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DEVELOPMENT OF WORKFORCE ACTIVITY STANDARDS IN EGYPT

March 2011

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Mission

The Health Systems 20/20 **cooperative agreement**, funded by the U.S. Agency for International Development (USAID) for the period 2006-2011, helps USAID-supported countries address health system barriers to the use of life-saving priority health services. Health Systems 20/20 works to strengthen health systems through integrated approaches to improving financing, governance, and operations, and building sustainable capacity of local institutions.

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CONTENTS

Acronyms	vii
Acknowledgments	ix
Introduction	11
1. Review of existing workforce Standards in Egypt	13
1.1 What Are Workforce Activity Standards?	14
1.2 Who Develops Workforce Activity Standards and How?	14
1.3 How Are Activity Standards Used?	14
2. The process for Developing Workforce Activity Standards in Egypt	17
2.1 Determining the Scope of Work.....	17
2.2 Forming the Expert Working Panels.....	18
2.2.1 Facilitation of the Expert Panel Workshops	18
2.2.2 Orientation.....	19
2.2.3 Panel Discussions	19
2.3 Validation process.....	22
3. Lessons learned	25
Annex A: Expert Opinion Workshop Materials	27
Annex B: Bibliography	30
Annex C: Workforce Activity Standards and Workload Standards	31

LIST OF TABLES & FIGURES

Figure 1: Graphical Representation of the WISN Method for Calculating Staffing Needs.....	15
Table 1: Phases of Workforce Model Implementation.....	17
Table 2 : List of Support (Nonclinical) Activities	20
Table 3: Example of Clinical Activities Subcategories as Listed by Experts in the Area of General Surgery.....	20
Table 4: Main Activities and Activity Standards for a Specialist in General Surgery	214
Table 5: Main Activities and Activity Standards for Ward/Inpatient Nurse in General Surgery.....	24

ACRONYMS

BSA	Body Surface Area
CCU	Cardiac Care Unit
ENT	Ear, Nose and Throat
HIO	Health Insurance Organization
HR	Human Resources
ICU	Intensive Care Unit
MOH	Ministry of Health
OB/GYN	Obstetrics/Gynecology
PHC	Primary Health Care
USAID	United States Agency for International Development
WHO	World Health Organization
WISN	Workload Indicators of Staffing Need

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INTRODUCTION

Workforce planning is a strategic objective of the health sector reform program in Egypt. One of the key challenges facing the Ministry of Health (MOH) in its reform efforts is ensuring that Egypt has the right workforce in place to roll out and sustain reforms. On several occasions, the Minister of Health has reiterated that improvements in human capacity are a key strategic priority of the reform program in the next few years. Dynamic changes in the population's health needs associated with a growing demand for varied health services and rising health costs require the MOH to reassess its workforce, not only to ensure that the public sector has the correct number and distribution of staff in its workforce, but also the right mix of skills needed to meet the demand.

Driven by these considerations, the MOH in Egypt, with technical support from the USAID-funded Health Systems 20/20 project, developed a health workforce planning model to estimate the number of workers needed in its public health system. This model is based on the World Health Organization's (WHO) Workload Indicators of Staffing Need (WISN) methodology, which estimates the number of workers required at a facility based on the facility's actual workload and a set of workforce activity standards. In order to improve upon existing workforce planning methods, the Health Systems 20/20 project suggested using a slightly modified version of the WISN methodology to fit the requirements and situation in Egypt. In coordination with the MOH, the project agreed to develop the WISN activity standards and test the model in three governorates: Assiut, Gharbia, and Luxor. Such activity standards are generally developed through a lengthy and thorough process involving in-country experts and health practitioners.

The purpose of this report is to discuss the process of developing health workforce activity standards in Egypt and its importance in estimating workforce requirements. The report describes the methodology used to develop and test these standards, as well as the challenges faced during the process and the lessons learned. At the end of this report, a complete list of the activity standards developed for the different specialties is presented.

I. REVIEW OF EXISTING WORKFORCE STANDARDS IN EGYPT

Several attempts have been made to develop workforce standards in Egypt, and most of these efforts have been conducted in collaboration with donor agencies. The purpose of these efforts was to define workforce standards for a range of positions needed to staff health sector reform clinics and support other aspects of the reform program. Three key initiatives are important to highlight.

In 1999, the World Bank funded a master plan for facility construction in the Montazah district in Alexandria, to be implemented by the Danish International Development Agency. The master plan (Ministry of Health and Population 2001 draft) produced standards that were used to determine workforce requirements at primary health care (PHC) units and centers, district hospitals, and other hospitals in the district. The master plan standards provided for roughly one bed and one physician per 1,000 persons.

During the same time period, and according to a health workforce rationalization technical paper under USAID's Partnership for Health Reform project (Gaumer et al. 1999), Health Insurance Organization (HIO) standards were established for HIO beneficiaries for both clinic-based care and inpatient care. The standards are set as ratios of physicians to the number of beneficiaries and range from one per 15,000 to one per 40,000, depending on the specialty. For inpatient care, the standards are one physician for every 2,000 persons, one high institute nurse for every 33,000 persons, and one pharmacist for every 10,000 persons.

Similarly, in 2004, the European Commission funded a study to develop the Family Health Facility Implementation Manual (Ministry of Health and Population 2004). The manual includes standards for staffing a family health unit. According to the study, the average number of visits per family physician is 24 per day, "based on the quality standards that estimate the average time required for patient examination to be 10–15 minutes." The average annual number of outpatient visits for each family member based on the national average is 1.9. The average size of the Egyptian family is 4.8 persons and the average annual working days per physician is 250. Based on these statistics, the European Commission report calculated standards for family health care units.

The traditional planning methods used in Egypt, and commonly used elsewhere, are based mostly on the size of the population or health facility. These methods include workforce to population ratios (e.g., number of doctors or nurses per 1,000 population), workforce to bed ratios (e.g., ratio of nurses to hospital beds), or other fixed schedules (e.g., fixed number of workers per type and size of facility). Although ratios are simple to adopt, these methods do not take into account variations in the use of health services within a country. Many other factors such as morbidity patterns, disease burden, economic circumstances, or patient attitudes may affect the demand for health care services and thus the number of staff needed (Shipp 1998). Methods that are based on population ratios, therefore, do not necessarily estimate the correct number of workers required to satisfy existing patient volumes or the proper distribution of workers in different areas. This is especially critical in Egypt given that facilities do not serve well-defined catchment areas.

In order to improve upon existing workforce planning methods, the MOH, with technical support from the Health Systems 20/20 project, agreed to adopt the WHO health workforce model that allows the estimation of the required number of workers at a facility to be based on that facility's actual workload or service volume. This is an improvement from the traditional planning methods or ratios since it adjusts staff numbers to patient volume.

According to the WISN model, determining the number of health workers needed to support a given volume and quality of health care services requires the use of worker activity standards. After a thorough review of the literature, the authors determined that it was very difficult to find international standards for a health workforce that could be adopted for Egypt. Workforce standards are dependent on factors that vary across and within countries, such as current health care practices, existing education and training programs, medical infrastructure, and the health care-seeking behavior of the population. Workforce standards must, therefore, be tailored to the existing health care system and take into account local variations that exist within every system.

1.1 WHAT ARE WORKFORCE ACTIVITY STANDARDS?

An activity standard is defined as the optimal time that a health worker should spend per activity or patient encounter to ensure quality care or service. It represents an optimal and desired level of worker productivity and helps standardize the work in a facility at a professional level of performance.

Activity standards are neither objective nor static, but a reflection of the best judgment of various experts at one point in time. They are typically developed through consultations involving in-country experts and health providers who have substantial clinical experience in their respective fields.

Activity standards are based on the kind of work health workers do in their jobs. Health workers routinely perform a set of clinical and nonclinical activities such as inpatient services, outpatient clinic visits, surgical procedures, administrative activities, and others. Each of these activities requires some level of effort, measured in time, for different categories of health workers (Shipp 1998). For example, an activity standard for a routine surgery may take two hours of a surgeon's time and four hours of a nurse's time. Similarly, an activity standard for an outpatient visit may take 20 minutes of a resident's time. Activity standards are presented as the number of minutes needed per activity to produce optimal care or service, such as minutes per patient encounter, surgery, lab tests, or X-ray.

