

Task Analysis as a Tool for Health Systems Strengthening

An Implementation Guide

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Jhpiego is an international, non-profit health organization affiliated with Johns Hopkins University. For more than 40 years, Jhpiego has empowered frontline health workers by designing and implementing effective, low-cost, hands-on solutions to strengthen the delivery of health care services for women and their families. By putting evidence-based health innovations into everyday practice, Jhpiego works to break down barriers to high-quality health care for the world's most vulnerable populations.

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Purpose, Audience, and Objectives

Jhpiego country programs use task analysis in their education and training programs for documentation of information needed for effective program implementation. Task analysis assists countries in identifying the essential and functional core tasks necessary to meet health care needs in a variety of practice settings. Task analysis is a useful tool for human resource planning as a component of health systems strengthening.

Purpose: The purpose of this document is to provide guidance on the design and implementation of task analysis. The guide is intended to assist countries with documenting the knowledge, skills (tasks), and behaviors used by the members of health professional and occupational cadres in the workplace.

Who should use this guide? This guide was developed for Jhpiego staff and their implementation partners who are addressing pre-service education or human resources for health and plan to use task analysis.

How will this guide benefit users? Users will

- Gain an understanding of task analysis as an approach to documenting the scope of practice of various health cadres;
- Gain an understanding of how task analysis can be applied in Jhpiego's programming for health systems strengthening;
- Be introduced to the various components (and their alternatives) involved in the design and implementation of a task analysis process;
- Be presented with a set of tools that will be useful in conducting task analysis;
- Be provided with additional resources that expand their understanding of task analysis as a health systems strengthening approach; and
- Gain an appreciation for the various roles and responsibilities involved in evaluating the impact of the task analysis as it is applied in the country context over time.

Task Analysis in the Context of Strategic Planning for Health Systems Strengthening

WHAT IS TASK ANALYSIS?

Task analysis is a systematic method of collecting data regarding the responsibilities, knowledge, and skills associated with acceptable performance within a profession (Althouse 2000). In other words, task analysis is a process by which interested health care regulators, educators, and resource allocators can determine what tasks are performed on a day-to-day basis by health care workers in their work settings.

A list of knowledge, skills, and behaviors is developed based on a variety of national and international documents relevant to a specific area of health worker practice. This task list is verified by a panel of experts who represent the respective health worker cadre. Participants in the task analysis process (members of the worker cadre) are then asked to make four different judgments about each task:

1. **Frequency: How often is the health care worker's task performed?**
 - Never—Health care worker does not feel capable or lacks opportunity
 - Rarely—Health care worker completes task less than once per month

- Monthly—Health care worker completes task less than once per week but at least once per month
 - Weekly—Health care worker completes task less than once per day but at least once per week
 - Daily—Health care worker completes task at least once per day
2. **Criticality:** How critical is timely and effective performance of this task to the outcome for the client or public health?
 - High importance—Failure to complete the task correctly or in a timely manner may lead to patient death or permanent disability or may cause major impact on public health
 - Moderate importance—Failure to complete the task correctly or in a timely manner may lead to serious patient discomfort or short-term disability, or moderate impact on public health
 - Low importance—Failure to complete the task correctly or in a timely manner will have minimal impact on the patient or public health
 3. **Location (when/where educated/trained):** When and where was the health care worker educated/trained to perform the task?
 - Pre-service education (PSE)—Health worker was educated/trained to complete task as part of pre-service education
 - In-service training—Health care worker received education/training needed to complete task following graduation
 - On the job—Health care worker received informal education/training from co-workers or supervisor
 - Not trained—Health care worker has not received any formal (PSE) or informal (in-service or on-the-job) education or training for the task
 4. **Performance:** What level of competence does the health care worker have in performance of the task?
 - Proficient—Health care worker is proficient and may instruct others in performance of the task
 - Competent—Health care worker performs task safely and effectively; may ask for assistance as necessary
 - Not competent—Health care worker cannot perform task safely without assistance and may cause harm if performing task without supervision

The data compiled from responses to these four questions can be analyzed and used for health system strengthening.

WHY CONDUCT A TASK ANALYSIS?

Findings from a task analysis can be used for various health system strengthening purposes, including the following:

- Promoting practice that is safe, effective, and relevant to a country's specific health needs
- Determining whether members of the workforce are functioning within their designated scope of practice or generating information required to develop a scope of practice for a new health cadre
- Designing education and training of the health care workforce that is based in the reality of practice
- Creating knowledge and skills assessments and/or licensure tests that are grounded in priority practice areas

- Facilitating decision-making to promote the deployment of health care workers in a way that adequately meets national health care needs, with an equitable distribution of workforce resources

BRIEF HISTORY AND BACKGROUND OF JHPIEGO'S EXPERIENCES WITH TASK ANALYSIS

Task analysis was originally used by industries and manufacturers to increase efficiency and productivity in their occupational workforce. It has since been widely adapted in the developed world and applied in the context of the health professions and occupations—for example, as a basis for developing curricula of study for various health worker cadres and for defining the content areas of certification and licensing examinations. Jhpiego has modified task analysis for health systems strengthening in the context of international public health work.

Jhpiego began using task analysis as a health systems strengthening tool to respond to questions such as these:

- How do you decide what goes in your curriculum for nurses, midwives or other health cadres?
- With limited time and resources for training, how do you prioritize content? As you add new content, what can or should be deleted?
- How does a country develop or update the content of a licensure examination?
- How do you decide which skills or what knowledge to test to assess students in education settings and/or graduates in the context of licensure examination?

Task analysis was used in **Mozambique** to inform the reorganization of educational pathways in general and maternal/child health nursing. **Liberia** used task analysis to inform curriculum design and development for a nursing cadre. In **Botswana**, task analysis was the basis for the creation of a national licensure examination for nurses and midwives. In **Zambia**, task analysis was conducted with medical licentiates to inform core competencies and to redefine the scope of work and educational requirements. Task analysis was used in **Lesotho** to inform a variety of country priorities, including the creation of a new graduate mentorship program for nurses and definition of scope and standards of practice for the social development cadre.

Examples of how Jhpiego has used task analysis in country programs are provided in Appendix A. Frequently asked questions (FAQs) about task analysis can be found in Appendix B.

The Task Analysis Process

PLANNING PHASE

Gaining Political Will

Political will is crucial to successful implementation of a complete and well-designed task analysis. Broad and informed support is needed from relevant ministries, regulatory bodies, education institutions, and professional associations. Because task analysis is time consuming and uses valuable human resources, governments need to be convinced of the usefulness of the entire process, regardless of the funding source. Decisions about the use of the task analysis results will be made at the national level and may affect job descriptions, scopes of practice, deployment decisions, and curricular and education program designs. Gaining political will should include clear identification of the gaps in the health system that would be closed with evidence from task analysis. It is at this stage that primary use of the task analysis exercise is determined. If task analysis is perceived only as generally useful information rather than specifically needed by anyone, the results of this expensive effort may not go on to be used by the country for improvement of services. Brief documents or presentations that explain task analysis and how it fits into health systems strengthening will be important in this process. (Examples of these materials are presented in the “Selected Resources for Task Analysis” section of this guide.)

Sensitization Meetings

It can be valuable to informally prepare key groups and individuals, both before the larger stakeholder meetings where task analysis will be presented and before the start of the task analysis. Sensitization meetings may be brief and conducted individually or in small groups, but they should involve the task analysis champions who have been identified among the relevant ministries, regulatory and professional bodies, and education leaders. The orientation to task analysis that these champions receive during the sensitization meetings can help them to assume a leadership role. Task analysis may be an unfamiliar topic to many, and the sensitization meetings will help to generate support and build consensus by providing less-formal opportunities to ask questions and express concerns.

Stakeholder Engagement

A comprehensive list of national stakeholders should include adequate representation from those who decide policy, make educational decisions for the targeted cadre, and shape labor laws. National stakeholders will vary by country but will likely include representation from Ministries of Health and Education as well as regulatory bodies and the professional association for the cadre. Representatives of governmental ministries/bodies that decide policy on education, human resource deployment, and the legal framework for human resources should also be included. It is helpful to include stakeholders with a practical understanding of the targeted cadre’s work. Table 1 is a list of suggested stakeholders. A sample agenda for a stakeholder meeting is provided in Appendix C.

Table 1: Stakeholder representation and rationale

REPRESENTED STAKEHOLDERS	RATIONALE
Ministry of Health (MOH) and/or Education (MOE), including the following: <ul style="list-style-type: none"> • Head of nursing • Head of midwifery • Head of medicine • Training director/coordinator 	MOH is typically responsible for health workforce planning decisions; funds pre-service education in some countries MOE may have authority over PSE for some or all cadres
Government bodies/ministries responsible for deployment	May be from a specific labor and industry unit within one or more ministries
Educational institutions for the cadre	Should include heads of school for the targeted cadre, teachers, preceptors, and representatives from practice sites
Partners for health system strengthening program	May include other implementing organizations also working in related area
Regulatory bodies such as councils for cadre	Council for targeted cadre may have regulatory responsibilities such as licensure, re-licensure, examination development, and administration
Professional association of cadre	Authority and responsibility may overlap with council; in some countries, professional association represents both public- and private-sector providers
Consumer	Consumer perspective is not always included but can provide additional information

ESTABLISHING A COUNTRY- OR CADRE-BASED PURPOSE FOR TASK ANALYSIS AND INTENDED OUTCOME(S)

A Jhpiego project or program may have made some early decisions about including task analysis in its forthcoming work plans. These decisions need to be linked to national health priorities, health planning, and strategies. As noted above, there are several purposes for doing a task analysis. Table 2 lists some of them, along with possible findings and outcomes.

