	15.4	3.5	0.9	1.3	28.5	41.7	29.8	53.5	37.7	8.8
33	Use laboratory information system and application software to manage data	228	33.0	3.1	4.4	3.5	55.9	10.1	28.6	61.2	20.7	51.1	28.2
	Service delivery: molecular biology laboratory tests												
34	Perform DNA extraction	222	99.1	0.0	0.0	0.5	0.5	41.1	30.9	28.0	88.8	8.8	2.3
35	Perform RNA extraction	222	99.5	0.0	0.0	0.0	0.5	41.1	31.9	27.1	88.8	9.3	1.9
36	Perform polymerase chain reaction including reverse transcription polymerase chain reaction	222	95.9	0.9	0.0	0.0	3.2	35.1	29.3	35.6	87.0	10.2	2.8
37	Perform gel electrophoresis	222	99.5	0.0	0.0	0.0	0.5	45.4	26.3	28.3	90.2	8.4	1.4
38	Perform Southern and Western blotting	222	99.5	0.0	0.0	0.0	0.5	46.3	25.4	28.3	90.7	7.9	1.4
39	Perform in situ and DNA hybridization	222	99.5	0.0	0.0	0.0	0.5	46.8	24.9	28.3	91.6	6.5	1.9
40	Perform restriction fragment length polymorphism and single nucleotide polymorphism	221	99.5	0.0	0.0	0.0	0.5	47.5	24.0	28.4	91.1	7.5	1.4

Task no.	Task name	Frequency						Criticality			Performance		
		Number responding	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
41	Perform cloning	222	99.5	0.0	0.0	0.0	0.5	49.3	22.9	27.8	91.6	6.5	1.9
42	Perform sequencing	204	98.5	0.5	0.0	0.0	1.0	52.1	20.2	27.7	90.8	6.6	2.6
	Service delivery: immunological and serological laboratory tests												
43	Prepare serial dilution of serum specimen in serology laboratory	228	77.1	9.3	4.0	4.0	5.7	17.6	47.1	35.2	37.9	45.4	16.7
44	Perform and interpret immunoassays	227	74.8	2.7	1.8	1.3	19.5	24.8	36.7	38.5	53.5	26.1	20.4
45	Carry out serological tests for the diagnosis of syphilis	227	12.8	4.0	4.4	8.4	70.4	3.5	24.8	71.7	3.5	46.9	49.6
46	Carry out laboratory test for febrile diseases (e.g., Widal, Weil-Felix tests)	228	12.3	1.8	2.6	4.4	78.9	5.3	25.1	69.6	2.6	41.4	55.9
47	Perform laboratory test for poststreptococcal infections (streptolysin O and antistreptolysin O identification)	228	79.3	11.0	1.3	3.1	5.3	18.5	42.7	38.8	39.6	41.4	18.9
48	Perform laboratory test for toxoplasmosis diagnosis	223	95.9	3.6	0.0	0.0	0.5	27.1	35.7	37.1	57.5	34.8	7.7
49	Perform laboratory test for Helicobacter pylori	228	13.7	7.9	7.0	12.8	58.6	4.0	39.6	56.4	4.0	44.9	51.1
50	Perform serologic tests for diagnosis of HIV infection	227	15.0	15.5	14.2	10.2	45.1	0.4	12.8	86.8	3.5	36.1	60.4
51	Perform serologic tests for diagnosis of hepatitis viruses infection	226	29.8	9.3	6.2	6.7	48.0	3.5	16.4	80.1	6.2	42.9	50.9
52	Perform serologic tests for infectious mononucleosis	223	98.2	0.9	0.5	0.0	0.5	38.5	36.7	24.9	74.7	20.8	4.5
53	Perform laboratory monitoring tests of antiretroviral treatment, such as viral load and CD4	228	63.9	1.3	2.6	5.7	26.4	7.5	21.6	70.9	44.1	32.6	23.3
54	Perform laboratory test for the diagnosis of autoimmune disease (systemic lupus erythematosus, thyroid diseases, rheumatoid arthritis) using acute-phase reactants	228	61.2	11.0	3.1	6.2	18.5	18.5	42.3	39.2	37.4	40.5	22.0
55	Perform serological tests to screen for pregnancy	228	8.4	0.0	2.6	4.0	85.0	5.7	15.4	78.9	1.3	35.2	63.4
	Service delivery: medical microbiology												
56	Apply appropriate disinfection and sterilization techniques	229	17.5	3.5	2.2	7.5	69.3	3.1	16.2	80.7	9.2	49.1	41.7
57	Prepare and store reagents used in microbiology laboratory	229	47.4	7.0	13.2	4.4	28.1	10.1	35.1	54.8	25.9	43.4	30.7
58	Prepare and store culture media	229	98.7	0.0	0.0	0.0	1.3	20.6	38.6	40.8	67.1	26.8	6.1
59	Prepare and store biochemical tests	228	98.2	0.4	0.0	0.0	1.3	22.0	40.5	37.4	69.2	26.0	4.8
60	Prepare and store equipment and materials for microbiological tests	228	45.4	6.6	8.8	4.8	34.4	10.6	36.6	52.9	28.2	45.4	26.4

