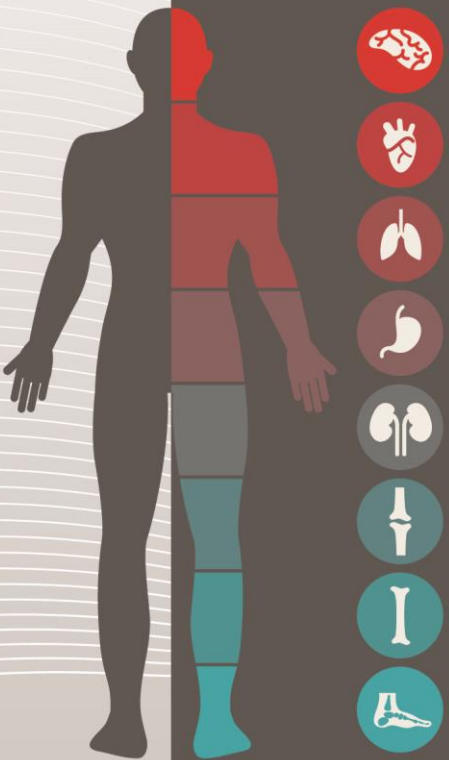
Medical Specialty Selection Guide

for Medical Graduates



Saudi Commission for Health Specialties
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BOOK SUPERVISOR
Dr. Mohammad Al-Onazi

BOOK ORGANIZER & COORDINATOR
Njoud Fahad Almahfouz

BOOK CO-ORGANIZERS & COORDINATORS
Anwaar Saud Aldaher
Osama Ibrahim Alghamdi

REVIEWED & EDITED BY:
Dr. Mohammed Al-Onazi
Consultant Pediatric Surgeon, Department of Pediatric Surgery, Prince Sultan Military Medical City, Riyadh, Saudi Arabia

EDITED & FORMATTED BY:
Vittoriana Crisera
Journal Manager, Journal of Health Specialties, Saudi Commission for Health Specialties, Riyadh, Saudi Arabia

REVIEW COMMITTEE:
Prof. James Ware
Director of Medical Education and Postgraduate Studies, Saudi Commission for Health Specialties, Riyadh, Saudi Arabia
Dr. Mohammad Al Sultan
Consultant Emergency Medicine, General Supervisor for Postgraduate Education, Saudi Commission for Health Specialties, Riyadh, Saudi Arabia
Dr. Fahad Al Rabiah
Section Head, Infectious Diseases, King Faisal Specialist Hospital and Research Center, Riyadh, Saudi Arabia
Dr. Sami Al Shammari
Consultant Palliative Care, King Fahad Medical City, Riyadh, Saudi Arabia
Dr. Thuraya Kattan
Medical Education Specialist, Saudi Commission for Health Specialties, Riyadh, Saudi Arabia

ADMINISTRATIVE SUPPORT:
Mrs. Laila Alyousef
Administrative Assistant, Medical Education and Postgraduate Studies Department, Saudi Commission for Health Specialties, Riyadh, Saudi Arabia

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بسم الله الرحمن الرحيم

Medical Specialty Selection Guide for Medical Graduates

Preface

The book was designed to help the medical college graduates select their future medical specialty according to essential objective information collected from specialty experts and the Saudi Commission for Health Specialties (SCFHS) on the available Postgraduate Training Programs.

The idea for the book was originated by a medical student, Njoud Fahad Almahfouz, who then contacted her colleagues Anwaar Saud Aldaher and Osama Ibrahim Alghamdi. Together with a group of enthusiastic medical students, they initiated structuring, collecting information, and organizing the book.

This book guides medical college students, as the title implies, to choose the medical specialty that most suits their personalities, learning styles, life-styles, and preferred future subspecialties by providing the necessary information on the available specialties.

The specialty chapters are designed to provide the reader with a global and holistic view on the specialty by organizing the information in three sections; an introduction to the specialty, a description of the specialty by an expert, and the SCFHS Residency Program.

We hope that this book serves its novel purpose in helping our colleagues select their future postgraduate education and training.

A very sincere thanks goes to every member of the Medical Specialty Guide team for their help, as they were the pillar of this production.

A special acknowledgment is extended to *Prof. Sulaiman Bin Omran Al Emran, the Deputy Secretary General of the SCFHS,* for his continuous support and encouragement. We also thank *Dr. Ibrahim Al Orainin* for his guidance and directions in the initial stages of this book.

Moreover, we would like to thank all the specialty experts who provided us with valuable information on their specialties as well as all the reviewers and editors.

A special thanks goes to *Mrs. Vittoriana Crisera*, for her effort in organizing, editing and formatting the book and *Mrs. Laila Al Yousef* for her administrative support.

Finally, we would like to extend our gratitude to all the SCFHS staff, in addition to the training residents who provided us with information that was used to prepare this book.

Dr. Mohammed Al Onazi
Consultant Pediatric Surgeon, Department of Pediatric Surgery
Prince Sultan Military Medical City
Riyadh, Saudi Arabia

Part I: Introduction

1.1 Internship: The First Step

Maram Alghamdi, Hala Marzoug Almarzoug, Fares Abdulmajed Alkhayal, Feras Abbas Qumqumji, Ali Yousif

Concept of Internship

The medical internship is a supervised period of training that covers different specialties following the completion of graduation requirements of medical schools. During a medical internship, the intern should be an active learner, achieve learning outcomes independently.

The resident/learner should also fulfill the essential educational components of practice-based learning, and he/she should be able to provide feedback and reflection in practice.

The Ministry of Higher Education (MOHE) in Saudi Arabia has set the Internship Program as a prerequisite and an essential requirement for all Bachelor Degree of Medicine holders to enable them to obtain a license to practice as medical professionals in the Kingdom for the duration of the medical internship is one year and starts in the summer in most universities.

Internship Requirements

Internship requirements are the same, locally and internationally, except for some differences in the duration of the training period and the period assigned for each cycle.

Specialty Rotations

1. Department of Surgery: 2 months
2. Department of Internal Medicine: 2 months
3. Department of Pediatrics: 2 months*
4. Department of Obstetrics and Gynecology: 2 months*
5. Department of Family and Community Medicine: 1 month*
6. Optional: one month (from a number of disciplines)

*(*The duration requirement depends on the curriculum of each college)*

Most universities require their graduates to spend at least 50% of the internship in their hospitals.

Intern Duties

The medical intern is expected to:

- Evaluate all new patients under the supervision of a Consultant, by a taking proper history of the patient, performing a physical examination and requesting the necessary laboratory investigations.
- List a differential diagnosis and management plan under the supervision of a Consultant.

- See all of his/her patients every day and follow-up their investigations.
- Attend morning report/handover meetings.
- Attend all the activities of the department/unit whether they are medical rounds on patients or educational activities.
- Attend some clinics in coordination with the training supervisor.
- Deliver scientific lectures, if asked to do so in the department/unit.

Recommended tips to be followed during internship

1. Arrive at work early and prepare your notes before rounds. It really helps because it enables you to work on other things after the medical rounds.
2. Be organized and always write things down. You need to develop a good system in order to keep track of your patients' information and their investigations (e.g. maintain a 'to-do' list).
3. Always ask for help when you need it. There are usually two or more interns in a team, so always help each other out.
4. Maintain good nutrition and ensure that you have enough rest and exercise.
5. Your communication skills are particularly important as an intern because of your central role in coordinating patient management.
6. You should have the opportunity to practice and improve your presentation skills. You will be asked to present patient case histories and clinical details at the bedside during regular ward rounds.
7. Utilize your free time by reading and try to keep a pocket book or a hand held device.
8. Attend courses/conferences that are related to your future specialty.
9. Attend courses/workshops that enhances your soft and personal skills.
10. Become capable of demonstrating your understanding of professional and ethical roles taught at medical school including:
    - Respecting professional boundaries and ethical practice.
    - Respecting team members.
    - Knowing how to act in difficult situations.
    - Continuing self-appraisal skills and involvement in peer assessment.
11. Start working on research studies, especially on topics related to your future specialty. This can enhance your chances of being accepted in your desired specialty program.
12. Internship is a good time to prepare yourself for international exams e.g. USMLE (United States Medical Licensing Examination), or others if you intended to complete your career training abroad.

Saudi Medical Selection Exam

The Saudi Medical Selection Exam (SMSE) is a mandatory exam that a medical graduate has to pass in order to be accepted in the local Residency Training Programs to pursue his/her postgraduate training. The exam is held at various SCFHS branches all over Saudi Arabia. Each intern has the right to take the exam three times per calendar year.

The exam is composed of 100 multiple choice questions (MCQs) from different

specialties which are distributed according to the table below.

Specialty	Number of Questions
Medicine	25
General Surgery	15
Pediatric	15
Family Medicine	15
Psychiatry	5
Obstetrics and Gynecology	5
Dermatology	3
ENT	3
Orthopedic	3
Ophthalmology	3
Basic Sciences	3
Total	100

Saudi Commission for Health Specialties (SCFHS) Registration

The following documents are required for registration purposes:

1. Letter from your college or faculty indicating that you are currently an Intern.
2. Hardcopy of your National ID Card.
3. Completed Saudi Licensing Exam (SLE) application form.
    - Payment of 500SR is required for the first attempt, 800SR for the second and third attempts.
    - The payment can either be made at the SCFHS office or by making a direct deposit in the SCFHS bank account, which is (Al-Ahli Bank Account No. 20159007001306) or (Al-Rajhi Bank No. 203608010000037)
    - All requirements should be taken to the nearest SCFHS branch in your city or sent to the SCFHS Exam Administration through mail: SCFHS PO Box 94656 Riyadh 11614. A reply will be sent back to your contact address with your username and password.
      (Note: An on-line process of application might be available at the SCFHS web site by the time this book is released)
    - The final step is to login to (https://securereg3.prometric.com) using the username and password provided to you. Pay the registration fee (105$) using Visa/MasterCard, and finally choose your preferred exam day.
    - Educational sources that might be of help are: USMLE Step 2 Secrets, USMLE Step 2 CK, Crush Step 2.

1.2 Being a Resident

Maram Alghamdi, Hala Marzoug Almarzoug, Fares Abdulmajed Alkhayal, Feras Abbas Qumqumji, Ali Yousif

Concept of Residency

Residency is a period of training in a specific medical specialty. The training period is designed according to the SCFHS approved specialty curriculum. Residency (training period) ends with a specialty board exam that must be passed to be certified as a specialist/senior registrar in the field of training.

Advantages of the medical residency program

Being enrolled in a residency program enables you to be trained in a structured program, as well as to become certified to practice the specialty as a senior registrar. After you obtain the certification, you can pursue your career in the same specialty by enrolling in a fellowship program.

Medical and Surgical Specialties

A. Surgical Specialties:

- General Surgery
- Vascular Surgery
- Thoracic Surgery
- Pediatric Surgery
- Neurosurgery
- Plastic and Reconstructive Surgery
- Orthopedics
- Obstetrics and Gynecology
- Ophthalmology
- Urology
- Otorhinolaryngology (ORL)

B. Medical Specialties:

- Internal Medicine
- Cardiology
- GIT and Hepatology
- Hematology
- Oncology
- Infectious Disease
- Pulmonology
- Palliative Medicine
- Rheumatology
- Neurology
- Pathology
- Radiology
- Family & Community Medicine

- Rehabilitation Medicine
- Pediatrics
- Psychiatry
- Dermatology

Fellowship after Residency Program

After completing the Residency Program, there is a possibility to subspecialize in a certain area within your general specialty. This is usually accomplished through Fellowships. Fellowships typically last from one to three years. The ultimate goal of your training is to be specialized, qualified and certified to practice as a consultant in your preferred subspecialty..

Other Options for Medical Graduates

There are other options for a medical graduate apart from joining a residency program, such as:

1. Obtaining a Master's degree in Basic Medical Sciences such as: Anatomy, Physiology, Pharmacology, etc.
2. Obtaining a PhD in Basic Medical Sciences is designed for students willing to do research or teach medical students at Medical Colleges. An independent research and a dissertation are both required to earn a PhD in Basic Medical Sciences; some programs also require an internship.

Being an Academic Staff

Becoming an academic staff member means that you are working in an academic institution and your duties are teaching students, doing research, in addition to patients' management. Such a position is provided by most universities in the Kingdom. The difference with this option is that, the sponsor of the program is the university instead of the hospital. Therefore, enrolling into such a program will enable you to become an academic staff who works in the College of Medicine and is entitled to be promoted through the academic ranks (Demonstrator > Assistant Professor > Associate Professor > Professor). The academic institutions in the Kingdom also have hospital jobs in which the promotion is similar to other hospitals (Resident > Registrar/ Specialist/ Senior Registrar/ > Consultant). You must be under 28 years of age, and your GPA should be 3.75 and above in order to be accepted in the aforementioned program.

Advantages:

- Being an academic faculty
- Available Scholarships
- Doing research
- Vacations follows students calendar.

Disadvantages:

- Lack of geographical flexibility, because the job is limited to the areas where there are universities.

1.3 Factors Influencing Your Choice of Specialty

Maram Alghamdi, Hala Marzoug Almarzoug, Fares Abdulmajed Alkhayal, Feras Abbas Qumqumji, Ali Yousif

Personality and Personal Preferences

Many physicians have carried out studies to explore the relationship between a doctor's personality and his/her chosen specialty, and they concluded that every personality type can have an interest in more than one area of medicine. "The Myer-Briggs Type Indicator" (MBTI) is a psychological test (among many others) which was designed to analyze personalities in a systematic and scientific manner.[6]

According to the theory under-pinning the MBTI, every individual falls under one type of personality out of a possible 16 types*. These personality types are derived from the four main indices of the MBTI, and as part of one's overall personality, this judgment guides behavioral preferences in any situation that involves other people-such as colleagues or patients.

(*Personality Types and The Transgender Community. http://www.webdotgal.com/html/m-b.html. Retrieved on August 2013)

The four dimensions measured by the MBTI are:

1. **Extroversion (E) versus Introversion (I)**
   - **Introversion:** Introverts prefer to focus their interest and energy on an inner world of ideas, impressions and reactions. Introversion is not the same as being asocial, because introverts prefer having interactions with greater focus and depth, with others who are also good listeners and who think before they act or speak.
   - **Extroversion**: Extroverts on the other hand, draw their energy from external stimuli and tend to focus their interest on the outside world. They prefer dealing with facts, objects and actions. They simply prefer being engaged in many things at once, with lots of expression, impulsivity and thinking out loud.
2. **Sensing (S) versus Intuition (N)**
   - **Sensing**: Sensors are individuals who are drawn into hard and immediate facts of life, as well as practical details and evidence that can be taken in through one of the five senses. They are sensible; thus, when looking at the reality of the world around them, they usually rely on prior experiences and take things literally.
   - **Intuition**: Intuitivists look beyond facts and evidence for meanings, possibilities, connections and relationships. They are imaginative and creative people who like to see the big picture and abstract concepts.
3. **Thinking (T) versus Feeling (F)**
   - **Thinking:** Thinkers make their decisions impersonally, as they mainly base them on objective data that makes sense to them. As analytical

people, they are motivated by achievement and they always consider the logical consequences of their decisions.

- **Feeling:** feelers rely on personal and subjective feelings when making their decisions. As empathetic, compassionate and sensitive people, they take the time to consider how their decision might affect others. Feelers like pleasing others and tend to get their feelings hurt rather easily.

4. Judgment (J) versus Perception (P)

- **Judgment**: Judgers need a world of structure and predictability to have a sense of control over their environment, and to be most organized and productive. Judgers work hard, make decisions quickly and decisively, and can sometimes be closed-minded.
- **Perception**: perceivers are much more open-minded, relaxed and nonconforming. They are much more aware of ideas, events and things. They feel the need to finish projects and settle all issues, and tend to gather information in a leisurely way before making a final decision. They prefer to experience as much of the world as possible, so they like to keep their options open and they adapt well to any given environment.

Medical specialties and MBTI

Extroverted-Intuitive-Thinking-Judging (ENTJ) • Neurology • Cardiology • Urology • Thoracic Surgery • Internal Medicine	**Extroverted-Intuitive-Feeling-Judging (ENFJ)** • Thoracic Surgery • Dermatology • Psychiatry • Ophthalmology • Radiology
Extroverted-Sensing-Thinking-Judging (ESTJ) • Obstetrics-Gynecology • General Practice • General Surgery • Orthopedic Surgery • Pediatrics	**Extroverted-Intuitive-Feeling-Perceptive (ENFP)** • Psychiatry • Dermatology • Otolaryngology • Psychiatry • Pediatrics
Extroverted-Intuitive-Thinking-Perceptive (ENTP) • Otolaryngology • Psychiatry • Radiology • Pediatrics • Pathology	**Extroverted-Sensing-Thinking-Perceptive (ESTP)** • Orthopedic Surgery • Dermatology • Family Practice • Radiology • General Surgery
Introverted-Intuitive-Feeling-Perceptive (INFP) • Psychiatry • Cardiology • Neurology	**Introverted-Sensing-Thinking-Judging (ISTJ)** • Dermatology • Obstetrics-Gynecology • Family Practice

• Dermatology • Pathology	• Urology • Orthopedic Surgery
Introverted-Sensing-Thinking-Perceptive (ISTP) • Otolaryngology • Anesthesiology • Radiology • Ophthalmology • General Practice	**Introverted-Sensing-Feeling-Judging (ISFJ)** • Anesthesiology • Ophthalmology • General Practice • Family Practice • Pediatrics
Introverted-Sensing-Feeling-Perceptive (ISFP) • Anesthesiology • Urology • Family Practice • Thoracic Surgery • General Practice	**Introverted-Intuitive-Feeling-Judging (INFJ)** • Psychiatry • Internal Medicine • Thoracic Surgery • General Surgery
Introverted-Sensing-Feeling-Judging (ISFJ) • Anesthesiology • Ophthalmology • General Practice • Family Practice • Pediatrics	**Introverted-Sensing-Thinking-Perceptive (ISTP)** • Otolaryngology • Anesthesiology • Radiology • Ophthalmology • General Practice

Lifestyle Influences

Different medical specialties differ not only in the knowledge and skills required, but also in the routine of work and their effect on the physician's lifestyle.

Some specialties require long daily working hours and busy on-call duties, such as Internal Medicine, Obstetrics & Gynecology, Pediatrics, and General Surgery. At the same time there is something known as lifestyle specialties, where people have better control over their lifestyle and can manage their time better in order to spend more time with family or engage in personal interests. Lifestyle specialties include Ophthalmology, Dermatology, Pathology and Rehabilitation.

Meeting the Country's need

There has been a dearth in the number of Saudi doctors because of the small number of medical schools, colleges and health colleges in general. Nowadays it seems that there are a reasonable number of medical school graduates with the increasing number of medical colleges. However, it still does not meet the needs of the country, especially in the cities that are not in the major regions of the Kingdom.

Job market needs

Obviously the country needs both clinical and basic medical science experts, however, the need is more for basic scientists since most of the experts in the

Kingdom are foreigners. This is due to the rarity of information available on such specialties to attract new medical school graduates and the lack of training programs in such domains which results in discouragement of medical school graduates to specialize in one of the various basic science specialties.

Part II: Specialties

2.1 Anesthesia

Expert	Students
Manal Bakhsh Obstetric Anesthesia King Fahad Medical City Riyadh, Saudi Arabia	Maryah Ahmed Asker Mohammed Waleed Alshakha Ohood Alamer

Introduction

Anesthesiology is a branch of medicine dedicated primarily to pain relief. In addition, it has a holistic approach towards patients undergoing surgical procedures by providing care before, during, and after a surgical procedure. This includes preoperative evaluation, optimization, maintenance of intraoperative sedation and analgesia, and postoperative monitoring.

Residency training in anesthesiology is a five year program. The basic objective of this program is to train an anesthetist to be competent enough to take care of patients by providing general and regional anesthesia. The training also includes comprehensive preoperative assessment of a patient. Recently, acute and chronic pain management has been included as a subspecialty.

The Specialty by an Expert

Anesthesia coverage is diversified. This means all age groups and all types of patients depending upon the branch of medicine that needs to be served. Since this care is a combination of medical and surgical sciences, it therefore, requires a thorough background knowledge of physiology, pharmacology, anatomy, and internal medicine as well as their application to clinical situations.

The daily routine for an anesthetist comprises of an average 9 hours. On-call days range between 4 to 6 per month which means 24 hours stay in the hospital followed by 24 hours off. During the training period, rotations are done through various surgical subspecialties, preoperative evaluation clinics, and pain management services according to the level of the trainee. The progression in the training program is based upon objective evaluation of the trainee through promotion exams which are conducted once a year. It is mandatory for all the trainees to be certified in Basic Life Support (BLS) and Advanced Cardiac Life Support (ATLS).

On successful completion of the anesthesia residency training, many subspecialty fellowship programs are available nationally and internationally. They include: neuroanesthesia, cardiac anesthesia, neonatal and pediatric anesthesia, obstetric anesthesia and regional anesthesia etc.

Anesthesia is a challenging and stressful specialty but it is very gratifying as well. The feeling of saving a life and to assist colleagues from other specialties to

accomplish a difficult surgical task is indeed rewarding. It has no gender bias and is suitable for single and married doctors equally. It provides an excellent social platform as it interacts with almost all the clinical specialties and that is why it can be considered as the backbone of the hospital.

An applicant should have knowledge of the following:

- Basic Sciences (Physiology, Anatomy and Pharmacology)
- Interpretation of laboratory and radiology results
- Intravenous fluid, and blood products management
- Working quickly and accurately under stressful conditions
- All procedures and techniques concerned with cardiac life support

Residency Program

Specialty	**Anesthesia**	
Duration	5 years	
Rotation	**R1**	• General Core Anesthesia • Accidents and Emergency Anesthesia
	R2	• General Core Anesthesia • Intensive Care (Surgical or Multidisciplinary)
	R3	• Subspecialty Orientation Rotation • Elective Rotation
	R4	• Cardiac Anesthesia • Pediatric Anesthesia • Thoracic Anesthesia • Intensive Care (Surgical, Medical or Multidisciplinary)
	R5	• Pain and Regional Anesthesia • Elective Rotation
Duty hours per day	9	
Clinics per month	4	
Number of on-calls per month	4-6	
Hospitals that offer the program	**Riyadh** • King Fahad Medical City • King Faisal Specialist Hospital & Research Center • Armed Forces Hospital in Riyadh • King Khalid University Hospital • King Abdulaziz Hospital-National Guard • Security Forces Hospital • King Fahad National Guard Hospital • Prince Sultan Military Medical City **Eastern Province** • King Fahad Hospital University-Khobar • King Fahad Specialist Hospital-Dammam	

	• King Abdulaziz Hospital- Al Ahsa • Saud Al-Babtain Cardiac Center-Dammam • King Abdulaziz Airbase Hospital-Dhahran **Western Province** • King Abdulaziz University Hospital • King Fahad Armed Forces Hospital-Jeddah • King Fahad General Hospital-Jeddah • King Faisal Specialist & Research Center-Jeddah • King Khaled National Guard Hospital-Jeddah • King Abdulaziz Medical City National Guard Hospital-Jeddah
Competition	Competitive
Regions	Riyadh , Eastern and Western Province
Yearly applicants	In 2011, 47 applied
Yearly acceptance	In 2011, only 14 were accepted
Yearly graduates	In 2010, 7 graduated
Please refer to SCFHS web site link below for updated information on the Anesthesia Training Program *http://www.scfhs.org.sa/en/MESPS/TrainingProgs/TrainingProgsStatement/AnesthesiaAndCare/Pages/default.aspx*	

2.2 Cardiac Surgery

Expert	Students
Turki B. Albacker Cardiac Surgeon King Fahad Cardiac Center King Khalid University Hospital Riyadh, Saudi Arabia	Alwaleed Abdulaziz Aljaser Asma Ibrahim Abdulla Turki Naif

Introduction

The heart is one of the most vital organs in the body. It helps in delivering important nutrients to other tissues by pumping blood throughout the arteries via repeated, rhythmic muscular contractions. Cardiac Surgery is the branch of medicine that is concerned with treatment of various heart diseases and procedures; such as ischemic heart disease, congenital heart disease, valvular heart disease, heart transplantation and others.

