



**OCCUPATIONAL ANALYSIS**  
**MEDICAL & PHARMACEUTICAL HEALTHCARE INDUSTRY**



**JABATAN PEMBANGUNAN KEMAHIRAN**  
**KEMENTERIAN SUMBER MANUSIA**

Department of Skills Development  
Ministry of Human Resources, Malaysia

## **EXECUTIVE SUMMARY**

An Occupational Analysis (OA) is the process of identifying the work scope of the occupational area in terms of competencies. It is used to analyse skilled human resource competency requirement for the industry. The development of the Occupational Structure is a preliminary process in developing relevant National Occupational Skills Standard (NOSS). The NOSS in turn will be developed to be used as the basis to conduct skills training and certification of competent personnel.

This document is divided into several chapters, the first being an industrial overview highlighting the definition and scope of the industry, the current analysis of the local industry and its skilled worker requirements, Government bodies and development plans supporting the growth of the industry, then the next chapter will explain the methodology of the Occupational Analysis development. The final chapters will present the findings of the Occupational Analysis that is translated into the Occupational Structures, levels of competencies and critical areas. These findings will in turn be the basis of reference for the development of the National Occupational Skills Standard (NOSS) document. The NOSS will serve not only as a reference of skills standards for certification but also as a guide to develop the skills training curriculum. In order to conduct the Occupational Analysis on the Medical & Pharmaceutical Healthcare Industry, all the information related to the aforesaid industry was gathered through literature survey and further discussed in workshop sessions with experts from the industry. Workshops were held to get a better understanding of the organisational structure, job titles, hierarchy objectives and main activities of the specified positions.

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## **LIST OF ABBREVIATIONS**

|                   |   |
|-------------------|---|
| <b>DESCUM</b>     | Development of Standard and Curriculum                |
| <b>DSD</b>        | Department of Skill Development                       |
| <b>DRG</b>        | Diagnosis Related Group                               |
| <b>ETP</b>        | Economic Transformation Programme                     |
| <b>GDP</b>        | Gross Domestic Product                                |
| <b>GMP</b>        | Good Manufacturing Practices                          |
| <b>GNI</b>        | Gross Net Income                                      |
| <b>ICSI</b>       | Intra cytoplasmic Sperm Insemination                  |
| <b>IVF</b>        | In-vitro Fertilization                                |
| <b>IUI</b>        | Intrauterine Insemination                             |
| <b>OA</b>         | Occupational Analysis                                 |
| <b>OAA</b>        | Occupational Area Analysis                            |
| <b>OD</b>         | Occupational Description                              |
| <b>OS</b>         | Occupational Structure                                |
| <b>OAS</b>        | Occupational Area Structure                           |
| <b>OTC</b>        | Over The Counter                                      |
| <b>MMC</b>        | Malaysian Medical Council                             |
| <b>MOSQF</b>      | Malaysian Occupational Skills Qualification Framework |
| <b>MQA</b>        | Malaysia Qualification Agency                         |
| <b>MSC</b>        | Malaysian Skills Certificate                          |
| <b>NPCB</b>       | National Pharmaceutical Control Bureau                |
| <b>NOSS</b>       | National Occupational Skills Standard                 |
| <b>T &amp; CM</b> | Traditional & Complementary Medicine                  |
| <b>WHO</b>        | World Health Organization                             |

## 1. CONCEPT OF OCCUPATIONAL ANALYSIS (OA)

### 1.1 INTRODUCTION

OA is a process to identify job titles and levels for skilled workers needed in the industry sector. It is a preliminary stage for National Occupational Skills Standard (NOSS) development in which the identified job titles will be used as a basic reference. It requires inputs from all parties especially industry players, statutory bodies, training institutions among others. Figure 1.0 shows the significance of OA for NOSS and policy development for skills training in Malaysia.

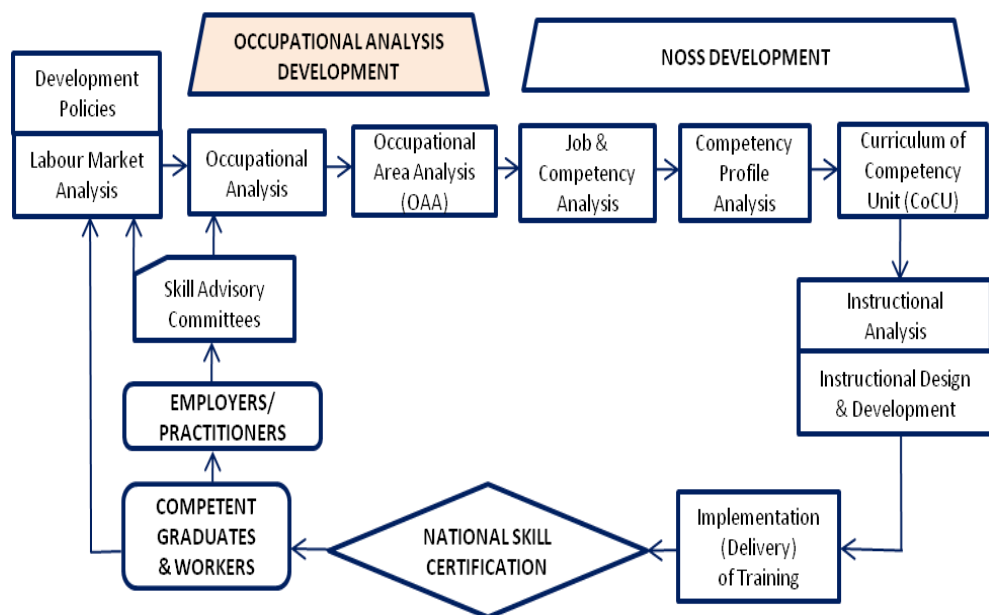


Figure 1.0: A Competency-Based Model for Skills Training in Malaysia

OA will identify sectors, Sub-Sectors, job areas and job titles for a particular industry in the form of Occupational Structure (OS) as illustrated in Table 1.0. Job scopes of each job title will be detail out in the Occupational Description (OD). Every job title will be identified according to its level defined in the Malaysian Occupational Skills Qualification Framework (MOSQF) level descriptor (refer to Annex 1).

Table 1.0: Example of OS for Front Office in Hospitality and Tourism

| SUB-SECTOR         | FRONT OFFICE                          |                           |                            |                      |                        |
|--------------------|---------------------------------------|---------------------------|----------------------------|----------------------|------------------------|
| LEVEL/<br>JOB AREA | GUEST<br>SERVICE                      | TELEPHONE<br>OPERATION    | FRONT OFFICE<br>ASSISTANCE | CONCIERGE            | RESERVATION            |
| LEVEL 5            | Front Office Manager (FOM)            |                           |                            |                      |                        |
| LEVEL 4            | Assistant Front Office Manager (AFOM) |                           |                            | Concierge<br>Manager | Reservation<br>Manager |
| LEVEL 3            | Guest<br>Service<br>Officer           | Telephonist<br>Supervisor | Front Office<br>Supervisor | Bell Supervisor      | Reservation<br>Officer |
| LEVEL 2            | Guest<br>Service<br>Assistant         | Telephonist               | Front Office<br>Assistant  | Bell Captain         | Reservation<br>Clerk   |
| LEVEL 1            | No Level                              |                           |                            | Doorman              | No Level               |

OS can be further analysed to produce its Occupational Area Structure (OAS) through Occupational Area Analysis (OAA). The objective of OAA is to identify areas which have similar competencies among the job titles. The outcome of the OAA is the merging of job titles/ areas (horizontally) and/ or levels (vertically) within the sectors. This will eventually result in multi-skilling and multi-tasking due to common competencies among job titles/ areas and/ or levels as shown in Table 2.0.

Table 2.0 Example of OAS for Front Office in Hospitality and Tourism

| SUB-SECTOR            | FRONT OFFICE              |                        |                               |           |             |
|-----------------------|---------------------------|------------------------|-------------------------------|-----------|-------------|
| LEVEL/<br>JOB<br>AREA | GUEST<br>SERVICE          | TELEPHONE<br>OPERATION | FRONT<br>OFFICE<br>ASSISTANCE | CONCIERGE | RESERVATION |
| LEVEL 5               | Guest Services Management |                        |                               |           |             |
| LEVEL 4               | Guest Services Management |                        |                               |           |             |
| LEVEL 3               | Guest Services Operation  |                        |                               |           |             |
| LEVEL 2               |                           |                        |                               |           |             |
| LEVEL 1               |                           |                        |                               |           |             |

All job titles in Level 1, 2 and 3 are actually the front liners that deal directly with customers. Therefore, they have common competencies which can be merged into the area of guest services operation. Ultimately, we are able to produce multi-skilling and multi-tasking workers required by the industry in line with the high income economy policy.

Nevertheless, in certain cases, due to the requirement of industry or regulations, merging is not necessarily required.

## 1.2 Malaysian Occupational Skills Qualification Framework (MOSQF)

The development of the OA is closely monitored in order to comply with the MOSQF. MOSQF is a framework that describes all skills qualifications awarded under the Malaysian Skills Certification System. It is an 8-tier framework that consists of 8 levels which reflect skills competencies in an occupational area (refer to Annex 1). However, for training purposes, only the first 5 levels are being offered with skills qualifications namely Malaysian Skills Certificate (MSC) Level 1, MSC Level 2, MSC Level 3, MSD

Level 4 (Malaysian Skills Diploma) and MSAD Level 5 (Malaysian Skills Advance Diploma).

MOSQF will serve as an instrument that develops and classifies skills qualifications based on a set of criteria guided by the National Skills Development Act 2006 (Act 652). It was benchmarked against international good practices in defining its level description and was developed in line with the Malaysian Qualifications Framework (MQF). It is aspired to become the national skills framework for all parties of interest such as individuals, skills training providers, the Government, associations, professional bodies, the industry sectors and the Malaysian communities.

### **1.3 OA Development Process**

Below are the main steps involved in OA:

(i) Preliminary information gathering

(a) Literature survey

A literature survey is carried out to get some insight on the scope, policies, programs and activities in the context of the Malaysian scenario. The scope covered under this survey includes descriptions, current analysis of the sectors/Sub-Sectors, current status of the respective industry, skilled workers requirement in the local sector and the industrial competition at international level.

(b) Survey/Questionnaire

The purpose of the survey is to collect the data and feedback from the industries on the supply and demand on skilled workforce, job scope, nature of work, occupational description, occupational structure, career path, current and future trend of the industries.

(c) Interview

Interviews are one of the methods to reinforce the information gathered from the survey. The Interview focuses on the main industry players and stakeholders to seek their opinions and/or impressions.

(ii) Identifying industrial experts

Industrial experts who represent small, medium and large scale industries are identified and short listed for further communication and contact. Normally these experts are from Human Resources or managerial levels who have an overall view of the skilled workforce in the industry. They should have sufficient experience and substantial knowledge on industry growth.

(iii) Brainstorming session

The Developing a Curriculum (DACUM) technique is commonly used in OA. The session is attended by industrial experts where they will discuss exhaustively on the Sub-Sectors and areas involved. The facts obtained during the literature survey will be discussed and presented to the industry experts.

(iv) Analysing the information

Based on the activities done above, substantial data and information will then be collected. The data and information will then be discussed and analysed in development workshops attended by selected key persons or experts from the public and private sector. The presence of the key persons or experts ensures that the development of the Occupational Analysis is current and relevant.

During this session, the respective industry is analysed using the DACUM and brainstorming methodology to identify the following:

- (a) Scope of the Industry and its Sub-Sector ;
- (b) Main areas;
- (c) Occupational groups of the sector;
- (d) Job title;
- (e) Critical job title;
- (f) Hierarchy structure (Level 1 – 8); and
- (g) Occupational Description.

(v) Finalising OA Documentation

Follow up discussions with the industrial experts and proofreader in a small group is vital to ensure all the findings of the occupational analysis are valid, reliable and sufficient.

The final report of OA must be well presented with discussion, conclusion and recommendations in order to guide the general readers and interested parties to comprehend about the skilled workforce scenario in the industries.

Details of the process flow in developing the OA is as shown in Figure 2.0

## Occupational Analysis (OA) Development Process Flow Chart

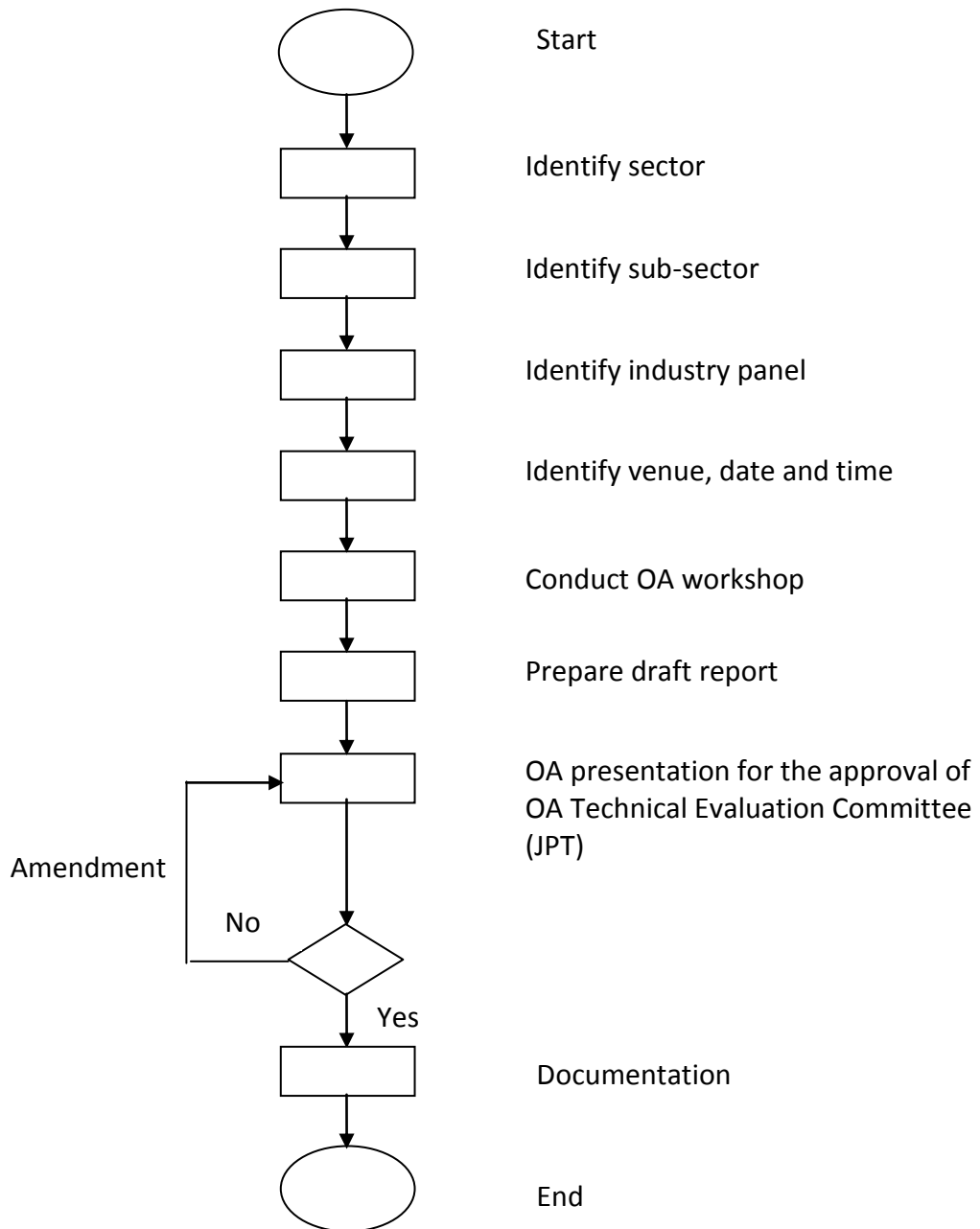


Figure 2.0: OA Development Process Flow Chart

#### 1.4 Occupational Description (OD)

The Occupational Description (OD) is the detailed description of the main job scope of the job title. Below are the main steps in producing an OD for the respective job titles:

- (i) determine the main Sub-Sectors and areas in the sector;
- (ii) identify the job titles; and
- (iii) identify the job scope.

To describe the Occupational Description clearly, the statement must consist of a **Verb**, **Object** and **Qualifier**. The rationale of determining the description attributes is to facilitate NOSS development especially in job and competency analysis.

##### a) Object

The object is determined first before the verb and qualifier. It is the main determinant to distinguish one job to another. For example, a demi chef (kitchen Sub-Sector of Hotel Sector), deals with food and cooking utensils as the objects in performing tasks. While, a hairdresser deals with client's hair, hairdressing chemical, among others.

The objects are acquired from the industrial experts during a brainstorming session and written on DACUM cards so that all the experts can see the objects identified. Objects of those in the related area or Sub-Sector are determined as in the example below:

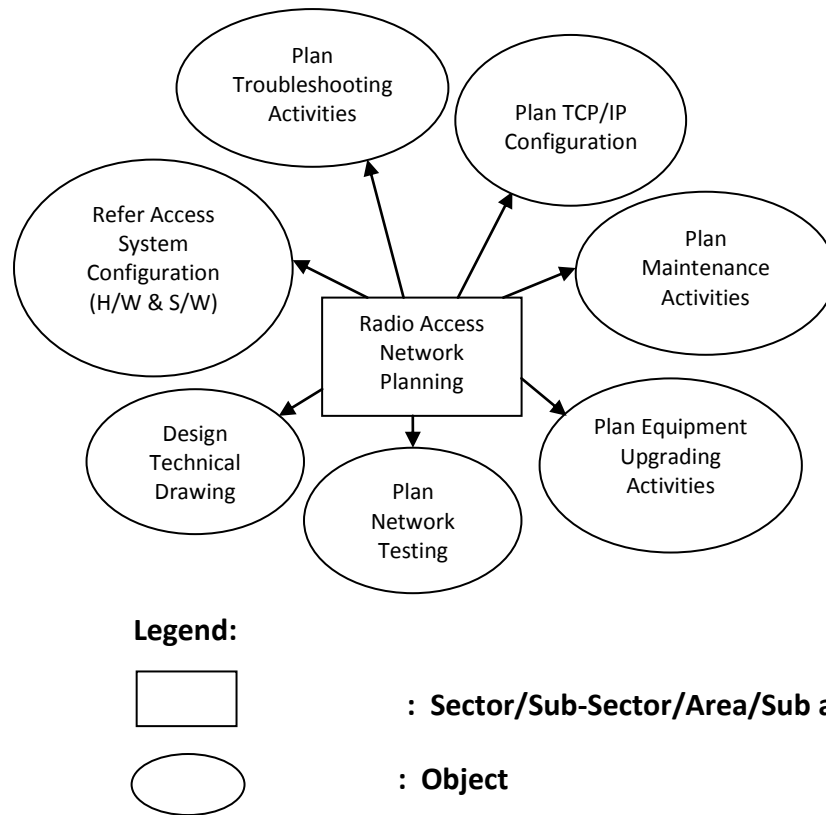


Figure 3.0: Example of Identifying Objects

**b) Verb**

The verb is then determined based on the level of difficulty of the identified job titles, such as below:

- ***Object : maintenance activities***
- ***Verb for Level 3 : Carry Out***
- ***Verb for Level 4 : Assist in planning***
- ***Verb for Level 5 : Plan***

Hence, the contents of the job definitions will be as below:

- Radio Access Network Planner (Level 5)
  - ✓ **Plan** maintenance activities + (qualifier)
- Radio Access Network Assistant Planner (Level 4)
  - ✓ **Assist in planning** maintenance activities + (qualifier)
- Access Network Technician (Level 3)
  - ✓ **Carry out** maintenance activities + (qualifier)

c) **Qualifier**

Based on the example above, the statement is not clear as there is no qualifier for the object, therefore a qualifier must be added to further clarify it. Below is an example:

- **Plan** maintenance activities for **Radio Access Networks**

Figure 4.0 shows an example on how to write an appropriate Occupational Description (OD).



**INSTALLATION & MAINTENANCE**  
**TRANSMISSION SERVICES ASSISTANT ENGINEER\***  
**LEVEL 4**

A Transmission Services Assistant Engineer is designated to carry out set up of transmission services, perform test plans (regression tests, test of new features, acceptance of new nodes or parts), handle changes in the live network, operate the transmission network, maintain the transmission network, carry out network restoration and perform network performance enhancement.

**A Transmission Services Assistant Engineer will be able to:**

1. carry out set up of transmission services;
2. improve network functionality to the satisfaction of the customer;
3. perform test plans (regression tests, test of new features, acceptance of new nodes or parts);
4. handle changes in the live network, including the definition of command lines based on planning, consolidation, performance and debriefing of changes;
5. prepare report on actual network performance;
6. operate and maintain the transmission network; and
7. carry out network restoration or network performance enhancement.

Notes:

\* Critical Job Title

Figure 4.0: Example of Occupational Description

## **1.5 Critical Job Titles**

Critical job titles can be defined based on the following four main scenarios:

- a) shortage of skilled worker supply in the industries;
- b) high demand for skilled workers in certain niche areas;
- c) mismatch of skills training; and
- d) decrease in number of skilled workers in certain areas such as in heritage and cultural activities.

Identified critical job titles should be categorised into short (1-3 years) and medium (4-5 years) terms and has to be supported with valid, reliable and sufficient data.

However, it must be highlighted that for this particular Medical & Pharmaceutical Healthcare Industry Occupational Analysis, the Critical Job Title section has been changed to two different sections which are Skilled Personnel Demand and Suggested Job Titles for Skills and Vocational Training. The reason is because not all job areas under this particular industry can be conducted and certified via skills training due to the nature of the work that involves the life and death and well being of humans based on direct contact and consultation. This area of work requires a high level of theoretical knowledge other than being skillful in one's area of skills.

## **2. OVERVIEW OF THE MEDICAL & PHARMACEUTICAL HEALTHCARE INDUSTRY IN MALAYSIA**

This chapter will focus on the explanation of the Medical & Pharmaceutical Healthcare industry, the current scenario in Malaysia, introduction to government policies, development plans, government bodies and industrial competitiveness at the international level pertaining to the Medical & Pharmaceutical Healthcare industry.

Findings in this chapter were obtained via literature review, observation, interviews with industry practitioners and discussions during workshops with development panel members. This literature review will be further discussed with panel members to obtain insight on the matters at hand from a practitioner's perspective.

### **2.1 PREAMBLE**

The healthcare industry is one of the world's largest and fastest-growing industries. Consuming over 10 percent of gross domestic product (GDP) of most developed nations, health care can form an enormous part of a country's economy. The healthcare industry is divided mainly into 2 sectors which are:

- The medical sector
- The pharmaceuticals sector.

### **2.1.1 Overview of the Medical Healthcare sector**

The medical healthcare sector provides services to treat patients with curative, preventive, rehabilitative, or palliative care. The modern medical sector is divided into many Sub-Sectors, and depends on interdisciplinary teams of trained professionals and paraprofessionals to meet health needs of individuals and populations.

With a rising and aging population, the Government's healthcare development plans include improvement in many areas such as the refurbishment of existing hospitals, building and equipping new hospitals, expansion of the number of polyclinics, and improvements in training and expansion of telehealth. Over the last couple of years they have increased their efforts to overhaul the systems and attract more foreign investment. *(Extracted from the Malaysian Economic Transformation Programme)*

The majority of private hospitals in urban areas are equipped with the latest diagnostic and imaging facilities. Private hospitals in the past have not generally been seen as an ideal investment, it has often taken up to ten years before companies saw any profits. However, the situation has now changed and companies are now exploring this area again, corresponding with the increased number of foreigners entering Malaysia for medical care and the government's focus on developing the health tourism industry.

Already, the Government is committed to set up new medical centres and upgrade the existing infrastructure to drive Malaysia's medical sector to the next level.

### **2.1.2 Overview of the Pharmaceutical Healthcare Sector**

Pharmaceuticals have become an indispensable part of the health care system around the globe. Pharmaceuticals have played a vital role by improving the quality of life and reducing the time spent in the hospitals. Thanks to the innovative pharmaceutical industry, almost all epidemics and chronic diseases are curable today. Due to its direct link with the welfare and wellbeing of human beings, the pharmaceutical industry is of strategic importance for the development of a healthy and productive nation. Today, the pharmaceutical industry is considered to be one of the largest and rapidly growing global industries. It is a major source of generating employment and foreign exchange earnings for many countries around the globe.

There are 2 main groups of pharmaceutical products:

- i. Modern pharmaceutical products: which mainly comprise of analgesics, antacids, diuretics, antibiotics and anti-histamines in the forms of tablets, capsules, drops, powders, creams, ointments, injections, syrups and ophthalmic and nasal preparation

- ii. Traditional pharmaceutical products, which mainly comprise of traditional pharmaceuticals health supplements, ethnic pharmaceuticals and other traditional medicines in the form of tablets, capsules, powder and granules

The Malaysian pharmaceutical industry has the capability to produce almost all dosage forms, including sterile preparations such as eye preparations, injections (both large and small volume), soft gelatin capsules of various sizes and shapes, time release medications and powders for reconstitution.

The current trend of self-managing among Malaysian consumers is a major factor that has broadened the Over the Counter (OTC) market, which is mainly driven by vitamin and dietary supplements. It attributes this trend to consumers' preference for self-administered healthcare, the prevalence of chronic illnesses that cannot be cured by conventional drugs, and the high pace of life which induces higher levels of stress. Malaysian consumers are increasingly turning from synthetic allopathic drugs (conventional drugs) to traditional pharmaceutical products to maintain health and prevent illnesses. The rich biological heritage of Malaysia presents a potential for the local pharmaceutical industry to lead in the traditional pharmaceutical products market. Many local players have already ventured into this arena, especially with the encouragement from the Government through various grants and incentives for R&D on traditional pharmaceutical products.

## **2.2 SUPPORT INDUSTRIES**

### **2.2.1 Health Tourism**

The growing awareness about health tourism in Malaysia will attract more foreign patients to seek treatment here, and this will drive demand the for the industry. The increased incidence of death-related illnesses, such as heart disease and cancer, in Malaysia are driving the demand of drugs for specialist treatment. The personnel involved are those in the marketing and business development departments in the hospital that facilitate the promotion of medical services and expertise.

### **2.2.2 Manufacturing**

The manufacturing industry covers a broader spectrum of manufacturing pharmaceuticals and medical devices. The Occupational Analysis of the Health Equipment Manufacturing Sub-Sector is not included in this OA matrix because it is already included in the existing OA Matrix for the Production sector and in the Mechatronics OA Matrix under the Medical Mechatronics Sub-Sector. Whereas the manufacturing and production Occupational Structure is presented in the existing Health & Pharmaceutical Manufacturing/ Support Services OA Structure as will be seen in the next section.

### **2.3 EXISTING MEDICAL AND PHARMACEUTICAL NATIONAL OCCUPATIONAL SKILLS STANDARD (NOSS) AND OCCUPATIONAL STRUCTURES UNDER THE DEPARTMENT OF SKILLS DEVELOPMENT (DSD)**

In order to analyse the medical and pharmaceutical sectors, the existing National Occupational Skills Standard (NOSS) and Occupational Structure documents were referred. In the DSD's NOSS Registry, under the current Medical and Pharmaceuticals sector the NOSS titles available are as below :

- Emergency Medical Paramedic
- Beauty Therapy
- Dialysis
- Midwifery
- Emergency
- Complementary/Alternative Therapy (Aromatherapy, Reflexology, Massage)
- Colour Vibration
- Aura Metaphysics
- Reiki
- Qi Gong
- Prosthetic
- Orthotic
- Ophthalmic
- Crystal Healing
- Cupping Healing

Whereas the existing Medical & Pharmaceutical Healthcare occupational structures can be found in the existing OA Matrix below:

- i) Mechatronics sector OA Structure
- ii) Production OA Structure
- iii) Health & Pharmaceutical Manufacturing/ Support Services OA Structure

The Health & Pharmaceutical Manufacturing/ Support Services OA Structure, recently there had been observations by the Department of Skills Development Technical Advisory Committee that the Traditional Production area may be misleading in the sense that it encourages the production of traditional pharmaceuticals not according to Good Manufacturing Practices (GMP) that is enforced on Pharmaceutical Manufacturing companies. Therefore in the revised Occupational Structure it can be seen in that the Traditional Production area has been omitted thereby maintaining the Traditional Pharmaceuticals Manufacturing area. The Pharmaceutical Care Sub-Sector has also been changed to Pharmacy Practice so that it can be integrated with the current Pharmaceuticals Occupational Structure. The pillar store keeper has also been omitted after clarification with panel members.

The existing OA Matrices can be seen in the following figures included in this section.

Table 3.0: Existing Medical Mechatronics Occupational Structure

| SUB-SECTOR | MEDICAL MECHATRONICS                    |                                     |   |
|------------|---|-------------------------------------|---|
| AREA/LEVEL | BIOMECHATRONIC                          | DIAGNOSTIC                          | SURGICAL SUPPORT                          |
| LEVEL 8    | Medical Automation Specialist           |                                     |   |
| LEVEL 7    | Biomechatronic Senior Technologist      | Diagnostic Senior Technologist      | Surgical Support Senior Technologist      |
| LEVEL 6    | Biomechatronic Technologist*            | Diagnostic Technologist *           | Surgical Support Technologist *           |
| LEVEL 5    | Biomechatronic Assistant Technologist * | Diagnostic Assistant Technologist * | Surgical Support Assistant Technologist * |
| LEVEL 4    | Medical Automation Senior Technician    |                                     |   |
| LEVEL 3    | No Level                                |                                     |   |
| LEVEL 2    | No Level                                |                                     |   |
| LEVEL 1    | No Level                                |                                     |   |

(Source : Mechatronics OA , DSD, Year:2009)

Table 4.0: Existing Production Industry Occupational Structure

| SUB-SECTOR     | RESOURCE BASED INDUSTRIES                |  |   |  |   |   |
|----------------|--|--|---|--|---|---|
| AREA/<br>LEVEL | PHARMACEUTICALS<br>(NATURAL/TRADITIONAL) |  | FOOD PROCESSING                             | RUBBER & RUBBER-<br>BASED PRODUCT                          | OIL PALM-BASED<br>PRODUCT                                   | WOOD-BASED<br>PRODUCT                                   |
| LEVEL 8        | No Level                                 |  | No Level                                    | No Level   | No Level  | No Level  |
| LEVEL 7        | Pharmaceuticals Production Specialist    |  | Food Processing Specialist                  | Rubber & Rubber Based Production Specialist                | Oil Palm Product Production Specialist                      | Wood Based Product Production Specialist                |
| LEVEL 6        | Pharmaceuticals Manager                  | Pharmaceuticals Quality Control Manager          | Food Processing Production Manager          | Rubber & Rubber Based Industries Production Manager        | Oil Palm Product Industries Production Manager              | Wood Based Product Industries Production Manager        |
| LEVEL 5        | Pharmaceuticals Senior Executive         | Pharmaceuticals Quality Control Senior Executive | Food Processing Production Senior Executive | Rubber & Rubber Based Industries Production Executive      | Oil Palm Product Industries Production Executive            | Wood Based Product Industries Production Executive      |
| LEVEL 4        | Pharmaceuticals Process Executive        | Pharmaceuticals Quality Control Executive        | Food Processing Production Executive        | Rubber & Rubber Based Industries Production Superintendent | Oil Palm Based Product Industries Production Superintendent | Wood Based Product Industries Production Superintendent |
| LEVEL 3        | Pharmaceuticals Production Supervisor    | Pharmaceuticals Quality Control Supervisor       | Food Processing Production Supervisor       | Rubber & Rubber Based Industries Production Supervisor     | Oil Palm Based Product Industries Production Supervisor     | Wood Based Product Industries Production Supervisor     |
| LEVEL 2        | Pharmaceuticals Production Line Leader   | Pharmaceuticals Quality Control Inspector        | Food Processing Production Line Leader      | Rubber & Rubber Based Industries Production Line Leader    | Oil Palm Based Product Industries Production Line Leader    | Wood Based Product Industries Production Line Leader    |
| LEVEL 1        | Production Operator                      |  |   |  |   |   |

(Source : Production Industry OA , DSD, Year:2009)

Table 5.0: Existing Biomedical Engineering sub-sector - Health & Pharmaceutical Manufacturing/Support Services  
Industry Occupational Structure

| SECTOR             | HEALTH & PHARMACEUTICAL MANUFACTURING/ SUPPORT SERVICES                      |   |   |   |
|--------------------|--|---|---|---|
| SUB-SECTOR         | HEALTH   |   |   |   |
| AREA               | BIOMEDICAL ENGINEERING MAINTENANCE   |   |   |   |
| SUB AREA/<br>LEVEL | RADIOLOGY AND IMAGING<br>ENGINEERING   | LABORATORY ENGINEERING  | DIAGNOSTIC ENGINEERING  | THERAPEUTIC<br>ENGINEERING  |
| LEVEL 8            | No Level   | No Level  | No Level  | No Level  |
| LEVEL 7            | Biomedical Engineering<br>Specialist<br>( Radiology And Imaging )*           | Biomedical Engineering<br>Specialist<br>( Laboratory )*           | Biomedical Engineering<br>Specialist<br>( Diagnostic )*           | Biomedical Engineering<br>Specialist<br>( Therapeutic )*            |
| LEVEL 6            | Biomedical Engineering<br>Technologist (Radiology And<br>Imaging)*           | Biomedical Engineering<br>Technologist<br>(Laboratory)*           | Biomedical Engineering<br>Technologist<br>(Diagnostic)*           | Biomedical Engineering<br>Technologist<br>(Therapeutic )*           |
| LEVEL 5            | Biomedical Engineering<br>Assistant Technologist<br>(Radiology And Imaging)* | Biomedical Engineering<br>Assistant Technologist<br>(Laboratory)* | Biomedical Engineering<br>Assistant Technologist<br>(Diagnostic)* | Biomedical Engineering<br>Assistant Technologist<br>(Therapeutic )* |
| LEVEL 4            | Biomedical Engineering Senior Technician                                     |   |   |   |
| LEVEL 3            | Biomedical Engineering Technician  |   |   |   |
| LEVEL 2            | Biomedical Engineering Assistant Technician                                  |   |   |   |
| LEVEL 1            | No Level   | No Level  | No Level  | No Level  |

(Source: Health & Pharmaceutical Manufacturing/Support Services Industry OA , DSD, Year:2010)

Table 6.0: Existing Health &amp; Pharmaceutical Manufacturing/Support Services Industry Occupational Structure

| SECTOR             | HEALTH & PHARMACEUTICAL MANUFACTURING/ SUPPORT SERVICES |  |                                 |  |   |  |                                 |                                 |  |   |  |
|--------------------|---|--|---------------------------------|--|---|--|---------------------------------|---------------------------------|--|---|--|
| SUB-SECTOR         | PHARMACEUTICALS   |  |                                 |  |   |  |                                 |                                 |  |   |  |
| AREA               | PHARMACEUTICALS MANUFACTURING                           |  |                                 |  |   |  | PHARMACEUTICAL CARE SERVICES    |                                 |  |   |  |
| SUB AREA/<br>LEVEL | DRUGS MANUFACTURING                                     |  | PHARMACEUTICALS R&D             |  | TRADITIONAL PHARMACEUTICALS MANUFACTURING       |  | PHARMACEUTICALS STORE           | CLINICAL                        | IN/OUT PATIENT                               | RECONSTITUTION  |  |
|                    | PRODUCTION  | QUALITY CONTROL                                  | DRUGS R&D                       | TRADITIONAL PHARMACEUTICALS R&D                    | TRADITIONAL PRODUCTION                          | MODERN PRODUCTION                          |                                 |                                 |  | PARENTERAL NUTRITION  | CHEMOTHERAPY   |
| LEVEL 8            | No Level  | No Level   | Specialist (Drugs)              | Specialist (Traditional pharmaceuticals)           | No Level  | No Level                                   | No Level                        | Pharmacy Specialist (Clinical)* | No Level                                     | No Level  | No Level   |
| LEVEL 7            | Pharmaceuticals Production Specialist*                  |  | Principal Researcher (Drugs)    | Principal Researcher (Traditional pharmaceuticals) | No Level  | No Level                                   | Senior Pharmacist (Store)       | Senior Pharmacist (Clinical) *  | Senior Pharmacist (In/Out Patient)           | Senior Pharmacist (Reconstitution- Parenteral Nutrition)*           | Senior Pharmacist (Reconstitution - Chemotherapy)*           |
| LEVEL 6            | Pharmaceuticals Production Manager                      | Pharmaceuticals Quality Control Manager          | Senior Researcher (Drugs)       | Senior Researcher (Traditional pharmaceuticals)    | No Level  | Production Manager (Modern)                | Pharmacist (Store)              | Pharmacist (Clinical)*          | Pharmacist (In/Out Patient)                  | Pharmacist (Reconstitution- Parenteral Nutrition)*                  | Pharmacist (Reconstitution - Chemotherapy)*                  |
| LEVEL 5            | Pharmaceuticals Senior Executive                        | Pharmaceuticals Quality Control Senior Executive | Researcher (Drugs)              | Researcher (Traditional pharmaceuticals)           | Production Manager (Traditional)                | Production Executive* (Modern)             | Senior Store Supervisor (Store) | No Level                        | Senior Assistant Pharmacist (In/Out Patient) | Senior Assistant Pharmacist (Reconstitution- Parenteral Nutrition)* | Senior Assistant Pharmacist (Reconstitution - Chemotherapy)* |
| LEVEL 4            | Pharmaceuticals Process Executive                       | Pharmaceuticals Quality Control Executive        | Assistant Researcher (Drugs)    | Assistant Researcher (Traditional pharmaceuticals) | Production Executive* (Traditional)             | Q.C/Q.A Officer (Modern)                   | Store Supervisor* (Store)       | No Level                        | Assistant Pharmacist (In/Out Patient)        | Assistant Pharmacist (Reconstitution- Parenteral Nutrition)*        | Assistant Pharmacist (Reconstitution - Chemotherapy)*        |
| LEVEL 3            | Pharmaceuticals Production Supervisor                   | Pharmaceuticals Quality Control Supervisor       | Laboratory Technician           |  | Q.C Supervisor (Traditional)                    | Supervisor (Modern)                        | Store Chief Clerk* (Store)      | No Level                        | No Level                                     | No Level  | No Level   |
| LEVEL 2            | Pharmaceuticals Production Line Leader                  | Pharmaceuticals Quality Control Inspector        | Laboratory Assistant Technician |  | Processing Technician (Traditional)             | Processing Technician (Modern)             | Storekeeper* (Store)            | No Level                        | No Level                                     | No Level  | No Level   |
| LEVEL 1            | Production Assistant                                    |  | No Level                        | No Level   | Raw Material Assistant Technician (Traditional) | Raw Material Assistant Technician (Modern) | No Level                        | No Level                        | No Level                                     | No Level  | No Level   |

(Source: Health &amp; Pharmaceutical Manufacturing/Support Services Industry OA, DSD, Year: 2010)

Table7.0: Revised Health &amp; Pharmaceutical Manufacturing/Support Services Industry Occupational Structure

| SECTOR             | HEALTH & PHARMACEUTICAL MANUFACTURING/ SUPPORT SERVICES |  |                                    |  |   |                                       |                                    |  |   |   |
|--------------------|---|--|------------------------------------|--|---|---------------------------------------|------------------------------------|--|---|---|
| SUB-SECTOR         | PHARMACEUTICALS   |  |                                    |  |   |                                       |                                    |  |   |   |
| AREA               | PHARMACEUTICALS MANUFACTURING                           |  |                                    |  |   | PHARMACY PRACTICE                     |                                    |  |   |   |
| SUB AREA/<br>LEVEL | DRUGS MANUFACTURING                                     |  | PHARMACEUTICALS R&D                |  | TRADITIONAL<br>PHARMACEUTICALS<br>MANUFACTURING | CLINICAL                              | THERAPEUTIC<br>DRUGS<br>MONITORING | DISPENSING   | RECONSTITUTION  |   |
|                    | PRODUCTION  | QUALITY<br>CONTROL                                     | DRUGS R&D                          | TRADITIONAL<br>PHARMACEUTICALS<br>R&D                    |   |                                       |                                    |  | TOTAL<br>PARENTERAL<br>NUTRITION  | CHEMOTHERAPY  |
| LEVEL 8            | No Level  | No Level   | Specialist<br>(Drugs)              | Specialist<br>(Traditional<br>pharmaceuticals)           | No Level  | Pharmacy<br>Specialist<br>(Clinical)* | Pharmacy<br>Specialist             | No Level   | No Level  | No Level  |
| LEVEL 7            | Pharmaceuticals Production Specialist*                  |  | Principal<br>Researcher<br>(Drugs) | Principal Researcher<br>(Traditional<br>pharmaceuticals) | No Level  | Senior<br>Pharmacist<br>(Clinical) *  | Senior<br>Pharmacist               | Senior<br>Pharmacist<br>(Clinical) *                     | Senior<br>Pharmacist<br>(Total-<br>Parenteral<br>Nutrition)*              | Senior<br>Pharmacist<br>(Reconstitution -<br>Chemotherapy)*           |
| LEVEL 6            | Pharmaceuticals<br>Production Manager                   | Pharmaceuticals<br>Quality Control<br>Manager          | Senior Researcher<br>(Drugs)       | Senior Researcher<br>(Traditional<br>pharmaceuticals)    | Production Manager<br>(Modern)                  | Pharmacist<br>(Clinical)*             | Pharmacist                         | Pharmacist<br>(In/Out<br>Patient)                        | Pharmacist<br>(Total-<br>Parenteral<br>Nutrition)*                        | Pharmacist<br>(Reconstitution -<br>Chemotherapy)*                     |
| LEVEL 5            | Pharmaceuticals<br>Senior Executive                     | Pharmaceuticals<br>Quality Control<br>Senior Executive | Researcher<br>(Drugs)              | Researcher<br>(Traditional<br>pharmaceuticals)           | Production<br>Executive*<br>(Modern)            | No Level                              | No Level                           | Senior<br>Assistant<br>Pharmacist<br>(In/Out<br>Patient) | Senior<br>Assistant<br>Pharmacist<br>(Total-<br>Parenteral<br>Nutrition)* | Senior Assistant<br>Pharmacist<br>(Reconstitution -<br>Chemotherapy)* |
| LEVEL 4            | Pharmaceuticals<br>Process Executive                    | Pharmaceuticals<br>Quality Control<br>Executive        | Assistant<br>Researcher<br>(Drugs) | Assistant Researcher<br>(Traditional<br>pharmaceuticals) | Q.C/Q.A Officer<br>(Modern)                     | No Level                              | No Level                           | Assistant<br>Pharmacist<br>(In/Out<br>Patient)           | Assistant<br>Pharmacist<br>(Total-<br>Parenteral<br>Nutrition)*           | Assistant<br>Pharmacist<br>(Reconstitution -<br>Chemotherapy)*        |
| LEVEL 3            | Pharmaceuticals<br>Production<br>Supervisor             | Pharmaceuticals<br>Quality Control<br>Supervisor       | Laboratory Technician              |  | Supervisor<br>(Modern)                          | No Level                              | No Level                           | No Level   | No Level  | No Level  |
| LEVEL 2            | Pharmaceuticals<br>Production Line<br>Leader            | Pharmaceuticals<br>Quality Control<br>Inspector        | Laboratory Assistant Technician    |  | Processing<br>Technician<br>(Modern)            | No Level                              | No Level                           | No Level   | No Level  | No Level  |
| LEVEL 1            | Production Assistant                                    |  | No Level                           | No Level   | Raw Material<br>Assistant Technician            | No Level                              | No Level                           | No Level   | No Level  | No Level  |

## **2.4 CURRENT ANALYSIS OF THE MEDICAL & PHARMACEUTICAL HEALTHCARE INDUSTRY IN MALAYSIA**

The global Medical & Pharmaceutical Healthcare industry is among the most dynamic and rapidly growing industries in the world economy. Spurred by demographic shifts such as extended longevity and a rise in lifestyle diseases such as hypertension and cardiovascular ailments, cancer and diabetes, national medical costs are increasing dramatically.

