

"The Scenario of Pharm. D. Course"

Pharmacists are higher salaried professionals in US and other foreign countries, where pharmacists are allowed to practice clinical pharmacy. They have statutory system in which patient is diagnosed by physicians or doctors (which are their exact responsibility not to prescribe drugs) and then the patient sent ahead to pharmacist with diagnosis report. Pharmacist is allowed to prescribe the patient and normally who charge more than physician. Average salary in USA is 40-50 or more USD per hour in beginning...

In India also the same course called as "Pharm D" was introduced for the academic year 2008-2009. The Pharmacy Council of India is the apex body controlling the course. Although to date there is not an exact reorganization of clinical pharmacy in India but it is sure that one has the greatest & the brightest career in US after clearing the NAPLEX and may be in future in India there will be higher prospectus for the course.

The basic requirement for pharmacists to be considered for registration is undergraduate or postgraduate Pharmacy degree from a recognized university. In most countries this involves a four- or Six year course to attain a Master of Pharmacy (M. Pharm.). In the **United States**, students graduating after **Jan 1, 2003** must complete a Doctor of Pharmacy degree to become a licensed pharmacist; this requires completion of four years at an accredited college of pharmacy (most students applying for admission into a college of pharmacy already have an undergraduate degree; however, many schools admit students after completion of 2 years of undergraduate pharmacy prerequisites or directly from high school into a six-year accelerated program). Any person holding a bachelor's degree in Pharmacy who graduated before this date is grandfathered and can register.

Thus, in USA the legal requirements of becoming a pharmacist include graduating with a Doctor of Pharmacy (Pharm D) degree from an accredited college of pharmacy, serving an internship under a licensed pharmacist, and passing a state (NAPLEX) and law exam. The designation Pharm D is often likened to a PhD degree, however in actuality it is an advanced degree that became the standard of practice for graduates of pharmacy schools around the turn of the 21st century (2001). The former degree was a Bachelor of Pharmacy and required slightly less schooling and different curriculum. Due to the changes to health care in today's society and the increasing need for counseling and medication maintenance, pharmacists have taken on a larger role as clinicians. This increased in the need for accessible health care information for consumers has led to great strides in the field of pharmacy. One result of this has been a change in the way pharmacy schools structure their curriculum as well

as an advanced doctorate degree, which further sets the pharmacist apart as a trusted ally in a patient's health care treatment regimen.

In fact, pharmacists consistently rank as one of the most trusted professionals in today's society. This degree requires the completion of at least five years of post-secondary schooling but usually requires at least 6-8 years at present time, depending on which state you live in and the pharmacy school which you attend. The former degree obtained upon completion of pharmacy school was a Bachelor in Pharmacy or BS and pharmacists with this designation were given the title RPh. In the USA, pharmacists who acquire a Pharm D degree are legally allowed to add the prefix "Dr." before his / her name. Pharmacy is the health profession that links the health sciences with the chemical sciences and it is charged with ensuring the safe and effective use of pharmaceutical drugs.

Objective of Pharm D Programme

1. To provide patient care in cooperation with patients, prescribers, and other members of an inter-professional health care team based upon sound therapeutics principles and evidence-based data, taking into account relevant legal, ethical, social cultural, economic and professional issues, emerging technologies, and evolving biomedical, pharmaceutical, social, or behavioral or administrative, and clinical sciences that may impart therapeutic outcomes.
2. To manage and use resources of health care system, in co-operation with patients, prescribers and other health care providers and administrative and supportive personnels, to promote health; to provide, assess, and coordinate safe, accurate, and time sensitive medication distribution; and to improve therapeutic outcomes of medication use.
3. To promote health improvement, wellness, and disease prevention in co-operation with patients, communities, at-risk population and other members of an inter-professional team of health care providers.
4. To demonstrate skills in monitoring of the National Health Programmes and schemes, oriented to provide preventive and promotive health care services to the community.
5. To develop leadership qualities to function effectively as a member of health care team organized to deliver the health and family welfare services in existing socio-economic, political and cultural environment.
6. To communicate effectively with patients and the community.

The Pharm. D and Post Bacculaureate course in India

State	No of Colleges	State	No of Colleges
Andhra Pradesh	24	Kerala	06
Karanataka	19	Madhya Pradesh	01
Gujarat	01	Punjab	01
Maharashtra	03	Tamilnadu	15

1. Bharti Vidyapeeth University, Poona College of Pharmacy, Capacity 30 students
2. Govt. College of Pharmacy, Osmanpura, Aurangabad, Capacity 30 students.
3. Govt. College of Pharmacy, Amravati, Capacity 30 students.