Cardiac Surgery is the specialty that deals with any surgical intervention in the heart or the great vessels. Multiple names were given to the specialty early on, including Cardiovascular Surgery, Cardiothoracic Surgery, as well as Thoracic Surgery. These names go back to an era when cardiac surgeons were trained in all of these specialties. However, with the advances in surgical practice and the branching of each specialty, Cardiac Surgery became a specialty on its own. After finishing an accredited training program in Cardiac Surgery the trainee can immediately start practicing cardiac surgery or can enroll in a one year fellowship in either vascular or thoracic surgery to practice either specialty.

The Specialty by an Expert

Cardiac Surgery is well-known to be a very stressful specialty. It requires a great deal of commitment and dedication. Multitasking, prioritization and balance are required skills, but they are hard to accomplish in most cases, and all the hard work and commitment related to the specialty usually comes at the expense of family and social life. On the other hand, with superb training and great mentorship, successful cardiac surgeons have very high career satisfaction and they are usually compensated and gratified by serving patients and saving lives. Private practice is extremely difficult for cardiac surgeons unless it is considered as a sole option (full time job). Having patients everywhere around the city and having patients coding, bleeding or tamponading while you are busy operating somewhere else is almost unethical as per the specialty roles and standards, unless you are working with a big team that has a strong infrastructure at your primary hospital with coverage available 24/7 that is at the same level of expertise. You should also remember that Cardiac Surgery is teamwork, so you cannot have a private practice without building a strong team in your private practice, and this can be very challenging.

Most of the skills that are required for cardiac surgery can usually be acquired.

However, you need to have the right attitude to be able to acquire these skills in a lengthy process. These characteristics include, but are not limited to: Enthusiasm, hard work, commitment, determination, patience, good communication, persistence, motivation, eagerness to learn, humbleness, dignity and respect.

Cardiac Surgery is related in one way or another to all the specialties in Medicine since the heart is the blood supplier to the whole body. However, a number of specialties are very closely related to cardiac surgery, and require daily interaction with cardiac surgeons. These are Adult and Pediatric Cardiology and ICU. The next line of specialties related to cardiac surgery consists of Vascular and Thoracic Surgery since a lot of structures that these specialties deal with are closely interrelated with the heart.

The Saudi Board of Cardiac Surgery is a new program that started to accept residents in the year 2011. The program receives 40 applicants every year and accepts 10 residents every 2 years (an average of 5 per year). The program has two tracks: Track I accepts residents directly after medical school in a 7-year Residency training Program, and Track II accepts residents in the last 4 advanced years of Cardiac Surgery after they complete an accredited residency training in General Surgery. The first three years in the Residency Training are the core surgical years in which the junior resident will rotate in all the specialties that provide the basic skills related to cardiac surgery. These include: General Surgery, Trauma, Pediatric Surgery, Vascular and Thoracic Surgery, Adult Cardiology, Coronary Care Unit (CCU), Echocardiography, Cardiac Catheterization, Cardiac Perfusion, Cardiac Anesthesia, Intensive Care Unit (ICU), and Research. After passing the third year, the resident becomes a senior resident in the next three years and a chief resident in the last year of the program. The last four years are the advanced years in Cardiac Surgery during which the senior resident will rotate in adult Cardiac Surgery, Pediatric Cardiac Surgery, Thoracic Surgery, and Vascular Surgery. The bulk of these years will be spent in Adult Cardiac Surgery. There is an annual Promotion Exam for both R1-3 and R4-7 separately. Like any other surgical specialty, there is no fixed number of working hours per day but the resident will go home after he/she finishes the assigned operation list but not before ensuring that his/her patients are recovering well. There are 6-7 on-calls per month and the post-call system is dependent on the number of residents in the service and the hospital in which the resident is rotating. We encourage interpersonal communication and cooperation between the residents to arrange for appropriate and effective service coverage. The number of operating room (OR) days and clinics per week are variable and depend on the training hospital, but we recommend at least three OR days and one clinic per week to be attended by each resident. There is an academic half day that is attended by all the residents in the city that is usually held in one of the training hospitals in addition to the local academic activities that the resident will be involved in locally in the hospital in which he or she is doing their training.

There are a good number of Saudi cardiac surgeons in Saudi Arabia today. However, the demand is much higher than supply and that is one of the reasons

behind the establishment of the Saudi Board of Cardiac Surgery. It aims to produce highly trained cardiac surgeons who are ready to serve his patients and country needs.

Fellowships and Subspecialty Training

A) Adult Cardiac Surgery Fellowships:

1. General Adult Cardiac Surgery Advanced Fellowship
2. Aortic Surgery Fellowship
3. Heart Failure Surgery Fellowship
4. Valvular Surgery Fellowship
5. Minimally Invasive Cardiac Surgery Fellowship

B) Congenital Cardiac Surgery Fellowship:

Residency Program

Specialty	**Cardiac Surgery**	
Duration	7 years	
Rotations	**R1**	**12 months** • General Surgery including a minimum duration of 3 months in Trauma Surgery
	R2	**3 months** • Thoracic Surgery (Junior) **3 months** • Vascular Surgery (Junior) **3 months** • Pediatric Surgery **3 months** • Multidisciplinary ICU
	R3	**2 months** • Adult Cardiology **1 month** • Echo Cardiography **1 month** • Cardiac Catheterization Laboratory **2 months** • Elective Rotation **6 months** • Academic Enrichment-a research proposal should be completed with a mentor
	R4 **R5**	Junior Resident in Cardiac Surgery **12 months** • Adult Cardiac Surgery **6 months** • Congenital Cardiac Surgery **3 months** • Thoracic Surgery Senior

		3 months • Vascular Surgery Senior
	R6 **R7**	Senior Resident in Cardiac Surgery **18 months** • Adult Cardiac Surgery **6 months** • Elective-adult or Congenital-based on choice
Working hours per day	8-9	
Clinic per week	1	
Number of on-calls per month	7	
Competition	Very Competitive	
Yearly applicants	Around 30	
Yearly acceptance	Between 5-7	
Yearly graduates	Between 5-7	
Hospitals that offer the program	• King Abdulaziz Medical City For National Guard-Riyadh • King Faisal Specialist Hospital and Research Center-Riyadh • King Fahad Cardiac Center in King Khaled Hospital-Riyadh • Prince Sultan Cardiac Center in Prince Sultan Medical Military City-Riyadh • Saud Al-Babtain Cardiac Center-Dammam • King Fahad Military Hospital-Jeddah • King Faisal Specialist Hospital-Jeddah	
Please refer to SCFHS web site link below for updated information on the Cardiac Surgery Training Program *http://www.scfhs.org.sa/en/MESPS/TrainingProgs/TrainingProgsStatement/HeartSurg/Pages/default.aspx*		

2.3 Community Medicine

Expert	Students
Abdulaziz Alajaji Community Medicine Security Forces Hospital Riyadh, Saudi Arabia	Alwaleed Abdulaziz Aljaser Asma Ibrahim Abdulla Turki Naif

Introduction

Community Medicine is a field of medicine devoted to the health of the biological community. The specialists in this field acquire information regarding the health conditions of a certain population, and apply their knowledge to find integrated and collaborative solutions for the improvement of general health within the community. They meticulously investigate the different health concerns affecting the entire population of communities in order to find effective and comprehensive solutions. This includes, but not limited to, (1) promoting preventive actions from very basic hand washing to immunization, (2) educating people regarding the importance of a clean environment for everyone's well-being, and (3) orienting people about the role and the scope of tertiary healthcare (hospital interventions). The community members must be well aware of the different services their community health center offers. The community's health, as a whole, must be protected especially the vulnerable members, like newborn babies.

It is vital to analyze the community's biological, social, cultural, economic, environmental and ethnic features, in order to be able to assess the community's health needs and properly evaluate population health or diseases. It has to be considered that different communities have different needs depending on a wide variety of factors, such as location, accessibility to medical institutions, and level of education. Due to this diversity, the Community Medicine team must plan, implement, and evaluate health programs to meet the needs accordingly.

The Specialty by an Expert

Specialists in Community Medicine utilize their expertise on promoting, maintaining, and restoring community's health. Their skills and familiarity about the population's health that they acquire during their degree and clinical experiences are essential for improvement of community well-being. Disease prevention, health protection, and health promotion are the core philosophies of Community Medicine, and the specialists can improve their ways of implementing their mission through interdisciplinary partnerships in developing strategies.

The duty of Community Medicine Physician does not end merely in his clinical duties. He must have the power to implement and evaluate health programs and be able to apply them to a wider range of community health issues; he must show good leadership skills to the rest of his team; and he must be

knowledgeable of the different community health guidelines and be able to develop public policies that will lead to a better health of the community.

Some of the Community Medicine specialist careers are:

- Community-oriented medical practice with the stress on disease prevention and health promotion
- The practice of public health at a local, regional, national, or international level
- The organization and management of health services
- The assessment and control of professional and environmental health problems
- Educational activity and research

Being a resident in a Community Medicine field, one must be able to comprehensively absorb and implement all the core concepts of Community Medicine, and must acquire the skills of an effective Community Medicine physician. They must exhibit the characteristics of a knowledgeable physician involving himself with the socioeconomic status, gender, culture and ethnicity of the community with which they work. Aside from the routine clinical services, a resident must be able to come up with ideas on how they can incorporate their observations in research work, from methodology to analysis.

It is of high priority for the kingdom to thoroughly train residents in Community Medicine in order to produce professionals that can contribute to the development of the population's health not only in Saudi Arabia, but to other Gulf Countries (GC).

Last but not least, residents must show exceptional skills in recognizing and diagnosing health system problems. After which, they should come up with inventive solutions to the problems. Good judgment, good communication, and analytic skills are necessary for residents who are interested to pursue this field of medicine. They need to know the physical and social determinants of the healthcare system. Just like any other profession, to be an effective Community Medicine physician, one must have the passion and great interest in its fields of practice such as healthcare policy, health promotion, infectious diseases, environmental health, preventive medicine, and health organization.

Residency Program

Specialty	**Community Medicine**	
Duration	4 years	
Rotations	**R1**	• Epidemiology and Biostatistics • Introduction to communicable diseases • Epidemic investigation and Infectious Disease Control in public health • Clinical Preventive Medicine • Maternal and Child Health

		• Environment and Health • Occupational Health • Principles of Health Informatics • Surveillance systems • Social and Behavioral Sciences • Health Administration
	R2	• Ethics in Community Medicine • Research Methodology • Health Research Proposal writing and funding • Mental Health • Health Education • Cancer Epidemiology • International Health • Epidemiological Practice • Applied Community Medicine • Clinical Preventive Medicine • Public Health Programs • Field Project
	R3	Subspecialty in one of the Community Medicine branches
	R4	Thesis
Working hours per day	8	
Clinics per week	4-6	
Number of on-calls per month	Not Applicable	
Yearly applicants	80-100	
Yearly acceptance	15-20	
Yearly graduates	10	
Hospitals that offer the program	**Joint Program** • King Saud University • Ministry of Health • King Abdulaziz Medical City • Prince Sultan Military Medical City • King Faisal Specialist Hospital & Research Center	
Please refer to SCFHS web site link below for updated information on the Community Medicine Training Program *http://www.scfhs.org.sa/en/MESPS/TrainingProgs/TrainingProgsStatement/Community/Pages/default.aspx*		

2.4 Dermatology

Expert	Students
Sultan Al-Khenaizan Dermatologist and Laser surgeon King Fahad National Guard Hospital King Abdulaziz Medical City Riyadh, Saudi Arabia	Ohood Alamer Mohammed Waleed Alshakha Maryah Ahmed Asker

Introduction

Dermatology is the branch of medicine that deals with the skin and its diseases; a unique specialty with both medical and surgical activities. Skin diseases are very common; there are over 1,000 different conditions described. They range from irritating conditions including acne, dermatitis, psoriasis, warts, and infections to life-threatening melanoma.

Dermatology offers an interesting clinical career in combination with a balanced and flexible working life. It also offers numerous research opportunities because the skin is a visible and accessible organ. The nature of dermatological diseases often results in a profound impact on the quality-of-life. A dermatologist; thus, has a lot of opportunities to improve a patient's physical and psychological well-being and this results in a high level of job satisfaction.

Dermatology is the study of skin, which includes its structure and diseases. It is the oldest medical specialty as all previous great doctors in history always started by examining the skin and commenting on any abnormalities. Skin is not only the largest organ in the body, but is also the first organ used by all human beings in interaction and communication. Skin is the largest sensory organ and it provides an important safety guard against environmental hazards.

A Dermatology trainee should be acquainted with all branches of the basic sciences. However, special knowledge is needed in Photobiology, Physics, and Immunology.

Dermatology was considered a medical specialty until the recent evolution of lasers and cosmetics. Nowadays, one of the main advantages of Dermatology is the integration of surgery and medicine. In fact, there is a trend to incorporate dermatology into surgical departments.

The Specialty by an Expert

Most of the Dermatology training is in outpatient clinics either in the morning or evening sessions. Simple office procedures are frequently performed in Dermatology, for example, wart treatment, and skin biopsies. This breaks the monotonous nature of clinic work. On-calls are usually not busy and mostly solved by phone. If emergency room visits are necessary, they are usually for

very interesting rare cases. Dermatology is one of the fastest evolving specialties in medicine. Over the last two decades, with the evolution of lasers and office cosmetic procedures, Dermatologists serve a wider population of clients than patients. Molecular genetic advances have allowed the diagnosis of many new diseases. Many advances in medicine such as therapy and stem cell research have been applied initially in skin diseases. With time, Dermatologists are becoming more and more invasive. One of the major challenges in Dermatology is to keep the fine balance between Cosmetic Dermatologists and Medical Dermatology.

There are many special and unique procedures, such as:

- Cryotherapy using liquid nitrogen
- Phototherapy using different machines such as broad band UVB, narrow band UVB, psorlen + UVA = (PUVA)
- Different laser procedures, such as Vascular and pigmented lesions' laser
- Surgical laser
- Fillers and Botox
- Curettage and skin biopsies

Dermatology, just like any other branch of medicine, is based on respect, empathy and confidentiality. The mere fact that many patients have chronic diseases enables the formation of long-term relationships between them and their doctors. Moreover, patients are considered clients in Cosmetic Medicine; therefore, satisfaction comes as a major determinant during their encounter.

The lifestyle of Dermatologists is excellent. Dermatology is neither physically demanding nor exhausting. The practice of dermatology can be anywhere and can be hospital or clinic based. Dermatologists, practicing cosmetic dermatology need to be affiliated with private clinics (if allowed by their sponsors) to maintain their skills as these procedures are not usually done in governmental hospitals. There is a general international trend of more females enrolling in the specialty than men.

Dermatologic problems constitute a major portion of the consultations in Family Medicine clinics, and with the evolution of lasers and cosmetic procedures, any adult can be helped as a client with many simple office-based procedures.

Dermatologists usually have good relationships with almost all the other specialties as they are frequently called in to see their patients. Special relationships are well-established with the following specialties:

- Rheumatologists
- Pediatricians
- Infectious Diseases
- Plastic Surgeons
- Oncologists

There are many emergency cases in Dermatology despite the common misconception. Emergency cases are mostly either drug induced reactions or life-threatening infections.

Dermatology has many advantages, such as:

- It combines the surgical and medical practice and interest
- Dermatologists serve all kinds of patients; children and adults of both genders
- It involves performing diverse procedures and maneuvers that break the monotonicity
- Dermatologists can work in hospital or clinics
- Minimal clinic equipment and tools are needed for basic Dermatology practice
- Dermatologists see the highest number of patients among all other specialties

Dermatologists like other doctors need to have the following traits to be successful:

- Good listening skills
- Empathy
- The ability to adjust to personal based medicine as there are many things that are unexplained and idiosyncratic
- Must be an avid reader as this branch largely depends on theoretical knowledge, especially during Residency Training
- Must have the ability to deal with patients of different psychological backgrounds and perspectives

While no Fellowship or Subspecialty Programs are available in the Kingdom, similar training is available abroad but is not limited to:

- Photobiology and Photo Medicine
- Laser
- Dermatologic Surgery
- Pediatric Dermatology
- Immunodermatology
- Cosmetic Dermatology

Residency Program

Specialty	**Dermatology**	
Duration	4 years	
Rotations	**R1**	**Junior Resident** This will be devoted to basic training in General Medicine, Pediatrics, and other related clinical specialties. Training rotations will be as follows: • Internal Medicine 6 months • Pediatrics 3 months • Clinical Elective 3 months The clinical elective may be spent in Medicine, Pediatrics, Surgery, Psychiatry, or other related medical specialties.

	R2	**Junior Resident** This will be devoted to training in general Dermatology and related specialties such as Basic Science, Pediatric Dermatology, Dermatopathology, Allergy, Dermatosurgery and Sexually Transmitted Diseases. Training will take place in outpatient clinics and inpatient areas under the supervision of Senior Residents and Consultants. Residents are expected to participate actively in ongoing teaching activities.
	R3	
	R4	**Senior Resident** Training at this stage will be a continuation of training in Dermatology and its subspecialties, but the Resident will function as a Senior Resident and will gain supervisory teaching and leadership skills. The trainee will be involved in teaching.
Working hours per day	9	
Clinic per week	8	
Number of on-calls per month	7	
Competition	Very Competitive	
Yearly applicants	The applicants in the last 3 years: 1. **Year 2011**: 210 applicants • Riyadh = 63 • Makkah = 76 • Eastern Region = 50 • Abha = 21 2. **Year 2012**: 374 applicants • Riyadh = 119 • Makkah= 127 • Eastern Region = 85 • Abha = 43 3. **Year 2013**: 377 applicants • Riyadh = 108 • Makkah= 148 • Eastern Region = 82 • Abha = 39	
Yearly acceptance	An average of 20 applicants accepted • Riyadh = 9 • Makkah = 5 • Eastern Region = 3 • Asir = 3	
Yearly graduates	**Year 2012:** 11 graduates **Year 2011:** 16 graduates **Year 2010:** 15 graduates	
Hospitals that offer the program	**Riyadh** • King Khalid University Hospital • King Abdulaziz Medical City in Riyadh • King Fahad Medical City	

	• King Faisal Specialty Hospital & Research Center • King Saud Medical City • Prince Sultan Military Medical City • Security Forces Hospital **Makkah** • Hera General Hospital in Makkah • King Abdulaziz Medical City in Jeddah • King Fahad Armed Forces Hospital in Jeddah • King Fahad General Hospital in Jeddah **Eastern Region** • King Fahad University Hospital in Al Khobar • Dammam Medical City **Asir** • Asir Central Hospital in Abha • Southern Region Armed Forces Hospital
Please refer to SCFHS web site link below for updated information on The Dermatology Training Program *http://www.scfhs.org.sa/en/MESPS/TrainingProgs/TrainingProgsStatement/Dermatologist/Pages/default.aspx*	

2.5 Emergency Medicine

Expert	Students
Abdulhadi Tashkandi Emergency Medicine King Abdulaziz Medical City Jeddah, Saudi Arabia	Ala Faisal Arab Lamia Hassan Aseery Ahmad Salem Banjar

Introduction

Emergency Medicine is a specialty that deals with critical cases which require urgent care. Being quick, alert and ready for whatever that will come rushing through the emergency door is part of the job description. Emergency Physicians do not build long-term relationships with their patients. They treat them as fast as they can to save their lives, and then refer them to another department or send them back home. Emergency Medicine is a specialty that will keep your adrenalin levels flowing up and down. It is all about action and acting fast, and it will definitely keep you on your toes!

It is a medical specialty concerned with resuscitation, transportation, and care from the point of injury or the beginning of an illness through to the hospital or other emergency treatment facility.

Emergency Medicine involves an immediate care of urgent and life-threatening situations found in the critically ill and injured patients. No other specialty can match the astonishing variety of patients found within the Emergency Room (ER). In just one shift, an Emergency Physician may take care of patients with asthma attacks, cardiac arrest, stab wounds, threatened abortion, dislocated shoulders or even foreign bodies stuck in ears.

During the 1960s, physicians began to realize that patients would have better clinical outcomes if they received prompt and appropriate care from the moment they entered the hospital. This small group of physicians recognized the need of formal study and training in Emergency Medicine and subsequently founded the American College of Emergency Physicians in 1968. Over the following 5 years, they worked to establish the first Residency Program at the University of Cincinnati. In 1979, the American Board of Medical Specialties recognized Emergency Medicine as an official clinical specialty.

In the Kingdom, the first group of Saudi Emergency Medicine Physicians was trained by North Americans in the year 1997; allowing the establishment of the Emergency Medicine Residency Training Program shortly thereafter, and the first batch graduated from SCFHS emergency residency program were 4 physicians in 2004.

When dealing with acute problems, whether non-urgent or life-threatening, their primary role is to stabilize the patient. They evaluate the ABCs (airway,

breathing, and circulation), take quick histories, perform focused physical examinations, and order relevant laboratory and radiology tests.

The contemporary Emergency Medicine Physician (EMP) must be completely sure that all life-threatening causes of particular symptoms are completely worked-up and ruled out. Despite being such a young arm of the medical practice, Emergency Medicine has matured into a rigorous clinical specialty.

Thus, medical students interested in this specialty should carefully consider whether having their own group of long-term patients is important to them or not. Unlike world-renowned experts in other specialties, Emergency Physicians and other hospital-based specialists like Radiologists and Anesthesiologists are behind-the-scene doctors who may remain largely anonymous to healthcare consumers.

For most patients who seek urgent medical care, the EMP is usually the first doctor on the case. This initial evaluation is both a privilege and a challenge. Patients do not arrive in the ER with their medical chart or old records. They may answer your questions poorly. Hence, EMPs often have to piece the clinical history together from fragments provided by unresponsive sick patients, family members, paramedics, police officers, and other sources. You must have the confidence to make fast medical decisions based on limited and incomplete information.

While one case is being stabilized, many more are waiting to be evaluated, treated, discharged, or admitted. The EMP constantly juggles many tasks at once, whether acquiring data, making decisions, or performing procedures. Patients, lab results, nurses, chest x-rays, family members, and other physicians all vie simultaneously for your immediate attention.

The Specialty by an Expert

Emergency Medicine is a quicker route to being a broad-based doctor who also gets to use scalpels, needles and threads. The EMP must have a broad field of knowledge and advanced procedural skills often including surgical interventions, trauma resuscitation, advanced cardiac life support, and advanced airway management. EMPs ideally have the skills of many specialists, such as:

- The ability to manage a difficult airway (Anesthesia)
- Suture a complex laceration (Plastic Surgery)
- Reduce a fractured bone or dislocated joint (Orthopedic Surgery)
- Treat a heart attack (Internist/Cardiologist)
- Work-up a pregnant patient with vaginal bleeding (Obstetrics and Gynecology)
- Stop a bad nosebleed (ENT)

The Emergency Department workplace is a messy and tense environment, for some, the confines of the ER seem like a more dangerous work environment than a clinic, operating room (OR), or inpatient ward.