Table 2: Task analysis purposes, examples of findings, and related outcomes

PURPOSE OF TASK ANALYSIS	ILLUSTRATIVE FINDINGS	ILLUSTRATIVE OUTCOMES
Promote safe, effective practice relevant to country health needs	<ul style="list-style-type: none"> Official scope of practice does not match actual practice Job descriptions outdated, not linked with scope of practice. 	<ul style="list-style-type: none"> Scope and standards of practice are revised Actual scope of practice is reflected in job descriptions, in accord with revised scope of practice Health workforce planning reflects scope of practice
Design education and training of health workforce based on reality of practice	<ul style="list-style-type: none"> PSE curriculum excessively large; some outdated content Curriculum not linked to accepted international competencies and standards 	<ul style="list-style-type: none"> Pre-service curriculum revised based on identified gaps and needs in education PSE content linked to international competencies and national needs In-service training developed on basis of identified priority needs
Create licensure tests that are rooted in priority practice areas	<ul style="list-style-type: none"> Licensure exam not updated along with PSE curriculum Content of exam not linked to competencies 	<ul style="list-style-type: none"> Exam updated to ensure that testing is based on actual practice and priority knowledge and skills Exam linked to PSE content
Ensure that health care workers are deployed in a way that adequately meets national health care needs	<ul style="list-style-type: none"> Remote/isolated regions have greater number of new graduates No system of updating providers in remote/isolated areas Students and graduates from areas with large numbers of education programs lack sufficient opportunities to practice 	<ul style="list-style-type: none"> Analysis of regional variation in training, competency, and scope used to plan workforce deployment and ensure appropriate distribution of resources System of critical practice and knowledge updates is created for remote/isolated areas (example: use of site-based and blended learning)

Task analysis identifies the critical competencies that cadres are actually performing across facility types and geographical settings. Identification of competencies helps provide the foundation for developing competency-based educational programs in which competencies are linked to syllabi and curricula across cadres. Identifying competencies also affords a framework for establishing benchmarks for educational outcomes within individual pre-service programs (within the didactic/skills lab/clinical arenas).

While the purpose of task analysis may be quite specific, the use of the information will likely involve and be of benefit to multiple groups and organizations. For example, licensing examinations affect the MOE, educational institutions that graduate students prepared to sit exams, regulators, and professional associations that have a role in licensing providers. These institutions and organizations, in turn, affect the MOH in terms of deployment decisions. Table 3 shows how task analysis informs the strengthening of education, regulation, and practice for a particular health care cadre.

Table 3: Task analysis promoting the three pillars of health care cadre strengthening

EDUCATION Gaps in training	PRACTICE Scope	REGULATION Competencies
<p>Task analysis may be used to identify critical gaps in pre-service education and in-service training. It may provide information about tasks that a health worker may not have been trained for, but nevertheless performs in the absence of qualified staff. Pre-service education can be revised and updated to ensure that it addresses the appropriate competencies. Plans for regular in-service training should be included.</p>	<p>Identification of the critical competencies that cadres are actually performing across rural/urban/regional settings is particularly important when looking at scope of practice. In urban settings where there are too many students for practicum sites, the scope of practice may be reduced not because the skill is unnecessary, but because the students lack experience needed to acquire competency in performance. If students and their preceptors are unable to practice, the result will be poorly skilled graduates who may be unsuccessful on licensing exams and unable to practice competently when deployed. Without careful consideration, the functional scope of practice might also be expanded to an unsafe level—for example, if the nurse or midwife is the only person in a rural, isolated area and works without supervision. If a scope of practice is restrictive, but the provider is expected to assume far greater responsibilities, the situation becomes a liability issue for both the provider and the facility as well as a safety issue for patients.</p>	<p>Regulatory bodies and ministries must consider distribution of tasks across multiple cadres in a country. There may be several levels of midwives, nurses, and auxiliary health workers. Task analysis can be used to look at the various levels for task-shifting purposes and for evaluating the training needs at each level. In Mozambique, as an example, the two pathways to general nurse education and the two pathways to maternal/child health nursing were combined into one pathway for each designation.</p>

It is important to distinguish between tasks actually being implemented in real-world practice and tasks that appear on job descriptions, scopes of work, and other documents, which may or may not be currently relevant or authorized. The identification of critical competencies provides information that can be prioritized, as in the following examples:

- Setting scope and standards of practice; revising scope of practice
- Strengthening pre-service education for a specific cadre through curricular updates and revisions to ensure that health workers are prepared for safe and effective practice immediately upon graduation (countries' health and workforce needs change over time; curricula must be reviewed periodically to ensure that content meets both international standards and the needs of the country)
- Developing/updating licensing examinations that accurately assess readiness to practice (in a rapidly changing field, it is critical that licensing examinations are regularly updated and carefully linked to both practice and the content of pre-service education.)
- Developing, revising, or strengthening continuing professional development programs to ensure that health workers are appropriately updated over their working careers in a system of lifelong learning
- Developing policies on deployment, based on identified areas of need for specific services

TIMELINE CONSIDERATIONS FOR PLANNING

When planning a task analysis, it is important to look at current and upcoming national planning priorities, issues, and processes, including both cyclical proceedings (such as budget development and periodic reviews of curricula) and nonrecurring events (such as specific one-time projects like the World Health Organization's High Burden Country Initiative or UNFPA's *The State of the World's Midwifery* report).

- **National-level strategies:** Sector-wide approaches relevant to the health workforce and/or national multiyear strategies with a particular focus (e.g., the Millennium Development Goals) can benefit from task analysis. Reviews of national health priorities and/or periodic evaluations of curricula may be under consideration; planning a task analysis in coordination with these efforts can lead to stronger findings and better applications of the findings. Task analysis can be an important part of national-level strategies, but only if it is coordinated with the appropriate ministries and regulators.
- **Budgetary year/budget planning:** National and project-based budget planning typically have a specific cycle, either annual or multiyear. Because task analysis findings are not budget-neutral, it is important to coordinate with the budget process.

Funding Considerations

During the planning phase for task analysis there are funding considerations beyond the project itself that are relevant to the timing and conduct of the task analysis. The data gathered in task analysis are time-limited. If action plans based on findings from the task analysis are not implemented within a short period of time, the work may be wasted. Because national funding priorities and schedules will affect implementation, coordination with relevant governmental bodies is necessary to ensure that the implementation of the task analysis results will be funded and conducted. Specific considerations include:

- National calendar for budget development, input, and approval
- Specific type/format of project information that might require lead time for preparation
- Availability of cost-sharing opportunities with other/ongoing projects that could also use task analysis

DESIGN PHASE

Drafting a Research Plan for Task Analysis

Task analysis is typically designed as a research project. The research structure benefits all end users of the process because it provides an objective approach to assessing the comprehensive nature of the design (internal users) and offers the opportunity for replication (external users).

It is useful, therefore, to follow the typical outline of a formal research plan when documenting the steps taken to design the process for a specific country context. The following sections of this guide follow that outline.

Planning for Protection of Human Subjects

The protection of human subjects in research is a fundamental ethical responsibility of any researcher. Planning should occur on several levels:

- **Institutional approval:** An application should be made to an institutional review board (IRB) for review of the proposed task analysis research plan. The order of approvals may vary—for example, USAID requires its approval process to precede other institutions' approval processes, but a local Ethics Committee may prefer to be the first to review a proposal.
- **Funder approval:** The program funder might or might not accept the IRB notice of approval. The funder may require an independent application to its own review board, either concurrent with or following the IRB review. The funder might also have a different opinion about certain components of the application (for example, the consent form or the instrumentation). The need

may arise to negotiate the opinions rendered by the two boards. Similarly, one board may review the application as exempt while another may require a higher-order level of review (expedited or full review). It is therefore important to plan adequate time for all IRB submissions.

- **Country approval:** The MOH in the country might have its own review process, which also might or might not accept the opinion of any other board. While review processes can occur simultaneously, opinions might differ. For example, one board might accept a participant's verbal consent; another might require written consent. Usually, the stricter requirement of any board will prevail.
- **Administrative approvals:** As a matter of professional courtesy, advance notice and a request to access health facilities for the purpose of data collection should be provided to health facilities, following established communication channels. These letters of introduction are usually prepared at the MOH level and sent to provincial or District Health Management Teams, which inform the selected health facilities. The letters typically include a copy of the IRB approval for the project. Appropriate courtesy gestures still need to be made at the district and health facility levels during the data collection phase.

Data Analysis Plan

The project statistician should be involved in all phases of designing the task analysis. The statistician can help to determine essential design elements, such as sample size and method of data collection and data entry, which will contribute to the quantity and quality of data generated by the project. The statistician should also consult with the primary stakeholders of the project to be certain that the tools and methods are designed to collect data that will respond to the objectives of the task analysis.

As the tools and methods are being designed, it is important to define what you want to learn from the data that are collected. Previous task analyses have informed updates to job descriptions, distribution/deployment of human resources, services offered by particular level of facility, PSE curricula, in-service training, and scopes of practice. Illustrative analyses and findings from previous task analysis studies can be useful.

An illustrative finding from a task analysis in Liberia was that partograph use was reported to be performed frequently by 80% of midwives, but active management of third stage of labor (AMTSL) was reported as being performed frequently by about 60% of midwives.

The analysis plan should be designed to identify trends in the data to explore both the expected and surprising findings in order to rule out anything that may explain the finding. For example, were the 20% that do not perform AMTSL trained to do so? Is there another cadre of health worker that reports frequently performing AMTSL?

Share findings with the stakeholders and consider the implications of this finding:

- PSE strengthening: Does the midwifery PSE program define partograph use and AMTSL as core competencies? Should it?
- Does the in-service training program need additional emphasis on partograph use and AMTSL?
- Does the job description for midwives encompass these tasks?

Another example finding from a previous TA is that nurses working at clinics reported frequently performing ANC tasks more than hospital-based nurses. While the finding is not surprising for the context (Liberia), it gave the key stakeholders a sense of confidence in the data. Consider the importance of expected findings, not only the unexpected.

Additionally, the analysis plan should summarize and explore the significance of contextual data of respondents, such as gender distribution, age, mean time in workforce, mean time at current position, location of work, and any other relevant data that may inform the findings.