1.2 WHO DEVELOPS WORKFORCE ACTIVITY STANDARDS AND HOW?

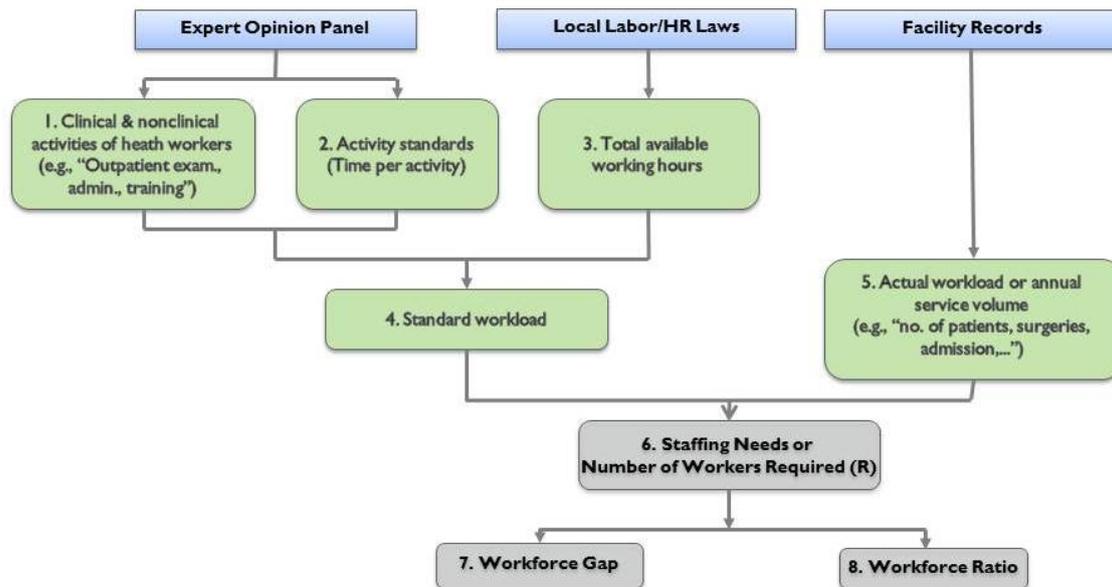
Activity standards should reflect a consensus of various expert opinions on what professional practice should involve. The standard should be acceptable to all health workers and managers and needs to be realistic under the circumstances of the country (Shipp 1998). It is therefore most desirable to involve representatives of the various health professions or specialties when establishing standards per specialty, as these professionals are the most knowledgeable about the practice requirements.

In developing activity standards, experts also need to balance what is desired with what is realistic, which inevitably introduces an element of subjectivity to the standards-setting process. One way to address this issue is to test or validate the standards first and then revisit them if necessary. This can be done by comparing the standards with actual productivity figures collected through time motion studies and measuring how much variance exists. Another way to do this would be to apply the draft standards, derive staffing needs estimates, and then investigate whether health managers or health workers agree that the estimates seem reasonable.

1.3 HOW ARE ACTIVITY STANDARDS USED?

Figure 1 is a graphical presentation of the WISN methodology used in Egypt for calculating the number of required staff. As the figure shows, activity standards (standard time per activity) is the cornerstone for estimating the number of staff required in a facility.

FIGURE 1. GRAPHICAL REPRESENTATION OF THE WISN METHOD FOR CALCULATING STAFFING NEEDS



According to Figure 1, estimating staffing needs or the number of workers required (R) is dependent on five key elements:

Clinical and nonclinical activities that health workers routinely perform in their jobs.

These activities differ by specialty and staff category.

Activity standards. For each type of activity, the average time that a health worker, working to acceptable professional standards of care, should spend to perform this activity.

Total working hours available. This is the total number of working hours health workers should work during a year according to the local labor law and Human Resources (HR) rules and regulations.

Standard workload. Once activity standards are set and the available working hours are known, a yearly standard workload can be calculated. This measures the maximum amount of work that could be undertaken in a year by each health worker, provided the worker adheres to the activity standards.

Actual annual volume of services. This refers to the actual volume of services delivered at a facility in a year, such as the number of outpatient visits, number of surgeries, and number of prescriptions filled.

Estimating Staffing Needs

Once the above information becomes available, the number of full-time health workers required (R) to handle the facility’s actual workload (R) is calculated by dividing the actual workload or volume by the standard workload.

R = Actual Volume/ Standard Workload

The required number of workers derived by the calculation above is then compared with the current number of workers available at the facility to derive estimates of shortages and surpluses of workers.

2. THE PROCESS FOR DEVELOPING WORKFORCE ACTIVITY STANDARDS IN EGYPT

2.1 DETERMINING THE SCOPE OF WORK

Because of the complexity and breadth of the workforce planning exercise in Egyptian hospitals, the development of the activity standards was implemented in three phases, as described in Table 1.

TABLE 1: PHASES OF WORKFORCE MODEL IMPLEMENTATION

Implementation Phase	Hospital Departments	Staff Type	Main Activities
First Phase	10 specialties: Pediatrics, Neonatology, Internal Medicine, General Surgery, OB/GYN, Renal Dialysis, Emergency, ICU, Dentistry, Burns	Consultants Specialists Residents Nurses Nurse supervisors	Developed activity standards for the 10 specialties
Second Phase	Cardiology Cardiac Surgery Cardiac Care Unit (CCU)	Same as above	Developed activity standards
		Administrative staff	Developed the Regression Analysis model
Third Phase	Pharmacy, Radiology, Laboratory, Rehab. & Rheumatology, and 10 additional specialties (Nephrology, Chest, Tropical Diseases, Skin, Psychiatry, Urology, Ear Nose and Throat, Orthopedics, Ophthalmology, and Anesthesia)	Pharmacists, radiologists, lab technicians, radiology technicians, dentistry technicians	Developed activity standards for Pharmacy, Radiology, Lab, Rehabilitation and Rheumatology staff and medical technicians Adopted activity standards for similar departments

- The **first implementation phase** of developing activity standards focused on 10 clinical departments that constitute the highest volume of services in public hospitals in Egypt and on five staffing categories: consultants, specialists, residents, nurse supervisors, and nurses.
- The **second implementation phase** of developing activity standards focused on the administrative staff. A separate methodology for estimating required administrative staff was developed using a Regression Analysis model. Using the WISN methodology for administrative staff proved to be challenging in MOH hospitals in Egypt due to the wide variability in administrative staff types and lack of well-defined job descriptions. After thorough discussions with the MOH, the project team agreed to use the Regression Analysis approach until further efforts are made to standardize administrative and managerial positions in reformed MOH hospitals. A description of the Regression Analysis model is provided in another report.
- The **third implementation phase** of developing activity standards focused on expanding the model to include the following:
 - Medical technicians (Lab, Radiology, and Dentistry)

- Hospital Pharmacy, Radiology, Laboratory, and Rehabilitation and Rheumatology departments
- Ten additional clinical departments, as listed in Table I. Senior management from the MOH met to discuss the activity standards development process for the 10 additional clinical areas. The team agreed that instead of convening more expert panels for the new specialties, they will use the same activity standards for similar departments with similar patterns of services provided. For example, activity standards for Internal Medicine were adopted for the Nephrology, Chest, Tropical Diseases, Skin, and Psychiatry specialties. Activity standards for General Surgery were adopted for the Urology, ENT, Orthopedics, Ophthalmology, and Anesthesia specialties. Tertiary care departments such as Oncology, Uro-Surgery, and Pediatric Surgery were excluded from the model.