Task no.	Task name	Frequency						Criticality			Performance		
		Number responding	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
61	Prepare microbiological smears	228	12.3	1.8	3.5	10.1	72.2	2.6	11.5	85.9	6.2	41.4	52.4
62	Perform fixation of microbiological smears	227	10.2	0.9	4.4	11.1	73.5	1.8	11.5	86.7	5.3	40.7	54.0
63	Perform examination of unstained preparations like wet mount, potassium hydrochloride preparation for fungi identification	228	64.8	15.4	5.3	3.1	11.5	14.1	45.4	40.5	34.4	47.1	18.5
64	Perform methylene blue staining techniques	228	52.4	1.8	0.4	4.4	41.0	19.9	27.0	53.1	31.9	39.8	28.3
65	Perform India ink preparation	225	95.5	1.3	0.4	0.0	2.7	35.3	31.3	33.5	66.1	25.4	8.5
66	Perform differential staining techniques of Gram stain	227	50.9	19.5	8.4	7.5	13.7	10.6	35.4	54.0	22.6	50.9	26.5
67	Perform differential staining techniques of acid-fast stain	228	11.0	0.4	4.4	10.1	74.0	0.9	7.5	91.6	4.0	38.8	57.3
68	Perform complex staining techniques of flagella	228	97.4	0.4	1.3	0.0	0.9	44.2	29.6	26.1	82.4	13.2	4.4
69	Perform complex staining techniques of capsule	228	98.7	0.4	0.4	0.0	0.4	44.4	29.8	25.8	82.3	12.8	4.9
70	Perform complex staining techniques of spore staining	227	98.2	0.9	0.4	0.0	0.4	44.6	28.6	26.8	82.7	13.3	4.0
71	Perform inoculation of microbiological specimen in appropriate culture media	228	97.8	0.0	0.9	0.0	1.3	26.1	37.6	36.3	73.1	22.5	4.4
72	Perform incubation of inoculated media in appropriate atmosphere	227	98.2	0.0	0.4	0.0	1.3	26.4	37.9	35.7	73.1	22.0	4.8
73	Identify colony characteristic of a culture	227	97.8	0.4	0.0	0.0	1.8	28.3	33.2	38.6	76.4	19.6	4.0
74	Perform bacterial count	228	93.8	0.9	0.0	0.0	5.3	28.6	34.4	37.1	73.9	18.6	7.5
75	Perform and read appropriate biochemical test for identification of microorganism	228	96.5	1.3	0.0	0.0	2.2	25.0	35.3	39.7	77.9	17.7	4.4
76	Perform germ tube test	228	98.2	0.9	0.0	0.0	0.9	38.1	33.2	28.7	83.2	13.7	3.1
77	Perform antimicrobial susceptibility tests	228	99.1	0.0	0.0	0.0	0.9	22.8	29.0	48.2	77.4	19.5	3.1
78	Perform viral culture (cell culture)	226	100.0	0.0	0.0	0.0	0.0	42.8	28.8	28.4	87.1	10.3	2.7
79	Perform collection and storage of microbiological specimen important to public health	228	76.2	9.7	1.8	0.4	11.9	13.8	37.5	48.7	51.8	39.8	8.4
80	Transport microbiological specimen important to public health	228	81.1	11.9	1.8	4.4	0.9	14.7	42.4	42.9	54.9	37.2	8.0
81	Perform examination of microbiological specimen important to public health	228	88.5	3.5	0.4	0.9	6.6	22.3	34.4	43.3	68.6	23.5	8.0
82	Perform TB culture	228	98.7	0.0	0.0	0.0	1.3	25.4	19.2	55.4	82.7	13.7	3.5
83	Perform TB drug susceptibility test	225	96.4	0.0	1.8	0.9	0.9	24.3	19.4	56.3	83.9	12.6	3.6

Task no.	Task name	Frequency						Criticality			Performance		
		Number responding	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
	Service delivery: medical parasitology												
84	Prepare reagents used in parasitology	227	35.4	4.0	2.2	1.3	57.1	4.9	28.3	66.8	17.3	39.8	42.9
85	Perform fecal wet mount and examine microscopically	228	5.3	0.0	1.8	0.0	93.0	3.5	18.9	77.5	0.9	34.4	64.8
86	Carry out stool concentration techniques	228	91.2	5.7	0.0	0.9	2.2	18.5	44.5	37.0	37.4	47.1	15.4
87	Prepare permanent smear for the identification of intestinal protozoa	228	81.5	1.3	0.0	0.4	16.7	31.0	29.2	39.8	59.5	23.8	16.7
88	Prepare blood smear	228	5.3	3.5	1.8	3.5	85.9	0	11.5	88.5	0.9	36.1	63.0
89	Prepare buffy coat smear	228	96.0	1.8	0.9	0.0	1.3	27.4	41.6	31.0	59.7	31.4	8.8
90	Stain blood smear	228	5.7	3.5	1.8	3.1	85.9	0.4	6.6	93.0	0.0	38.8	61.2
91	Stain blood buffy coat smear	228	98.7	0.4	0.4	0.0	0.4	28.6	43.2	28.2	62.6	29.1	8.4
92	Identify medically important parasites from different specimen sources	227	6.6	3.1	2.2	1.8	86.3	0.9	15.0	84.1	1.8	44.7	53.5
93	Determine parasitic load	226	34.2	21.8	1.8	5.3	36.9	7.1	37.3	55.6	15.1	51.6	33.3
94	Perform modified acid-fast stain and others for intestinal opportunistic parasite	227	92.0	4.4	0.9	0.4	2.2	27.9	43.8	28.3	65.0	24.3	10.6
	Service delivery: hematology and histopathology												
95	Prepare Wright stain	228	76.2	11.5	1.8	1.8	8.8	18.1	46.3	35.7	34.8	45.4	19.8
96	Prepare Giemsa stain	228	30.8	4.8	2.2	1.8	60.4	7.0	20.7	72.2	12.4	41.2	46.5
97	Prepare Leishman stain	227	95.6	1.8	0.0	0.0	2.7	39.4	29.2	31.4	76.0	17.3	6.7
98	Prepare panoptic stains	228	99.6	0.0	0.0	0.0	0.4	45.6	26.5	27.9	85.4	10.2	4.4
99	Prepare anticoagulants	228	85.9	1.8	1.8	1.8	8.8	26.4	35.7	37.9	62.8	23.9	13.3
100	Prepare red blood cell dilution fluid	228	94.3	2.2	0.9	0.0	2.6	31.7	32.2	36.1	64.8	27.3	7.9
101	Prepare white blood cell dilution fluid	228	80.2	4.8	1.3	2.6	11.0	22.9	35.7	41.4	48.0	31.7	20.3
102	Prepare platelet dilution fluid	228	96.5	2.2	0.0	0.0	1.3	31.3	33.9	34.8	64.3	28.2	7.5
103	Prepare reticulocyte dilution fluid	228	99.1	0.4	0.0	0.0	0.4	32.6	36.6	30.8	69.6	24.7	5.7