The ER is also a place where everyone wants something from you immediately. ER patients who can be unruly, impatient, difficult, rude or outright violent are another form of Emergency Medicine's occupational hazards. Sometimes, the anger and hostility of unruly patients turns into violence. EMPs, nurses, and pre-hospital providers who attempt to care for intoxicated or emotionally disturbed patients may become victims of assault.

Today, the trends in specialty selection among medical students have shifted towards lifestyle specialties that have controllable hours and the possibility of a better social and family life. Emergency Medicine is at the top of this list. There is no such thing as being on-call, because they never carry a beeper outside of the hospital. Once your shift is over, the noise, stress and demands of the patients waiting in the ER are all left behind as you head out of the ER. Because of the predictable hours, Emergency Medicine doctors have the flexibility to plan family and relaxation time without having to worry about keeping their patients covered. Unlike other physicians who are called at home, the illnesses and disasters that befall patients everywhere cannot tear you away from your picnic, night at the theater, or from running some errands on a weekday morning. However, the rotating shift schedule also has its drawbacks. You may dislike having a weekday off when friends and family are working or at school. Moreover, shifts sometimes last longer than anticipated. EMPs cannot simply walk away from a patient who might have had a heart attack 5 minutes before the scheduled end of the shift. They also must arrive a little early and stay a little later to help sign out patients, dictate charts, and tie up other loose ends from the previous shift.

Shift work quickly disrupts your circadian rhythms, normal sleeping, and eating patterns because the shifts typically alternate. In a given week, you may find yourself rotating through several blocks of tiring night shifts interspersed with day shifts or long weekend hours. Furthermore, your responsibilities do not always end after completing an overnight shift. Academic conferences, meetings, family duties, and errands often take up your time during the day and prevent you from immediately going to sleep. As a result, EMPs are always recuperating from their alternating shifts. Furthermore, constantly upsetting and resynching your body's internal clock can have adverse effects on your health. Basically, shift work is both a blessing and a curse. Most hospitals at least attempt to schedule shifts in a block format, rather than frequently alternating, for at least 1 week at time. Ostensibly, this format would allow your body and mind to readjust to a normal circadian rhythm again. By working the same type of shift for a long period of time, EMPs could better adapt their bodies and improve their cognitive performance.

Physicians who left the specialty cited shift work as the main reason for doing so, along with emotional stress, family matters (especially when working on weekends and holidays), and physical stress. They are always concerned about being held responsible for missing a diagnosis (along with the associated liability). They worry, for instance, about getting sued for discharging patients who should have been admitted.

Advantages of Emergency Medicine:

- Managing life-threatening injuries and illnesses
- Diverse patient population
- The challenge of "anything" coming in
- Emergency / invasive procedures
- Team approach
- Patient advocacy
- Open job market
- Academic opportunities
- Pre-set working hours
- Evolving specialty

Downside to Emergency Medicine:

- Very wide knowledge base required
- Interaction with difficult, intoxicated or violent patients
- Underestimation of the specialty
- Shift work
- Difficult to practice as private practice

Fellowships and Subspecialty Training

Critical Care Medicine
Specialists in Critical Care Medicine (CCM) either has a background specialty in Medicine, Anesthesia, Surgery or Emergency Medicine, and then spend 2 years in extensive training to take care of critically ill patient. CCM has almost the same scope of work as the Emergency doctor with more depth of knowledge and longer care.

Medical Toxicology
Specialists in Medical Toxicology know all about the nasty substances that both kids and adults manage to get inside themselves, either accidentally or intentionally. These poisons include medications, illicit drugs, chemicals, household toxins, industrial pollutants, hazardous materials and environmental waste.

Emergency Medical Services/Disaster Medicine
Fellowship training in Emergency Medical Services (EMS) covers the logistical, organizational and medical aspects of delivering quality care to sick individuals outside the hospital. These services include paramedic training, new pre-hospital treatments, disaster preparation, community organization, and many more.

Pediatric Emergency Medicine
All EMPs receive training in the acute care of infants, children and teenagers. It is rare; however, to find a doctor who feels completely at ease treating these younger patients. Pediatric emergency medicine is an exciting and very rewarding branch of medicine. You will typically work in the ER of a major children's hospital.

Undersea and Hyperbaric Medicine
For physicians who love scuba diving, this is the perfect Fellowship. These specialists are experts at the use of hyperbaric oxygen therapy, which is the delivery of 100% oxygen at pressures greater than atmospheric pressure. With proper training and use, oxygen becomes a form of treatment that enhances the physiologic oxygenation of the blood and tissues.

Emergency Ultrasound
A single clinical specialty does not oversee the use of ultrasound. In the ER, physicians perform focused ultrasound examinations to seek a "yes/no" answer to a clinical question. The modern emergency ultrasonographer is trained to perform at a comparable level to that of a radiologist.

Sports Medicine
Sports Medicine specialists evaluate the overall health of athletes in a clinic setting. Through continuous care, they are responsible for enhancing their patients' general physical health and fitness and treating injury and illness through medical management. They draw on their knowledge of exercise physiology, nutrition, and rehabilitation to promote a healthy lifestyle for all active individuals.

Residency Program

Specialty	**Emergency Medicine**		
Duration	4 years		
Rotations	**R1**	6 Months 1 Month 1 Month 1 Month 1 Month 1 Month 1 Month 1 Month	Emergency Medicine Pediatric Emergency Medicine Anesthesia Orthopedics Internal Medicine Psychiatry Obstetrics and Gynecology
	R2	6 Months 1 Month 2 Months 1 Month 1 Month 1 Month	Emergency Medicine Pediatric Emergency Medicine Intensive Care Unit Plastic Surgery General Surgery Coronary Care Unit
	R3	5 Months 2 Months 1 Month 1 Month 1 Month 1 Month 1 Month	Emergency Medicine Pediatric Emergency Medicine Coronary Care Unit Pediatric Intensive Care Unit Emergency Medicine Services Neurology Hajj Rotation
	R4	7 Months 2 Months	Emergency Medicine Pediatric Emergency Medicine

		3 Months	Electives
Working hours per day	8		
Clinic per week	Non		
Number of on-calls per month	16-20 shifts		
Competition	Very competitive		
Yearly applicants	225		
Yearly acceptance	42		
Yearly graduates	25		
Hospitals that offer the program	• King Abdulaziz Medical City-Riyadh • King Faisal Specialist Hospital and Research Center - Riyadh • King Fahad Medical City-Riyadh • King Khalid University Hospital-Riyadh • Security Forces Hospital-Riyadh • Prince Sultan Military Medical City-Riyadh • King Saud Medical Complex-Riyadh • King Fahad University Hospital-Damamm • King Fahad Specialist Hospital -Damamm • King Abdulaziz Medical City -Jeddah • King Abdulaziz University Hospital-Jeddah		
Please refer to SCFHS web site link below for updated information on the Emergency Medicine Training Program *http://www.scfhs.org.sa/en/MESPS/TrainingProgs/TrainingProgsStatement/Emergency/Pages/default.aspx*			

2.6 Family Medicine

Expert	Students
Marwan A. Bakarman Family & Community Medicine Rabigh Medical College King Abdulaziz University Jeddah, Saudi Arabia	Ala Faisal Arab Lamia Hassan Aseery Ahmad Salem Banjar

Introduction

Family Medicine is a medical specialty that deals with a wide spectrum of medical conditions that belong to different body systems in all age groups. A Family Physician provides continuous healthcare for common medical conditions that could be managed with a prescription or even reassurance. This specialty could be perceived as a relay station where possibly significant conditions are detected and directed to a specialist. As a patient advocate, a Family Physician must educate patients about health concerns in the community, and how to obtain the healthcare needed for their chronic conditions.

Family Physicians provide prevention and management of acute injuries and illnesses, health promotion, hospital care for acute medical illnesses, chronic disease management, maternity care, well-child care and child development, primary mental healthcare, rehabilitation, supportive end-of-life care.

The Specialty by an Expert

A Family Medicine Resident must comprehensively grasp the responsibility of a family physician in the organization and management of patient care. The resident must fully understand the different aspects of a family physician's broad scope of obligations. It is a must for residents to learn the process of diagnosis and hence recommend the basic therapeutic approaches.

As a family physician, one should be able to:

- Establish knowledge and familiarity with the clinical problems that are often encountered in Family Medicine and be able to manage them accordingly.
- Show competencies for the proper assessment and management of patients in the Family Medicine setting. He must be able to (a) secure an accurate history, (b) execute a physical exam with full precision, (c) develop a suitable differential diagnosis, (d) order and organize investigations, and (e) design a proper management plan.
- Analyze the indications of procedures commonly performed in Family Medicine.
- Establish trust with patients. A way to do this is by providing an evidence-based approach in assessing and managing patients with multiple health problems.

- Show understanding of the patient's life cycle status depending on the patient's condition.
- Describe and apply the foundations of antenatal care in the Primary Health Care (PHC) Center.
- Explain and practice the basic elements of preventive child services in well baby clinics (WBC) in lite PHC Center.
- Demonstrate and apply knowledge of age and gender specific periodic health examinations.
- Implement a geriatric assessment, including a history and physical examination. This includes, but not limited to, mobility, gait, balance assessments, and a mini-mental status examination.
- Identify the alarm symptoms or 'red flags' that might signal serious medical conditions.
- Have a patient-centered approach. In this context, one must be able to (a) acquire the patient's concerns regarding his/her condition, and the impact of the disease on his/her daily life, and his/her expectations about treatment; (b) determine the psychosocial context of the patient's disease; and (c) involve the patient in developing the treatment plan.
- Describe the major types and uses of alternative medicine and how it can be combined in Family practice.

A resident must be familiar with all the above-mentioned responsibilities of a family physician. In addition, the residents must know the fundamentals of Family Medicine, which includes the concepts and principles of Family Medicine, preventive, and home care. He must have proper introductory information regarding complementary medicine and geriatric care. During the clerkship/internship, practical sessions are offered in order to develop communication, consultation, and management skills.

The Saudi Board of Family Medicine is one of the important specialties in the Saudi Commission for Health Specialties. It is a four year program, which incorporates a 4-month rotation in Family Medicine, followed by rotations in different hospitals. After which, there will be a community medicine rotation for 3 months, and finally a 1-year long rotation in Family Medicine. The residents will work in the PHC Centers clinics during his/her Family Medicine rotation. For the hospital rotations, the resident will rotate to the different departments of the hospital, i.e. medicine, surgery, gynecology, pediatrics, obstetrics, ophthalmology, ENT, etc. During these rotations, the resident will be fully responsible for both the outpatient and inpatient daily activities, as well as the emergency or 'on-call' duties.

Graduates of the Family Medicine Residency Program can undergo fellowship training in any number of subspecialties. Depending on the subspecialty, the years of completion of the fellowship alone may vary from 1 to 2 years, However, Geriatrics and Sports Medicine are the only accredited fellowships that lead to a certificate of added qualification.

The practice of most family physicians usually centers on comprehensive

ambulatory medicine. With the huge number of patients encountered every day, the family physician will have a busy schedule. His/her work schedule depends mainly on the practice setting and the type of population being served. But despite this busy schedule, still, most staff including the administration try to be flexible when it comes to part-time work, maternity leaves, and any shared practice arrangements by the staff.

From the time Family Medicine was established in 1969, its popularity has been inconsistent. This has been due to a variety of reasons, but mainly financial and technical incentives, the majority of the medical students choose to pursue medical or surgical specialties and subspecialties rather than entering career path in primary care. However, in the late 1980s, due to the increased number of specializations in medicine causing the field to be far too congested, there was a movement that encouraged students to enter primary care. With the success of these initiatives, more graduating students became family physicians, and hence Family Medicine's popularity escalated accordingly. After all, family practice is the perfect specialty for those who love everything about medicine and want to become just like general practitioners-the very first physicians.

The first step for Family Physicians is to guide patients through the multifaceted healthcare system, to give them directions for appropriate tests, and direct them accordingly if there's any need for further referrals to a specialist. Family physicians must manage all problems, unless requiring additional evaluation by a specialist. Also, bear in mind, that family doctors are leading members of any community, whether urban or rural.

Being a Family Physician provides deep professional satisfaction. You provide comprehensive patient care to a wide range of the population. Aside from the quantity, you also have the chance to deal with all categories of patients from children to adults. And, due to the continuous interaction with the patients, you will gain long-term rewarding relationships with your patients. As a family physician, you provide preventive and maintenance medicine, and in some cases can perform minor surgeries. Aside from these clinical aspects, a family doctor can also become involved in health policy creationss. You also have the right to choose the community that you want to serve. If you have a desire to be a family care physician, then you should definitely consider this specialty.

Residency Program

Specialty	Family Medicine Board	
Duration	4 years	
Rotations	**R1**	• Family Medicine • Medicine • Orthopedics • Pediatrics
	R2	• Research • Obstetrics and Gynecology

		• Emergency • Family Medicine • Radiology
	R3	• Ophthalmology • ENT • Dermatology • Elective • Family Medicine • Psychiatry
	R4	• Family Medicine
Working hours per day	8	
Clinic per week	6-7	
Number of on-calls per month	Depends on rotations	
Competition	Competitive	
Yearly applicants	2013 applicants 110	
Yearly acceptance	45-70	
Yearly graduates	Average 80	
Hospitals that offer the program	• Security Forces Hospital-Riyadh • King Khalid University Hospital-Riyadh • Prince Sultan Military Medical-Riyadh • King Fahad National Guard Hospital-Riyadh • King Fahad University Hospital-Al Khobar • Family Medicine Sharing Program-Madinah • Family Medicine Sharing Program-Southern Region • Armed Forces Hospital-Alhadah • Armed Forces Hospital-Tabuk • Family Medicine Sharing Program-Jeddah	
Please refer to SCFHS web site link below for updated information on the Family Medicine Training Program *http://www.scfhs.org.sa/en/MESPS/TrainingProgs/TrainingProgsStatement/Family/Pages/default.aspx*		

2.7 Forensic Medicine

Expert	Students
Abdulmonem Al-Hayani Secretary General, Saudi Medical Deans Committee. Faculty of Medicine King Abdulaziz University Jeddah, Saudi Arabia	Firas Alateeq Saleh Ahmad Alsuwaydani Somaya M Alabaishi

Introduction

Forensic Medicine can be defined as the medico-legal aspects of the practice of medicine. In other words, it is the branch of medicine that interprets or establishes the facts in civil or criminal law cases. There are many synonyms for the term Forensic Medicine that represents parts of the functions of the Forensic Medicine, the best known are: Forensic Pathology, Medical Jurisprudence, Autopsy, and Postmortem examinations.

Forensic Physicians work with cases that are usually related to crimes and law. The issue of confidentiality is the cornerstone of the practice of Forensic Medicine. Forensic Physicians are expected to secure all the data and documents related to the cases they manage. They also have to refrain from talking about the cases to their family, public, and the media.

Forensic Physicians are also expected to be very professional and committed to their work. Some cases may require working after-hours, or on weekends or holidays.

The working hours for a Forensic Physician are better than almost all the other physicians, but this is not a nine-to-five office job by any means. Do not even think about going to medical school if you are a clock-watcher.

You have the satisfaction of not only helping to put criminals away, but of comforting grieving families; hence, making the job very challenging, and boredom will never be a problem. Moreover, the salary of a Forensic Physician in KSA and most countries is very good.

The lifestyles of Forensic Physicians depend on the job they are doing. Working for a Police Force usually requires more effort and working after hours; however, academic jobs in Universities are much more relaxing.

Forensic Physicians should have a talent and an interest in science; this should not only include biology, but also physics, chemistry and social sciences (anthropology and psychology). As for the technical part of your work, you should have an especially good grasp of spatial relationships, as well as good communication skills. You will not only be interacting with law officers, but you will be trying to convince judges and juries that your findings are valid.

A strong stomach is essential in this branch of Medicine. You will be routinely dealing with dismembered and/or rotting bodies. From a pure visceral stand point, no job is more revolting than Forensic Pathology. Another important trait is thick skin. Forensic Physician will be periodically raked over the coals by the local media, which apparently cannot resist the urge to interfere with their work. A Forensic Physician must have the mind of a detective. They have to constantly be on guard against being fooled by malefactors who are smarter and more focused than they are. Forensic Physician should have some insight of the heart and mind of a criminal.

The Specialty by an Expert

Forensic Medicine represents the medico-legal aspects of all medical practice. Therefore, it involves forming close and tight relationships with all medical and health professional specialties in terms of:

- Setting the ethical aspects and standards of clinical practice
- Observing and diagnosing medical errors including negligence and malpractice
- Collaborating with other medical practitioners to determine the cause of death in malpractice

The Forensic Physician is responsible for the application of medical knowledge for legal purposes. The following are the major areas for Forensic Medicine Practice:

- Identification of the cause of death
- Determination of the time since death
- Providing help and support to authorities in crime investigation and justice fulfillments
- Playing a major role in community protection

The practice of Forensic Services is not only concerned with physicians, since there are different specialties in Forensic Services that require individuals from different backgrounds:

	Forensic Services/ Specialties	**Scope of Work**	**Required Background**
1	Forensic Science	• Crime Scene investigation • PCR lab • Firearms chemistry • Microscopy	• Basic Science • Police training
2	Forensic Medicine	• Autopsy • Time after death • Identifications	• MBBS/MD in Medicine
3	Forensic Pathology	• Autopsy • Time after death • Histopathology and Toxicology	• MBBS/MD in Medicine
4	Forensic Toxicology	• Toxicology reporting and analysis	• MBBS/MD in Medicine

5	Forensic Psychology	• Criminal profiling • Risk assessment for potential criminals • Fitness to plead	• MBBS/MD in Medicine OR • Bsc Psychology as Major
6	Forensic Anthropology	• Identification of human remains	• MBBS/MD in Medicine
7	Forensic Entomology	• Identification of human remains	• Bsc Science in Biology/Zoology
8	Forensic Odontology	• Identification of human remains • Bite marks analysis	• Doctor of Dentistry
9	Forensic Hemogenetics	• Blood distribution and Crime scene reconstruction	• Bsc Science
10	Forensic Microanalysis	• Microscopy	• Bsc Science

Physicians can pursue a career to become "Forensic Physicians/Pathologists". Training as a Forensic Physician varies significantly from one country to another. However, there are common backgrounds that are available in all Training Programs all over the world, these are:

- Having a medical background is necessary
- Training on postmortem examination (autopsy) form the major part of the program
- Anatomy and pathology are the major basic medical sciences that will make a great Forensic Physician

The following are the different modes of the Training Programs that all require a Bachelor's degree in Medicine (MBBS/MD):

Track (1): Board of Forensic Medicine:

- This mode of training is the most common in the North American System (USA and Canada), where candidates can join the Board Program e.g. the American Board of Pathology (Residency) in pathology for 4-5 years, and then spend a 1-2 year(s) Fellowship in Forensic Pathology (total training years 5-7 years).
- The Saudi Commission for Health Specialties also established a "Saudi Board of Forensic Medicine" in 2009. It is a 4-year Residency Training where candidates follow the rules and regulations of Saudi Boards

Track (2): MRCPath (membership of the Royal College of Pathologists, UK):

- Another option is to join the UK and Irish Forensic Pathology Training for a period of 3-5 years and meet the standards of the Royal College of Pathologists.
- Training should be in one of the training centers recognized by the MRCPath administrations

Track (3): Diploma, MSC and PhD in Forensic Medicine:

- This track is available in the UK, and many European Universities, as well as Universities in the Arab world such as Egypt. Diplomas usually require (1

year), while MSC (1-2 years) and PhD (3-5 years). The details of the Training Programs vary from one system to another; however, autopsy training is a must in all these programs in addition to scientific research.

- This track can better suit academic staff that plan to pursue careers in the Faculty of Forensic Medicine in Universities.

Residency Program

Specialty	**Forensic Medicine**	
Duration	4 years	
Rotation	**R1**	• Human Anatomy (3 months) • Pathology (6 months) • Forensic Medicine-1 (1-2 months)
	R2	• Forensic Medicine-2 (8 months) • Toxicology and Forensic chemistry (3 months)
	R3	• Forensic Radiology (2 months) • Forensic Medicine-3 (6 months) • Clinical Forensic Medicine (3 months) • Statistical Analysis and Basis of Scientific Research (2 weeks)
	R4	• Forensic Science (3 months) • Forensic Medicine (4-8months)
Working hours per day	6 hours (2-8)	
Clinic per day	No definite number. The work could either take place inside or outside the clinic e.g. crime scene	
Number of on-calls per month	None	
Please refer to SCFHS web site link below for updated information on the Forensic Medicine Training Program *http://www.scfhs.org.sa/en/MESPS/TrainingProgs/TrainingProgsStatement/Pages/default.aspx*		

2.8 General Surgery

Experts	Students
Heythem Alzamel General and Trauma Surgeon National Guard Health Affairs Riyadh, Saudi Arabia **Nizar Yamani** Thoracic Surgeon National Guard Health Affairs Riyadh, Saudi Arabia **Faisal AlSaif** Hepatobiliary and Transplant Surgeon King Saud University Riyadh, Saudi Arabia **Abdulwahab Aljubab** Pediatric Surgeon King Fahad Medical City Riyadh, Saudi Arabia **Hossam Bin Yousef, and Khalid AlHajri** Brest, Oncology and Endocrine Surgeons. Department of Surgery Prince Sultan Military Medical City Riyadh, Saudi Arabia	Ala Faisal Arab Lamia Hassan Aseery Ahmad Salem Banjara

Introduction

General Surgery is a specialty that deals with the thoraco-abdominal organs including the esophagus, stomach, gall-bladder, liver, bile ducts, intestines and pancreas. After further studies General Surgeons can subspecialize in Trauma, Colorectal Surgery, Thoracic Surgery, Oncological Surgery, Hepatobiliary Surgery, Organ Transplant, Endocrine Surgery, Pediatric Surgery, and Vascular Surgery. Being a General Surgeon requires a lot of skills including good eye-hand coordination, working under stress, as well as making quick and wise decisions. It also requires giving up your social life in order to save others' lives.

The Specialty by an Expert

The applicant is expected to know the basic sciences, with special emphasis on the following:

- Anatomy
- Physiology
- Pathology

The Surgical Residency Training Program curriculum, which lasts 5 years, provides knowledge and skills to Residents; enabling them to deliver high quality services in surgical care. A fundamental goal of surgical education is to establish a solid foundation of basic surgical sciences. An equally important goal is to

ensure that the Surgical Resident acquires the necessary knowledge and skills to function as a competent professional.

The first 3 years of the Residency Training are designed to produce a surgical trainee who can thoroughly evaluate patients for elective and emergency operations and who can competently manage surgical illness by integrating knowledge of basic and clinical sciences. During the first 3 years of the basic program (R1, R2, R3), each participant receives approximately 12 months of General Surgery (Gastrointestinal, Oncology, Trauma, Vascular), with 2-3 months in Emergency Medicine, Plastic Surgery, Pediatric Surgery, and the Intensive Care Unit. The average number of on-calls that a Surgical Resident takes, per month, range from 5 to 8 days; depending on the specific rotation, and the average number of clinics are 2 per week; each clinic is 3-4 hours.