Project Timeline and Follow-Up

The planning and implementation of a fully detailed task analysis project can take up to one full calendar year or more. Table 4 depicts various aspects of the project and the length of time that the full implementation may require. These are estimates based on Jhpiego's experience in the field.

Post-analysis follow-up tasks include presentation of the findings to project principals and stakeholders (internal dissemination) and wider dissemination of the findings in various public forums such as local, regional, national, and international meetings in order to share the lessons learned from the task analysis.

Equally important is the need to assist country personnel with translating the findings of the study into a shorter-term action agenda. This is accompanied by the responsibility for longer-term monitoring of the impact of the project, to document the effectiveness of new program plans that were developed on the basis of study findings.

Table 4: Timeline considerations

THE PROJECT PHASE	ESTIMATED TIMELINE
Planning	
Garnering political will and engaging stakeholders	1 month
Human subjects approval <ul style="list-style-type: none"> • Organization IRB • Funder IRB • Country-based ethics committee • Administrative approvals 	3–6 months (may be extended when multiple funders/review boards are involved)
Design	
Gathering documents <ul style="list-style-type: none"> • Human resource planning documents • Curricula of study (for relevant cadre) • Results of task analysis studies conducted for the cadre in other countries (published literature) 	2–4 weeks
<ul style="list-style-type: none"> • Designing instruments • Crafting the model tool • Obtaining expert opinion (ensuring content validity) • Revision, following content review • Translation and assurance of cultural congruence • Production (including design and refinement of data entry method) 	2–3 months
Implementation	
<ul style="list-style-type: none"> • Training data collectors • Orientation to the data gathering process in the field • Teaching/learning the data recording/data entry process • Measuring and ensuring interrater reliability • Ensuring accuracy of data entry 	2 weeks–1 month
Data gathering	1–2 months (depending on sample size and geographic spread)
Data entry and data cleaning	1–2 months (can happen concurrently with data gathering)
Analysis	
Statistical analysis	1 month
Interpretation: making sense of the statistics	2 weeks
Interpretation: drawing inferences for the country (with stakeholders)	2–4 weeks
Reporting	
Report writing for primary users of the data (with user consultations)	6–8 weeks
Feedback to project participants and stakeholders	2 weeks
Post-project presentation at local, regional, national, and international meetings	Post-project task
Preparation of peer-reviewed publications	Post-project task

Sampling

Sampling is the selection of a group of people, events, behaviors, or other elements that are representative of the population being studied in order to derive conclusions about the entire population from a limited number of observations. Table 5 shows types of sampling and their implications for task analysis.

Table 5: Types of sampling

TYPE OF SAMPLING	WHAT IT MEANS FOR TASK ANALYSIS
Convenience sampling is a statistical method of drawing representative data in which the participants are selected, in part or in whole, based on convenience to the researcher (i.e., availability or accessibility).	<p>The advantages of this type of sampling are the availability of the sample and the efficiency with which data can be gathered. This approach makes best use of members of the cadre who can be easily reached.</p> <p>The disadvantages are</p> <ul style="list-style-type: none"> Workers in geographically distant settings might not be reached, leading to the risk that the sample might not represent the population as a whole. (Providers in distant and hard-to-reach places may perform the key tasks differently from providers in the convenience sample places, making the results nongeneralizable.) People who volunteer to participate may be different from those who don't in ways that affect the outcome, resulting in selection bias.
Probability sampling (random sampling) is a method of sampling in which each member of a population has an opportunity to be selected for the sample.	The purpose of this approach is to obtain a sample that is representative of the population and from which generalizations to the population can be made. Choosing this method of sampling will have implications for the budget, as it will require more research assistants and more travel.
Purposive sampling is a type of nonprobability sampling in which the researcher consciously selects specific elements or subjects for inclusion in a study in order to ensure that the sample will have certain characteristics relevant to the study.	This approach is selected if there is a specific interest in a subset of a population group. For example, the cadre of interest might not be all nurses, but rather, only nurses working in specific hospital units, such as the maternity unit, or nurses in rural vs. urban areas.
Quota sampling is a type of nonprobability sampling in which a convenience sample is adjusted to ensure that certain subgroups are not underrepresented.	In this approach, the research would specifically reach out to certain members of the cadres (e.g., those in rural settings). An a priori minimum sample size is established so that meaningful decisions can be made about the subgroup.
Stratified random sampling is a type of sampling in which the population is divided into several groups that are alike in certain ways and a random selection is made from each group.	This method of sampling would be used when it is important to identify differences between different groups. For example, nurses might be educated through different pathways (technical education, baccalaureate education). If this difference is thought to be important, the researcher would group the potential members of the sample according to this demographic feature and then take a random sample from each group.

Sampling decisions are among the most important decisions made during the design phase of a task analysis. Stakeholders will look very critically at this aspect of the design to form an opinion about whether findings can be generalized to other members of the cadre throughout the country. Other potential users of the findings will draw an opinion about the applicability of the findings in their own country settings.

- The **cadre** to be studied is a key element of the study design. The fundamental question posed in task analysis is the domain of practice of a single cadre (the knowledge, skills, and attitudes that identify the cadre's scope of practice). Some countries have crafted new cadres of health workers who are charged with delivering certain health care services, tasks shifted from other health care providers (e.g., health extension workers and family planning technicians). The new cadre's scope of

practice may not have been formally documented and may be very fluid, depending on the need for providers in selected service areas or settings. Task analysis is an ideal approach to formal documentation of the possible scope of practice for roles and titles. The project design must clearly identify the type of health care worker that is to be the subject of the study, so that a distinction can be drawn between one type of worker and another. Similarly, task analysis can help to confirm the level of education necessary and appropriate for cadres that share a common domain of practice (**level of experience**). For example, if the country currently educates more than one named type of health worker with some of the same elements of scope of practice (e.g., basic nurse and generalist nurse), task analysis is an ideal way to determine whether these differently educated and differently titled cadres are more alike than different in their domains of practice. If they are alike, then task analysis can inform stakeholders if it would be more efficient to educate a single cadre with a scope of practice that encompasses both cadres' tasks.

- The sample must be **representative** of workers throughout the region of study (ideally, a nationally representative sample). The tasks assumed by workers do vary depending on the availability of other providers in those settings and on the availability of resources needed by providers to perform the tasks. Therefore, the sample should include representation of workers based on the following:
 - Facility type (e.g., public vs. private ownership; health posts through referral-level facilities)
 - Region of the country (geographic location)
 - Locale (urban, suburban, rural settings)
- **Sample size** should be determined through **power analysis** *if it is important* to determine whether or not there are differences between two (or more) groups or cadres (e.g., physicians or nurses who practice in urban vs. rural areas). However, budget and time constraints often require the selection of a sample of convenience (number to reach within budget and time limits). Under either circumstance, *proportion* is key. The sampling design should aim for balanced representation across all of the settings in which health services are delivered.

Statistical power is the ability to find a difference between groups when a real difference exists.

There are four considerations:

- **Sample size:** the number of units (e.g., people) accessible to the study
- **Effect size:** an estimate of the degree of difference between groups that can be expected
- **Alpha level** (α , or significance level): the probability of finding an effect that is not there (i.e., the odds that the observed result is due to chance)
- **Power:** the odds that you will observe a treatment effect when it occurs

Given values for any three of these components, it is possible to compute the value of the fourth (**power analysis**). For instance, you might want to determine what a reasonable sample size would be for a study. If you could make reasonable estimates of the effect size, alpha level, and power, it would be simple to compute (or, more likely, look up in a table) the sample size.

Instrumentation

Task analysis depends, fundamentally, on a list of knowledge, skills, and behaviors that are presumed to represent the domain (the scope) of practice of a specific health worker cadre. This list may be available from various sources or may need to be newly prepared for the purpose.

Sources of Task Statements

Health professions such as medicine or nursing share certain commonalities in their scope of practice, across national boundaries. They are represented in the global arena by international professional organizations, such as the International Council of Nurses (ICN), the International Confederation of

Midwives (ICM), and the International Federation of Gynecologists and Obstetricians (FIGO). These organizations have generated statements about the competencies that should be demonstrated by members of their respective cadres. The World Health Organization (WHO) has also generated competency lists for various health worker cadres as well as planning guidelines for human resources. The competency task lists generated by these global-level partners are a valuable first source.

The major health professions are often represented at the country level through professional associations. The associations are likely to have generated a definition, standards, and guidelines for their cadre, including competencies for practice, and will have adapted global guidelines to suit country needs and circumstances. The use of global competencies and standards as a basis for country-level competencies avoids time-consuming and costly replication of work and places the national list within a set of internationally vetted and accepted work. Links to various international resources are provided in the “Selected Resources for Task Analysis” section of this guide.

Other sources of competency statements for the traditional health professions include the following:

- Curriculum guidelines and/or outlines produced by Ministries of Education and regulatory bodies
- Certification or licensure examination test content outlines (if required for registration in the country)
- Task lists produced by physician or nurse specialty organizations (e.g., oncology physician, family nurse practitioner)
- Components of a country’s basic package of health services that outline the range of services that are to be delivered to the population

It might be more challenging to find task lists for health worker cadres that are defined at the country or regional level, such as clinical officers and community health workers.

The following steps should be taken to ***create a task list***:

1. Begin with an existing outline of knowledge, skills, and behaviors for the cadre, gleaned from international and national sources.
2. Convene and survey an expert review panel comprising knowledgeable experts in the field who are charged with adding items to or deleting items from the list, based on their professional experience and knowledge of the work that is expected of this cadre in actual clinical practice.
3. Review and refine the list to remove equivalent/similar statements and order the tasks within logical domains of practice (e.g., medical/surgical care, maternity care).

