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USER'S MANUAL FOR DEVELOPING A WORKLOAD- BASED STAFFING MODEL IN EGYPT

May 2011

This publication was produced for review by the United States Agency for International Development. It was prepared by Nadwa Rafeh, Samir Mansour, and Marianne El-Khoury, Abt Associates for the Health Systems 20/20 Project.



Mission

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DISCLAIMER

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ACRONYMS

ALOS	Average Length of Stay
D&G	District and General (Hospitals)
HR	Human Resources
ICU	Intensive Care Unit
IM	Internal Medicine
MOH	Ministry of Health
OB/GYN	Obstetrics/Gynecology
USAID	United States Agency for International Development
WHO	World Health Organization
WISN	Workload Indicators of Staffing Need
WP	Workforce Planning

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I. INTRODUCTION

The Ministry of Health (MOH) in Egypt recognizes the importance of ensuring that the appropriate human resources are in place to sustain ongoing health reform efforts. As a result, the MOH is seeking to address many of its human resource challenges by implementing a workforce planning (WP) process. This requires an examination and analysis of the numbers and mix of various health workers and the way they are distributed across geographical locations and health facilities. Traditional planning methods commonly tried both in Egypt and elsewhere have relied heavily on fixed ratios, such as population ratios (e.g., number of doctors or nurses per 1,000 population) and bed ratios (e.g., ratio of nurses to hospital beds). While these methods may be simpler and easier to apply, they ignore local differences in the amount and type of medical services needed and may not be in line with the staffing required to meet the local demand for health.

Given the limitations of existing methods, the MOH recognized the need to adopt a more accurate planning method that would address real required staff at its facilities. In collaboration with the USAID-funded Health Systems 20/20 project in Egypt, the MOH developed a computerized planning model – the Workforce Planning Model – that examines the current supply and estimates required numbers of health workers across facilities, districts, and governorates. Estimation of the required number of health workers is largely based on the World Health Organization (WHO) Workload Indicators of Staffing Need (WISN) method, but has been tailored to fit the specific situation and requirements in Egypt. The WISN method has been tested and applied to MOH District and General (D&G) hospitals in three governorates: Assiut, Gharbia, and Luxor. A variant of the method was also applied to primary health care facilities but is not the subject of this report.

Purpose of This Manual

This manual is a “how-to guide” to the WISN process and its implementation in Egypt. It provides a step-by-step review of the WISN method and the calculations used in the analysis of the workforce to determine staffing needs. This guide is largely based on the Egyptian experience with the WHO methodology and how it was tailored to meet Egypt’s specific context and needs.

The guide aims at all those responsible and interested in human resource management and planning at all levels of the health sector in Egypt, mainly the MOH Human Resources (HR) Department and its HR taskforce, governorate-level planning teams, and hospital directors.

While this guide walks the reader through the WISN methodology and the process of estimating the number of staff needed in detail, users are not required to perform these calculations manually; a computerized Access-based software was developed for this purpose, and users can adopt it to analyze their workforce. A separate user’s guide explaining how to apply the Access-based WP software is also available for review.

This manual is divided into the following sections:

1. Overview of the WISN Methodology
2. Preparing to Use the WISN Methodology
3. Steps for Calculating the WISN Process
4. General Uses of the Workforce Planning Results

2. OVERVIEW OF THE WISN METHODOLOGY

The Workload Indicators of Staffing Need (WISN) is a method that identifies the number of health workers required at a certain facility, based on the volume of the work at the facility and the actual amount of work that health workers perform. Initially developed by the World Health Organization (WHO), WISN was subsequently advanced and revised as an operational model in the 1990s and then applied in several countries such as Indonesia, Papua New Guinea, Turkey, and, most recently, Egypt.

This methodology is an improvement on existing methods for determining required staff levels, such as the use of population ratios or catchment area size, which are widely used to determine facility staff needs. According to the WISN manual (Shipp 1998), the use of population ratios as a tool for estimating workforce needs has numerous disadvantages. Population ratios do not distinguish between the types of facilities and the differences in their staffing needs based on volume and complexity of work. Most importantly, these methods, which are currently in use in Egypt, do not take into account local patterns of service use and differences in service volume at the facility level.

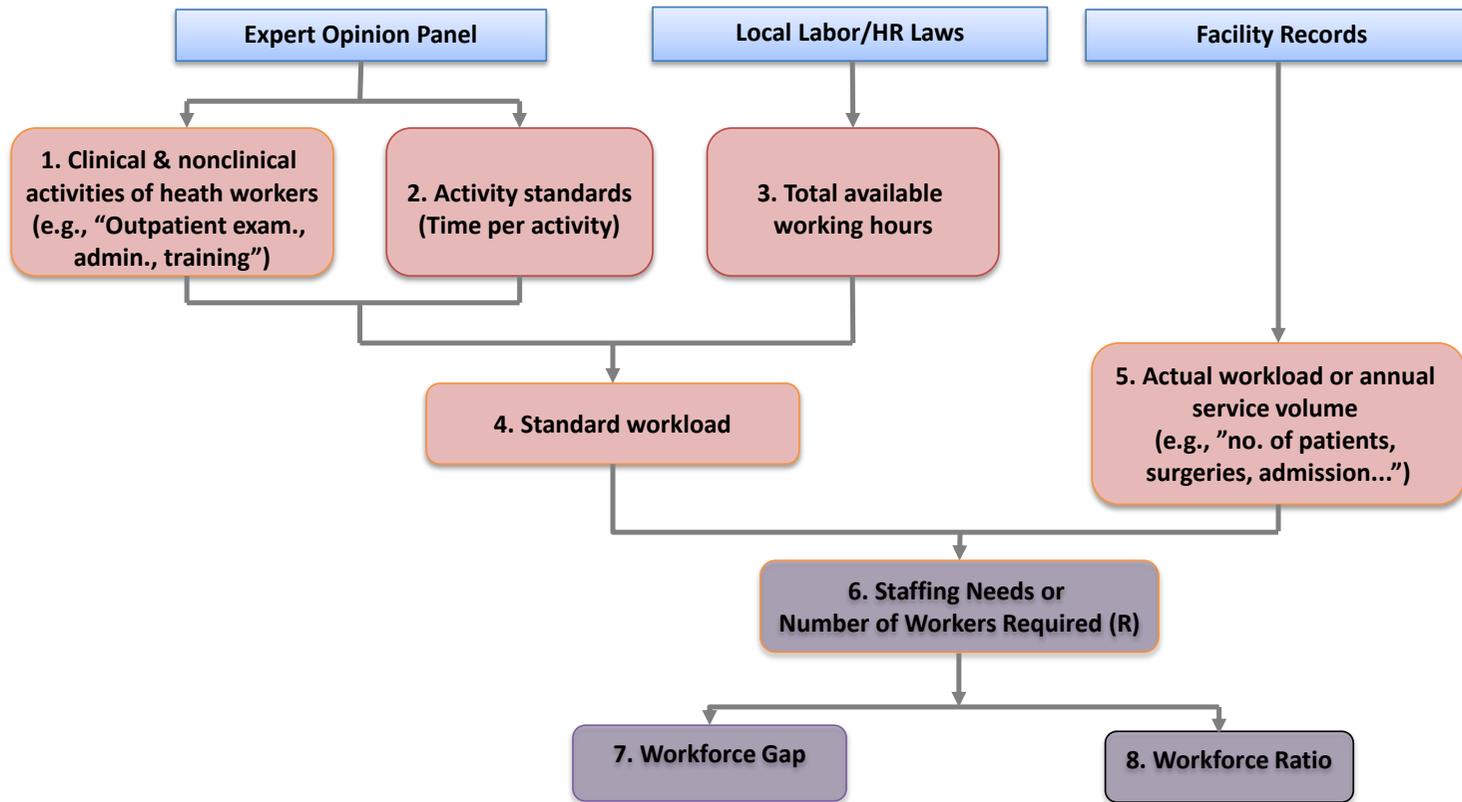
Advantages of the WISN Method

- Identifies required staff based on actual service volumes at the facility, and is therefore sensitive to varying service volumes in different localities
- Allows facility-specific estimates of required staff
- Can be applied to all personnel categories and at all types of health facilities

2.1 ELEMENTS OF THE WISN METHODOLOGY

Figure 1 is a graphical presentation of the WISN methodology used in Egypt, which is based on the original WHO-WISN method. As the figure shows, the method is based on five important input measures and three output measures. The success of this methodology in estimating the staffing needs is dependent on having the appropriate input data for the model. The more complete and accurate the input data, the more reliable and accurate the estimation of the workforce staffing needs will be.

FIGURE I. WISN METHODOLOGY FOR CALCULATING STAFFING NEEDS



2.1.1 INPUT MEASURES

1. Clinical and Nonclinical Activities

Health workers in health care facilities routinely perform a set of clinical and nonclinical activities, such as inpatient services, outpatient clinic visits, surgical procedures, and administrative duties. These activities differ by specialty and staff category. Defining these activities is an essential first step in developing activity standards.

2. Activity Standards

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

3. Total Available Working Hours

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

4. Standard Workload

This measures the maximum amount of work that could be undertaken in a year by each health worker, provided he or she adheres to the activity standards.

5. Actual Workload or Annual Service Volume

This is the actual amount of work at each facility in a year, measured as the volume of services actually performed at the facility (e.g., number of outpatient visits, number of surgeries, number of prescriptions filled). This service volume measure is typically reported in the facility's annual statistics.

The sources for these data vary. Input measures (1) and (2) are determined by senior and experienced members of the worker's category. They are therefore typically developed through consultations involving in-country experts who have substantial experience in their field and expert clinical knowledge. Step (3), the total available working hours per health worker, is estimated using information from the local labor or HR laws, which mandate the number of working days in a year and the official hours of work. Step (4), the standard workload, is estimated using both the activity standards developed by in-country experts and the workload data collected from annual statistics. Step (5), the annual workload, is collected from annual statistics found in facility records.

2.1.2 OUTPUT MEASURES

Once these input measures become available, an Access-based computerized model can be used to analyze the data and produce three important workforce output measures (see boxes 6-8 in Figure 1):

6. Staffing Needs or Workforce Requirements (R)

The first output measure from the model is the number of full-time health workers required (R) to handle the facility's actual workload. This measure answers questions related to how many workers (by type/specialty) are needed in the hospital to meet the workload of the facility, if the activity standard levels are applied. Required staff (R) is calculated by dividing the Actual Workload or Volume by the Standard Workload.

7. Workforce Gap

The second important output measure from the model is the gap between supply (S) and required (R) staff. The gap ($S - R$) is defined as the difference between the current numbers of workers and the required numbers, as estimated by the model. The gap shows the absolute magnitude of the shortage or surplus in the workforce.

8. Workforce Ratio

The WISN ratio is defined as the ratio of the current supply (actual number of workers) (S) to the required number (R) estimated by WISN. The workforce ratio (S/R) is an important measure in the WISN model as it shows where the workload pressure is the greatest, thus indicating priority areas for intervention. It indicates the staff imbalance relative to workload requirements.