Surgical Residents' rotation R1 to R5:

	October-December	**January-March**	**April-June**		**July-September**
R1	General Surgery	General Surgery	General Surgery		General Surgery
R2	Intensive Care Unit	ER	Pediatric Surgery	Plastic Surgery	Vascular
R3	General Surgery	General Surgery	Elective	Breast Surgery	Hepatobiliary
R4	General Surgery	General Surgery	General Surgery		General Surgery
R5	General Surgery	General Surgery	General Surgery		General Surgery

The objectives of the first 3 years of the program (Junior Resident) are:

- To teach Residents the fundamentals of basic science
- To teach Residents preoperative and postoperative patient care
- To provide the Residents with the necessary knowledge and skills that enables them to manage their patient in the perioperative period
- To expose the Resident to basic surgical techniques and minor surgical procedures

The number of patients for every Resident averages from 10 to 25 weeks, depending on the type of service. The surgical teams including the Residents are responsible for admitting, evaluating, performing diagnostic studies, and outlining therapeutic plans for their patients. Here are some of the Junior Resident's duties:

1. Clerk the patients (complete history and physical examination)
2. Discuss the management of the patients with their immediate senior
3. Know all their patients' complaints and concerns (history and physical examination, investigations and management).
4. Present the patients in daily clinical, preoperative and postoperative rounds.
5. Perform wound dressings under a senior's instructions and supervision.

6. Follow-up investigations e.g. radiology, pathology, laboratory results, etc.
7. Write the daily progress notes according to the following scheme: Subjective, Objective, Assessment and Plan (SOAP).
8. Perform some supervised minor emergency surgeries e.g. incision and drainage of an abscess, appendectomy, etc.
9. Assist in major operations and perform certain routine surgeries.

Upon completion of the training program the trainee should have performed, assisted, or attended 450 essential surgical procedures. The average 5-year operative experience is as follows:

Surgical Procedure	No. of Cases
Gastrointestinal	250
Thoracic	15
Oncology	55
Breast	30
Skin and Soft Tissue	60
Endocrine	40
Total	450

The evaluation process is continuous throughout the program. At the end of each 3-month rotation, the faculty evaluates in a timely manner, the Residents whom they supervise. The evaluation is then discussed with the whole team (other Consultants or Associate/Assistant Consultants or Senior Residents).

General Surgery is a demanding and stressful specialty. To be a surgeon entails that you dedicate a large part of your time to the profession, and sacrifice some of your family and social time. However; with proper time management and self-maturity you will be satisfied, keep your family happy, and maintain a strong social network of friends. Career satisfaction is usually excellent but it also depends on the amount of time and dedication that you dedicate. Private practice in the surgical field is available and in high demand.

By the end of the General Surgery Residency Training Program, the trainee should:

1. Strive to function effectively as an acute surgical expert, integrating all of the SaudiMed/CanMeds roles to provide optimal, ethical and patient-centered surgical care.
2. Establish significant clinical knowledge with regards to trauma and acute surgical care.
3. Perform a complete and appropriate assessment of trauma and acutely ill surgical patients.

4. Use preventive and therapeutic interventions effectively.
5. Demonstrate proficient and appropriate use of procedural skills in the emergency room (ER), the operating room (OR), or on simulators in the management of trauma and surgical patients.

Fellowships and Subspecialty Training

After completing the 5-year General Surgery Residency Training, you have the chance of continuing your postgraduate Fellowship and subspecialty in any of the following:

- Acute Care Surgery-2 years
- Surgical ICU-1 year
- Minimal Invasive Surgery-1 year
- Trauma & Acute Care Surgery – 2-3 years
- Vascular Surgery-2 years
  Thoracic Surgery – 1-2 years
- Colorectal Surgery-2 years
  Hepatobiliary and Transplant Surgery-2 years
- Pediatric Surgery-3 years

Thoracic Surgery

Thoracic Surgery is a subspecialty of surgery, usually obtained after the General Surgery Board exam, sometimes as a part of the Cardiothoracic Fellowship Training.

The subspecialty deals with diseases of the aero-digestive tract, thoracic cage and its contents, apart from the heart and spinal cord. Routine cases vary from minor procedures such as bronchoscopy, mediastinoscopy, and thoracoscopy, to major procedures such as lobectomy of the lung, esophagectomy, gastrectomy, colon interposition, and chest wall reconstruction. A major part of the practice includes the management of acute and urgent cases that are either life-threatening or urgent due to their effect on respiration such as pneumothorax, hemothorax, thoracic trauma, hemoptysis, and foreign body in the aero-digestive tract.

Thoracic Surgery patients vary in age, but a good number of them are at the extremes of life (60 years and above), therefore, a good knowledge of the physiology and effect of co-morbidities on respiratory and cardiac physiology is necessary for patient care and selection for surgery. However, you should expect patients from 14 years of age to those who are in late 80's.

The quality of a resident's life depends on the center in which they are trained. In tertiary centers where there is a busy Oncology and Trauma department, it is expected to be a busy practice. While in secondary centers, most of the service is directed towards acute illness and trauma cases.

Further training and advancement can be achieved in thoracic surgery subspecialties, such as Lung Transplant, Minimally Invasive Thoracic procedures.

Vascular Surgery

Vascular Surgery is the division of medicine specializing in treating the blood vessels of the body, with the exception of the heart vessels. Vascular Surgeons may work to restore blood flow to an area of the body after trauma, disease or other issues that damage blood vessels like thrombosis and embolism.

Pathways for Clinical Training in Vascular Surgery

There are 2 pathways

- 5 years of General Surgery followed by a 2-3 years Vascular Surgery Fellowship
- 5 years direct entry into Vascular Surgery Training (offered in a few centers in North America)

Endocrine and Breast Surgery

It is one of the earliest subspecialties in general surgery that deals with thyroid, parathyroid, adrenal, endocrine pancreatic diseases, and breast surgery disease.

Residency Program

Specialty	**General Surgery**	
Duration	5 years	
Rotation	**R1**	• Emergency Department • Intensive Care Unit
	R2	• Pediatric Surgery • Vascular Surgery
	R3	• Plastic Surgery • Thoracic/Cardiothoracic Surgery • Neurosurgery • Endoscopy
	R4	• General Surgery
	R5	• General Surgery
Working hours per day	9-10	
Clinic per week	1-2	
Number of on-calls per month	6-8	
Competition	Very competitive	
Yearly applicants	600	
Yearly acceptance	140	
Yearly graduates	55	
Hospitals that offer the program	**Riyadh** • Prince Sultan Military Medical City • King Abdulaziz Medical City • Security Forces Hospital • King Faisal Specialist Hospital & Research Center • King Khalid University Hospital • King Saud Medical Complex • King Abdulaziz Medical City Buraidah • King Fahad Specialist Hospital **Jeddah** • King Abdulaziz Medical City	

	• King Fahad General Hospital • Military Hospital • King Abdulaziz University Hospital • King Faisal Specialist Hospital **Makkah** • Al-Noor Specialist Hospital **Madinah** • King Fahad Hospital **Tabouk** • Military Hospital **Al-Hada** • Military Hospital **Al Sharqiah** • King Fahd University Hospital • Al-Dammam Medical Complex • King Fahd Hospital • Al-Dhahran Medical Complex • King Abdulaziz National **Abha** • Military Hospital • Aseer Central Hospital **Jazan** • King Fahd Hospital **AlBaha** • King Fahd Hospital
Please refer to SCFHS web site link below for updated information on the General Surgery Training Program *http://www.scfhs.org.sa/en/MESPS/TrainingProgs/TrainingProgsStatement/GeneralSurgery/Pages/default.aspx*	

2.9 Internal Medicine

Experts	Students
Salih Bin Saleh[1], Fahleh Alfaleh[2], Ibrahim Altraif[3], Maha Almuneef[4] [1]General Medicine [2]Gastroenterology [3]Hepatology [4]Infectious Diseases King Abdulaziz Medical City Riyadh, Saudi Arabia **Abdulaziz Alghamdi[1], , Khalid A. Qushmaq[2], Mushabbab Alasiri[3], Fadel A. Alrowaie[4]** [1]Cardiology [2]Rheumatology [3]Oncology [4]Nephrology King Fahad Medical City Riyadh, Saudi Arabia **Ahmed Ba Hammam** Pulmonary and Sleep Disorders King Saud University Riyadh, Saudi Arabia **Ali S. Alzahrani** Endocrinology King Faisal Specialist Hospital & Research Center Riyadh, Saudi Arabia	Firas Alateeqa Saleh Ahmad Alsuwaydani Somaya M Alabaishi

Introduction

Internal Medicine (IM) or General Medicine is the medical specialty that deals with the prevention, diagnosis and treatment of various diseases. It is concerned with providing long-term, comprehensive care in the office and hospital, managing both common and complex illnesses of adolescents, adults and the elderly.

General Medicine could be defined simply as the medical specialty which focuses on diagnosis, treatment, and prevention of non-surgical conditions in adults. This specialty has a number of subspecialties which include Allergy, Cardiology, Endocrinology, Gastroenterology, Geriatric Medicine, Hematology, Immunology, Infectious Diseases, Nephrology, Oncology, Pulmonary Medicine, and Rheumatology. Physicians specialized in Internal Medicine are called Internists.

Although the name suggests internal organs, Internists also treat external conditions. Internists are often consulted to solve medical problems, since they are familiar with a wide range of medical conditions and their causes. Some Internists take care of inpatients only and are called Hospitalists, while others

work in outpatient settings only and are called Ambulatory Care Specialists. This practice is seen in North American Hospitals and has been increasing in the last five years.

The Specialty by an Expert

IM is a discipline encompassing the study and practice of health promotion, disease prevention, diagnosis, care, and treatment of men and women from adolescence to old age, during good health and in all stages of illness. Intrinsic to the discipline is scientific knowledge, and scientific methods of problem solving, evidence-based decision making, a commitment to lifelong learning, and an attitude of caring that is derived from humanistic and professional values.

Global Training Programs and career options in Internal Medicine

Internal Medicine Board: This mode of training is the most common locally and internationally, where candidates can join a structured training program for 3-4 years, and then take another two year Fellowship in a subspecialty. The Saudi Commission for Health Specialties established a "Saudi Board of IM" in 1995, which is a four year Residency Training Program.

MRCP (membership of the Royal College of Physicians UK, Ireland and Australia): This is another option that enables you to join the UK, Ireland, or Australia General IM Physician Training for 3 - 5 years. The training should be in one of the recognized training centers by the Royal College administrations.

Advantages of being an Internist

1. More specialized care for specific health problems.
2. Continuous learning.
3. Teaching students and patients about diseases.
4. Intellectual challenges.

Disadvantages of being an Internist

1. Life-long education.
2. The practice is difficult, stressful and depressing when you are unable to help, especially in cases of terminally ill patients.
3. Long working hours.

A good Internist should be able to:

- Speak and talk effectively.
- Use scientific principles and methods to solve problems.
- Actively listen and pay full attention to what other people are saying, ask questions as appropriate, and do not interrupt at inappropriate times. He/she must be excellent in identifying problems, problem solving, and reviewing related information to develop, evaluate options, and implement solutions. He should be socially aware and sensitive to others' reactions.

IM is professionally related to other specialties such as Surgery, Orthopedics, Ophthalmology, ENT, ER, Obstetrics and Gynecology, ICU, etc. This relationship is

in the form of consultations, procedures and joint management in multidisciplinary teams.

Internal Medicine Subspecialties

A. Pulmonary Medicine
B. Rheumatology
C. Cardiology
D. Gastroenterology and Hepatology
E. Endocrinology
F. Nephrology
G. Infectious Diseases
H. Oncology
I. Intensive Care
J. Allergy and immunology.
K. Sleep Medicine

Pulmonary Medicine

This branch deals with all lung problems. The majority of the work in Pulmonary Medicine is dedicated to patients admitted under other specialties on a consultation basis. The consultation service in Pulmonary Medicine is usually busy, because many specialties require the help of a pulmonologist for patients with respiratory symptoms or chest X-ray changes. Patients known to have bronchial asthma (BA) or chronic obstructive pulmonary diseases (COPD) scheduled for surgical a procedure should always be assessed by a consultant pulmonologist, and is a typical example of the daily consultations provided by a pulmonologist. On the other hand, the night calls in Pulmonary Medicine are not very frequent. Bronchoscopy and pleural tapping are the common procedures in the Pulmonary Service. The cases that a Pulmonologist is presented with in the clinic include new and follow-up cases. However, the majority of cases are follow-ups for patients with chronic lung disease like asthma, chronic obstructive pulmonary disease, bronchiectasis etc.

Training Program

Doctors have to complete their IM Training before starting Pulmonary Medicine Training which is two years long. Fellows accepted in this Saudi Board subspecialty each year in a major city like Riyadh are 10-15.

Sleep Medicine is a subspecialty of Pulmonary Medicine. In general, most of Sleep Medicine Specialists in Saudi Arabia and North America have completed IM and Pulmonary Medicine Training before entering a Sleep Medicine Fellowship. However, specialists may come from Neurology, Psychiatry, ENT, Pediatrics and IM.

In King Saud University, a new Sleep Medicine Fellowship Program was launched in 2009. The program is two years duration for those coming from Neurology or Psychiatry and one year for those coming from Pulmonary Medicine.
In North America, the program is one year long.

Rheumatology

Rheumatology is the science of joint diseases, autoimmune, and connective tissue disease. The term Rheumatology is derived from the Greek term "rheuma" which refers to the "river" or the "water flow" as the disease is accompanied by spreading symptoms over many joints. Rheumatology has a close bond with Orthopedics, Immunology, and Rehabilitation Medicine. Many diseases require combined care from these specialties. Usually combined clinics with Orthopedic and Rehabilitation Medicine are the standard care.

Rheumatological diseases are chronic and patients require regular follow-up to maintain disease remission. Diagnosing new cases is usually a challenge for the physician in particular lupus and vasculitis patients. The work load is similar to most non-invasive medical specialties, and offers a better lifestyle. On-calls for Consultants are usually one week per month.

Training Program

IM is the primary specialty; four years of training are required before moving to the subspecialty. The Rheumatology Fellowship is two years, and an extra optional one year for the Fellow to spend in a specialty like Rheumatoid Arthritis, lupus, or vasculitis. The number of fellows accepted varies each year and is based on the recognized training centers, but their average now is 6 - 9 Fellows in the Riyadh and Jeddah Training Centers.

Cardiology

Cardiology is the branch of medicine that deals with the heart and vascular system. It is the discipline that diagnoses and treats heart and vascular diseases as well as their causes. Cardiology has been a prime medical specialty throughout the history of modern medicine. The term 'cardiology' is derived from the Greek translated as "kardia". It means "heart" or "inner self".

The field of cardiology includes the diagnosis and treatment of congenital heart disease, coronary artery disease, heart failure, valvular heart disease, pericardial disease, and electrophysiology. It is constantly changing and rapidly advancing which makes it one of the most appealing specialties for fresh graduate physicians.

Since all the organs in the human body depend on the heart for metabolism and oxygenation, any disorder that affects the heart may directly or indirectly disturb the function of the other organs. Therefore, Cardiologists are frequently consulted by colleagues from other specialties or subspecialties to help them in managing cardiac issues. The most common specialties in which a Cardiologist works in a team with are: Cardiac and Vascular Surgeons, Nephrologists, Intensivists, Radiologists, and Infectious Diseases.

Training Program

It is mandatory in Saudi Arabia to finish the IM Residency Training Program in order to join the Cardiology Fellowship Program. After completing the internship year, the candidate can join any of the local IM Residency Programs for four years. It is advisable that one applies for the IM Residency Program early during

the internship year since the competition is high, especially in the reputable training centers. Furthermore, it is recommended that you do your elective rotation during the IM Residency Program in Cardiology if you are planning to be a Cardiologist.

The Cardiology Fellowship Program in Saudi Arabia and North America is composed of three years of training in different areas of Cardiology. The requirement for the Saudi Commission for Health Specialties mandates the following rotations over the three year period: six months in Coronary Care Unit (CCU), nine months in Clinical Cardiology (In-patient, Outpatient Clinics, Consultations, stress test lab, cardiac imaging), six months in Echocardiography, six months in Cardiac Catheterization Lab, two months in Electrophysiology, four months elective, and a three month vacation. Fellows are expected to participate in performing, interpreting, and analyzing all cardiac procedures such as cardiac catheterizations and echocardiograms. The Cardiologist resident will build experience and confidence over time with more exposure to different cardiac cases.

After completing the three year Fellowship in Cardiology, you may need to do a subspecialty Fellowship that will take another 1-2 years on average. The available subspecialty in Cardiology involves; Echocardiography, Interventional Cardiology, Electrophysiology, Heart Failure, Adult Congenital and Cardiac Imaging. The Saudi Cardiology Fellowship Program accept about 30 - 50 candidates each year.

If you choose not to do a subspecialty in Cardiology you can practice as a General Cardiologist with reasonable job opportunities, but less income compared to a Cardiologist with a subspecialty.

Most of the training programs are expected to have a daily morning sign-in where cases admitted over on-call time are discussed in a scientific way. There will be a weekly Echocardiography (ECG), Cardiac Catheterization, and combined Cardiology-Cardiac Surgery rounds. There is also a monthly journal club, grand rounds as well as mortality and morbidity meetings.

The most common adult diseases in Cardiology are those of the coronary arteries; both acute and chronic. When selecting your Fellowship Program, you need to join a Cardiac Center that treats acute myocardial infarction with primary coronary interventions (PCI). This will add a lot to your experience, knowledge and skills. Other diseases include cardiomyopathy, heart failure, valvular heart diseases, arrhythmias and congenital heart diseases.

The advantages of the Cardiology specialty outweigh the disadvantages. Cardiology has always been well-known for being rewarding both financially and psychologically. The work opportunities are tremendous and the demand for Cardiologists is increasing and is expected to rise 22% by the year 2018. One of the advantages of being a Cardiologist is the ability to perform procedures that need intensive training and high skills in addition to the regular clinical work.

The disadvantages might include the lengthy training program which ranges between 5 - 6 years (Cardiology Fellowship and Subspecialty Training). The first year of the Cardiology Fellowship might be slightly stressful since you are dealing with different new technologies such as cardiac catheterization and echocardiography, as well as critical ill patients. The difficulties and stress will usually disappear from the second year onwards.

There are good opportunities in private practice due to the high prevalence of cardiovascular diseases. Cardiologists will usually have the highest income in private practice amongst other IM specialties.

Gastroenterology

Gastroenterology is a subspecialty of IM, that covers all the health and diseases affecting the gastrointestinal (GI) tract (esophagus, stomach, pancreas, gallbladder, small intestines and colon), spleen, and liver. In Saudi Arabia, the GI Fellowship Program started about 15 years ago.

The Residency Program of IM in Saudi Arabia is four years long, in contrast to North America, which is only three years long. The Gastroenterology Fellowship is a three year program in Saudi Arabia and North America. It is composed of two years of Gastroenterology and one year of Hepatology.

The majority of cases are gastroesophageal reflux diseases, peptic ulcers, biliary disease, inflammatory bowel disease, irritable bowel disease, pancreatic disease, tumors of the GI tract, GI bleeding, liver disease including viral hepatitis B and C, autoimmune diseases, fatty liver disease, liver cirrhosis, tumors of the liver, and liver transplantation.

The daily work of Gastroenterologists and Hepatologists cover outpatient and in-patient services, endoscopy sessions, consultations for other services, attending rounds and research meetings. Additionally, it includes participating in scheduled on-calls which include General IM and its subspecialties.

GI and liver disease are prevalent in Saudi Arabia, especially in the last two decades. Their diagnoses has also been enhanced by major technical developments in endoscopy and radiology. Significant interventional procedures have been introduced in this field in the last two decades, which makes this specialty more appealing to physicians who like to combine procedural skills with daily patient care. The Gastroenterology Subspecialty is known to be a very financially rewarding specialty because of the procedures.

One of the minor disadvantages is often the necessity to come to the hospital during on-call duties at night to perform and supervise emergency procedures, such as endoscopy for GI bleeding.

The annual average of acceptance in the Saudi Gastroenterology Fellowship Program is 25 candidates, which falls under the specialties of the Saudi Commission for Health Specialties.

Endocrinology

Endocrinology is a subspecialty of IM that is concerned with the study of endocrine system disorders. This includes conditions that result from hyper- or hypo-secretion of hormones, alterations of growth, and developmental anomalies of the endocrine glands including pituitary, hypothalamus, thyroid, parathyroid, adrenal, endocrine pancreas, and gonads. Metabolism is part of Endocrinology; it is the science concerned with disorders of metabolism including diabetes, dyslipidemia, obesity and the metabolic syndrome.

Endocrinologists work closely with Nuclear Medicine specialists, Endocrine Surgeons, Radiologists, Neurosurgeons, Radiation and Medical Oncologists, and Pathologists.

A typical training program in North America for a medical student who has finished his medical school and wants to subspecialize in Endocrinology includes a three year IM Residency Training Program, followed by two years of Endocrine Fellowship Training. In Saudi Arabia, the IM Residency Training Program is four years long, while the Endocrine Fellowship Training Program is two years.

Typically, the first year involves a comprehensive clinical training and the second year is mainly research with some ongoing clinical duties. The research might be clinical (e.g. being involved with a clinical trial) or laboratory-based translational/basic research.

Most programs have weekly activities including patient rounds, journal clubs and case presentations, in addition to combined academic activities with other specialties such as combined Pathology/Radiology/Endocrine meetings or tumor boards with Oncologists/Radiation Oncologists/Endocrine Surgeons and Nuclear Medicine Specialists.

The usual cases seen depend on the institution and its main mission. In general hospitals, the majority of cases include diabetes, thyroid disorders and calcium/parathyroid disorders. In specialized centers, Endocrine Oncology is a prominent part of the practice. This includes thyroid cancer, pheochromocytoma, and pituitary disorders/tumors. In addition to the common endocrine diseases such as diabetes, dyslipidemia and thyroid disorders.

Endocrinology is generally considered an outpatient subspecialty. Therefore, most of the work is in the clinics. However, in certain places patient admissions are significant. The consultations for other services are usually many; particularly for the management of diabetes and electrolyte disturbances. The daily hours depend on the institution, but are typically around 8 hours.

Each specialty/subspecialty has its own positive and negative aspects. Some of the positive aspects of Endocrinology are the depth of science, combined with the evolution of new technology, rapid advances in the field, the increasing need for more Endocrinologists, the rewarding outcome of patients since most endocrine diseases can be cured or controlled; while only a few acute emergencies need immediate action.

There are excellent opportunities for private practice due to the high prevalence of endocrine diseases in the Saudi population; these include diabetes, thyroid disorders, metabolic disorders, etc. The income is usually per clinic and is relatively low compared to procedure-based practices.

The number of candidates accepted in Endocrine Fellowships depends on the program, but it is usually 2 - 3 candidates per year per institution. The Saudi Endocrine Fellowship Program is under the Saudi Commission for Health Specialties, and about 20 candidates are accepted each year. However, the number is increasing due to the increasing number of new hospitals/centers enrolled in the program.

Nephrology

Nephrology is one of the medical specialties concerned with the care of patients with various kidney diseases. A Nephrologist (for adults or pediatrics) may manage patients with chronic kidney diseases, glomerular diseases, electrolyte disturbance, dialysis, renal transplantation, and hypertension.

Worldwide there is a critical shortage of adult and pediatric Nephrologists, and their numbers are still not meeting the increasing number of patients with chronic renal diseases, mainly secondary to diabetes.

The kidneys can be affected by many systemic diseases such as diabetes, hypertension, and autoimmune diseases like systemic lupus erythematosus, as well as cardiac/lung diseases, liver cancer, and various adverse drug reactions. Thus, a Nephrologist is an active partner in the care of patients under almost all specialties.

After completing the IM Training (3 - 4 years to attain IM Board), you must take a two year Fellowship if you want to pursue General Nephrology. However, if you are considering subspecializing in Dialysis, Transplantation, Intervention Nephrology, etc., then the duration of the Fellowship extends to 3 years, and this is what most trainees choose to do. After successful training, Fellows can work independently as Consultants.