Total 70 institutes are offering the Pharm. D course in India. The institutes are belonging to private sector except in the state of Maharashtra. The state of Maharashtra, courtesy the Government of Maharashtra has been the forefront of reform in Pharmacy education. The innovative step and a lead role of starting the Pharm. D course at Government College of Pharmacy at Aurangabad and Amravati, reflects the proactive vision of Government of Maharashtra to render quality service to the health care sector for the community in large.

Countries offering Pharm. D course

Continent	Country
Africa	Kenya, Nigeria, Egypt
South Asia	Bangladesh, India, Pakistan, Philippines, Thailand, South Korea,
Europe	Portugal, Czech Republic and Slovakia, France, Hungary, Italy, Netherlands, Spain, UK, Greece, Denmark, Republic of Ireland.
West Asia	Iran, Jordan, Lebanon, Qatar, Saudi Arabia, United Arab Emirates.
North America	Canada, United States
Australia	New zeland

Practice as a Pharmacist

To practice as a pharmacist, registration with the country, state or province's regulatory body is required. There is often a requirement for the pharmacy graduate to have completed a certain number of hours of experience in a pharmacy under the supervision of a registered pharmacist. If the regulatory body governs an entire country, they will usually administer a written and oral examination to the prospective pharmacist prior to registration; if its jurisdiction is limited to a specific area (e.g., a state or province), the required examination is administered by a national examining board.

Africa

Kenya: The University of Nairobi over a 8 years Pharmacy program. The first 4 years are for Pharmaceutical science and the other two are considered clinical residency in which students practice clinical pharmacy at various hospital and community pharmacy before they graduate.

Nigeria: Presently, The University of Benin, Edo State is the only institution offering the Pharm D degree. It is a six (6) year undergraduate program. Students are given clinical training in Pharmaceutical Care (PC) in various hospitals in the City.

Egypt: There is a new program in three Egyptian universities called clinical pharmacy program which give Pharm D degree like Alexandria University, Helwan University and recently Cairo University and Tanta University

South Asia

India: D. Pharm (a 2 year course) is the minimum qualification required to be a registered pharmacist in India. B. Pharm (a 4 year course) is a prerequisite course that is offered in various Universities. Some universities also offer Pharm. D (6 years course), which includes B. Pharm material along with the pharm. D coursework.

The Pharmacy Council of India permitted a few universities to start Pharm. D (post baccalaureate) (2 years + 1 full working year internship in a 300 bedded hospital) for B. Pharm graduates. The first batch of Pharm. D students will graduate by 2014. The government of Maharashtra has taken new innovative steps for increasing the interest of the students and starting the Pharm. D course.

Pakistan: In Pakistan, Quaid-i-Azam University offers the degree Doctor of Pharmacy (PharmD). Candidates must have at least 12 years of education with the last two years in pre-medical as a prerequisite. The first batch would commence from Fall 2011 session. QAU PharmD Program In Karachi, PharmD is a 5 years degree program offers in Karachi university, Ziauddin university, Baqai university, jinnah university for women etc.

Philippines: In the Philippines, only the Centro Escolar University offers the degree Doctor of Pharmacy (PharmD). The degree requires the completion of 52 units of formal course work and 36 units of clinical rotation done at the Makati Medical Center. It is a 2-year postbaccalaureate degree open to licensed pharmacists in the Philippines.

Thailand: In Thailand, Doctor of Pharmacy (Pharm D) program first established at Faculty of Pharmaceutical Sciences, Naresuan University in 1992 and Faculty of Pharmacy, Siam University in 2007.

South Korea: A new 6-year pharmacy education system has been implemented from 2011.

Europe

Portugal: In Portugal, Pharmacy studies consists in 4 years of basic school, 5 years of preparatory school, and three years of high school where afterward the student is submitted to nationwide exams. The process is the same for every degree the student chooses, from medicine to engineering. The student takes the Master's degree in Pharmaceutical Sciences (equivalent to the Pharm D program) in one of the 9 Pharmacy faculties with their own

respective numerous clausus which comprises a 6 year rigorous study (5 with the uniformities in EU teaching). Finished the degree, the academic title of Doctor of Pharmacy is issued. The graduate can then enroll in the regulatory institution for the Pharmacist profession in Portugal called, "Portuguese Pharmaceutical Society" or in Portuguese "Ordem dos Farmacêuticos". After the enrollment the title of Pharmacist is issued. Afterward, Pharmacists can start their career in a limitless number of professional areas that range from community pharmacies, drug development, fundamental or applied research, biotechnology to areas such as forensic sciences, toxicology, regulatory affairs, clinical analysis, law enforcement (scientific police), bromatology, drug marketing, regulatory authorities, university teachers, etc. The Pharmacists can also choose to become a specialist in one of following areas of activity: Pharmaceutical Industry, Regulatory Affairs, Hospital Pharmacy, and Clinical Analysis. Each specialization requires an additional 5 year professional study program guided by a tutor in the respective area of knowledge. This training includes regular evaluations by the professional order, which also requires an exam at the end of the 5 year training. After the success at the exam, the Pharmacist then becomes a specialist in its area of expertise.