Malaysia as a developing country has its own unique features. It is a multiracial and multicultural country. In Malaysia, there is a wide range of medical (e.g. modern, traditional and homeopathy) and pharmaceutical options available for the various ethnic groups (e.g. Malay, Chinese, Indian, Iban, Kadazan, etc.) for the treatment of physical discomfort and emotional distress. Medical systems in Malaysia, like social systems in general, are rooted in a cultural matrix. The practice of medicine, therefore, has evolved as a result of its setting in a unique cultural context. Another interesting feature is that the medical system is controlled by the physicians, where most of the dispensing of drugs in the private sector is done by physicians, and pharmacists in the community setting have to rely mostly on Class C drugs (i.e. those that can be prescribed by a pharmacist) and OTC products (over-the counter medicines) for their business income.

This industry can be a robust economic engine and one that indirectly creates significant social impact. Higher value jobs can be created,

infrastructure can be upgraded and both specialist skill-sets and technology can be harnessed to improve the quality of care for patients.

The Malaysian healthcare sector looks extremely attractive despite its modest beginnings. All three key Sub-Sectors of the larger healthcare ecosystem, pharmaceuticals and biotechnology, medical technology (medical technology) and health travel, have delivered stronger performances relative to the larger, more traditional economic sectors such as automotive, agriculture and electronics.

The Pharmaceuticals sector is targeted at a 22 percent Gross Net Income (GNI) growth rate that will deliver RM16.6 billion GNI by 2020. This is driven by higher exports of generic pharmaceuticals and increased clinical research in Malaysia. The drive for this aggressive growth is doubled by refocusing on higher value manufacturing of pharmaceuticals and through investment in research and development, original research and product innovation.

In the services sector, there is a GNI growth of 10 percent which will result in a GNI of RM27.8 billion by 2020. Driving this growth is an increased emphasis on export-focused services such as health travel, specialist care centres and seniors living.

The planned growth in medical technology remains a moderate eight percent. It is believed that in the next 10 years growth will continue to

come from the export of consumables to new markets, but towards the end of the next decade a new higher margin industry will emerge. Malaysia will be able to manufacture in-vitro diagnostic (IVD) test kits, orthopedic implants and dental devices that leverage the ongoing research efforts and manufacturing advantage.

The next 10 years could be transformative for the healthcare industry. To succeed we must not only move faster than our regional peers, for example Indonesia, Thailand and Vietnam, but also migrate beyond a product-centric strategy to one which is centered on offering services to patients. *(Economic Transformation Report – ETP Healthcare)*

The potential of the domestic pharmaceutical industry has been recognised by the Malaysian government which has identified it as a strategic industry which should be promoted. Pharmaceutical products manufactured by the Malaysian pharmaceutical industry can be broadly categorized as:

- Prescription
- Over-the-counter (OTC)
- Traditional medicines
- Health and Food supplements

According to the Malaysian Industrial Development Authority, Malaysia's exports of pharmaceutical products have received a boost since its admission as a member of the Pharmaceutical Inspection Convention and Pharmaceutical Inspection Cooperation/Scheme (PIC/S) in 2002.

This is especially so with regard to exports to PIC/S member countries such as the European Union, Australia and Canada. In addition, Malaysia's position as an international Halal hub will help strengthen and expand its market reach to the Muslim communities, particularly in the Middle East and Indonesia.

The export opportunity for the Malaysian pharmaceutical industry is huge because the international market recognizes the high quality of the products manufactured in Malaysia as most of the producers have fulfilled the worldwide Good Manufacturing Practices (GMP) requirements.

Despite showing rapid growth over the years, the global pharmaceutical industry remained highly concentrated in the developed countries, which dominate the global pharmaceutical production, consumption and trade. Although some developing countries emerged as major contributor, the share of developing countries in global pharmaceutical industry remained very low.

Malaysia is fast emerging as a value-for-money destination for health tourism, thanks to its world-class health and healthcare facilities. The Health Ministry is confident of surpassing its official target by hitting around RM600 million in medical tourism revenue this year. Although the target revenue for 2011 was only RM431 million, the government managed to pull RM511.2 million, far exceeding the expected mark, from 2010 to 2014, these hospitals would enjoy tax exemption for renovation, refurbishment works on any other capital expenditure aimed at increasing the quality of their service.

In 2009, the government's revenue for medical tourism was 288.2 million from 336,225 patients. Then came a 31.5 per cent increase in the figure in 2010 with revenue amounting to RM378.9 million coming from 392,956 patients. The year 2011 saw the highest increase in revenue as the nation's medical tourism hit RM511.2 million from 583,296 foreign patients. The largest number of patients heading to Malaysia's medical facilities hail from Indonesia with 335,150 patients reported in 2011, bringing in total revenue of RM325.3 million.

The prospects for the Malaysian Medical & Pharmaceutical Healthcare industry remain reasonably bright even during dim global economic times. The prevalence of various diseases, growing healthcare needs and an ageing population are factors that ensure a steady growth for the industry. So, even in a lean economy, the industry is expected to stay resilient. The country's changing demographics, with a growing young middle-class, as well as the rising healthcare expectations, will help the industry to grow at a compounded annual rate of 10%. The business expectations that will boost the industry are health tourism, specialist therapy, generic and Over the Counter (OTC) drugs and food supplements.

## **2.5 MEDICAL & PHARMACEUTICAL HEALTHCARE INDUSTRY STATUTORY AND REGULATORY BODIES**

### **(i) Ministry Of Health**

The Ministry of Health's role is basically to lay the policy and the direction of health services in the country and to show the commitment of the Government, that health is of utmost importance in nation building. The role of the ministry is to enforce regulations and be the regulator.

The Ministry of Health, being the lead agency in health provides leadership on matters relating to health and also sets the direction for health care development in the country. The Strategic Plan for Health is a summary of the Country Health Plan. It is intended to be a quick reference for all programs, institutions and state departments under the Ministry of Health to ensure that all activities and resources are directed towards similar goals. Achieving the Ministry's mission and goals will require sustained commitment. The plan will not only serve as a guide within the Ministry of Health, but will also provide a framework for other stakeholders to work together towards improving our health care system.

### **(ii) The Malaysian Medical Council (MMC)**

The principal aim of the Malaysian Medical Council (MMC) is to ensure the highest standards of medical ethics, education and practice, in the interest of patients, public and the profession through fair and effective

administration of the Medical Act 1971. The MMC only registers doctors to practise medicine in Malaysia. It does not:

(iii) The Malaysian Dental Council

The Malaysian Dental Council is a statutory body established under the Dental Act 1971. The functions of the Malaysian Dental Council are:

- Registration of dental practitioners;
- Issuance of Annual Practising Certificates and Temporary Practising Certificates;
- Maintenance of the Malaysian Dental Register in two parts i.e. Division I and Division II;
- Upholding and maintaining professional standards and ethics in the practice of dentistry; and
- Exercising disciplinary jurisdiction over any registered practitioner who violates the code of professional conduct or who has committed an offence against the Dental Act 1971.

(iv) The National Pharmaceutical Control Bureau (NPCB)

The National Pharmaceutical Control Bureau (NPCB), formerly known as the National Pharmaceutical Control Laboratory, was set up in October 1978 under the quality control activity of Pharmacy and Supply Programme. This institution was established to implement quality control on pharmaceutical products. The infrastructure and facilities were designed to meet the requirements for testing and quality control activities.

Beginning 1985, NPCB was given the task of ensuring the quality, efficacy and safety of pharmaceuticals through the registration and licensing scheme. This is achieved through evaluation of scientific data and laboratory tests on all products before they are marketed. A system to monitor products in the market was set-up. The NPCB also handles courses and provides training to personnel from the ASEAN countries, for example from Sri Lanka, Bangladesh, Myanmar, Mongolia and Vietnam.

In 1996, NPCB was given an international recognition by the World Health Organisation (WHO) as a "WHO Collaborating Centre for Regulatory Control of Pharmaceuticals". This recognition is an acknowledgement from WHO for NPCB's contribution in the field of regulatory affairs.

The main activities of NPCB are:

- To implement the drug and cosmetic registration scheme through evaluation of technical data, laboratory test, research and information from international bodies
- To carry out analytical, pharmaceutical, microbiological, pharmacological and toxicological tests on drugs and cosmetic to ensure quality, efficacy and safety of the products.
- To enforce a quality control scheme on drugs in the market through random sampling and test.
- To enforce a licensing scheme for manufacturer, importer, wholesaler including licensing scheme for clinical trial.

- To encourage and assist local manufacturer to upgrade the manufacturing standards to levels equivalent to the requirements of Good Manufacturing Practice as recommended by WHO.
- To manage adverse drug reaction monitoring programme and participate in the WHO Adverse Drug Reaction Monitoring Programme.
- To manage the product recall scheme for the pharmaceutical products which are found to be substandard or dangerous to the consumer.
- To carry out research on methodology for the purpose of evaluating quality, efficacy and safety of drug and cosmetic.
- To establish a reference standard system for local use and neighbouring countries through a scheme of co-operation among ASEAN countries.
- To carry out training for pharmacist, professional and semi professional who are placed in this institution from time to time under local training scheme or international co-operation scheme.

(v) Pharmacy Board

The functions of the Pharmacy Board as defined under the Registration of Pharmacists (Amendment) Act 2003 (Act A1207) include:

- Registration and deregistration of Pharmacists;
- Registration and deregistration of Bodies Corporate;
- Registration of Provisionally Registered Pharmacists (2nd September 2004 onwards);

- Recognition of Pharmacy degrees ;
- Approval of premises for training;
- Setting guidelines and standards relating to recognition of pharmacy degree;
- Setting and conducting pharmacy jurisprudence examination; and
- Conducting inquiries on unethical practices.

(vi) Nursing Board / Nursing Division

The Nursing Division of Malaysia is a restructured body within the Ministry of Health Malaysia. The organisation, currently under the directions of the Director General of Health, was formally known as the Nursing Board since its establishment in 1954. The Nursing Division which has 3 subdivisions approved in 2006 formally began its operation in October 2008 as below.

a. Nursing Practice

Monitors and regulates nursing practises according to the Nurses' Act and Regulations, 1985 and also the guidelines stated in the Code of Professional Conduct for Nurses (1st Edition April 1998). The units under this section are Nursing Practice (Hospitals), Nursing Practice (Public Health), Research and Quality Development and Continuous Professional Development.

b. Regulatory Bodies

Function is to monitors compliance to the Nursing Act 1950, Midwifery Act 1966 and other nursing rules and regulations through

the Nursing Board Malaysia and Midwifery Board Malaysia. The units under this section are: Curriculum unit, Examination unit, Private Nursing Practice, Facilities unit and Registration Unit.

c. Administrative and Finance

This unit manages the administrative and financial activities of the division.

The Malaysia Nursing Board is responsible for the registration of Staff Nurses, Community Nurses, Public Health nurses and Mental Health nurses trained locally and overseas. It is also responsible for the verification of registration and training transcripts for those nurses working abroad, issuance of training transcript for nurses from Nursing Colleges of Ministry of Health Malaysia, Public and Private Institute of Higher Education of Malaysia for further studies locally or abroad, issuance of registration certificate/registration statement, badge/duplicate, badges for Registered Nurses and Assistant Nurses (private).

The Nursing Board is also responsible for investigating all public and private complaints pertaining to nursing practice. In terms of training, the Board is responsible for approving all Nursing Training Curriculum and monitor the usage of clinical practice area for the public/private nursing colleges and Public/ Private Institute of Higher Education of Malaysia, accreditation of private nursing colleges together with the Malaysia Qualification Agency (MQA), Department of Private Higher Education and Department of Public

Services Training Unit and also responsible for conducting Licensing Examination for all nursing programmes.

(vii) Malaysia Midwives Board

The Malaysia Midwives Board is responsible for the registration of all Nurses and Midwives who have passed the final examination of Malaysia Midwives Board, issuance of Registration Certificate / Registration Statement / Badge / duplicate badge to Midwife and community nurses and verification of registration and issuance of midwifery training transcript from the Midwifery college and Community Nursing College.

(viii) Medical Assistant Board

The Medical Assistants (Registration) Board is responsible for the registration of persons entitled to be registered as medical assistants and for matters connected therewith.

## **2.6 MEDICAL & PHARMACEUTICAL HEALTHCARE INDUSTRY ACTS & POLICIES**

### **2.6.1 National Development Plans/Policies**

#### **(i) The Third Industrial Master Plan (IMP3)**

Besides the Ninth Malaysia Plan, the Malaysian Government has also launched the IMP3 (2006-2020). The IMP3 will be targeted at positioning Malaysia's long term competitiveness to meet the challenges of a fast changing global economic environment. Among the thrusts of the IMP3 are:

- Sustaining the manufacturing and services sector as a major source of growth; and
- Improving Malaysia's competitiveness and ensuring a conducive investment environment.

The aim is to achieve long term global competitiveness through transformation and innovation of the manufacturing and services sectors. The scope covers the manufacturing sector and twelve (12) industries in the manufacturing sector have been targeted for further development and promotion. Among them, six are non-resource based and the rest are resource based. Non resource based includes electrical and electronics, medical devices, textiles and apparel, machinery and equipment, metal and transport equipment. Resource based includes petrochemicals, pharmaceuticals, wood based, rubber based, oil palm based and food processing.

(ii) Economic Transformation Programme (ETP)

The Malaysian government is committed to pursuing a strategy to achieve high-income status. They have embarked on an Economic Transformation Programme (ETP) to propel Malaysian economy to 2020.

The ETP builds upon the policy directions, strategies and programmes of the 10th Malaysia Plan. It is aligned with previous efforts such as the Government Transformation Programme (GTP) and 1Malaysia People First Performance Now. The Entry Point Projects are as follows:

- EPP 1:** Mandating private health insurance for foreign workers
- EPP 2:** Creating a supportive ecosystem to grow clinical research
- EPP 3:** Pursuing generics export opportunities
- EPP 4:** Reinvigorating health travel through better customer experience, proactive alliances and niche marketing
- EPP 5:** Creating a diagnostic services nexus to achieve scale in telemedicine for eventual international outsourcing
- EPP 6:** Developing a health metropolis: A world-class campus for healthcare and bioscience

Recent indicators in the Economic Transformation Report on Healthcare show that despite fundamentals being at risk, the Malaysian healthcare industry has a solid starting point to undertake an economic transformation. In addition, the high incidence of lifestyle diseases and experience with quality assurance permits Malaysia to be a credible R&D

and clinical trial destination for the pharmaceutical and medical technology industries.

Malaysia's goal is to migrate from a primarily lower-value product strategy to a more comprehensive product, services and asset strategy that leverages Malaysia's competencies.

(iii) The National Oral Health Plan 2011-2020

The government has set a target to achieve a developed nation status by year 2020. It is from vision 2020 that the National Oral Health Plan or the year 2012 was developed. The main focus of the National Oral Health Plan is to improve oral conditions of public health significance. Four oral conditions identified for this purpose are dental caries, oral malignancies, dental injuries and periodontal conditions.

**2.6.2 Relevant Acts to the Medical & Pharmaceutical Healthcare Industry**

(i) Medical Act 1971

The Medical Act 1971 covers areas as below such as application for full registration that can be categorised into those who are undergoing Housemanship under Section 13 (2) of the Medical Act 1971 in this country and those who had undergone Housemanship overseas. The Act explains issues pertaining to the registration and issuance of practising certificates,

maintenance of professional standards, enforcement against illegal practice and enabling powers to the profession to discipline its members.

(ii) Dental Act 1971

The Act elucidates features pertaining to the registration and issuance of practising certificates, maintenance of professional standards, enforcement against illegal dentistry and enabling powers to the profession to discipline its own members. The Dental Act 1971 has since undergone some amendments. One was to enlarge the Malaysian Dental Council membership in 1997 from 20 to 24 members, and to strengthen penalties for offences under the Act. Another amendment was to address the acute shortage of dentists in the public sector. This led to the mandated three-year national service for new registrants with effect from 29 June 2001.

(iii) Nursing Act 1950

This act consists of the items below:

- Establishment and constitution of a Nursing Board
- Register of nurses
- Regulation relevant to nursing practice
- Admission to register of persons trained outside Malaysia
- Appeal against removal from the register or against refusal to approve institution
- Penalties for unlawful assumption of title of registered nurse and for falsification of Register

(iv) Medical Assistant (Registration) Act 1977

The Medical Assistant (Registration) Act 1977 states the conditions of the registration of medical assistants under this board and removal if necessary. This act also states any issues relevant to their registration.

(v) Malaysian National Medicines Policy (MNMP)

The Malaysian National Medicines Policy (MNMP) is an official document of the Government of Malaysia, which defines and prioritizes the medium- and long-term goals set by the government for the pharmaceutical sector, and identify the main strategies for attaining them. It provides the basic framework within which the activities of the pharmaceutical sector can be coordinated by both the public and private sectors. The objective of the MNMP is to improve health outcomes of the people through:

- Promoting equitable access to essential medicines;
- Promoting safe, effective and good quality medicines; and
- Promoting rational use medicines.

The MNMP has eight (8) components, comprising of four (4) core components and four (4) supportive components, as follows:

a) Core components

- Quality, safety and efficacy of drugs;
- Drug availability;
- Drug affordability; and

- Quality use of drugs

b) Supportive components

- Human resource development;
- Research and development;
- Technical cooperation; and
- Management of the National Medicine Policy

(vi) Dangerous Drugs Act 1952

An Act to make further and better provision for the regulating of the importation, exportation, manufacture, sale, and use of opium and of certain other dangerous drugs and substances, to make special provision relating to the jurisdiction of courts in respect of offences there under and their trial, and for purposes connected therewith.

(vii) Poison Act 1952

The Poison Act 1952 functions to regulate the importation, possession, manufacture, compounding, storage, transport, sale and use of poisons.

(viii) Registration Of Pharmacists Act 1951

This Act relates to the establishment of a Pharmacy Board and the registration of pharmacists.

(ix) Medicine (Advertisement and Sale) Act

The Medicines (Advertisement and Sale) Act was introduced in 1956 for two purposes:

To curb the proliferation of spurious and misleading advertisements for medicines and medical services, and

- To regulate the sale of substances recommended as a medicine

(x) Poison Act 1952 (Revised 1989)

The Poison Act 1952 (Revised in 1989) which is also cited as Poison Act 1952 was gazetted by the Malaysian Government in order to regulate the importation, possession, manufacture, compounding, storage, transport, sale and use of poisons.

(xi) Sales of Drugs Act 1952 – Act 368

The Sale of Drugs Act 1952 which was revised in 1989 was introduced in order to regulate the sales of drugs. Under this Act and Regulation, all prescription drugs, over-the-counter (OTC) medicines, traditional medicines in pharmaceutical dosage forms and cosmetics as defined under the Act or Regulations are required to be registered with the Drug Control Authority prior being manufactured, imported, sold or supplied, unless the product is

exempted under the specific provisions of the regulations. The objective of the registration of these products is to ensure that the therapeutic substance including cosmetic products approved for the local market are safe, effective and of quality in order to safeguard the consumers.

(xii) Act 304 - Atom Energy Licensing Act

The Atom Energy Licensing Act 1984 (Act 304) covers registration of radioactive equipment, license control of medical equipment, controlling of radioactive substance, monitor quality control of biomedical equipment at the hospital.

(xiii) Medical Device Act 737

The Medical Device Act 2012 or Act 737 and the Medical Device Authority Act 2012 or Act 738 have been gazetted on 9<sup>th</sup> February, 2012. The Act specifies requirements for medical device product registration, establishment licensing and conformity assessment body (CAB) registration. Whereas Act 738 details out the organisation of a regulatory body that will implementing Act 737, with Act 737 all medical devices are required to be registered and establishments will be licensed. All conformity assessment bodies will also be registered during the transition period.

## **2.7 INTERNATIONAL BENCHMARKS FOR THE MEDICAL & PHARMACEUTICAL HEALTHCARE INDUSTRY OCCUPATIONAL STRUCTURE**

A "benchmark" is a comparative measurement. It is a standard or point of reference used in measuring and judging quality or value. "Benchmarking" is the process of comparison. The process of continuously comparing and measuring an organization against business leaders anywhere in the world to gain information that will help the organization take action to improve its performance. In practice it is the *process* of undertaking benchmarking that generates most benefits because it challenges current norms. Benchmarking data can be obtained from international, regional, and national sources. International organizations are one source of benchmarking data, and increasingly make information available for online access through the Internet.

In order to develop a skilled and efficient Medical & Pharmaceutical Healthcare workforce, a benchmark of the occupational structure with other countries must be done in order to measure whether the occupational structure of Malaysia's Medical & Pharmaceutical Healthcare industry is at par with other developing and advanced countries.

The findings for this section were obtained via a combination of analysis done by job matching organisations and observation of job openings offered in each country's job agency portals.

Advanced countries such as the United States and Britain generally have similar job titles and occupational frameworks for the Medical & Pharmaceutical Healthcare industry. In developing countries such as Indonesia the structure is similar to Malaysia's occupational structure.

Therefore, the development of Malaysia's Medical & Pharmaceutical Healthcare Occupational framework is done with these international benchmarks in mind, but is specifically guided by the local Medical & Pharmaceutical Healthcare Industry and government human capital development plans.

### **3. OCCUPATIONAL ANALYSIS METHODOLOGY**

This chapter is divided into two (2) sections; the methodology of the overall Occupational Analysis process and the methodology to construct the Occupational Description that was conducted throughout the Medical & Pharmaceutical Healthcare Analysis.

#### **3.1 METHODOLOGY OF THE MEDICAL & PHARMACEUTICAL HEALTHCARE OCCUPATIONAL ANALYSIS PROCESS**

Below are the techniques used throughout the research conducted on the Medical & Pharmaceutical Healthcare industry.

(i) Literature survey

A literature survey on the Medical & Pharmaceutical Healthcare Industry was carried out to get some insight of this industry in the context of the Malaysian scenario. The scope covered under this search includes definitions, current analysis of the sector/Sub-Sector, current status of the Medical & Pharmaceuticals Industry, skilled workers requirement in the local sector and the industrial competition at international level.

(ii) Identifying industrial experts

The literature survey findings were used as a guide to identify the scope of occupational study and analysis. Experts from the Medical & pharmaceuticals Industry were identified and short listed for further

communication and contact. The lists of experts are included in the list of development panel members included in this report.

(iii) Information gathering

In the process of gathering the information, two (2) methods were adopted, namely; brainstorming and Development of Standard & Curriculum (DESCUM) session. The brainstorming and DESCUM sessions were attended by development panel members who discussed the different Sub-Sectors and areas. Facts obtained during the literature survey were also discussed and presented to the development panel members. The information gathered was then used as input to the occupational analysis of the said sector.

(iv) Analysing the information

Based on the activities done as above, substantial data and information were collected. The data and information were discussed and analysed in development workshops, focus group discussions and interviews attended by selected key persons or experts from the public and private sector. The presence of the key persons or experts ensured that the development of the Occupational Analysis is current and relevant. Throughout the development process, the Medical & Pharmaceuticals Industry was analysed using the above methodology to identify the following:

- (a) Scope of the Industry and its Sub-Sector;
- (b) Main areas;

- (c) Occupational groups of the sector;
- (d) Job title;
- (e) Hierarchy structure (Level 1 – 8); and
- (f) Occupational Description.

- (v) Development Workshop and interviews with development panel members

Workshops and interviews were conducted during the development of the Occupational Analysis of the Medical & Pharmaceuticals Industry. Follow up discussions with the expert panel members were done in smaller groups to verify the findings of the Occupational Analysis and Occupational Description. The details of the workshop and interviews are as below:

Table 8.0: List of Occupational Analysis Development sessions

| <b>Date</b> | <b>Venue</b>   | <b>Activity</b>  |
|-------------|--|--|
| April 2012  | Grand Continental Hotel, Melaka                              | Occupational Structure Development Workshop  |
| May 2012    | Pharmaceutical Department, Ministry of Health, Petaling Jaya | Focus Group Discussion – validation of findings (Pharmaceutical Sector Occupational Structure) |
| June 2012   | Private hospitals in Johor and Kuala Lumpur                  | Survey and interviews  |
| June 2012   | Hang Tuah Hotel, Melaka                                      | Occupational Definition Development workshop   |
| July 2012   | National Pharmaceuticals Control Bureau, Petaling Jaya       | Interview and survey   |
| July 2012   | Allied Health Division, Ministry of Health, Putrajaya        | Interview and survey   |
| July 2012   | Nursing Division, Ministry of Health, Putrajaya              | Interview and survey   |
| July 2012   | Private Hospitals in Johor and Malacca                       | Interview and survey   |

### 3.2 METHODOLOGY TO CONSTRUCT OCCUPATIONAL DESCRIPTION

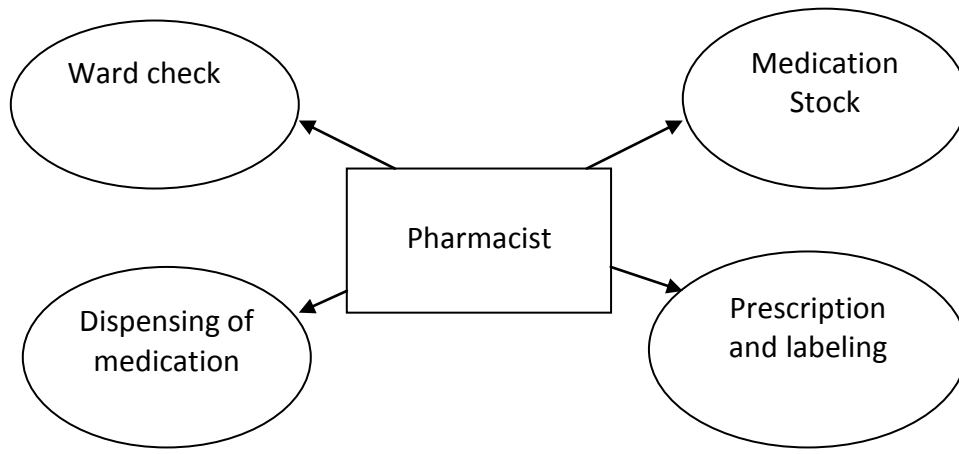
The methodology used to construct the Occupational Description was formulated by the facilitator, Dr. Amiron Ismail in order to produce an Occupational Description that is clear on the main job scope of the job title, while ensuring that the verb used is according to the level of difficulty and the object is clearly described. To describe the Occupational Description clearly, the statement must consist of a **Verb**, **Object** and **Qualifier**. The rationale of determining the attributes is to ensure consistency and continuity of using those attributes right from Occupational Analysis to Competency Unit analysis that will be done later during the Standard and Curriculum Development phase.

#### (i) Object

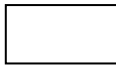
Firstly, the object is determined before the other two (2) attributes. The object of any job is the main determinant of distinguishing one job to the other. For example, a pharmacist from the Pharmaceuticals Sub-Sector, deals with *Medication* as the *object* in performing tasks.

The Objects are acquired from the expert panel members during a brainstorming session and written on cards that are put up to be observed by all panel members or typed into **mind mapping** software so that all panel members can see the Objects identified.

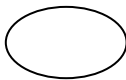
Objects of those in the related area or Sub-Sector of the sector are determined as in the example below:



**Legend:**



: Sector / Sub-Sector / Area / Sub area



: Object

Figure 5.0: Example of Identifying Objects

**(ii) Verb**

The Verb is then determined based on the level of difficulty of the identified job titles, such as below:

- **Object : Medication**
- **Verb for Level 6 : Conduct**
- **Verb for Level 7 : Verify**

Hence, the contents of the job definitions will be as below

- **Pharmacist (Level 5)**
  - ✓       ***Verify dispensing of medication + (qualifier)***
- **Assistant Pharmacist (Level 4)**
  - ✓               ***Conduct dispensing of medication + (qualifier)***

**(iii) Qualifier**

Based on the example above, the statement is not clear as there is no qualifier for the object, therefore a qualifier must be added to further clarify it. Below is an example:

- ***Conduct dispensing of medication to **patients*****

#### **4. FINDINGS**

##### **4.1 MEDICAL AND PHARMACEUTICAL HEALTHCARE INDUSTRY**

###### **OCCUPATIONAL STRUCTURE & CAREER PATH**

The identified Sub-Sectors for the Medical and Pharmaceutical Industry were obtained through literature research and discussions with industry experts during the development workshop sessions and interviews. According to the national economical plans, the nation is targeted to propel itself towards improving the quality of life of Malaysians and at boosting Malaysia's global competitiveness.

Based on the discussions held during development workshops and approval sessions, the development and approval panel members had identified that the main sectors under Medical and Pharmaceuticals in Malaysia were to be segregated into 3 different Occupational Structures which are Medical, Pharmaceuticals and Biomedical Engineering.

The Occupational Structures for these sectors are included in this section, firstly the sectors and relevant areas are shown, then following them will be the Occupational Structures that show the common job titles in the industry and are presented under each relevant Sub-Sector and area. It must be highlighted that the Occupational Structures for Biomedical Engineering are extracted from a previous Occupational Analysis document, Health and Pharmaceuticals Manufacturing and Support/Services.

Following each Occupational Structure framework is an Occupational Area Structure that depicts the common job scope for each of the areas as defined in

their respective occupational structures. In the Occupational Area Analysis, job titles under the same area may be combined if the job scope is similar. This is to show the common responsibilities of the personnel regardless of job title, as job titles may vary between different institutions and organizations.

It must be noted that the Occupational Structures are developed according to the profession and not by programme (for example, clinical, public health etc.). It is developed in such a way because in this industry, personnel such as doctors, nurses, pharmacists and other respective personnel may appear in more than one area or sub areas if it was to be structured by program. For example, there may be a Medical Officer under the Medical Research area and also under the Clinical area, treating patients.

The Occupational Structure in Table 10.0 till Table 19.0 shows the overall structure for the medical sector, whereas the branches of specialization for the Physicians and Dentists are depicted in Table 20.0 until Table 22.0. The Medical Sub-Sector is further divided into 10 areas which are;

- Medical & Surgery
- Dentistry
- Auxiliary
- Public Health
- Food Safety and Quality
- Medical Assistance
- Nursing
- Allied Health
- Medical & Health Research

- Traditional & Complementary Medicine

Below are the descriptions of each of the different areas;

(i) Medical Sector

a) Medical & Surgery

This area represents the occupational area of doctors or Medical Officers. The Malaysian medical system requires doctors to perform a compulsory four years service with public hospitals to ensure that the manpower in these hospitals is maintained. Doctors are required to perform 4 years including 2 years of houseman ship and 2 years government service with public hospitals throughout the nation, ensuring adequate coverage of medical needs for the general population. The Medical area consists of three levels of personnel starting at Level 6 as Medical Officers, progressing as Physicians or Specialists at Level 7 and as Consultant Physicians at Level 8. At Level 7, as Physicians they will practice medicine in their specialized fields. Below is a list of specialisations for personnel under this area:

- Anesthetic
- Cardiology - Heart Specialist
- Dermatology – Skin Specialist
- Endocrinology
- Emergency Medicine
- Gastroenterology – Stomach & Intestine Specialist
- Geriatric – Elderly Specialist
- Hematology – Blood related diseases Specialist
- Internal Medicine

- Cardiology – Heart Specialist
- Nephrology – Kidney Specialist
- Obstetrics & Gynecology
- Oncology – Cancer Specialist
- Ophthalmology – Eye Specialist
- Orthopedic – Bone Specialist
- Otolaryngology (ENT) – Ear, Nose, Throat Specialist
- Pathology
- Paediatrics– Child Specialist
- Psychiatry
- Respiratory Medicine
- Rehabilitation Medicine
- Rheumatology
- Urology
- Radiology
- Radiotherapy
- Sports Medicine
- Transfusion Medicine
- Nuclear Medicine
- Forensic Medicine
- Esthetics

These specialised fields have further sub specialisation as follows:

Table 9.0: List of Medical Practice Specialisations and Sub Specialisations

| SPECIALISATIONS         | SUB SPECIALISATIONS  |
|-------------------------|--|
| Obstetrics & Gynecology | Advanced O&G<br>Uro-Gynaecology<br>Gynae-Oncology<br>Maternal Fetal Medicine<br>Reproductive Medicine  |
| Pediatric               | Adolescent Medicine<br>Paediatrics Cardiology<br>Clinical Genetics<br>Community Pediatric<br>Paediatrics Dermatology<br>Paediatrics Endocrine<br>General Paediatrics & Child Health<br>Paediatrics Gastroenterology<br>Paediatrics Haemato-Oncology<br>Paediatrics Intensive Care<br>Paediatrics Infectious Diseases<br>Paediatrics Nephrology<br>Paediatrics Neurology<br>Neonatology<br>Paediatrics Respiratory Medicine<br>Paediatrics Rheumatology |
| Orthopaedics            | Advanced Musculoskeletal Trauma<br>Arthroplasty<br>Arthroscopy & Sports Surgery<br>Foot & Ankle Surgery<br>Orthopaedic Oncology<br>Paediatric Orthopaedic<br>Spine Surgery<br>Upper Limb & Microsurgery  |

Table 9.0 : List of Medical Practice Specialisations and Sub Specialisations  
(continued)

| SPECIALISATIONS | SUB SPECIALISATIONS   |
|-----------------|---|
| Anaesthesia     | Cardiac Anaesthesia<br>Intensive Care<br>Neuroanaesthesia<br>Obstetric Anaesthesia<br>Pain Management<br>Paediatric Anaesthesia   |
| Otolaryngology  | Head & Neck Surgery<br>Otoneurology & Skull Base Surgery<br>Paediatric ORL<br>Rhinology   |
| Ophthalmology   | Cornea<br>Glaucoma<br>Comprehensive Ophthalmology<br>Medical retinal<br>Paediatrics Ophthalmology<br>Occuloplastic Surgery<br>Vitreoretinal   |
| Radiology       | Body Imaging<br>Cardiac Radiology<br>Gastro-Hepatobiliary<br>Head & Neck radiology<br>Interventional Radiology<br>Musculoskeletal<br>Neuro Radiology<br>Paediatrics Radiology<br>Uro-radiology<br>Women Imaging |

Table 9.0: List of Medical Practice Specialisations and Sub Specialisations

(continued)

| SPECIALISATIONS         | SUB SPECIALISATIONS  |
|-------------------------|--|
| Pathology               | Chemical Pathology<br>(e.g. <i>Endocrine &amp; Metabolic Disorder, Enzymology, Paediatric/ IEM, Lipidology, Specific Proterin &amp; Tumour Marker, Toxicology</i> )        |
|                         | Histopathology<br>(e.g. <i>Cytopathology, Gastrohepatology, Respiratory, Bone Pathology, Perinatal, Renal Pathology, Paediatric Pathology</i> )                            |
|                         | Medical Microbiology<br>(e.g. <i>Infectious Disease, Virology, Immunology, Mycology, Parasitology</i> )  |
|                         | Haematology<br>(e.g. <i>Paediatric Haematology, Prenatal Genetics, Molecular Haematology, Stem Cell Transplant, Cytogenetic/ Molecular Genetics, Tranfusion Medicine</i> ) |
|                         | Uro pathology  |
| Forensic Medicine       | Cinical Forensic Medicine<br>Forensic Anthropology<br>Neuropathology   |
| Psychiatry              | Addiction & Substance Abuse<br>Child Psychiatry<br>Community & Rehabilitation Psychiatry<br>Forensic Psychiatry<br>Neuro Psychiatry<br>Psychogeriatrics                    |
| Nuclear Medicine        | Nuclear Medicine   |
| Rehabilitation Medicine | Cardiopulmonary Rehab Neuro-rehab  |
| Emergency Medicine      | Disaster Management  |

b) Surgery

Surgery is performed by a surgeon, a physician with specialised training in operative procedures.