2.2 FORMING THE EXPERT WORKING PANELS

The MOH and the Health Systems 20/20 project organized a series of expert panel workshops to develop the activity standards for the selected clinical departments in district and general hospitals. A total of 20 workshops were conducted, each consisting of approximately eight experts selected from the various health professions or specialties covered. By the end of this activity, a total of 188 experts had participated in the standard development process in Egypt: 130 physicians, 46 nurses, and 12 technicians.

The mix of experts selected for the panels came from various health professions and specialties, and they had the most knowledge about practice requirements, both clinically and administratively. Each panel included the following:

- **MOH providers.** Experienced MOH providers known for their high quality performance were selected from a number of “high performing” MOH hospitals. The MOH identified these hospitals according to a number of performance indicators. Various types of staff were invited to join the expert panels, including consultants, specialists, residents, pharmacists, dentists, nurses, nurse supervisors, and technicians.
- **University staff.** Highly acclaimed university professors from various specialty areas also participated in the panels. University staff enriched the discussions with their significant experience and extensive familiarity with evidence-based practices
- **MOH leadership.** Five senior MOH managers and planners participated in several expert panels, representing the Curative Sector, Nursing, Pharmacy, Emergency, and HR. Participation of MOH leaders in their relevant fields helped endorse the methodology and provide support and guidance throughout the activities.

2.2.1 FACILITATION OF THE EXPERT PANEL WORKSHOPS

Good facilitation of the expert panel meetings is critical for the success of the standards’ development process. Facilitators must have a thorough understanding of the workforce planning methodology, principles of standard development, and excellent facilitation and communication skills. The USAID Health Systems 20/20 team of experts facilitated the workshops alongside the MOH Workforce Task Force. The task force is a group of selected MOH health workers who have been working alongside the Health Systems 20/20 project team to acquire skills and knowledge in workforce planning concepts and approaches. The task force will form the nucleus of a future HR Workforce Planning Department at the MOH.

Experts were grouped into panels according to their specialty. For each clinical area, two expert groups were formed: one for physicians, which included consultants, specialists, and residents; and one for nurses, which included nurse supervisors and nurses. Each panel met for one day to develop the workload activity standards pertaining to inpatient and outpatient care within their specialty.

Various materials (presentations, facilitators' guides) were developed and were distributed to the experts prior to the workshop. A complete set of workshop materials is attached in Annex A.

Facilitators organized the discussion to help the working panels reach consensus by the end of the workshop. Facilitators first provided technical guidance regarding the model and answered all inquiries from participants regarding the standard setting methodology.

2.2.2 ORIENTATION

The expert panel meetings started with an orientation session on the WISN methodology and the various steps to set the activity standards. Experts received instructions on what they were expected to accomplish during the discussions and on how to complete the standards template tables. The panels were instructed that the standards set should be acceptable to health workers and managers, and therefore should be realistic and practicable under the country's circumstances.

2.2.3 PANEL DISCUSSIONS

The discussion among expert panels focused on worker standards that reflect the way health care should be carried out in Egypt, rather than the fragmented and under-productive situation that characterizes much of the MOH workforce today.

Each panel was responsible for discussing and reaching consensus on three important inputs essential for the WISN calculations:

- a. The list of key clinical and nonclinical activities performed by each staff category

Categorization of clinical activities by severity

Time it takes to perform these activities

I. List of Key Clinical and Nonclinical Activities

Experts in each specialty started the discussion by identifying the most common clinical and nonclinical activities performed in their specialty.

Clinical activities are patient-related activities that constitute most of the medical staff's daily working time. Experts in each specialty identified the most common clinical activities performed in their practice. The longer and more detailed the list of activities is, the harder it is to implement the WISN method; a longer list of activities does little to improve the accuracy of estimates. It was, therefore, important that the list of activities remain concise. Once all clinical activities that the experts identified were listed, the experts worked together to narrow the list to no more than five or six major activities.

Not all of the activities staff perform are clinical or patient-related. For each staff type, there are several support (nonclinical) activities that staff members engage in that take part of their time.

Experts listed the main support (nonclinical) activities that the staff members engage in and determined the time needed for these activities (also referred to as allowance standards in the WISN terminology). These allowance standards are defined as the time necessary to perform a nonclinical activity to professional standards.

Nonclinical activities (as shown in Table 2) are classified into two groups:

- a. Nonclinical activities carried out by all members of a particular staff category. For example, all general surgery specialists conduct case reporting on deaths during surgery. In other specialties, training would be an example of a common nonclinical activity.
- b. Nonclinical activities carried out only by certain staff members (but not all staff). For example, only one or two nurses might do administrative management or record keeping, or only one specialist might be responsible for the general supervision of the staff. This participation rate in nonclinical activities could also be expressed as a percentage.

TABLE 2: LIST OF SUPPORT (NONCLINICAL) ACTIVITIES

A. Main nonclinical activities of all members of the staff category
1. e.g., Training
2.
3.
B. Main nonclinical activities of certain members of the staff category
1. e.g., Death reports
2.
3.

2. Categorize Clinical Activities by Severity

Cases with different severities or of various types require a different amount of time per patient activity (i.e., the greater the severity, the longer the time required of a health worker). Therefore, it was important for experts to categorize patient activity by severity level. For instance, experts in the Neonatology department used the common MOH categorization of patients as “stable” or “unstable.” In the Burn department, experts defined severity levels according to the impacted Body Surface Area (BSA). They defined cases with less than 15 percent BSA as minor severity, those with a BSA between 15 percent and 30 percent as medium severity, and those with more than 30 percent BSA as major severity cases. Also, in General Surgery, experts defined severity levels according to days since surgical intervention. They defined inpatient cases “more than two days after surgery” as minor severity (requiring less support), and those “less than two days after surgery” as major severity as shown in Table 3.

TABLE 3: EXAMPLE OF CLINICAL ACTIVITIES SUBCATEGORIES AS LISTED BY EXPERTS IN THE AREA OF GENERAL SURGERY

Category	Subcategory 1 (least time)	Subcategory 2 (medium time)	Subcategory 3 (most time)
Ward rounds: patient encounters	< 2 days after surgery		> 2 days after surgery
Surgical procedures	Minor surgeries	Intermediate surgeries	Major surgeries
Outpatient clinic patient encounters	Middle aged 15-50 years		Patients < 15 years & > 50 years

3. Agree on Time Needed to Perform Each Activity – Activity Standard

For each activity (subcategories), experts identified the length of time needed to perform the activity. This step is the most critical because these expected time requirements or ‘activity standards’ need to reflect the ‘desired’ time that would be expected from a professional, well-trained and well-motivated staff member. Annex C presents a complete list of the activity standards developed for the different specialties.

Activity standards for physicians are expressed as ‘time per activity’ (Table 4) while for nurses, activity standards are expressed in terms of the ‘rate of work,’ such as the number of patients per six-hour shift (Table 5). Such a distinction is essential because nurses perform a fluid and simultaneous mix of clinical tasks across various patients and, therefore, it would be difficult to specify their ‘time per activity.’

TABLE 4: MAIN ACTIVITIES AND ACTIVITY STANDARDS FOR A SPECIALIST IN GENERAL SURGERY

Main Activities of a Specialist – General Surgery	Activity Standards
Outpatient visit (middle aged 15-50 yrs)	15 min/encounter
Outpatient visit (pediatric < 15 yrs or > 50 yrs)	20 min/encounter
Ward bed visits/consults (< 2 days after surgery)	5 min/bed visit; 2 bed visits/patient/day
Ward bed visits/consults (> 2 days after surgery)	10 min/bed visit; 2 bed visits/patient/day
Minor surgeries	30 minutes/surgery
Intermediate surgeries	90 minutes/surgery
Major surgeries	2 hrs/surgery
Training	15 days per year: 30% of staff
Death report	20 hours per year: 100% of staff
Administrative	2 hours per week: 100% of staff

TABLE 5: MAIN ACTIVITIES AND ACTIVITY STANDARDS FOR WARD/INPATIENT NURSE IN GENERAL SURGERY

Main Activities of a Ward Nurse – General Surgery	Activity Standards
Ward activities (morning shift – 6 hrs)	6 patients/nurse
Ward activities (afternoon shift – 6 hrs)	6 patients/nurse
Ward activities (overnight shift – 12 hrs)	6 patients/nurse
Maintain register & reports	3 hours/week, 100% of staff only
Stock & inventory	2 hours/week, 100% of staff only
Training	3 days/year, 100% of staff

Standards for outpatient visits for all departments except Dentistry averaged around 16 minutes per visit for a specialist and 22 minutes for a resident (see Annex C). Overall, residents require more time than specialists on clinical activities. Residents may spend more time on certain procedures to learn how to perform tasks that meet acceptable standards, or they may also engage in basic activities that do not typically occupy a specialist’s time.