The final list may be quite lengthy, particularly for the higher-level health professionals. Length will, in turn, affect the procedures that will be used to generate data in the actual study (see “Details of the task statements” section). Jhpiego’s program experience has suggested that task lists exceeding 100 items may lead to respondent fatigue. On the other hand, if an arbitrarily shortened list does not adequately define the scope of practice, then the intended outcome of the task analysis project might be compromised. Adding at least one qualitative question to otherwise quantitative task lists may prove useful—for example, “Were you ever asked to do a task for which you were not prepared?” This question often elicits some very surprising and enlightening responses!

Details of the Task Statements

The level of detail to include in each statement may vary. There are complex statements such as, “Obtains and records temperature, pulse, respiration, and blood pressure” or “Cuts an episiotomy using scissors, prior to birth of the presenting part.”

On the other hand, task statements can be more simple and “unbundled” with any other task, such as “obtains and records vital signs,” or “cuts an episiotomy,” given that a health worker may actually perform one, but not all, of the steps of any complex statement, or may use substitute materials or resources when performing the task.

Some general recommendations related to level of detail of tasks include the following:

- Maintain a consistent level of detail throughout the task list.
- Consider a level of detail that will allow the overall length of the task list to be reasonable in terms of avoiding respondent fatigue and also producing a manageable volume of data for analysis.
- Write tasks that health care workers will find straightforward and recognizable. A Jhpiego author would likely a single task that encompasses the more detailed implied tasks, such as “Actively manages the third stage of labor.”

Psychometric Considerations

The task list must be as representative of the domain and scope of practice as is practically possible (content validity), given the constraints of the study methods. However, every task included on the list (regardless of its length constraints) must represent a task that the cadre is actually expected to perform. Ensuring that is the case is the responsibility of the content expert panel that is convened during the instrument development phase. There should be consensus agreement among members of the panel about every item that is finally included. Another technical detail, which is often overlooked, is the generation of a *content validity index*—the proportion of members who agree to keep a specific item on the list. An index of 70% agreement is recommended as a minimum standard.

In some cases, the expert panel, rather than a larger, independent panel of respondents, is given the task of making final decisions about the importance of each item. This shortcut method is not recommended because, depending on the profiles of the individuals on the expert panel, the panel might not truly reflect the experience of those in actual clinical practice, particularly in remote or underserved areas.

A second important property of the task list is its *reliability*. There are various types of reliability in the instrument development field. However, in the context of task analysis, two types are most relevant:

- **Inter-rater reliability** refers to the degree of agreement between two or more raters who are collecting data from a similar observation. This might refer to “hearing the same thing” (e.g., in an individual or focus group interview) or “seeing the same thing” (for example, when a measurable, observable behavior is being documented, did a specific nurse actually do the specific step of a procedure?). Inter-rater reliability is promoted through a diligent process of training data collectors, so that they are oriented to the things they are supposed to be observing.
- **Reliability of the data entry process** is another aspect of inter-rater reliability. This refers to the degree of accuracy with which the observed data are recorded (on a survey form or in a computer application, such as a smartphone). Very high levels of agreement are important here so that trust can be placed in the information used for the data analysis.

GENERAL DEFINITIONS RELATED TO DATA COLLECTION	
Validity	A tool is considered valid if it actually measures what it is intended to measure. For example, a thermometer would be a valid tool for the measurement of body temperature, but not as a measure of blood pressure.
Reliability	A tool is considered reliable if it produces similar results each time a measure is taken. For example, a thermometer would be a reliable tool if it generated a very similar (within a very narrow range) result when a repeated measurement was taken within a very short period of time, under similar circumstances (e.g., hot liquids had not been ingested in the time between measurements).
Inter-rater (inter-observer) reliability	This measure of reliability documents the degree to which different raters/observers give consistent estimates of the same observation. This is particularly important when observed behaviors are being documented—one of the alternative approaches to gathering data for a certain type of task analysis project. A minimum of 80% agreement is an acceptable standard, although more precision (achieved through more training) is desirable.

Translation Considerations

The language in which the task list is developed will be determined in large part by the language of the resource documents (see “Selected Resources for Task Analysis” section). Which language to use for the task analysis research process is a topic that should be discussed and then determined with the help of local collaborators, including the local ethics committee and the panel of experts who review the task list. A general rule of thumb is to use the language in which the targeted health care cadre is educated. Once the appropriate language is determined, the data collection tool will very likely need to be translated from its original (source) language to another (target) language. There are several well-structured approaches for accomplishing this task.

- The *backward translation* approach uses at least one person to translate from the source to the target language; then a second individual retranslates from the target to the source. Then the original source version is compared to the back-translated version to determine whether the meaning of the original version has been altered or amended in any meaningful way. Of course, the back-translated version may be “wrong” simply because of the word choices of the translator, while the target version may in fact represent the true meaning; there is no way to know this without referring to the target version. Nevertheless, the translators should discuss these discrepancies and revise the target version to reflect the true meaning.
- The *forward translation* approach uses two or more native speakers of the target language to produce the target version. When two (or more) individuals work on the translation together, they are very likely to discuss alternative words or phrases that reflect the word formulations or phrases that are most common in the language spoken by the target group. If a single individual performs the work, it is always important to have at least one additional person review the result. Any words or phrases that sound unnatural to the reviewer should be discussed. This approach is typically more expedient (less time-consuming) than backward translation.

Whichever approach is used, it is important to include a measure of the **cultural and linguistic context** of the target language. Words and phrases must be carefully considered not only for their actual meaning, but also for how appropriate they may be in use. Certain words are “**hot words**” (e.g., abortion, contraceptive, sex, [female genital] mutilation). Other words may simply have no use or meaning in the target language (e.g., gender, counsel, advocate). Symbols may also have different meanings in different cultural contexts. Acronyms (e.g., SMART objectives) often do not work in another language, simply because the intended word begins with a different letter in the target language.

PROCEDURES

Methods and Procedures for Data Collection

The psychometric importance of attention to both of these processes is described in the “Psychometric considerations” section. This section provides additional detail on how to train the data collectors. A summary of data collection methodologies is included in Table 6.

Table 6: Summary of data collection methodologies

METHOD	ADVANTAGES	DISADVANTAGES	STAND-ALONE METHOD	SUPPLEMENTAL METHOD
Task analysis card game (Task Master: Mining for Data™)	Group based (depends on context) Avoids respondent fatigue People find it fun	Requires people to travel Consider combining this method with another to allow health care centers staffed by one person to remain attended Facilities with a single staff member can be visited in a separate round of data collection (not group based)	X	
Survey method	Thorough, clean data collection if every task area is filled in for every task	Respondent fatigue is an issue, especially for long task lists Consider keeping the number of tasks tasks, conservative, if a shorter list truly represents the actual scope of work	X	
Qualitative case study task mining	Fills in potential gaps in a task list created from national documents	Requires significant time and expertise on behalf of data collectors to mine tasks from the responses		X
Direct observation for work sampling	Allows health care workers to continue addressing patient care needs completely uninterrupted	Requires long hours on behalf of data collectors May omit particular health events, such as birth and hence birth-attendance-related tasks May not result in accurate data (consider the Hawthorne effect) Creates additional need to protect human subjects, since patients as well as providers will inevitably be observed		X

Data collector training for data gathering involves a number of important steps:

1. Select the staff: Familiarity with data collection is valuable, and specific language skills may be required for different regions.
2. Orient staff to the purpose of the task analysis study and the role of the data collector.
3. Orient staff to the instrument: Careful orientation to the format and content of the data collection instrument is imperative so that every data collector is intimately familiar with the tool.
4. Create the opportunity to work with mock data, using the same data collection procedures that will be used in the real study. It is important for data collectors to “test-drive” the tools they will use.

Initially this can be done in a classroom setting with the data collection staff playing (and alternating) the roles of both respondent and data collector.

5. After demonstrating data collection competency in the class setting, data collectors should practice in a **field setting that will not be used** for actual data collection. Regional sites may be needed if there are language differences by region.
6. Check for inter-rater reliability at the beginning of data collection, to ensure consistency between data collectors and reduce recording errors. Correct any sources of error in the data observation, collection, and entry processes between and among the data collectors and supervisor(s). Data collectors will ideally attend data collection training and the pilot workshop, to be sufficiently prepared for accurate data entry.
7. Debrief on problems/issues/confusion: Much information is gained by debriefing on the issues that arise during pilot collection. Unclear wording on tools, confusing instructions, and inter-rater reliability issues are common findings. Sometimes the need to amend the actual data collection tool will be identified during this training. Data collectors should then have another opportunity to practice with the amended aspects of the final instrument.
8. The research design and plan for fieldwork should include time for troubleshooting by supervisors. Depending on the size of the project and the geographical spread, regional supervisors may be required.

Examples of data collection methods

Option 1: Task Master: Mining for Data: A fun and interactive card game for workforce analysis

Jhpiego has created a task analysis card game, Task Master: Mining for Data, to be used as a task list validation tool and as a basis for data collection. The game is designed to be played in small groups. The method of data collection used in the game was found to be advantageous in regions where an individual survey method would be met with respondent fatigue or where language differences would pose a barrier to data collection via written questionnaires. Furthermore, in some situations responding to individually delivered surveys would be an unfamiliar practice and the method might compromise the validity/reliability of responses.

When used for data collection purposes, the card game should be played in groups of three to six. Ideally there should be two facilitators and no more than 24 participants per workshop (no more than two groups of six per facilitator), and two rooms available for two concurrent workshop sessions. The number of workshops held per day will depend on the density of the population being sampled, the distance to travel between workshop sites, and the recruitment strategy that has been employed. For example, a more centralized approach will mean larger and fewer workshops per day. An alternative approach may involve multiple workshops per day (two–three) with fewer participants at a time. Instructions for the card game are included in Appendix D.

At the start of the data collection activities, a biographical data (biodata) sheet will be provided to each participant. The biodata sheet collects information such as length of service, institution where trained, length of time in current position, type of facility where working, and any other information important to the country/cadre/purpose. Each participant's biodata sheet will be coded with a number that will correspond to the participant's responses to the task list. This will result in de-identified data that can be compared to reveal various potentially interesting data points, such as (a) what tasks are performed more frequently in what facility types; (b) whether participants who are “not competent” at certain tasks were trained at particular institutions; (c) whether more participants received in-service training than pre-service education for any particular task; and (d) other information relevant to the deployment practices necessary to meet the health care human resources needs of a country.