The Surgery area consists of three levels of personnel starting at Level 6 as Medical Officers, progressing as Surgeons at Level 7 and as Consultant Surgeons at Level 8. At Level 7, as Surgeons they will practice surgery in their specialized fields as listed below:

- Breast & Endocrine
- Cardiothoracic Surgery
- Colorectal Surgery
- Hand & Micro Surgery
- Hepatobiliary Surgery
- Neurosurgery
- Paediatric Surgery
- Thoracic Surgery
- Upper GIT Surgery
- Urology
- Vascular Surgery
- Reconstructive & Plastic Surgery

c) Family Medicine

Family medicine (FM) is a medical specialty devoted to comprehensive health care for people of all ages; the specialist is named a family physician, family doctor, or formerly family practitioner.

It provides continuing and comprehensive health care for the individual and family across all ages, genders, diseases, and parts of the body. It is based on knowledge of the patient in the context of the family and the community, emphasizing disease prevention and health promotion. According to the World Organization of Family Doctors (WONCA), the aim of family medicine is to provide personal, comprehensive and continuing care for the individual in the context of the family and the community. Medical doctors at Level 6 can further specialize their practice in Family Medicine as a Family Medicine Specialist at Level 7.

(ii) Dental

This area is concerned with the prevention, diagnosis, and treatment of diseases of the teeth, gums, and related structures of the mouth including the repair or replacement of defective teeth. Responsibilities include the repair and restoration of teeth, the replacement of missing teeth, and the detection of diseases, and tumors that require treatment by a dental specialist or physician. The Dental sub area consists of two sub areas which are Dentistry and Auxiliary. Whereas Auxiliary is divided into Dental Nurse or will soon be known as Dental Therapist, Dental Technician and Dental Surgery Assistant.

A general dental practitioner provides oral healthcare to the public. The practitioner does oral examinations and diagnosis, and carries out treatment such as fillings, extractions, dentures, scaling and emergency care. A general practitioner may refer patients who need further complex care to the appropriate specialist.

To practise dentistry in Malaysia one must first register with the Malaysian Dental Council. As of 29 June 2001, it is compulsory to serve the government for 3 years before a dental surgeon can work as a general dental practitioner in private practice. *(Excerpt from the Oral Health Division, Ministry of Health Malaysia Official Website (www.ohd.moh.gov.my))*

The Dentistry sub area consists of three levels of personnel starting at Level 6 as Dental Officers, progressing as Dental Specialist at Level 7 and as Consultant Dentists at Level 8.

In addition to the general practice of dentistry at level 6, there are five recognized specialties that they will practice at Level 7 as Dental Specialists as described below:

a) Oral and Maxillofacial Surgery

Oral surgery is a branch of dentistry, which deals with the treatment of facial injuries, reconstruction of the oral and maxillofacial region and dental implant surgery, care for patients with tumours and cysts of the jaws as well as correct functional and aesthetic conditions of the maxillofacial areas. The oral surgeon is based at a hospital and works as part of a team with other specialists in the hospital for the management of patients. *(Excerpt from the Oral Health Division, Ministry of Health Malaysia Official Website (www.ohd.moh.gov.my))*

b) Orthodontics

Orthodontics deals with the prevention and correction of irregularities of the teeth, bite, and jaws. Orthodontists have specialised training to manage such conditions. (*Excerpt from the Oral Health Division, Ministry of Health Malaysia Official Website (www.ohd.moh.gov.my)*)

c) Pedodontist – Paediatrics Dentistry

A Paediatrics dentist or also known as a pedodontist deals particularly with the oral healthcare of children from infancy through the teenage years, including medically-compromised children and those with special needs. This field of dentistry deals with problems related to growth disorders, oral diseases and traumatic injuries arising from accidents.

Medically-compromised patients include children with childhood cancers, cardiac diseases, blood abnormalities and other chronic illnesses such as diabetes, asthma and liver disease, and those undergoing organ transplants. Meanwhile, children with special needs are those with physical disabilities, severe learning difficulties and behavioural problems that require special management techniques for dental treatment. (*Excerpt from the Oral Health Division, Ministry of Health Malaysia Official Website (www.ohd.moh.gov.my)*)

d) Periodontology

Periodontology is a field of dentistry specialising in prevention, diagnosis and treatment of diseases related to the supporting structures of the tooth, namely the gums and the surrounding bone. The treatment of gum diseases includes scaling, root planing, bite adjustment and periodontal surgery. *(Excerpt from the Oral Health Division, Ministry of Health Malaysia Official Website ([www.ohd.moh.gov.my](http://www.ohd.moh.gov.my)))*

e) Oral Medicine and Oral Pathology

Specialists in the field of Oral Medicine and Oral Pathology, in the Ministry of Health, are based at the Stomatology Unit, Institute for Medical Research, Kuala Lumpur and other centres in the country. They carry out histopathological investigations and are involved in oral health research. *(Excerpt from the Oral Health Division, Ministry of Health Malaysia Official Website ([www.ohd.moh.gov.my](http://www.ohd.moh.gov.my)))*

f) Restorative Dentistry

Restorative Dentistry involves the restoration of function to ensure a healthy and pain-free dentition for patients with complex problems. Patients that come under the restorative dentist's care include those with special or complex clinical needs referred by the dental officers or specialists, and those with particular needs, with congenital or acquired facial defects, medical problems or learning

difficulties, that have implications for their care. (*Excerpt from the Oral Health Division, Ministry of Health Malaysia Official Website (www.ohd.moh.gov.my)*)

The scope encompasses advanced conservative procedures, endodontics, fixed and removable prosthodontics, together with implant technology. The use of various dental materials for particular needs of the patient is balanced against the technical skills involved. (*Excerpt from the Oral Health Division, Ministry of Health Malaysia Official Website (www.ohd.moh.gov.my)*)

g) Dental Public Health

The dental public health specialist is responsible for providing oral healthcare to the community through population-based strategies and community programmes. The dental public health specialist is also responsible for oral health policy development, programme management, oral health promotion and oral disease prevention as well as the safety and health aspects of the clinical environment. (*Excerpt from the Oral Health Division, Ministry of Health Malaysia Official Website (www.ohd.moh.gov.my)*)

h) Dental Auxiliary

Dentistry Auxiliary personnel under the dentistry area support the work of the dental officer and dental specialist.

- Dental Nurse / Therapist

Nurses working in the dental area are also recognized as having specialized competencies in caring for dental patients and when assisting dentists. A dental nurse will:

- Provide dental treatment to children aged 17 years and below.
- Participate in oral health promotion activities such as oral health talks, exhibitions and campaigns

Dental nurses who have undergone post-basic training in various disciplines will work in specialists' clinics and are allowed to treat adults.

- Dental Technology

The field of dentistry involved in procedures for designing and constructing dental appliances. It includes also the application of any technology to the field of dentistry. A dental technologist is responsible for:

- Designing and processing prosthetic, orthodontic and maxillo-facial appliances
- The repair and maintenance of dental equipment

- Dental Surgery Assistants

The duties of a dental surgery assistant are to:

- Assist the dental officer or dental nurse in management of patients
- Be responsible for infection control in the dental surgery area
- Register patients and manage patient records.

(iii) Public Health

Public health is the field of medicine concerned with safeguarding and improving the health of the community as a whole. It is the science and practice of protecting and improving the health of a community, as by preventive medicine, health education, control of communicable diseases, application of sanitary measures, and monitoring of environmental hazards. (Excerpt from Dorland's Medical Dictionary for Health Consumers. © 2007 by Saunders). Job titles under this area are the Public Health Specialist at Level 7 and Medical Officers at Level 6.

(iv) Medical Assistance

Personnel under this area are known as Assistant Medical Officers or Medical Assistants where they assist the doctor in conducting screening of patients in the hospital's emergency ward and may also carry out basic treatment and diagnosis in health clinics. They may also carry out minor procedures. Assistant Medical Officers start at Level 4 and may proceed to have competencies at Level 5 with post basic training.

(v) Nursing

Nursing encompasses autonomous and collaborative care of individuals of all ages, families, groups and communities, sick or well and in all settings. Nursing includes the promotion of health, prevention of illness, and the care of ill, disabled and dying people. Advocacy, promotion of a safe environment, research, participation in shaping health policy and in patient and health systems management, and education are also key nursing roles.

A nurse has to be registered with the board of nurses (regulatory body) and after being registered then only can they work as a trained nurse in hospitals, clinics and other health care institutions.

Post Basic training for a nurse means that they have to undergo training related to a particular department or specialist clinic for a period of not more than a year in a specific field before he/she can work in the particular department or specialist clinic.

As it can be seen in the Medical Sector Occupational Structure, Nurses may start at Level 3 as Community nurses where they will be able to further their careers to becoming a Registered Nurse at Level 4. Based on working experience and seniority, Registered Nurses may be able to become Head Nurses or Sisters. Currently nurses should undergo post basic training before becoming a Head Nurse or Sister. However, it is not compulsory for them to further their careers in the particular post basic area only and may work as a Head Nurse or Sisters in various settings.

The nursing career path enables nurses to advance their education until doctorate (PhD) level and may become Specialist nurses and even manage hospitals at higher levels of management. This is shown in the Occupational structure that nurses may proceed until Level 7 as Specialist Nurses.

(vi) Food Safety and Quality

The personnel under this Sub-Sector mainly consist of Food technologists. Food technologists study the principles underlying the processing and deterioration of foods, analyse food content to determine levels of vitamins, fat, sugar, and protein, discover new food sources, research ways to make processed foods safe, palatable, and healthful and apply food science knowledge to determine best ways to process, package, preserve, store, and distribute food. The Food Technologist starts at Level 5 as an Assistant Food Technologist and may proceed until Level 8 as a Principal Food Technologist.

(vii) Auxiliary

Personnel under this area support the medical workforce however they do not treat, counsel or deal with patients directly as compared to the other personnel such as Psychologists, Therapists and such. The list of the auxiliary personnel is as below:

- Health Attendant/Hospital Aide  
Mainly their work consist of various duties under the direction of the medical doctor, nurse or medical assistant in preparing the treatment room, inventory supplies and

instruments and setting up of the patient for attention of the physician.

- Ambulance Driver

Currently the practice is that the ambulance driver acts as a driver , but he must have special skills in driving in order to ensure patients arrive quickly but safely at the hospital without endangering others and those in the ambulance. However, the ambulance driver is currently not trained on the aspect of paramedics.

(viii) Allied Health

Allied Health professionals are defined as professionals in the medical profession other than medical officers, nurses, dental officers, physicians or consultant physicians. As defined by the Ministry of Health, Allied Health is divided into three main areas which are:

- i. Clinical
- ii. Public Health
- iii. Medical laboratory.

As mentioned before, because this Occupational Structure focuses on the profession and acknowledges that the personnel may be placed under other areas or programmes, therefore they are grouped according to similar job scope, knowledge and skills required.

The Allied Health area is divided into 11 sub areas which are described below:

#### a) Rehabilitation

- Physiotherapy

Physiotherapy are the activities of rehabilitating body parts by physical remedies, such as massage or special exercises rather than by drugs.

- Occupational Therapy

An occupational therapist is a health care professional who provides services designed to restore self-care, work, and leisure skills to patients/clients who have specific performance incapacities or deficits that reduce their abilities to cope with the tasks of everyday living. They will focus on the patient/client's ability and minimize inability and lessen secondary disability. They will work with the Treatment Group (Ahli Kumpulan Rawatan (AKUR)) members to improve their quality of living. The occupational therapist evaluates and solves problems arising from developmental deficits, physical illness or injury, emotional disorders, the aging process, and psychological or social disability.

- Speech - Language therapy

Speech- Language Therapy is the rehabilitation of speech and communication disorders. The approach used depends on the disorder. It may include physical exercises to strengthen the muscles used in speech (oral-motor work), speech drills to improve clarity, or sound production practice to improve articulation.

Such defects in speaking may originate in the brain, the ear (deafness), or anywhere along the vocal tract and may affect the voice, articulation, language development, or ability to speak after language is learned. Therapy begins with diagnosis of underlying physical, physiological, or emotional dysfunction.

- **Audiology Therapy**

Audiology is the branch of science that studies hearing, balance, and related disorders. Its practitioners, who provide rehabilitation to those with hearing loss and proactively prevent related damage, are audiologists. Employing various testing strategies, audiology aims to determine whether someone can hear within the normal range, and if not, which portions of hearing (high, middle, or low frequencies) are affected and to what degree. The audiologist is required to determine the type and degree of hearing impairment and implements rehabilitation services for the patient.

The Audiologist means an individual who is trained as an audiologist to provide a comprehensive array of professional services related to the prevention of hearing loss, audiologic identification; assessment, diagnosis and interventions of persons with impairment of auditory, vestibular and balance functions, which includes hearing aid, cochlear implant and assistive listening devices prescription, fitting and habilitation/rehabilitation and only audiologist are authorized to administer those procedures.

b) Psychology

The Clinical Psychologist diagnoses or evaluates mental and emotional disorders of individuals through observation, interview and psychological tests, then formulates and administers programs of treatment. The Allied Health unit under the Ministry of Health recognises two areas under psychology which are counselling and clinical.

c) Food Service

The Food Service officer will refer to menus and instructions set by dietitians in order to coordinate activities of preparing food and beverages for patients in a hospital or medical centre. They must ensure that nutrition standards and diet plans are followed in terms of selection of ingredients, food portions and methods of cooking. They are also responsible for the development of food services.

d) Medical records

They are responsible for the management and handling of patient medical records and health information covering Patient medical records, medical reports, medical legal cases, Diagnosis Related Group (DRG) Case-Mix and Diagnostic coding and procedures.

e) Environmental Health

Personnel under this area plan develop and enforce health programs to maintain health and sanitation standards, regulations and procedures designed to protect the public. There are three levels of personnel

starting at Level 4 as the Assistant Environmental Health officer up until Level 6 as the Senior Environmental Health Officer.

f) Nutrition

The nutritionist uses the science of nutrition to help individuals improve their health. Dietitians and nutritionists are experts in food and nutrition. They advise people on what to eat in order to lead a healthy lifestyle or achieve a specific health-related goal. The nutritionist starts at Level 6 as a nutritionist and may proceed until Level 8 as a Consultant Nutritionist.

g) Dietetics

Dietitians organize, plan and conduct food service or nutritional programs to assist in promotion of health and control of disease they assist patients with certain diseases such as diabetes or with high blood pressure to maintain a healthy diet and to lower their cholesterol or sugar level. The dietitian starts at Level 6 as a dietitian and may proceed until Level 8 as a Consultant Dietitian.

h) Health Education

The personnel under this area is responsible for community and behavioural analysis, planning, execution and evaluation of health education programmes in the community and patient education programmes at health facilities.

They must also identify the most suitable and effective education strategy and health promotion to be used to promote awareness, enabling the individuals in the community to control their own level of health, enable empowerment through skills training and by creating a supportive environment. Personnel under this area start at Level 6 as a Health Education Officer and may further their careers till Level 7 as a Health Education Senior Officer.

i) Medical Social Work

The personnel under this area will provide bio-psychosocial services to patients during the treatment process and rehabilitation in order to return the patients social functionality so that they will be more productive, independent and can return to the community according to their capabilities.

Medical Social Work personnel practice consists of the professional application of Social Work values, principles, and techniques to one or more of the following ends: helping people obtain tangible services; counseling and psychotherapy with individuals, families, and groups; helping communities or groups provide or improve processes. The practice of Social Work requires knowledge of human development and behavior; of social, economic, and cultural institutions; and of the interactions of all these factors. The Medical Social Work officer starts at Level 6 and may proceed until Level 8 as a Senior Officer.

j) Optometry

Optometrists prescribe optical aids (e.g., eyeglasses, contact lenses), supervise eye exercise programs to treat vision problems, and examine the eyes for disorders such as glaucoma and cataracts. They are generally not licensed to prescribe drugs or trained to perform surgery. The optometrist starts at Level 6.

k) Medical Laboratory Technology

This type of technologist is focused on laboratory science and performs tests on blood, body fluids, or skin samples to check for the presence of disease. There are varied jobs in this profession, and highly trained lab technicians may be particularly skilled in one area, for example, the evaluation of skin samples to check for cancer. Lab technicians must be familiar with using equipment like microscopes and gas chromatographs, and they must further understand the application of various chemicals or agents in order to yield test results. A medical lab technician in a small lab may be trained in phlebotomy, the collection of blood, in addition to being trained in the analysis of various samples; some are strictly phlebotomists, merely trained in the collection of blood and the safe storage and transfer of any body fluid samples to testing labs.

l) Radiology & Ultrasound

Though this type of medical technician may be called an x-ray technician, these workers don't simply take x-rays. They may also work in labs performing CAT (computerized axial tomography) scans, or MRIs

(magnetic resonance imaging). Some radiology technicians specialize in performing ultrasounds, while others primarily work as x-ray technicians. Most of these professionals have been trained in a variety of areas, and all of them can expect a great deal of contact with patients. Radiology is a medical specialty that employs the use of imaging to both diagnose and treat disease visualised within the human body. The acquisition of medical imaging is usually carried out by the radiographer. An ultrasound works by moving a small instrument over the area to be examined, which may be the abdomen, breast or other areas of the body. It emits sound waves that reflect off of the body's tissues at different rates, creating an image of the internal structures of the body. Personnel under the Radiology & Ultrasound Area are further defined as Imaging (Diagnostic) and Imaging (Therapy) and they start their work at Level 5. The main duty of the **Radiation Therapist** is to simulate and treat all diseases that require treatment using ionic rays that have high energy precisely and accurately. They are also responsible upon the treatment of the care of the patient, monitoring of side effects, safety of the patient, and creation of the workplace that is safe from harmful ionic rays. Whereas the **Diagnostic Radiographer** is responsible for producing the medical images to assist the Medical Officers and Specialists in diagnosing diseases, evaluating images and radiography produced, managing all matters relevant to the application of radiography examination, responsible for the care and quality of the equipment used.

m) Medical Sciences

Personnel under this sub area conduct research on scientific areas in order to assist in the analysis and treatment of patients such as described below:

- Embryology

The personnel in this area are responsible for carrying out procedures such as In-vitro fertilization (IVF), Intra cytoplasmic sperm insemination (ICSI), preparation of culture media, identification of oosit, embryo transfer, liquidation and refrigeration of the embryo, identification of the sperm from the testis tissue, sperm analysis, Intrauterine Insemination (IUI) and professional liquidation and refrigeration of the sperm.

- Medical Physics

Personnel under this area covers scientific physics expertise including adherence to the Atom Energy Licensing Act 1984 (AKTA 304), registration of radioactive equipment, license control of medical equipment, controlling of radioactive substance, monitor quality control of biomedical equipment at the hospital.

- Microbiology

Microbiology is the study of microorganisms. It can be defined as the biology of microscopic organisms, or life too small to be seen with the naked eye. Microbiology covers several disciplines, including virology (study of viruses), bacteriology (study of bacteria), mycology (study of

fungi), and parasitology (study of parasites). Each of these disciplines may include but is not limited to studies of infectious disease-causing microorganisms.

For example, specialties within microbiology may include microbial physiology (i.e., microbial growth, metabolism, structure), microbial genetics and evolution, environmental microbiology (i.e., microbial ecology), industrial microbiology (i.e., industrial fermentation, wastewater treatment), and food microbiology (i.e., use of microbes for food production, fermentation).

- Medical Genetics

Personel under this area are responsible for genetic services such as Sytogenetic, Molecular Sytogenetic and Molecular Genetic that involve the processing and anlysis of chromosomes or DNA from various samplessuch as blood, fibroblas cells, amnion liquid, chorionic villus, growth cells and such.

The Medical Genticist is responsible for carrying out duties that involve techniques and procedures of processing high end samples that require indepth knowledge and skills of the gentic field such as cell culture, DNA extraction, Flouresence In-Situ Hybridization technique, CGH Array technique, microscopic use technique and analysis using 'state of the art' equipment.

Their role include the identification, interpretation and reporting of DNA and chromosome abnormalities. Results obtained will help clinical experts carry out treatment regimens that are suitable for patients with hereditary diseases such as prenatal abnormalities, infertility, malignant tumours and other various genetic diseases.

- Entomology

This area involves the tasks regarding vector control, the research of insects and entomological risk assessment with the goal of ensuring that diseases carried by the vectors will not be spread. The personnel will conduct entomology research relevant to vector bionomics and its control, provide technical advice regarding the medical importance of insects and the control activities of the insects. The personnel are also responsible for organising logistics regarding vector control and preventive and vector control activities through Integrated Vector Management.

- Biomedical

The personnel in this area are responsible for the handling of clinical pathology including hematology, Histopathology, Cytology, Medical Transfusion and laboratory quality development. They are also responsible for the development of the technology and methodologies used in the laboratory.

- Biochemistry

Biochemistry is the chemistry of living things. It is concerned with

The structure and chemical processes of proteins, carbohydrates, lipids, nucleic acids and other molecules found in or produced by organisms.

- Medical Forensics

Medical Forensic officers are responsible for analyzing each medicolegal specimen that is accepted professionally and is according to standards and policies set by Medical Forensics which are in line with the Malaysian Legal system. They must ensure the integrity of each specimen that is analysed through the chain of evidence control without reasonable doubt towards the analysis results.

(ix) Medical Research

Medical research is the basic research, applied research, or translational research conducted to aid and support the body of knowledge in the field of medicine.

This area is divided into Statistics and Research. Biostatisticians record and analyse statistics on medical networks and the activities and staffs of medical institutions. Personnel under the research sub area may enter at Level 5 as Research Assistants and progress until Level 8 as Principal Researchers. Under the biostatistician sub area they may start at Level 6 as Biostatisticians and progress until Level 7 as Senior Biostatisticians.

Medical research includes the evaluation of new treatments for both safety and efficacy in what are termed clinical trials, and all other research that contributes to the development of new treatments. The latter is termed

preclinical research if its goal is specifically to elaborate knowledge for the development of new therapeutic strategies.

A new paradigm to biomedical research is being termed translational research, which focuses on iterative feedback loops between the basic and clinical research domains to accelerate knowledge translation from the bedside to the bench, and back again. Medical research may involve doing research on public health, biochemistry, clinical research, microbiology, physiology, oncology, surgery and research on many other non-communicable diseases such as diabetes and cardiovascular diseases.

Most of the research in the field is pursued by biomedical scientists, however significant contributions are made by other biologists, as well as chemists and physicists. Medical research, done on humans, has to strictly follow the medical ethics as sanctioned in the Declaration of Helsinki and elsewhere. In all cases, the research ethics has to be respected.

#### (x) Traditional & Complementary Medicine

The World Health Organization (WHO) has defined T&CM as “Traditional medicine (TM) is defined as diverse health practices, approaches, knowledge and beliefs incorporating plant, animal, and/or mineral based medicines, spiritual therapies, manual techniques and exercises applied singularly or in combination to maintain well-being, as well as to treat, diagnose or prevent illness.” Traditional and Complementary Medicine is a form of health-related practice designed to prevent, treat, and/or manage illnesses and/or preserve the mental and physical well-being of individuals and includes practices such

as traditional Malay medicine, Islamic medical practice, traditional Chinese medicine, traditional Indian medicine, homeopathy, and complementary therapies, and excludes medical or dental practices utilized by registered medical or dental practitioners. Traditional medicine has made a significant contribution to the health care of the Malaysian community. It continues to be patronized by people in their bid to seek treatment for diseases and in maintaining health.

Realizing this, the Ministry of Health has taken a positive and proactive approach towards traditional and complementary medicine to ensure quality and safe practices and products. The vision is to integrate T&CM in the Malaysian healthcare system. Integration through 4 pillars: practice; training & education; product and research. T&CM Units have been introduced at selected hospitals which are already established at 9 hospitals nationwide. T&CM is further divided into 5 areas which represent the different areas such as:

- Homeopathy

It is a practice that is based on the concept that disease can be treated with minute doses of drugs though capable of producing in healthy people the same symptoms as those of the disease being treated. This principle is similar to the concept behind exposure therapy for allergies, but the amounts of active medication used in homeopathy are so small as to be almost undetectable. Scientific studies of homeopathy have returned mixed results. It is considered alternative medicine in the United States.

The theory was advanced in the late eighteenth century by Dr. Samuel Hahnemann, who believed that a large amount of a particular drug may cause symptoms of a disease whereas moderate dosage may reduce those symptoms; thus some disease symptoms may be treated by very small doses of medicine.

- Traditional Malay Medicine

Traditional Malay medicine is a field of knowledge and practices which are indigenous to the Malay culture that cover aspects of health and healing which was practiced from generation to generations. The empirical aspect covers area which can be researched scientifically. These aspects include usage of natural materials such as plants, animals and minerals for health and healing treatments. There are currently 14 modalities of treatment that have been identified:

- a) Traditional Malay traditional pharmaceuticals medicine.
- b) Traditional Malay massage
- c) Traditional bone setting
- d) Traditional Malay post natal care
- e) Male vitality treatment
- f) Female health treatment
- g) Traditional Malay exercises
- h) Traditional Malay blood cupping/ letting (phlebotomy)
- i) Traditional sinus treatment
- j) Shingles
- k) Hernia

- l) Traditional treatment for stones
- m) Treatment for cancer

- Traditional Chinese Medicine

Traditional Chinese medicine is based on a concept of balanced qi (pronounced "chee"), or vital energy, that is believed to flow throughout the body. Qi is proposed to regulate a person's spiritual, emotional, mental, and physical balance and to be influenced by the opposing forces of yin (negative energy) and yang (positive energy). Disease is proposed to result from the flow of qi being disrupted and yin and yang becoming imbalanced. Among the components of Traditional Chinese Medicine are traditional pharmaceuticals and nutritional therapy, restorative physical exercises, meditation, acupuncture, and remedial massage.

- Complementary Therapy

Complementary therapy consists of therapy using other mediums and techniques such as below:

- ✓ Colour Vibration
- ✓ Aura Metaphysics
- ✓ Reiki
- ✓ Crystal Healing

- Wellness

Wellness may be defined as activities that may enhance the wellness of the individual through beautification and relaxation activities such as spa Treatments, facial and such.

(xi) Pharmaceuticals

The Pharmaceuticals Sub-Sector is further divided into 5 areas; Pharmacy Practice, Research & Development, Enforcement, Logistics and Regulatory, that require different competencies as the job scopes vary. Most of the areas have job titles from Level 4 until Level 7 starting as Assistant Pharmacists up until the level of Principal Pharmacists.

However, it must be highlighted that in the previous Occupational Analysis on the Pharmaceuticals sector, the Occupational Structure for the Pharmaceutical personnel in Research and Development and Pharmacy Practice were already obtained, therefore for the purpose of continuity, the current Occupational Analysis has extracted these job areas from the previous Occupational Structure as shown in the Pharmaceuticals Manufacturing Occupational Structure is not extracted as it is grouped under the Production Occupational Analysis (for details please refer the Production Occupational Analysis, 2009). The areas under the Pharmaceutical Sub-Sector are described as below:

a) Pharmacy Practice

Pharmacy practice is provided for the direct benefit of the patient, and the pharmacist is responsible directly to the patient for the quality of care. The fundamental relationship in pharmaceutical care is a mutually beneficial exchange in which the patient grants authority to the provider and the provider gives competence and commitment (accepts responsibility) to the patient.

Within the system of health care, pharmacists are experts in the therapeutic use of medications. They routinely provide medication therapy evaluations and recommendations to patients and other health care professionals. Pharmacists are a primary source of scientifically valid information and advice regarding the safe, appropriate, and cost-effective use of medications.

The personnel are required to select, dispense and administer suitable medication for the patients as well as counsel and advise patients on the types of medication and methods of taking the medication. This area is further divided into 4 sub areas which are:

- Clinical
- Dispensing
- Reconstitution (Total Parental Nutrition and Chemotherapy)
- Therapeutic Drugs Monitoring

b) Research and Development

Research often refers to basic experimental research; development refers to the exploitation of discoveries. Research involves the identification of possible chemical compounds or theoretical mechanisms. Universities are the main provider of research level products.

Corporations buy licenses from universities or hire scientists directly when economically solid research level products emerge and the

development phase of drug delivery is almost entirely managed by private enterprise. Development is concerned with proof of concept, safety testing, and determining ideal levels and delivery mechanisms. Development often occurs in phases that are defined by drug safety regulators in the country of interest. Specifically, the important areas of research include:

- Ethno botany studies;
- New plant and drug discovery;
- Phytochemical studies;
- Biological and Clinical studies; and
- Drug testing.

c) Enforcement

Pharmacists under this area are responsible for the enforcement of policies and regulations pertaining to the manufacturing, use and distribution of pharmaceuticals. This area requires the expertise of pharmacists as subject matter experts to ensure the enforcement is scientifically justified. They ensure efficient selection, procurement, distribution of pharmaceuticals; ensuring rational, cost-effective and optimal use of medicines through effective up-to-date clinical and professional pharmaceutical services in tandem with the current global development.

d) Regulatory

The expertise of pharmacists is required in order to ensure the safe use of pharmaceuticals to the consumer. They aim to protect consumers from hazardous drugs, misleading medicine advertisements and unscrupulous practices through the enforcement of related drug and pharmacy legislation that control the importation, sale and advertisement of drugs and the practices of pharmacy in the country. Regulatory activities include testing of products in order to verify that they comply with standards and regulations.

#### **4.2 MEDICAL & PHARMACEUTICAL HEALTHCARE OCCUPATIONAL AREA ANALYSIS**

The Occupational Area Analysis is done so that the current job titles in the industry are translated into the job areas required of the personnel. In doing so, candidates will have better employment prospects as there will be no mismatch of job titles to expected job competencies. This is because different organisations use different job titles. Certification will also be able to reflect the job competencies correctly and avoid confusion of job scope based on job titles.

For the Medical , Surgery and Dentistry job areas, it has been analysed by expert panel members that personnel at Level 6 perform General Medical Practice, then proceed until Level 7 where they will be more specialized and finally until Level 8 and provide consultation according to their specializations.

For the Nursing area, the competencies involve nursing care at Level 3 and Level 4, where they will proceed further until Level 5 and Level 6 where they will perform administration and supervisory jobs.

Under the Allied Health Sub-Sector, based on input from industrial personnel most of the personnel job competencies will merge horizontally between the levels therefore the specializations can be seen for the different areas. For example, personnel under the Rehabilitation area will carry out therapy according to the 4 main sub areas which are Audiology, Speech, Occupational and Physiotherapy. Personnel under the Medical Sciences area will perform research and analysis according to their respective specialized areas of science.

Personnel under the Medical Research area will conduct research and analysis, whereas personnel under the Traditional & Complementary Medicine (T&CM) area will carry out Medicine and Healing according to each specialised area of T&CM.

Personnel under the Pharmaceuticals Sub-Sector are divided into 4 main areas. The personnel under the Enforcement sub area start implementation at Level 4, conduct monitoring at level 5 and plan and monitor at higher levels. For the Dispensing, Therapeutic Drugs Monitoring and Reconstitution sub areas carry out pharmaceutical assistance at Level 4, dispensing at Level 5, monitoring at Level 6 and Planning and counseling at Level 7. Personnel under the Regulatory sub area will carry out testing and analysis at lower levels and carry out Planning and control at higher levels.

All Occupational Area structures can be seen in the following visual representations.