Task no.	Task name	Frequency						Criticality			Performance		
		Number responding	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
104	Prepare 0.1N hydrochloride for hemoglobin determination	228	74.4	8.8	1.8	3.1	11.9	19.4	35.7	44.9	38.8	38.8	22.5
105	Perform hematological stain	228	31.7	15.0	2.6	2.6	48.0	3.1	36.6	60.4	14.1	50.7	35.2
106	Perform manual differential count	228	50.2	22.9	5.7	5.3	15.9	6.2	46.3	47.6	17.2	53.7	29.1
107	Perform manual total white blood cell count	227	54.9	19.0	5.3	3.5	17.3	8.4	32.3	59.3	16.8	47.8	35.4
108	Perform manual platelet count	227	97.3	2.2	0.0	0.4	0.0	25.9	33.9	40.2	58.5	33.5	8.0
109	Perform manual hematocrit level determination	227	38.5	6.6	3.1	2.2	49.6	2.2	25.7	72.1	5.8	46.0	48.2
110	Perform manual erythrocyte sedimentation rate	227	37.6	8.8	4.4	6.2	42.9	13.3	37.6	49.1	7.5	47.3	45.1
111	Perform manual reticulocyte count	227	96.9	1.8	0.0	0.4	0.9	28.6	42.0	29.5	63.6	30.7	5.8
112	Determine hemoglobin level	227	27.9	8.0	3.5	1.8	58.8	3.1	19.0	77.9	8.0	42.5	49.6
113	Calculate red cell indices	227	76.5	5.3	0.4	0.9	16.8	17.0	37.5	45.5	40.4	39.5	20.2
114	Identify abnormal morphology of stained peripheral blood smear	227	61.5	16.4	3.5	4.4	14.2	14.2	43.6	42.2	32.0	45.3	22.7
115	Perform hematological tests using hematological analyzers	227	57.5	3.1	1.8	2.2	35.4	6.7	28.0	65.3	33.8	37.8	28.4
116	Perform counting of CD4+ using FACS count	227	68.6	0.4	1.3	2.7	27.0	7.1	28.0	64.9	40.4	36.9	22.7
117	Perform examination of lupus erythematosus cells	226	99.1	0.4	0.0	0.0	0.4	39.0	34.1	26.9	84.4	12.9	2.7
118	Perform examination of bone marrow smear	226	96.0	3.6	0.0	0.4	0.0	34.2	31.1	34.7	81.2	14.8	4.0
119	Perform osmotic fragility test of red cells	227	99.6	0.0	0.0	0.0	0.4	49.1	25.4	25.4	86.2	11.6	2.2
120	Carry out identification of hematological cell markers	226	98.2	1.3	0.0	0.0	0.4	35.6	35.1	29.3	82.5	14.8	2.7
121	Determine bleeding time of patient	227	97.3	0.9	0.0	0.0	1.8	28.7	35.9	35.4	73.7	21.9	4.5
122	Perform analysis of clot retraction time	227	99.6	0.0	0.0	0.4	0.0	30.8	34.4	34.8	79.6	16.9	3.6
123	Perform analysis of prothrombin time	227	98.2	0.4	0.4	0.0	0.9	21.9	37.5	40.6	75.6	19.6	4.9
124	Perform analysis of thrombin time	227	99.1	0.0	0.0	0.0	0.9	23.2	36.6	40.2	77.3	18.7	4.0
125	Perform analysis of partial prothrombin time	227	98.2	0.0	0.4	0.0	1.3	23.2	36.6	40.2	76.9	18.2	4.9
126	Perform analysis of activated partial prothrombin time	226	98.2	0.4	0.4	0.0	0.9	24.2	37.2	38.6	79.0	16.1	4.9

Task no.	Task name	Frequency						Criticality			Performance		
		Number responding	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
	Service delivery: immunohematology												
127	Prepare percent red cell suspension	209	88.0	4.8	1.4	1.9	3.8	16.6	35.6	47.8	58.3	31.6	10.2
128	Carry out blood grouping	229	7.5	1.3	3.1	4.8	83.3	0.9	11.0	88.2	0.9	32.5	66.7
129	Perform antiglobulin testing (Coombs test)	229	94.7	2.2	0.9	0.0	2.2	13.3	41.2	45.6	58.8	32.0	9.2
130	Perform cross-matching and antibody screening	229	67.1	3.1	5.7	8.8	15.4	8.3	24.6	67.1	32.9	40.4	26.8
131	Participate in selection of appropriate blood donor for transfusion using donor selection criteria	229	83.3	6.6	2.6	1.8	5.7	11.8	29.4	58.8	48.2	35.5	16.2
132	Collect blood from donor	229	80.3	10.1	3.9	0.9	4.8	11.8	30.3	57.9	41.2	42.1	16.7
133	Preserve and store blood from donors	229	77.2	7.9	3.9	3.9	7.0	11.4	26.8	61.8	40.8	38.6	20.6
134	Perform screening of blood for transfusion for transmissible diseases such as hepatitis viruses B and C, HIV, and syphilis	229	75.9	9.2	5.7	3.1	6.1	7.5	18.9	73.7	31.1	40.8	28.1
135	Prepare and store blood components	222	79.6	4.1	3.6	2.3	10.4	15.1	26.0	58.9	57.5	21.7	20.8
	Service delivery: histopathology												
136	Preserve various histopathological specimens	222	98.6	0.9	0.5	0.0	0.0	34.0	35.4	30.6	86.0	12.1	1.9
137	Process surgical and autopsy tissue specimens for histopathological techniques	222	99.5	0.0	0.5	0.0	0.0	35.4	33.0	31.6	90.2	7.9	1.9
138	Embed surgical and autopsy tissue specimens in paraffin	222	99.5	0.0	0.5	0.0	0.0	35.3	34.8	30.0	91.1	7.0	1.9
139	Operate rotary microtome to section paraffin-processed blocks of tissue	222	100.0	0.0	0.0	0.0	0.0	35.3	33.3	31.4	90.7	7.5	1.9
140	Perform frozen section	222	99.5	0.0	0.0	0.0	0.5	35.4	35.0	29.6	91.1	6.5	2.3
141	Perform cell concentration and fixation techniques	222	99.5	0.0	0.0	0.0	0.5	34.8	34.8	30.4	90.2	6.5	3.3
142	Prepare routine and special stains	222	98.6	0.5	0.0	0.0	0.9	35.3	34.8	30.0	91.2	7.0	1.9
143	Perform hematoxylin staining	222	100.0	0.0	0.0	0.0	0.0	36.7	33.3	30.0	92.1	6.0	1.9
144	Perform eosin staining	222	100.0	0.0	0.0	0.0	0.0	37.1	33.7	29.3	88.8	9.3	1.9
145	Perform connective tissue staining	221	100.0	0.0	0.0	0.0	0.0	37.4	34.0	28.6	91.6	5.6	2.8
146	Perform protein, nucleic acid, and amyloid staining	222	100.0	0.0	0.0	0.0	0.0	37.1	32.7	30.2	92.1	6.0	1.9