Average total time required for nonclinical activities varied from one specialty to another. For example, the proportion of nonclinical time required for Pediatric and Neonatal specialists is low (4 percent), while it is high (19 percent) for a Burn specialist (see Annex C). Burn specialists require more training time and spend a longer amount of time preparing death reports because of the larger number of patient deaths in the Burn unit compared with Pediatrics.

Expert panels engaged in thorough discussions to reach common agreement on key personnel activities and activity standards. The panels made a significant effort to allow different opinions to be voiced and debated. Some groups made several revisions of their activity standards before reaching a final decision. When the resulting workload was judged either too high or too low, experts reexamined the draft standards and made necessary adjustments. Eventually, a consensus was reached. Some components of this process are worth highlighting:

- **Data issues.** Experts found agreeing on a list of key activities for each staff category particularly time consuming and challenging. One of the difficulties was identifying staff’s main patient-related activities that were not routinely collected by the hospital. The absence of reliable, detailed, and regularly collected clinical information on patient volumes (e.g., by diagnosis or severity levels) in most of these hospitals was the main setback. For example, experts initially decided to categorize outpatient visits according to levels of severity, since different severity levels imply different time requirement. Thus Internal Medicine specialists divided outpatient activities into (1) simple cases with a ‘single-system’ disease that require less time and (2) complicated cases

with ‘multisystem’ diseases that require more time. However, because hospitals in Egypt did not record the severity level of each outpatient visit, this stratification was not possible. The experts had to develop single average activity standards for all outpatient visits. Data considerations therefore limited the ability to develop more accurate and detailed standards.

- **Current versus desired.** Some panel members, especially residents, found it particularly difficult to focus on what should be rather than what is currently happening at their facility. Rather than propose good practice standards, health professionals’ judgments often reflected the actual practice at their hospital, even when that practice was less efficient than what is considered ‘desirable.’ Facilitators had to keep reminding experts to offer what they thought good practice should be.
- **Roles and responsibilities.** The panel exercises revealed that some providers were frequently undertaking work that was not their responsibility. In particular, many of the nurses on the panels realized that they were actually spending a significant amount of their working day running errands (such as delivering reports or X-rays to various units at the hospital) that nursing assistants should typically perform. This created unnecessary work pressure on the nurses and diverted resources that would otherwise be better spent on patient-related activities. Nurses across departments also expressed the need for more and better training to improve their productivity. In addition, they noted that because of the absence of appropriate financial incentives, very few nurses were willing to work night shifts. This situation has led to severe understaffing and created tremendous work pressure on the few nurses who work at night, thus affecting their productivity and the quality of their service. These findings had obvious policy implications for defining the expected roles and responsibilities of different categories of health workers and improving workers’ competency in carrying out their daily work responsibilities.

2.3 VALIDATION PROCESS

Activity standards developed by the expert panels were pilot tested in El-Menshawi General Hospital in Gharbia Governorate. After collecting actual service volume from the hospital, the team used these activity standards to estimate staff requirements using the WISN method (refer to User’s Guide for Developing a Workload-based Staffing Model in Egypt for details on the calculation steps). Once preliminary results were produced, selected members of the expert panels representing different specialties were invited to again participate in a series of meetings to review the results according to the standards used and make any necessary revisions.

Experts reviewed the results in the pilot study based on two key questions: (1) how realistic are the results for the hospital, and (2) how applicable and feasible is it to implement these findings. For some specialties, the results for the required staff were too high or too low. The panels reviewed the standards and the following adjustments were made:

- The amount of time that clinicians should spend on nonclinical activities was adjusted, especially for nurses. It was clear that in practice, particularly for nurses, much time is spent doing errands and other administrative work. These patterns were reflected in the developed standards. Reapplying the criterion of “what should be,” the panels reduced these time commitments in some cases. Using the high amount of time nurses spent on nonclinical activities (before adjustment) led to increasing the number of nurses estimated to be needed for the service.
- Consistency was established in standards across activities and staff categories. Some of the inpatient standards for patient care were inconsistent across activities and across categories of workers. Some situations suggested that the standards had been misreported (e.g., some standards for specialists looked more like those for residents, and others appeared to be the reverse; or some standards for a complicated activity were more like those for a simple activity and vice versa). The panels reexamined these standards and adjusted them accordingly.
- Minimum shift coverage was ensured. The reviewing panels were concerned that some of the initial estimates of staffing requirements emerging from the pilot hospital would be too small to

cover minimum staffing requirements in the inpatient units, specifically to ensure coverage at every shift. Consequently, the panels agreed that it was important for the model to account for floors' or minimum staffing levels required regardless of the number of patients or cases seen (e.g., at least one specialist per ward per shift). The experts collectively determined these minimums according to the number of hours health workers worked in a week and their shift schedules. This was one of the most important changes that resulted from the validation process.

This validation process was very valuable and allowed the experts to better understand how these standards fit into the estimation of staffing needs. Some experts recognized the value of the method in helping hospital directors improve the management of their facilities. Managers could use these results as guidance for shifting staff across departments, moving staff from departments showing surpluses to others that had shortages. This could be especially helpful since hospital directors in Egypt do not have authority over the number of workers that are hired or transferred in and out of their facilities, but they do have some authority in redistributing workers across departments within their facility, provided proper training is given to the workers.

3. LESSONS LEARNED

Developing workforce activity standards using expert consensus-driven process in Egypt has important lessons learned worth highlighting:

- **Engaging various stakeholders is essential to the success of the experience.** The purpose of developing workforce standards and applying the WISN method is to guide managers and planners in determining the appropriate number of health workers needed to meet the demand for health services. For the successful implementation of the model, the method and its requirements have to be understood and accepted by all key stakeholders, such as the MOH planners, health providers, and facility managers. The Egypt experience showed that engaging the MOH is as important as engaging other stakeholders, especially those who will eventually become part of the workforce planning process. By involving various actors, the methods and results are more likely to be accepted, believable, and utilized.
- **Having a structured approach to reaching consensus may be helpful.** The Egypt experience taught us that consensus building during the development of workforce standards may best be reached through structured approaches that have proven to be effective, such as the Delphi method. The Delphi method employs multiple iterations to develop a consensus of opinion on a particular topic. This could help standardize the process and avoid erratic results.
- **The standards development process itself reveals important implications for HR policy that should not be disregarded.** The panel discussion exercises conducted in Egypt revealed important findings with clear policy implications for defining the expected roles and responsibilities of various categories of health workers. For instance, the finding that nurses were frequently undertaking work that was not their primary responsibility should be well documented and should serve as an input to planners and managers who want to improve the staffing situation in their facilities. The analysis also revealed that in specialties where severe shortages exist, such as Neonatology and Emergency, hospitals are substituting pediatricians for neonatologists and surgeons for emergency room doctors. This solution is applicable only when it is associated with proper training.
- **Facility managers and hospital directors can use and take ownership of the WISN methodology and results.** Since hospital managers know best the staffing patterns and challenges their facilities face, it is important to guide them on how to use the results of the WISN exercise and the standards-setting process to improve staffing allocations at their facility. The standards development process allowed the experts to better understand how workforce standards fit into the estimation of staffing needs.
- **Activity standards are not static.** Since they are the reflection of expert judgments at one point in time, activity standards need to be adjusted over time, especially as practices change, HR policies are enacted, or when productivity improves with investments such as training. Workforce standards may reasonably need to be revisited every two or three years by different panels and be tested in different facilities.
- **The standards development process highlighted issues with data availability.** The process revealed that the absence of reliable, detailed, and regularly collected clinical information on patient volumes (for instance by diagnosis or severity levels) in most of these hospitals limited the ability to develop more accurate and detailed standards. The sustainability of this process relies on having standardizing patient registry forms and solid and reliable information systems available at these hospitals.