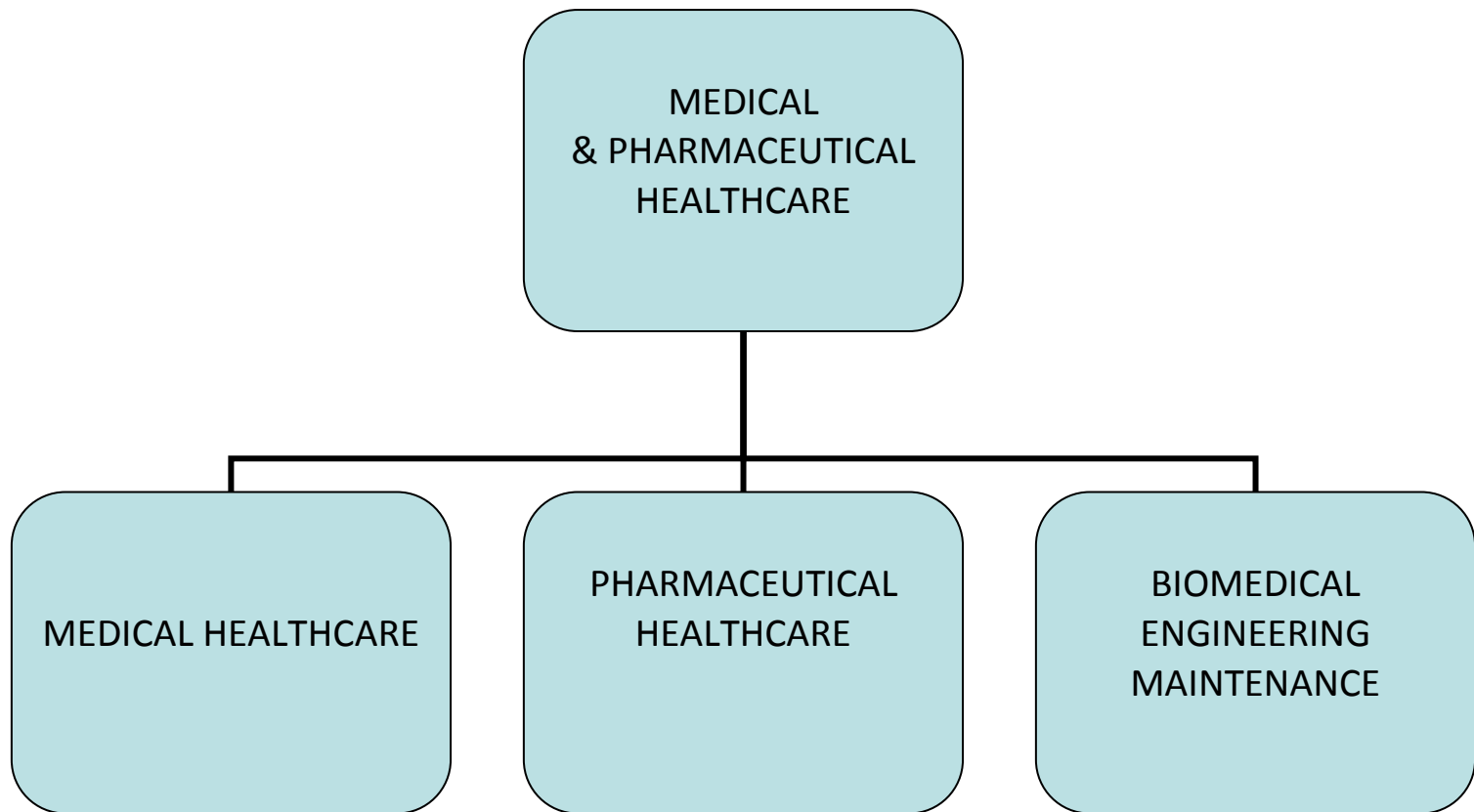


Figure 6.0: Overall Medical & Pharmaceutical Healthcare Sector

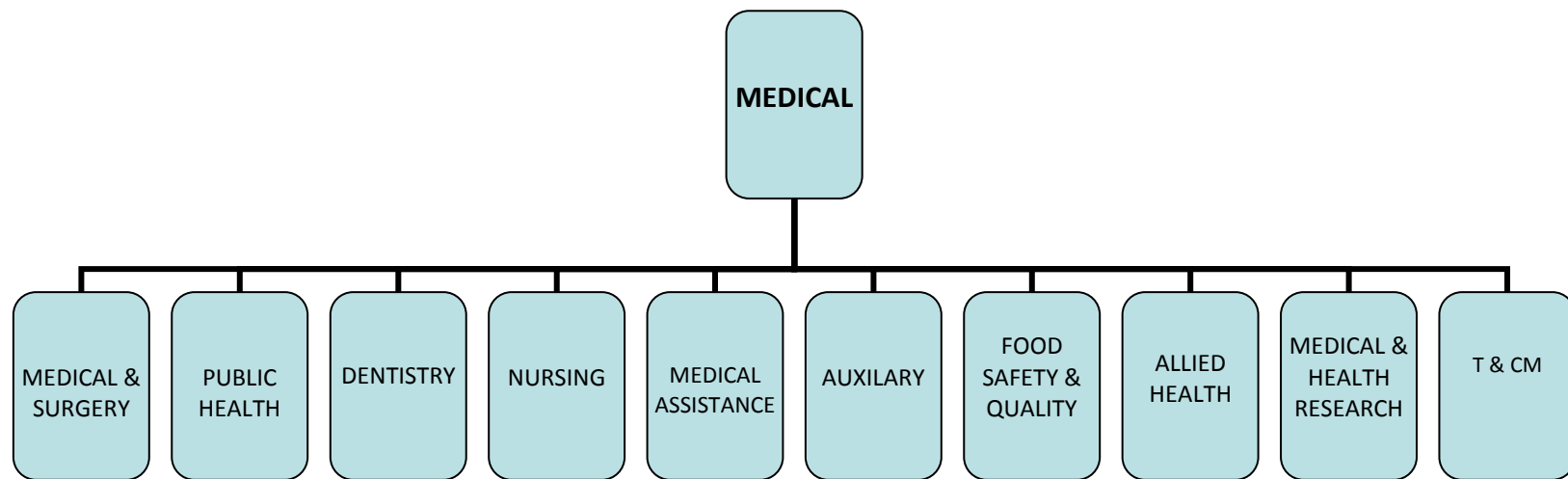


Figure 7.0: Overall Medical Sector and areas

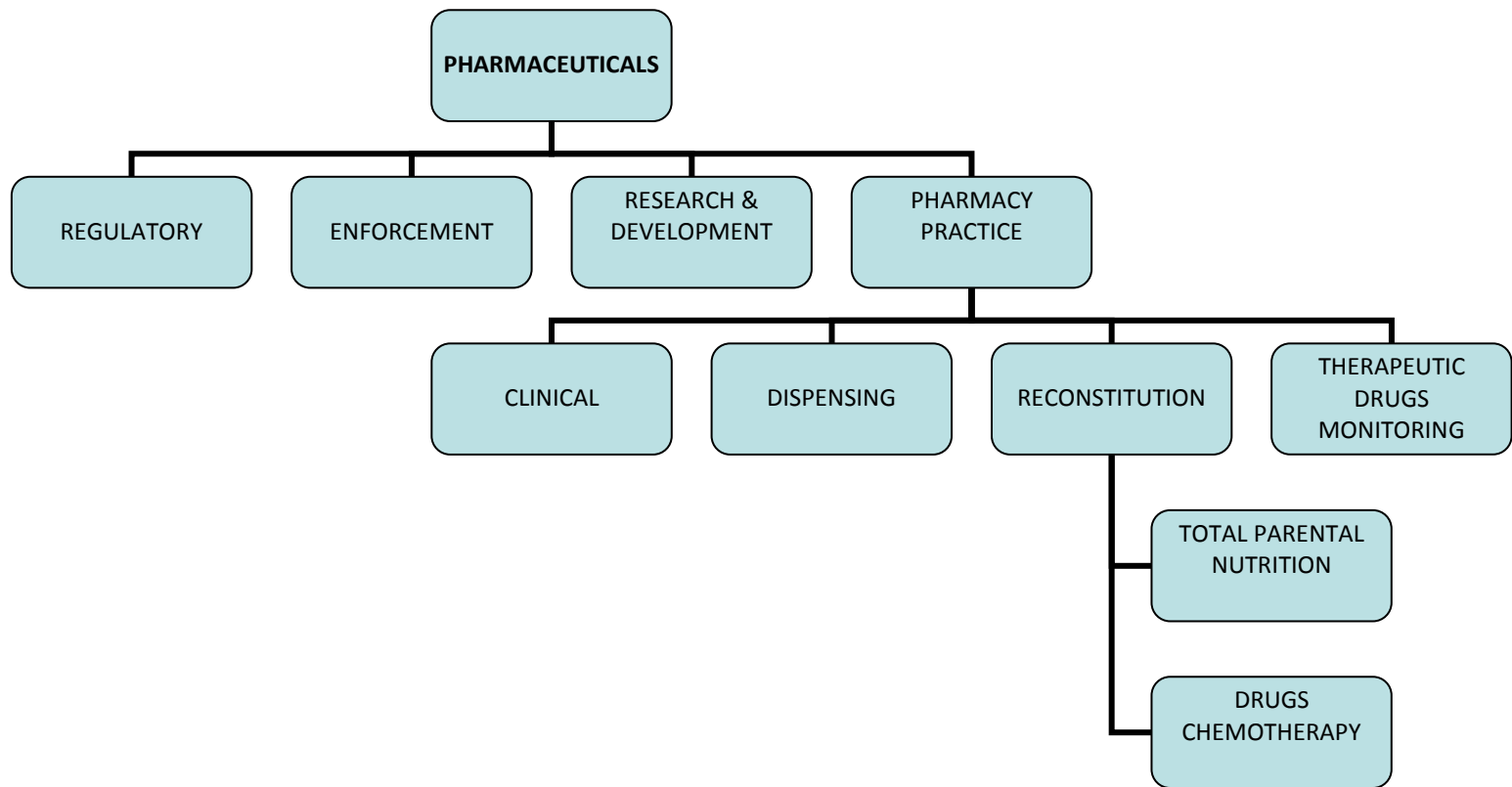


Figure 8.0: Overall Pharmaceuticals Sector and areas

Table 10.0: Overall Biomedical Engineering Occupational Structure

| SECTOR         | HEALTH & PHARMACEUTICAL MANUFACTURING/SUPPORT SERVICES                |  |  |   |
|----------------|---|--|--|---|
| SUB-SECTOR     | HEALTH  |  |  |   |
| AREA           | BIOMEDICAL ENGINEERING MAINTENANCE                                    |  |  |   |
| SUB AREA/LEVEL | RADIOLOGY AND IMAGING ENGINEERING                                     | LABORATORY ENGINEERING                                     | DIAGNOSTIC ENGINEERING                                     | THERAPEUTIC ENGINEERING                                     |
| LEVEL 8        | No Level  | No Level   | No Level   | No Level  |
| LEVEL 7        | Biomedical Engineering Specialist (Radiology And Imaging)             | Biomedical Engineering Specialist (Laboratory)             | Biomedical Engineering Specialist (Diagnostic)             | Biomedical Engineering Specialist (Therapeutic)             |
| LEVEL 6        | Biomedical Engineering Technologist (Radiology And Imaging)           | Biomedical Engineering Technologist (Laboratory)           | Biomedical Engineering Technologist (Diagnostic)           | Biomedical Engineering Technologist (Therapeutic)           |
| LEVEL 5        | Biomedical Engineering Assistant Technologist (Radiology And Imaging) | Biomedical Engineering Assistant Technologist (Laboratory) | Biomedical Engineering Assistant Technologist (Diagnostic) | Biomedical Engineering Assistant Technologist (Therapeutic) |
| LEVEL 4        | Biomedical Engineering Senior Technician                              |  |  |   |
| LEVEL 3        | Biomedical Engineering Technician                                     |  |  |   |
| LEVEL 2        | Biomedical Engineering Assistant Technician                           |  |  |   |
| LEVEL 1        | No Level  | No Level   | No Level   | No Level  |

Table 11.0: Medical Sector Occupational Structure

| SUB-SECTOR | MEDICAL & SURGERY        |                    | PUBLIC HEALTH            |                            | DENTAL            |                   |                                      |                           | NURSING                      | MEDICAL ASSISTANCE        |
|------------|--------------------------|--------------------|--------------------------|----------------------------|-------------------|-------------------|--------------------------------------|---------------------------|------------------------------|---------------------------|
| AREA/LEVEL | MEDICAL                  | SURGERY            |                          |                            | DENTISTRY         | DENTAL AUXILLIARY |                                      |                           |                              |                           |
|            |                          |                    | PUBLIC HEALTH            | FAMILY MEDICINE            |                   | DENTAL TECHNOLOGY | DENTAL NURSING / THERAPIST           | DENTAL SURGICAL ASSITANCE |                              |                           |
| LEVEL 8    | Medical Consultant       | Surgery Consultant | No Level                 | No Level                   | Dental Consultant | No Level          | No Level                             | No Level                  | No Level                     | No Level                  |
| LEVEL 7    | Medical Specialist       | Surgery Specialist | Public Health Specialist | Family Medicine Specialist | Dental Consultant | No Level          | No Level                             | No Level                  | Specialist Nurse             | No Level                  |
| LEVEL 6    | Medical Officer (Doctor) |                    |                          |                            | Dental Officer    | Dental Technician | Matron Dental Nurse/Dental Therapist | No Level                  | Matron / Nursing Manager     | No Level                  |
| LEVEL 5    | No Level                 | No Level           | No Level                 | No Level                   | No Level          | Dental Technician | Sister Dental Nurse/Dental Thpist    | No Level                  | Sister / Head Nurse          | Assistant Medical Officer |
| LEVEL 4    | No Level                 | No Level           | No Level                 | No Level                   | No Level          | Dental Technician | Dental Nurse/Dental Therapist        | No Level                  | Registered Nurse/Staff Nurse | Assistant Medical Officer |
| LEVEL 3    | No Level                 | No Level           | No Level                 | No Level                   | No Level          | No Level          | No Level                             | Dental Surgery Assistant  | Community Nurse              | No Level                  |
| LEVEL 2    | No Level                 | No Level           | No Level                 | No Level                   | No Level          | No Level          | No Level                             | No Level                  | No Level                     | No Level                  |
| LEVEL 1    | No Level                 | No Level           | No Level                 | No Level                   | No Level          | No Level          | No Level                             | No Level                  | No Level                     | No Level                  |

Table 12.0: Medical Sector Occupational Structure – Auxiliary Sub-sector

| SUB-SECTOR | MEDICAL                           |                     |                    |
|------------|-----------------------------------|---------------------|--------------------|
| AREA/LEVEL | AUXILIARY                         |                     |                    |
| LEVEL 8    | No Level                          | No Level            | No Level           |
| LEVEL 7    | No Level                          | No Level            | No Level           |
| LEVEL 6    | No Level                          | No Level            | No Level           |
| LEVEL 5    | No Level                          | No Level            | No Level           |
| LEVEL 4    | No Level                          | No Level            | No Level           |
| LEVEL 3    | No Level                          | No Level            | Autoclave Operator |
| LEVEL 2    | Hospital Aide/Health Attendant ** | Ambulance Driver ** | No Level           |
| LEVEL 1    | No Level                          | No Level            | No Level           |

Table 13.0: Medical Sector Occupational Structure – Food Safety and Quality Sub-sector

| SUB-SECTOR | MEDICAL                     |
|------------|-----------------------------|
| AREA/LEVEL | FOOD SAFETY & QUALITY       |
| LEVEL 8    | Principal Food Technologist |
| LEVEL 7    | Senior Food Technologist    |
| LEVEL 6    | Food Technologist           |
| LEVEL 5    | Assistant Food Technologist |
| LEVEL 4    | No Level                    |
| LEVEL 3    | No Level                    |
| LEVEL 2    | No Level                    |
| LEVEL 1    | No Level                    |

Table 14.0: Medical Sector Occupational Structure – Allied Health Sub-sector

| SECTOR     | MEDICAL                    |              |                 |                        |                                |                            |
|------------|----------------------------|--------------|-----------------|------------------------|--------------------------------|----------------------------|
| SUB-SECTOR | ALLIED HEALTH              |              |                 |                        |                                |                            |
| AREA       | REHABILITATION             |              |                 |                        | RADIOLOGY & ULTRASOUND         |                            |
| LEVEL      | SPEECH THERAPY             | AUDIOLOGY    | PHYSIOTHERAPY   | OCCUPATIONAL THERAPY   | IMAGING (DIAGNOSTIC)           | IMAGING (THERAPY)          |
| LEVEL 8    | No Level                   | No Level     | No Level        | No Level               | No Level                       | No Level                   |
| LEVEL 7    | Speech-Language Therapist* | Audiologist* | Physiotherapist | Occupational Therapist | No Level                       | No Level                   |
| LEVEL 6    | Speech-Language Therapist* | Audiologist* | Physiotherapist | Occupational Therapist | Senior Diagnostic Radiographer | Senior Radiation Therapist |
| LEVEL 5    | No Level                   | No Level     | No Level        | No Level               | Diagnostic Radiographer        | Radiation Therapist        |
| LEVEL 4    | No Level                   | No Level     | No Level        | No Level               | Diagnostic Radiographer        | Radiation Therapist        |
| LEVEL 3    | No Level                   | No Level     | No Level        | No Level               | No Level                       | No Level                   |
| LEVEL 2    | No Level                   | No Level     | No Level        | No Level               | No Level                       | No Level                   |
| LEVEL 1    | No Level                   | No Level     | No Level        | No Level               | No Level                       | No Level                   |

Notes:

\*Job title which is in high demand

Table 14.0: Medical Sector Occupational Structure – Allied Health Sub-sector (continued)

| SECTOR     | MEDICAL               |                         |                                 |
|------------|-----------------------|-------------------------|---------------------------------|
| SUB-SECTOR | ALLIED HEALTH         |                         |                                 |
| AREA/LEVEL | FOOD SERVICES         | MEDICAL RECORDS         | MEDICAL LABORATORY              |
| LEVEL 8    | No Level              | No Level                | No Level                        |
| LEVEL 7    | No Level              | No Level                | No Level                        |
| LEVEL 6    | Food Services Officer | Medical Records Officer | No Level                        |
| LEVEL 5    | Food Services Officer | Medical Records Officer | Medical Laboratory Technologist |
| LEVEL 4    | Food Services Officer | Medical Records Officer | Medical Laboratory Technologist |
| LEVEL 3    | No Level              | No Level                | No Level                        |
| LEVEL 2    | No Level              | No Level                | No Level                        |
| LEVEL 1    | No Level              | No Level                | No Level                        |

Table 14.0: Medical Sector Occupational Structure – Allied Health Sub-sector (continued)

| SECTOR     | MEDICAL                      |             |  |                         |                      |                                 |                              |                    |
|------------|------------------------------|-------------|--|-------------------------|----------------------|---------------------------------|------------------------------|--------------------|
| SUB-SECTOR | ALLIED HEALTH                |             |  |                         |                      |                                 |                              |                    |
| AREA/LEVEL | PSYCHOLOGY                   |             | ENVIRONMENTAL<br>HEALTH                | NUTRITION               | DIETITICS            | HEALTH<br>EDUCATION             | MEDICAL<br>SOCIAL WORK       | OPTOMETRY          |
|            | CLINICAL                     | COUNSELLING |  |                         |                      |                                 |                              |                    |
| LEVEL 8    | Senior Clinical Psychologist | No Level    | No Level                               | Consultant Nutritionist | Consultant Dietitian | Senior Health Education Officer | Senior Medical Social Worker | Senior Optometrist |
| LEVEL 7    | Clinical Psychologist        | Counsellor  | No Level                               | Senior Nutritionist     | Senior Dietitian     | Health Education Officer        | Senior Medical Social Worker | Senior Optometrist |
| LEVEL 6    | Clinical Psychologist        | Counsellor  | Environmental Senior Health Officer    | Nutritionist            | Dietitian            | Health Education Officer        | Medical Social worker        | Optometrist        |
| LEVEL 5    | No Level                     | No Level    | Environmental Health Officer           | No Level                | No Level             | No Level                        | No Level                     | No Level           |
| LEVEL 4    | No Level                     | No Level    | Environmental Health Assistant Officer | No Level                | No Level             | No Level                        | No Level                     | No Level           |
| LEVEL 3    | No Level                     | No Level    | No Level                               | No Level                | No Level             | No Level                        | No Level                     | No Level           |
| LEVEL 2    | No Level                     | No Level    | No Level                               | No Level                | No Level             | No Level                        | No Level                     | No Level           |
| LEVEL 1    | No Level                     | No Level    | No Level                               | No Level                | No Level             | No Level                        | No Level                     | No Level           |

Table 15.0: Medical Sector Occupational Structure – Allied Health Sub-sector (Medical Sciences)

| SECTOR             | MEDICAL          |                          |                       |                     |                     |                             |                   |                                  |
|--------------------|------------------|--------------------------|-----------------------|---------------------|---------------------|-----------------------------|-------------------|----------------------------------|
| SUB-SECTOR         | ALLIED HEALTH    |                          |                       |                     |                     |                             |                   |                                  |
| AREA               | MEDICAL SCIENCES |                          |                       |                     |                     |                             |                   |                                  |
| SUB AREA/<br>LEVEL | EMBRYOLOGY       | MEDICAL<br>PHYSICS       | MICROBIOLOGY          | MEDICAL<br>GENETICS | ENTOMOLOGY          | BIOMEDICAL                  | BIOCHEMISTRY      | MEDICAL<br>FORENSICS             |
| LEVEL 8            | No Level         | Senior Medical Physicist | Senior Microbiologist | No Level            | No Level            | No Level                    | Senior Biochemist | No Level                         |
| LEVEL 7            | Embryologist*    | Senior Medical Physicist | Senior Microbiologist | Medical Geneticist* | Senior Entomologist | Senior Biomedical Scientist | Senior Biochemist | Medical Forensic Science Officer |
| LEVEL 6            | Embryologist*    | Medical Physicist        | Microbiologist        | Medical Geneticist* | Entomologist        | Biomedical Scientist        | Biochemist        | Medical Forensic Science Officer |
| LEVEL 5            | No Level         | No Level                 | No Level              | No Level            | No Level            | No Level                    | No Level          | No Level                         |
| LEVEL 4            | No Level         | No Level                 | No Level              | No Level            | No Level            | No Level                    | No Level          | No Level                         |
| LEVEL 3            | No Level         | No Level                 | No Level              | No Level            | No Level            | No Level                    | No Level          | No Level                         |
| LEVEL 2            | No Level         | No Level                 | No Level              | No Level            | No Level            | No Level                    | No Level          | No Level                         |
| LEVEL 1            | No Level         | No Level                 | No Level              | No Level            | No Level            | No Level                    | No Level          | No Level                         |

Notes:

\*Job title which is in high demand

Table 16.0: Medical Sector Occupational Structure – Medical & Research

| SECTOR     | MEDICAL                   |                      |
|------------|---------------------------|----------------------|
| SUB-SECTOR | MEDICAL & HEALTH RESEARCH |                      |
| AREA/LEVEL | STATISTIC                 | RESEARCH             |
| LEVEL 8    | No Level                  | Principal Researcher |
| LEVEL 7    | Senior Biostatistician    | Senior Researcher    |
| LEVEL 6    | Biostatistician           | Researcher           |
| LEVEL 5    | No Level                  | Research Assistant   |
| LEVEL 4    | No Level                  | No Level             |
| LEVEL 3    | No Level                  | No Level             |
| LEVEL 2    | No Level                  | No Level             |
| LEVEL 1    | No Level                  | No Level             |

Table 17.0: Medical Sector Occupational Structure – Traditional & Complementary Medicine

| SECTOR     | MEDICAL                              |                                   |                                 |   |                                       |                         |
|------------|--------------------------------------|-----------------------------------|---------------------------------|---|---------------------------------------|-------------------------|
| SUB-SECTOR | TRADITIONAL & COMPLEMENTARY MEDICINE |                                   |                                 |   |                                       |                         |
| LEVEL/AREA | HOMEOPATHY                           | AYURVEDIC                         | TRADITIONAL CHINESE MEDICINE    | TRADITIONAL MALAY MEDICINE                | COMPLEMENTARY THERAPY                 | WELLNESS                |
| LEVEL 8    | No Level                             | No Level                          | No Level                        | No Level                                  | No Level                              | No Level                |
| LEVEL 7    | No Level                             | No Level                          | No Level                        | No Level                                  | No Level                              | No Level                |
| LEVEL 6    | Homeopathy Consultant**              | No Level                          | No Level                        | No Level                                  | No Level                              | No Level                |
| LEVEL 5    | Homeopathy Practitioner**            | No Level                          | No Level                        | No Level                                  | No Level                              | No Level                |
| LEVEL 4    | Homeopathy Assistant**               | No Level                          | No Level                        | No Level                                  | No Level                              | No Level                |
| LEVEL 3    | No Level                             | Ayurvedic Medicine Practitioner** | Chinese Medicine Practitioner** | Traditional Malay Medicine Practitioner** | Complementary Medicine Practitioner** | Wellness Practitioner** |
| LEVEL 2    | No Level                             | Ayurvedic Medicine Assistant**    | Chinese Medicine Assistant**    | Traditional Malay Medicine Assistant**    | Complementary Medicine Assistant**    | Wellness Assistant**    |
| LEVEL 1    | No Level                             | No Level                          | No Level                        | No Level                                  | No Level                              | No Level                |

Notes:

\*\* Suggested job areas for skills and vocational training

Table 18.0: Pharmaceutical Sector Occupational Structure

| SECTOR             | PHARMACEUTICALS                          |   |                                     |   |
|--------------------|--|---|-------------------------------------|---|
| LEVEL / SUB-SECTOR | REGULATORY                               | ENFORCEMENT                               | RESEARCH & DEVELOPMENT              | PHARMACY PRACTICE                               |
| LEVEL 8            | Principal Pharmacist (Regulatory)        | Principal Pharmacist (Enforcement)        | No Level                            | No Level  |
| LEVEL 7            | Senior Pharmacist (Regulatory)           | Senior Pharmacist (Enforcement)           | Senior Pharmacist (R & D)           | Senior Pharmacist (Pharmacy Practice)           |
| LEVEL 6            | Senior Pharmacist (Regulatory)           | Pharmacist (Enforcement)                  | Pharmacist (R & D)                  | Pharmacist (Pharmacy Practice)                  |
| LEVEL 5            | Senior Assistant Pharmacist (Regulatory) | Senior Assistant Pharmacist (Enforcement) | Senior Assistant Pharmacist (R & D) | Senior Assistant Pharmacist (Pharmacy Practice) |
| LEVEL 4            | Assistant Pharmacist (Regulatory)        | Assistant Pharmacist (Enforcement)        | No Level                            | Assistant Pharmacist (Pharmacy Practice)        |
| LEVEL 3            | No Level                                 | No Level                                  | No Level                            | No Level  |
| LEVEL 2            | No Level                                 | No Level                                  | No Level                            | No Level  |
| LEVEL 1            | No Level                                 | No Level                                  | No Level                            | No Level  |

Table 19.0: Pharmaceuticals Occupational Structure – Pharmacy Practice Sub-sector

| SECTOR         | PHARMACEUTICALS             |                             |                                    |                             |                               |
|----------------|-----------------------------|-----------------------------|------------------------------------|-----------------------------|-------------------------------|
| SUB-SECTOR     | PHARMACY PRACTICE           |                             |                                    |                             |                               |
| LEVEL/<br>AREA | CLINICAL                    | DISPENSING                  | THERAPEUTIC<br>DRUGS<br>MONITORING | RECONSTITUTION              |                               |
|                |                             |                             |                                    | DRUGS<br>CHEMOTHERAPY       | TOTAL PARENTERAL<br>NUTRITION |
| LEVEL 8        | No Level                    | No Level                    | No Level                           | No Level                    | No Level                      |
| LEVEL 7        | Senior Pharmacist           | Senior Pharmacist           | Senior Pharmacist                  | Senior Pharmacist           | Senior Pharmacist             |
| LEVEL 6        | Pharmacist                  | Pharmacist                  | Pharmacist                         | Pharmacist                  | Pharmacist                    |
| LEVEL 5        | Senior Assistant Pharmacist | Senior Assistant Pharmacist | Senior Assistant Pharmacist        | Senior Assistant Pharmacist | Senior Assistant Pharmacist   |
| LEVEL 4        | Assistant Pharmacist        | Assistant Pharmacist        | Assistant Pharmacist               | Assistant Pharmacist        | Assistant Pharmacist          |
| LEVEL 3        | No Level                    | No Level                    | No Level                           | No Level                    | No Level                      |
| LEVEL 2        | No Level                    | No Level                    | No Level                           | No Level                    | No Level                      |
| LEVEL 1        | No Level                    | No Level                    | No Level                           | No Level                    | No Level                      |

Table 20.0: Medical & Surgery Specialisations Occupational Structure

| SECTOR         | MEDICAL                  |                         |                          |                            |                               |                         |                            |                         |
|----------------|--------------------------|-------------------------|--------------------------|----------------------------|-------------------------------|-------------------------|----------------------------|-------------------------|
| SUB-SECTOR     | MEDICAL & SURGERY        |                         |                          |                            |                               |                         |                            |                         |
| LEVEL/<br>AREA | ANAESTHETIC              | CARDIOLOGY              | DERMATOLOGY              | ENDOCRINOLOGY              | GASTROEN-<br>TEROLOGY         | GERIATRIC               | OBSTETRICS &<br>GYNECOLOGY | HEMATOLOGY              |
| LEVEL 8        | Consultant Anaesthetist  | Cardiologist Consultant | Consultant Dermatologist | Consultant Endocrinologist | Consultant Gastroenterologist | Consultant Geriatrician | Consultant Gynecologist    | Hematologist Consultant |
| LEVEL 7        | Anaesthetist             | Cardiologist            | Dermatologist            | Endocrinologist            | Gastroenterologist            | Geriatrician            | Gynecologist               | Hematologist            |
| LEVEL 6        | Medical Officer (Doctor) |                         |                          |                            |                               |                         |                            |                         |
| LEVEL 5        | No Level                 | No Level                | No Level                 | No Level                   | No Level                      | No Level                | No Level                   | No Level                |
| LEVEL 4        | No Level                 | No Level                | No Level                 | No Level                   | No Level                      | No Level                | No Level                   | No Level                |
| LEVEL 3        | No Level                 | No Level                | No Level                 | No Level                   | No Level                      | No Level                | No Level                   | No Level                |
| LEVEL 2        | No Level                 | No Level                | No Level                 | No Level                   | No Level                      | No Level                | No Level                   | No Level                |
| LEVEL 1        | No Level                 | No Level                | No Level                 | No Level                   | No Level                      | No Level                | No Level                   | No Level                |

Table 20.0: Medical &amp; Surgery Specialisations Occupational Structures (continued)

| SECTOR         | MEDICAL                    |                          |                               |                             |   |                               |                         |                                   |                                   |
|----------------|----------------------------|--------------------------|-------------------------------|-----------------------------|---|-------------------------------|-------------------------|-----------------------------------|-----------------------------------|
| SUB-SECTOR     | MEDICAL & SURGERY          |                          |                               |                             |   |                               |                         |                                   |                                   |
| LEVEL/<br>AREA | NEPHROLOGY                 | ONCOLOGY                 | OPHTHALMOLOGY                 | ORTHOPEDIC                  | OTHLARYNGOLOGY<br>(ORL)                 | SPORTS<br>MEDICINE            | STEM CELL               | ESTHETIC/MEDICAL<br>COSMETOLOGY   | NUCLEAR<br>MEDICINE               |
| LEVEL 8        | Consultant<br>Nephrologist | Consultant<br>Oncologist | Consultant<br>Ophthalmologist | Consultant<br>Orthopedician | Consultant<br>Othlaryngologist<br>(ORL) | Sports Medicine<br>Specialist | Stem Cell<br>Specialist | Esthetic/Medical<br>Cosmetologist | Nuclear<br>Medicine<br>Specialist |
| LEVEL 7        | Nephrologist               | Oncologist               | Ophthalmologist               | Orthopedician               | Othlaryngologist<br>(ORL)               | Sports Medicine<br>Physician  | Stem Cell<br>Physician  | Esthetic/Medical<br>Cosmetologist | Nuclear<br>Medicine<br>Physician  |
| LEVEL 6        | Medical Officer (Doctor)   |                          |                               |                             |   |                               |                         |                                   |                                   |
| LEVEL 5        | No Level                   | No Level                 | No Level                      | No Level                    | No Level                                | No Level                      | No Level                | No Level                          | No Level                          |
| LEVEL 4        | No Level                   | No Level                 | No Level                      | No Level                    | No Level                                | No Level                      | No Level                | No Level                          | No Level                          |
| LEVEL 3        | No Level                   | No Level                 | No Level                      | No Level                    | No Level                                | No Level                      | No Level                | No Level                          | No Level                          |
| LEVEL 2        | No Level                   | No Level                 | No Level                      | No Level                    | No Level                                | No Level                      | No Level                | No Level                          | No Level                          |
| LEVEL 1        | No Level                   | No Level                 | No Level                      | No Level                    | No Level                                | No Level                      | No Level                | No Level                          | No Level                          |

Table 20.0: Medical & Surgery Specialisations Occupational Structures (continued)

| SECTOR     | MEDICAL                         |                             |                               |                              |                        |                         |                         |                                   |                           |                        |                      |
|------------|---------------------------------|-----------------------------|-------------------------------|------------------------------|------------------------|-------------------------|-------------------------|-----------------------------------|---------------------------|------------------------|----------------------|
| SUB-SECTOR | MEDICAL & SURGERY               |                             |                               |                              |                        |                         |                         |                                   |                           |                        |                      |
| LEVEL/AREA | TRANSFUSION MEDICINE            | NUCLEAR MEDICINE            | EMERGENCY MEDICINE            | INTERNAL MEDICINE            | PATHOLOGY              | PEDIATRIC               | PSYCHIATRY              | RESPIRATORY                       | RADIOTHERAPY              | RADIOLOGY              | UROLOGY              |
| LEVEL 8    | Transfusion Medicine Specialist | Nuclear Medicine Specialist | Emergency Medicine Specialist | Internal Medicine Specialist | Consultant Pathologist | Consultant Pediatrician | Consultant Psychiatrist | Consultant Respiratory Specialist | Consultant Radiotherapist | Consultant Radiologist | Consultant Urologist |
| LEVEL 7    | Transfusion Medicine Physician  | Nuclear Medicine Physician  | Emergency Medicine Physician  | Internal Medicine Physician  | Pathologist            | Pediatrician            | Psychiatrist            | Respiratory Specialist            | Radiotherapist            | Radiologist            | Urologist            |
| LEVEL 6    | Medical Officer (Doctor)        |                             |                               |                              |                        |                         |                         |                                   |                           |                        |                      |
| LEVEL 5    | No Level                        | No Level                    | No Level                      | No Level                     | No Level               | No Level                | No Level                | No Level                          | No Level                  | No Level               | No Level             |
| LEVEL 4    | No Level                        | No Level                    | No Level                      | No Level                     | No Level               | No Level                | No Level                | No Level                          | No Level                  | No Level               | No Level             |
| LEVEL 3    | No Level                        | No Level                    | No Level                      | No Level                     | No Level               | No Level                | No Level                | No Level                          | No Level                  | No Level               | No Level             |
| LEVEL 2    | No Level                        | No Level                    | No Level                      | No Level                     | No Level               | No Level                | No Level                | No Level                          | No Level                  | No Level               | No Level             |
| LEVEL 1    | No Level                        | No Level                    | No Level                      | No Level                     | No Level               | No Level                | No Level                | No Level                          | No Level                  | No Level               | No Level             |

Table 21.0: Surgery Specialisations Occupational Structure – Medical & Surgery Sub-sector

| SECTOR         | MEDICAL                            |                                 |                             |                          |   |                          |                            |
|----------------|------------------------------------|---------------------------------|-----------------------------|--------------------------|---|--------------------------|----------------------------|
| SUB-SECTOR     | MEDICAL & SURGERY                  |                                 |                             |                          |   |                          |                            |
| AREA           | SURGERY                            |                                 |                             |                          |   | PUBLIC HEALTH            | FAMILY MEDICINE            |
| SUB AREA/LEVEL | CARDIO-THORACIC SURGERY            | HAND & MICRO SURGERY            | VASCULAR SURGERY            | NEURO SURGERY            | RECONSTRUCTIVE & PLASTIC SURGERY            |                          |                            |
| LEVEL 8        | Consultant Cardio-thoracic Surgeon | Consultant Hand & Micro Surgeon | Consultant Vascular Surgeon | Consultant Neuro Surgeon | Consultant Reconstructive & Plastic Surgeon | No Level                 | No Level                   |
| LEVEL 7        | Cardio-thoracic Surgeon            | Hand & Micro Surgeon            | Vascular Surgeon            | Neuro Surgeon            | Reconstructive & Plastic Surgeon            | Public Health Specialist | Family Medicine Specialist |
| LEVEL 6        | Medical Officer (Doctor)           |                                 |                             |                          |   |                          |                            |
| LEVEL 5        | No Level                           | No Level                        | No Level                    | No Level                 | No Level                                    | No Level                 | No Level                   |
| LEVEL 4        | No Level                           | No Level                        | No Level                    | No Level                 | No Level                                    | No Level                 | No Level                   |
| LEVEL 3        | No Level                           | No Level                        | No Level                    | No Level                 | No Level                                    | No Level                 | No Level                   |
| LEVEL 2        | No Level                           | No Level                        | No Level                    | No Level                 | No Level                                    | No Level                 | No Level                   |
| LEVEL 1        | No Level                           | No Level                        | No Level                    | No Level                 | No Level                                    | No Level                 | No Level                   |

Table 22.0: Dentistry Specialisations – Medical &amp; Surgery Sub-sector

| SUB-SECTOR     | MEDICAL & SURGERY                |                         |                         |   |                                   |                           |                                |                                 |
|----------------|----------------------------------|-------------------------|-------------------------|---|-----------------------------------|---------------------------|--------------------------------|---------------------------------|
| AREA           | DENTISTRY                        |                         |                         |   |                                   |                           |                                |                                 |
| SUB AREA/LEVEL | ORAL & MAXILLOFACIAL SURGERY     | ORTHODONTICS            | PERIODONTICS            | PAEDIATRIC DENTISTRY                    | RESTORATIVE                       | PROSTHODONTICS            | ORAL MEDICINE & ORAL PATHOLOGY | PUBLIC HEALTH                   |
| LEVEL 8        | Maxillofacial Surgeon Consultant | Orthodontist Consultant | Consultant Periodontist | Consultant Paediatric Dental Specialist | Consultant Restorative Specialist | Consultant Prosthodontist | Consultant Oral Pathologist    | No Level                        |
| LEVEL 7        | Maxillofacial Surgeon            | Orthodontist            | Periodontist            | Paediatric Dental Specialist            | Restorative Specialist            | Prosthodontist            | Oral Pathologist               | Public Health Dental Specialist |
| LEVEL 6        | Dental Officer                   |                         |                         |   |                                   |                           |                                |                                 |
| LEVEL 5        | No Level                         | No Level                | No Level                | No Level                                | No Level                          | No Level                  | No Level                       | No Level                        |
| LEVEL 4        | No Level                         | No Level                | No Level                | No Level                                | No Level                          | No Level                  | No Level                       | No Level                        |
| LEVEL 3        | No Level                         | No Level                | No Level                | No Level                                | No Level                          | No Level                  | No Level                       | No Level                        |
| LEVEL 2        | No Level                         | No Level                | No Level                | No Level                                | No Level                          | No Level                  | No Level                       | No Level                        |
| LEVEL 1        | No Level                         | No Level                | No Level                | No Level                                | No Level                          | No Level                  | No Level                       | No Level                        |

Table 23.0: Health & Pharmaceutical Manufacturing/ Support Service Occupational Area Structure

| SECTOR         | HEALTH & PHARMACEUTICAL MANUFACTURING/ SUPPORT SERVICE                                  |  |  |   |
|----------------|---|--|--|---|
| SUB-SECTOR     | HEALTH  |  |  |   |
| AREA           | BIOMEDICAL ENGINEERING MAINTENANCE  |  |  |   |
| SUB AREA/LEVEL | RADIOLOGY AND IMAGING ENGINEERING   | LABORATORY ENGINEERING   | DIAGNOSTIC ENGINEERING   | THERAPEUTIC ENGINEERING   |
| LEVEL 8        | No Level  | No Level   | No Level   | No Level  |
| LEVEL 7        | Radiological and Imaging Biomedical Equipment Upgrade & Commissioning Planning          | Laboratory Biomedical Equipment Upgrade & Commissioning Planning             | Diagnostic Biomedical Equipment Upgrade & Commissioning Planning             | Biomedical Upgrade & Commissioning Planning                                   |
| LEVEL 6        | Radiology and Imaging Biomedical Equipment Troubleshooting & Commissioning Coordination | Laboratory Biomedical Equipment Troubleshooting & Commissioning Coordination | Diagnostic Biomedical Equipment Troubleshooting & Commissioning Coordination | Therapeutic Biomedical Equipment Troubleshooting & Commissioning Coordination |
| LEVEL 5        | Radiology and Imaging Biomedical Equipment Maintenance and Testing & Commissioning      | Laboratory Biomedical Equipment Maintenance and Testing & Commissioning      | Diagnostic Biomedical Equipment Maintenance and Testing & Commissioning      | Therapeutic Biomedical Equipment Maintenance and Testing & Commissioning      |
| LEVEL 4        | Biomedical Equipment Maintenance and Testing & Commissioning Coordination               |  |  |   |
| LEVEL 3        | Basic Biomedical Equipment Testing & Commissioning                                      |  |  |   |
| LEVEL 2        | Biomedical Equipment Maintenance  |  |  |   |
| LEVEL 1        | No Level  |  |  |   |

Table 24.0: Medical Sector Occupational Area Structure

| SUB-SECTOR     | MEDICAL & SURGERY        |                        | PUBLIC HEALTH                  |                          | DENTAL                  |   |                            |                            | MEDICAL ASSISTANCE | NURSING                    |
|----------------|--------------------------|------------------------|--------------------------------|--------------------------|-------------------------|---|----------------------------|----------------------------|--------------------|----------------------------|
| AREA/<br>LEVEL | MEDICAL                  | SURGERY                |                                |                          | DENTISTRY               | DENTAL AUXILIARY                            |                            |                            |                    |                            |
|                |                          |                        | PUBLIC HEALTH                  | FAMILY MEDICINE          |                         | DENTAL TECHNOLOGY                           | DENTAL NURSING / THERAPIST | DENTAL SURGICAL ASSISTANCE |                    |                            |
| LEVEL 8        | Medical Consultation     | Surgery Consultation   | No Level                       | No Level                 | Dental Consultation     | No Level                                    | No Level                   | No Level                   | No Level           | No Level                   |
| LEVEL 7        | Medical Specialisation   | Surgery Specialisation | Public Health Medical Practice | Family Medicine Practice | Dental Specialisation   | No Level                                    | No Level                   | No Level                   | No. Level          | Nurse Specialisation       |
| LEVEL 6        | Medical General Practice |                        |                                |                          | Dental General Practice | Dental Equipment Construction & Design      | Dental Treatment           | No Level                   | No. Level          | Nursing Care & Management  |
| LEVEL 5        | No Level                 | No Level               | No Level                       | No Level                 | No Level                | Dental Equipment Construction & Maintenance | Dental Treatment           | No Level                   | Medical Assistance |                            |
| LEVEL 4        | No Level                 | No Level               | No Level                       | No Level                 | No Level                | Dental Equipment Repair & Maintenance       | Dental Treatment           | No Level                   | Medical Assistance | Nursing Care & Supervisory |
| LEVEL 3        | No Level                 | No Level               | No Level                       | No Level                 | No Level                | No Level                                    | No Level                   | Dental Surgery Assistance  | No Level           | Nursing Care               |
| LEVEL 2        | No Level                 | No Level               | No Level                       | No Level                 | No Level                | No Level                                    | No Level                   | No Level                   | No Level           | No Level                   |
| LEVEL 1        | No Level                 | No Level               | No Level                       | No Level                 | No Level                | No Level                                    | No Level                   | No Level                   | No Level           | No Level                   |

Table 25.0: Medical Sector – Food Safety & Quality Occupational Area Structure

| SUB-SECTOR | MEDICAL                                |
|------------|--|
| LEVEL/AREA | FOOD SAFETY & QUALITY                  |
| LEVEL 8    | Food Technology Research & Development |
| LEVEL 7    |  |
| LEVEL 6    | Food Technology Research               |
| LEVEL 5    | Food Technology Research Assistance    |
| LEVEL 4    | No Level                               |
| LEVEL 3    | No Level                               |
| LEVEL 2    | No Level                               |
| LEVEL 1    | No Level                               |