The facilitator of the data collection workshop will read a task aloud. Card game players should be given up to a minute to respond to the task, laying down the card that represents their experience. For example, when playing the FREQUENCY round of the game, a player might consider the task “Obtains and records vital signs” and might lay down the DAILY card in response. Cards are laid facedown, and a data collector takes the cards to an out-of-sight location to record the responses, thereby maintaining anonymity of the respondents’ feedback. Each player will receive two sets of response cards so that while one set of responses is being recorded, the next task can be read aloud and the game can move along.

The benefits of the card game are that it engages participants in a social activity, collects individual survey data with less respondent fatigue, and creates an opportunity for the participants to clarify their understanding of the activity and to give feedback in a supportive environment. Drawbacks of the game include the need for a minimum number of participants to play the game, necessitating travel to a central location for those working in remote settings.

Benefits of using the card game for task list validation during the expert panel review include all of the above. In addition, the card game offers an opportunity to generate a group consensus on items with a range of ratings, as the task list is meant to represent the national average, according to the experts, of the health care cadre’s job activities.

Those interested in using Task Master: Mining for Data as a data collection tool for task analysis should contact glo@jhpiego.org.

Option 2: survey questionnaire

When data are collected via a survey questionnaire, a written task list is presented to the respondent, accompanied by a means of indicating the selected response. The survey may be administered in one of three ways:

1. Self-administered at a single site, with the data collector physically present to answer any questions about the survey
2. Self-administered remotely, either electronically or via postal mail
3. Administered by the data collector in the field (one on one)

In method 1, the survey materials (consent form, instructions, task list, and response tool) are distributed to potential respondents by a data collector on-site (typically, a single site at which potential respondents are gathered). Participants are instructed to complete the study forms and return them to the data collector, who does not otherwise interact with the respondents, except to answer any questions that may arise. The benefits of this approach are that one data collector can distribute several questionnaires simultaneously, interact only as needed to facilitate the process, and then collect the completed instruments at the end of the time-limited session. A drawback of the approach is that respondents may feel pressured to participate (or to hurry) simply because the data collector is present.

In method 2, the survey materials are sent via email or prepaid, return-addressed postal mail, with a return-by date. The benefits of this approach are that respondents have a degree of privacy and a period of time in which to think about, complete, and return the study materials. The drawbacks of this approach are that the response rates to emailed or postal mailed surveys are typically very low, requiring the extra expense of follow-up and a longer period for data collection. In addition, there is little to no control of the confidentiality of data and a real potential for loss of data if electronic transmissions fail or postal services are unreliable. This method may also introduce response bias, because those who choose to participate are likely to be different in some way from those who choose to opt out of the survey.

Method 3 involves a more expensive and time-intensive way of administering the survey (i.e., one on one in the field). However, the benefits include the opportunity for data collectors to encourage responses while being sensitive to the situation in the field at the time of the survey, and rigorous control of the data, as the survey never leaves the visual space of the fieldworker. The drawbacks include the need for more data collectors (due to the one-to-one administration of the survey), more time, and potentially more travel to individual facility settings.

Related approaches

The following activities can augment and supplement the task analysis strategies described above. They are not stand-alone approaches, but they are very helpful ways to broaden the scope of information received through task analysis.

Option A: qualitative case study task mining

Case studies can be developed based on scenarios provided by a few experienced providers. The providers can be asked to respond to questions such as the following:

1. Reflect on a time when you had to care for someone with a condition you had never seen before. What was the condition and what did you do in response to the situation?
2. Reflect on your daily routine as a health care provider. List three scenarios that you see frequently and what you do to respond to your patients' needs.
3. Have you ever been asked to perform a task for which you were not prepared? If yes, please describe.

Based on the responses to these questions, case studies can be developed that reflect the current practice reality in a given country. The case studies should follow a consistent format, such as the following example:

Case Study Example

You are a (type of health care worker) in (type of facility). It is 11:00 p.m. and you are the only one on duty. A (type of patient) enters with (presenting symptoms). After performing a thorough assessment, you determine that the patient has (condition). Please list the tasks that you would perform to address this patient's needs.

The written and/or verbal responses to these case studies can be used to supplement a task list that was prepared using national documents and reviewed by expert panelists. The task list is enhanced by new approaches or additional skills that these experienced providers have incorporated into their practice. The task list is less constrained by external influences and may be less likely to miss tasks, especially tasks that are performed infrequently but that are critical to patient safety.

Option B: direct observation/work sampling

Direct observation of providers at work is sometimes used as an objective strategy for identifying tasks performed on the job. It is also used to sort these tasks into domains of responsibility (e.g., administrative tasks vs. patient care tasks).

Data collectors may observe health care workers directly during the workday and record their daily activities. This may be used as a stand-alone method if sufficient resources are available for observing a sufficient number of health care workers for a sufficient period of time, or as a supplemental method, to ensure that there are no gaps in the task list developed from national documents.

Be aware of the potential for the Hawthorne effect—that is, the health care workers being observed might not perform tasks the way they normally would if they were not being observed. Also, multiple observers would be needed to gather a sufficient number of observations in an acceptable time frame. Detailed tools would need to be developed to help data collectors record their observations with consistency.

The greatest drawback to use of this method as a stand-alone strategy for defining a task list is that it is almost guaranteed that the low-frequency tasks will not be identified, and competence in some of these may be critical to quality service delivery.

Considerations in choosing a data collection method

Factors that will influence the choice of data collection method include the following:

- **Resources available**—The number of data collectors available and the length of time needed to perform data collection may determine whether an individual survey method with a data collector physically present is chosen over the group-based card game data collection methodology.
- **Data validity**—Respondent fatigue may cause health care workers to leave responses blank on a self-administered survey. If there are adequate resources, opt for a survey or group-based data collection method with data collectors present.
- **Cultural context**—In some places, a group-based activity may enhance respondents' responses to the task list; in others, individual approaches may be more appropriate.
- **Respect for health care resources**—Some data collection methodologies may require health care workers to travel away from their workplace to a central workshop location in order to provide feedback on the task list. This removal from their place of work has important implications for service delivery at their facilities. Strong consideration should be given to enabling health care workers to remain at their workplace and available to patients as much as possible, with deference given to patient care needs over data collection activities.

DATA ANALYSIS

Data Entry

The previous discussions on selection, orientation to the project, orientation to the instrument, and the need to work with mock data also relate to data collector training. Additional critical items for data collector training include the following:

- It is very important that data entry follows selected conventions: Decisions about data entry conventions are made before data collection begins and prior to any training. These decisions include the format for the data and what to do with blank fields. If a convention has been agreed to, it is imperative that it be followed every time. There is no room for creative entry in data collection.
- If electronic data collection is used, emphasis will be on entering data in the correct field.
- Correct entry means using only the agreed-on symbol for paper **entry** (X or ✓, for example) and entering data in every cell individually, in the correct format. The use of ditto marks or a line running down a column to indicate that the content of a cell is the same as above invites errors.
- Address the meaning of a blank field. Without an entry convention, a blank field could indicate missing data, a negative answer, or a mistake. Decide what to enter in blank fields before data collection starts.
- Save electronic data frequently. There should be a strong backup system.
- Both electronic and paper data forms must be carefully controlled in order to protect respondent confidentiality and the data itself. Phones and paper forms containing data must be secured and protected against loss.
- Well-established procedures for timely transmission of data are important. Electronic data should be uploaded frequently, and data on paper forms will need to be transferred to an electronic medium.

The Three Cs of Data Entry

Data entry should strive for **completeness, clarity, and confidentiality**.

Completeness refers to correctly entering data in every cell using the agreed-on format.

Clarity means that all data collection forms should be neatly recorded. There should not be overlapping entries that cross cells, and only the agreed-on format should be used.

Confidentiality refers to the importance of treating all data and data forms as confidential documents. Both paper and electronic data are carefully safeguarded and access is given only to project staff.

Conducting Data Analysis

Basic data: All task analysis projects should include collection and reporting of information about the **demographic characteristics** of the project participants—*all* those who participated in *any* aspect of the design or implementation of the project, including members of the expert panels, data collectors, and survey respondents. Among the most important data are age, education, clinical specialty, years of clinical practice, and location of practice. In addition, any factors that would be important in a profile of experts and/or respondents and that would justify their participation in a particular aspect of the total task analysis effort should be included.

The core of the data analysis output for any task analysis project is the information gathered about the **frequency** with which a specific task is performed and the judgment about how **critical** (or how **important**) the task is for the scope of practice for the specific cadre. This is the information that is recorded during the data entry process. It will most likely have already been subcoded to reflect frequency (e.g., once a week, once a month, never) and may also have already been subcoded to reflect degree of urgency (e.g., if the provider does not have the capacity to perform this task, the patient could die).

Statistical analyses will sort all of this frequency and importance data according to subgroups, such as the specific cadre, the level of health facility in which the respondent works, the urban/rural setting of the facility, or any other factor that has been gathered as part of the demographic profile of the respondent. Data analysis can be far more complex and may include sorting the data twice—by frequency (from “most often” to “least often” performed) and according to any demographic factor. Weights can be assigned statistically so that the end product of the analysis clearly identifies the items that are most important to high-quality service delivery (e.g., low-frequency but highly critical tasks). In short, a richer data set allows a richer analysis.

Tip: Depending on the task, frequency responses can be grouped. For example, daily and weekly can be grouped as “frequent” and monthly and rarely grouped as “rarely.”