Task no.	Task name	Frequency						Criticality			Performance		
		Number responding	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
147	Perform carbohydrates and lipids staining	222	100.0	0.0	0.0	0.0	0.0	37.6	31.7	30.7	92.1	6.0	1.9
148	Carry out mounting of stained slides	221	99.1	0.9	0.0	0.0	0.0	37.6	32.2	30.2	89.7	8.4	1.9
	Service delivery: clinical chemistry												
149	Perform pipette calibrations (forward and backward)	228	78.9	7.5	1.8	3.1	8.8	13.3	39.8	46.9	53.5	34.5	11.9
150	Perform standardization of clinical chemistry tests	229	74.6	3.5	3.1	3.1	15.8	17.2	27.8	55.1	55.1	30.0	15.0
151	Prepare working solutions for clinical chemistry analyses	228	70.5	4.0	4.8	5.7	15.0	15.9	30.5	53.5	46.7	32.9	20.4
152	Perform glucose measurement	229	36.0	4.4	2.2	6.1	51.3	1.8	19.3	78.9	15.4	43.6	41.0
153	Perform renal function test (creatinine, urea, and uric acid)	229	70.2	2.2	2.2	2.6	22.8	9.7	22.9	67.4	44.9	33.5	21.6
154	Perform protein analysis (i.e., total protein and albumin)	229	82.9	3.1	0.4	3.1	10.5	11.0	41.0	48.0	52.9	33.9	13.2
155	Perform lipid profile tests (cholesterol, triglyceride), high- and low-density lipoprotein cholesterol)	229	77.6	3.1	1.3	5.7	12.3	11.9	36.1	52.0	53.3	32.2	14.5
156	Perform liver function test (aspartate transaminase, alanine transaminase, bilirubin, etc.)	229	71.1	1.8	2.2	2.6	22.4	11.0	23.3	65.6	47.6	32.6	19.8
157	Perform measurement of clinically important enzymes like amylase, lactate dehydrogenase, and creatine kinase	229	90.8	2.6	1.3	1.8	3.5	17.6	37.0	45.4	64.3	27.8	7.9
158	Perform testing of clinically significant electrolytes	229	93.0	0.0	1.3	0.4	5.3	20.0	26.2	53.8	69.9	22.1	8.0
159	Perform hormonal assays like thyroid function test and free thyroid	229	97.4	0.4	0.0	0.0	2.2	21.1	33.9	44.9	76.7	18.5	4.8
160	Perform measurement of clinically significant tumor markers	229	98.2	0.4	0.0	0.0	1.3	25.7	33.2	41.2	82.4	15.0	2.6
161	Perform analysis of toxins in clinical specimen	229	97.8	0.4	0.0	0.9	0.9	27.8	31.3	41.0	83.3	14.1	2.6
	Service delivery: urine and body fluid analysis												
162	Perform physical examination of urine	229	9.2	3.5	3.1	3.5	80.7	8.3	19.7	71.9	1.8	38.2	60.1
163	Perform chemical examination of urine	229	6.1	2.2	2.6	2.6	86.4	0.4	20.2	79.4	1.3	36.8	61.8
164	Perform physical examination of body fluids (cerebrospinal, amniotic, synovial, seminal, etc.)	229	72.8	11.0	3.5	8.3	4.4	11.0	35.5	53.5	41.2	41.2	17.5
165	Perform chemical examination of body fluids (cerebrospinal, amniotic, synovial, seminal, etc.)	229	75.0	11.4	3.5	6.6	3.5	8.8	37.3	53.9	43.4	40.8	15.8
166	Perform microscopic examination of urine	229	6.1	0.9	2.6	4.8	85.5	0.9	21.5	77.6	2.2	39.5	58.3

Task no.	Task name	Frequency						Criticality			Performance		
		Number responding	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
167	Perform microscopic examination of body fluid specimen	225	67.9	13.4	4.0	7.6	7.1	10.3	33.6	56.1	38.8	40.2	21.0
168	Differentiate microscopic features in normal and pathological condition (stained preparations, organized sediment, unorganized sediment, and parasites)	228	18.1	10.1	7.0	3.5	61.2	2.2	34.8	63.0	9.7	54.2	36.1
	Health service management and laboratory quality assurance												
169	Conduct a strategic and policy analysis for formulating and translating strategic health plans, objectives, and operations	229	76.3	10.1	5.7	2.2	5.7	23.2	44.3	32.5	55.7	35.1	9.2
170	Plan, monitor, manage, and supervise laboratory service	228	22.9	14.5	26.9	9.7	26.0	5.7	45.4	48.9	12.8	58.6	28.6
171	Play managerial role in peripheral and district laboratories, other health care systems (Federal Ministry of Health, Regional Health Bureau, other health offices, etc.), and private health institutions	229	61.0	12.3	4.4	3.1	19.3	26.8	37.3	36.0	35.5	47.8	16.7
172	Participate in the design of standardized laboratory	229	41.7	32.0	11.0	3.9	11.4	21.1	40.4	38.6	31.7	47.1	21.1
173	Prepare and revise manuals, standard operating procedures, and protocols and communicate to relevant personnel	229	33.8	31.1	17.1	4.4	13.6	9.6	34.6	55.7	18.4	62.3	19.3
174	Establish and monitor laboratory quality assurance programs and activities to ensure the accuracy of laboratory results	227	28.3	15.0	18.1	13.3	25.2	5.7	27.8	66.5	18.5	55.1	26.4
175	Perform selection, procurement, and distribution of laboratory commodities and equipment	228	47.6	36.1	11.0	2.6	2.6	8.8	34.8	56.4	16.3	59.0	24.7
176	Initiate and participate in laboratory internal quality audit	228	37.4	15.4	18.5	16.3	12.3	9.7	44.9	45.4	25.2	49.1	25.7
177	Participate in human resource management	228	60.4	10.6	8.8	7.5	12.8	17.2	41.4	41.4	25.6	57.7	16.7
178	Participate in laboratory accreditation process	228	66.1	11.0	8.4	2.2	12.3	20.3	35.2	44.5	44.9	41.8	13.3