Table 26.0: Medical Sector – Auxiliary Sub-Sector Occupational Area Structure

| SECTOR            | MEDICAL                        |                                    |                         |
|-------------------|--------------------------------|------------------------------------|-------------------------|
| LEVEL/ SUB-SECTOR | AUXILIARY                      |                                    |                         |
| LEVEL 8           | No Level                       | No Level                           | No Level                |
| LEVEL 7           | No Level                       | No Level                           | No Level                |
| LEVEL 6           | No Level                       | No Level                           | No Level                |
| LEVEL 5           | No Level                       | No Level                           | No Level                |
| LEVEL 4           | No Level                       | No Level                           | No Level                |
| LEVEL 3           | Hospital General Assistance ** | No Level                           | Equipment Sterilisation |
| LEVEL 2           | No Level                       | Emergency Patient Transportation** | No Level                |
| LEVEL 1           | No Level                       | No Level                           | No Level                |

Notes:

\*\* Suggested job areas for skills and vocational training

Table 27.0: Medical Sector – Allied Health Occupational Area Structure

| SECTOR             | MEDICAL            |                   |               |                         |                                       |   |                          |
|--------------------|--------------------|-------------------|---------------|-------------------------|---------------------------------------|---|--------------------------|
| SUB SECTOR         | ALLIED HEALTH      |                   |               |                         |                                       |   |                          |
| AREA               | REHABILITATION     |                   |               |                         | RADIOLOGY & ULTRASOUND                |   |                          |
| LEVEL/<br>SUB AREA | SPEECH<br>THERAPY  | AUDIOLOGY         | PHYSIOTHERAPY | OCCUPATIONAL<br>THERAPY | IMAGING<br>(DIAGNOSTIC)               | IMAGING<br>(THERAPY)                    | ULTRASOUND               |
| LEVEL 8            | No Level           | No Level          | No Level      | No Level                | No Level                              | No Level                                | No Level                 |
| LEVEL 7            | Speech<br>Therapy* | Audio<br>Therapy* | Physiotherapy | Occupational<br>Therapy | No Level                              | No Level                                | No Level                 |
| LEVEL 6            |                    |                   |               |                         | Radiography/<br>Diagnostic<br>Imaging | Radiotherapy/<br>Therapeutic<br>Imaging | No Level                 |
| LEVEL 5            | No Level           | No Level          | No Level      | No Level                |                                       |   | Diagnostic<br>Ultrasound |
| LEVEL 4            | No Level           | No Level          | No Level      | No Level                |                                       |   | No Level                 |
| LEVEL 3            | No Level           | No Level          | No Level      | No Level                | No Level                              | No Level                                | No Level                 |
| LEVEL 2            | No Level           | No Level          | No Level      | No Level                | No Level                              | No Level                                | No Level                 |
| LEVEL 1            | No Level           | No Level          | No Level      | No Level                | No Level                              | No Level                                | No Level                 |

Table 27.0: Medical Sector – Allied Health Occupational Area Structure (continued)

| SECTOR     | MEDICAL          |                                |   |
|------------|------------------|--------------------------------|---|
| SUB-SECTOR | ALLIED HEALTH    |                                |   |
| LEVEL/AREA | FOOD SERVICES    | MEDICAL RECORDS                | MEDICAL LABORATORY                              |
| LEVEL 8    | No Level         | No Level                       | No Level  |
| LEVEL 7    | No Level         | No Level                       | No Level  |
| LEVEL 6    | Food Preparation | Medical Records Administration | No Level  |
| LEVEL 5    |                  |                                | Medical Laboratory Equipment Handling & Testing |
| LEVEL 4    |                  |                                |   |
| LEVEL 3    | No Level         | No Level                       | No Level  |
| LEVEL 2    | No Level         | No Level                       | No Level  |
| LEVEL 1    | No Level         | No Level                       | No Level  |

Table 27.0: Medical Sector – Allied Health Occupational Area Structure (continued)

| SECTOR     | MEDICAL             |             |                                 |                          |                       |  |                                  |  |
|------------|---------------------|-------------|---------------------------------|--------------------------|-----------------------|--|----------------------------------|--|
| SUB-SECTOR | ALLIED HEALTH       |             |                                 |                          |                       |  |                                  |  |
| AREA/LEVEL | PSYCHOLOGY          |             | ENVIRONMENTAL HEALTH            | NUTRITION                | DIETITICS             | HEALTH EDUCATION                       | MEDICAL SOCIAL WORK              | OPTOMETRY                                      |
|            | CLINICAL            | COUNSELLING |                                 |                          |                       |  |                                  |  |
| LEVEL 8    | Clinical Psychology | No Level    | No Level                        | Nutritional Consultation | Dietitic Consultation | Health Education Planning & Management | Medical Social Work Coordination | Optometry Diagnosis & Visual Aids Prescription |
| LEVEL 7    |                     | Counseling  | No Level                        |                          |                       | Health Education Delivery              |                                  |  |
| LEVEL 6    |                     |             | Environmental Health Management |                          |                       |  |                                  |  |
| LEVEL 5    | No Level            | No Level    |                                 | No Level                 | No Level              | No Level                               | No Level                         | No Level                                       |
| LEVEL 4    | No Level            | No Level    |                                 | No Level                 | No Level              | No Level                               | No Level                         | No Level                                       |
| LEVEL 3    | No Level            | No Level    | No Level                        | No Level                 | No Level              | No Level                               | No Level                         | No Level                                       |
| LEVEL 2    | No Level            | No Level    | No Level                        | No Level                 | No Level              | No Level                               | No Level                         | No Level                                       |
| LEVEL 1    | No Level            | No Level    | No Level                        | No Level                 | No Level              | No Level                               | No Level                         | No Level                                       |

Table 28.0: Medical sector – Allied Health Occupational Area Structure (Medical Sciences)

| SECTOR         | MEDICAL                         |                                     |                                  |                                      |                                |                                |                                  |  |
|----------------|---------------------------------|-------------------------------------|----------------------------------|--------------------------------------|--------------------------------|--------------------------------|----------------------------------|--|
| SUB-SECTOR     | ALLIED HEALTH                   |                                     |                                  |                                      |                                |                                |                                  |  |
| AREA           | MEDICAL SCIENCES                |                                     |                                  |                                      |                                |                                |                                  |  |
| SUB AREA/LEVEL | EMBRYOLOGY                      | MEDICAL PHYSICS                     | MICROBIOLOGY                     | MEDICAL GENETICS                     | ENTOMOLOGY                     | BIOMEDICAL                     | BIOCHEMISTRY                     | MEDICAL FORENSICS                            |
| LEVEL 8        | No Level                        | Medical Physics Research & Analysis | Microbiology Research & Analysis | No Level                             | No Level                       | No Level                       | Biochemistry Research & Analysis | No Level                                     |
| LEVEL 7        | Embryology Research & Analysis* |                                     |                                  | Medical Genetic Research & Analysis* | Entomology Research & Analysis | Biomedical Research & Analysis |                                  | Medical Forensic Science Research & Analysis |
| LEVEL 6        |                                 |                                     |                                  |                                      |                                |                                |                                  |  |
| LEVEL 5        | No Level                        | No Level                            | No Level                         | No Level                             | No Level                       | No Level                       | No Level                         | No Level                                     |
| LEVEL 4        | No Level                        | No Level                            | No Level                         | No Level                             | No Level                       | No Level                       | No Level                         | No Level                                     |
| LEVEL 3        | No Level                        | No Level                            | No Level                         | No Level                             | No Level                       | No Level                       | No Level                         | No Level                                     |
| LEVEL 2        | No Level                        | No Level                            | No Level                         | No Level                             | No Level                       | No Level                       | No Level                         | No Level                                     |
| LEVEL 1        | No Level                        | No Level                            | No Level                         | No Level                             | No Level                       | No Level                       | No Level                         | No Level                                     |

Notes:

\* Job title which is in high demand

Table 29.0: Medical Sector Occupational Area Structure – Medical & Research

| SECTOR     | MEDICAL                            |  |
|------------|------------------------------------|--|
| SUB-SECTOR | MEDICAL & HEALTH RESEARCH          |  |
| AREA/LEVEL | STATISTIC                          | RESEARCH                                 |
| LEVEL 8    | No Level                           | Research Analysis & Development Planning |
| LEVEL 7    | Biostatistical Analysis Management |  |
| LEVEL 6    | Biostatistical Analysis            | Research Data Analysis                   |
| LEVEL 5    | No Level                           | Research Data Compilation                |
| LEVEL 4    | No Level                           | No Level                                 |
| LEVEL 3    | No Level                           | No Level                                 |
| LEVEL 2    | No Level                           | No Level                                 |
| LEVEL 1    | No Level                           | No Level                                 |

Table 30.0: Medical Sector - Traditional &amp; Complementary Medicine Occupational Area Structure

| SECTOR      | MEDICAL                              |                               |                               |   |                                   |                       |
|-------------|--------------------------------------|-------------------------------|-------------------------------|---|-----------------------------------|-----------------------|
| SUB-SECTOR  | TRADITIONAL & COMPLEMENTARY MEDICINE |                               |                               |   |                                   |                       |
| LEVEL/ AREA | HOMEOPATHY                           | AYURVEDIC                     | TRADITIONAL CHINESE MEDICINE  | TRADITIONAL MALAY MEDICINE              | COMPLEMENTARY THERAPY             | WELLNESS              |
| LEVEL 8     | No Level                             | No Level                      | No Level                      | No Level                                | No Level                          | No Level              |
| LEVEL 7     | No Level                             | No Level                      | No Level                      | No Level                                | No Level                          | No Level              |
| LEVEL 6     | Homeopathy Consultation **           | No Level                      | No Level                      | No Level                                | No Level                          | No Level              |
| LEVEL 5     | Homeopathy Practice Assistance**     | No Level                      | No Level                      | No Level                                | No Level                          | No Level              |
| LEVEL 4     |                                      | No Level                      | No Level                      | No Level                                | No Level                          | No Level              |
| LEVEL 3     | No Level                             | Ayurvedic Medicine Healing ** | Chinese Medicine & Healing ** | Traditional Malay Medicine & Healing ** | Complementary Medicine Healing ** | Wellness Treatment ** |
| LEVEL 2     | No Level                             |                               |                               |   |                                   |                       |
| LEVEL 1     | No Level                             | No Level                      | No Level                      | No Level                                | No Level                          | No Level              |

Notes:

\*\* Suggested Job Areas for Skills and Vocational Training

Table 31.0: Pharmaceuticals Sector Occupational Area Structure

| SECTOR             | PHARMACEUTICALS   |  |  |  |
|--------------------|---|--|--|--|
| LEVEL / SUB-SECTOR | REGULATORY  | ENFORCEMENT  | RESEARCH & DEVELOPMENT                           | PHARMACY PRACTICE                        |
| LEVEL 8            | Pharmaceutical Regulatory Activities Planning             | Pharmaceutical Enforcement Activities Planning           | No Level   | No Level                                 |
| LEVEL 7            | Pharmaceutical Regulatory Activities Planning & Control   | Pharmaceutical Enforcement Activities Planning & Control | Pharmaceutical Research And Development Planning | Pharmacy Practice Planning & Counselling |
| LEVEL 6            |   |  | Pharmaceutical Research Evaluation And Analysis  |  |
| LEVEL 5            | Pharmaceutical Regulatory Testing Activities And Analysis | Pharmaceutical Enforcement Monitoring                    | Pharmaceutical Research                          | Pharmacy Practice Treatment              |
| LEVEL 4            | Pharmaceutical Regulatory Testing Assistance              | Pharmaceutical Enforcement Implementation                | No Level   | Pharmacy Practice Treatment & Assistance |
| LEVEL 3            | No Level  | No Level   | No Level   | No Level                                 |
| LEVEL 2            | No Level  | No Level   | No Level   | No Level                                 |
| LEVEL 1            | No Level  | No Level   | No Level   | No Level                                 |

Table 32.0: Pharmaceuticals– Pharmacy Practice Sub-sector Occupational Area Structure

| SECTOR       | PHARMACEUTICALS                        |                                      |   |  |  |
|--------------|--|--------------------------------------|---|--|--|
| SUB-SECTOR   | PHARMACY PRACTICE                      |                                      |   |  |  |
| LEVEL / AREA | CLINICAL                               | DISPENSING                           | THERAPEUTIC DRUGS MONITORING                        | RECONSTITUTION   |  |
|              |  |                                      |   | DRUGS CHEMOTHERAPY                                     | TOTAL PARENTERAL NUTRITION                                     |
| LEVEL 8      | No Level                               | No Level                             | No Level  | No Level   | No Level   |
| LEVEL 7      | Pharmaceutical Treatment & Counselling | Pharmaceutical Dispensing Management | Therapeutic Drugs Monitoring Planning & Counselling | Drugs Chemotherapy Reconstitution Treatment & Planning | Total parenteral Nutrition Reconstitution Treatment & Planning |
| LEVEL 6      |  |                                      |   |  |  |
| LEVEL 5      | Pharmaceutical Treatment               | Pharmaceutical Dispensing            | Therapeutic Drugs Monitoring                        | Drugs Chemotherapy Reconstitution Treatment            | Total parenteral Nutrition Reconstitution Treatment            |
| LEVEL 4      |  |                                      | Therapeutic Drugs Monitoring Assistance             | Drugs Chemotherapy Reconstitution Assistance           | Total parenteral Nutrition Reconstitution Assistance           |
| LEVEL 3      | No Level                               | No Level                             | No Level  | No Level   | No Level   |
| LEVEL 2      | No Level                               | No Level                             | No Level  | No Level   | No Level   |
| LEVEL 1      | No Level                               | No Level                             | No Level  | No Level   | No Level   |

### **4.3 SKILLED PERSONNEL DEMAND IN THE MEDICAL & PHARMACEUTICAL HEALTHCARE INDUSTRY**

This section will highlight the skilled personnel requirement in the Medical & Pharmaceutical Healthcare industry which are in demand currently and in the near future. The Medical & Pharmaceutical Healthcare industry is technology and research-intensive, requiring highly qualified professionals such as pharmacists, chemists, biotechnologists, microbiologists, and biologists especially at the supervisory level in production, quality assurance and R&D activities. According to the Ministry of Health, the present employment of the industry is estimated at about 8,700 persons with 75% engaged in modern pharmaceuticals. About 60% of the jobs are in the managerial, technical, supervisory and skilled workforce categories.

The areas/sectors as listed below have been highlighted by the industry as being in demand which are:

#### **i. Allied Health – Embryologists & Geneticists**

Presently, the industry faces a shortage of skilled workforce, especially highly qualified scientists and researchers to conduct R&D activities. There are an insufficient number of scientists and researchers for specific research in the private sectors as most of them are involved in primary public research institutes. Based on input from both the private sector and the public sector, there is a need to train more **Embryologists** and **Geneticists** due to demand from patients regarding fertility and invitro (IVF).

**ii. Rehabilitation - Speech Therapists & Audiologist**

Under the **Rehabilitation** sub area, there is currently a demand for **Speech Therapists** and **Audiologists** both in the Private Sector and Public Sector.

**4.4 SUGGESTED OCCUPATIONS FOR SKILLS AND VOCATIONAL TRAINING**

This section will highlight occupations in the Medical & Pharmaceutical Healthcare Industry that are suitable to be adapted to the Skills and Vocational training system. Based on input from the medical industry, the majority of occupations and their respective occupational areas require a strong theoretical background including hands on training in the workplace such as in hospitals and clinics. The personnel who will deal directly with patients such as Medical Doctors, Dental Doctors, Nurses, Assistant Medical Officers, Dental Support and Therapists etc, may not be suitable to be adapted into the skills training system.

However, there are occupational areas that are possible to be adapted to skills training and have National Occupational Skills Standards (NOSS) developed that in turn will be used as the basis for skills training. These occupational areas are:

- i. All Traditional & Complementary Medicine practitioners
- ii. Health Attendant
- iii. Ambulance Driver

#### **4.5 OCCUPATIONAL DESCRIPTION**

The Occupational Description describes the occupations under the Occupational Structure in terms of competencies and duties that they are designated to carry out as competent personnel. These Occupational Descriptions can be used as reference for employees, employers, practitioners, trainers and academicians alike.

The Occupational Descriptions in this chapter are organised according to sector, area and hierarchy of levels.

**Please note that all Occupational Descriptions in this section are for reference only, where as practitioners can refer the Occupational Description as specified by their respective regulatory bodies and authorities such as for Medical Practice, Nursing, Pharmaceuticals and Allied Health.**

## 5. RECOMMENDATIONS & CONCLUSION

### 5.1 RECOMMENDATIONS

Based on the findings obtained throughout the Occupational Analysis on the Medical and Pharmaceutical Healthcare Industry, the occupational areas that are possible to be adapted to skills training and have National Occupational Skills Standards (NOSS) developed to be used as the basis for skills training are:

- i. All Traditional & Complementary Medicine practitioners
- ii. Health Attendant
- iii. Ambulance Driver

This is so that the personnel in this area will obtain a more structured skills training and also will enable experienced and skilled to be certified.

### 5.2 CONCLUSION

As a result of the Medical and Pharmaceutical Healthcare Industry Occupational Analysis conducted together with expert panel members from various Medical and Pharmaceutical organizations, a total of **177 job titles, 3 main sectors, 35 Sub-Sectors and 30 areas** have been identified.

Malaysia has always placed great importance and emphasis on the quality of the services that it provides in line with the aspirations to serve the people of Malaysia. The main goal of the personnel in this industry to provide a world class health care

system therefore one of the key components of an excellent service is the development of competent professionals who will be able to provide high quality health care.

Referring to Malaysia's economical plans and vision for the coming years, a framework of the medical and pharmaceutical healthcare industry workforce has been identified. It is hoped that the result of this Occupational Analysis will be able to be used as reference as how to fulfill the future plans of developing skilled personnel and certifying Malaysians in the Medical and Pharmaceutical Healthcare industry towards improving the quality of life of Malaysians and at boosting Malaysia's global competitiveness.

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**ANNEX 1: MALAYSIAN OCCUPATIONAL SKILLS  
QUALIFICATION FRAMEWORK  
(MOSQF) LEVEL DESCRIPTOR**

**MALAYSIAN OCCUPATIONAL SKILLS QUALIFICATION FRAMEWORK (MOSQF)**  
**LEVEL DESCRIPTOR**

| Level | Level Description   |
|-------|---|
| 1     | Achievement at this level reflects the ability to use relevant knowledge, skills and procedures to <b>complete routine and predictable tasks</b> that include responsibility for completing tasks and procedures subject to <b>direction or guidance</b>  |
| 2     | Achievement at this level reflects the ability to select and use relevant knowledge, <b>ideas</b> , skills and procedures to <b>complete well-defined tasks and address straightforward problem</b> . It includes <b>taking responsibility</b> for completing tasks and procedures, <b>and exercising autonomy and judgment</b> subject to overall direction or guidance  |
| 3     | Achievement at this level reflects the ability to <b>identify and use relevant understanding</b> , methods and skills to <b>complete task</b> and address problems that are well defined with a <b>measure of complexity</b> . It includes taking responsibility for initiating and completing tasks and procedures as well as exercising autonomy and judgments <b>within limited parameter</b> . It also reflects awareness of different perspectives or approaches within an area of study or work                                 |
| 4     | Achievement at this level reflects the ability to identify and use relevant understanding, methods and skills to address problems that are well defined but <b>complex and non-routine</b> . It includes taking responsibility for overall courses of action as well as exercising autonomy and <b>judgment within fairly broad parameters</b> . It also reflects <b>under-standing of different</b> perspective or approaches within an area of study or work  |
| 5     | Achievement at this level reflects the ability to identify and use relevant understanding, methods and skills to address <b>broadly-defined, complex problems</b> . It includes taking responsibility for <b>planning and developing courses</b> of action as well as exercising autonomy and judgment within broad parameters. It also reflects <b>understanding of different perspectives, approaches or schools of thought and the reasoning behind them</b>   |
| 6     | Achievement at this level reflects the ability to <b>refine</b> and use relevant understanding, methods and skills to address <b>complex problems that have limited definition</b> . It includes taking responsibility for planning and developing courses of action <b>that are able to underpin substantial change or development, as well as exercising broad autonomy and judgment</b> . It also reflects an understanding of different perspectives, <b>approaches of schools of thought and the theories that underpin them</b> |

| Level | Level Description  |
|-------|--|
| 7     | Achievement at this level reflects the ability to <b>reformulate</b> and use relevant understanding, methodologies and approaches to address <b>problematic situations</b> that involve many interacting factors. It includes taking responsibility for <b>planning and developing</b> courses of action that initiate or underpin substantial change or development, as well as exercising broad autonomy and judgment. It also reflects an understanding <b>of theoretical and relevant methodological perspectives, and how they affect their area of study or work</b>   |
| 8     | Achievement at this level reflects the <b>ability to develop original understanding</b> and extend an area of knowledge or professional practice. It reflects the ability to address problematic situations that involve many complexes, interacting factors through initiating, designing and undertaking research, development or strategic activities. It involves the exercise of broad autonomy, judgement and leadership in sharing responsibility for the development of a field of work or knowledge, or for creating substantial professional or organisational change. It also reflects a critical understanding of relevant theoretical and methodological perspectives and how they affect the field of knowledge or work. |

## **ANNEX 2 : LIST OF DEVELOPMENT PANEL AND FACILITATORS**

**LIST OF INDUSTRY PANEL MEMBERS FOR THE MEDICAL AND PHARMACEUTICAL  
INDUSTRY OCCUPATIONAL ANALYSIS DEVELOPMENT**

| <b>NO</b> | <b>NAME</b>                                       | <b>POSITION</b>                                      | <b>EXPERTISE</b> | <b>ORGANISATION</b>   |
|-----------|---|--|------------------|---|
| 1         | PROF. DR UNGKU<br>MOHD NOOR BIN.<br>UNGKU MAHMOOD | CONSULTANT   | HOMEOPATHY       | FITRAHTECH<br>MEDICINA<br>ALTERNATIVA                                     |
| 2         | DATUK DR. BABA MD.<br>DENI                        | CHAIRMAN   | MEDICAL          | KUMP. KLINIK<br>PENAWAR DAN<br>PEMBEDAHAN                                 |
| 4         | DATIN NORMAH BT<br>MOHD ZIN                       | NURSE<br>SUPERVISOR                                  | NURSING          | NURSING DIVISION,<br>KEMENTERIAN<br>KESIHATAN MALAYSIA                    |
| 3         | PN. FARINA BT<br>ZULKERNAIN                       | DEPUTY DIRECTOR                                      | ALLIED HEALTH    | ALLIED HEALTH<br>DIVISION, MIN OF<br>HEALTH                               |
| 4         | PN. RUSIDAH<br>SELAMAT                            | DEPUTY DIRECTOR                                      | NUTRITION        | MINISTRY OF HEALTH  |
| 5         | PN. NOORIZAM<br>IBRAHIM                           | DEPUTY DIRECTOR                                      | PHARMACEUTICAL   | NATIONAL<br>PHARMACEUTICAL<br>CONTROL BUREAU                              |
| 6         | DR. KHALIDAH KHALID                               | HEAD ASSISTANT<br>DIRECTOR                           | DENTISTRY        | MELAKA STATE<br>HEALTH DEPARTMENT<br>(JABATAN KESIHATAN<br>NEGERI MELAKA) |
| 7         | PN. NORAZLIANA<br>MOHD NOR                        | HEAD ASSISTANT<br>DIRECTOR                           | NUTRITION        | MINISTRY OF HEALTH  |
| 8         | PN AZLINA ISMAIL                                  | HEAD ASSISTANT<br>DIRECTOR                           | PHARMACEUTICAL   | NATIONAL<br>PHARMACEUTICAL<br>CONTROL BUREAU                              |
| 9         | PN SUHANA JAWAHIR                                 | PHARMACIST   | PHARMACEUTICAL   | NATIONAL<br>PHARMACEUTICAL<br>CONTROL BUREAU                              |
| 10        | PN NORA BT HAMID                                  | OCCUPATIONAL<br>THERAPY<br>REHABILITATION<br>OFFICER | MEDICAL          | HOSPITAL PERMAI<br>JOHOR  |

| NO | NAME                             | POSITION                     | EXPERTISE               | ORGANISATION                            |
|----|----------------------------------|------------------------------|-------------------------|---|
| 11 | PN. INTAN BT KASAH               | EXECUTIVE DIRECTOR           | WELLNESS/<br>HOMEOPATHY | FITRAHTECH<br>MEDICINE<br>ALTERNATIVA   |
| 12 | PN. SUMERA BT<br>MAZLAN          | OFFICER                      | PHARMACEUTICAL          | PHARMANIAGA<br>MANUFACTURING<br>SDN BHD |
| 13 | PN.KALSOM BT<br>MD.ISA           | OFFICER                      | PHARMACEUTICAL          | PHARMANIAGA<br>MANUFACTURING<br>SDN BHD |
| 13 | EN. BADRUL NILAM<br>BIN MD SAAID | ASSISTANT<br>MEDICAL OFFICER | MEDICAL                 | HOSPITAL BATU<br>PAHAT                  |
| 14 | PN. NURAIN JURNALIS<br>RIZAL     | CARDIAC<br>TECHNICIAN        | BIOMEDICAL              | PRIVATE HOSPITAL,<br>KUALA LUMPUR       |

**LIST OF FACILITATORS FOR THE MEDICAL & PHARMACEUTICAL  
INDUSTRY OCCUPATIONAL ANALYSIS DEVELOPMENT**

**DR. AMIRON BIN ISMAIL**

**PN. EVARINA BINTI AMIRON**

FACILITATOR

PRITEC ACADEMY

**PN. RAFIDAH BINTI AMIRRUDIN**

CO-FACILITATOR

PRITEC ACADEMY

**EN. MUHAMMAD ROSMIZAN BIN ABDUL WAHAB**

**CIK NORFADILAH BINTI ITHNIN**

SECRETARIAT

PRITEC ACADEMY

**ANNEX 3: OCCUPATIONAL DESCRIPTIONS  
(OD) FOR THE MEDICAL &  
PHARMACEUTICAL INDUSTRY**

**SECTOR : MEDICAL**  
**SUB-SECTOR : MEDICAL & SURGERY**



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 6**  
**MEDICAL OFFICER (DOCTOR)**

A medical officer (doctor) is designated to diagnose illness, prescribe and administer treatment for injury and disease.

**A Medical Officer (Doctor) will be able to:**

1. analyse records, reports, test results, or examination information to diagnose medical condition of patient;
2. prescribe or administer treatment, therapy, medication, vaccination, and other specialised medical care to treat or prevent illness, disease, or injury;
3. monitor patient's condition, patient's progress and re-evaluates treatments as necessary;
4. discuss procedures and discusses test results on prescribed treatments with patients;
5. operate on patients to remove, or improve functioning of diseased or injured body parts and systems;
6. collect, record, and maintain patient information, such as medical history, reports, and examination results;
7. refer patient to medical specialist or other practitioner when necessary;
8. advise patients and community concerning diet, activity, hygiene, and disease prevention;

9. implement, or administer health programs or standards in hospital, business, or community for information, prevention, or treatment of injury or illness;
10. coordinate activities of nurses, students, assistants, therapists, and other medical staff;
11. prepare reports for government or management of birth, death, and disease statistics, workforce evaluations, or medical status of individuals; and
12. conduct research to study anatomy and develop or test medications, treatments, or procedures to prevent, or control disease or injury.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 7**  
**ANESTHETIST**

An anesthetist is designated to administer anesthetics during surgery or other medical procedures.

**An Anesthetist will be able to:**

1. administer anesthetic or sedation during medical procedures, using local, intravenous, spinal, or caudal methods;
2. monitor patient before, during, and after anesthesia and counteracts adverse reactions or complications;
3. examine patient to determine risk during surgical, obstetrical, and other medical procedures;
4. confer with medical professional to determine type and method of anesthetic or sedation to render patient insensible to pain;
5. record type and amount of anesthesia and patient condition throughout procedure;
6. inform staff of types and methods of anesthesia administration, signs of complications, and emergency methods to counteract reactions;
7. follow up patient's condition after discharge; and
8. refer cases to specialist or consultant (if necessary).



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 8**  
**CONSULTANT ANESTHETIST**

A consultant anesthetist is designated to perform management of patients receiving anesthesia and be responsible for the care of these patients and rules set by medical administration for control of the work system and conduct all activities within the contracted level of service and operating plan for anesthetic services.

**A Consultant Anesthetist will be able to:**

1. provide anesthesia care to elective as well as emergency cases;
2. perform management of patients receiving anesthesia;
3. manage the anesthetic team to deliver timely, safe and effective care in line with the guidelines, operating standards and contractual obligations of the anesthetic service;
4. ensure all specialists working within the service provide timely completion of all documentation pertinent to diagnosis, treatment, transfer or discharge in line with service standards and agreed protocols when in clinic;
5. keep up to date in developments relevant to best practice in anesthetic;
6. respond to complaints and critical incidents in an appropriate and timely manner; and
7. participate in all requested departmental, consultant and senior staff training sessions and meetings.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 7**  
**CARDIOLOGIST**

A cardiologist is designated to examine patients for symptoms indicative of heart disorders, study diagnostic images and electrocardiograph recordings to aid in making diagnoses, prescribe medications and recommend dietary and activity program as indicated.

**A Cardiologist will be able to:**

1. examine patient for symptoms indicative of heart disorders using medical instruments and equipment;
2. study diagnostic images and electrocardiograph recordings to aid in making diagnoses;
3. prescribe medications and recommend dietary and activity program as indicated;
4. refer patient to surgeon specialising in cardiac cases when need for corrective surgery is indicated;
5. analyse records, reports, test results or examination information to diagnose medical condition of patient;
6. prescribe or administer treatment, therapy, medication, vaccination and other specialised medical care to treat or prevent illness, disease or injury;
7. monitor patients' condition and progress and re-evaluates treatments as necessary;

8. explain procedures and discusses test results on prescribed treatments with patients;
9. collect, record and maintain patient information such as medical history, reports and examination results; and
10. refer patient to medical specialist or other practitioner when necessary.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 8**  
**CONSULTANT CARDIOLOGIST**

A consultant cardiologist is designated to perform duties of diagnosis and management of patients attending the cardiology department, analyse examination information to diagnose complex cases of patients, manage the Cardiology team to deliver timely, safe and effective care in line with the guidelines, operating standards and contractual obligations of the Cardiology service and ensure all specialists working within the service provide timely completion of all documentation pertinent to diagnosis, treatment, transfer or discharge in line with service standards and agreed protocols

**A Consultant Cardiologist will be able to:**

1. analyse records, reports, test results or examination information to diagnose complex cases of patients;
2. direct and manage the Cardiology team to deliver timely, safe and effective care in line with the guidelines, operating standards and contractual obligations of the Cardiology service;
3. ensure all specialists working within the service provide timely completion of all documentation pertinent to diagnosis, treatment, transfer or discharge in line with service standards and agreed protocols when in clinic;
4. keep up to date in developments relevant to best practice in Cardiology;
5. respond to complaints and critical incidents in an appropriate and timely manner; and

6. participate in all requested departmental, consultant and senior staff training sessions and meetings.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 7**  
**DERMATOLOGIST**

A dermatologist is designated to diagnose and treat diseases of human skin through treatment of abscesses, skin injuries, and other skin infections, and monitor patients' condition and re-evaluates treatments as necessary, explain procedures and discusses test results on prescribed treatments with patients and collect, record, and maintain patient information, such as medical history, reports, and examination results.

**A Dermatologist will be able to:**

1. examine skin to determine nature of disease, blood samples and smears from affected areas,
2. examine various chemical and biological specimens
3. perform tests to identify disease-causing organisms or pathological conditions;
4. prescribe and administers medications, and applies superficial radiotherapy and other localised treatments;
5. treat abscesses, skin injuries, and other skin infections, and surgically exercises coetaneous malignancies, cysts, birthmarks, and other growths;
6. treat scars, using dermabrasion;
7. analyse records, reports, test results, or examination information to diagnose medical condition of patient;
8. monitor patients' condition and progress and re-evaluates treatments as necessary;

9. explain procedures and discusses test results on prescribed treatments with patients; and
10. collect, record, and maintain patient information, such as medical history, reports, and examination results.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 8**  
**CONSULTANT DERMATOLOGIST**

A consultant dermatologist is designated to direct and manage the dermatology team to deliver timely, safe and effective care in line with the guidelines, operating standards and contractual obligations of the dermatology service, ensure all specialists working within the service provide timely completion of all documentation pertinent to diagnosis, treatment, transfer or discharge in line with service standards and agreed protocols when in the clinic.

**A Consultant Dermatologist will be able to:**

1. direct and manage the dermatology team to deliver timely, safe and effective care in line with the guidelines, operating standards and contractual obligations of the dermatology service;
2. ensure all specialists working within the service provide timely completion of all documentation pertinent to diagnosis, treatment, transfer or discharge in line with service standards and agreed protocols when in clinic;
3. keep up to date in developments relevant to best practice in dermatology;
4. respond to complaints and critical incidents in an appropriate and timely manner; and
5. participate in all requested departmental, consultant and senior staff training sessions and meetings.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 7**  
**ENDOCRINOLOGIST**

An endocrinologist is designated to treat disorders of the endocrine system, and focuses primarily on the organs whose primary function is hormone secretion. These organs include the pituitary gland, thyroid gland, adrenals, ovaries, testes, and pancreas.

**An Endocrinologist will be able to:**

1. diagnose evaluation of a wide variety of symptoms and variations and the long-term management of disorders of deficiency or excess of one or more hormones;
2. diagnose and treats endocrine diseases by using laboratory tests;
3. investigate diseases through excitation/stimulation or inhibition/suppression testing, which might involve injection with a stimulating agent to test the function of an endocrine organ;
4. assess typical patterns of physical development and abnormal test results as indicative of disease or not;
5. diagnose imaging of endocrine organs; and
6. care for the person as well as the disease, because most endocrine disorders are chronic diseases that need life-long care.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 8**  
**CONSULTANT ENDOCRINOLOGIST**

A consultant endocrinologist is designated to perform an examination, search for signs and symptoms of hormone imbalance, disorders or diseases, order tests to better understand a patient's condition and counsel patients on subjects such as diets, hygiene and other areas of preventive maintenance for problems.

**A Consultant Endocrinologist will be able to:**

1. perform an examination, search for signs and symptoms of hormone imbalance, disorders or diseases such as osteoporosis, diabetes or thyroid malfunction;
2. order tests to better understand a patient's condition such as to gauge whether a patient's hormone levels are normal or determine whether a metabolism is abnormally slow or fast; and
3. counsel patients on subjects such as diet, hygiene and other areas of preventative maintenance for problems such as hypertension and cholesterol levels.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 7**  
**GASTROENTEROLOGIST**

A gastroenterologist is designated to treat diseases of the digestive system (the esophagus, stomach, small and large intestine, liver, pancreas and gallbladder).

**A Gastroenterologist will be able to:**

1. perform Colonoscopy – an examination of the colon using a soft, flexible fiber-optic instrument to examine the entire colon lining and also perform biopsies and polyp removal;
2. perform EGD (Upper Endoscopy) – this procedure uses a soft, flexible fiber-optic instrument to examine the esophagus, stomach and duodenum;
3. perform Esophageal 24-hours pH study uses a tiny flexible tube to measure the amount of acid that refluxes (comes up) from the stomach to the esophagus during a 24-hours period;
4. perform Sigmoidoscopy using a flexible, fiber-optic tube to examine limited portions of the lower colon; and
5. analyse records, reports, test results or examination information to diagnose medical condition of patient.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 8**  
**CONSULTANT GASTROENTEROLOGIST**

A consultant gastroenterologist is designated to treat patients with complex diseases of the digestive system (the esophagus, stomach, small and large intestine, liver, pancreas and gallbladder).

**A Consultant Gastroenterologist will be able to:**

1. analyse records, reports, test results or examination information to diagnose complex cases of patient.
2. direct and manage the Gastroenterology team to deliver timely, safe and effective care in line with the guidelines, operating standards and contractual obligations of the Gastroenterology service;
3. ensure all specialists working within the service provide timely completion of all documentation pertinent to diagnosis, treatment, transfer or discharge in line with service standards and agreed protocols when in clinic;
4. keep up to date in developments relevant to best practice in Gastroenterology;
5. respond to complaints and critical incidents in an appropriate and timely manner; and
6. participate in all requested departmental, consultant and senior staff training sessions and meetings.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 7**  
**GERIATRICIAN**

A geriatrician is designated to diagnose, provide treatment and prevention of illness in senior citizens.

**A Geriatrician will be able to:**

1. provide medication management, management of finances, home safety and modifications;
2. provide an elderly patient and will utilize geriatric care when there is no family nearby;
3. provide Home Health Aide Services for specific health care assistance;
4. provide monitoring of vital signs;
5. provide non-sterile dressing changes;
6. provide Ostomy and catheter care;
7. provide ROM exercises / PT Transfer;
8. provide personal grooming / bathing;
9. provide housekeeping / meal preparation; and
10. provide telehealth monitoring.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 8**  
**CONSULTANT GERIATRICIAN**

A consultant geriatrician is designated to perform duties of diagnosis and management of patients attending the geriatric department, perform complex procedures (invasive and/or non-invasive) and be responsible for care of these patients and follow rules set by medical administration for control of work system.

**A Consultant Geriatrician will be able to:**

1. analyse records, reports, test results or examination information to diagnose complex cases of patient.
2. direct and manage the Geriatric team to deliver timely, safe and effective care in line with the guidelines, operating standards and contractual obligations of the Geriatric service;
3. ensure all specialists working within the service provide timely completion of all documentation pertinent to diagnosis, treatment, transfer or discharge in line with service standards and agreed protocols when in clinic;
4. keep up to date in developments relevant to best practice in Geriatric;
5. respond to complaints and critical incidents in an appropriate and timely manner; and
6. participate in all requested departmental, consultant and senior staff training sessions and meetings.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 7**  
**GYNECOLOGIST**

A gynecologist is designated to treat diseases and disorders of female genital, urinary and rectal organs.

**A Gynecologist will be able to:**

1. examine patient to ascertain condition, utilise physical findings, laboratory results and patient's statements as diagnostic aids;
2. determine needs for modified diet and physical activities and recommend plan. periodically examine patient, prescribing medication or surgery, if indicated;
3. treat patients for diseases of generative organs;
4. examine patient to determine medical problem, utilising physical findings, diagnostic images, laboratory test results and patient's statement as diagnostic aids; and
5. discuss problem with patient and prescribe medication and exercise or hygiene regimen or perform surgery as needed to correct malfunctions or remove diseased organ.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 8**  
**CONSULTANT GYNECOLOGIST**

A consultant gynecologist is designated to perform duties of diagnosis and management of patients attending the gynecologist department, perform complex procedures (invasive and/or non-invasive) and be responsible for care of these patients and follow rules set by medical administration for control of work system.