Since Nephrologists are part of the multidisciplinary team in most hospitals, they work side by side with Dialysis Nurses, Transplant Coordinators, Pharmacists, Social Workers, Dieticians, Renal Pathologists, and Vascular Surgeons. Transplant Nephrologists also have regular meetings with Immunologists and Transplant Surgeons. They have regular weekly or monthly meetings, depending on the institution as well as their regular educational activities e.g. lectures etc.

Most Nephrologists perform the following procedures: insertion of temporary dialysis catheters and renal biopsies, but some insert permanent and peritoneal dialysis catheters.

The training load is heavy, even after becoming a Consultant; however, it depends on the number of patients as well as staffing. As a Consultant, you will

have your on-call at home and will seldom have to go to the hospital after working hours, especially if you have a good Fellow or Assistant.

Advantages:
- Wide knowledge
- Long-term relationships with patients
- Good job opportunities, as there is a great shortage locally and internationally.

Disadvantages:
- Busy service
- Dealing with sick patients for long periods of time, for example, treating dialysis patients even after being transplanted

Infectious Diseases (IDs)

This is a subspecialty of IM and Pediatrics. It is concerned with infectious agents, antimicrobials, epidemiology, infection control, and public health. The topics that are most commonly studied are: the pathogenesis of all forms of bacterial, fungal, viral, and protozoal infections, their mode of transmission, host agent relationships, prevention strategies such as with vaccines, and various immune modulators. Information about public health policies, HIV and AIDS, outbreak management, prevention of hospital based infections, and management of healthcare worker infections, are all studied in depth.

An Infectious Disease Specialist (IDs) works closely with Microbiologists, Histopathologists, Molecular Laboratory Specialists, and Radiologists. All specialists and subspecialists refer cases to IDs, especially those working with immune compromised patients, such as Oncologists, Transplant Surgeons, and Cardiac Surgeons.

A typical training in North America for new graduates from medical school requires the completion of a 3–4 year Residency Training Program in IM or Pediatrics. In Saudi Arabia, the IM and Pediatrics Residency Training Programs are four years.

The duration of the IDs Fellowship Training Program differs from one country to another. In Canada and Saudi Arabia, it is two years; while in the USA, it is three. The components of the Fellowship Program also differ from program to program, but generally, all applicants must have a comprehensive clinical training accompanied by research. The research might be clinical (e.g. involvement in a clinical trial) or laboratory-based basic research in microbiology or virology. After completing the general ID fellowship, fellows have the chance to do one more year in advanced fellowship training in Infectious Diseases such as infection in the immunocompromised host, HIV/AIDS, Tropical Medicine ,Virology, etc.

Most programs have weekly activities including patient rounds, journal clubs and case presentations, in addition to combined academic activities with adult IDs,

Pediatric IDs, and Microbiologists. In large programs, the HIV/AIDS service may have special weekly meetings.

The types of IDs cases seen depend on whether the institutional area is based on tertiary or primary care. In general hospitals, the majority of cases concern the management of community-acquired infections. In specialized referral centers where cardiac surgeries, cancer treatment, and various transplant surgeries are performed, the cases will be more challenging. This is in addition to the ongoing management of chronic cases of HIV infections, and management of infections in immunocompromised patients.

The main advantage of the in the field over the latter part of the last century. Vaccines were considered to be the most significant developments of the last millennium. The development of new technologies in vaccine production progressed to the point of not only preventing infections but also preventing cancer. The rapid spread of infection in the new era of globalization makes the IDs specialist in the frontline as a public health expert and strategist.

The disadvantages are few but include the large number of consultations from high risk areas and the misuse of antimicrobial agents which makes the task of an ID specialist more challenging. Finally not having a specific procedure or a specific group of patients (other than HIV) is not encouraging does not encourage any work in the private sector.

The number of candidates accepted annually depends on the program, but on average, 2 - 4 candidates per year per institution are admitted to the IDs Fellowship Program. The Saudi IDs Fellowship Program is under the Saudi Commission for Health Specialties and about 20 candidates are accepted each year, but their number is increasing as the number of hospitals/centers enrolling in the program is also increasing.

Oncology

The Oncology specialty and its subspecialties are explained in the following tables:

Definitions

Medical Oncology	Treating malignant solid tumors by systemic therapies such as chemotherapy, endocrine therapy, immunotherapy and targeted medicine.
Hematology and Bone Marrow Transplant	Treating hematological malignancies and blood disorders by systemic therapies such as medications, chemotherapy, immunotherapy and targeted medicine
Pediatric Hematology-Oncology	Treating pediatric cancers by systemic therapies such as chemotherapy, endocrine therapy, immunotherapy and targeted medicine.

Radiation Oncology	Treating cancer and selected benign diseases by ionizing radiation therapies such as external beam radiotherapy, brachytherapy, and radioisotopes.
Palliative Care	Caring for cancer patients by symptom control and comfort care especially at terminal stage.
Surgical Oncology	Specialized surgical treatment for breast and abdominal cancers.

Training years and experience (in main specialties) needed to get into the subspecialty:

Medical Oncology	Complete a 4-year IM Residency and IM Board.
Hematology and Bone Marrow Transplant	Complete a 4-year IM Residency and IM Board.
Pediatric Hematology Oncology	Complete a 4-year Pediatric Residency with Pediatric Board.
Radiation Oncology	Complete a 5-year Radiation Oncology Board starting after the Internship. • Canada - 5 years • USA - 4 years • UK and Australia - 5 years Clinical Oncology.
Palliative Care	Complete • Family Medicine Board • IM Board • Pediatric Board • General Surgery Board • ER, Anesthesia and all other Boards
Surgical Oncology	Complete • General Surgery Residency with Board

Fellowship years:

Medical Oncology	2-3 years
Hematology and Bone Marrow Transplant	2-3 years
Pediatric Hematology-Oncology	2 years
Radiation Oncology	1 year (optional) in Canada only None in USA
Palliative Care	1 year
Surgical Oncology	3 - 5 years

Work load, daily hours, and on-calls:

Medical Oncology	Weekly: • 2 - 3 Outpatient Clinics of 3 hours each • 1 Chemotherapy session • Daily ward rounds • 2 MDM • 5 - 7 On-calls
Hematology and Bone Marrow Transplant **Pediatric Hematology-Oncology**	Weekly: • 2 - 3 Outpatient Clinics of 3 hours each • 1 Chemotherapy session • Daily ward rounds • 2 MDM • 5 - 7 On-calls with frequent hospital calls
Radiation Oncology	Weekly: • 2 - 3 Outpatient clinics of 3 hours each • Radiotherapy planning session of 3 hours each • Daily ward round • 2 MDM • 5 - 7 Very quiet on-calls
Chapter 2 Palliative Care	Chapter 3 Weekly: • 2 Outpatient clinics of 3 hours each • Daily ward round • 2 MDM • 5 - 7 On-call • Home care visit
Chapter 4 Surgical Oncology	Chapter 5 Weekly: • 2 Outpatient clinics of 3 hours each • 2 Operating room sessions • Daily ward rounds • 2 MDM • 5 - 7 On-calls

Advantages:

Medical Oncology **Hematology and Bone Marrow Transplant** **Pediatric Hematology-Oncology** **Radiation Oncology**	• Rare • Excellent relationship with patients • Important • Prestigious • Quiet on-call • Excellent educational resources • Multidisciplinary care
Palliative Care	• Short postgraduate • Rare • Excellent relationship with patients • Quiet on-calls • Excellent educational resources • Multidisciplinary care

Surgical Oncology	• Rare • Excellent relationship with patients • Important • Prestigious • Excellent educational resources • Private (if permitted) • Multidisciplinary care

Disadvantages:

Medical Oncology	• Bad patient prognosis
Hematology and Bone Marrow transplant **Pediatric Hematology -Oncology**	• Stormy on- calls • Tertiary hospitals only
Radiation Oncology	• No private practice • Tertiary hospitals only • Very competitive postgraduate programs
Palliative Care	• No private practice • Bad patient prognosis • Tertiary hospitals only
Surgical Oncology	• Stormy on-calls • Stressful

Yearly candidates accepted:

Medical Oncology	Hematology and Bone Marrow Transplant	Pediatric Hematology - Oncology	Radiation Oncology	Palliative Care	Surgical Oncology
2	2	2	1	1	1

Residency Program

Specialty	Internal Medicine	
Duration	4 years	
Rotation	**R1**	• General Medicine
	R2	Mandatory rotations are: • Cardiology, • Critical Care Medicine • Emergency Medicine
	R3	

	R4	• Neurology • Subspecialty rotations: • Endocrinology. • Gastroenterology • Hematology and Oncology • Infectious Diseases • Nephrology • Pulmonary Medicine • Rheumatology • General Medicine
Working hours per day	8	
Clinic per week	2 - 3	
Number of on-calls per month	6 - 8	
Competition	Very competitive	
Yearly applicants	900-1000	
Yearly acceptance	350	
Yearly graduates	150	
Hospitals that offer the program	1. National Guard Health Affairs - Riyadh 2. King Fahad Medical City - Riyadh 3. King Faisal Specialist Hospital & Research Center - Riyadh 4. King Khalid University Hospital - Riyadh 5. King Saud Medial City - Riyadh 6. Prince Sultan Military Medical City - Riyadh 7. Security Forces Hospital - Riyadh 8. National Guard Health Affairs - JEDDAH 9. King Abdulaziz University Hospital - Jeddah 10. King Fahd Hospital - Jeddah 11. King Fahad Military Medical Complex - Dhahran 12. National Guard Health Affairs -Al-Ehsaa 13. King Fahd Military Medical Complex - Dhahran 14. King Fahd Specialist Hospital - Dammam 15. King Fahd University Hospital - Khobar 16. King Fahd Hospital - Madinah 17. North West Armed Forces Hospital - Tabouk 18. King Fahd Hospital – Al Baha 19. Assir Central Hospital - Abha 20. Armed Forces Hospital Southern Region - Asir Region 21. King Fahd Central Hospital - Jazan 22. King Fahad Specialist Hospital - Al Qassim	
Please refer to SCFHS web site link below for updated information on the Internal Medicine Training Program *http://www.scfhs.org.sa/en/MESPS/TrainingProgs/TrainingProgsStatement/Pages/default.aspx*		

2.10 Neurology

Expert	Students
Mohammed Al Jumah King Saud bin Abdulaziz University for Health Sciences Riyadh, Saudi Arabia	Al Waleed Abdulaziz Al Jaser Asma Ibrahim Abdulla Turki Naif

Introduction

Neurology is a branch of medicine concerned with the disorders of the brain and nervous system (brain, spinal cord, peripheral nerves, and muscles). Neurologists deal with the diagnosis and treatment of all types of disorders involving the nervous system. Knowledge about the nervous system continues to expand which makes the specialty increasingly appealing.

Neurologists see and evaluate patients who suffer a wide variety of complaints including: headaches and pain, numbness and weakness, poor balance and tremors, seizures and changes in consciousness, as well as speech and swallowing difficulties. Patients presenting with neurological disorders are not usually at immediate terminal risk, instead they generate significant morbidity and disability over time. Neurological disorders constitute a large and increasing share of the global burden of disease. Stroke, dementia, epilepsy, and Parkinson's disease are important factors determining mortality and morbidity in all societies. Recommendations of the required number of Neurologists in a given country vary from 1 - 10 for 100,000 population. It is currently estimated that Saudi Arabia requires between 1,500 – 3,000 Neurologists to meet its current and growing needs. This number reflects the shortage of Neurologists for healthcare delivery.

Neurology is one of the fastest growing fields in medicine with an extremely optimistic future. Neurologists are able to alter the natural history of disabling disease with major improvements in the patient's quality-of-life and prolongation of survival. As understanding of neurologic disease continues to expand, Neurology stands out as one of the most appealing fields in medicine.

The Specialty by an Expert

There is a commonly felt fear among medical students of the field of Neuroscience in general, and specifically for Neurology (neurophobia). The seemingly overwhelming amount of knowledge needed to master this specialty often discourages medical students from choosing a career in Neurology. However, they should be aware that Neurology does not call for genius, instead, it simply requires the physician to analyze complex clinical findings in a systematic manner. Neurology is a perfect specialty for aspiring physicians who enjoy critical thinking and can integrate and analyze multiple symptoms, clinical examination findings, and laboratory results to work out rational solutions that are best for the patient. This methodical approach to diagnosis and management

is an integral part of the specialty. It makes the job of the Neurologist both relatively easy and extremely rewarding. For a physician to flourish in Neurology, he/she must develop and enhance certain standards and skills, which may include strong observational proficiencies, good listening with clinical skills and patience. A respectful Neurologists always approaches their patients and their families with empathy, compassion, and patience. These are equally important for the specialty as having sound, competent, and scientific abilities.

Becoming a Neurologist consists of a four year full time Residency Training in an institution that is accredited by the Saudi Board of Neurology. The goal is to certify a competent and independent Neurologist. The four year Residency programme include:

- First training year in Internal Medicine.
- Second training year in Clinical Neurology, in which he is exposed to a wide variety of in-patient settings, neurological emergencies, and consultation services.
- The third training year includes three months of Clinical Neurophysiology, three months of Pediatric Neurology, and six months of Clinical Neurology.
- The fourth training year is as follows:
  - Nine months as a senior resident.
  - One month in Neuroradiology and Neuropathology.
  - One month elective in one of the following disciplines: Research, Neurosurgery, or Neuro-Ophthalmology.

The Neurology Resident lifestyle is reasonable in comparison to other specialties. The on-calls could either be in-house or from home depending on institution and any specific needs. The on-calls are on average one every 3 - 4 days (with a minimum of seven on-calls per month). Like all other specialties, there is an end of rotation evaluation and in-training annual exams. In Saudi Arabia, there are almost 80 residents, with a distribution of 52% being females and 48% being males.

After four years of Residency Training, most of the Neurologists take a 1 – 2 year Fellowship in one of the subspecialties. These Fellowships include the following:

- Epilepsy, Clinical Neurophysiology, and Stroke (cerebrovascular)
- Neuro-intensive Care, Movement Disorders, and Neuromuscular Disorders
- Neuro-immunology (multiple sclerosis), Behavioral Neurology (dementia and memory problems), and Headache/Pain.

However, to date, there is no subspecialty training in Saudi Arabia

There is an urgent need for skilled Neurologists in Saudi Arabia as well as the region. The necessary training to become a practicing Neurologist is reasonable and allows for a very balanced lifestyle with the ability to advance in both academia and research while still managing clinical responsibilities. The majority of the work load, 85%, lies in the out-patient setting which makes it desirable and accessible for private practice.

Residency Program

Specialty	**Neurology**	
Duration	4 years	
Rotations	**R1**	• Internal Medicine • Clinical Neurology
	R2	• Clinical Neurology • Neuroradiology
	R3	• Clinical Neurology • Pediatric Neurology • Electroencephalography
	R4	• Clinical Neurology • Electromyogram/Nerve Conducting Studies/Evoked Potential • Psychiatry • Elective
Working hours per day	9	
Clinic per week	1 – 2	
Number of on-calls per month	5 - 10	
Competition	Competitive	
Yearly applicants	221	
Yearly acceptance	24	
Yearly graduates	9	
Hospitals that offer the program	**Riyadh**: • King Khalid University Hospital (KKUH) • King Faisal Specialist Hospital (KFSH) • King Abdulaziz Medical City (KAMC) • Prince Sultan Military Medical City (PSMMC) • King Fahad Medical City (KFMC) • Security Forces Hospital (SFH) **Eastern Province**: • King Fahad Specialist Hospital (KFSH) • King Fahad University Hospital (KFUH) • Dammam Central Hospital (DCH) • National Guard Hospital (NGH) **Jeddah**: • King Fahad Hospital (KFH) • King Abdulaziz University Hospital (KAUH) • National Guard Hospital (NGH)	
Please refer to SCFHS web site link below for updated information on The Neurology Training Program *http://www.scfhs.org.sa/en/MESPS/TrainingProgs/TrainingProgsStatement/Neurology/Pages/default.aspx*		

2.11 Neurosurgery

Expert	Students
Mahmoud Al Yamany Director, National Neuroscience Institute King Fahd Medical City Riyadh, Saudi Arabia	Al Waleed Abdulaziz Al Jaser Asma Ibrahim Abdulla Turki Naif

Introduction

The central nervous system with the brain at its center is the fastest computer known to man. It is a masterpiece created by Allah Almighty. Being the command and control center of all the body parts, it is a mysterious structure that despite the journey of science this far, has not been completely understood.

Neurosurgery is a fascinating specialty which deals with prevention, diagnosis and treatment of various disorders affecting the central nervous system and includes the brain, spinal cord, cranial nerves, and cerebrovascular system.

The Specialty by an Expert

Neurosurgery is one of the most challenging and demanding clinical specialties. It deals with the most delicate tissue structures of the human body. Furthermore, it demands An excellent understanding of clinical problems with a very high level of dexterity, and strong visual-spatial coordination combined with the use of advanced technology. Use of advanced equipment, such as spatial MRI, Navigation tools, Nerve detectors, and the gamma knife in the practice of neurosurgery, on almost a daily basis, is the hallmark of this specialty. For this reason and the sensitive nature of the diseases, the Neurosurgical Specialty can only be practiced in an established clinical setup with technological advancements available.

Overall, a Neurosurgeon has to be assertive, inquisitive, and focused. Also physically fit, mentally agile, emotionally stable, flexible, a patient's advocate, communicator, and collaborator. A Neurosurgeon has to possess high social skills. Contrary to the charisma of a Neurosurgeon, it is by no means a solo specialty, it needs a lot of interaction with other specialties as it is interlinked with Critical Care, the Emergency Room, Neurology, Internal Medicine, Orthopedics, Ophthalmology, ENT, ORL, Endocrinology, Radiology, Anesthesia, Rehabilitation Medicine, and Oncology. A majority of the Neurosurgical referrals are from ER and many of the postoperative patients need temporary admission to critical care. Likewise, management of pituitary and parasellar lesions is combined teamwork with Endocrinology; whereas anterior skull surgery needs input from Ophthalmology and Otorhinolaryngology (ORL). However, the Neurosurgeon is the key variable in deciding when and how to intervene.

Neurosurgery is a very demanding specialty and the residency is a reflection of

what lies ahead as a career. Basic residency training in Neurosurgery comprises of five years. Written and oral promotion exams are conducted annually. After successful completion of training, advanced subspecialty fellowship programs are available.

Typical daily working hours are no less than nine. It has long operating hours, critical patients, and delicate procedures that needs commitment, concentration, and a current knowledge of the literature. Post on-call, the residents are expected to finish their rounds and assigned surgeries before leaving. Obviously, daily stress is a factor which needs to be managed. The busy routine of a neurosurgeon has a price in the form of limited social interaction and personal leisure, yet with good time management a Neurosurgeon can be an excellent family person.

The clinics are quite busy yet very interesting. Approximately 30% of the patients are new in every clinic. The target population of patients range from infancy to old age. Career satisfaction is a major advantage of being a Neurosurgeon.

Neurosurgery Subspecialties

Neurovascular Surgery (1-2 year)

It concerns the management of vascular abnormalities of the brain and the spinal cord including arteriovenous malformations (AVM), cerebral aneurysms, cavernous malformations, dural arteriovenous fistulae, and carotid stenosis. Due to the advancement and expanding use of endovascular techniques in recent years the role of surgical intervention has been limited only to very challenging cases.

Pediatric Neurosurgery (1-2 year)

It is one of the most popular and developed subspecialty universally.

Spine Surgery (1-2 year)

Sedentary lifestyles have led to an increase in spinal problems over recent decades. It constitutes 40-50% of Neurosurgical practice and can be safely practiced in private practice. Today recent advances in minimally invasive techniques have had a significant and positive impact on management outcomes.

Skull Base Surgery (1 year)

This subspecialty is concerned with skull base tumors. It is technically challenging and the procedures are generally of long duration. Recently, endoscopic techniques have been adopted to manage these tumors and have proven to be very useful.

Functional Neurosurgery (1 year)

This specialty demands multidisciplinary teamwork with Neurophysiology and Neurology. Advanced technology has made it a very interesting specialty.

Epilepsy Surgery (1-2 year)

This subspecialty deals with the surgical intervention of the tissues which are anatomically normal yet functionally abnormal. Management of the clinical problem depends on the localization of the seizure focus by the epileptologist, before and during surgery.

Peripheral Nerve Surgery (1-2 year)

It is a highly privileged and needed subspecialty. It requires great in-depth knowledge of the peripheral nerves and plexuses, the muscles, bones, and joints along the pathways of these nerves.

Neurosurgical Oncology (1-2 year)

It qualifies a Neurosurgeon to deal with complex tumors of the brain. It demands mastering the techniques of conscious cortical mapping, stereotactic biopsies, endoscopic surgeries for deep seated tumors and understanding the basics of chemo and radiation therapy.

Residency Program

Specialty	Neurosurgery	
Duration	5 years	
Rotation	**R1**	6 Months Neurosurgery 6 Months General Surgery 3 Months Critical Care
	R2	9 Months Neurosurgery 3 Months Neuroradiology
	R3	9 Months Neurosurgery 3 Months Neurology
	R4	Neurosurgery
	R5	Neurosurgery 3 Months Elective Rotation
	R6	Neurosurgery
Working hours per day	8 - 9	
Clinic per week	2	
Number of on-calls per month	4-7	
Competition	Competitive	
Yearly Applicants	50 Male to female ratio is 3:1	
Yearly Acceptance	12 candidates • 10 Saudi • 1 Gulf Region • 1 International	
Yearly graduates	6-8	

Hospitals that offer the program	**Riyadh**: • King Khalid University Hospital (KKUH) • King Faisal Specialist Hospital (KFSH) • King Abdulaziz Medical City (KAMC) • Prince Sultan Military Medical City (PSMMC) • King Fahad Medical City (KFMC) • Security Forces Hospital (SFH) **Eastern Province**: • King Fahad Specialist Hospital (KFSH) • King Fahad University Hospital (KFUH) • Dammam Central Hospital (DCH) • National Guard Hospital (NGH) **Jeddah**: • King Fahad Hospital (KFH) • King Abdulaziz University Hospital (KAUH) • National Guard Hospital (NGH)
Yearly graduates	6 - 8
Please refer to SCFHS web site link below for updated information on the Neurosurgery Training Program *http://www.scfhs.org.sa/en/MESPS/TrainingProgs/TrainingProgsStatement/Neurosurgery/Pages/default.aspx*	

2.12 Obstetrics and Gynecology

Expert	Students
Abdulaziz Alobaid Consultant Gynecologic Oncology Medical Director, Women's Specialized Hospital King Fahad Medical City Riyadh, Saudi Arabia	Amna Baljoun Adeebah Albadran Mawdah Alqabbani

Introduction

Obstetrics and Gynecology (OBGYN) is the combined medical and surgical specialties dealing with the health care issues related to the female genital tract and reproductive system. The specialty is divided into Obstetrics and Gynecology. The fact that makes Obstetrics a unique specialty is because it deals with two patients in one individual, the pregnant woman and her unborn child, therefore the care giver has to make sure that both are well cared for. Gynecology on the other hand deals with the problems of non-pregnant females from the onset of puberty until after the menopause. A doctor who prefers this field as a career can practice one or both.