- **The standards development process is time consuming.** The process of developing activity standards in Egypt proved to be time consuming, especially given the large scope of the exercise and the complexity and diversity of activities in hospitals. On average, setting and testing activity standards took one to two days per specialty. It may not be realistic to apply this approach to every clinical area.

ANNEX A: EXPERT OPINION WORKSHOP MATERIALS

TEMPLATE TABLES AND INSTRUCTIONS FOR EXPERT PANELS

For physician panels

The purpose of Table A1 is to identify the main clinical activities of the staff member that take up most of his/her daily working time and to set activity standards for each of the main activities identified.

TABLE A1 LIST OF CLINICAL (PATIENT-RELATED) ACTIVITIES AND ACTIVITY STANDARDS

Department:	
Staff Category:	
Main clinical activities	Time needed to perform the activity (activity standards)
1. Outpatient visits	30 min/encounter
2.	
3.	
4.	
5.	

Start by listing the major clinical activities that these staff categories undertake in the work of the facility or hospital. The longer and the more detailed the list is, the harder it will be to implement the WISN method; having more categories will provide little improvement to the accuracy of estimates. It is, therefore, important to remain concise. Start by listing all clinical activities that the experts identify (note that the list could be long), and then work together to narrow the list down to no more than five or six major activities.

Activities considered need to be routinely recorded as service statistics at the facility (such as outpatient visits, surgeries, admissions). In identifying these main activities, make sure that the hospital *routinely* collects related statistics. For example, if two important clinical activities are first-time outpatient visits and follow-up outpatient visits, hospital data on patient volumes should be available at that level of disaggregation.

For each activity, identify a unit of time needed to conduct the activity. This step is the most critical because these units of time or standards need to reflect the 'desired' time that would be expected from a professional, well-trained, and well-motivated staff member. Activity standards need to take into account the time required to complete all work related to the service activity when it is delivered. For example, the time needed to update a medical record for the patient is included in the time per visit since it is directly linked to the service being provided. Standards at teaching hospitals must include the time needed for practical training. For example, included in the activity standards

for an attending physician is the time needed to teach residents how to perform various clinical procedures. Each category of health worker is studied separately, so the fact that two or more categories of health workers (such as specialists and residents) perform one activity simultaneously does not affect the setting of standards.

If it is easier to provide a range of time (e.g., 10–20 minutes) depending on the specificity of the case, then please provide the range. In the WISN calculations, we can consider the average time needed.

If one of the activities is to conduct bed visits or ward rounds to inpatients, make sure to include not only the time spent per bed visit, **but also the number of bed visits per patient per day!**

Not all of the activities of staff are clinical or patient related. The purpose of Table A2 is to list the main support activities (nonclinical) that the staff member also engages in and to set the amount of time needed for these activities (also referred to as allowance standards in the WISN terminology). These are defined as the time necessary to perform a nonclinical activity to professional standards.

TABLE A2: LIST OF SUPPORT (NONCLINICAL) ACTIVITIES AND TIME PER ACTIVITY

Department:	
Staff Category:	
A. Main support activities of all members of the staff category	Time needed to perform the activity
1. Meetings	2 hours per week
2.	
3.	
B. Main support activities of certain members of the staff category	Time needed to perform the activity
1. Supervision of staff	1 hour per day, 1 staff member (usually the chief) or expressed as a %
2.	
3.	

These are classified into two groups:

- Item A: Important support (nonclinical) activities carried out by all members of the staff category.
- Item B: Additional support activities (nonclinical) carried out by certain (but not all) members of the staff category.

In the second half of the table (Item B), indicate the number of members of that staff category that undertake the support activity. For example, only one or two nurses could do administrative management or record keeping; or only one specialist could be responsible for the general supervision of the staff. This number could also be expressed as a percentage.

Some staff members on the expert panel may indicate that they are performing activities they should not be performing and that do not fall under their job responsibilities. In cases in which such activities exist and take a significant amount of a staff member’s time, list the activity and mark a star or asterisk (*) next to it. For example, running errands should be the responsibility of a nurse assistant, but in certain hospitals that do not hire nurse assistants, a nurse may be performing such errands.

For nurse panels

The purpose of Table A3 is to set activity standards for both outpatient and ward nurses. In the case of ward nurses, it becomes very difficult to speak of “time per activity.” Ward nurses are constantly performing a fluid and simultaneous mix of clinical tasks for a variety of patients. Therefore, activity standards for ward nurses are set slightly differently — instead of “time per activity,” these standards are set in terms of a “rate of work,” such as the number of patients per six-hour shift. In this case, departments or shift hours that require more patient attention may require more nurses per patient.

TABLE A3: CLINICAL ACTIVITIES AND ACTIVITY STANDARDS (EXPRESSED AS A RATE) FOR NURSE STAFF

Department:

Staff Category: Outpatient/Clinic Nurse

Main clinical activities	Activity standards
1. Outpatient visits	25 min/encounter
2.	
3.	

Department:

Staff Category: Ward Nurse

	Total hours	Activity standards (rate) (1 nurse/ X patients or occupied beds)	Activity standards (rate) (1 nurse supervisor/ Y nurses)
Morning shift	8 hrs	1 nurse / 5 patients or occupied beds	1 supr / 5 nurses
Afternoon shift			
Evening shift			

For outpatient nurses, follow the same instructions as those for completing Table A1 for physicians. For Table A4, follow the same instructions as those for completing Table A2 for physicians.

TABLE A4: LIST OF SUPPORT (NONCLINICAL) ACTIVITIES AND TIME PER ACTIVITY

Department:

Staff Category:

A. Main support activities of all members of the staff category	Time needed to perform the activity
1. Inventory recording	1 hour per shift
2.	
3.	
B. Main support activities of certain members of the staff category	Time needed to perform the activity
1.	
2.	
3.	

ANNEX B: BIBLIOGRAPHY

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ANNEX C: WORKFORCE ACTIVITY STANDARDS AND WORKLOAD STANDARDS

Activity Standards for Pediatrics

I. Physicians

ACTIVITIES	Unit	Consultants	Specialists	Residents
OUTPATIENT ENCOUNTERS				
a. Simple case	minutes/patient	5	10	20
b. Complicated case (<i>need adm. or referral</i>)	minutes/patient	15	20	30
<i>All (Average)</i>	<i>minutes/patient</i>	<i>10</i>	<i>15</i>	<i>25</i>
INPATIENT WARD VISITS				
a. Follow-up case	minutes/patient	10	20	30
b. First seen (adm.) case	minutes/patient	15	30	40
<i>All (Average)</i>	<i>minutes/patient</i>	<i>12.5</i>	<i>25</i>	<i>35</i>
NON-CLINICAL ACTIVITIES (% time on non-clinical activities)		11%	4%	7%
AVAILABLE CLINICAL HOURS PER YEAR		1389	1505	1948

II. Nurses

ACTIVITIES	Unit	Nurses
OUTPATIENT ENCOUNTERS	minutes/patient	20
NON-CLINICAL ACTIVITIES (% time on non-clinical activities)		6%
AVAILABLE CLINICAL HOURS PER YEAR		1959
INPATIENT WARD ACTIVITIES		
Morning shift (6hrs)	patients/nurse	6
Afternoon shift (6 hrs)	patients/nurse	6
Evening shift (12 hrs)	patients/nurse	6
NON-CLINICAL ACTIVITIES (% time on non-clinical activities)		17%
AVAILABLE CLINICAL HOURS PER YEAR		1728