**A Consultant Gynecologist will be able to:**

1. analyse records, reports, test results or examination information to diagnose complex cases of patient;
2. direct and manage the gynecology team to deliver timely, safe and effective care in line with the guidelines, operating standards and contractual obligations of the gynecology service;
3. ensure all specialists working within the service provide timely completion of all documentation pertinent to diagnosis, treatment, transfer or discharge in line with service standards and agreed protocols when in clinic;
4. keep up to date in developments relevant to best practice in gynecology;
5. respond to complaints and critical incidents in an appropriate and timely manner; and
6. participate in all requested departmental, consultant and senior staff training sessions and meetings.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 7**  
**HEMATOLOGIST**

A hematologist is designated to treat disorders of the blood. These can include many different conditions, and a hematologist must be knowledgeable enough to treat all of the different types, which may include disorders with blood cells, bone marrow, and the vascular system in general.

**A Hematologist will be able to:**

1. investigate the biochemistry of blood clotting;
2. produce quantitative data in the form of reports and providing key information to medical staff about a patient's condition;
3. liaise with medical staff by giving professional guidance with regard to haematological analysis results;
4. make decisions on further haematological analysis;
5. liaise with other medical professionals to discuss patient treatment plans;
6. conduct cross-matching blood for use in transfusions;
7. select appropriate techniques for different types of haematological analysis;
8. maintain accurate and detailed records;
9. receive and prepare blood samples for analysis;
10. analyse blood samples using computer-aided and manual techniques; and
11. review initial data that reveals, for example, white or red blood cell abnormalities.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 8**  
**CONSULTANT HEMATOLOGIST**

A consultant hematologist is designated to treat disorders of the blood. These can include many different conditions, and a hematologist must be knowledgeable enough to treat all of the different types, which may include disorders with blood cells, bone marrow, and the vascular system in general.

**A Consultant Hematologist will be able to:**

1. investigate the biochemistry of blood clotting;
2. analyse quantitative data in the form of reports and providing key information to medical staff about a patient's condition;
3. consult medical staff by giving professional guidance with regard to haematological analysis results;
4. liaise with other medical professionals to discuss patient treatment plans;
5. cross-matching blood for use in transfusions;
6. coordinate appropriate techniques for different types of haematological analysis;
7. verify accurate and detailed records;
8. analyse blood samples using computer-aided and manual techniques; and
9. analyse data that reveals, for example, white or red blood cell abnormalities;
10. direct and manage the Hematology team to deliver timely, safe and effective care in line with the guidelines, operating standards and contractual obligations of the Hematology service;

11. ensure all specialists working within the service provide timely completion of all documentation pertinent to diagnosis, treatment, transfer or discharge in line with service standards and agreed protocols when in clinic;
12. keep up to date in developments relevant to best practice in Hematology; and
13. respond to complaints and critical incidents in an appropriate and timely manner.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 7**  
**NEPHROLOGIST**

A nephrologist is designated to provide timely and comprehensive nephrology care for adults with medical kidney disease. Inpatient and outpatient services are available to active duty military personnel, adult dependents and retirees.

**A Nephrologist will be able to:**

1. collect, research and manage patient's medical history and records;
2. provide Home Health Aide Services for specific health care assistance;
3. perform and interpret routine urine analysis and microscopic sediment;
4. provide continuous renal replacement therapy;
5. provide pre-transplant education and preparation;
6. provide education and training programmes;
7. perform a systematic, comprehensive physical examination and be able to report; and
8. the physiologic and anatomic bases of normal and abnormal findings.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 8**  
**CONSULTANT NEPHROLOGIST**

A consultant nephrologist is designated to specialise in the identification and treatment of kidney disease also called renal nephrology.

**A Consultant Nephrologist will be able to:**

1. provide face-to-face clinical health care to patients suffering from diseases and other issues of the kidney, performing examinations and prescribing treatment as appropriate;
2. counsel and advise patients on matters of kidney health and disease prevention;
3. carry out research, study patient histories in an effort to discover better treatments for kidney disease; and
4. work within the guidelines prescribed by the medical facility's policies and procedures as well as the local and national laws that govern the profession.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 7**  
**OBSTETRICIAN**

An obstetrician is designated to treat women during prenatal, natal and postnatal periods.

**An Obstetrician will be able to:**

1. examine patient to ascertain condition, utilise physical findings, laboratory results and patient's statements as diagnostic aids;
2. determine needs for modified diet and physical activities and recommend plan to periodically examine patient, prescribing medication or surgery, if indicated;
3. deliver infant and cares for mother for prescribed period of time following childbirth; and
4. perform cesarean section or other surgical procedures as needed to preserve patient's health and deliver infant safely.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 8**  
**CONSULTANT OBSTETRICIAN**

A consultant obstetrician is designated to treat women during prenatal, natal and postnatal periods, perform complex procedures and be responsible for care of these patients and follow rules set by medical administration

**A Consultant Obstetrician will be able to:**

1. examine patient to ascertain condition, utilise physical findings, laboratory results and patient's statements as diagnostic aids;
2. determine needs for modified diet and physical activities and recommend plan to periodically examine patient, prescribing medication or surgery, if indicated;
3. deliver infant and cares for mother for prescribed period of time following childbirth;
4. perform cesarean section or other surgical procedures as needed to preserve patient's health and deliver infant safely;
5. analyse records, reports, test results or examination information to diagnose complex cases of patient;
6. direct and manage staff to deliver timely, safe and effective care in line with the guidelines, operating standards and contractual obligations of the obstetric service;
7. ensure all specialists working within the service provide timely completion of all documentation pertinent to diagnosis, treatment, transfer or discharge in line with service standards and agreed protocols when in clinic;
8. keep up to date in developments relevant to best practice in obstetrics; and

9. respond to complaints and critical incidents in an appropriate and timely manner.



**MEDICAL**

**(MEDICAL & SURGERY)**

**LEVEL 7**

**ONCOLOGIST**

An oncologist is designated to diagnoses and treats patients concerned with studies tumors (cancer) and seeks to understand their development, diagnosis, treatment, and prevention.

**An Oncologist will be able to:**

1. diagnose, examines or conduct tests on patient to provide information on medical condition;
2. analyse records, reports, test results, or examination information to diagnose medical condition of patient;
3. prescribe or administer treatment, therapy, (e.g. surgery, chemotherapy, radiotherapy and other modalities) medication, vaccination, and other specialized medical care to treat or prevent illness;
4. follow-up of cancer patients after successful treatment and monitor patients' condition and progress and re-evaluates treatments as necessary;
5. provide palliative care of patients with terminal malignancies;
6. deal with Ethical questions surrounding cancer care;
7. provide screening efforts; fine needle aspiration biopsy, core needle biopsy, vacuum-assisted biopsy, Image-guided biopsy, surgical biopsy, endoscopic biopsy, and bone marrow biopsy;
8. evaluate the size and location of the tumor by imaging procedures; X-ray, Computed tomography (CT or CAT) scan, Magnetic resonance imaging (MRI), Ultrasound, Positron emission tomography (PET) scan, and bone scan;

9. perform Endoscopic tests; and
10. perform laboratory tests involve testing a sample of blood, urine, and other body fluids to learn or confirm what is happening in the body.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 8**  
**CONSULTANT ONCOLOGIST**

A consultant oncologist is designated to diagnose and treat patients with tumors (cancer) and seeks to understand their development, diagnosis, treatment, and prevention.

**A Consultant Oncologist will be able to:**

1. analyse records, reports, test results or examination information to diagnose complex cases of patient;
2. direct and manage staff to deliver timely, safe and effective care in line with the guidelines, operating standards and contractual obligations of the oncology service;
3. ensure all specialists working within the service provide timely completion of all documentation pertinent to diagnosis, treatment, transfer or discharge in line with service standards and agreed protocols when in clinic;
4. keep up to date in developments relevant to best practice in oncology;
5. respond to complaints and critical incidents in an appropriate and timely manner;
6. diagnose, examines or conduct tests on patient to provide information on medical condition;
7. prescribe or administer treatment, therapy, (e.g. surgery, chemotherapy, radiotherapy and other modalities) medication, and other specialized medical care to treat or prevent illness;

8. follow-up of cancer patients after successful treatment and monitor patients' condition and progress and re-evaluates treatments as necessary;
9. provide palliative care of patients with terminal malignancies;
10. deal with Ethical questions surrounding cancer care;
11. provide screening efforts; fine needle aspiration biopsy, core needle biopsy, vacuum-assisted biopsy, Image-guided biopsy, surgical biopsy, endoscopic biopsy, and bone marrow biopsy;
12. evaluate the size and location of the tumor by imaging procedures; X-ray, Computed tomography (CT or CAT) scan, Magnetic resonance imaging (MRI), Ultrasound, Positron emission tomography (PET) scan, and bone scan; and
13. perform Endoscopic tests.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 7**  
**OPHTHALMOLOGIST**

An ophthalmologist is designated to diagnose and treat diseases and injuries of the eyes.

**An Ophthalmologist will be able to:**

1. examine patient for symptoms indicative of organic or congenital ocular disorders and determine nature and extent of injury or disorder;
2. perform various tests to determine vision loss;
3. prescribe and administer medications and perform surgery, if indicated;
4. direct remedial activities to aid in regaining vision or to utilise sight remaining, by writing prescriptions for corrective glasses and instructing patient in eye exercises;
5. examine or conduct tests on patient to provide information on medical condition;
6. analyse records, reports, test results or examination information to diagnose medical condition of patient;
7. prescribe or administer treatment, therapy, medication, vaccination and other specialised medical care to treat or prevent illness, disease or injury; and
8. monitor patients' condition and progress and re-evaluates treatments as necessary.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 8**  
**CONSULTANT OPHTHALMOLOGIST**

A consultant ophthalmologist is designated to diagnose and treat diseases and injuries of eyes.

**A Consultant Ophthalmologist will be able to:**

1. analyse records, reports, test results or examination information to diagnose complex cases of patient;
2. direct and manage staff to deliver timely, safe and effective care in line with the guidelines, operating standards and contractual obligations of the ophthalmology service;
3. ensure all specialists working within the service provide timely completion of all documentation pertinent to diagnosis, treatment, transfer or discharge in line with service standards and agreed protocols when in clinic;
4. keep up to date in developments relevant to best practice in ophthalmology;
5. respond to complaints and critical incidents in an appropriate and timely manner;
6. examine patient for symptoms indicative of organic or congenital ocular disorders and determine nature and extent of injury or disorder;
7. perform various tests to determine vision loss;
8. prescribe and administer medications and perform surgery, if indicated;

9. direct remedial activities to aid in regaining vision or to utilise sight remaining, by writing prescriptions for corrective glasses and instructing patient in eye exercises;
10. examine or conduct tests on patient to provide information on medical condition;
11. analyse records, reports, test results or examination information to diagnose medical condition of patient;
12. prescribe or administer treatment, therapy, medication, vaccination and other specialised medical care to treat or prevent illness, disease or injury;
13. monitor patients' condition and progress; and
14. re-evaluates treatments as necessary.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 7**  
**OTHLARYNGOLOGIST (ENT)**

An othlaryngologist (ENT) is designated to diagnose and treat diseases of ear, nose and throat.

**An Othlaryngologist (ENT) will be able to:**

1. examine affected organs using equipment such as audiometers, prisms, nasocopes, microscopes, x-ray machines and fluoroscopes;
2. determine nature and extent of disorder and prescribe and administer medications or perform surgery;
3. perform tests to determine extent of loss of hearing due to aural or other injury and speech loss as result of diseases or injuries to larynx;
4. analyse records, reports, test results or examination information to diagnose medical condition of patient;
5. prescribe or administer treatment, therapy, medication, vaccination and other specialised medical care to treat or prevent illness, disease or injury;
6. monitor patients' condition and progress and re-evaluate treatments as necessary;
7. explain procedures and discuss test results on prescribed treatments with patients; and
8. collect, record and maintain patient information such as medical history, reports and examination results.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 8**  
**CONSULTANT OTHLARYNGOLOGIST (ENT)**

A consultant othlaryngologist (ENT) is designated to diagnose and treat diseases of ear, nose and throat.

**A Consultant Othlaryngologist (ENT) will be able to:**

1. analyse records, reports, test results or examination information to diagnose complex cases of patient;
2. direct and manage staff to deliver timely, safe and effective care in line with the guidelines, operating standards and contractual obligations of the othlaryngology service;
3. ensure all specialists working within the service provide timely completion of all documentation pertinent to diagnosis, treatment, transfer or discharge in line with service standards and agreed protocols when in clinic;
4. keep up to date in developments relevant to best practice in othlaryngology;
5. respond to complaints and critical incidents in an appropriate and timely manner;
6. examine affected organs using equipment such as audiometers, prisms, nasocopes, microscopes, x-ray machines and fluoroscopes;
7. determine nature and extent of disorder and prescribe and administer medications or perform surgery;
8. perform tests to determine extent of loss of hearing due to aural or other injury and speech loss as result of diseases or injuries to larynx;

9. prescribe or administer treatment, therapy, medication, vaccination and other specialised medical care to treat or prevent illness, disease or injury;
10. monitor patients' condition and progress and re-evaluate treatments as necessary;
11. explain procedures and discuss test results on prescribed treatments with patients; and
12. collect, record and maintain patient information such as medical history, reports and examination results.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 7**  
**PEDIATRICIAN**

A pediatrician is designated to plan and carry out medical care programme for children from birth through adolescence to aid in mental and physical growth and development.

**A Pediatrician will be able to:**

1. examine patients to determine presence of disease and to establish preventive health practices;
2. determine nature and extent of disease or injury, prescribe and administer medications and immunisations and perform variety of medical duties;
3. analyse record, reports, test results or examination information to diagnose medical condition of patient;
4. prescribe or administer treatment, therapy, medication, vaccination and other specialised medical care to treat or prevent illness, disease or injury;
5. monitor patients' condition and progress and re-evaluate treatments as necessary;
6. collect, record and maintain patient information, such as medical history, reports and examination results; and
7. refer patient to medical specialist or other practitioner when necessary.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 8**  
**CONSULTANT PEDIATRICIAN**

A consultant pediatrician is designated to plan and carry out medical care programme for children from birth through adolescence to aid in mental and physical growth and development.

**A Consultant Pediatrician will be able to:**

1. analyse records, reports, test results or examination information to diagnose complex cases of patient;
2. direct and manage staff to deliver timely, safe and effective care in line with the guidelines, operating standards and contractual obligations of the Paediatricsservice;
3. ensure all specialists working within the service provide timely completion of all documentation pertinent to diagnosis, treatment, transfer or discharge in line with service standards and agreed protocols when in clinic;
4. keep up to date in developments relevant to best practice in Pediatrics;
5. respond to complaints and critical incidents in an appropriate and timely manner;
6. examine patients to determine presence of disease and to establish preventive health practices;
7. determine nature and extent of disease or injury, prescribe and administer medications and immunisations and perform variety of medical duties;

8. analyse record, reports, test results or examination information to diagnose medical condition of patient;
9. prescribe or administer treatment, therapy, medication, vaccination and other specialised medical care to treat or prevent illness, disease or injury;
10. monitor patients' condition and progress and re-evaluate treatments as necessary;
11. collect, record and maintain patient information, such as medical history, reports and examination results; and
12. refer patient to medical specialist or other practitioner when necessary.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 7**  
**PSYCHIATRIST**

A psychiatrist is designated to diagnose mental, emotional, and behavioral disorders and prescribe medication or administer psychotherapeutic treatments to treat disorders.

**A Psychiatrist will be able to:**

1. analyse and evaluate patient data and test or examination findings to diagnose nature and extent of mental disorder;
2. prescribe, direct, and administer psychotherapeutic treatments or medications to treat mental, emotional, or behavioral disorders;
3. examine or conducts laboratory or diagnostic tests on patient to provide information on general physical condition and mental disorder;
4. gather and maintain patient information and records, including social and medical history obtained from patient, relatives, and other professionals;
5. review and evaluate treatment procedures and outcomes of other psychiatrists and medical professionals;
6. advise and inform guardians, relatives, and significant others of patient's condition and treatment;
7. prepare case reports and summaries for government agencies; and
8. teach, conduct research and publish findings to increase understanding of mental, emotional, behavioral states and disorders.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 8**  
**CONSULTANT PSYCHIATRIST**

A consultant psychiatrist is designated to treat, diagnose and aid in the prevention of mental illnesses, administer and prescribe psychotherapeutic treatments and medications in order to treat these illnesses and disorders. They must also confer with physicians, psychiatric nurses, psychologists, social workers and health care professionals.

**A Consultant Psychiatrist will be able to:**

1. analyse records, reports, test results or examination information to diagnose complex cases of patient;
2. direct and manage staff to deliver timely, safe and effective care in line with the guidelines, operating standards and contractual obligations of the Psychiatry service;
3. ensure all specialists working within the service provide timely completion of all documentation pertinent to diagnosis, treatment, transfer or discharge in line with service standards and agreed protocols when in clinic;
4. keep up to date in developments relevant to best practice in Psychiatry;
5. respond to complaints and critical incidents in an appropriate and timely manner;
6. review and evaluate treatment outcomes and procedures of other psychiatrists and medical professionals;
7. conduct diagnostic and laboratory tests on patients; and

8. gather and maintain patient information and records, which includes medical history and social history.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 7**  
**RESPIRATORY SPECIALIST**

A respiratory specialist is designated to deal with diseases of the lungs and the respiratory tract. In some countries and areas it is also called pulmonology or chest medicine.

**A Respiratory Specialist will be able to:**

1. diagnose and treat allergic bronchopulmonary aspergillosis, Asthma, Chronic obstructive pulmonary disease, Chronic bronchitis, Emphysema, Cystic fibrosis, Lung cancer diagnosis, Pneumoconiosis, Pneumonia, Pneumothorax, Psittacosis, Pulmonary embolism, Pulmonary fibrosis, Pulmonary hypertension, Pulmonary sequestration, Sarcoidosis, Sleep apnea and Tuberculosis;
2. analyse records, reports, test results or examination information to diagnose medical condition of patient;
3. prescribe or administer treatment, therapy, medication, vaccination and other specialised medical care to treat or prevent illness, disease or injury;
4. monitor patients' condition and progress and re-evaluate treatments as necessary; and
5. explain procedures and discuss test results on prescribed treatments with patients.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 7**  
**RHEUMATOLOGIST**

A rheumatologist is designated to diagnose and treat individuals with arthritis and musculoskeletal diseases.

**A Rheumatologist will be able to:**

1. review the history of symptoms, examine the joints for inflammation and deformity, the skin for rheumatoid nodules, and other parts of the body for inflammation;
2. perform blood and x-ray tests;
3. perform other tests to exclude arthritis due to infection or gout. The detection of rheumatoid nodules, most often around the elbows and fingers, can suggest the diagnosis;
4. perform an office procedure called arthrocentesis. In this procedure, a sterile needle and syringe are used to drain joint fluid out of the joint for study in the laboratory;
5. provide optimal treatment for the disease which involve a combination of medications, rest, joint strengthening exercises, joint protection, and patient and family education;
6. advise patient concerning continued treatment of disorders to prevent recurrence of disorders; and
7. refer to Orthopedic Surgeons who specialise in joint surgery as surgery may be recommended to restore joint mobility or repair damaged joints.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 8**  
**CONSULTANT RHEUMATOLOGIST**

A consultant rheumatologist is designated to deal with diseases of the bones and joints.

**A Consultant Rheumatologist will be able to:**

1. analyse records, reports, test results or examination information to diagnose complex cases of patient;
2. direct and manage staff to deliver timely, safe and effective care in line with the guidelines, operating standards and contractual obligations of the Rheumatology service;
3. ensure all specialists working within the service provide timely completion of all documentation pertinent to diagnosis, treatment, transfer or discharge in line with service standards and agreed protocols when in clinic;
4. keep up to date in developments relevant to best practice in Rheumatology;
5. respond to complaints and critical incidents in an appropriate and timely manner;
6. treat patients with complex cases of the bones and joints. These include;
  - i) Rheumatoid arthritis
  - ii) Osteoarthritis and osteoporosis
  - iii) Soft tissue problems such as whiplash and repetitive strain injury (RSI)
  - iv) Connective tissue disease
  - v) Ankylosing Spondylitis, Psoriatic Arthritis, Reflex sympathetic dystrophy, fibromyalgia



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 7**  
**RADIOLOGIST**

A radiologist is designated to diagnose and treat diseases using x-ray and radioactive substances.

**A Radiologist will be able to:**

1. examine internal structures and functions of organ systems, making diagnoses after correlation of x-ray findings with other examinations and tests;
2. treat benign and malignant internal and external growths by exposure to radiation from x-rays, high energy sources and natural and manmade radioisotopes directed at or implanted in affected areas of body;
3. administer radiopaque substances by injection, orally or as enemas to render internal structures and organs visible on x-ray films or fluoroscopic screens;
4. specialise in diagnostic radiology or radiation oncology; and
5. diagnose and treat diseases of human body, using radioactive substances.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 8**  
**CONSULTANT RADIOLOGIST**

A consultant radiologist is designated to diagnose and treat diseases using x-ray and radioactive substances.

**A Consultant Radiologist will be able to:**

1. analyse records, reports, test results or examination information to diagnose complex cases of patient;
2. direct and manage staff to deliver timely, safe and effective care in line with the guidelines, operating standards and contractual obligations of the Radiology service;
3. ensure all specialists working within the service provide timely completion of all documentation pertinent to diagnosis, treatment, transfer or discharge in line with service standards and agreed protocols when in clinic;
4. keep up to date in developments relevant to best practice in Radiology;
5. respond to complaints and critical incidents in an appropriate and timely manner;
6. examine internal structures and functions of organ systems, making diagnoses after correlation of x-ray findings with other examinations and tests;
7. treat benign and malignant internal and external growths by exposure to radiation from x-rays, high energy sources and natural and manmade radioisotopes directed at or implanted in affected areas of body;

8. administer radiopaque substances by injection, orally or as enemas to render internal structures and organs visible on x-ray films or fluoroscopic screens;
9. specialise in diagnostic radiology or radiation oncology; and
10. diagnose and treat diseases of human body, using radioactive substances.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 7**  
**UROLOGIST**

An urologist is designated to diagnose and treat diseases and disorders of genitourinary organs and tract.

**An Urologist will be able to:**

1. examine patient, using x-ray machine, fluoroscope, and other equipment to aid in determining nature and extent of disorder or injury;
2. treat patient, using diathermy machine, catheter, cystoscope, radium emanation tube, and similar equipment;
3. perform surgery, as indicated;
4. prescribe and administer urinary antiseptics to combat infection;
5. examine or conduct tests on patient to provide information on medical condition;
6. analyse records, reports, test results, or examination information to diagnose medical condition of patient;
7. prescribe or administers treatment, therapy, medication, vaccination, and other specialised medical care to treat or prevent illness, disease, or injury;
8. monitor patients condition and progress and re-evaluates treatments as necessary; and
9. explain procedures and discusses test results on prescribed treatments with patients.



**MEDICAL**  
**(MEDICAL & SURGERY)**  
**LEVEL 8**  
**CONSULTANT UROLOGIST**

A consultant urologist is designated to diagnose and treat diseases of the renal (kidney) and urinary system. Patient focus, communication and diagnostic skills are essential traits in this profession.

**A Consultant Urologist will be able to:**

1. analyse records, reports, test results or examination information to diagnose complex cases of patient;
2. direct and manage staff to deliver timely, safe and effective care in line with the guidelines, operating standards and contractual obligations of the urology service;
3. ensure all specialists working within the service provide timely completion of all documentation pertinent to diagnosis, treatment, transfer or discharge in line with service standards and agreed protocols when in clinic;
4. keep up to date in developments relevant to best practice in urology;
5. respond to complaints and critical incidents in an appropriate and timely manner;
6. diagnose, examine and treat patients with renal and urinary tracts illnesses; and
7. consult with urologists, other physicians and medical technicians.



**SURGERY**  
**(MEDICAL & SURGERY)**  
**LEVEL 7**  
**CARDIOTHORACIC SURGEON**

A cardiothoracic surgeon is designated to perform surgery on the heart and / or vessels. frequently, it is done to treat complications of ischemic heart disease (for example coronary artery bypass grafting), correct congenital heart disease or treat vascular heart disease created by various causes including endocarditic.

**A Cardiothoracic Surgeon will be able to:**

1. receive referral for surgical arrangement of operable cardiac cases;
2. plan for treatment before, during and after surgery;
3. operate on patient to correct deformities, repair injuries, prevent diseases or improve or restore patient's functions;
4. analyse patient's medical history, medication allergies, physical condition, and examination results to verify operation's necessity and to determine best procedure;
5. examine patient to provide information on medical condition and patient's surgical risk;
6. refer patient to medical specialist or other practitioners when necessary;
7. conduct research to develop and test surgical techniques to improve operating procedures and outcomes;
8. manage the clinic, ICU, CCU with other physician, surgeon and others;
9. examine instruments, equipment, and operating room to ensure sterility; and
10. coordinate activities of nurses, assistants, specialists, and other medical staff.



## **SURGERY**

### **(MEDICAL & SURGERY)**

#### **LEVEL 7**

### **HAND AND MICRO SURGEON**

A hand and micro surgeon is designated to perform surgery to the hand, wrist and elbow. Hand surgeons do not just engage in surgery – they are the primary medical doctors to deal with these issues and often use non-surgical approaches.

#### **A Hand and Micro Surgeon (Hand) will be able to:**

1. operate on patient to correct deformities, repair injuries, prevent diseases or improve or restore patient's functions especially hand injuries from industrial accidents, explosive wound and amputated hand following trauma;
2. analyse patient's medical history, medication allergies, physical condition and examination results to verify operation's necessity and to determine best procedure;
3. examine patient to provide information on medical condition and patient's surgical risk;
4. refer patient to medical specialist or other practitioners when necessary;
5. conduct research to develop and test surgical techniques to improve operating procedures and outcomes;
6. examine instruments, equipments and operating room to ensure sterility; and
7. coordinate activities of nurses, assistants, specialists and other medical staff.



## **SURGERY**

### **(MEDICAL & SURGERY)**

#### **LEVEL 7**

#### **VASCULAR SURGEON**

A vascular surgeon is designated to perform surgery involving surgery in which diseases of the vascular system or arteries and veins are managed, largely via surgical intervention.

**A Vascular Surgeon will be able to:**

1. perform surgery on Abdominal aorticaneurysm;
2. perform surgery on Carotid arterial stenosis;
3. perform surgery on Varicose veins;
4. perform surgery on peripheral artery occlusive disease;
5. perform surgery on Acute limb ischemia; and
6. perform surgery on Aortic dissection.



## **SURGERY**

### **(MEDICAL & SURGERY)**

#### **LEVEL 7**

#### **NEURO SURGEON**

A neuro surgeon is designated to diagnose and perform surgery to treat disorders affecting the brain, spinal cord, nerves and spine.

**A Neuro Surgeon will be able to:**

1. operate on patient to correct deformities, repair injuries, prevent diseases or improve or restore patient's functions;
2. analyse patient's medical history, medication allergies, physical condition and examination results to verify operation's necessity and to determine best procedure;
3. perform a systematic, comprehensive physical examination and be able to report the physiologic and anatomic bases of normal and abnormal findings. the physical exam will be obtained discretely with attention comfort and privacy;
4. examine patient to provide information on medical condition and patient's surgical risk;
5. refer patient to medical specialist or other practitioners when necessary. provide pre-transplant education and preparation;
6. conduct research to develop and test surgical techniques to improve operating procedures and outcomes; and
7. examine instruments, equipments and operating room to ensure sterility.



## **SURGERY**

### **(MEDICAL & SURGERY)**

#### **LEVEL 7**

### **RECONSTRUCTIVE AND PLASTIC SURGEON**

A reconstructive and plastic surgeon is designated to treat surgical specialty concerned with the correction of disfigurement, restoration of impaired function, and improvement of physical appearance. It is largely concerned with the bodily surface and with reconstructive work of the face and exposed parts.

#### **A Reconstructive and Plastic Surgeon will be able to:**

1. perform reconstructive procedures correct defects on the face or body. These include physical birth defects like cleft lips and palates and ear deformities, traumatic injuries like those from dog bites or burns, or the aftermath of disease treatments like rebuilding a woman's breast after surgery for breast cancer;
2. perform Cosmetic (also called aesthetic) procedures alter a part of the body that the person is not satisfied with. Common cosmetic procedures include making the breasts larger (augmentation mammoplasty) or smaller (reduction mammoplasty), reshaping the nose (rhinoplasty), and removing pockets of fat from specific spots on the body (liposuction). Some cosmetic procedures aren't even surgical in the way that most people think of surgery, that is, cutting and stitching. For example, the use of special lasers to remove unwanted hair and sanding skin to improve severe scarring are two such treatments;

3. analyse patient's medical history, medication allergies, physical condition, and examination results to verify operation's necessity and to determine best procedure;
4. examine patient to provide information on medical condition and patient's surgical risk;
5. refer patient to medical specialist or other practitioners when necessary;
6. conduct research to develop and test surgical techniques to improve operating procedures and outcomes; and
7. examine instruments, equipment and operating room to ensure sterility.

**SECTOR : MEDICAL**  
**SUB-SECTOR : PUBLIC HEALTH**



**PUBLIC HEALTH**  
**(MEDICAL & SURGERY)**  
**LEVEL 7**  
**PUBLIC HEALTH SPECIALIST**

A public health specialist is designated to provide and manage health education programmes that help individuals, families and their communities maximise and maintain healthy lifestyles. he/she also collect and analyse data to identify community needs prior to planning, implementing, monitoring and evaluating programmes designed to encourage healthy lifestyles, policies and environments. This person also serves as a resource to assist individuals, other healthcare workers, or the community and may administer fiscal resources for health education programmes.

**A Public Health Specialist will be able to:**

1. document activities and record information, such as the numbers of applications completed, presentations conducted, and persons assisted;
2. develop and present health education and promotion programs, such as training workshops, conferences, and school or community presentations;
3. prepare and distribute health education materials, including reports, bulletins, and visual aids such as films, videotapes, photographs, and posters;
4. maintain databases, mailing lists, telephone networks, and other information to facilitate the functioning of health education programs;
5. develop operational plans and policies necessary to achieve health education objectives and services;
6. supervise professional and technical staff in implementing health programs, objectives, and goals;

7. develop, conduct or coordinate health needs assessments and other public health surveys;
8. design and conduct evaluations and diagnostic studies to assess the quality and performance of health education programs; and
9. provide program information to the public by preparing and presenting press releases, conducting media campaigns, or maintaining program-related web sites.

**SECTOR : DENTISTRY**  
**SUB-SECTOR : DENTAL**



**DENTISTRY**  
**(DENTAL)**  
**LEVEL 6**  
**DENTAL OFFICER**

A dental officer is designated to examine and diagnosed dental disease / dental abnormalities related to oral cavity (internal and external) and threat.

**A Dental Officer will be able to:**

1. examine and diagnose dental disease / dental abnormalities;
2. perform gum-cut and tied-cut;
3. provide counseling to the patient;
4. provide Oral Health promotion / education to the patient;
5. refer to specialist if necessary; and
6. review treatment if necessary.



**DENTISTRY**

**(DENTAL)**

**LEVEL 7**

**MAXILLOFACIAL SURGEON**

A maxillofacial surgeon is designated to perform surgery on mouth, jaws, and related head and neck structure to execute difficult and multiple extractions of teeth, to remove tumors and other abnormal growths, to correct abnormal jaw relations by mandibular or maxillary revision, to prepare mouth for insertion of dental prosthesis, or to treat fractured jaws.

**A Maxillofacial Surgeon will be able to:**

1. administer general and local anesthetics;
2. collaborate with other professionals such as restorative dentists and orthodontists in order to plan treatment;
3. perform surgery on the mouth and jaws in order to treat conditions such as cleft lip and palate and jaw growth problems;
4. perform surgery to prepare the mouth for dental implants, and to aid in the regeneration of deficient bone and gum tissues;
5. provide emergency treatment of facial injuries including facial lacerations, intra-oral lacerations, and fractured facial bones; and
6. remove impacted, damaged, and non-restorable teeth.



**DENTISTRY**

**(DENTAL)**

**LEVEL 8**

**CONSULTANT MAXILLOFACIAL SURGEON**

A consultant maxillofacial surgeon is designated to undertake all clinical duties, carry out administrative duties associated with clinical work and provide advice to referring practitioners on clinical matters.

**A Consultant Orthodontist will be able to:**

1. undertake all clinical duties including seeing new patients, continue patient treatments and joint clinics;
2. carry out administrative duties associated with clinical work;
3. provide advice to referring practitioners on clinical matters;
4. administer general and local anesthetics;
5. collaborate with other professionals such as restorative dentists and orthodontists in order to plan treatment;
6. perform surgery on the mouth and jaws in order to treat conditions such as cleft lip and palate and jaw growth problems;
7. perform surgery to prepare the mouth for dental implants, and to aid in the regeneration of deficient bone and gum tissues;
8. provide emergency treatment of facial injuries including facial lacerations, intra oral lacerations, and fractured facial bones; and
9. remove impacted, damaged, and non-restorable teeth.



**DENTISTRY**  
**(DENTAL)**  
**LEVEL 7**  
**ORTHODONTIST**

An orthodontist is designated to treat malocclusions (improper bites), which may be a result of tooth irregularity, disproportionate jaw relationships, or both.

**An Orthodontist will be able to:**

1. fit dental appliances in patients' mouths in order to alter the position and relationship of teeth and jaws, and to realign teeth;
2. study diagnostic records such as medical/dental histories, plaster models of the teeth, photos of a patient's face and teeth, and X-rays in order to develop patient treatment plans;
3. diagnose teeth and jaw or other dental-facial abnormalities;
4. examine patients in order to assess abnormalities of jaw development, tooth position, and other dental-facial structures;
5. prepare diagnostic and treatment records;
6. adjust dental appliances periodically in order to produce and maintain normal function;
7. provide patients with proposed treatment plans and cost estimates;
8. instruct dental officers and technical assistants in orthodontic procedures and techniques;
9. coordinate orthodontic services with other dental and medical services; and
10. design and fabricate appliances, such as space maintainers, retainers, and labial and lingual arch wires.



**DENTISTRY**  
**(DENTAL)**  
**LEVEL 8**  
**CONSULTANT ORTHODONTIST**

A consultant orthodontist is designated to undertake all clinical duties, carry out administrative duties associated with clinical work and provide advice to referring practitioners on clinical matters.

**A Consultant Orthodontist will be able to:**

1. undertake all clinical duties including seeing new patients, continue patient treatments and joint clinics;
2. carry out administrative duties associated with clinical work; and
3. provide advice to referring practitioners on clinical matters.



**DENTISTRY**  
**(DENTAL)**  
**LEVEL 7**  
**PERIODONTIST**

A periodontist is designated to specialise in diseases of the gums and other structure surrounding the teeth.

**A Periodontist will be able to:**

1. diagnose and treat inflammatory and destructive diseases of investing and supporting tissue of teeth: Cleans and polishes teeth, eliminates irritating margins of fillings, and corrects occlusions;
2. perform surgical procedures to remove diseased tissue, using dental instruments; and
3. establish recall treatment program to monitor oral health practices.



**DENTISTRY**  
**(DENTAL)**  
**LEVEL 8**  
**CONSULTANT PERIODONTIST**

A consultant periodontist is designated to undertake all clinical duties, carry out administrative duties associated with clinical work and provide advice to referring practitioners on clinical matters.

**A Consultant Orthodontist will be able to:**

1. undertake all clinical duties including seeing new patients, continue patient treatments and joint clinics;
2. carry out administrative duties associated with clinical work; and
3. provide advice to referring practitioners on clinical matters.



**DENTISTRY**  
**(DENTAL)**  
**LEVEL 7**  
**PEDODONTIST**

A pedodontist (paediatricdentists) gives regular oral health examinations, preventive dental care treatment, fluoride treatments and uses sealants to prevent cavities within baby teeth.

**A Pedodontist will be able to:**

1. provide mouth guards (for young athletes);
2. provide night guards (for those who grind their teeth in their sleep);
3. provide special preventive care steps to ensure there are no problems;
4. provide tips and advice for parents;
5. provide habit counseling (thumb sucking, pacifier usage);
6. repair teeth defects, such as cavities or broken teeth;
7. diagnose oral conditions;
8. diagnose dental development difficulties;
9. care for dental injuries and emergencies; and
10. assess and treat crooked teeth and improper bites.



**DENTAL AUXILIARY**

**(DENTAL)**

**LEVEL 4**

**DENTAL TECHNICIAN**

A dental technician is designated to manufacture dental prosthetics including bridges, crowns and dentures according to specifications dentists send to them. They work in specialties that include orthodontic appliances, crowns and bridges, complete dentures, partial dentures, or ceramics.

**A Dental Technician will be able to:**

1. construct various appliances such as removable and fixed prosthesis including dentures, bridges, crowns, retention plates post orthodontic braces removal etc;
2. work directly with the dentists by following detailed written instructions from the dentist or the orthodontist; and
3. use molds as replica of teeth for construction of crowns, bridges or false teeth.



**DENTAL AUXILIARY**  
**(DENTAL)**  
**LEVEL 4**  
**DENTAL NURSE**

A dental nurse is designated to assist the dentist with all clinical aspects within the surgery. This person adopts proficient surgery procedures, ensuring the best utilisation of surgery time. He/she provide excellent patient care, maintain cross infection control, equipment and materials.

**A Dental Nurse will be able to:**

1. build a relationship with patients;
2. manage patients appointments;
3. make sure all equipment is sterilised and ready before procedures and treatments;
4. help reassure patients;
5. process labs requests, x-rays;
6. carry out stock control duties; and
7. calculate treatment costs and explain them to patient.



**DENTAL AUXILIARY**  
**(DENTAL)**  
**LEVEL 3**  
**DENTAL SURGERY ASSISTANT**

A dental surgery assistant is designated to assist duties including dental treatment or rehabilitation involving dental health promotion and disease prevention. This person also responsible as a member of dental health plays a role in the conduct of clinical patient management, patient and dental health education.

**A Dental Surgery Assistant will be able to:**

1. assist Dental Officer / Dental Consultant in connection with the adoption of the concept of treatment provision of four-handed dentistry;
2. provide all the equipment needed for dental treatment before, during and after treatment;
3. provide materials for dental treatment according to established procedures;
4. assist in the management of the clinic and managing patient data via computer; and
5. assist in taking dental X-Ray.

**SECTOR : MEDICAL**  
**SUB-SECTOR : MEDICAL ASSISTANCE**



**MEDICAL ASSISTANCE**  
**(MEDICAL)**  
**LEVEL 4**  
**ASSISTANT MEDICAL OFFICER**

An assistant medical officer is designated to assist medical officers to manage and treat patients as soon as possible especially in emergency cases such as trauma and non trauma patients.