The Specialty by an Expert

An obstetrician has to extend medical care provided to mother and baby and ensure that both are adequately supported for a favorable outcome. One of the major branches is Maternal-Fetal Medicine, which deals with high risk pregnancies either due to fetal anomalies and/or the pregnant mother suffering from ailments like heart failure, cancers, chronic lung diseases etc. Another branch is Adolescent Gynecology which deals with pediatric patients suffering from congenital malformations affecting the genital tract requiring specific surgical interventions. *In-vitro* fertilization (IVF) cares for couples with infertility issues and helps the mother conceive through the use of hi-tech scientific advancements.

OBGYN is a very challenging and demanding specialty, at the same time a rewarding one. The feeling of being the source of helping another human into life is profoundly rewarding. Doctors practicing this specialty need to be compassionate. They need sound theoretical knowledge in Anatomy, Reproductive Endocrinology and Medicine, with continuous development and polishing of procedural skills, not only to perform them, but also to handle potential complications.

The typical working day for an OBGYN residents start at 8 am and finishes at 4.30pm. Working hours vary between different hospitals. During the training, residents are exposed to diverse and challenging clinical situations. They are supposed to cover the inpatients, outpatient clinics, and the Emergency Room. The arrival of emergency patients is unpredictable. They are also assigned to the Labor and Operating rooms according to the level of their training. Surgical

procedures range from the routine to complex operations. In Obstetrics routine cesarean sections are the commonest. The number of on call days per month follows the regulations of the Saudi Council for Health Specialties. The on call days are busy and residents usually provide patient care throughout the night. In most training centers residents have the post on-call day off. OBGYN residency training in Saudi Arabia is a five year program. The residents cover general OBGYN and rotate through its subspecialties in addition to off-service rotations in NICU, ICU, and Pathology. At the end of each training year there is a promotion exam and the end of the fifth training year residents are eligible to sit the Saudi Board Exam for OBGYN.

OBGYN doctors need to handle emergency situations which are stressful in a calm and efficient manner. This is a mandatory quality which continues to be needed throughout a career in this specialty.

As far as family and social life are concerned, choosing OBGYN as a career is a major commitment not only for the physician but also their families. This specialty is known for in-hospital busy schedules and needs lot of dedication. This may sound rather negative, although it is not a reality, because there is a great demand for OBGYN specialists throughout the country, training opportunities for applicants are generally available.

For male doctors who chose OBGYN, the situation is easier than may be first thought. Although according to the cultural norms of the region, female patients prefer female doctors, however, according to many male OBGYN physicians this has never been a major issue in their practice. Once they develop a good rapport with the couple who understand that their physician has a professional approach and is trying to do the best for the care, they prefer to stay with the same physician. This issue of gender preference can be overcome by demonstrating sensitive patient care and compassion.

OBGYN is a multi-disciplinary service, with doctors having to work in close collaboration with other specialties like Anesthesiologists, Internists, General Surgeons, Urologists, Neonatologists, dieticians, Social workers, and Psychologists.

After completing the General OBGYN board, there is a wide range of subspecialty fellowships available. They offer advanced training to deal with more complex OBGYN issues.

Obstetrics and Gynecology Subspecialties

Maternal-Fetal Medicine (2-3 Year)

Concerned with the management of high risk pregnancies including maternal and fetal problems. It enables the physician to deal with fetal anomalies and abnormal pregnancies that require intervention.

Gynecological Oncology (2-3 Year)

The fellows will be trained to manage complex Gynecological malignancies even

involving the Gastrointestinal and Urinary tracts. It also enables management with chemotherapy for these malignancies.

Uro-Gynecology (1-2 Year)

This is concerned with the management of urinary and fecal incontinence in females. It also offers training in reconstructive pelvic surgery for different types of prolapse of the genital tract.

Adolescent Gynecology (1-2 Year)

It is concerned with congenital malformations of the female genital tract.

Reproductive Endocrinology and Infertility (2 Year)

It offers training in the management of endocrinological and anatomical abnormalities for infertile couples through hormonal supplements, specific surgical procedures and *in-vitro* fertilization.

Residency Program

Specialty	Obstetrics and Gynecology	
Duration	5 years	
Rotations	**R1**	TBI
	R2	One month Neonatal ICU One Month Anesthesia
	R3	One month Urology One month Pathology Two months Surgical /General ICU Two months Gynecological Oncology Two months Infertility Two months Perinatology / Fetal Medicine
	R4	
	R5	
Working hours per day	8 - 10 (depends on the Training Center)	
Clinic per week	2 - 3	
Number of on-calls per month	7	
Competition	Average	
Yearly applicants	320	
Yearly acceptance	200	
Yearly graduates	50	
Hospitals that offer the program	• Al Yamamah Hospital • Dallah Hospital • King Abdulaziz Medical City in Riyadh • King Fahad Medical City • King Faisal Specialist Hospital & Research Center • King Khalid University Hospital • King Saud Medical City • Prince Salman bin Abdulaziz Hospital	

	• Prince Sultan Military Medical City • Security Forces Hospital • Al Hada Armed Forces Hospital • Al Noor Specialist Hospital in Makkah • Hera General Hospital in Makkah • International Medical Center • King Abdulaziz Hospital & Oncology Center • King Abdulaziz Medical City in Jeddah • King Abdulaziz Specialist Hospital in Al Taif • King Abdulaziz University Hospital • King Fahad Armed Forces Hospital in Jeddah • Maternity & Children Hospital in Jeddah • Maternity & Children Hospital in Makkah • Armed Forces Hospital Northern Area • King Abdulaziz Medical City in Al Ahsa • King Fahad Hospital in AlHofuf • King Fahad Military Medical Complex • King Fahad University Hospital in Al Khobar • Maternity & Children Hospital in Al Ahsa • Maternity & Children Hospital in Al Dammam • Qatif Central Hospital • Maternity & Children Hospital in Al Madinah • Ohoud Hospital in Al Madinah • Royal Commission Medical Center in Yanbu • North West Armed Forces Hospital • Maternity & Children Hospital in Buraydah • King Fahad Hospital in Al Baha • Abha General Hospital • Southern Region Armed Forces Hospital • King Abdullah Hospital in Bisha • King Fahad Central Hospital in Jazan • Bahrain Royal Medical Services of Bahrain • Defence Force • Salmaniya Medical Complex
Please refer to SCFHS web site link below for updated information on the Neurology Training Program *http://www.scfhs.org.sa/en/MESPS/TrainingProgs/TrainingProgsStatement/Pages/default.aspx*	

2.13 Ophthalmology

Expert	Students
Waleed Al-Tuwairqi Department of Ophthalmology Elite Medical & Surgical Center Riyadh, Saudi Arabia	Alaa Faisle Ahmad Salem Banjar Lamia Hassan Aseery

Introduction

Ophthalmology is a derivative of Greek word which means "Science of the Eye". It is considered as vital among the five senses, the eye is what enables us to appreciate our surroundings. Even though it seems to be a tiny part of the human anatomy, it deserves to be dedicated to a whole branch of medical science for understanding and managing its diseases. An ophthalmologist has to be a competent physician and a skilled surgeon at the same time.

The Specialty by an Expert

Ophthalmology despite having a lot of medical applications is primarily a field of surgery. It is about acquiring a combination of medical and surgical skills. At a basic level it deals with ocular and visual disorders. Because it is generally neglected at the undergraduate level leaving a great deal to be learned during the first year of postgraduate training. The clinical examination methods and the use of instruments to perform them are all new and therefore postgraduate trainees feel like starting from scratch when they enter the residency program. One not only has to understand the precise anatomical details of an organ no bigger than a walnut but also has to master the refined motor skills and excellent hand eye coordination to perform microscopic surgical procedures. However, in many countries, there are ophthalmologists who treat the problems medically only and refer cases which need surgery, to their colleagues.

Ophthalmology is largely an outpatient specialty. A significant part of management can be done in the clinics and most of the operations can also be done as day case procedures. This gives a large range of practice both in big hospitals and private ophthalmic centers.

Ophthalmology is action oriented and offers fast results. Principally it deals with refractive errors which can be surgically corrected quickly with an excellent success rate, for example, Myopia by LASIC and Cataract by PHACO therapies. This greatly increases patient satisfaction and makes it one of the most gratifying specialties.

Ophthalmology offers a relaxed lifestyle. Ophthalmologists are generally considered as pleasant and relaxed individuals in the hospital. The stress level is much less comparing to other specialties, however, one must keep in mind that it deals with a very vital organ in the body and there is always a risk of losing its function with a bad decision.

Basic residency training in ophthalmology comprises of four years to be followed up by another two years in subspecialty training for advanced skill seekers.

The choice of a postgraduate specialty is a critical career decision because it is what you will be doing for the rest of your professional life. This decision making process has to be logical and independent of emotional influences; but often affected by the charisma of a "role model" arising from the admiration of a senior colleague.

Ophthalmology Subspecialties

Viteroretinal Surgery (2 Year)
Concerned with the management of retinal problems through sophisticated surgical procedures.

Pediatric Ophthalmology and Strabismus (1-2 Year)
This is the management of complex cases of vertical and recurrent squint.

Corneal and External Ocular Diseases (1 Year)
General ophthalmologists wishing not only to carry out simple cataract extractions but more complex procedures like Penetrating or Lamellar Keratoplasty, and require special training.

Glaucoma (1 Year)
Today glaucoma is being treated medically and with surgical procedures like Trabeculectomy and YAG-Laser Iridotomy. Advanced cases of Glaucoma are treated with special surgical procedures making it a separate subspecialty.

Neuro Ophthalmology (1 Year)
This deals with central nervous system disorders affecting the ocular and visual pathways.

Uveitis (1 Year)
It is concerned with the management of ophthalmic diseases that are caused by systemic disorders.

Oculoplastic Surgery (1 Year)
Concerned with the management of ocular tumors, disorders of the lacrimal drainage system, and orbital reconstruction.

Ophthalmic Pathology (1 Year)
It is concerned with diagnosing ophthalmological diseases through histopathological examination of ophthalmic specimens.

Residency Program

Specialty	Ophthalmology	
Duration	4 years	
Rotations	**R1**	2 months • Basic and Clinical Science Course 4 months • General Ophthalmology • Refraction • Contact lenses 2 months • ER 1 month • Retina / uvea 1 month • Occuloplastic 1 month • Anesthesia • Pathology 1 month • Vacation
	R2	2 months • Anterior Segment • Cornea • External Diseases • Anesthesia 2 months • Glaucoma 2 months • Pediatric Ophthalmology 1 month • Retina • Uvea 1 month • Refraction • Contact Lenses 1 month • Oculoplastic 1 month • Neuro-Ophthalmology 1 month • ER 1 month • Vacation
	R3	3 months • Anterior Segment • Cornea • External diseases 2 months • Retina

		2 months • Oculoplastic 2 months • ER 1 month • Neuro-Ophthalmology 1 month • General Ophthalmology 1 month • Vacation
	R4	3 months • Pediatric Ophthalmology 2 months • Anterior Segment • Cornea • External Diseases • Anesthesia 2 months • Retina 2 months • Glaucoma 2 months • ER 1 month • Vacation
Working hours per day	8	
Clinic per week	5	
Number of on-calls per month	5 - 7	
Competition	Very competitive	
Yearly applicants	200	
Yearly acceptance	25	
Yearly graduates	15	
Hospitals that offer the program	• King Abdulaziz Medical City in Riyadh • King Abdulaziz University Hospital in Riyadh • King Khaled Eye Specialist Hospital • King Khalid University Hospital • King Saud Medical City • Prince Sultan Military Medical City • Security Forces Hospital • King Abdullah Medical City in Makkah • Jeddah Eye Hospital • King Abdulaziz Medical City in Jeddah • King Abdulaziz University Hospital • King Fahad Armed Forces Hospital in Jeddah • Air Base Hospital in Dhahran • Dammam Medical Complex • Dhahran Eye Specialist Hospital	

	• King Fahad Military Medical Complex • King Fahad University Hospital in Al Khobar • Southern Region Armed Forces Hospital
Please refer to SCFHS web site link below for updated information on the Ophthalmology Training Program *http://www.scfhs.org.sa/en/MESPS/TrainingProgs/TrainingProgsStatement/Ophthalmology/Pages/default.aspx*	

2.14 Orthopedic Surgery

Expert	Students
Omar Ali Batouk Orthopedic Surgeon KSAU-HS College of Medicine Jeddah, Saudi Arabia	Amnaa Baljoun Adeebah Albadran Mawdah Alqabbani

Introduction

The structural support and integrated movements of different parts of the body depend upon a healthy musculoskeletal system which comprises of 206 bones and 600 to 800 skeletal muscles. Any abnormality of this system due to trauma (fractures), infections, tumors, degenerative diseases or congenital disorders can cause pain, discomfort and restriction of movement.

Orthopedic Surgery is a branch of medical science which deals with the problems of the musculoskeletal system through surgical and non-surgical management. It is highly specialized and demanding. Essentially, it deals with fractured bones and dislocated joints, the management of which includes closed reduction with stabilizing cast application, and open reduction with fixation using internal or external implants to re-align and fixate them. This needs expertise and mandates command over the use of a hi-tech instrumentation system. When the specialty was established by Jean-Andre Venel, who is considered the father of Orthopedic Surgery, it used only to deal with skeletal deformities of children, but soon evolved to cover all age groups. Today it is considered as one of the top specialties that has had a large impact on the quality of life. The Orthopedic service has a multidisciplinary approach, therefore the trainee has to interact and collaborate with colleagues from many other specialties like Pediatrics, Internal Medicine, Rheumatology, Anesthesiology, Physiotherapy, and Occupational therapy.

The Specialty by an Expert

Orthopedic Surgery is one of the most active and busiest service of any hospital because it has a high turnover. It is inevitable that this affects the social and family life of Orthopedic residents, but this problem can be overcome by appropriate time management. On the other hand, it is a respected and much appreciated specialty by all hospital administrations and patients.

The Residency Training Program is a 5 year program which is provided in accredited centers across the Kingdom. Doctors can apply for the program after successful completion of their internship. Once in the program, the responsibilities and duties vary according to the level of training. Residents are assigned to the outpatient clinics and operating room according to the duty roster. In the operating room surgical skills are acquired gradually according to the level of training. They start by learning how to perform joint aspirations and application of skin traction. Formal teaching sessions are also conducted. The

nature and frequency of these sessions vary from hospital to hospital. The residents are responsible for the inpatient care as well as the cover of Emergency Room calls. Post on-call day can be a free day in very busy centers. The whole period of training is divided into three monthly rotations. Each of these rotations has objectives relevant to the level of training that need to be attained. Performance of residents is continuously evaluated and they have to sit and pass the yearly exam for promotion to the next year of training.

The basic objective of the residency program is to provide an academic and competitive environment that promotes high standards of health care delivery and competent and knowledgeable orthopedic surgeons capable of working independently by the end of their training. The residents are expected to understand the scientific background of each case and to possess sound knowledge in the principles of Orthopedic Surgery, biomechanics, skeletal embryology and physiology of metabolic bone problems, pharmacology, and the concepts of wound and bone healing. They should have a clear understanding of trauma and shock management. They must be capable of acquiring a good history, physical exam, ordering relevant investigations and imaging, and interpret their results to formulate a comprehensive and accurate diagnosis with a plan for appropriate operative or non-operative management.

Trainee Orthopedic surgeons also need to possess high ethical and moral standards and should learn to communicate well with patients, their relatives, and colleagues from other specialties. Like any other specialty, for the doctor-patient relationship "rapport" is very important. It starts at the first encounter with the patient in the clinic or Emergency Room.

Post residency advanced fellowship training programs over a period of 12 to 18 months are available internationally. They offer highly specialized training in the subspecialties of adult joint reconstruction, musculoskeletal oncology with limb salvage procedures, foot and ankle surgery, Orthopedic traumatology, hand and upper extremity disorders and trauma, Pediatric Orthopedics, Spinal surgery, Sports injuries, and Hip preservation surgery.

Residency Program

Specialty	Orthopedics	
Duration	5 years	
Rotations	**R1** **R2**	3 months • Principles of General Surgery 3 months • Intensive Care Unit 3 months • Plastic and Hand Surgery 24 months • General and Basic Orthopedics and Trauma 3 months • Elective Rheumatology

		• Orthopedic Radiology • Physiotherapy • Research
	R3	
	R4	6 months • Musculoskeletal Trauma 3 months • Orthopedics 3 months • Spinal Surgery 3 months • Arthroplasty 3 months • Pediatric Orthopedics 3 months • Orthopedics Oncology 3 months • Arthroscopic & Sport Surgery 3 months • Elective Orthopedics Subspecialty
	R5	
Working hours per day	8	
Clinic per week	2	
Number of on-calls per month	7	
Competition	Very competitive	
Yearly applicants	Southern Region(16) Eastern Region (31) Western region (55) Central region (53)	
Yearly acceptance	Southern Region(5) Eastern Region (12) Western region (19) Central region (20)	
Yearly graduates	35	
Hospitals that offer the program	**Riyadh** • King Abdulaziz Medical City in Riyadh • King Fahad Medical City • King Faisal Specialist Hospital & Research Center • King Khalid University Hospital • King Saud Medical City • Prince Sultan Military Medical City • Security Forces Hospital **Taif** • Al Hada Armed Forces Hospital • King Abdulaziz Specialist Hospital in **Makkah** • Al Noor Specialist Hospital	

	• International Medical Center **Jeddah** • King Abdulaziz Hospital & Oncology Center • King Abdulaziz Medical City • King Abdulaziz University Hospital • King Fahad Armed Forces Hospital • King Fahad General Hospital • King Faisal Specialist Hospital & Research Center **Dahran** • Air Base Hospital **Dammam** • Dammam Medical Complex • King Fahad Specialist Hospital **Al Ahsa** • King Abdulaziz Medical City **Al Hafof** • King Fahad Hospital • King Fahad Military Medical Complex **Al Khobar** • King Fahad University Hospital **Al Qatif** • Qatif Central Hospital **Al Madinah** • King Fahad General Hospital **Tabuk** • North West Armed Forces Hospital **AlBaha** • King Fahad Hospital **Abha** • Asir Central Hospital • Southern Region Armed Forces Hospital **Jazan** • King Fahad Central Hospital **Najran** • King Khalid Hospital **Kingdom of Bahrain** • Bahrain Royal Medical Services of Bahrain Defense Force • Salmaniya Medical Complex
Please refer to SCFHS web site link below for updated information on the Orthopedic Training Program *http://www.scfhs.org.sa/en/MESPS/TrainingProgs/Pages/default.aspx*	

2.15 Otorhinolaryngology

Expert	Students
Samir M. A. Bawazir Head and Neck Surgeon Department of Otorhinolaryngology Prince Sultan Military Medical City Riyadh, Saudi Arabia	Amnaa Baljoun Adeebah Albadran Mawdah Alqabbani

Introduction

Otorhinolaryngology (ORL) or Ear-Nose-Throat (ENT) surgery is an interesting and challenging specialty. As the name implies, the scope of practice covers all the diseases affecting the head and neck other than the brain and eye. Of the five senses, humans are blessed with to communicate with the environment, the ORL Specialty deals with three. The ears, the nose, and the throat are inter connected organs, therefore, any problem affecting one will invariably affect the other.

The Specialty by an Expert

The residency training in ORL is a five year program. During the training program the residents will rotate between all the hospitals in the province accredited for training.

The program starts with three month rotations during the first year including General Surgery, Neurosurgery, Plastic surgery and the ICU. The purpose of these rotations is to train the resident in the application of basic sciences, history taking skills, fluid balance management, coagulation pathways, wound healing, handling a trauma patient, and development of basic surgical skills. The next four years are spent exclusively in ORL service. The second and third years (R2 and R3) are as a junior resident and the fourth and fifth years (R4 and R5) as senior residents. Promotion to the next year of training in the program depends upon successfully passing the written and oral exams conducted at the end of each academic year. The resident can sit for the Saudi Board Part I Exam at the end of the second year. However, it is obligatory to pass it for promotion to R4. During the first two years of training, the junior residents are responsible for clerking patients, ward rounds, and attending operating sessions and outpatient clinics under the supervision of consultants.

During training the residents will be exposed to all fields of ORL starting from basic knowledge, such as for tonsillitis diagnosis and management, to more complex problems like complicated airway diseases, the surgical management of deafness, and skull base tumors.

The Saudi Board of Otorhinolaryngology and Head and Neck Surgery (ORL / H&NS) is affiliated with a King Saud University fellowship. Hence, at the end of the training the residents can sit both exams and can have a double certification.

The ORL / H&NS surgeon can have a relaxed life style if he or she is working in a secondary hospitals because most of the cases are simple and require only outpatient clinic follow-up. However, the ORL / H&N surgeons' life might be stressful if working in a tertiary care center because he/she will deal with advanced cases such as airway diseases, sinus pathologies with intracranial involvement, or head and neck tumors. Despite that, the social life of the ORL specialist is not usually affected by the workload and there is still enough time for hobbies and family life. ORL / H&N surgeons are always needed in private practice.

The Saudi council is running two post-residency fellowship programs. They are: Otology / Neurotology and Pediatric ORL / H&NS.

Other available advanced subspecialty training programs are:
Rhinology, Head and Neck, Facioplastic, Phonetics, Allergy, and Skull Base Surgery.

Residency Program

<table>
<tr><td>Specialty</td><td colspan="2">ORL / ENT</td></tr>
<tr><td>Duration</td><td colspan="2">5 years</td></tr>
<tr><td rowspan="9">Rotations</td><td rowspan="7">R1</td><td>3 Months General Surgery</td></tr>
<tr><td>3 Months Critical Care</td></tr>
<tr><td>2 Months Plastic Surgery</td></tr>
<tr><td>1 Month Neurosurgery</td></tr>
<tr><td>1 Month Emergency Care</td></tr>
<tr><td>1 Month Pediatric Surgery</td></tr>
<tr><td>1 Month Annual Leave</td></tr>
<tr><td>R2</td><td rowspan="4">Otorhinolaryngology Specialties
&
Head and Neck Specialty</td></tr>
<tr><td>R3</td></tr>
<tr><td>R4</td></tr>
<tr><td>R5</td></tr>
<tr><td>Working hours per day</td><td colspan="2">8</td></tr>
<tr><td>Clinics per week</td><td colspan="2">1 - 2</td></tr>
<tr><td>Number of on-calls per month</td><td colspan="2">5 - 7</td></tr>
<tr><td>Competition</td><td colspan="2">Very competitive</td></tr>
<tr><td>Yearly applicants</td><td colspan="2">Variable, the last 2 years, had applicants from outside the Kingdom
65 applicants (2012)
85 applicants (2013)</td></tr>
</table>

Yearly acceptance	Between 32 and 35
Yearly graduates	Between 17 and 25
Hospitals that offer the program	• King Abdulaziz University Hospital • Prince Sultan Military Medical City • King Abdulaziz Medical City • King Fahad Medical City • King Faisal Specialty Hospital & Research Center • King Saud Medical City • Security Forces Hospital
Please refer to SCFHS web site link below for updated information on The ENT Training Program *http://www.scfhs.org.sa/en/MESPS/TrainingProgs/TrainingProgsStatement/NoseEarSurg/Pages/default.aspx*	

2.16 Pathology

Expert	Students
Hindi N Al-Hindi Department of Pathology King Faisal Specialist Hospital & Research Center Riyadh, Saudi Arabia	Amnaa Baljoun Adeebah Albadran Mawdah Alqabbani

Introduction

The word pathology is derivative of two Greek words "Pathos" – Suffering and "Logia" – The study of. It is the branch of medicine which covers the study of any disease process by looking at its basic aspects i.e. the etiology (cause), pathogenesis (how a disease develops and progresses), the morphology (structural changes at the cellular level due to disease) and clinical manifestations (the effects of disease on the body).