Activity Standards for Neonatology

I. Physicians

ACTIVITIES	Unit	Consultants	Specialists	Residents
INPATIENT WARD VISITS				
a. Stable case (includes: Jaundice, L.B.W, T.T.N, Abandoned (no parent))	minutes/patient	10	20	20
b. Unstable case (includes: R.D.S, H.I.E. Severe jaundice Sepsis, I.D.M.)	minutes/patient	15	30	45
<i>All (Average)</i>	<i>minutes/patient</i>	12.5	25	32.5
NON-CLINICAL ACTIVITIES <i>(% time on non-clinical activities)</i>		13%	4%	7%
AVAILABLE CLINICAL HOURS PER YEAR		1358	1498	1948

II. Nurses

ACTIVITIES	Unit	Nurses
INPATIENT WARD ACTIVITIES		
Morning shift (6hrs)	patients/nurse	3
Afternoon shift (6 hrs)	patients/nurse	3
Evening shift (12 hrs)	patients/nurse	3
NON-CLINICAL ACTIVITIES <i>(% time on non-clinical activities)</i>		18%
AVAILABLE CLINICAL HOURS PER YEAR		1711

Activity Standards for Internal Medicine

I. Physicians

ACTIVITIES	Unit	Consultants	Specialists	Residents
OUTPATIENT ENCOUNTERS				
a. Single system disease	minutes/patient	10	10	15
b. Multisystem & complicated	minutes/patient	15	15	25
<i>All (Average)</i>	<i>minutes/patient</i>	<i>12.5</i>	<i>12.5</i>	<i>20</i>
INPATIENT WARD VISITS				
a. Admitted with follow-up: diagnosis plan	minutes/patient	5	10	30
b. Admitted as "managing patient"	minutes/patient	10	15	30
<i>All (Average)</i>	<i>minutes/patient</i>	<i>7.5</i>	<i>12.5</i>	<i>30</i>
NON-CLINICAL ACTIVITIES <i>(% time on non-clinical activities)</i>		9%	8%	7%
AVAILABLE CLINICAL HOURS PER YEAR		1435	1443	1937

II. Nurses

ACTIVITIES	Unit	Nurses
OUTPATIENT ENCOUNTERS		
Outpatient Encounters	minutes/patient	20
NON-CLINICAL ACTIVITIES <i>(% time on non-clinical activities)</i>		6%
AVAILABLE CLINICAL HOURS PER YEAR		1959
INPATIENT WARD ACTIVITIES		
Morning shift (6hrs)	patients/nurse	6
Afternoon shift (6 hrs)	patients/nurse	6
Evening shift (12 hrs)	patients/nurse	6
NON-CLINICAL ACTIVITIES <i>(% time on non-clinical activities)</i>		17%
AVAILABLE CLINICAL HOURS PER YEAR		1728

Activity Standards for General Surgery

I. Physicians

ACTIVITIES	Unit	Consultants	Specialists	Residents
OUTPATIENT ENCOUNTERS				
a. Middle aged 15-50 yrs	minutes/patient	10	15	20
b. Ped < 15 yrs & > 50 yrs	minutes/patient	10	20	25
<i>All (Average)</i>	<i>minutes/patient</i>	10	17.5	22.5
INPATIENT WARD VISITS				
a. < 2 days after surgery	minutes/patient	5	5	10
b. > 2 days after surgery	minutes/patient	10	10	20
<i>All (Average)</i>	<i>minutes/patient</i>	7.5	7.5	15
SURGERIES				
a. Minor surgeries	minutes/patient	30	30	45
b. Intermediate surgeries	minutes/patient	60	90	120
c. Major surgeries	minutes/patient	120	120	140
<i>All (Average)</i>	<i>minutes/patient</i>	70	80	102
NONCLINICAL ACTIVITIES <i>(% time on nonclinical activities)</i>		14%	9%	6%
AVAILABLE CLINICAL HOURS PER YEAR		1344	1434	1968

II. Nurses

ACTIVITIES	Unit	Nurses
OUTPATIENT ENCOUNTERS		
Outpatient Encounters	minutes/patient	20
NONCLINICAL ACTIVITIES <i>(% time on non-clinical activities)</i>		12%
AVAILABLE CLINICAL HOURS PER YEAR		1850
INPATIENT WARD ACTIVITIES		
Morning shift (6 hrs)	patients/nurse	6
Afternoon shift (6 hrs)	patients/nurse	6
Evening shift (12 hrs)	patients/nurse	6
NONCLINICAL ACTIVITIES <i>(% time on nonclinical activities)</i>		17%
AVAILABLE CLINICAL HOURS PER YEAR		1728

Activity Standards for OB/GYN

I. Physicians

ACTIVITIES	Unit	Consultants	Specialists	Residents
OUTPATIENT ENCOUNTERS				
Outpatient Encounters	minutes/patient	10	15	15
INPATIENT WARD VISITS				
a. All other admissions	minutes/patient	15	20	20
b. Normal vaginal deliveries	minutes/patient	20	70	75
<i>All (Average)</i>	<i>minutes/patient</i>	<i>17.5</i>	<i>45</i>	<i>47.5</i>
SURGERIES				
a. Minor procedures	minutes/patient	15	30	30
b. Major procedures	minutes/patient	60	90	90
<i>All (Average)</i>	<i>minutes/patient</i>	<i>37.5</i>	<i>60</i>	<i>60</i>
NONCLINICAL ACTIVITIES <i>(% time on nonclinical activities)</i>		6%	5%	4%
AVAILABLE CLINICAL HOURS PER YEAR		1467	1487	2018

II. Nurses

ACTIVITIES	Unit	Nurses
OUTPATIENT ENCOUNTERS		
Outpatient Encounters	minutes/patient	20
NONCLINICAL ACTIVITIES <i>(% time on nonclinical activities)</i>		7%
AVAILABLE CLINICAL HOURS PER YEAR		1937
INPATIENT WARD ACTIVITIES		
Morning shift (6 hrs)	patients/nurse	6
Afternoon shift (6 hrs)	patients/nurse	6
Evening shift (12 hrs)	patients/nurse	6
NONCLINICAL ACTIVITIES <i>(% time on nonclinical activities)</i>		17%
AVAILABLE CLINICAL HOURS PER YEAR		1728

Activity Standards for Burns

I. Physicians

ACTIVITIES	Unit	Consultants	Specialists	Residents
INPATIENT WARD VISITS				
a. Minor burns: BSA* < 15%	minutes/patient	5	10	25
b. Moderate burns: BSA 15-30%	minutes/patient	10	15	30
c. Major burns: BSA > 30%	minutes/patient	15	20	40
<i>All (Average)</i>	<i>minutes/patient</i>	10	15	32
SURGERIES				
a. Minor procedures (include: Esharectomy, Fasiotomy)	minutes/patient	20	90	120
b. Moderate procedures (include: skin graft, moderate dress)	minutes/patient	45	120	150
c. Major procedures (include: major skin graft, major dressin)	minutes/patient	90	240	270
<i>All (Average)</i>	<i>minutes/patient</i>	52	150	180
NONCLINICAL ACTIVITIES <i>(% time on nonclinical activities)</i>		16%	19%	20%
AVAILABLE CLINICAL HOURS PER YEAR		1317	1271	1670

II. Nurses

ACTIVITIES	Unit	Nurses
INPATIENT WARD ACTIVITIES		
Morning shift (6 hrs)	patients/nurse	2
Afternoon shift (6 hrs)	patients/nurse	2
Evening shift (12 hrs)	patients/nurse	2
NONCLINICAL ACTIVITIES <i>(% time on nonclinical activities)</i>		10%
AVAILABLE CLINICAL HOURS PER YEAR		1885

Activity Standards for Renal Dialysis

I. Physicians

ACTIVITIES	Unit	Consultants	Specialists	Residents
OUTPATIENT ENCOUNTERS				
a. Hemodialysis	minutes/patient	10	30	60
b. Peritoneal dialysis	minutes/patient	20	180	360
<i>All (Average)</i>	<i>minutes/patient</i>	<i>15</i>	<i>105</i>	<i>210</i>
NONCLINICAL ACTIVITIES <i>(% time on nonclinical activities)</i>		13%	9%	11%
AVAILABLE CLINICAL HOURS PER YEAR		1365	1431	1865