**An Assistant Medical Officer will be able to:**

1. attend emergency cases (first line);
2. attend to ambulance call and respond as team leader;
3. perform dressing procedures;
4. conduct primary triage / secondary triage (triaging);
5. conduct ecg and interpretation;
6. conduct iv drip insertion;
7. oversee the ordering of drugs, equipment and other supplies required by health units;
8. assist doctor in procedures such as diagnose laparoscopic lavage (dpl) , clast tube, intubation, suprapubic cathetar (spc) and etc.;
9. obtain patient history;
10. conduct patient examination and investigation (physical, blood, urine);
11. assist in supervising all staff at health clinic;
12. refer cases to medical officer; and
13. refer cases to nearest hospital.

**SECTOR : MEDICAL**  
**SUB-SECTOR : NURSING**



**NURSING**  
**(MEDICAL)**  
**LEVEL 3**  
**COMMUNITY NURSE**

A community nurse is designated to provide total care for pregnant women, from prenatal visits through to labor and delivery, advises individuals and families in health education and disease prevention in community health agency.

**A Community Nurse will be able to:**

1. work in a variety of settings including, hospitals, health maintenance organizations, private practices, birth centers, clinics and etc.;
2. provide primary health care throughout the course of a woman's reproductive life;
3. provide primary care to women of childbearing age including prenatal care, labor and delivery care, care after birth, newborn care, assistance with family planning decisions;
4. counseling in health maintenance and disease prevention;
5. provides holistic, continuous care, safe clinical management, education and in some cases, primary care for women's health needs;
6. provides medical care and treatment to obstetrical patients under supervision of obstetrician;
7. participates in initial examination of obstetrical patient and is assigned responsibility for care, treatment and delivery of patient;

8. examines patient during pregnancy, utilizing physical findings, laboratory test results and patient's statements to evaluate condition and ensure that patient's progress is normal;
9. instructs patient in diet and prenatal health practices;
10. delivers infant and performs postpartum examinations and treatments to ensure that patient and infant are responding normally;
11. administers stipulated emergency measures and arranges for immediate contact of obstetrician when deviations from standard are encountered during pregnancy or delivery; and
12. visit patient during postpartum period in hospital and at home to advise patient on methods of postpartum care and examines mother & infant.



**NURSING**  
**(MEDICAL)**  
**LEVEL 4**  
**REGISTERED NURSE / STAFF NURSE**

A registered nurse/staff nurse is designated to care for individuals and families in medical facilities, assist in disease prevention in community health centres, and provide healthcare services to the public, patients and their families.

**A Registered Nurse/Staff Nurse will be able to:**

1. provide health care, first aid and treatment in medical facilities;
2. observe patient's skin color, dilation of pupils and utilizes computerized equipment to monitor vital signs;
3. record patient's medical information and vital signs;
4. administer local, inhalation, intravenous and other anesthetics;
5. prepare patients for and assists with examinations;
6. prepare rooms, sterile instruments, equipment and supplies and hands items to physician/surgeon;
7. provide nursing care to patients under supervision of physicians;
8. inform physician of patient's condition;
9. maintains patient's records in ward;
10. administers local, inhalation, intravenous and other anesthetics;
11. prepares patients for and assists with examinations;
12. orders, interprets and evaluates diagnostic tests to identify and assess patient's condition;

13. prepares rooms, sterile instruments, equipment and supplies and hands items to physician/surgeon;
14. provides health care to patients under the supervision of the physician;
15. discusses cases with physician; and
16. administer stipulated emergency measures and contacts physician when deviations from standard are encountered with patient.



**NURSING**  
**(MEDICAL)**  
**LEVEL 5**  
**SISTER/HEAD NURSE**

A sister/head nurse is designated to provide comprehensive nursing care according to professional nursing standards, modifies patient care as necessary.

**A Sister/Head nurse will be able to:**

1. supervise and coordinate work activities of nurses in a ward;
2. usually performs more complex procedures such as administering blood transfusions, using special equipment or closely monitor seriously ill patients;
3. provides nursing service for surgical operations;
4. provides a range of nursing services including preventive health care counselling; and
5. provides a brooad range of nursing services including child health care, chronic and communicable disease control, health care counselling.



**NURSING  
(MEDICAL)  
LEVEL 6  
MATRON / NURSING MANAGER**

A matron/nursing manager is designated to manage the staff administration, evaluate patient conditions and recommend treatment plans, determines whether a condition needs further treatment at a medical facility, maintains patient records and interacts with medical facilities to update and share patient information.

**A Matron/Nursing Manager will be able to:**

1. ensure development and delivery of best clinical practice;
2. comply with all relevant current legislation;
3. operate within agreed staffing levels, ensuring the safety and well being of the residents at all times;
4. ensure the nurses provide a high quality of care to patients;
5. ensure patient administration is conducted in accordance with the standard operating procedures;
6. operate within agreed staffing levels, ensuring the safety and well being of the residents at all times;
7. ensure the nurses provide a high quality of care to patients; and
8. ensure patient administration is conducted in accordance with the standard operating procedures.



**NURSING  
(MEDICAL)  
LEVEL 7  
SPECIALIST NURSE**

A specialist nurse is designated to plan and provide highly specialised patient care in a difficult specialty area such as intensive care or critical care.

**A Specialist Nurse will be able to:**

1. research, develop and implement new or modified techniques and approaches in nursing care (as a specialist nurse);
2. provide expert and complex hospital nursing care to a specialized group of patients(as a specialist nurse);
3. develop and monitor the implementation of new nursing techniques (as a specialist nurse);
4. serve as primary health advisor in clinics and community health organizations (as a practitioner);
5. manages clinic and is responsible for formulating nursing and health care standard and policies (as a practitioner); and
6. collaborates with the physicians in planning, evaluating and coordinating program and determines policies essential to delivery of health care services (as a practitioner).

**SECTOR : MEDICAL**  
**SUB-SECTOR : FOOD SAFETY & QUALITY**



## **FOOD SAFETY & QUALITY**

### **(MEDICAL)**

#### **LEVEL 6 - 8**

### **FOOD TECHNOLOGIST**

A food technologist is designated to develop the manufacturing processes and recipes of food and drink products. This person work on existing and newly discovered ingredients and technologies to invent new recipes and concepts, as well as modify foods to create, for example, fat-free products and ready meals.

#### **A Food Technologist will be able to:**

1. modify existing products and processes and developing new ones;
2. address issues of safety and quality;
3. study methods to improve quality of foods, such as flavor, color, texture, nutritional value, convenience, or physical, chemical, and microbiological composition of foods;
4. specialise in one phase of food technology, such as product development, quality control, or production inspection, technical writing, teaching, or consulting; and
5. specialise in particular branch of food technology, such as cereal grains, meat and poultry, fats and oils, seafood, animal foods, beverages, dairy products, flavors, sugars and starches, stabilisers, preservatives, colors, and nutritional additives, and be identified according to branch of food technology.

**SECTOR : MEDICAL**  
**SUB-SECTOR : AUXILIARY**



**AUXILLIARY**

**(MEDICAL)**

**LEVEL 3**

**HOSPITAL AIDE / HEALTH ATTENDANT \*\***

A hospital aide/health attendant is designated to perform various duties under the direction of medical doctor, nurse or medical assistant such as preparing treatment room, inventory supplies and instruments and preparing patient for attention of physician.

**The Hospital Aide/Health Attendant must be able to:**

1. prepare treatment rooms for examination of patients;
2. handle instruments and materials for physician's usage;
3. clean and sterilizes instruments; and
4. contact medical facility or department to schedule patients for tests lift and turn patients.

Notes:

\*\* Suggested job areas for skills and vocational training



**AUXILLIARY  
(MEDICAL)  
LEVEL 2  
AMBULANCE DRIVER \*\***

An ambulance driver is designated to drive the ambulance to transport sick, injured or recuperative persons.

**The Ambulance Driver should be able to:**

1. place patients on stretcher and loads stretcher into ambulance;
2. transport sick or injured persons to hospital or convalescents to destination, using knowledge and skill in driving to avoid sudden motions detrimental to patients;
3. change soiled linen on stretcher;
4. replace supplies and disposable items on ambulance;
5. replace equipment to maintain sanitary conditions;
6. administer first aid as needed, such as bandaging, splinting and administering oxygen; and
7. report facts concerning accident or emergency to hospital personnel or law enforcement officials.

**Notes:**

**\*\* Suggested job areas for skills and vocational training**



**AUXILLIARY  
(MEDICAL)  
LEVEL 3  
AUTOCLAVE OPERATOR**

An autoclave operator is designated to perform various duties of sterilising hospital equipment

**The Autoclave Operator should be able to:**

1. inspect general condition of parts and assemblies, examines positioning of parts and assemblies in jigs and fixtures, and verifies that vacuum bag installation conforms to specifications;
2. connect thermocouples and vacuum lines to fittings on jigs and fixtures and inside autoclave;
3. adjust manual controls or enters commands in computerized control panel to regulate and activate autoclave power supply, cooling system, vacuum, heat, and pressure gauges and recorders, and to close interlocking autoclave doors;
4. monitor instruments, switches, and recorders and listens for warning signals during autoclave operation to ensure conformance to specifications, and modifies or aborts process as required;
5. maintain manual or computerized autoclave processing records; and
6. operate curing ovens and presses with heated platens.

**SECTOR : MEDICAL**  
**SUB-SECTOR : ALLIED HEALTH**

**\*\* Please note that all Occupational Descriptions in this section for Allied Health are for reference only. Practitioners can refer the Occupational Description as specified by the Allied Health Division, Ministry of Health**



**FOOD SERVICES**  
**(ALLIED HEALTH)**  
**LEVEL 4-6**  
**FOOD SERVICE OFFICER**

A food service officer is designated to coordinate activities of food and beverages for a hospital and medical centre.

**A Food Service Officer must be able to:**

1. monitor compliance with health and fire regulations regarding;
2. perform food preparation and serving and building maintenance in lodging and dining facility;
3. organize worker training programs;
4. evaluate employee performance in dining and lodging facilities;
5. coordinate assignments of cooking personnel to ensure economical use of food and timely preparation;
6. monitor food preparation and methods, size of portions and garnishing and presentation of food to ensure food is prepared and presented in accepted manner;
7. investigate and resolves complaints regarding food quality and service;
8. review menus and recipes to determine labour and overhead costs and assigns prices to menu items;
9. adhere to nutrition standards for dining establishment based on accepted industry standards;
10. keep records required by government agencies regarding sanitation and regarding food subsidies where indicated;

11. test cooked food by tasting and smelling to ensure palatability and flavor conformity; and
12. create specialty dishes and develops recipes to be used in dining facility.



**MEDICAL RECORDS**  
**(ALLIED HEALTH)**  
**LEVEL 4-6**  
**MEDICAL RECORDS OFFICER**

A medical record officer is designated to compile, verify, type and file medical records of hospital or other health care facility.

**A Medical Records Officer will be able to:**

1. prepare folders and maintains records of newly admitted patients;
2. review medical records for completeness, assembles records into standard order and file records in designated areas according to applicable alphabetic and numeric filing system;
3. locate, signs out and delivers medical records requested by hospital departments;
4. compile statistical data, such as admissions, discharges, deaths, births and types of treatment given;
5. operate computer to enter and retrieve data and type correspondence and reports; and
6. assist other workers with coding of records.



## **SPEECH THERAPY**

### **(REHABILITATION)**

#### **LEVEL 6-7**

#### **SPEECH- LANGUAGE THERAPIST \***

A Speech Therapist is designated for managing individuals with problems in speech, language with their voice, communications, feeding and swallowing through expert services in the Speech - Language area that are suitable such as trials, evaluation, diagnosis, intervention, therapy, counseling, consultation, prevention and education.

#### **A Speech Therapist will be able to:**

1. treat individuals with problems in speech, language, with their voice, communications, feeding and swallowing through expert services in the speech - language area that are suitable;
2. manage therapy trials;
3. conduct evaluation and diagnosis of patients;
4. conduct intervention, therapy, counseling, consultation relevant to speech language therapy;
5. conduct prevention and education programme relevant to speech language therapy;
6. keep detailed medical records;
7. counsel a patient's family about speech disorders;
8. explain how to deal with frustration and communication problems; and
9. train family members in techniques to continue speech therapy at home.

Notes:

\* Job title in demand



**AUDIOLOGY**  
**(REHABILITATION)**  
**LEVEL 6-7**  
**AUDIOLOGIST \***

An Audiologist is designated to provide a comprehensive array of professional services related to the prevention of hearing loss, audiologic identification, assessment, diagnosis and interventions of persons with impairment of auditory, vestibular and balance functions, which includes hearing aid, cochlear implant and assistive listening devices prescription, fitting and habilitation/rehabilitation and only audiologists are authorized to administer those procedures.

**An Audiologist will be able to:**

1. provide a comprehensive array of professional services related to the prevention of hearing loss, audiologic identification;
2. conduct assessment, diagnosis and interventions of persons with impairment of auditory, vestibular and balance functions, which includes hearing aid, and cochlear implant;
3. carry out assistive listening devices prescription, fitting and habilitation/rehabilitation; and
4. administer authorized procedures.

Notes:

\* Job title in demand



**PHYSIOTHERAPY  
(REHABILITATION)  
LEVEL 6-7  
PHYSIOTHERAPIST**

A Physiotherapist is designated to ensure that the physiotherapy service that is provided is safe, efficient and ensures the optimal care of the patients. The physiotherapist must maintain the quality of physiotherapy service based on the standard of practice that is set.

**A Physiotherapist will be able to:**

1. ensure that the physiotherapy service that is provided is safe, efficient and ensures the optimal care of the patients;
2. maintain the quality of physiotherapy service based on the standard of practice that is set;
3. evaluate and identify patient problems in detail based on clinical reasoning and physiological understanding including the manifestation of diseases and injuries;
4. analyse the evaluation findings of patient problems and treatment programmes based on the problem faced by patient;
5. conduct treatment using various generic interventions;
6. plan, develop and implement health promotional programmes in aspects relevant to physiotherapy;
7. plan and carry out prevention activities to avoid complications related to injuries, diseases and increase of age;

8. plan and carry out programmes to return movement and self functionality to maximum level based on evidence based practice and current technologies;  
and
9. plan and carry out programmes to expand the scope of physiotherapy service based on training activities and research programmes.



## **OCCUPATIONAL THERAPY**

### **(REHABILITATION)**

#### **LEVEL 6 - 7**

### **OCCUPATIONAL THERAPIST**

An Occupational Therapist is designated to restore self-care, work, and leisure skills to patients/clients who have specific performance incapacities or deficits that reduce their abilities to cope with the tasks of everyday living. They will focus on the patient/client's ability and minimize inability and lessen secondary disability. They will also evaluate and treat problems arising from developmental deficits, physical illness or injury, emotional disorders, the aging process, and psychological or social disability.

#### **An Occupational Therapist will be able to:**

1. restore self-care, work, and leisure skills to patients/clients who have specific performance incapacities or deficits that reduce their abilities to cope with the tasks of everyday living;
2. minimize inability and lessen secondary disability; and
3. evaluate and treats problems arising from developmental deficits, physical illness or injury, emotional disorders, the aging process, and psychological or social disability.



**IMAGING (DIAGNOSTIC)**  
**(RADIOLOGY & ULTRASOUND)**  
**LEVEL 4-6**  
**DIAGNOSTIC RADIOGRAPHER**

A Diagnostic Radiographer is designated to assist the expert officer and medical officer in the diagnosis of patients, evaluation of images and radiography that has been produced. They are also responsible for managing matters related to the application of radiography inspections, the handling and quality of equipment used plus the duties of planning, managing, training and research in developing and controlling the quality of diagnostic radiographer personnel.

**A Diagnostic Radiographer will be able to:**

1. assist in the expert officer and medical officer in the diagnosis of patients, evaluation of images and radiography that has been produced;
2. manage matters related to the application of radiography inspections;
3. handle quality of equipment used; and
4. develop and control the quality of diagnostic radiographer personnel.



**IMAGING (THERAPHY)**  
**(RADIOLOGY & ULTRASOUND)**  
**LEVEL 4-6**  
**RADIATION THERAPHIST**

A Radiation Therapist is designated to carry out treatment plans and treat all diseases that require treatment using high energy ionizing radiation precisely and accurately. They are also responsible for the care of patients, monitoring of side effects, ensuring the safety of the patient, patient's family and other members in the workplace from ionizing radiation

**A Radiation Therapist will be able to:**

1. carry out treatment plans and treat all diseases that require treatment using high energy ionizing radiation precisely and accurately;
2. ensure the care of patients, monitoring of side effects; and
3. ensure the safety of the patient, patient's family and other members in the workplace from ionizing radiation.



**CLINICAL  
(PSYCHOLOGY)  
LEVEL 6-8  
CLINICAL PSYCHOLOGIST**

A Clinical Psychologist is designated for the planning, implementation and coordination of programmes/activities related to the psychological/clinical psychological area to the client.

**A Clinical Psychologist will be able to:**

1. plan programmes/activities related to the psychological/clinical psychological area; and
2. coordinate programmes/activities related to the psychological/clinical psychological area.



**COUNSELING  
(PSYCHOLOGY)  
LEVEL 6-7  
COUNSELOR**

A Counselor is designated to plan, implement and coordinate the prevention, development, rehabilitation and research related to the psychological area based on the type of client.

**A Counselor will be able to:**

1. plan and implement development related to the psychological area based on the type of client;
2. plan prevention related to the psychological area based on the type of client;  
and
3. coordinate the rehabilitation of clients.



**ENVIRONMENTAL HEALTH**  
**(ALLIED HEALTH)**  
**LEVEL 4-6**  
**ENVIRONMENTAL HEALTH OFFICER**

A Environmental Health officer is designated to manage, plan, control, and prevent legal matters and enforcement of regulations related to public health and environmental health activities such as disease control, food safety and quality, water supply and environmental cleanliness (Bekalan Air Dan Kebersihan Alam Sekeliling (BAKAS)), Drinking Water Quality Control (Kawalan Mutu Air Minuman (KMAM)) and Entry Point Health (Airports, Ports and Land.)

**A Health Environmental Officer will be able to:**

1. manage legal matters and enforcement of regulations related to public health and environmental health activities;
2. plan legal matters and enforcement of regulations related to public health and environmental health activities; and
3. conduct public health and environmental health activities.



**NUTRITION**  
**(ALLIED HEALTH)**  
**LEVEL 6-8**  
**NUTRITIONIST**

A Nutritionist is designated to plan, develop, execute, monitor and evaluate nutritional programmes and services for babies, children, teenagers, adults, women, the elderly, special needs children, athletes and focus groups. They are also required to develop the nutritional monitoring system for all age levels such as adults, school children, elderly persons, pregnant and breast feeding mothers.

**A Nutritionist will be able to:**

1. evaluate nutritional programmes and services for babies, children, teenagers, adults, women, the elderly, special needs children, athletes and focus groups;
2. provide nutritional services at the health clinic and community level such as the upgrade of baby nutrition, children, individual and the community, nutrition education and consultation, weight management and food rehabilitation;
3. promote, protect and support for mother's milk feeding including the ethical code of baby food and related products marketing at the nutritionist level and at the health clinic, hospital and community level;
4. develop the nutritional monitoring system for all age levels such as adults, school children, elderly persons, pregnant and breast feeding mothers;
5. provide specific rehabilitation intervention in individuals and the community's nutritional problems such as children and pregnant women

with lack of nutrition, anaemic control and prevention program, iodine deficient control and prevention program including the obesity prevention and control program;

6. promote healthy eating at Health clinic levels and the community through the implementation of eat right programs, Community Health Kitchen Project and Nutrition Information Centre;
7. promote nutritional and menu suggestions including diet scales at institutions such as child care centres, prisons and boarding schools;
8. conduct nutritional promotions with the food industry in efforts to produce food that is nutritional and simple and is accessible to the community;
9. conduct healthy eating promotion with the media;
10. provide nutritional education services including diet analysis and the development of healthy recipes;
11. provide nutrition education through the integration of nutrition syllabus in the school curriculum;
12. conduct nutritional training to public sector officers, government agencies and non government agencies including the public; and
13. conduct research or be involved with research relevant to nutrition.



**MEDICAL SCIENCE**  
**(ALLIED HEALTH)**  
**LEVEL 6-8**  
**DIETITIAN**

A Dietitian is designated to plan and implement clinical dietetic services, planning and preparation of nutritional food based on the Hospital Diet Manual, consultation of diet given to the patient that requires therapeutic diet, and will also plan and implement training and research activities.

**A Dietitian will be able to:**

1. implement clinical dietetic services;
2. prepare nutritional food based on the Hospital Diet Manual;
3. consult patient on diet given to the patient that requires therapeutic diet;  
and
4. implement training and research activities.



**HEALTH EDUCATION**  
**(ALLIED HEALTH)**  
**LEVEL 6-8**  
**HEALTH EDUCATION OFFICER**

A Health Education officer is designated to conduct the analysis, planning, execution and evaluation community and behavioural of health education programmes in the community and patient education programmes at health facilities. They must also identify the most suitable and effective education strategy and health promotion to be used to promote awareness, enabling the individuals in the community to control their own level of health, enable empowerment through skills training and by creating a supportive environment

**A Health Education Officer will be able to:**

1. conduct the analysis, planning, execution and evaluation of the community and behavioural of health education programmes in the community and patient education programmes at health facilities; and
2. identify the most suitable and effective education strategy and health promotion to be used to promote awareness, enabling the individuals in the community to control their own level of health, enable empowerment through skills training and by creating a supportive environment.



**MEDICAL SCIENCE**  
**(ALLIED HEALTH)**  
**LEVEL 6-8**  
**MEDICAL SOCIAL WORKER**

A Medical Social Worker is designated to provide biopsychological services to patients during the treatment and rehabilitation process while helping to restore the patients social functionality so that the patient will be more productive and are able to return to the community according to their abilities

**A Medical Social Worker will be able to:**

1. provide biopsychological services to patients during the treatment and rehabilitation process;
2. restore the patients social functionality ;
3. ensure the patient will be more productive during the process treatment;  
and
4. ensure the patient is able to return to the community according to their abilities.



**OPTOMETRY**  
**(ALLIED HEALTH)**  
**LEVEL 6-8**  
**OPTOMETRIST**

An optometrist is designated to examine patients' eyes, test their sight, give advice on visual problems and prescribe and fit spectacles or contact lenses when needed. This person recognises diseases of the eye, such as glaucoma and cataract, as well as general health conditions such as diabetes. They refer patients to medical practitioners when necessary, as well as sometimes sharing the care of patients with chronic conditions.

**An Optometrist will be able to:**

1. communicate with patients to get detailed case histories;
2. examine the eyes of patients of all ages to detect signs of injury, disease, abnormality or vision defects;
3. check for signs and symptoms of general health conditions (e.g. diabetes);
4. use specialist equipment for diagnosis and testing;
5. issue prescriptions for spectacles or contact lenses;
6. fit and check prescribed lenses in order to correct vision defects;
7. offer advice and reassurance about vision-related matters;
8. offer help and advice for patients choosing frames and lenses;
9. write referral communications to doctors; and
10. liaise with other medical practitioners and sometimes sharing the care of patients with chronic ophthalmic conditions.



**MEDICAL LABORATORY**  
**(ALLIED HEALTH)**  
**LEVEL 4-5**  
**MEDICAL LABORATORY TECHNOLOGIST**

A Medical Laboratory Technologist is designated to the conduct diagnosis of blood samples, urine samples, stool samples, tissue samples and bodily liquids professionally. They must also verify decisions, produce reliable, quality and precise test reports promptly plus provide medical transfusion services used in the collection, filtering, processing and supply of blood and its components safely and of quality. They will also be involved in the monitoring/control of infectious diseases.

**A Medical Laboratory Technologist will be able to:**

1. conduct diagnosis of blood samples, urine samples, stool samples, tissue samples and bodily liquids professionally;
2. verify decisions, produce reliable, quality and precise test reports promptly plus provide medical transfusion services used in the collection, filtering, processing and supply of blood and its components safely and of quality; and
3. monitor/control of infectious diseases.



**MEDICAL SCIENCES**

**(ALLIED HEALTH)**

**LEVEL 6-7**

**EMBRYOLOGIST \***

An Embryologist is designated to carry out procedures such as In-vitro fertilization (IVF), Intra cytoplasmic sperm insemination (ICSI), , identification of the sperm from the testis tissue, sperm analysis, Intrauterine Insemination (IUI) and professional liquidation and refrigeration of the sperm. They are also responsible for managing the Andrology and Embryology laboratory efficiently and provide advice that fulfills client requirements.

**An Embryologist will be able to:**

1. carry out procedures such as In-vitro fertilization (IVF), Intra cytoplasmic sperm insemination(ICSI), preparation of culture media, identification of oosit, embryo transfer, liquidation and refrigeration of the embryo , identification of the sperm from the testis tissue, sperm analysis, Intrauterine Insemination (IUI) and professional liquidation and refrigeration of the sperm;
2. manage the Andrology and Embryology laboratory efficiently; and
3. provide advice that fulfils client requirements.

Notes:

\* Job title which is in high demand



**MEDICAL SCIENCE**

**(ALLIED HEALTH)**

**LEVEL 6-8**

**MEDICAL PHYSICIST**

A Medical Physicist is designated to provide expertise including adherence to the Atom Energy Licensing Act 1984 (AKTA 304), registration of radioactive equipment, license control of medical equipment, controlling of radioactive substance, and monitoring of the quality control of biomedical equipment at the hospital

**A Medical Physicist will be able to:**

1. provide related services whilst adhering to the Atom Energy Licensing Act 1984 (AKTA 304);
2. register of radioactive equipment, license control of medical equipment;
3. control of radioactive substance; and
4. monitor quality control of biomedical equipment at the hospital.



**MEDICAL SCIENCES**  
**(ALLIED HEALTH)**  
**LEVEL 6-7**  
**MEDICAL GENETICIST \***

A Medical Geneticist is designated for carrying out duties that involve techniques and procedures of processing high end samples that require in depth knowledge and skills of the genetic field such as cell culture, DNA extraction, Fluorescence In-Situ Hybridization technique, CGH Array technique, microscopic use technique and analysis using 'state of the art' equipment. Their role include the identification, interpretation and reporting of DNA and chromosome abnormalities.

**A Medical Geneticist will be able to:**

1. carry out processing high end samples that require in depth knowledge and skills of the genetic field;
2. obtain report of DNA and chromosome abnormalities; and
3. carry out treatment regiments that are suitable for patients with heredity diseases such as prenatal abnormalities, infertility, malignant tumours and other various genetic diseases.

Notes:

\* Job title which is in high demand



## **MEDICAL SCIENCES**

### **(ALLIED HEALTH)**

#### **LEVEL 6-7**

### **ENTOMOLOGIST**

An entomologist is designated to carry out tasks regarding vector control, the research of insects and entomological risk assessment with the goal of ensuring that diseases carried by the vectors will not be spread. The personnel will conduct entomology research relevant to vector bionomics and its control, provide technical advice regarding the medical importance of insects and the control activities of the insects. The personnel are also responsible for organising logistics regarding vector control and preventive and vector control activities through Integrated Vector Management.

#### **An Entomologist will be able to:**

1. organise logistics regarding vector control and preventive activities through Integrated Vector Management;
2. carry out the research of insects and entomological risk assessment with the goal of ensuring that diseases carried by the vectors will not be spread;
3. conduct entomology research relevant to vector bionomics and its control; and
4. provide technical advice regarding the medical importance of insects and the control activities of the insects.



**MEDICAL SCIENCES**  
**(ALLIED HEALTH)**  
**LEVEL 6-7**  
**BIOMEDICAL SCIENTIST**

A Biomedical Scientist is designated to handle clinical pathology including haematology, Histopathology, Sitology, Medical Transfusion and laboratory quality development. They are also responsible for the development of the technology and methodologies used in the laboratory.

**A Biomedical Scientist will be able to:**

1. handle clinical pathology including haematology, Histopathology, Sitology, Medical Transfusion conduct laboratory quality development; and
2. conduct the development of the technology and methodologies used in the laboratory.



**MEDICAL SCIENCES**  
**(ALLIED HEALTH)**  
**LEVEL 6-7**  
**FORENSICS SCIENCE OFFICER**

A Forensics Science officer is designated for analyzing each medicolegal specimen that is accepted professionally and is according to standards and policies set by Medical Forensics which is in line with the Malaysian Legal system. They must ensure the integrity of each specimen that is analysed through the chain of evidence control without reasonable doubt towards the analysis results.

**A Forensics Science Officer will be able to:**

1. analyse each medicolegal specimen that is accepted professionally according to standards and policies set by Medical Forensics which are in line with the Malaysian Legal system; and
2. ensure the integrity of each specimen that is analysed through the chain of evidence control without reasonable doubt towards the analysis results.



**MEDICAL SCIENCES**  
**(ALLIED HEALTH)**  
**LEVEL 6-7**  
**BIOMEDICAL SCIENTIST**

A Biomedical Scientist is designated for the handling of clinical pathology including haematology, Histopathology, Cytology, Medical Transfusion and laboratory quality development. They are also responsible for the development of the technology and methodologies used in the laboratory.

**A Biomedical Scientist will be able to:**

1. handle clinical pathology including haematology, Histopathology, Cytology, Medical Transfusion and laboratory quality development; and
2. develop technology and methodologies development used in the laboratory.



## **MEDICAL SCIENCES**

### **(ALLIED HEALTH)**

#### **LEVEL 6-8**

#### **BIOCHEMIST**

A Biochemist is designated to monitor the operation of the Chemical Pathology Lab, Biochemists must provide diagnostic services, surveillance trials, blood supply and its components, dangerous drugs detection and toxicology, therapeutic blood and adhere to service standards and stakeholder requirements. They will ensure that the quality assurance programmes which are Internal Quality Control and External Quality Control are conducted according to the set standards. The biochemist will be involved in co-relation studies and verification of laboratory equipment and methodology.

#### **A Biochemist will be able to:**

1. monitor the operation of the Chemical Pathology Lab;
2. provide diagnostic services, surveillance trials, blood supply and its components, dangerous drugs detection and toxicology, therapeutic blood medical transfusions, and water quality especially in the analysis of laboratory tests including pre analytical management, test analysis and post analysis;
3. adhere to service standards and stakeholder requirements;
4. ensure the quality assurance programmes which are Internal Quality Control and External Quality Control are conducted according to the set standards;
5. ensure the laboratory equipment are maintained and are also in optimal condition;

6. conduct co-relation studies and verification of laboratory equipment and methodologies; and
7. implement workplace safety and health is according to rules and regulations.



## **MEDICAL SCIENCES**

### **(ALLIED HEALTH)**

#### **LEVEL 6-8**

### **MICROBIOLOGIST**

A Microbiologist is designated for provide quality microbiology services (Bacteriology, serology, virology, immunology, parasitology, mycology). They are responsible for managing the laboratory, quality matters, research & development, training services, consulting and technical services and other related services.

#### **A Microbiologist will be able to:**

1. provide quality microbiology services (Bacteriology, serology, virology, immunology, parasitology, mycology);
2. manage the laboratory, quality matters;
3. conduct research & development; and
4. provide training services, consulting and technical services and other related services.

**SECTOR : MEDICAL**  
**SUB-SECTOR : MEDICAL & HEALTH**  
**RESEARCH**



**STATISTIC**  
**(MEDICAL & HEALTH RESEARCH)**  
**LEVEL 6**  
**BIostatistician**

A biostatistician is designated to provide statistical expertise to the clinical development program for assigned projects to ensure that scientifically valid conclusions are drawn concerning claims with respect to efficacy and safety of the compound which is under development.

**A Biostatistician will be able to:**

1. participate in Clinical Study Team meetings for assigned studies;
2. responsible within the Clinical Study Team for the quality, accuracy and timely completion of assigned tasks;
3. support any R&D department by providing statistical expertise for issues in preclinical and clinical research;
4. responsible for making statistic model selection, experimental design, design and analysis of clinical trials;
5. analyse and interpret data from individual trials;
6. perform meta-analyses by pooling data from several studies;
7. develop project analysis plan, including computer-generated table specifications, statistical analysis plan, and research report format;
8. co-operate in further development of internal guidelines and SOPs;
9. maintain state of the art statistical applications in clinical research; and
10. responsible for data processing for accurate relocation, formatting, generating and transmitting required data.



**STATISTIC**  
**(MEDICAL & HEALTH RESEARCH)**  
**LEVEL 7**  
**SENIOR BIOSTATISTICIAN**

A senior biostatistician is designated to guide and support the biostatistician assigned to support the clinical trials, adhere to the company sops and working procedures, write the statistucal analysis plan and coordinate with other biostatiscians and statistical programmers to prepare the statistical analyses.

**A Senior Biostatistician will be able to:**

1. guide and support the biostatistician(s) assigned to support the clinical trials;
2. adhere to the company SOPs and working procedures;
3. write the Statistical Analysis Plan; and
4. coordinate with other biostatisticians and statistical programmers to prepare the statistical analyses.



**RESEARCH**  
**(MEDICAL & HEALTH RESEARCH)**  
**LEVEL 6**  
**RESEARCHER**

A researcher is designated to perform research activities, assist in managerial function, verify purchasing activities, operate/supervise analytical instrument, supervise sample preparation and follow laboratory standard operating procedure.

**A Researcher will be able to:**

1. perform research activities;
2. assist in managerial function;
3. verify purchasing activities;
4. operate/supervise analytical instrument;
5. supervise sample preparation;
6. follow laboratory standard operating procedure;
7. perform evaluation testing of researcher; and
8. adhere that all required safety procedures.



**RESEARCH**  
**(MEDICAL & HEALTH RESEARCH)**  
**LEVEL 7**  
**SENIOR RESEARCHER**

A senior researcher is designated to a senior researcher (drugs) is designated to assist in accreditation activities, conduct managerial function, verify research activities, approve purchasing activities and implement laboratory standard operating procedure

**A Senior Researcher will be able to:**

1. verify laboratory ware preparation;
2. conduct preventive analytical instrument maintenance;
3. carry out requisition activities;
4. operate analytical instrument;
5. carry out sample preparation;
6. follow laboratory standard operating procedure; and
7. ensure that all required safety procedure are followed.



**RESEARCH**  
**(MEDICAL & HEALTH RESEARCH)**  
**LEVEL 8**  
**PRINCIPAL RESEARCHER**

A principal researcher is designated to implement managerial duties, plan research activities, endorse purchasing activities and design laboratory standard operating procedure.

**A Principal Researcher will be able to:**

1. verify R & D budget;
2. plan research activities;
3. endorse purchasing activities;
4. design laboratory standard operating procedure;
5. verify evaluation testing of researcher ;
6. verify that all required safety procedure are followed; and
7. endorse housekeeping of working area.

**SECTOR : MEDICAL**  
**SUB-SECTOR : TRADITIONAL &  
COMPLEMENTARY  
MEDICINE**



**HOMEOPATHY**  
**(TRADITIONAL & COMPLEMENTARY MEDICINE)**  
**LEVEL 4**  
**HOMEOPATHY ASSISTANT \*\***

A homeopathy assistant is designated to assist in prescribing homeopathic medicine, keeps case history and communicating with patients.

**A Homeopathy Assistant will be able to:**

1. records history of disease or disorder and patient's and his family's (both paternal and maternal) past and present, mental and physical reactions to heat, cold and food by careful questioning and obtains complete subjective and objective picture of symptoms expressed;
2. prescribes homeopathic medicine to treat patient for symptoms exhibited;
3. advises patient on diet restrictions during course of treatment;
4. keeps case history of patient and treatment prescribed along with progress report;
5. monitoring and evaluating patient progress;
6. respond to patient queries and problems, either face to face or over the phone;
7. advises patients about the use and effects of particular remedies;
8. maintaining detailed clinical notes and records for each patient; and
9. visiting patients in their home (though this is less common than patient contact in a clinic).

Notes:

\*\* Suggested job areas for skills and vocational training



**HOMEOPATHY**  
**(TRADITIONAL & COMPLEMENTARY MEDICINE)**  
**LEVEL 5**  
**HOMEOPATHY PRACTITIONER \*\***

A homeopathy practitioner is designated to prescribe homeopathic medicine, keeps case history and communicating with patients. They also instruct patient on diet restrictions during course of treatment.

**A Homeopathy Practitioner will be able to:**

1. record history of disease or disorder and patient's and his family's (both paternal and maternal) past and present;
2. prescribe homeopathic medicine to treat patient for symptoms exhibited;
3. instruct patient on diet restrictions during course of treatment;
4. keep case history of patient and treatment prescribed along with progress report;
5. communicate with patients in order to develop a detailed case history comprising psychological, emotional and physical symptoms and characteristics;
6. use homeopathic remedies to treat a range of conditions e.g. arthritis and eczema;
7. analyse each case to select a remedy or series of remedies appropriate for the individual (this may take several consultations);
8. monitor and evaluating patient progress;
9. respond to patient queries and problems, either face to face or over the phone;
10. instruct patients about the use and effects of particular remedies;

11. advise on lifestyle issues, such as diet, exercise and mental health;
12. refer the patient to other health practitioners, as appropriate;
13. visit patients in their home (though this is less common than patient contact in a clinic);
14. maintain detailed clinical notes and records for each patient; and
15. research medical conditions and homeopathic remedies.

Notes:

\*\* Suggested job areas for skills and vocational training



**HOMEOPATHY**  
**(TRADITIONAL & COMPLEMENTARY MEDICINE)**  
**LEVEL 6**  
**HOMEOPATHY CONSULTANT \*\***

A homeopathy consultant is designated to examine and interview patient complaint and history include family history, carry out clinical exam, match symptoms to remedies, prepare medication and prescription, advise for further lab and screen test investigation and necessary treatment, monitor and evaluating patient progress and accept reference from practitioner.

**A Homeopathy consultant will be able to:**

1. examine and interview patient complaint and history including family history;
2. carry out clinical exam (temperature, blood pressure, blood sugar, urine);
3. match complex symptoms to remedies – medication;
4. prepare medication and prescription;
5. advise for further lab and screen test investigation and necessary treatment;
6. monitor and evaluate patient progress; and
7. analyse reference from practitioner.

Notes:

\*\* Suggested job areas for skills and vocational training



**AYURVEDIC**  
**(TRADITIONAL & COMPLEMENTARY MEDICINE)**  
**LEVEL 2**  
**AYURVEDIC MEDICINE ASSISTANT \*\***

An ayurvedic medicine assistant is designated to assist the practitioner when preparing necessary medicines according to ayurvedic system of treatment.

**An Ayurvedic Medicine Assistant will be able to:**

1. Observe urine, stool and sputum, if necessary, and applies findings for diagnosis and treatment;
2. Assist in deciding time of treatment, prescription of medicine with instructions regarding diet to be observed;
3. assist in preparing medicines for general improvement of health and prevention of diseases; and
4. prepare tonics, patent and other indigenous medicines.

Notes:

\*\* Suggested job areas for skills and vocational training



**AYURVEDIC**  
**(TRADITIONAL & COMPLEMENTARY MEDICINE)**  
**LEVEL 3**  
**AYURVEDIC MEDICINE PRACTITIONER \*\***

An ayurvedic medicine practitioner is designated to examine patients by interrogation, sight, feeling and pulse rate to diagnose ailments and prescribes necessary medicines according to ayurvedic system of treatment.