Czech Republic and Slovakia: In both countries, the Pharm. D. (Pharmaciae doctor) diploma can be obtained by pharmacists who have previously graduated in pharmacy (Magister, Mgr.) (the undergraduate study of pharmacy takes 5 years). Applicants must defend a research or experimental thesis, and pass a rigorous examination. The Pharm Dr. title is highly prestigious and written in front of the name. It is different from the postgraduate Ph.D diploma.

France: In France, a six-year PharmD (called "Diplôme d'Etat de Docteur en Pharmacie") must be completed. At the end of the 5th year, young pharmacists can choose to pass a competitive examination. If they succeed, the few students chosen can then follow a four-year specialty (like Physician). It is a pharmaceutical residency called "Internat en Pharmacie". During this residency, pharmacists specialize in Laboratory Medicine called "Biologie médicale" or in Hospital Pharmacy.

Hungary: In Hungary, pharmacists obtain their Master's degree, after 5 years of study. On the fifth year, students must undergo a professional training that lasts for six months in a public pharmacy or a hospital. At the end of this period, the student must pass a nationwide exam to be legally entitled for practicing the profession of pharmacy, after acquiring the pharmacist work license. According to the new law in 2008, all pharmacists, who have acquired the Masters degree of Pharmacy, are entitled to the Pharm D (Doctor of Pharmacy).

Italy: In Italy the Master's degree in Pharmacy last 5 years, this includes a 6-months professional training in a public pharmacy or hospital. At the end of this period, the student must pass a nationwide exam to be legally entitled for practising the profession of pharmacist. The subscription to "Pharmacists Order", or in Italian "Ordine dei Farmacisti",

is required for working in public pharmacies or hospitals. It is not required if the pharmacist is working in a private entity (e.g. a pharmaceutical company). After having obtained the Master degree in Pharmacy, the student may also choose to become a specialist in Hospital Pharmacy, with an additional 4 year professional study program and respective final exam.

Netherlands: The education of pharmacists in the Netherlands requires a minimum of six years of university study. EU-harmonisation has led to division into three bachelor and three master years. A bachelor title is, however, not used at all professionally. The Dutch consider the educational level of their current (M.Sc.) Degree in Pharmacy to be comparable to the Pharm D title in use in the United States. Before the harmonization a four year Master of Science was superseded by two more years of university education preparing for pharmacy practice. To become a hospital pharmacist a 4-year residency program has to be completed after that.

Spain: In Spain, Pharmacy studies can be accessed after completing five and a half years of University College (with at least 6 months of initiation to Pharmacy Practice). The Licenciado en Farmacia or Grado en Farmacia Spanish degree is the only title that allows practicing the profession of Pharmacy in Spain. To become a Hospital Pharmacist a person with a degree in Pharmacy must enter a selection process (national selection process called FIR) to initiate a Pharmacy Residency period of professional training during 4 additional years (including one full year of advanced clinical practice in different medical wards). Apart from the professional degrees, like with any other university studies, Pharmacy degree allows to pursue an academic career by enrolling masters and doctorates programs (MSc and PhD) in several scientific fields (pharmaceutical technology, pharmacokinetics and biopharmaceutics, biomedical sciences, pharmaceutical and organic chemistry, physical chemistry, food sciences, pharmacology, toxicology, public health, etc.). Masters usually last 1–2 years and PhD's no less than 4 years.

In summary, in Spain an entry-level pharmacy degree lasts 5 years and a Hospital Pharmacy Specialist needs 9.5 years of education and/or training. Hospital Pharmacy Residents are paid during their residency period. There are other residencies available to pharmacists such as Medical Biology, Clinical Biochemistry, Immunology, Microbiology, Radiopharmacy, Pharmaceutical Analysis, and Industrial Pharmacy lasting from 2 to 4 years. Pharmacists usually work as retail pharmacists (private practice), hospital pharmacists, primary care pharmacists, medical biologists, scientists (private and public biomedical research institutions), as university professors (Pharmacy, Medicine, Biology, Food Sciences, Biochemistry, Veterinary, Nursing, etc.), and as technicians and executive managers (pharmaceutical and biotechnology companies and governmental institutions).