The WISN method requires five input measures:

1. The list of key clinical and nonclinical (or nonpatient-related) activities that occupy the health worker's working time
2. Activity standards, or the average time that the health worker ideally should spend per activity
3. The total available working time of a health worker in a year
4. Standard workload, or the maximum amount of work that each health worker could undertake in a year
5. The actual annual workload (e.g., number of patient visits) for each clinical activity at the facility

and calculates three output measures:

1. Required staff based on actual workload
2. Workforce gap showing any staffing surpluses or shortages
3. Workforce ratio highlighting the work pressure faced by staff

3. PREPARING TO USE THE WISN METHODOLOGY

3.1 ESTABLISHING A WORKING GROUP

Conducting the WP exercise at any level of the health sector can be rigorous and may require important decisions to be made during the process. Therefore, it is important to organize the appropriate team(s) to work on this task. Three key groups/teams should be considered:

Steering Committee – The steering committee has the critical role of setting the overall strategy for implementation and overseeing the WP activity. The committee sets the overall vision and strategic priorities and monitors the progress of the work. The steering committee should consist of senior Ministry of Health (MOH) officials and other stakeholders who have the authority to make decisions and take action.

Workforce Planning Taskforce Team – The Workforce Planning Taskforce team is responsible for implementing the WISN process. This includes setting WP priorities, defining the scope of work, managing workforce data collection, analyzing the findings, and reporting to the steering committee and other stakeholders. The number of members required for the Taskforce team is based on the volume of work in the selected governorates or facilities in which WP exercise will be implemented. If the WISN process is extensive, the Taskforce team will most probably need full-time core staff. It is also likely to include technical resource persons, such as a statistician and/or a computer analyst.

For any sizeable WISN implementation, the steering committee should appoint a leader of the Taskforce team. The leader must have sufficient seniority and experience to command respect and have access to relevant decision makers. The Taskforce leader will monitor day-to-day activities of WISN implementation and report to the steering committee.

Governorate-level Workforce Planning Team – The role of the governorate team is to lead the WP activity at the governorate level and manage the workforce data collection, data entry, and verification. The governorate team will have representatives from the curative and/or primary health care departments, depending on the type of health facilities involved, and representatives from the Governorate Information Center.

Egypt Example (I)

Forming the Working Teams for the Workforce Planning Activity

- **MOH-HR Taskforce team**

MOH selected five physicians for the Taskforce team to serve as the nucleus for a viable HR department at MOH in the future. The Taskforce team's role was to oversee the WP initiative and lead the implementation. The team was involved in all WP activities, including the data collection, data entry, and data analysis. The team also practiced reporting on workforce assessment at the level of individual hospitals and a governorate level.

Health Systems 20/20 assisted in setting criteria for the selection of Taskforce members to ensure continuity, buy-in, and accountability. The criteria for the selection of Taskforce members included the following:

Experience: Minimum three years with MOH hospitals

Knowledge:

- Health care management – hospital management, familiarity with workload management (i.e., cases per doctor/nurse)
- Workforce planning and analysis – ability to manage information and data
- A good understanding of HR and/or staffing rules and regulations at MOH

Attitude: Energetic, have good communication skills and be committed to developing a workforce of physicians, nurses, managers, and technicians that meets the health needs

Additional Skills: Good computer experience is essential

- **Governorate-level team**

A team was selected to lead the WP activity in each pilot governorate. The selected team had representatives from the curative, primary health care, and information center at the level of directorate of health in each governorate. Governorate teams played an important role in data management and in revising results of hospital workforce assessment before dissemination.

The taskforce and governorate teams were exposed to a variety of didactic, on-the-job training and practical training in data collection, entry, and verification; in addition, experiences were exchanged among teams in the three pilot governorates.

A steering committee was not formed in Egypt.

3.2 DEFINE THE SCOPE FOR WORKFORCE PLANNING ACTIVITY

The first step in using the WISN model is to define the scope of the WP exercise. This includes defining the following elements to be covered:

- Categories of health workers that will be analyzed (e.g., nurse, specialist, residents, technicians)
- Specialty areas (e.g., Pediatrics, General Surgery, Internal Medicine)
- Types of health facilities (e.g., health centers, hospitals)
- Geographical areas (e.g., national, governorate, or district).

In defining the scope, it is important to start small. The WISN process is lengthy and is likely to take significant time and effort. One way to prioritize the work is to define the scope according to the type and severity of current staffing issues as perceived by facility managers or senior decision makers at the MOH. For example, hospital managers may be complaining about nursing shortages that have been affecting the quality of care at their facilities, or an Undersecretary for Health in a certain governorate has a problem with the distribution of specialists across health centers in various districts. In such instances, WISN can be helpful in identifying the sources of the staffing imbalances and the size of such gaps.

Egypt Example (2)
Scope of WISN Application

Major staffing imbalances in District and General (D&G) hospitals in Egypt resulted in an agreement between the MOH and the working team to focus first on D&G hospitals in the three governorates of Assiut, Gharbia, and Luxor. The working team then implemented the WISN methodology in phases, as described in Table I.

Table I. 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, Intensive Care Unit, Dentistry, Burns	Consultants Specialists Residents Nurses Nurse supervisors	Developed activity standards for the 10 specialties
Second Phase	Cardiology Cardiac Surgery Cardiac Care Unit	All staff types	Developed activity standards
		Administrative staff	Developed the Regression Analysis Model
Third Phase	Pharmacy, Radiology, Laboratory, Rehab. and Rheumatology, and 10 additional specialties	Pharmacists, radiologists, lab technicians, radiology technicians, dentistry technicians	Developed activity standards for Pharmacy, Radiology, Lab, Rehabilitation & Rheumatology staff and medical technicians Adopted activity standards for similar departments

Applying the WISN methodology for estimating administrative staff proved to be challenging in Egypt due to the wide variation in administrative staff types and lack of well-defined job descriptions in MOH hospitals. Hence, a separate methodology for estimating the required administrative staff was developed using a Regression Analysis Model. The model uses data from 51 sample MOH hospitals to set Egyptian hospital average standards for administrative staff adjusted for workload. A detailed report on the methodology used for estimating administrative staff in D&G hospitals in Egypt is available elsewhere for review.

3.3 ORGANIZE EXPERT WORKING PANELS

Once the scope is defined, the next step is to organize expert working panels to help define the clinical and nonclinical activities and develop the activity standards (see Figure 1). These panels usually consist of in-country experts from the various health professions or specialties with substantial experience in their field and thorough clinical knowledge about the practice requirements, both clinically and administratively. According to Peter Shipp, the author of the original WISN manual, experts are “expected to bring to bear professional expertise (how *should* things be done?) and recent working experience and/or observation (how much of this is *practicable?*)” (Shipp 1998, p. 31).

Different panels are needed for the various medical departments. For example, expert pediatricians are needed to set activity standards for pediatrics while expert general surgeons are needed for general surgery. Similarly, expert nurses are needed to set activity standards for nurses.

Panels should be convened to discuss and reach consensus on two important inputs needed for the WISN calculations:

1. The list of activities, both clinical and nonclinical, performed by the selected workers' categories
2. The activity standards, or average expected time needed to perform each activity.

In principle, members of the expert panels should consist of the following:

- Four or five experts from the category of health workers for which the WISN will be estimated; these experts must have significant experience in their field and familiarity with the type of work in which these health workers are engaged.
- One or two facilitators who will be responsible for guiding and managing the discussion within the group and will answer questions as needed. The facilitator(s) should be neutral to the team, preferably not a health worker belonging to the same category as the one being analyzed. The Workforce Planning Taskforce can play this role and provide good facilitation to the expert panels due to team members' knowledge of the model.

Prior to engaging in panel discussions, the experts need to be properly oriented to gain an understanding of the steps in the WISN process and what they are expected to accomplish during these discussions. This orientation session usually takes up to two hours, followed by discussions among panel experts, which typically last between three and four hours. Hence, each working panel is expected to spend at least one full day developing these standards. Various materials (presentations, facilitators' guides) have been developed through the pilot experience in Egypt and are available for use.

Egypt Example (3) Expert Working Panels

In Egypt, a series of expert panel workshops convened during 2009/10 to discuss and reach consensus on activity standards. A total of 20 workshops were conducted, each consisting of about 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: 130 physicians, 46 nurses, and 12 technicians. Activity standards were tested in select hospitals and were later refined by the same expert groups in a series of additional consultation meetings.

Each panel included the following:

MOH providers: Experienced MOH providers, known for their high quality work, were selected from a number of "high performing" MOH hospitals. These hospitals were identified by the MOH according to a number of performance indicators. Various staff types were invited to the expert panels, including consultants, specialists, residents, pharmacists, dentists, nurses, nurse supervisors, and technicians.

University staff: Highly acclaimed university professors from different specialty areas also participated in the panels. Selected university staff had significant experience and extensive familiarity with evidence-based practices.

MOH leadership: Five senior MOH managers and planners participated in 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 to the panels throughout the activities.

4. STEPS IN THE WISN PROCESS

Once the scope for WP activity is defined and the working panels have been formed and oriented, the Workforce Planning Taskforce team must organize expert panel workshops to identify the input for the WISN process, as shown in Figure 1.

4.1 DEFINE CLINICAL AND NONCLINICAL ACTIVITIES OF HEALTH WORKERS

At the expert opinion workshops, the first task of the panels is to reach agreement on the list of key activities for each category of health worker. This is usually the most time-consuming step in the process. Activities are classified into two categories: clinical and nonclinical.

Clinical activities are patient-related activities that constitute most of the daily working time of the medical staff. Experts in each specialty should identify the most common clinical activities performed in their practice. The longer and more detailed the list is, the harder it is to implement the WISN method and the less likely the accuracy of estimates will be improved; therefore, it is important to remain concise.

Cases of different severities or types require differing amounts of time per patient activity (i.e., the more severe the case, the longer the time required by a health worker). Therefore, it is important for experts to categorize patient activities by severity level. Experts must also take into consideration the availability of data in hospital records for each selected category.

For physicians, experts might find it necessary to indicate the contribution of a given clinical activity that is typically performed by different staff types of physicians (residents, specialists, and consultants). For example, in some facilities not all inpatient visits are performed by specialists. Specialists might only be responsible for cases with a certain level of severity. In such instances, experts should indicate the approximate portion of that activity (e.g., inpatient visits) that is typically performed by specialists (e.g., 30 percent). This is important so as not to overestimate the workload.

Egypt Example (4)	
Percentage of Physicians' Contributions to Inpatient Visits in Internal Medicine	
Physicians' Staff Type	Percentage of Staff Contribution
Resident	70
Specialist	30
Consultant	20

Nonclinical activities refer to the activities staff perform that are not clinical or patient related. Each staff type has several nonclinical activities that staff members engage in and that will require part of their time. Experts should list the main nonclinical activities that staff members also engage in and set the time needed for these activities (also referred to as allowance standards in the WISN terminology).