Annex E: Task Lists for Pharmacy Professionals

		Frequency					Criticality			Performance		
Task no.	Task name	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
	A. Professionalism and ethics											
1	Pursue lifelong professional learning	3.4	15.8	4.3	35	41.5	4.7	32.1	63.2	2.6	68.8	28.6
2	Actively participate in professional associations	82.1	14.5	0.4	1.7	1.3	15	49.6	35.5	12.8	66.2	20.9
3	Advocate for pharmacy profession	16.2	21.8	12.8	25.6	23.5	12.4	52.6	35	7.3	56.8	35.9
4	Practice within legal and ethical framework	1.3	3.0	1.3	2.2	92.2	2.6	15.1	82.3	1.3	40.5	58.2
5	Maintain professional conduct in interactions with coworkers, patients, caregivers, and the community	0.4	0.9	1.3	3.4	94	0.9	32.5	66.7	0.4	42.3	57.3
6	Recognize and respect the cultural differences, beliefs, and values of patients	0.4	2.1	0	1.7	95.7	4.7	27.4	67.9	1.3	37.6	61.1
7	Participate in policy dialogue in relation to the profession	69.1	20.6	3.9	2.6	3.9	11.5	46.6	41.9	18.8	58.5	22.6
8	Maintain confidentiality of information acquired in the course of providing professional services	0.9	0.9	0.4	1.7	96.2	2.6	25.6	71.8	0.4	33.8	65.8
9	Collaborate with other health professionals to provide high quality health care service	1.3	3.0	1.7	7.3	86.8	3	29.5	67.5	0	44.0	56.0
10	Expose unethical practice in the profession by fellow professionals or others	38.9	35.0	6.8	0.9	18.4	6.8	26.9	66.2	6.4	43.2	50.4
	B. Supply chain management services											
11	Process registration of products with Food, Medicine and Health Care Administration and Control Authority (FMHACA)	98.7	0.9	0	0.4	0	2.6	25.5	71.9	28.8	62.7	8.6
12	Process import permit (purchase order approval) with FMHACA	97.4	1.7	0.9	0	0	2.6	33.8	63.6	26.2	67.4	6.4
13	Select pharmaceuticals for procurement	80.3	13.7	5.2	0.9	0	0.9	17.7	81.5	9.0	56.2	34.8
14	Use consumption data to forecast national/regional pharmaceuticals needs	87.6	7.7	4.3	0.4	0	2.2	25.4	72.4	11.6	57.5	30.9
15	Use morbidity data to forecast national/regional pharmaceuticals needs	93.6	4.3	2.1	0	0	5.1	42.1	52.8	23.4	62.1	14.5
16	Use service data to forecast national/regional pharmaceuticals needs	93.6	3.8	2.6	0	0	11.9	41.3	46.8	26.4	62.6	11.1
17	Reconcile quantifications made based on different data	90.6	6.0	3.0	0.4	0	1.7	40.2	58.1	17.9	64.5	17.5
18	Conduct VEN (vital, essential, and nonessential) analysis to reconcile quantified amount with budget	89.4	6.0	3.8	0	0.9	1.3	23	75.7	11.1	63.4	25.5

		Frequency					Criticality			Performance		
Task no.	Task name	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
19	Conduct ABC analysis	91.0	6.4	2.1	0	0.4	3	41.9	55.1	18.4	66.2	15.4
20	Prepare product specifications for procurement	83.4	9.4	6.8	0.4	0	0.9	27.7	71.5	10.2	61.7	28.1
21	Conduct inspection for good dispensing practice and current good manufacturing practice to prepare suppliers list	92.3	3.0	2.1	0.4	2.1	2.6	37.4	60	30.2	56.6	13.2
22	Set lead time based on stock analysis and consumption rate	88.5	5.1	5.5	0.9	0	1.3	41.7	57	16.6	65.5	17.9
23	Set criteria to select appropriate suppliers for procurement	90.6	4.7	4.3	0.4	0	1.3	44.3	54.5	14.5	70.5	15
24	Conduct dossier evaluation	96.6	2.6	0	0.4	0.4	1.7	32.5	65.8	53.0	41.5	5.6
25	Determine stock levels	80	6.4	7.2	4.7	1.7	1.7	30.2	68.1	11.6	51.3	37.1
26	Perform clearance of imported products of FMHACA and customs	98.3	1.3	0.4	0	0	3.4	48.5	48.1	37.0	57.4	5.5
27	Conduct inspection of procured health commodities	84.3	7.7	6.4	0.9	0.9	0.9	28.5	70.6	12.8	54	33.2
28	Receive procured health commodities using goods receiving voucher (model 19)	78.7	8.5	7.2	4.3	1.3	1.3	40	58.7	4.7	39.1	56.2
29	Apply appropriate store classification and arrangement system	77.4	8.9	5.1	4.3	4.3	2.6	46.4	51.1	3.4	42.1	54.5
30	Dejunk and organize storage spaces	77.0	7.7	6.8	4.3	4.3	3.0	43.0	54.0	3.8	44.3	51.9
31	Store all products per the manufacturer's label	74.8	6.8	4.3	2.1	12.0	3.0	16.2	80.8	3.8	38.9	57.3
32	Use cold chain/refrigerators to maintain cold storage for vaccines and other products requiring cold storage	77.8	2.6	0.9	0	18.8	0.9	7.7	91.5	3.8	37.9	58.3
33	Handle NPS (narcotic and psychotropic drugs) per the national guideline	85.9	2.6	1.7	0.9	9.0	1.3	13.7	85.0	5.1	49.6	45.3
34	Use bin cards and stock cards, or electronic database, to monitor stock status	73.9	6.0	6.8	5.6	7.7	1.7	28.2	70.1	3.0	40.6	56.4