II. Nurses

ACTIVITIES	Unit	Nurses
OUTPATIENT ENCOUNTERS		
a. Hemodialysis	minutes/patient	60
b. Peritoneal dialysis	patients/nurse/shift	2
NONCLINICAL ACTIVITIES <i>(% time on nonclinical activities)</i>		18%
AVAILABLE CLINICAL HOURS PER YEAR		1711

Activity Standards for ICU

I. Physicians

ACTIVITIES	Unit	Consultants	Specialists	Residents
INPATIENT WARD VISITS				
a. After 48 hrs from admission	minutes/patient	10	15	20
b. First 48 hrs	minutes/patient	15	30	30
<i>All (Average)</i>	<i>minutes/patient</i>	<i>12.5</i>	<i>22.5</i>	<i>25</i>
NONCLINICAL ACTIVITIES <i>(% time on nonclinical activities)</i>		8%	12%	20%
AVAILABLE CLINICAL HOURS PER YEAR		1435	1386	1681

II. Nurses

ACTIVITIES	Unit	Nurses
INPATIENT WARD ACTIVITIES		
Morning shift (6 hrs)	patients/nurse	2
Afternoon shift (6 hrs)	patients/nurse	2
Evening shift (12 hrs)	patients/nurse	2
NONCLINICAL ACTIVITIES <i>(% time on nonclinical activities)</i>		13%
AVAILABLE CLINICAL HOURS PER YEAR		1815

Activity Standards for Emergency

I. Physicians

ACTIVITIES	Unit	Consultants	Specialists	Residents	
OUTPATIENT ENCOUNTERS					
a. Not admitted	minutes/patient	N/A	15	20	
b. Patient for admission	minutes/patient		30	40	
<i>All (Average)</i>	<i>minutes/patient</i>		22.5	30	
SURGERIES					
a. Simple cases	minutes/patient		10	15	
b. Multiple/deep wounds	minutes/patient		30	40	
<i>All (Average)</i>	<i>minutes/patient</i>		20	28	
NON-LINICAL ACTIVITIES (% time on nonclinical activities)			10%	19%	
AVAILABLE CLINICAL HOURS PER YEAR			1412	1697	

II. Nurses

ACTIVITIES	Unit	Nurses
OUTPATIENT ENCOUNTERS		
Outpatient Encounters	minutes/patient	20
NONCLINICAL ACTIVITIES (% time on nonclinical activities)		7%
AVAILABLE CLINICAL HOURS PER YEAR		1951

Activity Standards for Dentistry

I. Dentists

ACTIVITIES	Unit	Consultants	Specialists	Residents
OUTPATIENT ENCOUNTERS				
a. Diagnosis list 1: Drug application/treatment, X-ray, dressing after extraction, referrals	minutes/patient	4	10	20
b. Diagnosis list 2: Gum scaling, minor operation (e.g., incision + drainage), abscess, filling, complete denture	minutes/patient	15	40	50
c. Diagnosis list 3: Bridges	minutes/patient	60	90	120
<i>All (Average)</i>	<i>minutes/patient</i>	26	47	63
NONCLINICAL ACTIVITIES <i>(% time on nonclinical activities)</i>		17%	13%	13%
AVAILABLE CLINICAL HOURS PER YEAR		1295	1366	1812

II. Dentistry Nurses

ACTIVITIES	Unit	Nurses
OUTPATIENT ENCOUNTERS		
Outpatient Encounters	minutes/patient	20
NONCLINICAL ACTIVITIES <i>(% time on nonclinical activities)</i>		10%
AVAILABLE CLINICAL HOURS PER YEAR		1882

III. Dentistry Technicians (works only on 10% of list 2 workload)

ACTIVITIES	Unit	Technicians
ENCOUNTERS		
a. Diagnosis list 1: Drug application/treatment, X-ray, dressing after extraction, referrals	minutes/patient	0
b. Diagnosis list 2: Gum scaling, minor operation (e.g., incision + drainage), abscess, filling, complete denture	minutes/patient	50
c. Diagnosis list 3: Bridges	minutes/patient	0
<i>All (Average)</i>	<i>minutes/patient</i>	
NONCLINICAL ACTIVITIES <i>(% time on nonclinical activities)</i>		2%
AVAILABLE CLINICAL HOURS PER YEAR		1531

Activity Standards for Hospital Pharmacy

I. Pharmacists

ACTIVITIES	Unit	Consultants	Specialists	Residents
OUTPATIENT ENCOUNTERS		N / A		N / A
a. Routine: Pharmaceutical care	minutes/prescription		6	
b. Simple: Dispensing medications	minutes/prescription		6	
c. Advanced: Clinical pharmacy	minutes/prescription		18	
<i>All (Average)</i>	<i>minutes/prescription</i>		<i>10</i>	
NONCLINICAL ACTIVITIES <i>(% time on nonclinical activities)</i>			21%	
AVAILABLE CLINICAL HOURS PER YEAR		1381		

Activity Standards for Hospital Lab.

I. Physicians

ACTIVITIES	Unit	Consultants	Specialists	Residents
OUTPATIENT ENCOUNTERS				
a. Routine (chemical & serology test-parameters)	minutes/test	7.5	7.5	7.5
b. Simple (hematology & parasitology test-parameters)	minutes/test	5	5	10
c. Advanced (bacteriology, virology & histopathology test parameters)	minutes/test	10	10	10
<i>All (Average)</i>	<i>minutes/test</i>	8	8	9
NON-CLINICAL ACTIVITIES <i>(% time on non-clinical activities)</i>		10%	10%	9%
AVAILABLE CLINICAL HOURS PER YEAR		1405	1414	1905

II. Lab. Technicians

ACTIVITIES	Unit	Technicians
ENCOUNTERS		
a. Routine (chemical & serology test-parameters)	minutes/test	10
b. Simple (hematology & parasitology test-parameters)	minutes/test	15
c. Advanced (bacteriology, virology & histopathology test parameters)	minutes/test	15
<i>All (Average)</i>	<i>minutes/test</i>	
NON-CLINICAL ACTIVITIES <i>(% time on non-clinical activities)</i>		1%
AVAILABLE CLINICAL HOURS PER YEAR*		2594

Activity Standards for Radiology

I. Physicians

ACTIVITIES	Unit	Consultants	Specialists	Residents
OUTPATIENT ENCOUNTERS				
a. Plain X-Ray	minutes/patient	5	5	15
b. C.T.-MRI.	minutes/patient	10	15	20
c. U/S	minutes/patient	20	20	20
<i>All (Average)</i>		12	13	18
NON-CLINICAL ACTIVITIES <i>(% time on non-clinical activities)</i>		8%	22%	11%
AVAILABLE CLINICAL HOURS PER YEAR		1441	1223	1857

II. Radiology Technicians

ACTIVITIES	Unit	Technicians
ENCOUNTERS		
a. Plain X-Ray	minutes/patient	5
b. C.T.-MRI.	minutes/patient	20
c. U/S	minutes/patient	0
<i>All (Average)</i>	<i>minutes/patient</i>	8
NON-CLINICAL ACTIVITIES <i>(% time on non-clinical activities)</i>		6%
AVAILABLE CLINICAL HOURS PER YEAR*		1496

Activity Standards for Rehabilitation & Rheumatology

I. Physicians

ACTIVITIES	Unit	Consultants	Specialists	Residents
REHABILITATION ENCOUNTERS				
a. Regional	minutes/patient	5	10	12
b. Systematic	minutes/patient	15	25	35
<i>All (Average)</i>	<i>minutes/patient</i>	<i>10</i>	<i>18</i>	<i>24</i>
RHEUMATOLOGY ENCOUNTERS				
a. Regional	minutes/patient	10	10	10
b. Systematic	minutes/patient	25	25	25
<i>All (Average)</i>	<i>minutes/patient</i>	<i>18</i>	<i>18</i>	<i>18</i>
NON-CLINICAL ACTIVITIES <i>(% time on non-clinical activities)</i>		11%	9%	16%
AVAILABLE CLINICAL HOURS PER YEAR		1392	1427	1754