Egypt Example (5)
Clinical and Nonclinical Activities Set by the General Surgery Expert Panel

Table 2. Categories of Clinical and Nonclinical Activities of Physicians in General Surgery

Categories of Activities	Unit	Time Spent By Each Staff Type		
		Consultants	Specialists	Residents
I. Clinical Activities				
Outpatient Encounters				
Middle aged 15–50 yrs	minutes/patient	10	15	20
Pediatrics < 15 yrs & > 50 yrs	minutes/patient	10	20	25
Inpatient Visits				
< 2 days after surgery	minutes/patient	5	5	10
> 2 days after surgery	minutes/patient	10	10	20
Surgeries				
Minor surgeries	minutes/patient	30	30	45
Intermediate surgeries	minutes/patient	60	90	120
Major surgeries	minutes/patient	120	120	140
2. Nonclinical Activities				
Training	days/year	20	15	15
Death report	hours/year	0	1	1
Administrative activities	hours/week	2	4	4

Source: Expert Panel Working Groups in Egypt

4.2 DEVELOP ACTIVITY STANDARDS

Once clinical and nonclinical activities are defined, the next step is to develop activity standards for health workers selected for the analysis. 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. According to the WHO WISN manual, activity standards are defined as “the time necessary for a well-trained, skilled, and motivated staff to perform an activity to professional standards in the circumstances of the country (its medical practices, equipment available, etc.)” (Shipp 1998, p.44). Standards are therefore closely linked to service quality in that they must reflect the way professional practice should be conducted.

When experts are defining the time per activity, it is also important for them to consider 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 should be included in the time per visit since it is directly linked to the service being provided.

Standards should remain realistic and practicable under the circumstances of the country. Because the WISN results will ultimately be used to inform managerial and human resource decisions, setting “ideal” standards and disregarding local realities is pointless. Standards should take into account the level and type of training expected of a health worker and the working circumstances. Having local health providers set these standards is therefore important, since they are the most fit to judge what is locally practicable and what is not.

Egypt Example (6)
Workforce Activity Standards Set by the Internal Medicine Expert Panel

Table 3. Activity Standards for IM Physicians at MOH Hospitals in Egypt

Activities	Unit	Activity Standards for IM Physicians		
		Consultants	Specialists	Residents
Clinical Activities				
Outpatient Encounters				
Single system disease	minutes/patient	10	10	15
Multisystem & complicated	minutes/patient	15	15	25
Average activity standard - outpatient encounters	minutes/patient	12.5	12.5	20
Inpatient Visits				
Follow-up admission	minutes/patient	5	10	30
First-time admission	minutes/patient	10	15	30
Nonclinical Activities				
Training	days/year	20 (100%)*	15 (100%)*	15 (100%)*
Death report	hours/year	0 (0%)*	1 (100%)*	1 (100%)*
Administrative activities	hours/week	2 (16%)*	4 (20%)*	4 (20%)*

* The percentage of staff engaged in nonclinical activity

In the absence of detailed service statistics for outpatient cases by severity or type of case, the expert panel agreed to set an average time for all outpatient cases, which takes into consideration the time required for simple and complicated cases.

Notice that in addition to estimating the time spent on nonclinical activities performed by certain members of a category of health workers, experts also identified the percentage of staff who typically engages in these activities. For example, only 20 percent of Internal Medicine (IM) specialists (or one in every five workers) should be assigned to perform administrative duties.

Activity Standards for Hospital Inpatient Nurses

In the case of inpatient nurses, it becomes very difficult to speak of 'time per activity.' Inpatient nurses are constantly performing a fluid and simultaneous mix of clinical tasks across various patients. Therefore, activity standards for inpatient nurses are set slightly differently – instead of 'time per activity,' they are set in terms of a 'rate of work' (e.g., number of patients per six-hour shift). Departments or shift hours that require more patient attention may require more nurses per patient. Since it is difficult for an outsider to know these factors, nursing experts with practical experience should guide the standards-setting process. Table 4 provides an example of activity standards for OB/GYN inpatient nurses.

Table 4. Activity Standards for OB/GYN Inpatient Nurses at MOH Hospitals in Egypt

Shift Period	Activity Standards
Morning shift (6 hrs)	Six patients per nurse
Afternoon shift (6 hrs)	Six patients per nurse
Evening shift (12 hrs)	Six patients per nurse

Source: Expert Panel Working Groups in Egypt

4.3 ESTIMATE THE TOTAL AVAILABLE WORKING HOURS FOR CLINICAL ACTIVITIES

After the expert panels have completed the development of the activity standards, experts need to estimate the number of hours available to the health worker in a year to perform the clinical activities, using the following equation:

Total available hours for clinical activities/year =

Total working hours available/year – Total working hours spent on nonclinical activities

This calculation is achieved in three small steps:

4.3.1 CALCULATE WORKING HOURS AVAILABLE IN A YEAR

To calculate the number of working hours per year, subtract the total number of weeks in a year from the number of weeks that the health worker is entitled to spend away from the facility and multiply by the number of working hours per week.

Total working hours available in a year =

(Total number of weeks/year – Number of weeks away from the facility) x Total working hours/week

The number of working hours per week and the number of weeks away from work are defined by local labor laws, or according to HR policy and regulations, as shown in the Egypt example below.

Egypt Example (7)

Working Hours Available in a Year

The example in Table 5 shows the calculations used to determine the number of working hours in a year for health workers in D&G hospitals in Egypt.

Table 5. Available Working Weeks Annually for Health Workers in Egypt

Nonworking Days Per Year	
Annual leave	Up to 25 days
Official holidays	13 days
Other leave (sick, emergency, etc.)	Up to 21 days
Total nonworking days per year	59 days
Total nonworking weeks per year	= 59/7 = 8.4 weeks
Total number of weeks per year	52 weeks
Total number of working weeks in a year	52 – 8.4 = 43.6 weeks

- Health workers at MOH D&G hospitals are required to work 36 hours per week at the hospital.
- Therefore, the number of working hours in a year for health workers is 43.6 x 36 = 1569 working hours.

4.3.2 CALCULATE TIME SPENT ON NONCLINICAL ACTIVITIES

The amount of time that should be spent on nonclinical activities by each category of health worker is determined by the expert panels as part of the activity standard development exercise.

Egypt Example (8)

Time Spent on Nonclinical Activities among IM Specialists

Table 6 shows the amount of time the expert panel determined that IM specialists spend on three nonclinical activities: (1) training, (2) preparation of death reports, and (3) administrative activities.

Column B shows the amount of time the experts identified that should be spent on each nonclinical activity.

Column C shows the percentage of IM specialists the experts determined were needed to perform each activity.

Column D shows how to determine the total hours spent on each nonclinical activity by multiplying time spent on each nonclinical activity (column B) by the percentage of staff performing each activity (column C).

The overall time spent on nonclinical activities for a given category of health workers is then calculated by totaling all times spent on each nonclinical activity.

Notice that all times in the calculations should be expressed in the same unit for each of the nonclinical activities. For example, if IM specialists spend 15 days per year on training activities and specialists are working 6 hours per day, the total time in hours that specialists spend on training activities is calculated by the following: $15 \times 6 = 90$ hours.

Table 6. Estimating Time Spent on Nonclinical Activities by IM Specialists

COLUMN A	COLUMN B	COLUMN C	COLUMN D = B x C
Nonclinical Activities of IM Specialists	Time Spent on Nonclinical Activities as Set by the Experts	% of Staff Performing Activity	Total Hours Spent on Nonclinical Activities
Training	15 days per year = 90 hours per year	100	90
Death reports	1 hour every year	100	1
Admin activities	4 hours per week = 174.4 hours per year, since specialists are working 43.6 weeks per year	20	34.88
Total Time Spent on Nonclinical Activities			126 hours

4.3.3 CALCULATE AVAILABLE WORKING HOURS IN A YEAR FOR CLINICAL ACTIVITIES

In the previous step, the number of available working hours in a year was determined and the total time spent on nonclinical activities was estimated. Based on that figure, the number of hours available for clinical activities can be calculated using the stated equation:

Total hours available for clinical activities/year =

Total working hours available/year (Step 3A) – Total working hours spent on nonclinical activities (Step 3B)

Egypt Example (9)

Total Number of Hours Available for Clinical Activities among IM Specialists

If the total number of working hours available for IM specialists per year is 1,569 and the time spent on nonclinical activities is 126 hours (Egypt example 8), then the total number of hours available for clinical activities is calculated as $1569 - 126 = 1443$ hours.

4.4 ESTIMATE 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 by each health worker in a year, provided they adhere to the activity standards. The standard workload is estimated for every clinical activity listed by the expert working panels using the following equation:

Standard Workload =

$$\frac{\text{Total hours available for clinical activities in a year (Step 3C)}}{\text{Activity standards time per activity}}$$

Egypt Example (10)

Calculating Standard Workload for IM Specialists

Table 7 shows the standard workload, or the maximum number of patients or visits IM specialists in a D&G hospital in Egypt could handle in a year, for each type of clinical activity.

Column A lists all the clinical activities that an IM specialist performs, as agreed by the expert panel.

Column B includes the activity standards to perform these activities, or the amount of time in minutes these activities should take to provide quality work, as set by the expert panel.

Column C shows the activity standards based on the amount of hours needed to perform these activities, to ensure that the time set in all the activity standards is based on the same unit of time.

Column D added the available working hours for clinical activities in a year, as previously calculated.

Column E shows the standard workload per activity, calculated by dividing the total hours available for clinical activities (column D) by the activity standard time (column C).

According to the example, therefore, an IM specialist could see a maximum of 6,925 outpatient encounters in a year (1,443 divided by 0.20 hours) and could see a maximum of 8,656 patients with minor severity in a year.

Table 7. Standard Workload of IM Specialists at MOH Hospitals in Egypt

Column A	Column B	Column C	Column D	Column E
Main Clinical Activities	Activity Standards (in minutes)	Activity Standards (in hours)	Available Working Hours for Clinical Activities	Standard Workload per Activity = D/C
Outpatient encounters	12.5 minutes per encounter	= 12.5/60 or 0.20 hours	1,443 hours/year	1,443/(0.20) = 6,925 outpatient encounters
Inpatient visits, minor severity	10 minutes per patient	= 10/60 or 0.16 hours		1,443/(0.16) = 8,656 inpatient minor severity visits
Inpatient visits, complicated case	15 minutes per patient per day	= 15/60 or 0.25 hours		1,443/(0.25) = 5,771 inpatient complicated case visits

Egypt Example (11)

Calculating Standard Workload for OB/GYN Inpatient Nurses

Since activity standards for inpatient nurses are set differently from the rest of the health worker categories, the calculation of the standard workload will also differ. Activity standards for inpatient nurses are expressed as a 'rate of work' at each shift (e.g., number of patients per six-hour shift). Because inpatient nurses work three shifts a day, the average rate of work needs to be calculated first. This is given as follows :

$$\text{Average rate of work} = (A/K + B/L + C/M)/\text{Number of shifts per day}$$

A	Morning shift	6 working hours
B	Evening shift	6 working hours
C	Night shift	12 working hours
K	Rate of work for morning shift	6 patients/shift
L	Rate of work for evening shift	6 patients/shift
M	Rate of work for night shift	6 patients/shift

Based on the above data, the average rate of work for an OB/GYN inpatient nurse is:

$$(6/6+6/6+12/6)/3 = 1.33.$$

Standard workload for an OB/GYN nurse is then calculated as follows:

$$\frac{\text{Total hours available for clinical activities in a year}}{\text{Average rate of work}} = \frac{1,728}{1.33} = 1,296$$

The amount of 1,728 is determined according to the calculation of nursing hours for clinical activities for an OB /GYN inpatient nurse, following the same formula described in step 3C.