A recommended **data analysis plan template** is as follows:

Demographic Analysis

If different groups of job incumbents have responded to different sets of tasks, then the characteristics of the groups will need to be compared to determine whether the two groups are statistically different from one another. If the groups differ, there may be potential biases in the responses to the tasks, and a second round of data collection should be considered, with the different groups responding to the set of tasks that they did not examine in the first round of data collection. For example, in Lesotho, half of job incumbents responded to tasks #1–51, while the other half responded to tasks #52–102. After comparison, it was determined that the groups did not differ statistically according to their age, length of experience, job location, or on any other demographic variable that was collected. If a difference had been found, further data collection would have ensued, with job incumbents examining the tasks that they had not yet seen.

Frequency Analysis

The data will be used to answer the task analysis study research questions. Any commercially available statistical analysis software can be used. Analysis will involve running frequencies for all tasks under all four categories to show the proportion of responses to level of frequency, criticality, performance and location trained.

- Frequency – Never, Rarely, Monthly, Weekly, Daily
- Criticality – Low, Moderate, High
- Location Trained – In-service, Pre-service, On the job, Not trained
- Performance – Not Capable, Capable, Proficient

Task No.	Frequency					Criticality			Location Trained				Performance		
	N	R	M	W	D	Low	Mod	High	In	Pre	OTJ	NT	NC	C	P
1	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%

Cross-Tabulation Analysis

Indicators to answer the research questions:

- Task data will be cross-tabulated in terms of criticality-frequency and criticality-performance.

Table 7: Criticality-frequency matrix (Prioritized #1 highest priority to #9 lowest priority)
Red = urgent attention, Yellow = moderate attention, Green = no attention or removal of task?

Criticality	Frequency				
	Daily	Weekly	Monthly	Rarely	Never
High	High criticality + high frequency (6)		High criticality + moderate frequency (2)	High criticality + low frequency (1)	
Moderate	Moderate criticality + high frequency (5)		Moderate criticality + moderate frequency (4)	Moderate criticality + low frequency (3)	
Low	Low criticality + high frequency (8)		Low criticality + moderate frequency (7)	Low criticality + low frequency (9)	

Table 8: Criticality-performance matrix (Prioritized #1 highest priority to #9 lowest priority)
Red = urgent attention, Yellow = moderate attention, Green = no attention or removal of task?

Criticality	Performance		
	Non-capable (NC)	Capable (C)	Proficient (P)
High	High criticality + NC (1)	High criticality + C (4)	High criticality + P (7)
Moderate	Moderate criticality + NC (2)	Moderate criticality + C(5)	Moderate criticality + P (8)
Low	Low criticality + NC (3)	Low criticality + C(6)	Low criticality + P (9)

Categorization

In the creation of the cross-tabulation tables, a determination of how to categorize the task will need to be made, in order to present results. It may be that 56% of respondents say that a task is performed rarely while 42% say it is performed monthly and 2% say it is never performed. The majority of respondents will define the category of the task. If respondents are evenly split between two categories, results from the expert panel feedback will be consulted to make a category determination. (For example, if 36% say a task is performed daily and 36% say rarely, the expert panel results will be used to make a determination.)

The “majority opinion,” with occasional expert panel input may be used for categorization, with the exception of criticality, or importance.

Adding variability to the criticality responses

Health care workers will typically characterize most tasks on the task list as highly critical. Few will consider the tasks that have made it on the task list to have low or moderate importance in terms of patient or public health outcome. The tendency to rate tasks as highly critical is a well-established phenomenon according to the National Council of the State Boards of Nursing (NCSBN), which has conducted practice analysis studies of nurses in the United States for several decades. Given that the purpose of conducting a task analysis is to prioritize tasks in training and curricula based on the results, it is important to be able to instill variability in the area of criticality. A statistician who is familiar with task analysis will be helpful in determining the three categories of criticality. A data analysis team could consider using the following method:

Using the results of the frequency data, list the most highly critical task (in terms of percentage of respondents that scored the task as highly critical) to the lowest number (very few rated the task as highly critical).

For example,

Task 1 (99% rated as highly critical)

Task 2 (96%)

Task 3 (92%)

Task 4 (90%)

And so on...

Examine the percentages and consider where logical cutoff points exist, dividing the tasks into categories of high, moderate, and low criticality for the purposes of the cross-tabulations. It is important for the cutoffs to be informed by the primary users of the data, such as the regulatory body for whom the task analysis is being done or the expert panel. They are better placed to determine what level of importance is important enough in actual practice.

Summary

In summary the data will be examined based on the following:

- Establishing that there is no significant difference between different groups of respondents
- Frequency analysis
- Cross-tabulation analysis for criticality/frequency and criticality/performance
- Further analyses can be run on an as-needed basis/per stakeholder request until the next set of task analysis data are collected, in approximately 5 years.

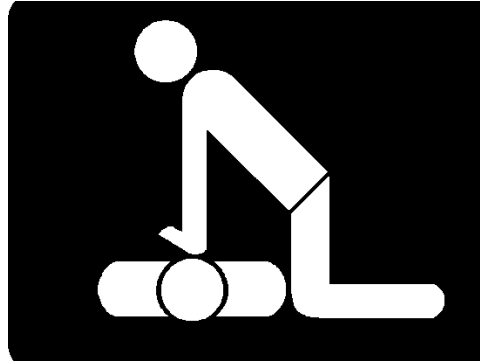
Analytical combinations related to the purpose and intended outcome of the task

analysis: Following are example questions that can be “asked” of the data during analysis to elicit information related to the intended purpose of the task analysis project.

1. Which task area should get priority when curriculum or licensure examination content is updated?

Even though you may have a strong sense of what the priority areas are, the data will provide guidance. The section on “Cross-Tabulation Analysis” provides guidance on two analytical combinations that will highlight the most important (i.e., high-priority) information.

CPR: A highly critical task for patient/population health



Prioritizing task analysis results

Given the inevitable limitations of curriculum and training during pre-service education, difficult decisions must be made about prioritizing certain tasks in the curriculum over others. The concept of criticality is helpful in this regard. Health care workers should be educated first and foremost to address those issues that are most critical—for example, first-aid training should be prioritized over bed making.

When new health issues arise, continuing professional development topics should focus on the most highly critical aspects of the new health care needs. For example, when HIV became prevalent in sub-Saharan Africa, prevention of mother-to-child transmission (PMTCT) services and antiretroviral administration were prioritized, in order to stop the spread of the pandemic.

2. What combination of frequency and criticality is most important to include in training and testing?

It is important to prioritize the most important tasks that are also least likely to be mastered in a normal working environment. In most settings, health care workers who perform a task frequently (at least weekly) are observed by their co-workers and supervisor, providing the opportunity for correction if a task is not performed well. In addition, competency is more likely to be achieved the more frequently a task is practiced. For these reasons, high-frequency tasks should take lower priority in curricula, testing, and training. Thus, the most important tasks to prioritize in training, licensure exams, and in-service trainings are tasks that are performed with low frequency but that are highly critical. Note that low frequency in this case is defined as tasks that are performed rarely or monthly.

High Frequency+ Low Criticality	High Frequency+ High Criticality
Low Frequency+ Low Criticality	Low Frequency+ High Criticality

3. What do you do with the information about the task combinations?

Table 9 depicts some of the task combinations that can be generated from a rich data analysis and the actions that can be taken on the basis of this information.

Table 9: Taking action based on findings (per task combination)

TASK COMBINATION	WHAT TO CONSIDER
High criticality + low frequency (rarely or monthly)	Prioritize for in-service trainings and facility drills; consider inclusion in pre-service
Low performance + high criticality	Prioritize for in-service training
Low performance in a geographical zone or health facility level	May influence deployment decisions
Location (e.g., never trained) + high criticality	Prioritize for PSE and potentially IST
Low criticality + high frequency (daily or weekly)	Consider removing from curriculum/training or at least minimizing time dedicated to the topic (e.g., bed making)
Low level of comfort (performance) + high criticality	Prioritize for in-service training

Depending on the purpose of the task analysis, a set of activities related to implementing the results of the task analysis study should be designed and executed. The table below presents a brief comment about the types of activities that may follow the task analysis study, to utilize the information for the intended purpose of conducting the study in the first place. For further detailed examples, or for technical assistance with designing these activities, consult the Regulatory Toolkit (available at <http://reprolineplus.org/resources/health-care-professional-and-occupational-regulation-toolkit>).

Table 10: Taking action on findings (per overall goal[s] of task analysis study)

AREA OF FOCUS	SUMMARY OF GENERAL APPROACH
Revision of job descriptions	Working with local human resource experts, compare task analysis results with current job descriptions, check for accuracy, and revise accordingly.
Curriculum revision	Review results of the task analysis and the current curriculum. Update curriculum where there are gaps identified by the task analysis results (high ratings of never trained, not competent, or combination of low frequency/high criticality).
Updating scopes of practice	Work with regulators to review current scopes of practice, identify tasks that lie outside the current scope, and update the scope accordingly; if tasks within the scope are often rated “never trained” or “not competent,” consider solutions for updating health care workers on the tasks within their scope.
Assignment/distribution of HR	Examine the results by geographical area or facility type to assess for any patterns or correlations between certain locations and certain health care worker resources.
Service delivery at the facility level	Examine for those tasks “never performed” whether the health care issue related to the task is not occurring or whether there are barriers to task performance that can be addressed, such as a weak supply chain or lack of training to perform the task.

Why Low Frequency/High Criticality?

High-frequency tasks lend themselves to task supervision and task mastery during pre-service training and on the job.

Encourage the experts and those charged with the implementation of task analysis results to consider graphing frequency and criticality data along a continuum of an x and y axis. The tasks will appear scattered throughout the graph. Depending on what you're using the task analysis results for, the task may be given lower or higher priority. For example, tasks that are performed at least weekly and are mostly menial (i.e., do not require critical thinking), such as spiking a bag of IV fluid or making a bed, will be learned on the job without difficulty and will not lead to death if they are performed poorly.