II. Nurses

ACTIVITIES	Unit	Nurses
OUTPATIENT ENCOUNTERS		
Outpatient Encounters	minutes/patient	10
NON-CLINICAL ACTIVITIES <i>(% time on non-clinical activities)</i>		2%
AVAILABLE CLINICAL HOURS PER YEAR		2052

Activity Standards for Cardiology

I. Physicians

ACTIVITIES	Unit	Consultants	Specialists	Residents
OUTPATIENT ENCOUNTERS				
a. Outpatient Exam	minutes/patient	12	20	16
b. Echo	minutes/patient	20	53	53
<i>All (Average)</i>	<i>minutes/patient</i>	16	36.5	34.5
INPATIENT WARD VISITS				
a. Ward Round	minutes/patient	20	36	14
b. CCU	minutes/patient	20	0	30
<i>All (Average)</i>	<i>minutes/patient</i>	20	36	22
NON-CLINICAL ACTIVITIES <i>(% time on non-clinical activities)</i>		2%	16%	14%
AVAILABLE CLINICAL HOURS PER YEAR		1545	1318	1799

II. Nurses

ACTIVITIES	Unit	Nurses
OUTPATIENT ENCOUNTERS		
Outpatient Encounters	minutes/patient	25
NON-CLINICAL ACTIVITIES <i>(% time on non-clinical activities)</i>		7%
AVAILABLE CLINICAL HOURS PER YEAR		1954
INPATIENT WARD ACTIVITIES		
Morning shift (6hrs)	patients/nurse	6
Afternoon shift (6 hrs)	patients/nurse	6
Evening shift (12 hrs)	patients/nurse	6
NON-CLINICAL ACTIVITIES <i>(% time on non-clinical activities)</i>		7%
AVAILABLE CLINICAL HOURS PER YEAR		1954

Activity Standards for Cardiac Surgery

I. Physicians

ACTIVITIES	Unit	Consultants	Specialists	Residents
OUTPATIENT ENCOUNTERS				
All (Average)	minutes/patient	12	17.5	16
INPATIENT WARD VISITS				
Ward Round	minutes/patient	16	16	16
SURGERIES				
All (Average)	minutes/patient	216	216	216
NON-CLINICAL ACTIVITIES (% time on non-clinical activities)		6%	14%	11%
AVAILABLE CLINICAL HOURS PER YEAR		1475	1349	1861

II. Nurses

ACTIVITIES	Unit	Nurses
OUTPATIENT ENCOUNTERS		
Outpatient Encounters	minutes/patient	22.5
NON-CLINICAL ACTIVITIES (% time on non-clinical activities)		14%
AVAILABLE CLINICAL HOURS PER YEAR		1799
INPATIENT WARD ACTIVITIES		
Morning shift (6hrs)	patients/nurse	6
Afternoon shift (6 hrs)	patients/nurse	6
Evening shift (12 hrs)	patients/nurse	6
NON-CLINICAL ACTIVITIES (% time on non-clinical activities)		26%
AVAILABLE CLINICAL HOURS PER YEAR		1548

Activity Standards for Hospital Nurse Supervisors:

Ratio of Nurses to Nurse Supervisor

Specialty	Nurses / Nurse Supervisor
Pediatrics	6
Neonatology	4
Internal Medicine	6
General Surgery	6
OB/GYN	6
Burns	4
Renal Dialysis	4
ICU	4
Emergency	4
Rehab. & Rheumatology	6
Cardiac Surgery	4
Cardiology	4
CCU	4

Model Assumptions

1. Working Hours per Staff Type

	Unit	Residents	Specialists	Consultants	Outpatient Nurses	Ward Nurses	Pharmasists	Lab. Technicians	Radiology Technicians	Dentistry Technicians
Available working hours per week	Hours/week	48	36	36	48	48	40	60	36	36
Paid leave as per Egypt law (Average)	Days/year	25	25	25	25	25	25	25	25	25
Official holidays per year	Days/year	13	13	13	13	13	13	13	13	13
Other leave (sick, urgent)	Days/year	21	21	21	21	21	21	21	21	21
Number of working weeks/year	Weeks/year	43.6	43.6	43.6	43.6	43.6	43.6	43.6	43.6	43.6
Number of working hours/year	Hours/year	2091	1569	1569	2091	2091	1743	2614	1569	1569

2. Percentage of Physicians' Contribution to Total Workload by Staff Type

Physicians' Staff Type	Outpatient Encounters	Inpatient Days	Surgeries
Resident	70*	70	70
Specialist	30	30	30
Consultant	20	20	20

*Residents share 20% of their workload with specialists and/or consultants

3. Coverage Minimums: Minimum Number of Staff per Department (Two Assumed Scenarios)

3.a. Scenario 1: Staffing needs identified based on Workload Indicators only, assuming that no minimum number of staff is required

3.b. Scenario 2: Needs identified based on minimum number of staff required per department to cover shifts* (as in below table)

Specialty	Residents	Specialists	Consultants	Outpatient Nurses	Ward Nurses	Nurse Supervisors
Pediatrics	2	1	0	1	3	0
Neonatology	2	1	0	0	3	0
Internal Medicine	2	1	0	1	3	0
General Medicine	2	1	0	1	3	0
OB/GYN	2	1	0	1	3	0
Burns	2	1	0	0	3	0
Renal Dialysis	2	1	0	1	0	0
ICU	2	1	0	0	3	0
Emergency	2	1	0	1	0	0
Dentistry	1	1	0	1	0	0
Nephrology	1	1	0	1	0	0
Chest Disease	1	1	0	1	0	0
Tropical Disease	1	1	0	1	0	0
Skin Disease	1	1	0	1	0	0
Psychiatry	1	1	0	1	0	0
Rehabilitation & Rheumatology	1	1	0	1	0	0
Uro-Surgery	2	1	0	1	3	0
Orthopedics	2	1	0	1	3	0
Ophthalmology	2	1	0	1	3	0
ENT	2	1	0	1	3	0
Cardiology	2	1	0	1	3	0
Cardiac Surgery	2	1	0	1	3	0
Anesthesia	2	1	0	0	0	0
Radiology	1	1	0	0	0	0
HOSPITAL LAB	1	1	0	0	0	0
HOSPITAL PHARMACY	0	2	0	0	0	0

4. Available Clinical Hours for Hospitals by Staff Types

SPECIALTIES	Residents	Specialists	Consultants	Outpatient Nurses	Ward Nurses
Pediatrics	1948	1505	1389	1959	1728
Neonatology	1948	1499	1358		1711
Internal Medicine	1937	1443	1435	1959	1728
General Surgery	1968	1434	1344	1850	1728
OB/GYN	2018	1487	1467	1937	1728
Burns	1670	1271	1317		1885
Renal Dialysis	1865	1431	1365	2059	
ICU	1681	1386	1435		1815
Emergency	1697	1412	1569	1951	
Dentistry	1812	1366	1295	1882	
Nephrology	1937	1443	1435	1959	1728
Chest Diseases	1937	1443	1435	1959	1728
Tropical Diseases	1937	1443	1435	1959	1728
Skin Diseases	1937	1443	1435	1959	1728
Psychiatry	1937	1443	1435	1959	1728
Rehabilitation & Rheumatology	1754	1427	1392	2091	
Uro-Surgery	1968	1434	1344	1850	1728
Orthopedics	1968	1434	1344	1850	1728
Ophthalmology	1968	1434	1344	1850	1728
ENT	1968	1434	1344	1850	1728
Cardiology	1799	1318	1545	1954	1954
Cardiac Surgery	1861	1349	1475	1799	1548
Anesthesia	1968	1434	1344	1850	1728
Radiology	1857	1223	1441		
Hospital Lab.	1833	1366	1310		
Hospital Pharmacy		1381			