Therefore, an OB /GYN inpatient nurse could see a maximum of 1,296 inpatient cases in a year.

4.5 COLLECT DATA ON ACTUAL CLINICAL WORKLOAD AT THE FACILITY

Data collection forms need to be designed to take into account the inputs from the expert panels. For example, if the expert working panel listed outpatient encounters, inpatient bed visits, and surgeries as clinical activities, data would need to be collected on the number of outpatient visits, the number of admissions, and the number of surgeries performed per year, respectively.

An additional step would be to convert the number of admissions cases into the number of inpatient days using the following equation:

$$\text{Inpatient days} = \text{Number of admissions} \times \text{Average Length of Stay (ALOS)}$$

This step is necessary because one admission can generate multiple workers' encounters with a patient, and workload estimates must be expressed as time spent per patient per day. These data should be readily available and collected from the hospital records.

In addition, the WISN calculations require statistics on patient volumes at a given facility (e.g., number of patient visits, number of surgical operations). Therefore, patient-related activities should be defined in terms of these routine service statistics.

Egypt Example (12)
Calculating Actual Workload for IM Specialists

Table 8 shows the actual workload for clinical activities of IM specialists in a sample hospital.

Table 8. Actual Workload for Clinical Activities of IM Specialists in Hospital X

Main Clinical Activities	Workload Indicators	Actual Workload in Hosp X
Outpatient encounters	Number of outpatient encounters to the IM clinic in a year	24,071 visits
Inpatient visits, minor severity	Number of admissions for minor severity cases multiplied by ALOS in a year	-
Inpatient visits, complicated case	Number of admissions for complicated cases multiplied by ALOS in a year	11,367 inpatient days

Egypt Example (13)
Profile of Current Staff

The team in Egypt developed more comprehensive data collection forms for hospitals. To complete these forms, facilities were asked to report the annual number of health workers by type and specialty; workers' characteristics such as age, gender, and qualifications; workers' inflows and outflows by reason; and service volume according to the parameters set by the expert panels. These data will be useful in painting a comprehensive picture of the workers' situation at the facility. Ideally, summary information on health workers such as the data collected in these forms would be made available through an HR database that records real time micro data on all workers in health facilities. Such a database is not currently available in Egypt, however, which led the project to collect these data directly from facilities.

It is important to note that data collected at each hospital in Egypt was subject to multiple verifications to ensure that the data entered into the WISN calculations were correct and reliable.

4.6 CALCULATE REQUIRED STAFF

After ensuring that all the necessary input measures for the model are obtained, it is possible to calculate the total required staff (R), or the number of health workers needed to service the actual volume of patients at the facility, based on the expert-developed activity standards. This is calculated as follows:

Required staff for each activity =

Actual workload for activity (Step 5) / Standard workload for activity (Step 4)

The facility's overall need for a given type of health worker is then calculated by adding these ratios across all the clinical activities conducted by that type of health worker.

Egypt Example (14)
Estimation of the Required Staff

The calculations for the required number of IM specialists in the pilot hospital X are presented in Table 9.

Table 9. Required Staff for IM Specialists in Hospital X

	COLUMN A	COLUMN B	COLUMN C = B/A
Main Clinical Activities	Standard Workload	Actual Workload	Required Staff
Outpatient encounter	6,925	24,071	3*
Inpatient visits, minor severity	8,656	-	-
Inpatient visits, complicated case	5,771	11,367	2*
Number of required IM specialists			5

*Fractions are rounded up to the nearest integer.

As the table shows, the number of required IM specialists (R) needed to cope with actual workload in this hospital is 5. In other words, 5 IM specialists are needed to handle the patient volume experienced by this facility given an adequate level of care. Note that fractions are rounded up to the nearest integer. When activity requirements are calculated, the resulting number will likely be in the form of a fraction. A fraction implies that work is needed on a part-time basis. For example, 2.6 is equivalent to two full-time workers and one part-time worker. However, it is generally advisable to round up the ratios to an integer, especially if part-time workers are not common, as is the case in Egypt.

Egypt Example (15)

Using Minimum Staffing Requirements

In some cases, preliminary results of staffing requirements showed very low numbers of required staff due to the facility's low workload. Expert panels were concerned that these results would be too small to cover minimum staffing requirements, which would ensure coverage for each shift. MOH policy requires hospitals to have at least one specialist and one resident covering each shift. Following discussions with workforce experts in Egypt, the expert panels revised the methodology to add 'floors' or the minimum number of staff required regardless of the number of patients or cases. The Egypt WISN software integrates the minimum number of staff required as part of the calculations. If the required number for a certain staff category comes out to be less than the minimum number set by the experts, then the software automatically uses the minimum staffing number as the required number. Table 10 shows the minimum number of staff set for some specialties for D&G hospitals in Egypt.

Table 10. Minimum Staffing Requirements by Specialty

Specialty	Physicians			Nurses		
	Residents	Specialists	Consultants	Outpatient	Inpatient	Supervisors
Pediatrics	2	1	0	1	3	0
Neonatology	2	1	0	0	3	0
Internal Medicine	2	1	0	1	3	0
General Surgery	2	1	0	1	3	0
OB/GYN	2	1	0	1	3	0

In Egypt example 14, the required number of IM specialists, R = 5, is already larger than the minimum number of specialists required (minimum = 1), thus this amount should be adequate to cover the minimum staffing requirements in Table 10.

Note that because of the multiple factors involved in estimating WISN, it is easy to make mistakes. It is therefore very important to check the validity of answers at every step of the calculations. For example, a required staff estimate of 50 might be an indication of possible errors in the calculations or in the workload data collected. In such a case, return to the original data and recheck calculations to ensure no errors were made along the way.

Bear in mind that the WP model automates all WISN calculations discussed above and automatically calculates results. The model has embedded all the parameters and the activity standards set by the expert panels. These can be modified at any time to respond to changes in local policies and regulations related to WP.

4.7 ESTIMATE WORKFORCE GAP

After completing the WISN calculations to determine the number of required staff, it is important to further analyze those results for a better and more comprehensive analysis and understanding of the workforce situation.

The workforce gap shows the magnitude of the difference between the current supply and the required number of health workers, and is calculated as follows:

Workforce Gap =

Current supply (S) – Required staff (R).

- If the gap is zero ($S - R = 0$), it indicates a balance between the current and required staff.
- If the gap is positive ($S - R > 1$), it indicates overstaffing.
- If the gap is negative ($S - R < 1$), it indicates understaffing. Alternatively, the gap may be interpreted as the size of the shortage in the facility that is required to bring worker productivity back to the level of activity standards set by the experts.

4.8 ESTIMATE WORKFORCE RATIO

The Workforce ratio measures the work pressure faced by health workers in a facility. The ratio (S/R) shows where the workload pressure is the greatest, thus indicating priority areas for intervention. The following gives guidance for how to interpret the ratios:

- Ratio = 1: Indicates that the number of staff and the workload at a facility are in balance.
- Ratio > 1: A ratio that is larger than 1 is evidence of overstaffing in relation to the workload.
- Ratio < 1: A ratio of less than 1 implies understaffing, with too few staff for the level of workload at that facility and may merit more urgent attention by planners. Because the required staff is based on activity standards, understaffing implies that these standards are not currently being met. A ratio of less than 1 means that health workers may be working more hours to cope with the excessive workload, or that the health services at that facility are not being delivered according to the professional standards set by the experts.

The WISN ratio can also be used to indicate where urgent action needs to be taking place. Consider the following two situations:

- Facility A currently has six physicians ($S = 6$) but needs eight ($R = 8$) to meet the full workload. The gap ($6 - 8 = -2$) indicates a shortage of two physicians. The ratio is 0.75, indicating that the facility is 25-percent understaffed.
- Facility B currently has 90 physicians but needs 100 to meet the full workload. The gap indicates a shortage of 10 physicians and the ratio of 0.9 indicates a 10-percent understaffing.

Although facility B has a need for more physicians, the higher ratio in facility A indicates a greater work pressure on its workers. This means that facility A requires more urgent action than facility B. The ratio is therefore useful to prioritize interventions to resolve staffing imbalances.

5. GENERAL USES OF THE WORKFORCE PLANNING RESULTS

The value of WISN is not simply in revealing a number or “gap” for each facility, but in determining how the data and analysis of results can help policy officials improve workforce balance and the performance of the MOH system of facilities. A surplus of five workers does not necessarily mean that the facility should discharge five workers, but rather that it is important to investigate and ask questions to identify the sources of the problem. What are the reasons for such gaps? Is the facility underused? Are workers performing all activities at professional standards? Are there other services that can be offered for which the excess workers can be used?

If a facility is found to be understaffed, it is similarly important to find out why and whether the shortage is affecting service quality. Are workers performing activities that are not part of their main tasks but are taking up a significant portion of their time? Is there duplication of work between different categories of workers? If so, is there a need to clarify roles and responsibilities, and job descriptions? Is any category of health worker undertaking work for which they have not been trained?

Finally, the WISN method has important limitations that are worth noting. In relying on annual service statistics and expert judgments of workers’ productivity, the accuracy of the WISN results is determined by the accuracy of these factors. The more incomplete and imprecise the actual workload data are, the less accurate are the WISN estimations. For example, if actual workload data are underrecorded at the facility – due to underreporting in some months – the WISN method will underestimate the number of required staff. Furthermore, the detail used in recording these statistics also affects the detail that the expert panels have available when determining the list of clinical activities of a health worker. For example, some facilities do not differentiate in their records between first-time and follow-up visits at their outpatient clinics. Activity standards will therefore have to be averaged to accommodate the available data, as explained in a previous example.

Despite its limitations, the WISN method provides a powerful diagnostic model that can help policymakers and managers improve decisions about the provision, allocation, and deployment of health workers. Several potential actions could be taken to use the WISN results to improve staffing situations. Ultimately, such actions will depend on a range of factors, such as the policy environment, staffing regulations, processes, and political environment. In a health system workforce strategy, these solutions need to be further explored and evaluated.

Egypt Example (16)

Overall results showed that while some categories of health workers are staffed at less than the requirements (often seen in the case of nurses), other categories are staffed at levels higher than the requirements (most physician specialties). In one general hospital, a total of seven pediatricians were required to meet the volume of patient activities performed; however, the facility reported that 33 pediatricians were actually working there. After ruling out the possibility of flawed data or mistakes in calculations, the team needed to investigate the sources of such large imbalances. Discussions and consultations with health workers and department managers revealed important findings. Pediatricians at that hospital were not only responsible for the workload in the Pediatric department, but were also responsible for patient care in the Neonatal department and in the Emergency Inpatient. Since the results were based on service volume data from Pediatrics only, they reflected the need for pediatricians in that department only. This example shows how important it is to carefully understand what these WISN numbers represent.