The reason higher frequency makes a task lower priority for curriculum or licensure is twofold: Tasks performed frequently give health care workers the opportunity to learn the task well because of the inherently frequent (e.g., weekly or daily) practice the worker receives. Secondly, in a practice setting where at least one other person is practicing with a nurse or midwife, on-the-job supervision is likely to happen more frequently when the task is performed more frequently. Co-workers or supervisors will naturally have the opportunity to give feedback to those who are performing a task poorly. For example, if a nurse gives insulin every day in the hospital, the nurse's colleagues will check the amount of insulin before it is given. So, even though giving insulin is a highly critical task, the high frequency of performance of the task lowers the priority of the task in terms of devoting time to it in the curriculum.

Recording and Reporting

Recording: Decisions about the data entry process include what type of entry, who will do the data entry, and what type of format.

- **Data entry tool:** Using the tool itself as a data collection instrument reduces the number of times that information has to be transcribed, thereby decreasing the potential for error. Whether to use a paper or e-format may depend on factors such as connectivity, who does the entry, and whether data collection is conducted in workshops or at an individual level. If the data are collected in multiple languages, a dual-language tool can be helpful and may make it easier for staff responsible for data entry to check specific entries. (See Appendix E for an example of a dual-language data entry tool used in Mozambique.)
- **Data entry:** Designated staff should perform data entry in compliance with the research plan. Even though information does not include individual identifiers, data forms must be handled carefully, with attention to protecting confidentiality, as noted in the research plan. Accuracy of data entry is paramount, and its importance should be emphasized repeatedly. Validation of 10% of data to check for errors should be conducted.
- **Software:** Excel is easy to use, a reasonable level of expertise is common, and data entered in an Excel file can be easily exported into other software platforms (an example is provided in Appendix F). In some studies it may be possible for data collectors to enter data directly into a software platform that has been programmed into a smartphone or tablet. The software program would then be directly exportable to the analysis program used to generate study results.

Reporting: Reporting has both external and internal meanings.

- “Internal reporting” documents the project; it is the ongoing monitoring of processes and findings.
- “External reporting” is the public version of internal information; it includes a number of types of documentation:
 - Periodic progress reports will be expected by the funder and partners.
 - Final reports of findings will also go to appropriate bodies such as ministries, councils, and professional associations. The final report should be presented in a form that can be used by the country (for example, a curriculum outline based on task analysis results).

- Program description briefs are short overview documents that can be distributed at local and/or regional meetings, used as advocacy tools, and linked to program sites.
- Presentations at national and international meetings and published articles add value to what is known about task analysis.

Conclusion and Recommendations

Task analysis is a valuable tool for strategic planning and an important asset in health systems strengthening. Jhpiego has creatively adapted the task analysis process for applications in diverse geographic regions, in projects of different scopes, and among various health worker cadres.

Task analysis is also an emerging methodological approach that is being adopted rapidly by other organizations in the field. Jhpiego has a leadership role in demonstrating the usefulness of task analysis because of its history of successfully applying the approach.

Task analysis has been well received by governments, regulatory bodies, professional associations, and donors. The process is readily learned and easily implemented, with a variety of design options from which to choose. However, task analysis must be viewed as a longer-term project that is ideally repeated approximately every five years. It requires appropriate timing, in alignment with concurrent national and organizational work plans and budgetary cycles.

Task analysis is not a product in itself. Rather, it generates data that inform a number of strategic planning areas—such as health human resource allocation, curriculum development for both pre-service and in-service education, regulation, and other country workforce priorities—and should therefore be specifically targeted to address identified gaps in these areas.

Recommendations

- Identify obvious gaps in the health system that task analysis will assist in addressing. Use this information in advocacy to get policymakers' buy-in and ownership.
- Use this guide to inform task analysis planning and implementation.
- Pick the methodology most appropriate to the country's priority and intended purpose.
- Plan for the dissemination and implementation of results as the prime focus of the task analysis.
- Take responsibility for monitoring and long-term follow-up of the application of findings.

Selected Resources for Task Analysis

Listed below are recommended resources for learning more about task analysis and examples of resources that can be adapted by program planners and staff for use at the country level. The list includes published references organized by topic and links to other resources on the web.

PUBLICATIONS BY TOPIC

Developing Task Lists

Battisto D, Pak R. Using a task analysis to describe nursing work in acute care patient environments. *The Journal of Nursing Administration* 2009; 39(12): 537–547.

Fidler JR. Task analysis revisited: refining the phlebotomy technician scope of practice and assessing

longitudinal change in competencies. *Evaluation & the Health Professions* 2007; 30(2): 150–189.

Gardener G, Gardner A, Middleton S, Della P, Kain V, Doubrovsky A. The work of nurse practitioners. *Journal of Advanced Nursing* 2010; 66(10): 2160–2169.

Conducting a Task Analysis

Althouse L. Test development: Ten steps to a valid and reliable certification exam. 2000. Accessed June 11, 2013, at: <http://analytics.ncsu.edu/sesug/2000/s-71.pdf>

Dgedge M, Mendoza A, Rajabo M, Necocha E, Bossemeyer D, Fullerton J. Assessment of the nursing skill mix in Mozambique using a task analysis methodology. *Human Resources for Health*. 2014, 12:5 DOI: 10.1186/10.1186/1478-4491-12-5

Munyisia E, Yu P, Hailey D. How nursing staff spend their time on activities in a nursing home: an observational study. *Journal of Advanced Nursing* 2011; 67(9): 1908–1917.

Oshio S, Johnson P, Fullerton J. The task analysis of American nurse-midwifery/midwifery practice. *J Midwifery Women's Health* 2002; 47(1): 35–41.

Tripping MD, Forth VE, Magill DB, Englert K, Williams MV. Systematic review of time studies evaluating physicians in the hospital settings. *J Hospital Medicine* 2010; 5(6): 353–359.

Udaya-Thomas A, Subah M, Drake M, Ng C, Johnson P. Task analysis: An evidence-based methodology for strengthening education and training of nurses and midwives in Liberia. *International Journal of Nursing and Midwifery* 2011; 3(9): 118–127.

Pascual-Leone A, Greenberg LS, Pascual-Leone J. Developments in task analysis: new methods to study change. *Psychother Res* 2009; 19(4-5): 527–542.

Translation

Baker D, Meinikow J, Ly MY, Shoultz J, Niedehauser V, Diaz-Escamilla R. Translation of health surveys using mixed methods. *Journal of Nursing Scholarship* 2010; 42(4): 430–438.

Cha E, Kim K, Erlen J. Translation of scales in cross-cultural research: issues and techniques. *Journal of Advanced Nursing* 2007; 58(4): 386–395.

Khalaila R. Translation of questionnaires into Arabic in cross-cultural research: Techniques and equivalence issues. *Journal of Transcultural Nursing*. 2010; 24:353

Maneesriwongul W, Dixon J. Instrument translation process: a methods review. *Journal of Advanced Nursing* 2004; 48(2): 175–186.

Sousa V, Rojjanasrirat W. Translation, adaptation and validation of instruments or scales for use in cross-cultural health care research: a clear and user-friendly guideline. *Journal of Evaluation in Clinical Practice* 2011; 17: 268–274.

Squires A, Aiken LH, van den Heede K, Sermeus W, Bruyneel L, Lindqvist R, Schoonhoven L, Stromseng I, Busse R, Brzostek T, Ensio A, Moreno-Casbas M, Rafferty AM, Schubert M, Zikos D, Matthew A. A systematic survey instrument translation process for multi-country, comparative health workforce studies. *International Journal of Nursing Studies* 2013; 50(2): 264–273.

Wang W, Lee H, Fetzer S. Challenges and strategies of instrument translation. *Western Journal of Nursing Research* 2006; 28: 310–321.

Psychometric Properties

Slagle J, Weinger M, Dinh M, Brumer V, Williams K. Assessment of the intrarater and interrater reliability of an established clinical task analysis methodology. *Anesthesiology* 2002; 95(5): 1129–1139.

WEB RESOURCES

- International Council of Nurses. ICN Framework of Competencies for the Nurse Specialist: <http://www.icn.ch/vmchk/English/ICN-Framework-of-Competencies-for-the-Nurse-Specialist.html>
- International Confederation of Midwives. Essential Competencies for Basic Midwifery Practice: <http://www.internationalmidwives.org>
- International Federation of Gynecology and Obstetrics: <http://www.figo.org/>
- World Health Organization. Sexual and Reproductive Health: Core Competencies in Primary Care: http://www.who.int/reproductivehealth/publications/health_systems/9789241501002/en/

Appendix A: Examples of Jhpiego's Work in Task Analysis

COUNTRY	CADRE	PURPOSE	METHODS	RESPONDENTS	TIMELINE	TASKS
Botswana	Nursing	Create nurse licensure examination for new graduates and for foreign-trained nurses	Task Master: Mining for Data game for data collection; nine workshops (one per district)	223	2011–2014	89
Lesotho	Nursing	Develop new graduate mentorship program; update PSE/ISE curriculum; create continuing professional development requirements for re-licensure	Task Master: Mining for Data game for data collection; 10 workshops (one per district)	208	2012–2014	104
Liberia	Nursing	Develop curriculum for pre-service education	Survey	165	2007–2009	264
Mozambique	Nursing and midwifery	Professional reorganization	Self-administered survey	395	2010–2012	300+
Zambia	Medical licentiate	Define core competencies and scope of practice; redesign educational requirements	Structured interview	80	2010	400

Appendix B: Frequently Asked Questions about Task Analysis

1. How often should a country perform task analysis?

ANSWER: There is no set rule, but typically a task analysis is done at least every five years. That's a fine goal to set.

2. We had a sampling strategy, but we changed our minds and want to do a convenience sample instead. Can we just go ahead with the new plan?

ANSWER: Keep in mind that task analysis is a study conducted on the basis of a protocol that has likely been approved by multiple ethics boards. Therefore, you must update your principal investigator and whoever is communicating with the ethics boards to make necessary amendments to the research protocol, and ensure that all approved study procedures are being followed.