UK: In the United Kingdom, integration with the European Union has resulted in the B.Pharm. and B.Sc. courses being superseded by a four-year course for the qualification Master of Pharmacy (M.Pharm). In Great Britain the General Pharmaceutical Council is responsible for regulation of pharmacy affairs and in Northern Ireland it is the Pharmaceutical Society of Northern Ireland. Graduates must complete one year of practical training and pass a registration examination before they can be entered on the register of pharmacists, known as the register of pharmaceutical chemists. Pharmacists registered in other countries can also register in the UK. Overseas pharmacists are required to undertake the Overseas Pharmacists Assessment Programme (OSPAP), a one year intensive course focused on pharmacy practice in Great Britain. OSPAP authorization can be given by the Royal Pharmaceutical Society of Great Britain and the course is undertaken either the University of Sunderland, Aston University, Robert Gordon University, Kingston University or the University of Brighton. However, pharmacists that have obtained their qualifications and are registered in other countries of the European Economic Area can register with the Royal Pharmaceutical Society of Great Britain without undergoing additional or pre-registration training. Pharmacists in the UK can now be accredited to perform a number of enhanced services. These include but are not limited to Medicine Use Reviews (MUR's) and Patient Group Directives (where certain prescription only medicines can be sold by the pharmacist for indications of hair retention, weight loss and erectile dysfunction). The titles Pharmacist, Pharmaceutical Chemist and Pharmacist are legally protected in the United Kingdom. They can only be used by individuals that are registered with the Royal Pharmaceutical Society of Great Britain ; any other users are guilty of a criminal offence.

Greece: In Greece, a four year University course must be completed. This course is offered by the University of Athens, the University of Thessaloniki and the University of Patras. The course comprises 4 years of theory and laboratory practice and a 5th year of compulsory, full-time in- service training in a community pharmacy and the pharmaceutical department of a hospital. An additional trimester placement in a pharmaceutical industry is also an option, however it does not count towards the acquisition of the license to practice. Upon successful completion of the course, a Degree in Pharmacy is awarded. Since September 2011, undergraduate students that have completed a thesis in the University of Athens during the 5th year of their studies are able to obtain a certificate, equivalent to Master Degree, together with the Bachelor of Pharmacy. The pharmacy graduate may pursue a career in the industry after graduation. A career in this field does not require a license to practice pharmacy. However, pharmacists wishing to open a pharmacy, work in hospitals or in the National Organization of Medicines must first successfully participate in board examinations organized by the Greek Ministry of Health, in order to obtain a license to Practice Pharmacy

Denmark: The pharmacist (Danish: farmaceut) education in Denmark takes place either at the Faculty of Pharmaceutical Sciences at the University of Copenhagen.

The Bachelor of Pharmacy (B. Pharm) degree (Danish: bachelor i farmaci) takes 3 years. The Master of Pharmacy (M. Pharm) degree (Danish: cand. pharm.) takes 2 more years a total of 5 years. To work as a pharmacist in a Danish pharmacy a M.Pharm degree is requested. After graduation as a pharmacist (M.Pharm), you can begin the 3 year Doctor of Pharmacy (D. Pharm) education programme (Danish: dr.pharm.). Beside the pharmacists, in Denmark there's another professional group with a pharmaceutical tertiary higher education — i.e. the pharmacoconomists (experts in pharmaceuticals) whose education takes place at Pharmakon—Danish College of Pharmacy Practice.

Republic of Ireland: A 4-year BPharm degree must be completed followed by one year of pre-registration training. The one year of pre-registration training has recently been replaced by an internship programme, for which the student both works and completes assignments, leading to the award of an M.Pharm degree from the Royal College of Surgeons. Currently this is an interim programme which will run for three years (for the classes of 2009, 2010 and 2011). It is likely that in the future a five year integrated Masters programme will come onstream. At the moment there are three universities in Ireland offering a B.Pharm degree: Trinity College Dublin, University College Cork and Royal College of Surgeons in Ireland.

West East

Iran: In 1930 Tehran University changed the Pharmacy degree from Masters to doctorate (PharmD or Doctor in Pharmacy) and the duration of the study was increased to 5 years. Graduates need to present and defend their theses in different fields of pharmacy and this adds another year to their studies and generally after 6 years students can graduate as Doctor in Pharmacy. The Masters degree in Pharmacy was available in Tehran University since 1926.

Jordan: In Jordan, this program was first offered in 2000. This program is not to be confused with Pharmacy Program. When the program was first offered, students shared their first 3 years with medicine student, the last two with pharmacy students and one year of clinical work. After 2006, the program's nature had changed; a new curricula was developed specifically for this program. Students now complete 5 years of academic work and 1 year of clinical practice to earn their Doctor of Pharmacy(B.Sc.) degree. This program is offered at some public universities in Jordan, such as Jordan University of Science and Technology and University of Jordan.