Annex B is a PowerPoint presentation showing the results of the WP analysis for all D&G hospitals in one pilot governorate. The example shows how results using the Access-based model are presented and analyzed to determine the requirements for staffing, as well as the gap and the ratios.

WISN MODEL, TOOLS, AND MATERIALS

Several useful resources are available for the MOH WP and HR teams, or any other interested stakeholder in Egypt. These resources provide a thorough explanation of the WISN methodology and its implementation. These include the following:

1. **WISN PowerPoint Presentation.** This presentation can be used to disseminate and explain the WISN methodology to stakeholders (Annex A).
2. **Workforce Planning Tool: User's Guide**¹. This guide introduces the user to WISN Access-based software and how to use it in the model calculations.
3. **Workforce Activity Standards in Egypt**². This technical report explains the process of developing health workforce activity standards in Egypt and its importance in estimating workforce requirements.
4. **Hospital Workforce Assessments.** These three technical reports present the findings of the workforce assessment of public MOH hospitals in each of the pilot governorates (Gharbia, Luxor, and Assiut) and the policy implications of these findings.
5. **Administrative Staffing Requirements – Regression Analysis Model.** This technical report describes the Regression Analysis Model and its importance in estimating administrative workforce requirements based on actual hospital workload.

WISN model resources, including manuals, reports, and user guides, are available at www.healthsystems2020.org.

¹ Michael Murphy. March 2011. *Workforce Planning Tool User's Guide*. Bethesda, Maryland, USA: Health Systems 20/20 Project, Abt Associates Inc.

² Rafeh, Nadwa and Samir Mansour. March 2011. *Development of Workforce Activity Standards in Egypt*. Bethesda, Maryland, USA: Health Systems 20/20 Project, Abt Associates Inc.

ANNEX A: PRESENTATION: THE WORKFORCE PLANNING MODEL IN EGYPT



MOH Workforce Planning Model

What Is It and What Does It Do?

April 2011



Abi Associates Inc.
In collaboration with:
| Aga Khan Foundation | Birán y Asociados
| BIRAC University | Broed Branch Associates
| Deloitte Consulting, LLP | Forum One Communications
| RTI International | Training Resources Group
| Tulane University's School of Public Health



Human Resource Challenges in Egypt

- Egypt's Health reforms in hospitals and the Family Health Model require changes in staff skills and mix.
- Workforce distribution poorly allocated:
 - Between urban and rural areas
 - Between primary, secondary, and tertiary care
 - Between specialties
- New management skills due to increasing complexity of health systems.

Objectives of Our Work

- Identify a good methodology to plan the number and type of staff needed
- Build MOH capacity in workforce planning
- Develop Egyptian standards for Health Workforce
- Develop a strategy report on long-term MOH workforce plan

3

Goal of Workforce Planning

To have the right number of people with the right skills in the right job at the right time.

4

What Is the Workload Indicators of Staffing Need (WISN) Model?

- Workforce analytical planning tool.
- Based on WHO methodology.
- Determines staff requirements based on workload and not on the number of beds *nor* on population ratio.
- Can be used at the facility, district, governorate, and central levels.
- Applicable to all personnel categories:
 - Medical staff
 - Paramedical staff
 - Nonmedical staff

5

What Doesn't the WISN Model Do?

- It is not a plan, but provides data for planning.
- It is not a personnel database.

6

WISN Informs Decision Making

- Identifies gaps in staffing
- Improves distribution of current staff
- Reduces workload pressure
- Plans for future staffing
- Informs MOH regarding residency programs
- Informs MOH about need for specialization

7

MOH Priorities for Workforce Planning

Geographical Scope

- 3 Pilot Governorates: Gharbia, Luxor, Assiut,

Health Facilities

- MOH district and general hospitals (33)

Staff Types

- PHC clinics (538)
- Medical staff (consultants, specialists, residents, nurses)

Specialty Areas

- Administrative staff
- Technicians (X-ray, Lab, dentistry)
- 26 Specialties

8

MOH Priorities for WP (cont.)

Specialty Areas

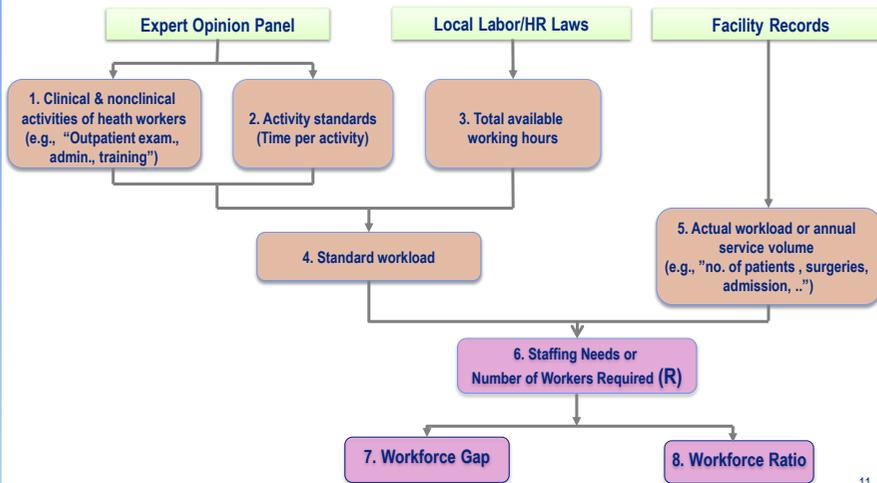
First Phase	Second Phase
<input type="checkbox"/> Pediatrics	<input type="checkbox"/> Hospital Pharmacy
<input type="checkbox"/> Neonates	<input type="checkbox"/> Radiology
<input type="checkbox"/> Internal Medicine	<input type="checkbox"/> Hospital Lab.
<input type="checkbox"/> General Surgery	<input type="checkbox"/> Rehab. & Rheumatism
<input type="checkbox"/> Obstetrics & Gyn.	<input type="checkbox"/> Cardiology
<input type="checkbox"/> Burns	<input type="checkbox"/> Cardiac Surgery
<input type="checkbox"/> Renal Dialysis	<input type="checkbox"/> Similar departments (either similar to internal medicine or general surgery)
<input type="checkbox"/> ICU	
<input type="checkbox"/> Emergency	
<input type="checkbox"/> Dentistry	

9

Overview of the Model

10

Graphical Representation of the WISN Egypt Model



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Determine Required Staff

$$R = \frac{\text{Annual Workload}}{\text{Standard Workload}}$$

12

Establish Standard Workloads

What are standard workloads?

- Amount of work (within one activity) that one person could do in a year, e.g.; Full-time specialist in General Surgery performs:
 - OP encounters: 8,061 cases or
 - IP visits: 10,748 or
 - Surgeries: 2,150

Example of Standard Workloads

STANDARD WORKLOAD

FOR SPECIALISTS

Department	Outpatient Encounters	Inpatient Days	Surgeries
PEDIATRICS			
Total	6,019	3,611	
Minor		4,514	
Major		3,010	
NEONATAL			
Total		3,597	
Minor		4,496	
Major		2,998	
I.MEDICINE			
Total	6,925	6,925	
Minor		8,656	
Major		5,771	
GEN. SURGRY			
Total	4,918	11,475	
Minor		17,213	2,869
Medium			956
Major		8,607	717
OB/GYN			
Total	5,949	1,983	1,983
Minor		4,462	2,974
Major		1,275	991

What Does the Model Measure?

Three Key Measures

Required Staff	Based On Actual Workload		
GAP	Current – Required	C > R	Surplus
		C < R	Shortage
		C = R	Balance
Ratio	Current / Required	Ratio < 1	High workload pressure
		Ratio > 1	Low workload pressure
		Ratio = 1	Balance

Assumptions Used in Egypt WISN Model

Basic Assumptions

Number of working hours in Egypt	6 hours/day
Number of shifts per day	3 shifts
MOH policy	Availability of specialists and residents in the same shift (overlapping of activities) Minimum number of staff required irrespective of workload

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Assumptions (cont.)

Workload Distribution	Assumption
Workload distribution among physicians (consultants, specialists, and residents)	Estimated % distribution of physicians to workload as follows: <ul style="list-style-type: none">▪ 70% for residents,▪ 30% for specialists, and▪ 20% for consultants based on discussion with MOH and expert opinions.

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Assumptions (cont.)

Case Mix (Minor-Major)

Assumption

Severity and Case-Mix data

- Data are not routinely recorded according to case-mix.
- Available data for case-mix are inaccurate.

For outpatient subcategories:

Use average time spent per encounter.

For inpatient, dentistry OP and surgeries:

Use case-mix percentage distribution of cases by case-mix based on results of a study

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Assumptions (cont.)

Minimum Staff Coverage

Assumption

MOH policy requires minimum staff availability irrespective of workload to ensure coverage.

The model is designed to provide two scenarios for required staff:

- Based on actual workload only.
- Applying the minimum staff coverage.

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Example of Two Scenarios

Assessment of the Health Workforce at the Facility Level WISN Results by Facility and Position

Facility Name: المنطقة العام

Facility ID: 1001

Position	Supply	No Staffing Minimums			Staffing Minimums		
		Requirements	Unmet Need	Ratio	Requirements	Unmet Need	Ratio
Specialists	382	166	216	2.3	204	178	1.9
Residents	204	207	-3	1.0	225	-21	0.9
Consultants	89	59	30	1.5	60	29	1.5
Outpatient Nurses	195	127	68	1.5	127	68	1.5
Ultrad Nurses	142	51	91	2.8	51	91	2.8
Nurse Supervisors	22	9	13	2.4	11	11	2.0
Facility Totals	1034	619	415	1.7	676	356	1.5

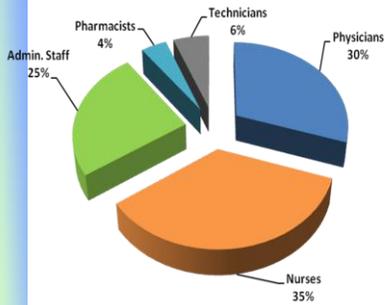
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Example of Egypt's WISN Results Gharbia Report

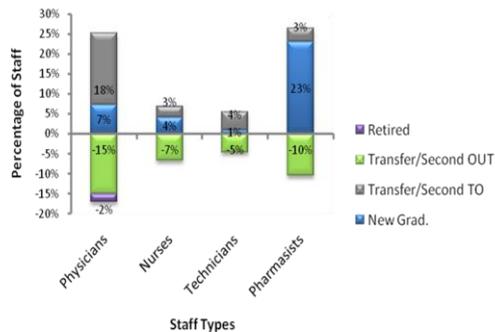
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Workforce Analysis Results: Current Staff Profile (Gharbia Governorate, 2009)

Staff Composition



Hospital Staff Flow (Percent Gain and Loss)



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Example of Recommendation: (Gharbia Report)

- Adopt task shifting and retraining to resolve shortages in certain specialties
- Extend and expand the programs of temporary secondment of workers between hospitals to resolve imbalances
- Consolidate some services and specialties with staff shortage in fewer hospitals until there are enough qualified staff available

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Validation of Egypt WISN Model

- The methodology, assumptions, and implementation of the WISN model in Egypt were validated through discussion with WHO team – Department of HR for Health, Headquarters in Geneva.
- WISN is a global initiative and has been applied in countries such as Turkey, Indonesia, and Uganda, but the scope of application was different in each country.