**An Ayurvedic Medicine Practitioner will be able to:**

1. question patient about nature of ailment, previous history of disease and ascertains condition of bowel movement and appetite;
2. diagnose ailment by feeling pulse, examining abdomen, color of skin, eyes and tongue of patient;
3. observe urine, stool and sputum, if necessary, and applies findings for diagnosis and treatment;
4. decide time of treatment prescribes medicine with instructions regarding diet to be observed;
5. prescribe medicines for general improvement of health and prevention of diseases;
6. may prepare tonics, patent and other indigenous medicines;
7. maintain a healthy life, eliminate impurities, reduce stress and fight disease; and
8. assess dietary habits, lifestyle choices and mental state.

Notes:

\*\* Suggested job areas for skills and vocational training



**TRADITIONAL CHINESE MEDICINE**  
**(TRADITIONAL & COMPLEMENTARY MEDICINE)**  
**LEVEL 2**  
**CHINESE MEDICINE ASSISTANT \*\***

A chinese medicine assistant is designated to diagnose and treat ailments or disorders of the human body according to chinese traditional system of medicine.

**A Chinese Medicine Assistant will be able to:**

1. assist in questioning patient about the nature of ailment and ascertains physical condition; and
2. assist in advising administration of medicines with instructions regarding their dosages and precautions.

Notes:

\*\* Suggested job areas for skills and vocational training



**TRADITIONAL CHINESE MEDICINE  
(TRADITIONAL & COMPLEMENTARY MEDICINE)**

**LEVEL 3**

**CHINESE MEDICINE PRACTITIONER \*\***

A chinese medicine practitioner is designated to diagnose and treat ailments or disorders of human body according to chinese traditional system of medicine. They will also able to diagnose ailments.

**A Chinese Medicine Practitioner will be able to:**

1. question patient about the nature of ailment and ascertains physical condition;
2. diagnose ailment by feeling pulse; and
3. decide time and type of treatment required and prescribes medicines with instructions regarding their dosages and precautions.

Notes:

\*\* Suggested job areas for skills and vocational training



**TRADITIONAL MALAY MEDICINE**  
**(TRADITIONAL & COMPLEMENTARY MEDICINE)**  
**LEVEL 2**  
**TRADITIONAL MALAY MEDICINE ASSISTANT \*\***

A traditional malay medicine assistant is designated to assist the practitioner in examining patients by interrogation and sight or pulse rate to diagnose ailments. They will also be able to prescribe medicines and prepare sell indigenous tonic and medicines.

**A Traditional Malay Medicine Assistant will be able to:**

1. assist in decides time and type of treatment and prescribes medicines with special instructions regarding diet;
2. assist in transcribing of medicines for general improvement of health; and
3. assist in preparing indigenous tonic and medicines.

Notes:

\*\* Suggested job areas for skills and vocational training



**TRADITIONAL MALAY MEDICINE**  
**(TRADITIONAL & COMPLEMENTARY MEDICINE)**  
**LEVEL 3**  
**TRADITIONAL MALAY MEDICINE PRACTITIONER \*\***

A traditional malay medicine practitioner is designated to examine patients by interrogation and sight or pulse rate to diagnose ailments. They will also be able to prescribe medicines and prepare indigenous tonic and medicines.

**A Traditional Malay Medicine Practitioner will be able to:**

1. question patients about nature of ailments and examines patients by sight or by feeling pulse rate;
2. decide time and type of treatment and prescribes medicines with special instructions regarding diet;
3. prescribe medicines for general improvement of health; and
4. prepare indigenous tonic and medicines.

Notes:

\*\* Suggested job areas for skills and vocational training



**COMPLEMENTARY THERAPY**  
**(TRADITIONAL & COMPLEMENTARY MEDICINE)**  
**LEVEL 2**  
**COMPLEMENTARY MEDICINE ASSISTANT \*\***

A complementary medicine assistant is designated to assist in questioning patients about nature of ailments and examines patients. They will also be able to assist in providing advice as well as alternative treatments.

**A Complementary Medicine Assistant will be able to:**

1. assist in questioning patient about the nature of ailment and ascertains physical condition;
2. assist in preparing treatment required and instructions regarding their dosages and precautions;
3. assist in constantly checking that the client feels comfortable with the particular treatment being administered;
4. assist in preparing the complementary treatment session;
5. assist in following up with the client after the treatment has ended; and
6. assist in spending time advertising and trying to build up a client base.

Notes:

\*\* Suggested job areas for skills and vocational training



**COMPLEMENTARY THERAPY**  
**(TRADITIONAL & COMPLEMENTARY MEDICINE)**  
**LEVEL 3**  
**COMPLEMENTARY MEDICINE PRACTITIONER \*\***

A complementary medicine practitioner is designated to examine patients about the nature of ailments and are also able to prescribe alternative treatments as well as provide advice on their condition and precautions

**A Complementary Medicine Practitioner will be able to:**

1. interview patient about the nature of ailment and ascertains physical condition;
2. diagnose ailment of patient;
3. decide time and type of treatment required;
4. provide instructions regarding treatment dosages and precautions;
5. consult individual clients and assess the treatment which may be best for them;
6. provide advice as well as alternative treatments;
7. assess the current medical conditions of the client in order to make sure they are not exposed to treatments which may be risky;
8. discuss treatment plans with the client and alter them if necessary;
9. provide a range of treatments to the individual;
10. constantly check that the client feels comfortable with the particular treatment being administered;
11. assess the session with the client after the treatment has ended; and
12. conduct advertising and build up a client base;

13. research on new treatments and keeping up-to-date with new advances in the medical world.

Notes:

\*\* Suggested job areas for skills and vocational training



**WELLNESS THERAPY**  
**(TRADITIONAL & COMPLEMENTARY MEDICINE)**  
**LEVEL 2**  
**WELLNESS ASSISTANT \*\***

A Wellness Assistant is designated to prepare tools and equipment for wellness session, ensure client is comfortable, interpret wellness centre offerings and carry out wellness treatment/therapy session according to wellness centre's Standard Operating Procedures.

**A Wellness Practitioner will be able to:**

1. prepare tools, material and equipment for wellness session;
2. interpret wellness centre (i.e. spa) offerings;
3. record guest volume and appointment schedules;
4. record client progress ( if required); and
5. carry out wellness treatment/therapy session according to wellness centre's Standard Operating Procedures.

Notes:

\*\* Suggested job areas for skills and vocational training



**WELLNESS THERAPY**  
**(TRADITIONAL & COMPLEMENTARY MEDICINE)**  
**LEVEL 3**  
**WELLNESS PRACTITIONER \*\***

A Wellness Practitioner is designated to conduct wellness treatment/therapy session according to wellness centre's Standard Operating Procedures, ascertain physical condition, demonstrate in-depth knowledge of retail lines and make customized suggestions to guests,

**A Wellness Practitioner will be able to:**

1. interpret wellness centre (i.e. spa) offerings;
2. ascertain physical condition;
3. demonstrate in-depth knowledge of retail lines, and make customized suggestions to guests;
4. monitor guest volume and schedules appropriate staffing of practitioners;
5. assist in training other staff members as needed;
6. prepare tools, material and equipment for wellness session; and
7. conduct wellness treatment/therapy session according to wellness centre's Standard Operating Procedures.

Notes:

\*\* Suggested job areas for skills and vocational training

**SECTOR : PHARMACEUTICALS**  
**SUB-SECTOR : REGULATORY**



**REGULATORY  
(PHARMACEUTICALS)  
LEVEL 8  
PRINCIPAL PHARMACIST (REGULATORY)**

A Principal Pharmacist (Regulatory) is designated to plan regulatory activities, consult regulatory issues and implementation, endorse regulatory activities and design regulatory standard operating procedures.

**A Principal Pharmacist (regulatory) will be able to:**

1. determine health authority approvals for products manufacturing and packaging;
2. plan regulatory activities;
3. manage the submission and approval process together with company affiliates and worldwide regulatory affairs;
4. ensure regulatory compliance through participation in the change control process;
5. endorse regulatory activities;
6. verify evaluation testing of drugs;
7. consult regulatory issues and implementation; and
8. design regulatory standard operating procedures.



**REGULATORY  
(PHARMACEUTICALS)  
LEVEL 7  
SENIOR PHARMACIST (REGULATORY)**

A Senior Pharmacist (Regulatory) is designated to conduct regulatory activities, implement managerial duties, endorse regulatory activities and design regulatory standard operating procedures.

**A Senior Pharmacist (regulatory) will be able to:**

1. determine health authority approvals for products manufacturing and packaging;
2. plan regulatory documentation;
3. manage the submission and approval process together with company affiliates and worldwide regulatory affairs;
4. ensure regulatory compliance through participation in the change control process, provide regulatory support to the manufacturing and quality organization;
5. verify department budget;
6. plan regulatory activities;
7. endorse regulatory activities;
8. verify evaluation testing of drugs; and
9. verify that all required safety procedure are followed.



**REGULATORY  
(PHARMACEUTICALS)  
LEVEL 6  
PHARMACIST (REGULATORY)**

A Pharmacist (Regulatory) is designated to obtain health authority approvals for products manufacturing and packaging, prepare regulatory documentation and manage the submission and approval process together with company affiliates and worldwide regulatory affairs and ensure regulatory compliance through participation in the change control process, provide regulatory support to the manufacturing and quality organisation.

**A Pharmacist (Regulatory) will be able to:**

1. obtain health authority approvals for products manufacturing and packaging;
2. prepare regulatory documentation, and manage the submission and approval process together with company affiliates and worldwide regulatory affairs; and
3. ensure regulatory compliance through participation in the change control process, provide regulatory support to the manufacturing and quality organization.



**REGULATORY  
(PHARMACEUTICALS)  
LEVEL 5  
SENIOR ASSISTANT PHARMACIST (REGULATORY)**

A Senior Assistant Pharmacist (Regulatory) is designated to compile the required regulatory documentation in compliance with specific requirements, identify and obtain any information that is outstanding in order to complete that compilation, ensure internal communication of registration status as per process, ensure that all regulatory documentation is updated and complete all administrative functions in order to support and accurately reflect the current status of the product details within the dossier.

**A Senior Assistant Pharmacist (Regulatory) will be able to:**

1. compile the required regulatory documentation in compliance with specific requirements, within the allocated timelines, ensuring quality and compliance of documentation;
2. identify and obtain any information that is outstanding in order to complete that compilation;
3. ensure internal communication of registration status as per process;
4. ensure that all regulatory documentation is updated and that the required super ceding takes place so that an accurate reflection of the current status is always maintained; and
5. complete all administrative functions in order to support and accurately reflect the current status of the product details within the dossier.



**REGULATORY  
(PHARMACEUTICALS)  
LEVEL 4  
ASSISTANT PHARMACIST (REGULATORY)**

An Assistant Pharmacist (Regulatory) is designated to ensure the accuracy of drugs and personal health information in the patient record, receive and transcribing verbal prescriptions from practitioners, ensure that a prescription is complete and authentic, transfer prescriptions to and receiving prescriptions from other pharmacies, ensure the accuracy of the drug preparation and perform the final check of the drug preparation.

**An Assistant Pharmacist (Regulatory) will be able to:**

1. ensure the accuracy of drug and personal health information in the patient record;
2. receive and transcribing verbal prescriptions from practitioners (within the law);
3. ensure that a prescription is complete and authentic;
4. transfer prescriptions to and receiving prescriptions from other pharmacies (within the law);
5. ensure the accuracy of the drug preparation; and
6. perform the final check of the drug preparation.

**SECTOR : PHARMACEUTICALS**  
**SUB-SECTOR : ENFORCEMENT**



**ENFORCEMENT  
(PHARMACEUTICAL)  
LEVEL 8  
PRINCIPAL PHARMACIST (ENFORCEMENT)**

A Principal Pharmacist (Enforcement) is designated to plan pharmaceutical distribution at entry points, plan surveillance activities, plan inspections on distributors and retail outlet, validate prosecutions, plan confiscation procedures and plan penalty procedures.

**A Principal Pharmacist (Enforcement) will be able to:**

1. plan pharmaceutical distribution;
2. plan surveillance activities;
3. plan inspections on distributors and retail outlet;
4. validate prosecutions;
5. plan confiscation procedures; and
6. plan penalty procedures.



**ENFORCEMENT**  
**(PHARMACEUTICALS)**  
**LEVEL 7**  
**SENIOR PHARMACIST (ENFORCEMENT)**

A Senior Pharmacist (Enforcement) is designated to implement pharmaceutical distribution activities, implement surveillance activities, implement inspections on distributors and retail outlet, implement prosecution activities, implement confiscation procedures and implement penalty procedures.

**A Senior Pharmacist (Enforcement) will be able to:**

1. implement pharmaceutical distribution;
2. implement surveillance activities;
3. implement inspections on distributors and retail outlet;
4. verify prosecutions;
5. implement confiscation procedures; and
6. implement penalty procedures.



**ENFORCEMENT**  
**(PHARMACEUTICALS)**  
**LEVEL 6**  
**PHARMACIST (ENFORCEMENT)**

A Pharmacist (Enforcement) Is designated to conduct pharmaceutical distribution activities, conduct surveillance activities, conduct inspections on distributors and retail outlet, implement prosecution activities, implement confiscation procedures and implement penalty procedures.

**A Pharmacist (Enforcement) will be able to:**

1. conduct pharmaceutical distribution;
2. implement surveillance activities;
3. implement inspections on distributors and retail outlet;
4. verify prosecutions;
5. implement confiscation procedures; and
6. implement penalty procedures.



**ENFORCEMENT**  
**(PHARMACEUTICALS)**  
**LEVEL 5**  
**SENIOR ASSISTANT PHARMACIST (ENFORCEMENT)**

A Senior Assistant Pharmacist (Enforcement) Is designated to carry out pharmaceutical distribution activities, carry out surveillance activities, carry out inspections on distributors and retail outlet, prosecution activities, carry out confiscation procedures and carry out penalty procedures.

**A Senior Assistant Pharmacist (Enforcement) will be able to:**

1. carry out pharmaceutical distribution;
2. carry out surveillance activities;
3. carry out inspections on distributors and retail outlet;
4. carry out prosecutions;
5. carry out confiscation procedures; and
6. carry out penalty procedures.



**ENFORCEMENT**  
**(PHARMACEUTICALS)**  
**LEVEL 4**  
**ASSISTANT PHARMACIST (ENFORCEMENT)**

An Assistant Pharmacist (Enforcement) is designated to assist in pharmaceutical distribution at entry points, surveillance and raids, inspections on distributors and retail outlet, prosecutions and confiscation.

**An Assistant Pharmacist (Enforcement) will be able to:**

1. assist in pharmaceutical distribution at entry points;
2. assist in surveillance and raids;
3. assist in inspections on distributors and retail outlet;
4. assist in prosecutions; and
5. assist in confiscation.

**SECTOR : PHARMACEUTICALS**  
**SUB-SECTOR : RESEARCH & DEVELOPMENT**



## **RESEARCH & DEVELOPMENT**

### **(PHARMACEUTICALS)**

#### **LEVEL 5**

#### **SENIOR ASSISTANT PHARMACIST (R & D)**

A Senior Assistant Pharmacist (R & D) is designated to perform research activities, assist in managerial function, operate/supervise analytical instrument, supervise sample preparation, verify laboratory ware preparation, conduct preventive analytical instrument maintenance, carry out requisition activities, operate analytical instrument & sample preparation and follow laboratory Standard Operating Procedure.

**A Senior Assistant Pharmacist (R & D) will be able to:**

1. verify laboratory ware preparation;
2. conduct preventive analytical instrument maintenance;
3. carry out requisition activities;
4. operate analytical instrument;
5. carry out sample preparation;
6. carry out evaluation of research testing;
7. perform research activities;
8. assist in managerial function;
9. operate/supervise analytical instrument;
10. supervise sample preparation;
11. follow laboratory Standard Operating Procedure;
12. perform evaluation testing of researcher (drugs); and
13. adhere that all required safety procedure are followed.



## **RESEARCH & DEVELOPMENT**

### **(PHARMACEUTICALS)**

#### **LEVEL 6**

#### **PHARMACIST (R & D)**

A Pharmacist (R & D) is designated to assist in managerial functions, verify research activities, approve purchasing activities and implement laboratory Standard Operating Procedure.

**A Pharmacist (R & D) will be able to:**

1. perform research activities;
2. conduct managerial function;
3. prepare R&D activities requirement;
4. approve purchasing activities;
5. prepare R&D budget;
6. implement laboratory standard operating procedure; and
7. verify that all required safety procedure are followed.



**RESEARCH & DEVELOPMENT  
(PHARMACEUTICALS)  
LEVEL 7  
SENIOR PHARMACIST (R & D)**

A Senior Pharmacist (R&D) is designated to conduct accreditation activities, implement managerial duties, plan research activities, endorse purchasing activities and design laboratory Standard Operating Procedure.

**A Senior Pharmacist (R&D) will be able to:**

1. verify R&D budget;
2. plan accreditation activities;
3. plan research activities;
4. endorse purchasing activities;
5. design laboratory standard operating procedure;
6. verify evaluation testing of researcher; and
7. verify that all required safety procedure are followed.

**SECTOR : PHARMACEUTICALS**  
**SUB-SECTOR : PHARMACY PRACTICE**



**CLINICAL**  
**(PHARMACY PRACTICE)**  
**LEVEL 7**  
**SENIOR PHARMACIST (CLINICAL)**

A Senior Pharmacist (Clinical) is designated to follow ward rounds with specialist doctors, suggest/provide medication for complicated cases, provide correct information of dosage, monitor patient progress medication & side effect, for complicated cases, conduct counseling session to in-patients for complicated cases, plan crisis management, conduct clinical with workshops for pharmacist and implement managerial tasks.

**A Senior Pharmacist (Clinical) will be able to:**

1. follow ward rounds with specialist doctors;
2. suggest/provide medication for complicated cases;
3. provide correct information of dosage;
4. monitor patient progress medication & side effect for complicated cases;
5. recommend drugs or types of medicine;
6. monitor performance of clinical pharmacists;
7. conduct counseling session to patients for complicated cases;
8. plan crisis management;
9. conduct workshops for pharmacist; and
10. implement managerial tasks.



**CLINICAL**  
**(PHARMACY PRACTICE)**  
**LEVEL 6**  
**PHARMACIST (CLINICAL)**

A Pharmacist (Clinical) is designated to follow ward rounds with doctors, suggest/provide medication for intermediate type of cases, provide correct information of dosage, conduct counselling session to in-patient for intermediate cases, monitor patient progress medication & side effect for intermediate cases, recommend drugs or types of medicine, decide suitable dosage form, liaise with patient, relatives, doctor and nurses for simple cases and assist in crisis management.

**A Pharmacist (Clinical) will be able to:**

1. follow ward rounds with doctors;
2. suggest/provide medication for intermediate type of cases;
3. provide correct information of dosage;
4. conduct counseling session to in-patient for intermediate type of cases;
5. monitor patient progress medication & side effect for intermediate type of cases;
6. recommend drugs or types of medicine;
7. decide suitable dosage form;
8. liaise with patient, relatives, doctor and nurses for intermediate type of cases; and
9. assist in crisis management.



**CLINICAL**  
**(PHARMACY PRACTICE)**  
**LEVEL 5**  
**SENIOR ASSISTANT PHARMACIST (CLINICAL)**

A Senior Assistant Pharmacist (Clinical) is designated to provide medication for simple type of cases, provide correct information of dosage, monitor patient progress medication & side effect for simple cases, and prepare drugs or medicine.

**A Senior Assistant Pharmacist (Clinical) will be able to:**

1. provide medication for simple type of cases;
2. provide correct dosage information;
3. monitor patient progress medication & side effect for simple cases; and
4. prepare drugs or medicine.



**CLINICAL**  
**(PHARMACY PRACTICE)**  
**LEVEL 4**  
**ASSISTANT PHARMACIST (CLINICAL)**

An Assistant Pharmacist (Clinical) is designated to provide medication for simple type of cases, assist in providing correct information of dosage, assist in monitoring of patient progress medication & side effect for simple cases, and assist in preparing drugs or medicine.

**An Assistant Pharmacist (Clinical) will be able to:**

1. provide medication for simple type of cases;
2. assist in providing correct dosage information;
3. assist in monitoring patient progress medication & side effect for simple cases;  
and
4. assist in preparing drugs or medicine.



**DISPENSING**  
**(PHARMACY PRACTICE)**  
**LEVEL 4**  
**ASSISTANT PHARMACIST (DISPENSING)**

An Assistant Pharmacist (Dispensing) is designated to ensure sufficient stock, carry out filling in of prescription and labelling, adhere to guidelines and standard operating procedure, ensure maintenance of counter facilities/satellite pharmacy, assist in handover of medication to nurse staff for in-patient and ward check (i.e. Quantity, storage condition)

**An Assistant Pharmacist (Dispensing) will be able to:**

1. ensure sufficient stock;
2. carry out filling in of prescription and labeling;
3. adhere to guidelines and Standard Operating Procedure;
4. carry out dispensing of medication to patient;
5. ensure maintenance of counter facilities/satellite pharmacy; and
6. assist in handover of medication to nurse staff (when necessary for in-patient).



**DISPENSING**  
**(PHARMACY PRACTICE)**  
**LEVEL 5**  
**SENIOR ASSISTANT PHARMACIST (DISPENSING)**

A Senior Assistant Pharmacist (Dispensing) is designated to ensure sufficient stock, monitor sufficient staff at counter (pharmacy), verify filling in of prescription and labelling, conduct dispensing of medication to patient, adhere to guidelines and Standard Operating Procedure, verify maintenance of counter facilities/satellite pharmacy, handover medication to nurse staff for in-patient and prepare section report.

**A Senior Assistant Pharmacist (Dispensing Patient) will be able to:**

1. ensure sufficient stock;
2. monitor sufficient staff at counter (pharmacy);
3. verify filling in of prescription and labeling;
4. conduct dispensing of medication to patient;
5. adhere to guidelines and Standard Operating Procedure;
6. verify maintenance of counter facilities/satellite pharmacy;
7. handover medication to nurse staff for in-patient (when necessary); and
8. prepare section report.



**DISPENSING**  
**(PHARMACY PRACTICE)**  
**LEVEL 6**  
**PHARMACIST (DISPENSING)**

A Pharmacist (Dispensing) is designated to verify sufficient stock, implement plan to ensure sufficient staff at counter (pharmacy, liaise with doctors on dispensing/receiving issues, handle in-patient/counter complaints, verify handover of medication to nurse staff for in-patient management, perform staff training and prepare departmental report.

**A Pharmacist (Dispensing) will be able to:**

1. verify sufficient stock;
2. implement plan to ensure sufficient staff at counter (pharmacy);
3. verify dispensing of medication to patient;
4. conduct counselling cases;
5. liaise with doctors on dispensing/receiving issues;
6. handle in-patient/counter complaints;
7. verify handover of medication to nurse staff for in-patient;
8. monitor counter performance (out patient);
9. implement crisis management;
10. perform staff training; and
11. prepare departmental report.



**DISPENSING**  
**(PHARMACY PRACTICE)**  
**LEVEL 7**  
**SENIOR PHARMACIST (DISPENSING)**

A Senior Pharmacist (Dispensing) is designated to plan sufficient staff at counter (pharmacy), liaise with doctors on dispensing/receiving issues for complex cases, monitor counter performance, handle outpatient complaints for complex cases, suggest alternative choices of medication to other medical departments, endorse training, verify departmental report and conduct practice research on drugs

**A Senior Pharmacist (Dispensing) will be able to:**

1. plan sufficient staff at counter/dispensing (pharmacy);
2. liaise with doctors on dispensing/receiving issues for complex cases;
3. monitor counter performance;
4. handle out-patient complaints for complex cases;
5. suggest alternative choices of medication to other medical department;
6. plan crisis management;
7. endorse staff training;
8. verify departmental report; and
9. conduct practice research on drugs.



**RECONSTITUTION  
(PHARMACY PRACTICE)**

**LEVEL 4**

**ASSISTANT PHARMACIST (TOTAL PARENTERAL NUTRITION)**

An Assistant Pharmacist (Total Parenteral Nutrition) is designated to perform reconstitution activities, ensure sufficient stock activities, ensure lab is ready to be used & maintenance of lab and equipment, carry out labeling, be involved in training activities and carry out safety checks in clean room.

**An Assistant Pharmacist (Total Parenteral Nutrition) will be able to:**

1. perform reconstitution activities;
2. ensure sufficient stock activities;
3. ensure lab is ready to be used;
4. ensure maintenance of lab and equipment;
5. carry out labeling;
6. involve in training activities;
7. carry out safety checks in clean room; and
8. adhere to standard operating procedure on reconstitution of parenteral nutrition.



**RECONSTITUTION  
(PHARMACY PRACTICE)  
LEVEL 5**

**SENIOR ASSISTANT PHARMACIST (TOTAL PARENTERAL NUTRITION)**

A Senior Assistant Pharmacist (Total Parental Nutrition) is designated to verify parenteral nutrition mixing activities, carry out handover of prepared nutrition fluid to ward staff, ensure sequence of nutrition fluid administered to patient, assist in staff training to clear room staff on handling & labelling, prepare roster on duty list of staff, verify safety check on clear room and verify maintenance on equipment used in clear room.

**A Senior Assistant Pharmacist (Total Parenteral Nutrition) will be able to:**

1. verify parenteral nutrition mixing activities;
2. carry out handover of prepared nutrition fluid to ward staff;
3. ensure sequence of nutrition fluid administered to patient;
4. assist in staff training to clean room staff on handling & labeling;
5. prepare roster on duty list of staff;
6. verify safety check on clear room;
7. verify maintenance on equipment used in clear room; and
8. prepare stock order and purchasing of items used.



**RECONSTITUTION**  
**(PHARMACY PRACTICE)**  
**LEVEL 6**  
**PHARMACIST (TOTAL PARENTERAL NUTRITION)**

A Pharmacist (Total Parenteral Nutrition) is designated to perform ward rounds with doctors, monitor patient progress and medication side effect for simple cases, verify sequence of nutrition fluid administered to patient, verify prepared nutrition fluid before hand over to ward staff, conduct staff training to pharmacist staff on handling & labelling, prepare stock order, unit report, plan standard operating procedure, verify roster on duty list of staff and verify stock order and purchasing of items used.

**A Pharmacist (Total Parenteral Nutrition) will be able to:**

1. perform in ward rounds with doctors;
2. monitor patient progress and medication side effect for simple cases;
3. verify sequence of nutrition fluid administered to patient;
4. verify prepared nutrition fluid before hand over to ward staff;
5. conduct staff training to pharmacist staff on handling & labelling;
6. prepare stock order;
7. prepare unit report;
8. plan standard operating procedure;
9. verify roster on duty list of staff; and
10. verify stock order and purchasing of items used



**RECONSTITUTION**  
**(PHARMACY PRACTICE)**  
**LEVEL 7**  
**SENIOR PHARMACIST (TOTAL PARENTERAL NUTRITION)**

A Senior Pharmacist (Total Parental Nutrition) is designated to conduct wards round with specialists, monitor patient progress and medication side effects for complex cases, plan change in nutrition regimen based in patient progress, conduct briefing with expert doctor, recommend new drugs to be used and the status of old drugs and participate in clinical trials and research, verify in staff training, endorse stock orders and purchases, competency of staff in unit and unit report

**A Senior Pharmacist (Total Parental Nutrition) will be able to:**

1. conduct wards rounds with specialists;
2. monitor patient progress and medication side effect for complex cases;
3. plan changes in nutrition regimen;
4. briefing with expert doctor;
5. recommend new drugs to be used and the status of old drugs;
6. participate in clinical trials and research;
7. verify in staff training;
8. endorse stock orders and purchases;
9. endorse competency of staff in unit; and
10. endorse unit report.



**RECONSTITUTION**  
**(PHARMACY PRACTICE)**  
**LEVEL 4**  
**ASSISTANT PHARMACIST (DRUGS CHEMOTHERAPY)**

An Assistant Pharmacist (Drugs Chemotherapy) is designated to perform reconstitution activities for chemotherapy, ensure sufficient stock lab is ready to be used & maintenance of lab and equipment, carry out labelling, prepare reconstitution of chemotherapy drugs, ensure safety of clean room and adhere to standard operating procedure of drugs.

**An Assistant Pharmacist (Drugs Chemotherapy) will be able to:**

1. perform reconstitution activities for chemotherapy;
2. ensure sufficient stock;
3. ensure lab is ready to be used;
4. ensure maintenance of lab and equipment;
5. carry out labeling;
6. prepare reconstitution of chemotherapy drugs;
7. ensure safety of clean room; and
8. adhere to standard operating procedure on reconstitution of chemotherapy.



**RECONSTITUTION**  
**(PHARMACY PRACTICE)**  
**LEVEL 5**  
**SENIOR ASSISTANT PHARMACIST (DRUGS CHEMOTHERAPY)**

A Senior Assistant Pharmacist (Drugs Chemotherapy) is designated to verify reconstitution medication mixing activities, carry out handover of prepared chemotherapy to ward staff, ensure sequence of chemotherapy administered to patient, conduct spillage management in lab and assist in conducting staff training to pharmacist staff on handling & labelling, verify standard operating procedure on reconstitution worksheet and safety in clean room

**A Senior Assistant Pharmacist (Drugs Chemotherapy) will be able to:**

1. verify reconstitution medication mixing activities;
2. carry out handover of prepared chemotherapy to ward staff;
3. ensure sequence of chemotherapy administered to patient;
4. conduct spillage management in lab;
5. assist in conducting staff training to pharmacist staff on handling & labeling;
6. prepare pre-chemo counseling;
7. verify standard operating procedure on reconstitution worksheet; and
8. verify safety in clean room.



**RECONSTITUTION**  
**(PHARMACY PRACTICE)**  
**LEVEL 6**  
**PHARMACIST (DRUGS CHEMOTHERAPY)**

A Pharmacist (Drugs Chemotherapy) is designated to perform in ward rounds with doctors, monitor patient progress and medication side effect for simple cases, verify prepared chemotherapy before handover to ward staff, sequence of chemotherapy administered to patient, spillage management in lab and conduct staff training to pharmacist staff on handling & labelling, provide pre-chemo counselling, verify prepared chemotherapy before hand over to ward staff and prepare unit report

**A Pharmacist (Drugs Chemotherapy) will be able to:**

1. perform in ward rounds with doctors;
2. verify sequence of chemotherapy administered to patient;
3. verify spillage management in lab;
4. conduct staff training to pharmacist staff on handling & labeling;
5. monitor patient progress and medication side effect for simple cases;
6. provide pre-chemo counseling;
7. verify prepared chemotherapy before hand over to ward staff; and
8. prepare unit report.



**RECONSTITUTION**  
**(PHARMACY PRACTICE)**  
**LEVEL 7**  
**SENIOR PHARMACIST (DRUGS CHEMOTHERAPY)**

A Senior Pharmacist (Drugs Chemotherapy) is designated to monitor patient progress and medication side effects for complex cases, plan change in chemotherapy regimen, conduct briefing with expert doctor, recommend new drugs to be used and the status of old drugs and participate in clinical trials and research, verify staff training, unit report and staff competency in handling reconstituting chemotherapy.

**A Senior Pharmacist (Drugs Chemotherapy) will be able to:**

1. monitor patient progress and medication side effect for complex cases;
2. plan change in chemotherapy regimen;
3. conduct briefing with expert doctor;
4. recommend new drugs to be used and the status of old drugs;
5. participate in clinical trials;
6. verify staff training;
7. verify unit report; and
8. verify staff competency in handling reconstituting chemotherapy.



**THERAPEUTIC DRUGS MONITORING**  
**(PHARMACY PRACTICE)**  
**LEVEL 7**  
**SENIOR PHARMACIST**

A Senior Pharmacist (Therapeutic Drugs Monitoring) is designated to manage collaborative pharmaceutical care to Internal Medicine patients through clinical services, research, and teaching, coordinate the Adverse Drug Reaction (ADR) prevention, detection and monitoring program.

**A Senior Pharmacist (Therapeutic Drugs Monitoring) will be able to:**

1. manage collaborative pharmaceutical care to Internal Medicine patients through clinical services, research, and teaching;
2. plans the Adverse Drug Reaction (ADR) prevention, detection and monitoring program;
3. conduct cost-effective care analysis, teaching, and pharmacy representation in Medical committees;
4. conduct/consult clinical interventions;
5. select patients receiving targeted drugs;
6. provide pharmacokinetic/anticoagulation consultations as required;
7. conduct patient care rounds with internal medicine teams;
8. discuss medication order changes/clarifications with the prescriber, document any changes in patient and pharmacy records; and
9. develop and conduct target drug programs and medication use evaluations as needed and report results to the pharmacy and therapeutics committee.



**THERAPEUTIC DRUGS MONITORING**  
**(PHARMACY PRACTICE)**  
**LEVEL 6**  
**PHARMACIST**

A Pharmacist (Therapeutic Drugs Monitoring) is designated to provide collaborative pharmaceutical care to Internal Medicine patients, provide pharmaceutical care to hospital patients requiring clinical pharmacokinetic/anticoagulation monitoring, provide clinical interventions, coordinate the Adverse Drug Reaction (ADR) prevention, detection and monitoring program and provide cost-effective pharmaceutical care to patients receiving drugs that require clinical pharmacokinetic/anticoagulation monitoring.

**A Pharmacist (Therapeutic Drugs Monitoring) will be able to:**

1. provide pharmaceutical care to Internal Medicine patients;
2. provide clinical interventions;
3. coordinate the Adverse Drug Reaction (ADR) prevention, detection and monitoring program;
4. provide cost-effective pharmaceutical care to patients receiving drugs that require clinical pharmacokinetic/anticoagulation monitoring;
5. participate in selection of patients receiving targeted drugs;
6. provide pharmacokinetic/anticoagulation consultations as required;
7. participate in patient care rounds with Internal Medicine teams; and
8. discuss medication order changes/clarifications with the prescriber, document any changes in patient and pharmacy records.



**THERAPEUTIC DRUGS MONITORING**  
**(PHARMACY PRACTICE)**  
**LEVEL 5**  
**SENIOR ASSISTANT PHARMACIST**

A Senior Assistant Pharmacist (Therapeutic Drugs Monitoring) is designated to assist in performing drug therapy while identifying use, dose, dosage form, regimen, route, therapeutic duplication, and drug interactions, promote and demonstrate rational, cost-effective drug therapy and document clinical interventions and cost avoidance.

**A Senior Assistant Pharmacist (Therapeutic Drugs Monitoring) will be able to:**

1. assist in performing drug therapy while identifying use, dose, dosage form, regimen, route, therapeutic duplication, and drug interactions;
2. promote and demonstrate rational, cost-effective drug therapy;
3. document clinical interventions and cost avoidance;
4. facilitate discharge for home care patients when appropriate;
5. work collaboratively with the medical or faculty service to ensure appropriate practice in the ambulatory setting;
6. assist in providing continuity of care for applicable pharmacokinetic/anticoagulation and internal medicine patients;
7. provide operational support to the pharmacy;
8. assist in providing patient medication orders for monitorable drug and anticoagulation therapy for accuracy and appropriateness; and
9. provide resident on-call reports relative to pharmacokinetic and anticoagulation consultations.



**THERAPEUTIC DRUGS MONITORING**  
**(PHARMACY PRACTICE)**  
**LEVEL 4**  
**ASSISTANT PHARMACIST**

An Assistant Pharmacist (Therapeutic Drugs Monitoring) is designated to work collaboratively with the medical or faculty service to ensure appropriate practice in the ambulatory setting, assist in providing continuity of care for applicable pharmacokinetic/anticoagulation and internal medicine patients, provide operational support to the pharmacy, and assist in providing patient medication orders for monitorable drug and anticoagulation therapy for accuracy and appropriateness.

**An Assistant Pharmacist (Therapeutic Drugs Monitoring) will be able to:**

1. facilitate discharge for home care patients when appropriate;
2. work collaboratively with the medical or faculty service to ensure appropriate practice in the ambulatory setting;
3. assist in providing continuity of care for applicable pharmacokinetic/anticoagulation and internal medicine patients;
4. provide operational support to the pharmacy;
5. assist in providing patient medication orders for monitorable drug and anticoagulation therapy for accuracy and appropriateness;
6. provide resident on-call reports relative to pharmacokinetic and anticoagulation consultations; and
7. inform relevant personnel of medication order changes.

## **ANNEX 4:      SAMPLE OF OCCUPATIONAL ANALYSIS SURVEY**



## Occupational Analysis for the Medical & Pharmaceutical Industry

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*Greetings & Salam 1 Malaysia.*

In collaboration with the Department of Skills Development (DSD) of the Ministry of Human Resources, Professional & Technical Academy Sdn. Bhd. (PRITEC) is currently conducting an occupational analysis on the **Medical and Pharmaceuticals Industry**. From this analysis, the industry framework, occupational structure, occupational job titles, and job description will be summarised for the use of the Government, private sector, investors, employers, employees, educators or any personnel involved either directly or indirectly with this industry.

We would like to extend our heartfelt gratitude upon your cooperation in answering this survey. This survey will be used as field data in order to conduct a comprehensive occupational analysis on the industry. Please fill in where necessary in the form provided. Any inconvenience caused is deeply regretted. Thank you.

Regards,  
Evarina Amiron  
Managing Director  
PRITEC

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### **Survey Respondent Details**

Name : \_\_\_\_\_

IC Number : \_\_\_\_\_

Position : \_\_\_\_\_

Organisation : \_\_\_\_\_

Phone Number: \_\_\_\_\_

Email Address: \_\_\_\_\_

Date : \_\_\_\_\_

**Please answer the questions below in the space provided, additional pages may be added if necessary. There are 13 questions in this 5 page survey.**

1. Please provide a brief job description of your position. Please state your job title.

2. What is the widely accepted definition of the medical industry?

3. What is the widely accepted definition of the pharmaceuticals industry?
4. What are the main areas under the medical industry? Please elaborate where possible.
5. What are the main areas under the pharmaceuticals industry? Please elaborate where possible.

6. What is the current economic situation of the healthcare industry in Malaysia?
7. Which job title or position in the medical & pharmaceuticals industry is currently in demand and most likely to be in demand 5 years down the road?
8. Please list down the main regulatory bodies in your profession.
9. Please list down the main national policies in your profession.

10. Please list down the related acts in your profession.
  
  
  
  
  
  
  
  
  
  
11. What are the Occupational Structures do you know of in other countries that are relevant to your profession? Please state which country.
  
  
  
  
  
  
  
  
  
  
12. Which job titles in your line of work do you feel are suitable to be developed as a **National Occupational Skills Standard - (NOSS)**? The NOSS is a national document that outlines skills and competencies required for a specific occupation in Malaysia. The OA will be used as a basis to develop the National Curriculum for skills training to be adapted by public and private institutions, as required by the National Skills Development Act 652 (NASDA Act 652).

13. Please list any useful source of information throughout the process of this Occupational Analysis survey.

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**End of Questionnaire.**  
**Thank you for your cooperation.**

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