		Frequency					Criticality			Performance		
Task no.	Task name	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
35	Maintain stock records	78	7.3	6.5	3.4	4.7	2.2	34.1	63.8	4.3	41.6	54.1
36	Apply "first expiry, first out" at store during arrangement and distribution	74.8	4.3	5.1	1.3	14.5	0	17.9	82.1	3.0	36.3	60.7
37	Use goods issuing voucher (model 22) to distribute pharmaceuticals	82.8	2.6	8.6	2.1	3.9	3.4	39.7	56.8	4.3	41.5	54.3
38	Conduct physical inventory	77.8	15.8	4.3	1.3	0.9	3.4	42.5	54.1	5.2	45.7	49.1
39	Prepare pharmaceuticals logistics data	82.5	9.4	6.8	0.9	0.4	3.4	50.6	45.9	10.7	59.7	29.6
40	Report defective or substandard medicines to the appropriate authority	86.8	8.5	3.0	0.9	0.9	3.0	34.2	62.8	9.4	51.7	38.9
41	Dispose pharmaceuticals that are expired or unfit for use per the national guideline	87.2	11.1	0	0.4	1.3	0	29.9	70.1	9.8	54.3	35.9
42	Coordinate supply management services	85.9	9.0	3.4	0.4	1.3	5.1	40.6	54.3	25.6	50.9	23.5
43	Monitor the performance of the pharmaceutical logistics system	85.9	7.7	1.7	2.1	2.6	6.0	45.7	48.3	22.2	62.8	15
44	Evaluate the performance of the pharmaceutical logistics system	86.8	8.1	4.3	0	0.9	7.3	47.0	45.7	28.6	57.3	14.1
	C. Hospital pharmacy services											
	C1. Dispensing of medications											
45	Verify prescription orders to ensure legality and completeness	7.3	0.9	0.4	0.9	90.6	0.9	6.4	92.8	0.9	26.8	72.3
46	Interpret the prescription to ensure the prescribed drug is for the mentioned diagnosis	9.8	4.7	0	2.6	83	0	8.1	91.9	2.1	38.3	59.6
47	Interpret prescription to rule out contraindications	7.2	2.6	3.4	2.6	84.3	0.4	5.1	94.5	2.1	42.1	55.7
48	Interpret prescription to rule out drug interactions	7.3	3.0	1.7	3.8	84.2	0.9	7.7	91.5	3.8	41.5	54.7
49	Correct prescription errors through effective communication with the prescriber	6.4	5.5	5.1	17	66.0	0.9	9.8	89.4	1.3	38.3	60.4
50	Perform course-of-therapy packaging in the dispensary	32.5	6.4	6.4	13.7	41.0	10.3	37.2	52.6	6	36.8	57.3
51	Label medicines to be dispensed with appropriate information	7.3	3.4	0.9	2.1	86.3	1.3	8.5	90.2	1.7	25.2	73.1
52	Provide medication use counseling on dispensed medications that meets the needs of individual patients	6.4	1.7	1.7	2.1	88.1	0	8.5	91.5	2.1	34.9	63

		Frequency					Criticality			Performance		
Task no.	Task name	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
53	Keep record of each dispensed product for each patient by completing the prescription registration book	23.9	6.8	0.4	4.3	64.5	9.8	42.1	48.1	2.6	31.1	66.4
54	Keep record of dispensed medications for each patient attending antiretroviral treatment and other chronic care clinics on patient medication profile card	46.6	4.7	2.1	7.3	39.3	3.8	29.5	66.7	7.7	44.6	47.6
55	File dispensed prescription papers	9.9	2.1	3.4	4.7	79.8	5.6	43.2	51.3	1.3	26.5	72.2
56	Arrange medication products and other health commodities properly at outpatient and ward/inpatient dispensaries	10.6	4.3	14	23.8	47.2	4.3	45.1	50.6	1.3	30.6	68.1
57	Handle NPS in the dispensaries per the national guideline	40.0	6.8	3.4	5.1	44.7	1.3	19.6	79.1	3.8	41.3	54.9
58	Select appropriate products for the hospital/health center	20.9	57	19.1	1.3	1.7	0.4	19.6	80.0	2.1	45.5	52.3
59	Select and make available emergency drugs in the health facility	17.4	32.8	16.2	7.2	26.4	0.4	9.8	89.7	1.3	38.5	60.3
60	Use consumption data to quantify pharmaceuticals needs for the hospital/health center	23.4	54.9	17.4	1.7	2.6	0.4	23.8	75.7	4.7	45.1	50.2
61	Use morbidity data to quantify pharmaceuticals needs for the hospital/health center	63.4	29.4	6.0	0.9	0.4	6.4	41.3	52.3	17.9	58.3	23.8
62	Use service delivery data to quantify pharmaceuticals needs for the hospital/health center	74.0	14.0	10.6	0.9	0.4	14.5	41.3	44.3	27.2	50.6	22.1
63	Determine stock levels for the health facility	18.8	29.5	26.1	15	10.7	1.7	32.5	65.8	4.3	45.3	50.4
64	Conduct VEN analysis to reconcile quantification results with procurement budget	39.7	47.0	9.8	2.1	1.3	1.3	23.9	74.8	9.4	49.6	41.0
65	Conduct ABC analysis to reconcile quantification results with budget for procurement	55.1	34.6	6.4	2.6	1.3	3.4	39.7	56.8	19.2	51.3	29.5
66	Reconcile VEN and ABC analysis results	59.2	31.3	6.9	1.3	1.3	2.6	40.2	57.3	22.3	50.6	27.0
67	Prepare product specifications for procurement	21.8	59.4	16.2	1.3	1.3	1.3	26.9	71.8	3.8	47.9	48.3
68	Procure medications and other health commodities from Pharmaceuticals Fund and Supply Agency (PFSA)	28.2	60.7	9.8	0.4	0.9	2.6	24.9	72.5	4.3	38.5	57.3
69	Procure medications and other health commodities from other sources (other than PFSA)	39.3	56.4	3.4	0.4	0.4	7.3	32.5	60.3	5.1	45.7	49.1
70	Inspect procured health commodities	16.2	60.3	17.9	2.1	3.4	2.1	20.9	76.9	2.6	40.6	56.8
71	Receive procured health commodities using goods receiving voucher (model 19)	25.6	40.6	21.4	6.0	6.4	1.7	38.5	59.8	2.1	29.9	67.9