3. What level of health care worker should respond to the task list?

ANSWER: It depends on what you want to use the results for. If you intend to use the results for a licensure exam, you will target the group that the exam will target, which is new graduates; if it's for exploring the state of the practice of the profession, a completely representative sample, including experienced workers, is necessary.

4. What do we do about survey fatigue?

ANSWER: When you use a survey, your respondents might decide to answer only a portion of the survey. For data integrity, it's important that respondents finish the entire survey. From an ethical standpoint, however, it is important to respect the autonomy of the person responding to the survey. It is appropriate to encourage completion of the survey to a certain extent—for example, by offering the option of finishing the survey on another day or taking a break and then continuing. However, if the person refuses, it is his/her right to abstain from finishing the survey. Do not discard the data, but mark it clearly as an unfinished survey so final decisions can be made about which partially finished surveys will be included, if any, in the final data analysis.

5. What if we end up with an incomplete data set (e.g., we run out of funding mid–data collection)?

ANSWER: It depends on what you want to do with the task analysis results, but, for example, limited deployment decisions could be made. Curriculum, testing, and policy decisions, on the other hand, cannot be made based on an incomplete data set.

6. Why can't we use the international competencies as our task list?

ANSWER: You can include international competencies as tasks on the list, especially if updating scope and standards of practice to comply with international standards is part of the purpose of the task analysis. However, it is critical that each task list be created specifically for an individual country's context. Health care needs differ by region according to the region's prevalent diseases, cultural practices, climate, geography, and so on.

7. Why is low frequency and high criticality such an important combination of task characteristics to consider?

ANSWER: Tasks that come up infrequently but that have a high impact on patient or public health outcomes should be emphasized during education, and practice of these tasks should be encouraged on the job. For example, CPR might not be performed by a provider every day, so those skills may not be honed to perfection through natural day-to-day work. Frequent training updates will ensure that the low-frequency/high-importance task of CPR is done correctly whenever the need arises.

8. I thought I was only supposed to take a sample of health care workers, but what if the entire health cadre includes only 80 individuals?

ANSWER: The sample should always be representative. If you take some portion of the 80, make the sample as representative as possible. If resources allow, it would be even better to sample everyone (the population).

Appendix C: Sample Stakeholder Meeting Agenda

GOAL

The goal of this activity is to provide pre-service stakeholders with a high-level orientation to the program plan, obtain input, and develop a national plan of action.

OBJECTIVES

- Review relevant national health priorities and pre-service education system
- Outline a framework for strengthening pre-service education
- Review current needs assessment findings or other recent data on pre-service program
- Present program plan for pre-service interventions
- Establish relevant working groups
 - Outline activities and roles of relevant working groups
 - Outline key components to include in a terms of reference or MOU document
- Develop a national plan of action for implementation
 - Present related educational standards
 - Identify plan for use of educational standards to frame interventions
 - Identify activities that require national or stakeholder support

PARTICIPANT SELECTION CRITERIA

Participants typically invited include the following:

- Representatives of national bodies, including ministries (e.g., Ministry of Health, Ministry of Education), professional councils, licensing boards, in-service training bodies, etc.
- Heads of related teaching institutions and related clinical practice facilities
- Partners and donors, other international agencies
- Community-focused organizations
- National task forces or recognized national experts in related technical area

SCHEDULE

9:00	Welcome and introductions; opening remarks	12:30	LUNCH
9:30	Presentation of national priorities and current pre-service system overview	1:30	Present and discuss program plan for pre-service interventions
10:30	Review conceptual model or framework for strengthening pre-service education	3:00	Outline activities and roles of relevant working groups
11:30	Presentation of needs assessment findings and discussion	4:00	Outline key components to include in a terms of reference or MOU document

Appendix D: Task Master: Mining for Data

A Fun and Interactive Game for Workforce Analysis

WHAT DO YOU ACTUALLY DO?

This is a game that helps a group of health care professionals determine the tasks that they perform while at work. They will do this by examining a task list that has been created by reviewing relevant international and country-based resources, including Ministry of Health documents, and which may include a service delivery package, job descriptions, and curricula for the training of the health care worker group, among other documents.

The small group–based activity is an engaging way to answer the following questions:

- How frequently is a task performed?
- How critical is that task in terms of patient/public health outcome?
- How competent is the health care worker in the performance of a task?
- Where was the health care worker trained to perform the task, if at all?

HOW TO PLAY THE GAME

The four questions are considered for each task with four rounds of the card game. The game is played in groups of 3 to 6. For best results, the ratio of facilitators to players will be no less than 1 facilitator per 12 players.

FREQUENCY: *How frequently do you do what you do?*

Pass out two sets of the blue FREQUENCY cards to all players. Each player should have 2 sets of 5 cards with the following corresponding definitions:

1. NEVER – The health care worker lacks the opportunity to perform the task
2. RARELY – The health care worker completes the task less than once per month
3. MONTHLY – The health care worker completes the task less than once per week but at least once per month
4. WEEKLY – The health care worker completes the task less than once per day but at least once per week
5. DAILY – The health care worker completes the task at least once per day

Read aloud the tasks from the task list one at a time and allow up to a minute for respondents to choose to play the card, facedown, that reflects their experience. For example, if a task reads “Obtain and record vital signs,” then a health care worker may lay down the DAILY card, facedown.

CRITICALITY: *How critical is what you do?*

Pass out two sets of the red CRITICALITY cards to players. All players should have two sets of three cards with the following:

1. **LOW** – Failure to complete the task correctly or in a timely manner will have minimum impact on client or public health
2. **MODERATE** – Failure to complete the task correctly or in a timely manner may lead to serious client impact or moderate impact on public health
3. **HIGH** – Failure to complete the task correctly or in a timely manner will lead to client death, serious disability or major impact on public health

Read aloud the tasks one at a time and allow time for the players to lay down a card that corresponds with their opinion about how critical the task is in terms of the impact on patients/public health outcomes. For example, “Bed making” may be considered to have low criticality while “Administering blood products” may be considered highly critical.

PERFORMANCE: *How comfortable are you doing what you do?*

Pass out two sets of the orange PERFORMANCE cards to players. All players should have two sets of three cards with the following:

1. **NOT COMPETENT** – The health care worker may cause harm if the task is performed without supervision
2. **COMPETENT** – The health care worker is capable of performing the task safely, although he/she may ask for supervision from a more experienced provider
3. **PROFICIENT** – The health care worker feels he/she can perform the task so well that he/she feels comfortable supervising others in the task’s performance; he/she is an expert at the task

Read each task aloud and allow respondents to lay down the card that corresponds with their judgment of their competency level for the task performance. If the health care worker feels very comfortable performing the task, he/she is likely proficient. If he/she feels capable, but might need some help, he/she is competent. If he/she feels uncomfortable performing a task, he/she is likely incompetent.

LOCATION: *Where were you trained to do what you do?*

Pass out two sets of the purple LOCATION cards. All players should have two sets of four cards with the following:

1. **HAS NOT BEEN TRAINED** – The health care worker has received no formal or informal training for the task
2. **IN-SERVICE** – The health care worker received formal training needed to complete the task at some point after graduation
3. **PRE-SERVICE** – The health care worker received formal training as part of pre-service education; the task is addressed in the didactic and/or hands-on clinical training portion of the curriculum
4. **ON-THE-JOB** – The health care worker received informal training from co-workers or supervisors once he/she began working

Read aloud each task and allow players to lay down the card that corresponds to the location of the training they received to perform each task.

ADDITIONAL MATERIALS NEEDED

- Task list
- Data collection forms (based on the task list)

ADDITIONAL INSTRUCTIONS

This card game should be used only in the context of performing a task analysis for health care professionals. Expert guidance is required for execution of a task analysis. Jhpiego offers technical guidance for performing task analysis. This game is a data collection tool, and is one part of the systematic process of determining what health care professionals do in their jobs.

CONTACT INFORMATION

For additional instructions, please visit www.reprolineplus.org to obtain Jhpiego technical reports about task analysis. Visit www.jhpiego.org for contact information related to technical assistance for task analysis.

Appendix E: Dual-Language Task List and Data Entry Form (Mozambique)

Tarefa Instruções: Inserte uma marca ✓ na caixa correspondente de acordo com sua opinião ou juízo sobre a frequência e o impacto.		Frequência Com que frequência Você realiza a tarefa?							Impacto Se Você como técnico desta US não realiza esta tarefa, como afectaria os cuidados do paciente/ utente?			
		Nunca (Por favor indique a razão pela qual esta habilidade não é realizada)			Raramente	Pelo menos uma vez por dia	Pelo menos uma vez por semana	Pelo menos uma vez por mês	Não afecta	Efeito menor: atraso do seu tratamento, transferência	Maior efeito: Hospitalização ou prolongamento da mesma	Poderia causar problemas graves ou até a morte
		Não foi treinado para realizar esta tarefa.	Esta tarefa não é realizada nesta Unidade Sanitária	Outro técnico realiza esta tarefa								
Área enfermagem básica Basic nursing care												
100	Estabelece comunicação adequada com o utente <i>Establish adequate communication with the patient</i>											
101	Realiza higiene simples das mãos <i>Carry out simple hygiene of the hands</i>											
102	Realiza higiene anti-séptica das mãos em todos os procedimentos de cuidados ao doente <i>Carry out antiseptic hygiene of the hands in all patient care procedures</i>											
103	Prepara e utiliza o equipamento, incluindo as luvas, de protecção individual <i>Prepare and use proper equipment, including gloves, for individual protection</i>											

Appendix F: Example of an Excel Data Entry Format

TASKS	1	1	1	1
Variables:	Frequency	Criticality	Location	Performance
Respondents:	0=Never, 1=Rarely, 2=Monthly, 3=Weekly, 4=Daily	0=Low, 1=Moderate, 2=High	0=Never trained, 1=On-the-job, 2=In-service, 3=Pre-service	0=Not competent, 1=Competent, 2=Proficient
1				
2				
3				
4				
5				
6				
7				
8				
9				