Lebanon: In Lebanon, the first Doctor of Pharmacy degree was awarded by the Lebanese University Faculty of Pharmacy (upon a decree by the Lebanese government) to its graduating class of 19 students in 1992. The program was first established by Dr. Anwar Bikhazi, a

Pharmacy graduate of the American University of Beirut with a PhD from the University of Michigan. The 6-year entry level Pharm D program at the Lebanese University adopted the US Pharm. D curriculum and training. Enrollment into the program is highly competitive with an average admission rate of 20% of applicants. This was the leading Pharm D program in the Middle East, which was followed by other mirror copies of similar programs in Lebanon and neighboring countries, such as the one provided by the Lebanese American University.

Qatar: In Qatar, pharmacy degrees are offered by the new College of Pharmacy at the Qatar University. Students were accepted into the 5-year BSc (Pharm) program commencing in 2007. Students will be accepted into the final year of the 6-year Pharm D program in 2011. Accordingly, the first graduates of the Pharm D program are expected in 2012. The program adopts a Canadian curriculum and received early accreditation by the Canadian Council for Accreditation of Pharmacy Programs (CCAPP) in February 2009. This is the first international program to undergo review and receive accreditation by this sole Canadian accreditation agency.

Saudi Arabia: Started in 2001 at KAU, then in 2005 at Ibn-Sina University, then 2006 at KFU, then 2007 at Qassim University. In 2008, KSU College of Pharmacy at Riyadh, College of Pharmacy at Kharj, and Taif University started their Pharm D programs. The degree duration in Saudi Arabia is six years in total, including one academic year of clinical rotations.

According to the Saudi Commission for Health Specialties (SCFHS), if a student graduates with a (minimum six years) Pharm D degree, then the graduate has the chance to further develop himself. This can be achieved by taking an Accredited Residency Training Program that is at least one year long (for a total of seven years, minimum). Upon successfully completing both the Residency program and the Pharm D, the graduate can apply for Professional Equivalent (only equivalent in practice) to the Master degree in Pharmacy.

United Arab Emirates: The Gulf Pharmacy College, under the Gulf Medical University is the first institution in the region to provide an innovative, integrated, comprehensive and patient- centered Doctor of Pharmacy (Pharm D) Program to qualified students, using world-class facilities, clinical simulations and the latest technologies to ensure excellence in pharmacy practice. The teaching/learning is based on directed self-learning, critical thinking, evidence-based and patient related approach. The didactic part of the program focuses on the integration of basic and medical sciences subjects which are clinically oriented.

Clinical simulations in various subjects allow the students to enhance their skills and monitor their performance through self-assessments using I.T. learning means. Students are exposed from the early stage to the clinical environment in order to better understanding the relations of the human body to the clinical practice.

North America

Canada: In Canada the Pharm D program is offered in both English and French. Currently in Canada Pharm B (and not Pharm D) is the minimum level to practice pharmacy. Students enrolled in the program must have graduated from a CCAPP (Canadian Council for Accreditation of Pharmacy Programs) or an ACPE (Accreditation Council for Pharmacy Education) school with an accredited teaching program or must have passed the PEBC (Pharmacy Examining Board of Canada) Evaluating and Qualifying examinations. As of fall 2007, the Pharm D program is offered at the Université de Montréal (in French) and is the first Canadian university to give this program instead of the baccalaureate program in pharmacy. The Pharm D program was offered as a graduate program. In Canada, pharmacist who acquire a Pharm D degree aren't legally allowed to add the prefix "Dr." before his / her name. Pharmacy is the health profession that links the health sciences with the chemical sciences and it is charged with ensuring the safe and effective use of pharmaceutical drugs.

United States: In 1990, the American Association of Colleges of Pharmacy (AACP) mandated that a doctor of pharmacy degree would be the new first-professional degree. Currently all accredited schools and colleges of pharmacy in the US offer the Pharm D degree. Many also offer post-Pharm D graduate programs in specialized areas of the profession.

The current Pharm D degree curriculum is very different than that of the prior BS in pharmacy and now includes extensive didactic clinical preparation and a full year of hands-on practice experience.

Australia

In Australia a pharmacist must complete an undergraduate four-year Bachelor of Pharmacy course followed by an internship and independent examinations set by respective state registration boards. In addition, graduates are required to complete an approved graduate training course. There is the option of a postgraduate two-year Master of Pharmacy (M Pharm) course for those with undergraduate science degree background. Since 1st July 2010 pharmacists are registered nationally with the Pharmacy Board of Australia, having previously been registered by individual states. Graduates are required to complete one year of practice under the supervision of a registered pharmacist. In addition, graduates are required to complete an approved graduate training course. On meeting these requirements, graduates are eligible to sit the registration examination which may involve both written and oral components.