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Site Visit Discussion

Series of meetings were conducted with hospital teams to:

- Present and discuss workforce gap analysis results of each hospital
- Discuss solutions adopted at the level of the hospital to solve workforce problems



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Next Steps

- Assist hospitals to develop workforce action plans based on WISN results.
- Disseminate workforce gap analysis results among MOH stakeholders and governorate teams and address policy implications.
- Approve and endorse the developed standards workload.
- Discuss the application of the workforce planning model in primary health care facilities (PHCs).

ANNEX B: PRESENTATION: WORKFORCE ASSESSMENT OF DISTRICT AND GENERAL HOSPITALS IN PILOT GOVERNORATE



Workforce Assessment of District and General Hospitals in a Pilot Governorate

Key Findings & Recommendations

October 2010



Abi Associates Inc.
In collaboration with:
| Aga Khan Foundation | Birán y Asociados
| BIRAC University | Broed Branch Associates
| Deloitte Consulting, LLP | Forum One Communications
| RTI International | Training Resources Group
| Tulane University's School of Public Health

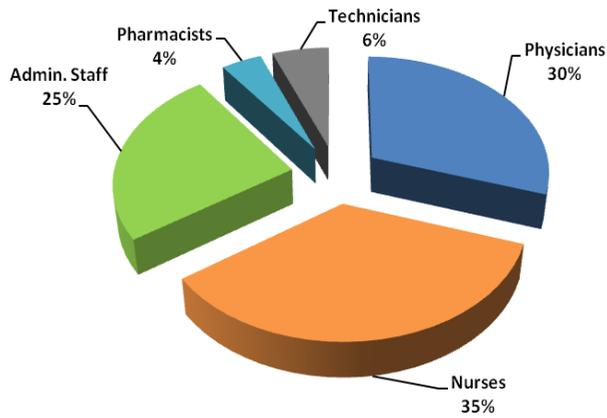


Purpose of the Presentation

- Summarize the findings of the workforce assessment conducted in district and general hospitals in a pilot governorate for the year 2009:
 - Current supply of workforce
 - Required staff based on hospital's workload for each specialty and staff type
 - Gap analysis results: staff oversupply and shortages
 - Priorities for intervention based on workload pressure on staff

Staff Composition in 2009

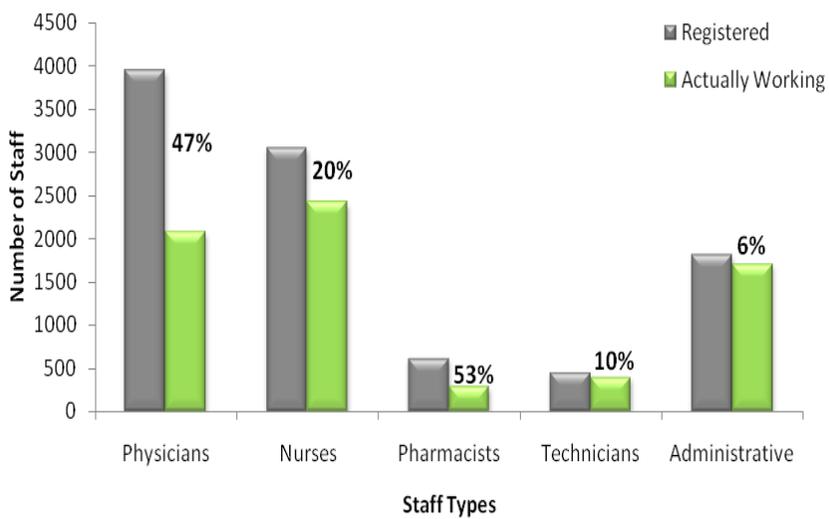
Pilot Governorate Hospitals



- Physician and nursing staff form more than 60% of the workforce in district and general hospitals in the pilot governorate

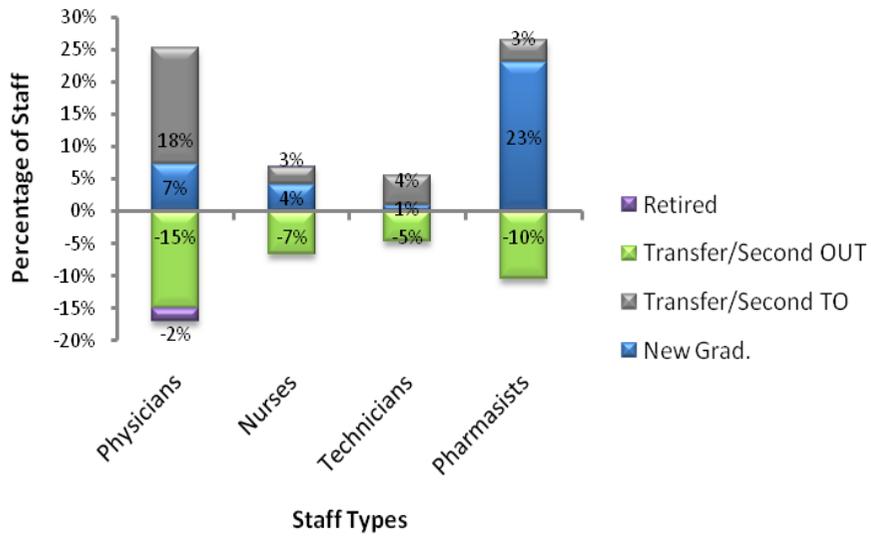
3

Registered vs Actually Working Staff



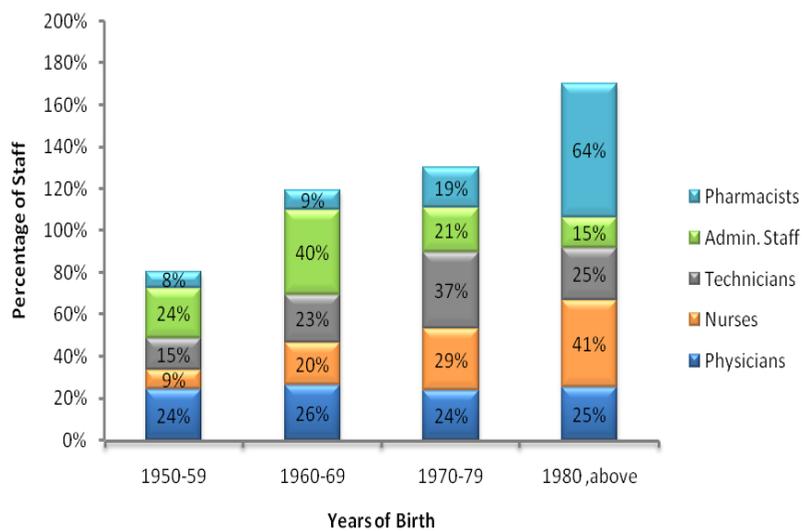
4

Turnover Rates of Hospital Staff



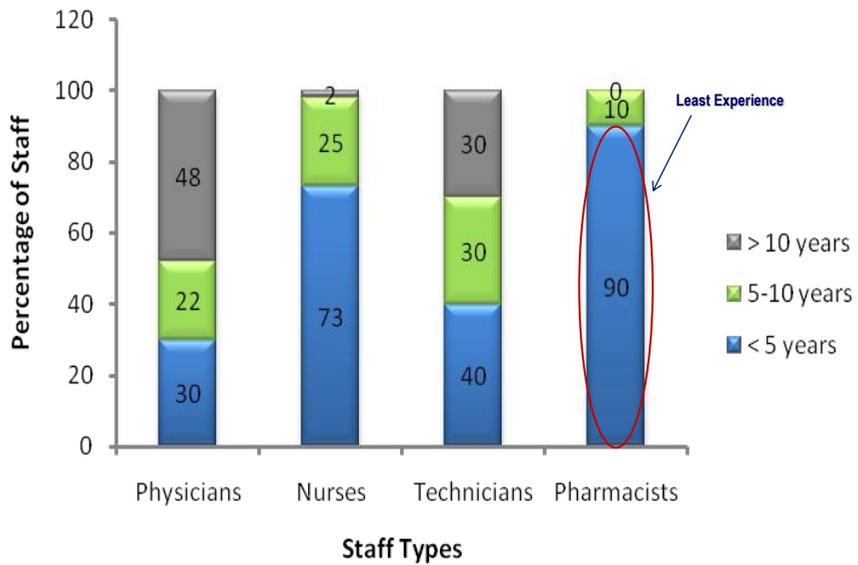
5

Retirement: Staff Distribution by Age



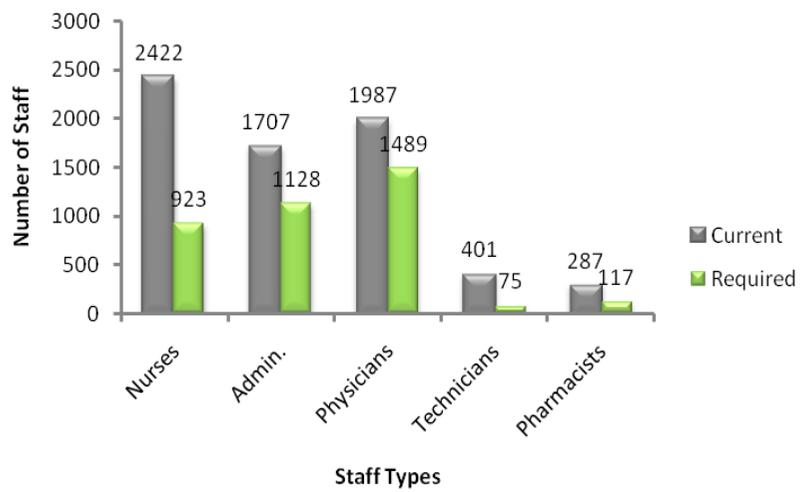
6

Years of Experience of Hospital Staff



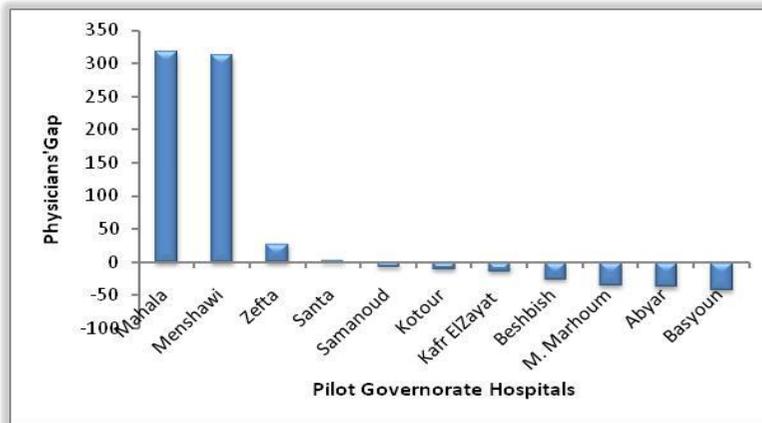
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Gap between Current and Required Staff