		Frequency					Criticality			Performance		
Task no.	Task name	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
72	Apply appropriate store classification and arrangement systems	20.5	26.1	18.4	14.5	20.5	3.0	46.2	50.9	3.0	35.0	62.0
73	Dejunk and organize storage spaces	19	31.5	17.2	14.2	18.1	3.9	37.9	58.2	2.6	32.3	65.1
74	Store all products per the manufacturers label	10.8	17.7	12.9	9.9	48.7	2.6	21.1	76.3	0.9	27.2	72.0
75	Use cold chain/refrigerators to maintain cold storage for vaccines and other products requiring cold storage	15.9	6.5	0.4	3.4	73.7	0	5.2	94.8	1.3	24.1	74.6
76	Keep NPS per the national guideline in the store	47.0	8.6	1.3	4.3	38.8	0.9	17.0	82.2	4.8	36.1	59.1
77	Use bin cards and stock cards, or electronic database, to monitor stock status	10.8	3.9	21.2	18.6	45.5	2.6	30.6	66.8	2.6	27.6	69.8
78	Apply “first expiry, first out” at store and dispensary	6.0	5.6	3.9	7.3	77.2	0	15.5	84.5	0.9	24.6	74.6
79	Use internal facility report and resupply form to request supply of pharmaceuticals from store	15.9	6.5	49.1	19.4	9.1	2.2	35.3	62.5	3.0	30.6	66.4
80	Use internal facility report and resupply form to distribute pharmaceuticals within facilities	34.0	3.4	37.9	16.2	8.5	2.1	34.9	63.0	4.3	35.3	60.4
81	Use report and requisition form to report consumption to request resupply from PFSA	34.0	42.1	19.1	2.1	2.6	1.3	25.1	73.6	6.4	37	56.6
82	Use goods issuing voucher (model 22) to issue pharmaceuticals to sections within a health facility	32.3	9.4	30.2	15.7	12.3	1.3	40.4	58.3	3.8	32.8	63.4
83	Conduct physical inventory of health commodities at dispensary and store	13.2	40.6	27.4	10.3	8.5	1.7	44	54.3	0	38.0	62.0
84	Report defective or substandard products to the appropriate authorities	45.5	32.8	14.5	3.8	3.4	0.9	27.7	71.5	5.1	46.0	48.9
85	Maintain transaction and consumption records of pharmaceuticals	18.8	22.2	21.4	5.6	32.1	1.7	47	51.3	4.7	42.7	52.6
86	Prepare aggregated logistics report	38.9	36.8	21.8	1.3	1.3	3	50.9	46.2	7.3	54.3	38.5
87	Dispose of damaged and expired products per the national disposal guideline	41.9	50	6.4	0.4	1.3	0.4	31.2	68.4	6.4	50.9	42.7
88	Use logistics management information system to support the management of essential pharmaceuticals	32.8	17.4	14.9	12.8	22.1	2.1	45.5	52.3	9.4	53.2	37.4
89	Apply Integrated Pharmaceuticals Logistics System	21.5	10.3	15	11.2	42.1	1.7	32.2	66.1	12	36.8	51.3
90	Apply auditable pharmaceutical transactions and services at health facility	83.8	3.4	0.9	1.7	10.2	6.4	51.3	42.3	42.3	45.7	12.0
91	Coordinate supply chain management services at health facility level	39.3	26.1	11.1	5.6	17.9	3.0	45.9	51.1	13.7	50	36.3

Task no.	Task name	Frequency					Criticality			Performance		
		Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
	C2. Compounding of extemporaneous preparations											
92	Verify the compounding order	95.2	1.7	1.3	0	1.7	2.2	43.9	53.9	17.9	69.9	12.2
93	Ensure availability and assemble ingredients and equipment correctly	93.5	1.7	1.7	0	3.0	4.7	48.7	46.6	17.7	67.2	15.1
94	Compound extemporaneous products following the standard operating procedure	94.8	2.6	0.4	0	2.2	3.0	39.2	57.8	22.4	63.8	13.8
95	Pack extemporaneous products using appropriate packaging material	95.7	1.7	0.4	0	2.2	3.4	36.6	59.9	16.4	56.9	26.7
96	Label extemporaneous products following the standard operating procedure	95.7	1.7	0.4	0	2.2	3.4	33.6	62.9	14.7	54.3	31.0
97	Maintain records of compounded preparations	96.5	0.9	0.4	0	2.2	6.6	49.3	44.1	14.6	58.4	27.0
	C3. Pharmaceutical care											
98	Take relevant patient history for pharmaceutical care	70.8	6.0	1.7	3.4	18	0.9	20.2	79.0	34.8	47.6	17.6
99	Assess patient drug therapy needs	63.5	7.7	1.3	4.3	23.2	0.9	14.2	85.0	35.2	42.5	22.3
100	Identify actual drug therapy problems	57.9	8.2	1.7	5.2	27.0	0.9	14.6	84.5	32.2	43.8	24
101	Develop and implement patient-specific pharmaceutical care plan	76.7	5.2	0.9	4.3	12.9	1.3	20.7	78	41.4	43.5	15.1
102	Monitor medication therapy	70.4	8.2	2.6	4.3	14.6	0.9	18.1	81	34.8	48.1	17.2
103	Evaluate patient therapeutic outcomes	71.2	9.0	3.0	6	10.7	1.3	21	77.7	33.5	50.2	16.3
104	Perform medication reconciliation for selected patients	74.2	6.0	3.0	3.9	12.9	0.4	26.2	73.4	34.3	41.6	24
105	Identify adverse drug reaction (ADR)	50.6	26.2	3.9	4.3	15	0.4	12.4	87.1	21.5	50.2	28.3
106	Use ADR reporting form to communicate ADR events in the facility to FMHACA	81.5	12.4	2.1	0.4	3.4	1.3	27.6	71.1	22	53.4	24.6
107	Coordinate ward pharmacy services	87.1	3.9		0.9	8.2	3.9	31.5	64.7	34.5	51.7	13.8
108	Perform unit dose dispensing at inpatient/ward pharmacy	87.1	3	0.4	0.9	8.6	4.7	30.2	65.1	31.9	39.2	28.9