New Zealand: In New Zealand, as with other western nations, a four year B Pharm must be completed, followed by an internship at a pharmacy (Community, Hospital, Industry &/or

University). Pharmacists are registered with the Pharmacy Council and must meet competence standards as set by the Pharmaceutical Society of New Zealand. The degree can be taken at University of Otago in Dunedin and University of Auckland in Auckland. The School of Pharmacy is divided into three main sections of research focus. These are:

Division of Pharmacy Practice: Focussed on the inter-relationship between pharmacists and the communities they serve. Division of Pharmaceutical Sciences: Focussed on the molecular mechanism and biological basis of drug development. Division of Pharmacotherapy: Focussed on the application and effects of pharmaceuticals in clinical settings. Postgraduate studies include diplomas, Masters, PhD and DPharm which may be clinical, practice or pharmaceutical specialties.

Licensure

Pharmacists must be licensed by the state pharmacy board of the state in which they wish to practice, with one exception: A pharmacist with an active license may practice in a federal facility regardless of the state which issued the license.

In order to obtain an initial license, or license by examination, a candidate must have graduated from an AACP accredited school or college of pharmacy, satisfy requirements for internship, write and pass the North American Pharmacist Licensure Examination (NAPLEX), in some states write and pass the Multi-state Pharmacy Jurisprudence Exam (MPIE) and sometimes an additional state exam. Upon licensure, one may then be designated "Pharmacist" or "Registered Pharmacist" ("R.Ph."), as usage of these titles are generally regulated by state governments.

A pharmacist in good standing may reciprocate an active licensure by examination to another state. Typically the requirements for licensure by reciprocity are less intensive and may require as little as passing an additional law exam.

After obtaining a license, it must be periodically renewed by completing continuing education and other requirements as prescribed by the state of licensure.

Career opportunity

The prime (No.1) sectors which need the service of Pharm Ds are the pharmaceutical industries. They make new medicines and they need the professionals first than any other sector. Then the second priority comes to the hospitals of pharmacies where it is used or distributed. Production is may be one among ten divisions of an industry where Pharm Ds may not be needed. The numerous and diverse career options available to Pharm D students:

1. Clinical Research : Clinical research is a branch of medical science that determines the safety and effectiveness of medications, devices, diagnostic products and treatment regimens intended for human use. These may be used for prevention, treatment, diagnosis or for relieving symptoms of a disease. The term clinical research refers to the entire bibliography of

a drug/device/biologic, in fact any test article from its inception in the lab to its introduction to the consumer market and beyond. Once the promising candidate or the molecule is identified in the lab, it is subjected to pre-clinical studies or animal studies where different aspects of the test article (including its safety toxicity if applicable and efficacy, if possible at this early stage) are studied. The focus of clinical research is wide enough to include important items such as data management, medical writing, regulatory consultation, and biostatistics.

2. Pharmacovigilance: (abbreviated PV or PhV) is the pharmacological science relating to the detection, assessment, understanding and prevention of adverse effects, particularly long term and short term side effects of medicines. Generally speaking, pharmacovigilance is the science of collecting, monitoring, researching, assessing and evaluating information from healthcare providers and patients on the adverse effects of medications, biological products, herbalism and traditional medicines with a view to: 1) identifying new information about hazards associated with medicines and 2) preventing harm to patients.

3. Research & Development: The phrase research and development refers to the "creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications".

4. Medical Writing: Is the activity of producing scientific documentation by a specialized writer. The medical writer typically is not one of the scientists or doctors who performed the research. A medical writer, working with doctors, scientists, and other subject matter experts, creates documents that effectively and clearly describe research results, product use and other medical information. The medical writer also makes sure the documents comply with regulatory, journal, or other guidelines in terms of content, format and structure.

5. Product Managers: A product manager investigates, selects, and develops products for an organization, performing the activities of product management.

6. Regulatory affairs: Regulatory Affairs (RA), also called Government Affairs, is a profession within regulated industries, such as pharmaceuticals and medical devices. Regulatory Affairs professionals usually have responsibility for the following general areas:

- Ensuring that their companies comply with all of the regulations and laws pertaining to their business.
- Working with federal, state, and local regulatory agencies and personnel on specific issues affecting their business. i.e. working with such agencies as the Food and Drug Administration or European Medicines Agency (pharmaceuticals and medical devices); The Department of Energy; or the Securities and Exchange Commission (banking).
- Advising their companies on the regulatory aspects and climate that would affect proposed activities. i.e. describing the "regulatory climate" around issues such as the

promotion of prescription drugs and Sarbanes-Oxley compliance.

7. Correspondents & Trainers

8. Top level medical representatives

9. Academics

10. Community Pharmacy: A community pharmacy is a community-based pharmacy. The main responsibilities of a community pharmacy include appropriate procurement, storage, dispensing, and documentation of medicines.

In compliance with the vision of the community pharmacy section of the International Pharmaceutical Federation, community pharmacists should

- A. be experts in pharmaceutical care, pharmacotherapy, and health promotion.
- B. be professional communicators with patients, other healthcare providers, decision makers.
- C. deliver good quality in products, services, and communication.
- D. document their actions and make descriptions and publications.