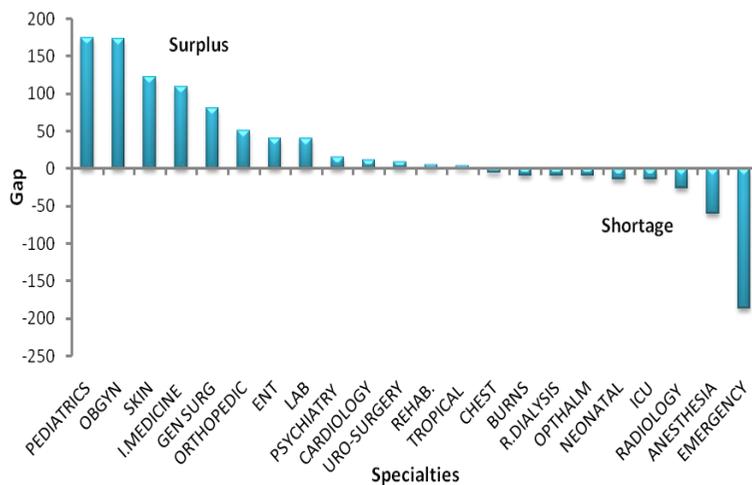
8

Physicians Gap Analysis across the Pilot Governorate Hospitals



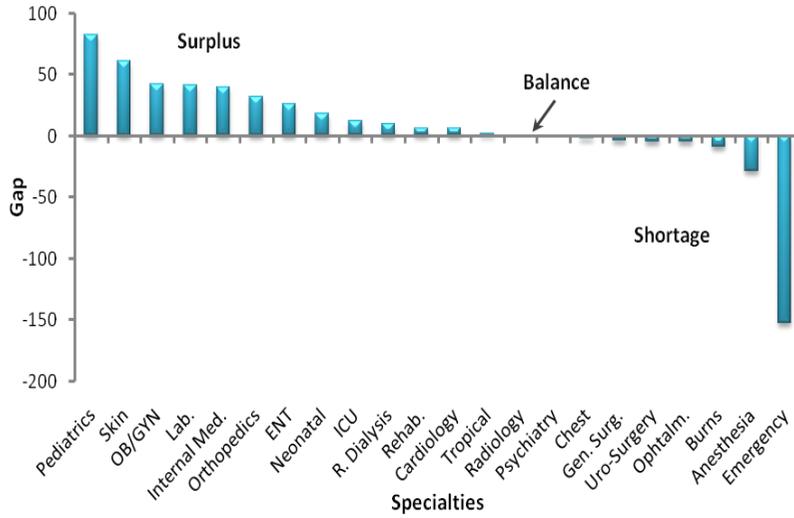
9

Physicians' Gap Analysis



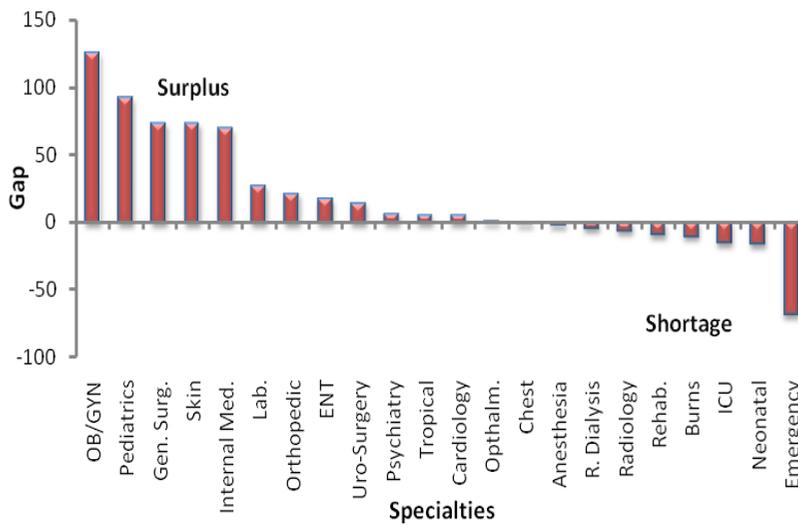
10

Residents' Gap Analysis



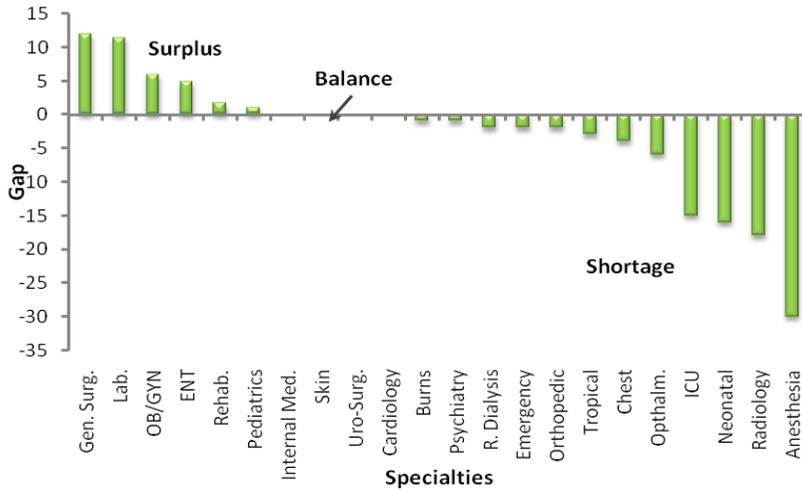
11

Specialists' Gap Analysis



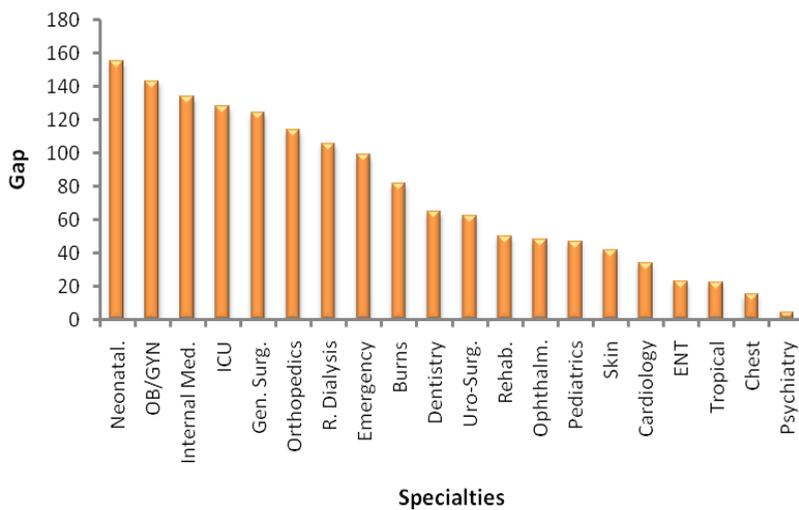
12

Consultants' Gap Analysis



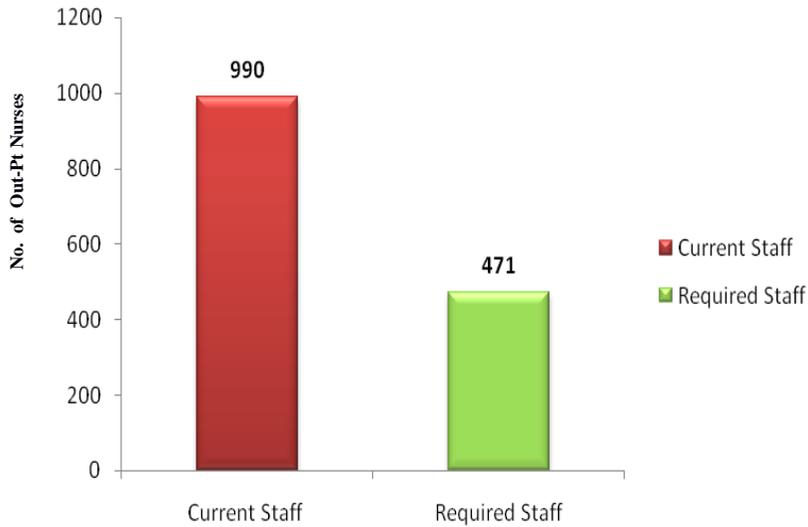
13

Inpatient Nurses' Gap Analysis



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Outpatient Nurses' Gap Analysis



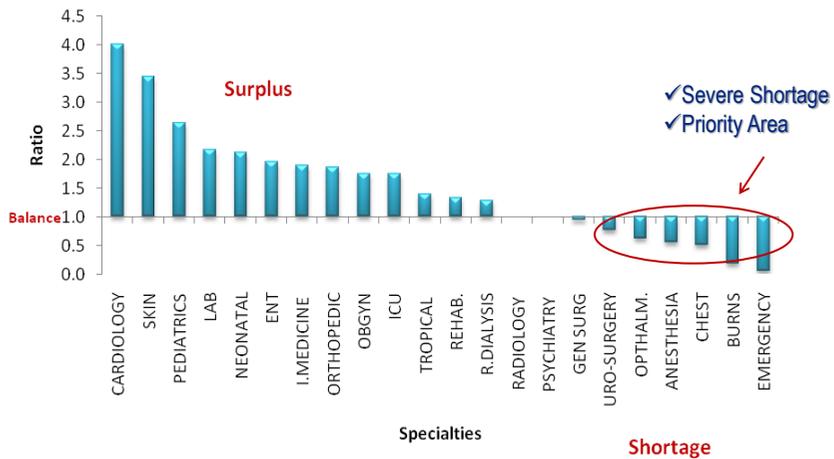
15

Priority Areas for Intervention

- Priority areas for intervention are based on the Ratio of Current Supply to Required Staff:
 - **Ratio = 1:** number of staff is in balance with the workload at the facility.
 - **Ratio < 1:** indicates shortages and greater pressure on staff.
 - **Ratio > 1:** implies overstaffing in relation to the workload.