Major advances took place in the 19th century with the introduction of the microscope by Rudolph Virchow to study tissues and cells. Since pathology has minimal physical contact with patients, questions may arise questioning where it stands in daily clinical practice? What is the need of a pathologist and pathology department in any hospital? Pathology is the core of the investigative approach to a patient's management. That is why Pathology is considered as a basic science as well as a clinical specialty, often being referred to as the Department of Pathology and Laboratory Medicine. As the clinician deals with the patients, the pathologists deal with patient's tissues, cells, and body fluids to investigate the disease. Physicians can never be 100% certain about a diagnosis until they have test results to support it. This is where the pathologist steps in to help in establishing an accurate diagnosis by processing and studying the tissues and the body fluids of the patient and also monitoring the progression or resolution of a chronic disease.

The Pathology residency program in Saudi Arabia comprises of five years of training. The programs are very competitive due to availability of a limited number of training positions. The entry process into the program includes a written examination and a personal interview. The training involves rotations through various hospitals. During the training residents learn the art of gross dissection and selection of the right sections of surgical specimens for microscopic examination as well as processing these specimens and various body fluids through the use of conventional and ancillary investigative tools like histochemistry (special stains), immunohistochemistry, flow cytometry, electron microscopy, and molecular diagnostics such as fluorescence in-situ hybridization (FISH), and interpret the results under supervision of the consultants. Promotion to the next level of training depends on passing the yearly promotion exams and satisfactory evaluation.

The pathology residents are rarely needed to be around after working hours and

on weekends. On-calls are not required. This is in contrast with North American programs where pathology residents cover night and weekend on-calls.

Residents are encouraged to participate in research projects throughout their training. There are plenty of opportunities available in different institutions.

The Specialty by an Expert

Pathology is divided into two major branches:
Anatomic pathology, considered as a clinical discipline and Clinical pathology.

Anatomic pathology also referred to as Histopathology as it is about examination of histological tissue sections obtained from biopsies, fine needle aspiration (FNA), surgical resections, or at autopsy. Anatomic pathology involves gross and microscopic examination, immunohistochemistry stains, and / or the use of electron microscopy. Clinical pathology on the other hand deals with the body fluids, mainly blood, and through appropriate tests reaching the diagnosis. Clinical pathology is further subdivided into disciplines of Clinical Biochemistry, Hematopathology, Clinical Microbiology, Immunology, and Molecular Pathology. In many countries both anatomic and clinical pathology are practiced together and are known as General Pathology.

Doctors who are seeking a career as pathologists must realize that it is a very diverse and challenging specialty. There should be a solid knowledge of the basic medical sciences of Anatomy, Histology, and Biochemistry. They also need to be good observers and meticulous individuals. Although they have very limited patient contact other than the FNA clinic, their frequent interaction with the clinical colleagues demands good communicators skills and facilitators of knowledge. Their reports have to be clear, concise, and adequately detailed because they will have a critical impact on the management of patients. For example, a radical surgical resection and the use of toxic chemotherapeutic drugs can only be justified if the diagnosis of cancer is accurate.

Pathologists generally enjoy a relaxed lifestyle. Actually, the specialty is more about mental effort than physical exertion. Exceptions to this, however, do exist. One of them is processing the serial specimens of a diseased tissue (frozen section) coming from the operating room for rapid diagnosis while the surgery is ongoing, that may alter the intraoperative management.

One of the issues related to life style is the occupational hazard of being in physical contact with potentially infected and dangerous specimens. That is why all specimen processing is done under cover of fume cupboards with protective equipment.

Currently there is a Saudi Specialty Certification available in Anatomic Pathology only through a Program that was established in 2007. However, King Saud University and Dammam (formerly King Faisal) University offer training in some disciplines of Clinical Pathology in addition to Histopathology.

After completion of the residency training period, advanced subspecialty training is available largely outside the Kingdom. Fellowship programs in Anatomic Pathology are being considered at King Faisal Specialist Hospital & Research center, Riyadh. Pathology training in major Saudi hospitals is recognized by the Royal College of Pathologists in the UK and Australia.

Residency Program

Specialty	Pathology
Duration	5-years
Rotation	Every 3 months • Renal, Skin • Neurology, GI • Cytology
Working hours per day	8
Clinic per day	4 days in a week (Clinical Pathology)
Number of on-calls per month	None
Hospitals that offer the program	Prince Sultan Military Medical City Riyadh King Abdulaziz Medical City, Riyadh Security Forces Hospital, Riyadh King Faisal Specialized Hospital, Riyadh King Khalid University Hospital, Riyadh
Competition:	Average
Yearly applicants	**Eastern Province** 21 **Western Provence** 28 **Central Province** 31
Yearly acceptance	**Eastern Province** 2 **Western Provence** 4 **Central Province** 9
Please refer to SCFHS web site link below for updated information on the Pathology Training Program *http://www.scfhs.org.sa/en/MESPS/TrainingProgs/TrainingProgsStatement/Pathology/Pages/default.aspx*	

2.17 Pediatrics

Expert	Students
Abdulmoein Eid Al-Agha Department of Pediatric Endocrinology King Faisal Specialist Hospital & Research Center Riyadh, Saudi Arabia	Ohood Alamer Maryah Ahmed Asker Asma Abdullah Mohammed Waleed Alshakha

Introduction

The specialty of Pediatrics is considered a medical specialty that delivers care to infants, children, and adolescents. Physicians in this field are called Pediatricians. Pediatricians provide preventive health maintenance for healthy children and medical care for those who are seriously or chronically ill. They are experts in physical and social health care as well as emotional and behavioral assessment. They can be powerful advocates for troubled children and adolescents.

A pediatrician is responsible for the care of children from the moment they are born until they reach young adulthood. This field gives the chance to watch children as they grow up. The age factor may differ from one community or country to another; for instance, in the Western countries; childhood is defined up to the age of 18 years, however, in Saudi Arabia, it is mostly defined up to the age of 14 years.

Pediatricians work to reduce infant and child mortality, control infectious disease, foster healthy lifestyles, and ease the day-to-day difficulties affecting children and adolescents with chronic conditions. Pediatricians are often the first and best advocates for children who suffer from increasingly prevalent psychosocial morbidities.

Following graduation from medical school, a resident entering Pediatrics will need to complete four years of education in a Pediatric Residency Program. These four-year programs include mandatory rotations in General Pediatrics, Ambulatory Pediatrics, Primary Care Pediatrics, Emergency Medicine, Neonatal Care Unit, Pediatric Intensive Care Unit, and rotations in sub-specialty services, such as Pediatric Cardiology, Neurology, Endocrinology etc. An additional 2-3 years of training are required to be certified as a sub-specialist.

The Specialty by an Expert

This specialty consists of four pillars: Growth, Nutrition, Vaccination, and developmental mile stones. The field requires a knowledge base in physiology, embryology, and biochemistry. In addition to history taking and physical examinations skills, the most important general ability that is needed in Pediatrics is the skill to communicate with a sick neonate, infant, young child or adolescent. As each age range has certain behaviors that are different.

History taking and physical examination skills are essentials for a pediatrician. A Pediatric resident in training will be working with both children and their families to provide information, education, and management which will require patience and dedication.

Those who wish to become a Pediatrician are expected to have/acquire the following personal characteristics and skills:

1. Energetic, and a sense of humor and fun
2. Emotional stability and able to make decisions in emergency situations.
3. Good self-motivation and the willingness to study throughout their careers to keep up to date with the advances in pediatric medicine.
4. A sense of caring, empathy, and dedication to patient care.
5. Patience, cool headedness, and a good bedside clinical sense.
6. Highly developed manual skills, especially for procedures with young children and infants.
7. Clear and appropriate communication skills.

Most pediatricians will work in a child-friendly environment, filled with bright colors, toys, and fun activities. A sense of humor and fun is allowed in the day-to-day job, in contrast to the more serious appearance and tone that adult patients are accustomed to. The main part of resident training will be in hospital wards and clinics. The Outpatient Clinic provides services to patients who require routine care. Any child with an acute illness should be seen in the Emergency Room. Most of the patients are considered long-term patients, although usually five new patients could be seen in each clinic. Walk-in patients are allowed to visit any time, in order to avoid delaying treatment.

Pediatricians often work with a wide variety of patients, nurses, and other doctors. Therefore, professional communication skills should be well developed. The support of other specialties such as Family Medicine, Surgery, Urology, Radiology, Orthopedics, Neurology, Radiation Oncology, Optometry, Podiatry, and Sleep Medicine are important to obtain good management outcomes and meet the health needs of children and adolescents. For example, if a child has acute abdominal pain, involving a surgeon is necessary.

This specialty has a lifestyle of its own with issues and considerations that may keep the pediatrician wake up all night working. This is not to say that a Pediatrician will have a happy and balanced life easily, we do not want you to misjudge the term “lifestyle” as such. On the contrary, it may not be an easy balance at first, but with time, you will learn how to manage your time efficiently. In other words, you will learn to acquire "Balance life skills".

Because the typical private practice of a Pediatrician is spent mostly in the clinics, with a small percentage being in the hospital, a Pediatricians has more normal working hours than an Emergency Doctor does, and so can have a better work-life balance.

Generally, Pediatricians are satisfied with the balance between care for their patients and their personal time. Private practice is considered busy because of

parental anxiety when children become sick. However, the financial returns may not be as high as it is in other specialties.

The specialty of Pediatrics has many opportunities which cover the following: health supervision, anticipatory guidance, monitoring physical, psychosocial growth and development, diagnosis and treatment of acute and chronic disorders, management of serious and life-threatening illnesses, referral of complex conditions, Consultative partnerships, and Community based activities (i.e. sports, schools, etc.).

The working hours during residency training are usually between 08:00 am to 05:00 pm (depends on the institution). On-calls will range from 6-8 duties per month, and are usually 24 hours in-hospital on-call. A pediatric resident should have the ability to survive the pressures and long hours of the practice and medical education.

At the end of each residency training year, a promotion exam will be taken by the residents, which includes both a written and clinical component, in addition to the monthly clinical evaluations. Throughout the training, a Procedure Log Book of all basic procedures should be completed. This system ensures sufficient experience with and skills of different procedures required by the resident, such as how to perform a tracheal intubation, do a lumbar puncture, perform intravenous/intra-arterial catheterization, neonatal and paediatric cardio-pulmonary resuscitation etc.

Because the specialty deals with young children and infants, becoming too involved or emotionally attached to a patient may be stressful. A pediatrician may not always be able to help children and may find it difficult to cope for example with children with neurological diseases such as cerebral palsy. Watching children become ill, suffer, or even die is difficult and stressful.

Pediatric Subspecialties

Most Subspecialty training requires a 2-3 year post-residency fellowship. Pediatric Neurology and Psychiatry require two years of General Pediatric training followed by a three year fellowship.

Pediatric subspecialties include the following: Adolescent Medicine, Allergy/Immunology, Cardiology, Clinical Genetics, Critical Care Medicine, Dermatology, Developmental Medicine, Emergency Medicine, Endocrinology, Gastroenterology, Hematology/Oncology, Infectious Diseases, Neonatology, Nephrology, Pulmonology, Rheumatology, Metabolic diseases, and Neurology.

Residency Program

Specialty	Pediatrics	
Duration	4years	
Rotations	**R1**	General Pediatric Emergency Medicine Primary Care Well-baby Clinic Simulation Courses
	R2	General Pediatric Emergency Medicine Cardiology Neurology Pediatric Intensive Care (PICU) Neonatal Intensive Care Unit (NICU) Ambulatory Care
	R3	General Pediatric Emergency Medicine Pediatric Intensive Care (PICU) Neonatal Intensive Care Unit (NICU) Gastroenterology Endocrinology Infectious disease Elective
	R4	General Pediatric Nephrology Allergy Immunology Metabolic Genetic Pulmonology Elective Pediatric Intensive Care (PICU) Neonatal Intensive Care Unit (NICU)
Working hour per day	8 - 9	
Clinics per week	5 General Pediatrics Clinics 1 - 2 Subspecialty Clinics	
Number of on-calls per month	6-7	
Competition	Very Competitive	
Yearly applicants	485	
Yearly acceptance	228	
Yearly graduates	91	
Hospitals that offer the program	• Al Yamamah Hospital • King Abdulaziz Medical City in Riyadh • King Fahad Medical City • King Faisal Specialist Hospital & Research Center • King Khalid University Hospital	

	• King Saud Medical City • Prince Sultan Military Medical City • Security Forces Hospital • Maternity & Children Hospital Buraidah • Al Hada Armed Forces Hospital • Al Noor Specialist Hospital in Makkah • King Abdulaziz Hospital & Oncology Center • King Abdulaziz Medical City in Jeddah • King Abdulaziz University Hospital • King Fahad Armed Forces Hospital in Jeddah • Maternity & Children Hospital in Jeddah • Maternity & Children Hospital in Makkah • King Abdulaziz Hospital in Al Ahsa • King Fahad University Hospital in Al Khobar • Maternity & Children Hosital in Al Ahsa • Maternity & Children Hospital in Al Dammam • Qatif Central Hospital • King Fahad Specialist Hospital in Al Dammam • Maternity & Children Hospital in Al Madinah • North West Armed Forces Hospital • King Fahad Hospital in Al Baha • Asir Central Hospital in Abha • Southern Region Armed Forces Hospital • King Fahad Central Hospital in Jazan
Please refer to SCFHS web site link below for updated information on the Pediatric Training Program *http://www.scfhs.org.sa/en/MESPS/TrainingProgs/TrainingProgsStatement/Pediatrics/Pages/ProgBook.aspx*	

2.18 Physical Medicine and Rehabilitation

Expert	Students
Maher Al-Jadid Physiatrist Division Department of Neurosciences Prince Sultan Military Medical City Riyadh, Saudi Arabia	Mohammed Al Shakha Ohood Alamer Maryah Ahmed Asker

Introduction

Physical Medicine and Rehabilitation is a specialty that helps to reduce the burden of disabilities. It is defined as an independent medical specialty concerned with the promotion of physical and cognitive function, activities (including behavior), participation (including quality of life), and the modification of personal and environmental factors. Thus, it is responsible for the prevention, diagnosis, treatment and rehabilitation of people with disabling medical conditions and co-morbidities across all ages.

In recent years, health care has gone through very significant change, which has led to higher expectations and an increased demand for high quality medical care. It is imperative that medical students have access to clear, factual and concise information about the specialty of Physical Medicine and Rehabilitation to assist them in their career choices.

The Specialty by an Expert

Physical Medicine and Rehabilitation (PM&R), Also known as Physiatry is the medical specialty whose goal is to enhance and restore functional ability and quality of life to those with physical impairment or disabilities. This normally involves helping to empower individuals to achieve the levels and pattern of autonomy and independence that they wish to have, including participation in vocational, social, and recreational activities, consistent with their human rights. PM&R is concerned with prevention, diagnosing, and treatment of a variety of neurologic, musculoskeletal and cardiopulmonary disorders through rehabilitation programs. A typical adult patient is one with conditions such as stroke, spinal cord injury, traumatic brain injury, burn injuries, post chemotherapy and cancer patients, sports' injuries, multiple sclerosis, and amyotrophic lateral sclerosis, while for children, it includes cerebral palsy, spina bifida, muscular dystrophy, and postoperative orthopedic care.

In recent years, the field of PM&R has also attracted many medical school graduates who are interested in Sports' Medicine. It enables them to work with trained athletes and dancers. Sports' Medicine doctors can become athletic team physicians. PM&R specialists are trained in dynamic interventional techniques that can enhance balance and proprioception, increasing the range of motion and strength of the affected parts of the body. The goal of care for the professional

athlete and the performer are obviously different than for a patient who has moderate to severe disability. In these cases, the physiatrist is focused on enhancing performance or is providing treatment of injuries due to repetitive movements.

Surprisingly, many students complete several years of medical school before they finally know about "PM&R". Physical Medicine and Rehabilitation is based on the philosophy that addressing physical and cognitive impairments due to injury and disease will decrease the disability.

PM&R specialists routinely perform inpatient and outpatient musculoskeletal and neuromuscular diagnoses and treatments that emphasize on function and rehabilitation. Most practices are a combination of consultations, inpatient, and outpatient services. In the past, PM&R was more of an "academic" specialty. Recent there are equally as many doctors practicing PM&R in private practice as there are in community settings.

Physical Medicine and Rehabilitation specialists treat patients of all ages afflicted with painful and function-limiting musculoskeletal disorders of the spine, peripheral joints, soft tissues such as sprains/strains, disc herniation, rheumatologic conditions, and athletic injuries. PM&R specialists also diagnose and treat degenerative, developmental, acquired, and traumatic neuromuscular conditions. It is a unique blend of Orthopedics, Neurology, and Rheumatology. This multidisciplinary training makes the PM&R physician the most qualified specialist to lead the team of medical specialists and rehabilitation therapists involved in a patient's rehabilitative care.

PM&R residents are expected to gain experiences in the management of hospitalized and ambulatory patients. Residents are expected to be able to diagnose and manage common medical problems, as well as initiate treatment of acute complications such as deep-venous thrombosis, pulmonary embolism, and infections.

Physical Medicine and Rehabilitation Subspecialties

- Spinal Cord Injury Medicine
- Sports and Musculoskeletal Medicine
- Traumatic Brain Injury
- Pediatric Rehabilitation
- Research (Postdoctoral Fellowships in Neuropsychology & Neuroscience)
- Research (Fellowships in Medical Rehabilitation Outcomes Research)
- Stroke
- Pain Medicine
- Cancer Rehabilitation
- Cardiac Rehabilitation
- Pediatric Rehabilitation
- Neuromuscular medicine

Compared to other medical specialties, the lifestyle of PM&R physiatrists is excellent. Because of the nature of the problems that the patients have, "on-call"

is not as intrusive as for some other specialties. Many physiatrists have found that they are able to work on a part-time basis and make time for their family. Conversely, many physiatrists spend long hours providing patient care. The demands of a practice will vary from one location to another. Overall, the quality of life of a physiatrist is excellent.

Residency Program

Specialty	Physical Medicine & Rehabilitation	
Duration	4 years	
Rotations	**R1**	Required Physical Medicine & Rehabilitation Related Rotations • Five months in Internal Medicine, (two months in General and three months are selected from the following subspecialties: Geriatrics, Nephrology, Cardiology, Endocrine, Respiratory, Infectious disease, or Intensive Care Unit) • Two months in different surgical rotations selected from the following: Otorhinolaryngology, General Surgery, Plastic surgery, Urology • Three months in Neurology • Two months in Electromyography and Nerve conduction studies • Three months in Rheumatology • Two months in Orthopedics • One month in Spine Surgery • One month in Neurosurgery • One month in Radiology • One month in Psychiatry • Required Core Physical Medicine & Rehabilitation Rotations • Three months in Stroke Rehabilitation • Three months in Orthotics/Prosthetics and Amputee Rehabilitation • Three months in Traumatic Brain Injury Rehabilitation • Three months in Pediatric Rehabilitation • Three months in Spinal Cord Injury Rehabilitation • Two months in Musculoskeletal/Neuro-musculoskeletal Disorders • One month in Cardiac and Respiratory Rehabilitation
	R2	
	R3	
	R4	
Working hours per day	9	
Clinic per week	5-10	
Number of on-calls per month	10	
Competition	Average	

Yearly applicants	45
Yearly acceptance	10
Yearly graduates	4
Hospitals that offer the program	• King Abdulaziz Medical City in Riyadh • King Fahad Medical City • Prince Sultan Military Medical City
Please refer to SCFHS web site link below for updated information on the Physical Medicine and Rehabilitation Training Program *http://www.scfhs.org.sa/en/MESPS/TrainingProgs/TrainingProgsStatement/Rehabilitation/Pages/default.aspx*	

2.19 Plastic Surgery

Expert	Students
Abdullah M. Alnamlah Division of Plastic Surgery King Abdulaziz Medical City Riyadh, Saudi Arabia	Alwaleed Abdulaziz Aljaser Asma Ibrahim AbdullaTurki Naif

Introduction

The word plastic is a derivative of the Greek word "plastikos" translated as "to mold" or "give form". Plastic surgery is a surgical specialty which deals with reconstruction of normal or near normal anatomy for congenital or disfigured body parts to restore their function and structural function. It is generally divided into reconstructive and aesthetic surgery. Most of the procedures are not purely cosmetic, which most people still think what plastic surgery is all about.

The residency training in plastic surgery is a six year rotation based program. The first two years, the residents rotate through General surgery, Orthopedics, and critical care. These rotations are objectively oriented and are relevant to the expertise necessary for a plastic surgeon to manage their patient as a whole. Of the remaining four years the residents will be working only in plastic surgery, two years as a junior and two years as a senior residents. During these years workload includes coverage of inpatient care, outpatient clinics, and operating rooms for elective and emergency procedures. Responsibilities increase with training level and are directed towards making clinical judgments, decision making, and performance of surgical procedures in various clinical situations. Promotion in the program is decided on the basis of a yearly promotion exam and in-training assessment.

The Specialty by an Expert

The trainees of plastic surgery are expected to have a very sound knowledge of anatomy. This includes a thorough understanding of the muscular, vascular, and neurological structures. They need to possess the talent of being imaginative to visualize the outcome of surgery as of how it is going to positively affect the shape without compromising the function and vice versa. They also need to understand the psychosocial aspects of patient care as it deals with all age groups, both genders, and other medical specialties. The patients are a mixture of those having short and long term problems and some of them need extra surgical care in terms of emotional support.

The routine day is 10 hours. It starts at 7 am and finishes at 5 pm. The on call day is a 24 hour cover.

In short, a plastic surgeon has to be academically competent and must demonstrate the physical and mental strength to endure long operating hours.

He or she needs to understand the emotional status of the patient and to deal with it in an effective way.

Upon successful completion of training, a plastic surgeon can decide between hospital based and private practice or both. The private sector has a lot of scope in aesthetic and hand surgery. It is a suitable specialty for both genders, keeping in mind the cultural values of the region, a female plastic surgeon can be very successful with female patients.

Plastic Surgery Subspecialties

Hand and upper limb
It deals with the correction of deformities and structural abnormalities involving the soft tissues, bones, nerves, and blood vessels in both adult and pediatric age groups.

Craniofacial
It deals with fractures and deformities of the adult face and skull.

Pediatric Plastic Surgery
It is concerned with the management of pediatric congenital abnormalities such as cleft lip and palate, brachial plexus injuries, congenital deformities of the hand, craniosynostosis, and other craniofacial abnormalities.

Microvascular
It involves reconstruction through micro vascular anastomosis.