The above mentioned requirement is being fulfilled by the Pharm.D course.

11. Geriatric Pharmacy: Geriatrics is a sub-specialty of internal medicine and family medicine that focuses on health care of elderly people. It aims to promote health by preventing and treating diseases and disabilities in older adults.

12. Governmental agencies

13. Home Health Care: Home Care, (also referred to as domiciliary care or social care), is health care or supportive care provided in the patient's home by healthcare professionals (often referred to as home health care or formal care. Often, the term home health care is used to distinguish non-medical care or custodial care, which is care that is provided by persons who are not nurses, doctors, or other licensed medical personnel, as opposed to home health care that is provided by licensed personnel.

14. Hospital Pharmacy: A hospital pharmacy is concerned with pharmacy service to all types of hospital and differs considerably from a community pharmacy. Some pharmacists in hospital pharmacies may have more complex clinical medication management issues whereas pharmacists in community pharmacies often have more complex business and customer relations issues. Because of the complexity of the medication use system, many pharmacists practicing in hospitals gain more education and training after pharmacy school through a pharmacy practice residency and sometimes followed by another residency in a specific area.

15. Managed Care: The term managed care is used in the United States to describe a variety of techniques intended to reduce the cost of providing health benefits and improve the quality of care ("managed care techniques") for organizations that use those techniques or provide them as services to other organizations ("managed care organization" or "MCO"), or to describe systems of financing and delivering health care to enrollees organized around managed care

techniques and concepts ("managed care delivery systems"). According to the United States National Library of Medicine, the term "managed care" encompasses programs:

...intended to reduce unnecessary health care costs through a variety of mechanisms, including: economic incentives for physicians and patients to select less costly forms of care; programs for reviewing the medical necessity of specific services; increased beneficiary cost sharing; controls on inpatient admissions and lengths of stay; the establishment of cost-sharing incentives for outpatient surgery; selective contracting with health care providers; and the intensive management of high-cost health care cases.

16. Pharmacoeconomics: Pharmacoeconomics refers to the scientific discipline that compares the value of one pharmaceutical drug or drug therapy to another. It is a sub-discipline of Health economics. A pharmacoeconomic study evaluates the cost (expressed in monetary terms) and effects (expressed in terms of monetary value, efficacy or enhanced quality of life) of a pharmaceutical product. We can distinguish several types of pharmacoeconomic evaluation: cost-minimization analysis, cost-benefit analysis, cost-effectiveness analysis and cost-utility analysis. Pharmacoeconomic studies serve to guide optimal healthcare resource allocation, in a standardized and scientifically grounded manner. One important consideration in a pharmacoeconomic evaluation is to decide the perspective from which the analysis should be conducted (such as institutional or societal).

17. Any more opportunities that can be explored.....

Threat

The qualified private medical Practitioners are raising their hands against the Pharm D. The registered doctors are raising serious questions about the need of introduction of Pharm D course in India, the reason that it could lower the importance of doctors in future.

The first such voice is raised by the Kerala branch of the Qualified Private Medical Practitioners Association (QPMPA). The association is planning to initiate a demonstration against this course. A Kerala based Private Doctor who is also the owner of Kozhikode based hospital apart from being a member of Kerala branch of QPMPA, is the first doctor to put her voice against this new course, thinks that implementation of such a course which will put intermediaries between a doctor and patient in hospitals would lead to reduction of all the control that at present lies with the doctor in medicines. The Doctor also pointed out that such courses (Pharm.D) including M. Pharmacy or B Pharmacy can only make compounders, not intermediaries to handle doctor's work. Pharm. D is not equivalent to Ph. D both are having different orientation....Likely they both will have prefix Dr. in front of their names... No other similarities.

Importance of Pharm. D in context with India

The B.Pharm course currently has a duration of 4 years in India. Well, it sounds good that we are able to complete such a professional medical course in just 4 years. When we think of the aftermath of degree course, we are left with 2 main options:

- 1) Get into a job AND 2) Study Further

The job options though diverse and many, but the changing health care scenario will pose a challenge to the future B. Pharm. graduates. In the era of globalization India is visioned as a country of medical tourism and this would demand skilled and technically qualified professionals to meet the global health care management. The situation demands launch of Pharm. D. course.