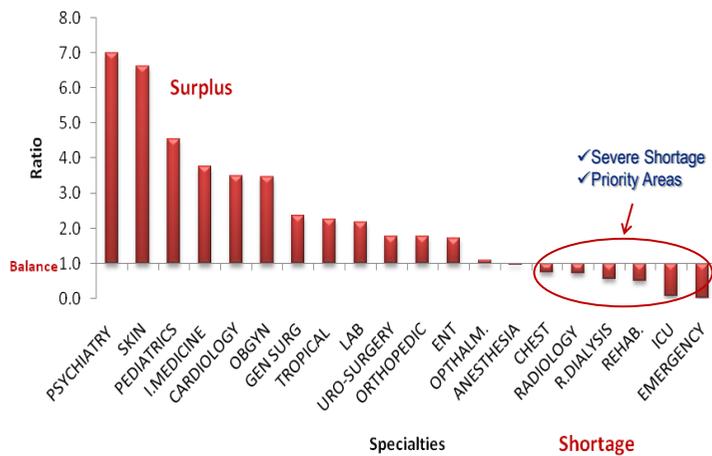
16

Priority Areas for Intervention among Residents



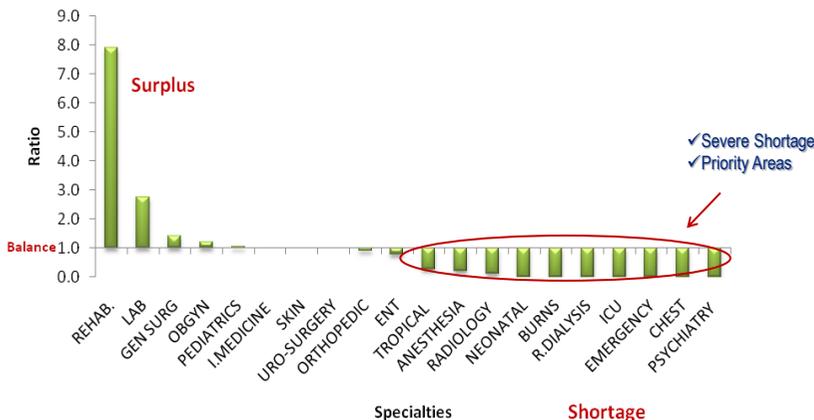
17

Priority Areas for Intervention among Specialists

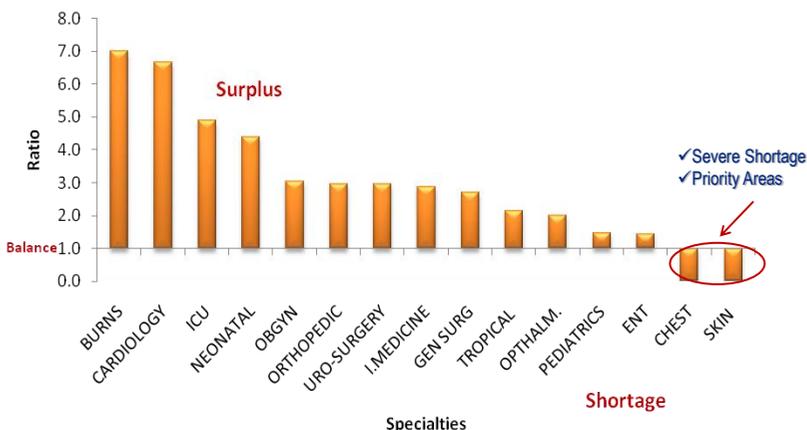


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Priority Areas for Intervention among Consultants



Priority Areas for Intervention among Inpatient Nurses



Physicians' Requirements by Specialty

SPECIALTIES	CONSULTANTS				SPECIALISTS				RESIDENTS				TOTAL PHYSICIANS			
	Current	Required	Gap	Ratio	Current	Required	Gap	Ratio	Current	Required	Gap	Ratio	Current	Required	Gap	Ratio
PEDIATRICS	18	17	-1	1.1	118	26	92	4.5	132	50	82	2.6	268	93	175	2.9
NEONATAL	0	16	-16	0.0	0	16	-16	0.0	34	16	18	2.1	34	48	-14	0.7
INTERNAL MEDICINE	23	23	0	1.0	94	25	69	3.8	85	45	40	1.9	202	93	109	2.2
GEN SURG	41	29	12	1.4	127	54	73	2.4	57	61	-4	0.9	225	144	81	1.6
OBGYN	35	29	6	1.2	176	51	125	3.5	98	56	42	1.8	309	136	173	2.3
BURNS	0	1	-1	0.0	0	10	-10	0.0	2	11	-9	0.2	2	22	-20	0.1
RENAL DIALYSIS	0	2	-2	0.0	5	9	-4	0.6	45	35	10	1.3	50	46	4	1.1
ICU	0	15	-15	0.0	1	16	-15	0.1	28	16	12	1.8	29	47	-18	0.6
EMERGENCY	0	2	-2	0.0	1	69	-68	0.0	8	161	-153	0.0	9	232	-223	0.0
LAB	18	7	11	2.8	50	23	27	2.2	76	35	41	2.2	144	65	79	2.2
REHAB.	2	0	2	7.9	9	18	-9	0.5	24	18	6	1.3	35	36	-1	1.0
RADIOLOGY	2	20	-18	0.1	15	21	-6	0.7	29	29	0	1.0	46	70	-24	0.7
CHEST	0	4	-4	0.0	3	4	-1	0.8	2	4	-2	0.5	5	12	-7	0.4
TROPICAL DISEASES	1	4	-3	0.3	9	4	5	2.3	7	5	2	1.4	17	13	4	1.3
SKIN	11	11	0	1.0	86	13	73	6.6	86	25	61	3.4	183	49	134	3.7
PSYCHIATRY	0	1	-1	0.0	7	1	6	7.0	3	3	0	1.0	10	5	5	2.0
URO-SURGERY	14	14	0	1.0	32	18	14	1.8	16	21	-5	0.8	62	53	9	1.2
ORTHOPEDIC	16	18	-2	0.9	48	27	21	1.8	69	37	32	1.9	133	82	51	1.6
OPHTHALMOLOGY	0	6	-6	0.0	12	11	1	1.1	8	13	-5	0.6	20	30	-10	0.7
ENT	10	13	-3	0.8	41	24	17	1.7	53	27	26	2.0	104	64	40	1.6
ANESTHESIA	8	37	-29	0.2	41	43	-2	1.0	36	65	-29	0.6	85	145	-60	0.6
CARDIOLOGY	0	0	0	0.0	7	2	5	3.5	8	2	6	4.0	15	4	11	3.8
TOTAL BY HOSPITAL	199	268	-69	0.7	882	485	397	1.8	906	735	171	1.2	1987	1489	498	1.3

Nurses' Requirements by Specialty

SPECIALTIES	IN-PATIENT NURSES				OUT-PATIENT NURSES				NURSE SUPERVISORS				TOTAL NURSES			
	Current	Required	Gap	Ratio	Current	Required	Gap	Ratio	Current	Required	Gap	Ratio	Current	Required	Gap	Ratio
PEDIATRICS	90	61	29	1.5	41	34	7	1.2	15	4	11	3.6	146	99	47	1.5
NEONATAL	180	41	139	4.4					21	5	16	4.4	201	46	155	4.4
INTERNAL MEDICINE	146	51	95	2.9	60	40	20	1.5	24	5	19	4.8	230	96	134	2.4
GEN SURG	130	48	82	2.7	54	28	26	1.9	21	5	16	4.5	205	81	124	2.5
OBGYN	137	45	92	3.0	50	13	37	3.8	17	3	14	6.4	204	61	143	3.4
BURNS	42	6	36	7.0					57	11	46	5.2	99	17	82	5.8
RENAL DIALYSIS					166	61	105	2.7	12	11	1	1.1	178	72	106	2.5
ICU	152	31	121	4.9					22	15	8	1.5	174	46	129	3.8
EMERGENCY					217	127	90	1.7	-1	-10	9	0.1	216	117	99	1.8
DENTISTRY					82	27	55	3.0	8	-2	10	0.0	90	25	65	3.6
REHAB.					71	6	65	11.8	-16	-1	-15	0.0	55	5	50	11.0
CHEST	8	0	8	0.0	12	5	7	2.4	0	0	0	0.0	20	5	15	4.0
TROPICAL DISEASES	28	13	15	2.2	29	9	20	3.2	-14	-2	-13	9.3	43	21	23	2.1
SKIN	2	0	2	0.0	59	32	27	1.8	13	0	13	0.0	74	32	42	2.3
PSYCHIATRY					8	4	4	2.0	0	0	0	0.0	8	4	4	2.0
URO-SURGERY	71	24	47	3.0	23	12	11	1.9	2	-3	5	-0.8	96	34	63	2.9
ORTHOPEDIC	98	33	65	3.0	56	34	22	1.6	29	2	27	13.4	183	69	114	2.6
OPHTHALMOLOGY	36	18	18	2.0	30	11	19	2.7	12	1	11	18.0	78	30	48	2.6
ENT	43	30	13	1.4	30	27	3	1.1	5	-2	7	-3.0	78	55	23	1.4
CARDIOLOGY	20	3	17	6.7	2	1	1	2.0	22	6	16	0.0	44	10	34	4.3
TOTAL	1183	404	779	2.9	990	471	519	2.1	249	48	201	5.2	2422	923	1499	2.6

Other Staff Requirements

Staff Type	Current	Required	GAP	Ratio
Dentists	92	45	47	2.0
Pharmacists	287	117	170	2.5
Admin Staff	1707	1128	579	1.5
Medical Technicians				
Dentistry	73	10	63	7.3
Lab.	107	49	58	2.2
Radiology	221	16	205	13.8

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Summary of Findings

- The results of the workforce model will only be applicable if the workload standards, working hours, and attendance policies are implemented.
- Physical and structural factors such as space, availability of examination rooms, and equipment affect the attendance of the workforce and, therefore, should be considered in any workforce improvement plan.
- While there is an overall surplus of the workforce in the pilot governorate, there is wide mal-distribution between urban and rural hospitals and specialties.

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Summary of Findings (cont.)

Highest Physician Shortages	Highest Physician Surplus
Emergency*	Pediatrics❖
Anesthesia*	OB/GYN❖
Radiology	Skin❖
Burns*	Internal Medicine❖
ICU*	General Surgery
Neonatal	Lab.
Ophthalmology	Orthopedics
	ENT
* High workload pressure. Priority for intervention.	❖Low workload pressure low productivity

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Summary of Findings

cont'd

- The large two urban general hospitals of El-Menshawi and El-Mahala have around 50% of the physicians and only about 35% of the workload.
- The large surplus of nursing and administrative staff in the pilot governorate exerts a burden on the facilities, especially considering that the turnover rate among these groups is low.

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Suggested Interventions

- Implement the workforce model at all levels as the basis for workforce planning to establish accurate staff requirements based on workload
- Adopt task shifting and retraining to resolve shortages in certain specialties
- Extend and expand the programs of temporary secondment of workers between hospitals to resolve imbalances
- Consolidate some services and specialties, with staff shortage, in fewer hospitals until there are enough qualified staff available

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Suggested Interventions

cont'd

- Coordinate between MOH and MOHE, which is needed to:
 - Determine the size of undergraduate programs, in medicine and nursing, based on workload needs
 - Direct the residency programs towards key shortages in Emergency Medicine, Anesthesia, Radiology, Neonatology, and Burns
- Adopt financial incentives to encourage physicians to train in priority specialties and to encourage geographical distribution
- Delegate authority to governorate officials and hospital directors to allocate budget and mobilize human resources based on their needs

ANNEX C: BIBLIOGRAPHY

Shipp, P. 1998. *Workload Indicators of Staffing Need (WISN), A manual for implementation*. Geneva: World Health Organization.

World Health Organization. *WISN Workload Indicators of Staffing Need, User's Manual 2010*. Geneva: WHO.