Residency Program

Specialty	**Plastic Surgery**	
Duration	6 years	
Rotations	**R1&R2**	The first 2 years (core surgical years) ***Mandatory Rotations*** • 3 months Accidents and Emergencies • 3 months Intensive Care Unit • 3 months Orthopedic Surgery • 3 months Plastic Surgery • 6 months General Surgery ***Elective Rotations*** *The resident can choose any two rotations of the following:* • 3 months Vascular Surgery • 3 months Oral Surgery • 3 months Pediatric Surgery • 3 months ENT • 3 months Neurosurgery

	R3, R4, R5 and R6	Four (4) years Plastic Surgery R3 and R4 junior resident rotation in Plastics R5 and R6 senior resident rotation in Plastic Surgery
Working hours per day	8	
Clinic per week	1 - 2	
Number of on-calls per month	6-7	
Competition	Very Competitive	
Yearly applicants	60 - 70	
Yearly acceptance	10 - 13	
Yearly graduates	2 - 4	
Hospitals that offer the program	• King Abdulaziz University Hospital • Prince Sultan Military Medical City • King Abdulaziz Medical City • King Fahad Medical City • King Faisal Specialty Hospital & Research Center • King Saud Medical City • Security Forces Hospital	
Please refer to SCFHS web site link below for updated information on the Plastic Surgery Training Program *http://www.scfhs.org.sa/en/MESPS/TrainingProgs/TrainingProgsStatement/PlasticSurg/Pages/default.aspx*		

2.20 Psychiatry

Expert	Students
Fahad Alosaimi Psychosomatic Medicine & Psychiatry King Khalid University Hospital Riyadh, Saudi Arabia	Nora Alrowaibah Waleed Alshakha Ohood Alamer Ahmad Askar

Introduction

Psychiatry is one of the specialties that are needed throughout our lives. It is a branch of medicine that deals with the diagnosis, treatment, and prevention of mental and emotional disorders. Its name, which literally means "medical treatment of the soul", was given to it in 1808. Those specialized are called psychiatrists. Their basic scientific backgrounds should consist of Biology, Physiology, Genetics, Anatomy, Biochemistry, Pharmacology, Medicine, Medical ethics, Psychology, and Neuroscience. Having an interest listening to patients, getting to knowing them in depth, understanding and empathizing with them are some of the characteristics of a psychiatrist. Added to which, is good teamwork skills. Psychiatrists work in multidisciplinary teams that consist of psychologists, psychiatric nurses, social workers, and occupational therapists. Some of them also get to communicate with almost every department at the hospital; for example, a liaison psychiatrist would see patients admitted to general medical wards at the request of the treating medical or surgical consultant or team.

The Specialty by an Expert

Psychiatry is one of the most varied, interesting, and rewarding specialties in medicine. Every day can be different and every patient is unique. Psychiatry offers fast career progression and excellent job opportunities. As a career, it can be particularly appealing for those interested in flexible (part-time) work. There are so many different ways to practice Psychiatry (outpatient, inpatient, ER, medication management, therapy, academic, private practice, research, writing, teaching, etc.). A psychiatrist can take the part that interests him/her the most, or he can practice in multiple modalities at once.

Psychiatrists do not work with their hands, but they are very analytical, intellectual, and rational. They also have to be creative and imaginative. The changes that they can do to people's lives in reducing their degree of disability and impairment are substantial. On the other hand, this profession can be emotionally tiring. By treating the person's "self" and personality, psychiatrists have both privilege and frustration because they often do this while sacrificing their own "self" and personality.

The residency training in Psychiatry consists of a four year planned training program, in which a resident would be constantly evaluated to be promoted from one level to the next. In addition to the overall annual evaluation, being promoted to a senior resident (R3 and R4) also requires passing the Saudi Board

Part I Examination. Candidates who pass the Saudi Board Part II Exam are awarded the certificate of the Saudi Board of Psychiatry.

Typical workday hours for a resident are 8 to 9 on average. The workload and the clinical hours are not the same for every psychiatrist because many factors contribute to that, such as the place chosen to work. On-call duty is once every three of four nights on average, with a minimum of five on-calls every month. The on-call period is 24 hours, except when working in an Emergency Department, with regular duty on the days immediately following the night on-call. This was specified by the Saudi Board of Psychiatry to ensure that the residents give continuity of care to their patients.

Being able to empathize with patients and gain insight into their concerns, difficulties, and sufferings is crucial to the success of a psychiatrist. A psychiatrist should not act as a personal friend of the patient or have any personal stake in their lives. Nevertheless, he / she must be able to relate to the patient in the same way that a friend would, and to offer support while still maintaining a professional detachment. Psychiatric patients are neither more frequently one gender or the other, nor have are limited to one age group. They could be males, females, children, adolescents, adults, or elders. The majority of psychiatric patient visit types depend on the place that the psychiatrist works, for example, if he works at a tertiary health care center, his patients most probably would be more chronic or difficult cases that a primary or a secondary health care center could not handle, which of course does not mean that all psychiatry patients are chronic cases.

Skills that a Psychiatry applicant needs to have are*:*

1. Active listening: Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.
2. Social Perceptiveness: Being aware of others' reactions and understanding why they react the way that they do.
3. Good communication skills: Talking to others to convey information effectively.
4. Critical thinking: Using logical reasoning to identify the strengths and weaknesses of alternative solutions, conclusions, or approaches to problems.
5. Active Learning: Understanding the implications of new information for both current and future problem-solving and decision-making.
6. Complex problem solving: Identifying complex problems and reviewing related information to develop, evaluate options, and implement solutions.
7. Time Management: Managing one's own time and the time of others.

Psychiatry Subspecialties

General Adult Psychiatry

This branch of psychiatry deals with patients aged 14 to 65 years with a wide variety of mental health needs and a range of illnesses including depression,

mania, schizophrenia, anxiety disorders, and as well as personality disorders. This specialty gives exciting opportunities to work in an assortment of settings including thye community, district and general hospitals, university hospitals, or a combination of these.

Addiction Psychiatry

Focuses on evaluating, diagnosing and treating individuals addicted to legal and illegal drugs, gambling, alcohol, food, and other impulse control disorders. An addiction psychiatrist need to have skills in prescribing maintenance treatment of withdrawal states, managing physical and mental illness in patients with addiction, and providing psychological treatment. He also has the ability to work with professionals from a range of disciplines including courts, prisons, and housing. The development of services and advocacy for these groups of patients are the psychiatrist's areas of responsibility.

Child and Adolescent Psychiatry

This branch of psychiatry specializes in the study, diagnosis, treatment and prevention of psychopathological disorders of children, teenagers, and their families. The psychiatrist would be concerned with the intellectual, emotional, and behavioral problems of children from birth to school-leaving age. It is a stimulating and fulfilling area where successful treatment can affect an entire lifetime. A variety of treatment are used, ranging from individual psychotherapy to behavioral and family therapy. It is an interesting prospect for developing a close working relationship with those children and families concerned.

Forensic Psychiatry

This is the interface between the law and Psychiatry. It is also the care of offenders with mental health problems. Special skills are needed when assessing behavioral abnormalities, understanding and using security as a means of control and treatment, writing reports for courts and lawyers, and giving evidence in courts. It could be practiced in general, specialized hospitals, and prisons. The Forensic Psychiatrist works in the courts to assist in clarifying medico-legal problems, such as criminal responsibility, fitness to plead, and the management of offenders with mental health needs.

Geriatric Psychiatry

This is a branch of Psychiatry that deals with the study, prevention, and treatment of mental disorders in elderly patients. It is a specialty that is focused on the mental health needs of those over the age of 65 years. A major part of this job involves the pharmacological and psycho-social aspects of dealing with patients with cognitive impairment (mainly dementia but also delirium). It also has the possibility of working with a large number of different professionals (including community psychiatric nurses, social workers, psychologists, occupational therapists, physiotherapists, geriatricians, and neurologists) in a wide range of settings.

Consultation-Liaison Psychiatry

This branch of Psychiatry specializes in the interface between other medical and

surgical specialties and Psychiatry. It deals with patients in general medical hospitals; the patients are usually inpatients, outpatients, or attendees at the Emergency Department. Referrals are made when the treating medical team has questions about a patient's mental health, or how that patient's mental health is affecting his or her care and treatment. Those who specialize in this branch have expertise in complex co-morbidities (of physical and mental health). They understand and apply various psychological theories and therapies in the management of medically unexplained symptoms.

Learning Disability Psychiatry

It is concerned with the prevention, diagnosis, and treatment of mental health problems that occur in people with learning disability. Expertise in related subjects such as pediatrics, neurology, epilepsy, genetics, biochemistry, and psychology is required. It gives excellent opportunities to work in a variety of settings and have close working relationships with patients' families and a large range of professionals including psychologists, nurses, speech, language, occupational therapists and others.

Social and Rehabilitation Psychiatry

It deals with promoting the recovery of people with serious and long-term mental health problems. It includes providing support to families and caretakers to schieve social inclusion. It provides the opportunity to work across diverse settings within a network of support teams which requires expertise in management, leadership, service development, and clinical governance. Application of a more pragmatic view of the interaction of the social (and economic) environment with mental health status is central to the specialty; this includes the impact of stigma and discrimination. It gives an extremely rewarding role maintaining the mental and social wellbeing of patients.

Cross-cultural Psychiatry

A branch of Psychiatry that is concerned with the cultural and ethnic contexts of mental disorders and psychiatric services. It studies psychiatric classifications, formal or informal, as they relate to different cultures.

Military Psychiatry

It covers special aspects of psychiatry and mental disorders within the military context. The military psychiatrist has responsibilities to both the individual and the organization in order to make them efficiently perform their duties.

Academic Psychiatry

It concerns exploration, through research, of the basis for mental illness, its clinical manifestations and treatment. It involves the need to develop research ideas, protocols for their study through testing hypotheses, analyzing and presenting results at conferences and writing scientific papers. It demands taking much time to develop new ideas, contributing to the existing knowledge base upon which evidence-based practice depends, as well as practicing clinical psychiatry within their chosen specialty.

There are many more different specialties in Psychiatry such as Neuropsychiatry, Behavioral Neurology, Community Psychiatry, Biological Psychiatry and Emergency Psychiatry.

There are significant differences between psychiatry and psychology roles as they tend to deal with different types of problems, although there is also a considerable overlap in their work.

Psychology is a discipline that is first and foremost concerned with the normal functioning of the mind. It is the study of people; how they think, how they act, react, and interact. It is concerned with all aspects of behavior and the thoughts, feelings, and motivation underlying it. Psychologists deal with the way the mind works and they are not usually medically qualified. Only a small proportion of people studying psychology will go on to work with patients. Those clinically involved psychologists would treat emotional and mental suffering in patients with behavioral intervention(s). They provide counseling, and conduct psychological testing and assessment.

Psychiatry, on the other hand, is the study of mental disorders and their diagnosis, management and prevention. Psychiatrists are the only mental health specialists licensed to prescribe drugs and to do a full physical examinations. They are also qualified to administer somatic therapies such as electro-convulsive therapy and psychotropic medication. They treat a variety of patients, from children and adolescents with behavior disorders to adults with severe mental illness and prescribe medications.

Residency Program

Specialty	**Psychiatry**	
Duration	4 years	
Rotation	**R1+R2**	General Psychiatry (12 months) Consultation Liaison Psychiatry (6) Neurology (3 months) Drug Abuse & Addiction (3 months) Electives (8 months)
	R3+R4	General Psychiatry (6 months) General Psychiatry Clinic (3 months) Child Psychiatry (6 months) Forensic Psychiatry (1 month)
Working hours per day	8	
Clinic per week	3 - 4	
Number of on-calls per month	4 - 7	
Competition	Very Competitive	
Yearly applicants	**150**	

Yearly acceptance	25
Yearly graduates	16 - 21
Hospitals that offer the Program	**Central Region:** • King Abdulaziz Medical City • King Fahad Medical Complex • Al Amal Hospital • Prince Sultan Military Medical City • King Faisal Specialist Hospital & Research Center • Security Forces Hospital • King Khalid University Hospital **Western Region:** • Jeddah Mental Health • Al Amal Hospital • Taif Mental Health Hospital • King Abdulaziz Medical City • King Faisal Specialist Hospital **Eastern Region:** • King Fahad Military Medical Complex • Al Amal Hospital • King Fahad University Hospital • King Fahad Specialist Hospital
Please refer to SCFHS web site link below for updated information on the Psychiatry Training Program *http://www.scfhs.org.sa/en/MESPS/TrainingProgs/TrainingProgsStatement/Psychiatry/Pages/default.aspx*	

2.21 Radiology

Expert	Students
Maha Nojoom Department of Radiology Prince Sultan Military Medical City Riyadh, Saudi Arabia	Firas Alateeq Saleh Ahmad Alsuwaydani Somaya M Alabaishi

Introduction

Radiology is a branch of medicine that is generally considered as the cornerstone of any hospital, being the linkage with every other specialties. It is concerned with the diagnosis and treatment of diseases with a variety techniques that captures images produced by ionizing and non-ionizing radiation. Because of its great importance in the surgical field it is sometimes considered as a part of it.

Medical Imaging (Radiology) is vital for the management of patients, initial diagnosis, follow-up, and assessment of response to treatment. It includes General Radiography uses plain X -rays, Ultrasonography, Computed Tomography (CT), Magnetic Resonance Imaging (MRI), Nuclear Medicine, Mammography, Angiography, and Interventional procedures.

The Specialty by an Expert

"A good radiologist is a good physician"; a good background knowledge to satisfy different specialties is often needed for General Radiology and for its subspecialties. Therefore, it is important to have all the basic science background, particularly in anatomy and physics. General and manual skills are also required. Imaging services are highly dependent on computer technology which is very important for this specialty.

Radiology is considered the eyes of other clinical services particularly surgery and oncology. Good observations along with integrated evidence-based thinking are required competencies of a radiologist.

Generally, Radiologists are involved in case consultations as well as different subspecialty clinical radiology meetings. At present, no clinics are assigned to Radiologists within the Kingdom of Saudi Arabia.

The scope of the Medical Imaging services is wide, covering Emergency Departments, Intensive Care Units, Internal Medicine, Surgery, Pediatric, Neonatology, Obstetrics and Gynecology, Neurology, Neurosurgery, ENT, Ophthalmology, Orthopedics, Cardiology, Endocrinology, Pulmonology, and many other specialties. A radiologist is often an important part of the multidisciplinary team and can further guide the patient's management process.

Radiologists deal less with patients compared with clinicians in other specialists

and subspecialties. The Doctor-Patient relationship in the medical imaging field is considered a weak one. Although patient interaction is minimal, it is not completely absent, for example, when it comes to procedures such as fluoroscopy, ultrasound guided biopsy, or mammography, interaction with the patient is required.

General radiologists deal with all age groups; however, it may be limited to a certain age group or gender depending on the subspecialty, for instance, Pediatric Radiologists deal only with neonates and children, Women Imagers are in contact only with females, Musculoskeletal Radiologists frequently deal with young patients with sports-related injuries.

Despite the heavy daily workload, the specialty is emotionally comfortable and there is not much stress in this field. The family and social life are considered to be normal for most Radiologists after their working hours. The demand for Radiologists is increasing worldwide and is associated with a good income. Radiologists are always needed in private practice.

With the increasing clinical demands on imaging, resulting from its importance in guiding medical, surgical, and other forms of clinical management, the service is usually a busy one with a relatively heavy working load. A high level of concentration and organized thinking is required for an average of 6-8 hours a day, reporting facing the PACS (Pictures Archiving Computer System), which has recently replaced conventional radiology viewing boxes. This means long hours of sitting and observing images on computer screens.

Radiation hazards remains one of the drawbacks of imaging services. However, as the radiation protection guidelines are applied in almost all hospitals, radiation hazards are becoming less of a concern than before. Radiation dosimeter devices, such as radiation badges, that assess safety from radiation exposure are routinely used by all those working in a radiology department.

The residency training program is usually four years with a yearly promotion exam. Objective Structured Clinical Exams (OSCE) and written exams are also included with the promotion exams, with a final oral exam required for fourth year residents to pass in order to be board certified.

The on-calls are based on the usual system of first on-call being in-house, and second on-calls are mostly covered by residents and/or registrars of different levels, as well as third on-call by consultants. The on-call load is typically of average but can become heavy depending on the training center and/or season. Post on-call residents are allowed the day-off after discussing and reporting all on-call cases to with the consultant.

Radiology Subspecialties

After obtaining the radiology board, there are several medical imaging subspecialties one can select from. They are usually obtained within one to two

years either locally or internationally. Most of the large imaging departments are subdivided into subspecialty sections in order to meet the needs of many other clinical subspecialties, as it is becoming difficult for General Radiologists to cope with the different imaging subspecialties. Examples of the subspecialties include: Pediatric Radiology, Neuroradiology, Cross Sectional and Body Imaging, Musculo-skeletal Radiology, Women's Imaging, Cardiothoracic Imaging, Interventional Radiology, and Nuclear Medicine.

Residency Program

Specialty	**Radiology**	
Duration	4 years	
Rotations	**R1**	Ultrasound, CT, chest, MSK, fluoroscopy, ER
	R2	R1 + Pediatrics, Breast, Nuclear Med., MRI
	R3	R2 + Intervention, Cardiac, Research
	R4	R3 + Positron Emission Tomography (PET), electives
Working hours per day	8 - 9	
Clinic per week	None	
Number of on-calls per month	5 - 7	
Competition	Very competitive	
Yearly applicants	300 - 320	
Yearly acceptance	90 - 100	
Yearly graduates	20 - 30	
Hospitals that offer the program	• King Abdulaziz Medical City in Riyadh • King Fahad Medical City • King Faisal Specialist Hospital & Research Center • King Khalid University Hospital • King Saud Medical City • Prince Sultan Military Medical City • Security Forces Hospital • Al Noor Specialist Hospital in Makkah • King Abdulaziz Medical City in Jeddah • King Abdulaziz University Hospital • King Fahad Armed Forces Hospital in Jeddah • King Fahad General Hospital in Jeddah • King Faisal Specialist Hospital & Research Center in Jeddah • Al Hada Armed Forces Hospital • King Abdulaziz Specialist Hospital in Al Taif • International Medical Center Jeddah • Air Base Hospital in Dhahran • Dammam Medical Complex	

	• King Abdulaziz Hospital in Al Ahsa • King Fahad Military Medical Complex • King Fahad Specialist Hospital in Al Dammam • King Fahad University Hospital in Al Khobar • King Fahad Hospital in Al Hofuf • Qatif Central Hospital • King Fahad General Hospital in Al Madinah • King Fahad Specialist Hospital in Buraydah • Asir Central Hospital in Abha • Southern Region Armed Forces Hospital • Bahrain Royal Medical Services of Bahrain Defence Force • Salmaniya Medical Complex
Please refer to SCFHS web site link below for updated information on the Radiology Training Program *http://www.scfhs.org.sa/en/MESPS/TrainingProgs/TrainingProgsStatement/TecRadMedImag/Pages/default.aspx*	

2.22 Urology

Expert	Students
Adel Al Dayel Department of Urology King Fahad Specialist Hospital Dammam, Saudi Arabia	Firas Alateeq Saleh Ahmad Alsuwaydani Somaya M Alabaishi

Introduction

Urology is a specialty which deals with both male and female urinary tract disorders in all age groups in addition to male reproductive organs through a combined management with surgery and medicine.

The urology residency program is five years. It starts with a nine month rotation through General Surgery followed by three months in the ICU. During the remaining four years the trainees will have periodic rotations between hospitals in the same region or may take a rotation through a program in another region for a limited period of time. A three month rotation in diagnostic radiology is part of the residency training, preferably completed during the first two years.

The Specialty by an Expert

A thorough knowledge of the basic medical sciences is mandatory for a practicing urologist. Anatomy, physiology, pharmacology, and genetics are all needed to be applied for better understanding and management of urological diseases and disorders. A sound knowledge of medicine and proficiency with surgical skills are the hallmark of a good urologist. While urology is a surgical specialty, many of the diseases are managed medically. Typical examples are infertility where treatment is directed towards correction of hormonal imbalances and voiding disturbances which require appropriate medicines.

The current era of minimally invasive procedures dominates urology. Open surgical, laparoscopic, and endourological skills are gradually acquired during by the resident. They also need to master the diagnostic procedures such as ultrasound examination and should be capable of performing trans-rectal ultrasound guided prostate biopsies. Training on other diagnostic procedures like uroflowmetry and urodynamic studies are part of residency training. Residents should be competent to perform these investigations and interpret the results. There is an increasing trend of developing specialized urological units where extracorporeal shock wave lithotripsy as day case procedures are performed. More advanced skills such as micro dissection of the testes, *in vitro* fertilization, and partial nephrectomies as laparoscopic and robotic procedures are acquired in the post residency fellowship training programs.

Daily activities may vary between different hospitals. In general many departments require a morning report at least twice a week to review the

inpatients. In addition, combined meetings relevant to urological care with other departments such as Nephrology and Gynecology are also conducted. Major surgeries like Nephrectomies, Cystectomies, and Urinary diversion procedures are technically demanding and may take all day. At times, it is required by the residents to stay after the working hours to complete inpatient care and on-call residents have to follow postoperative patients closely especially during the first night.

The residents are also involved in educational activities. They are encouraged to be involved in research through writing and publishing scientific papers, and to present them in local or international conferences. The competition for the post residency fellowship training programs is tough, therefore published papers on the CV of the applicant will certainly improve his/her chance of selection.

Considering the sensitive nature of certain diseases, a good doctor-patient relationship is of the utmost importance in urology, which despite development of technological advances, must be possessed by all urologists. Urologists also need to have counselling skills to explain different management options suitable for their patients and to involve them in the decision making. They will need to gain their patient's trust.

The workload in urology varies between different hospitals and subspecialties. Some of them are busier than others. It is possible to have a relaxed life style if one chooses a branch like andrology.

Urology Subspecialties

Endourology
This is an evolving area with increasing use of minimally invasive surgical techniques using laparoscopic and operating robots. Because of the specialized training requirements, it is considered as a complete specialty of its own.

Andrology
This is the management of male infertility and sexual dysfunction, and shares patient management with gynecology and dermatology.

Urogynecology (Female Urology)
This is the management of female voiding dysfunction and incontinence. It is closely related to gynecology and neurology.

Neurourology
Male voiding disturbances are the core of this subspecialty. Treatment options include neuromodulation and bio-feedback mechanisms. The training may be provided parallel with that of urogynecology.

Renal transplantation
Traditionally it has been a part of Urology, but with time it has become an independent specialty along with other organ transplants such as liver and

pancreas. The urologist however needs to have a sound knowledge of transplant related problems and their management.

Pediatric Urology

It deals with the congenital abnormalities of the urinary tract and voiding dysfunction in children. This is the only specialty that has a three year training program available locally.

Residency Program

Specialty	**Urology**	
Duration	5 years	
Rotations	**R1**	9 months • General Surgery 3 months • ICU
	R2	1 month • Radiology 1 month • Pathology 1 month • Gynecology 9 months • Urology
	R3	9 months • Urology 3 months • Renal transplant
	R4 **R5**	Urology
Working hours per day	8	
Clinic per week	2	
Number of on-calls per month	6-7	
Competition	Very competitive	
Yearly applicants	110	
Yearly acceptance	30	
Yearly graduates	15	
Hospitals that offer the program	• King Abdulaziz Medical City in Riyadh • King Fahad Medical City • King Faisal Specialist Hospital & Research Center • King Khalid University Hospital • King Saud Medical Complex • Prince Sultan Military Medical City	

	• Security Forces Hospital • Al Hada Armed Forces Hospital • King Abdulaziz Medical City in Jeddah • King Abdulaziz University Hospital • King Fahad General Hospital in Jeddah • Air Base Hospital in Dhahran • King Abdulaziz Hospital in AlAhsa • King Fahad Hospital in Al Hofuf • King Fahad Military Medical Complex • King Fahad Specialist Hospital in Al Dammam • King Fahad University Hospital in Al Khobar • King Fahad General Hospital in Al Madinah • Ohoud Hospital in Al Madinah • North West Armed Forces Hospital • King Fahad Hospital in Al Baha • Asir Central Hospital in Abha • Southern Region Armed Forces Hospital • King Fahad Central Hospital in Jazan
Please refer to SCFHS web site link below for updated information on the Urology Training Program *http://www.scfhs.org.sa/en/MESPS/TrainingProgs/TrainingProgsStatement/Urology/Pages/default.aspx*	

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