Most students prefer 2nd option, i.e.- to study further, either M.Pharm and Ph.D or M.S. and Ph.D abroad (though there are other options too!!!). But when it comes to a combination of work and foreign areas, i.e.- to work abroad after bachelor's degree, we find ourselves into a big trouble, especially trouble in getting into a job in countries like U.S.A etc. This is because the entry into pharmacy work profession after B.Pharm demands qualifying 2 exams:

- 1) FPGEE 2) NAPLEX

FPGEE or FOREIGN PHARMACY GRADUATE EXAMINATION COMMITTEE (FPGEC)

CERTIFICATION: FPGEE demands that foreign-educated pharmacy students who have completed their degree on or after January 1, 2003, will require a professional degree from a five-year curriculum program in order to apply for FPGEE or Foreign Pharmacy Graduate Examination Committee (FPGEC®) Certification. This change affects only those candidates who earn a pharmacy degree after the 2003 deadline. The new curriculum FPGEE requirements do not apply to foreign-educated pharmacists who have earned a four-year degree prior to January 1, 2003. These individuals will remain eligible for FPGEE under the current program requirements of a four-year curriculum.

The FPGEC Certification program or FPGEE is accepted by more than 48 state boards of pharmacy as a means of documenting the educational equivalency of a candidate's foreign pharmacy education. Foreign educated pharmacists successfully passed FPGEC certification are considered to have partially fulfilled eligibility requirements for licensure in those states that accept the Certification.

NAPLEX: The NAPLEX, or North American Pharmacist Licensure Examination, is a standard examination, created by the National Association of Boards of Pharmacy (NABP) to help individual state boards of pharmacy assess an individual's competency and knowledge so that he or she may be given a license to practice.

The NAPLEX is exclusively a computer-administered exam. Applicants must register with an official testing facility, such as Prometric, at least two business days in advance to schedule a

testing appointment. The exam consists of 185 questions and has a time limit of four hours and fifteen minutes, with a mandatory ten-minute break after approximately two hours.

The NAPLEX is an adaptive examination in that it tailors itself to the skill level of the applicant. Because of the linear nature of the exam (applicants must answer a question to continue, and there is no backtracking), the computer is able to zero-in on incorrect responses and select similar questions for presentation later in the exam. This allows for analyzation of the applicants' skill level across several performance categories.

Pharm D programme

It is a 6 years program during which 5 years is academic session and final year is completely bound to internship in hospital.

Eligibility for Pharm. D. (Doctor of Pharmacy) (6 years programme)

10+2 (M.P.C./Biology, Physics, Chemistry) or D. Pharm.

Subjects in each year:

First year Pharm. D: Human Anatomy and Physiology, Pharmaceutics, Medicinal Biochemistry, Pharmaceutical Organic Chemistry, Pharmaceutical Inorganic Chemistry, Remedial Mathematics/ Biology.

Second Year Pharm. D: Pathophysiology, Pharmaceutical Microbiology, Pharmacognosy & Phytopharmaceuticals, Pharmacology-I, Community Pharmacy, Pharmacotherapeutics-I.

Third Year Pharm. D: Pharmacology-II, Pharmaceutical Analysis, Pharmacotherapeutics-II, Pharmaceutical Jurisprudence, Medicinal Chemistry, Pharmaceutical Formulations.

Fourth Year Pharm. D: Pharmacotherapeutics-III, Hospital Pharmacy, Clinical Pharmacy, Biostatistics & Research Methodology, Biopharmaceutics & Pharmacokinetics, Clinical Toxicology

Fifth Year Pharm. D: Clinical Research, Pharmacoepidemiology and Pharmacoeconomics, Clinical Pharmacokinetics & Pharmacotherapeutic Drug Monitoring, Clerkship, Project work (Six Months).

Sixth Year Pharm. D: Internship or residency training including postings in speciality units. Student should independently provide the clinical pharmacy services to the allotted wards.

- (i) Six months in General Medicine department, and
- (ii) Two months each in three other speciality departments

Hospital details to link with institute to run Pharm. D. or Pharm. D. & Pharm.D. (Post Baccalaureate) courses: Hospital should have teaching facility (minimum 300 bedded Hospital), Pharmacy Practice Department, Specialties: Medicine (Compulsory and any three of the following)

- Surgery
- Pediatrics
- Gynecology and Obstetrics
- Psychiatry
- Skin and VD
- Orthopedics

Pharm. D. Post Bacculaureate programme: It is three years programme with two years of study and one year internship or residency.

Eligibility: B.P harm completed students.

Number of seats under each programme allowed

as per PCI Pharm. D. Programme – 30 students.

Pharm. D. (Post Bacculaureate) Programme – 10 students.

Conclusion

Thus, the present scenario of pharma world requires a mandatory 5 year degree course in pharmacy instead of conventional 4 year duration. This emphasizes the importance of giving time and stressing importance on each and every aspect of health-care involved in the profession. Thus, it is important that pharmacy course of every country in the world to be in pace with the growing demands of global health-care. The hurdle that has to be overcome is the equivalence of the course imparted in India to that with other nations/countries. The collective efforts of the policy maker, government, and governing body cannot be denied to bridge the gap. A proactive step would surely build a healthy world and in a true sense globalization in education system.