		Frequency					Criticality			Performance		
Task no.	Task name	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
109	Provide discharge medication counseling to inpatients or caregivers	69.2	6.4	0.9	6.8	16.7	1.7	20.9	77.4	24.8	47.9	27.4
110	Perform drug use evaluation studies for appropriate action	82.1	10.3	3.0	1.3	3.4	2.1	33	64.8	45.1	41.6	13.3
111	Document pharmaceutical care services to improve continuity and quality of care	71.8	5.6	2.1	6.0	14.5	2.6	36.1	61.4	32.2	45.9	21.9
	C4. Drug information services											
112	Prepare query receiving and response forms	86	3.8	1.7	2.6	6.0	12.8	43.4	43.8	29.1	53.8	17.1
113	Use query response forms	86.4	3.8	1.7	2.6	5.5	12.3	44.3	43.4	29.9	52.6	17.5
114	Identify reliable sources for drug information	71.8	10.7	3.4	5.1	9	7.3	34.6	58.1	30	54.1	15.9
115	Evaluate drug information	75.7	8.5	4.7	4.7	6.4	6	33.2	60.9	36.8	46.6	16.7
116	Prepare educational materials on medicines information (alerts, newsletters, brochures, posters, bulletins)	84.3	7.2	2.1	4.7	1.7	7.7	47.2	45.1	32.1	53.4	14.5
117	Provide accurate, appropriate, evidence-based, and timely drug information to patients	43.0	5.1	2.6	3.0	46.4	4.3	19.6	76.2	17.1	47.4	35.5
118	Provide accurate, appropriate, evidence-based, and timely drug information to health care professionals	43.4	20	11.5	11.9	13.2	3.8	27.7	68.5	17.9	54.7	27.4
119	Provide accurate, appropriate, evidence-based, and timely drug information to the public	55.6	14.5	12.4	11.1	6.4	5.1	35.9	59	19.2	48.3	32.5
120	Document drug information requests and responses	83.8	4.3	2.6	2.1	7.3	6.0	49.6	44.4	25.2	51.3	23.5
121	Coordinate drug information services	83.3	4.3	2.6	2.1	7.7	8.6	45.1	46.4	34.2	48.7	17.1
	C5. Pharmaceutical public health											
122	Participate in health promotion, disease prevention and control	31.9	34.0	14.0	12.8	7.2	2.6	40.4	57	5.5	58.3	36.2
123	Provide health education to patients in the health facility	33.3	25.6	17.5	18.4	5.1	3.4	44	52.6	6.4	48.3	45.3
124	Provide behavioral support to clients on substance addiction cessation	39.6	35.3	6.0	5.5	13.6	3.8	33.6	62.6	7.2	63	29.8
125	Participate in emergency preparedness, management, and rehabilitation	60	27.7	3.0	1.3	8.1	4.7	32.3	63	11.5	61.7	26.8
126	Participate in the prevention and containment of microbial resistance	42.3	23.1	7.3	10.3	17.1	0.4	21.8	77.8	7.7	56.4	35.9

		Frequency					Criticality			Performance		
Task no.	Task name	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
	D. Regulatory services											
127	Conduct prelicensing inspection for pharmaceuticals manufacturing	99.6	0.4	0	0	0	2.1	19.7	78.2	53.4	43.6	3.0
128	Conduct prelicensing inspection of facilities for import and distribution	98.7	0.4	0.4	0.4	0	2.1	29.1	68.8	51.9	42.9	5.2
129	Conduct prelicensing inspection of facilities for drug retail outlets	97.4	1.7	0.4	0.4	0	1.3	23.6	75.1	43.3	40.8	15.9
130	License pharmaceutical services	98.3	1.3	0	0.4	0	3.4	35.3	61.2	50.9	41.4	7.8
131	Regulate medicine production	99.1	0.9	0	0	0	1.3	19.7	79	53.6	41.6	4.7
132	Regulate import and distribution of pharmaceuticals	96.6	1.3	0.4	0.4	1.3	1.7	32	66.2	48.5	45.5	6.1
133	Regulate import, distribution, and use of NPS and precursor chemicals	97.8	0.9	0.4	0	0.9	1.3	19.5	79.2	49.4	44.2	6.5
134	Regulate promotion and advertisement of pharmaceuticals	98.7	1.3	0	0	0	5.2	39.4	55.4	55.8	36.4	7.8
135	Regulate drug retail outlets	97.0	1.7	0.9	0.4	0	3.0	28.6	68.4	35.9	47.2	16.9
136	Conduct current good manufacturing practice inspection	98.7	1.3	0	0	0	2.6	28.6	68.8	57.6	37.7	4.8
137	Perform dossier evaluation for product registration	97.4	0.9	0	0.9	0.9	1.7	23.4	74.9	55.4	38.1	6.5
138	Conduct bioequivalence tests	100	0	0	0	0	3.0	30.3	66.7	67.5	29.9	2.6
139	Issue marketing authorization	98.3	0.4	1.3	0	0	1.3	32	66.7	55.8	40.7	3.5
140	Perform postmarketing surveillance	98.3	1.3	0.4	0	0	2.2	31	66.8	48.5	45.4	6.1
141	Conduct pharmacovigilance	98.3	1.3	0	0	0.4	2.6	33.5	63.9	50.9	44.8	4.3
142	Coordinate the development of formularies	96.9	3.1	0	0	0	3.5	43	53.5	45.2	48.7	6.1
143	Participate in the development of treatment guidelines	96.5	3.5	0	0	0	2.2	33.3	64.5	39.4	52.4	8.2
144	Coordinate the development of directives, proclamations, and policies governing the control of pharmacy service and pharmaceuticals	98.7	1.3	0	0	0	4.8	36.5	58.7	54.1	41.9	3.9
145	Conduct quality control tests for product registration	98.7	0.9	0.4	0	0	1.7	15.2	83	51.3	43.9	4.8

		Frequency					Criticality			Performance		
Task no.	Task name	Never	Rarely	Monthly	Weekly	Daily	Low	Moderate	High	Not capable	Competent	Proficient
146	Facilitate registration and licensure of pharmacy professionals	98.7	1.3	0	0	0	3.5	36.8	59.6	40.6	47.2	12.2
	E. Research and education											
147	Provide in-service training to health care providers	68.7	24.9	3.4	0.4	2.6	5.6	51.3	43.2	22.2	56.4	21.4
148	Provide on-the-job training to fellows	50.4	39.7	3.9	2.2	3.9	5.6	43.2	51.3	12.4	52.1	35.5
149	Participate in pre-service education of health care providers as an instructors or preceptor	70.8	24	1.7	0.9	2.6	10.3	49.1	40.6	23.5	58.5	17.9
150	Conduct research activities	94	6.0	0	0	0	11.1	45.3	43.6	47.6	45.1	7.3
151	Participate in pharmacy curriculum development and evaluation	96.1	3.9	0	0	0	12.4	41.0	46.6	43.2	50.9	6.0

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