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Lastly, we also acknowledge the contributions of the FIP Bureau and Board of Pharmaceutical Practice, International Organization for Migration (IOM), pharmacy educators and academic associations, who were involved in the review of this document.

**Foreword**

On behalf of the International Pharmaceutical Federation, it is with great importance that we bring to you the official FIP Global Pharmacy Workforce and Migration Report.

Human resources for health has been a significant focus of FIP over the last year in the build up to the 2006 World Health Day of the World Health Organization. This report compiles data on many aspects affecting the constantly changing profile of pharmacy human resources around the world. FIP strongly believes that an expertly skilled and competent - but also motivated and professionally fulfilled - pharmacy workforce is of pinnacle importance in the safe and effective delivery of healthcare. FIP is committed to collaborating with Member Organisations to develop an evidence base for action to strengthen the pharmacy workforce.

With this report, we invite Member Organisations and key stakeholders to examine those issues affecting the pharmacy workforce in their own countries, and to join FIP in celebrating the profession and planning for its future direction.

Jean Parrot  
*President*  
International Pharmaceutical Federation
All over the world, health care systems are undergoing dramatic changes. As populations age and disease burden increases due to HIV/AIDS and chronic diseases, we see a corresponding growth in demands on health systems and patient needs. The increased pressure on health care systems stretches the health workforce to meet the accelerating demand for health care providers, services and managed care facilities. No examination of these mounting issues is complete without a critical evaluation of global and national human resources. This must be taken into consideration in the development of health, labour and education policies. Data collection is the key initial step to understanding the current health care labour market.

In many countries, pharmacists are the most accessible of all healthcare workers and as such play a key role in the delivery of healthcare services at all levels. In an era of rapidly accelerating change in healthcare delivery, the roles of pharmacists are being constantly redefined. As roles change, competency and training requirements change. Thus it is vital that international data relating to the pharmacy workforce be available to be considered in international and national health care policies and workforce planning.

The International Pharmaceutical Federation developed the Global Pharmacy Workforce and Migration Study with the support of FIP Member Organisations, to build an evidence base on the pharmacy workforce, raise awareness of global trends affecting the workforce and engage partners to develop strategies to address these.

This report for the first time presents global data on the distribution of pharmacists, Continuing Professional Development systems, and migration of pharmacists. This report is one of the major projects of FIP on Human Resources for Health, in the lead up to 2006 World Health Day and the launch of the WHO Ten Year Action Plan for Strengthening the Health Workforce.

The 2006 World Health Day celebrates the healthcare worker on the 7th of April with the theme of Human Resources for Health. The 2006 World Health Report will cover issues relating to health professionals such as pharmacists, physicians, nurses, dentists and allied healthcare workers. This, together with other activities leading up to the day, aim to raise awareness of the need to address issues relating to the distribution, training, competence, capacity, and migration of health professionals.

“Sufficient investment in the recruitment, training, retention and involvement in health policy of health care professionals is the key to the quality and safety of care”
Ton Hoek, General Secretary, FIP

FIP participated in the WHO Human Resources and National Health Systems – Shaping the Agenda for Action Workshop in 2002. This workshop involved a range of stakeholders including ministries of health and professional organisations to identify the following four priorities for action:

• examine and prepare for the effect of HIV/AIDS on the health workforce and workload;
• advocate for fair incentives and motivation to remunerate and retain health workers;
• address and map imbalances regionally and at a country level;
• and collect evidence and explore the effect of strategies to manage the migration of health workers.

Health workers save lives and are the interface between health systems and the community. Imbalances in human resources for health will only exacerbate imbalances in access to quality health care and compromise patient safety. In 2002, the World Health Professions Alliance partners (FIP, International Council of Nurses and the World Medical Association) called for increased attention to patient safety, a health care challenge that is inextricably linked to human resources for health. The WHPA urged WHO, governments and others to examine ways and means of attracting and retaining appropriately qualified health workers.

The FIP Global Pharmacy Workforce and Migration Report serves as an international starting point to provide a snapshot of the current workforce issues in pharmacy and give direction on required actions to build capacity and strengthen the profession. It is the vision of the Federation to set the international
agenda in addressing pharmacy workforce issues and to provide guidance in the development of solutions.

With this report, FIP urges pharmacy professional and regulatory bodies, policy makers, pharmacy education providers, and pharmacists to document the profession, build an evidence base, and develop national strategies and actions to address workforce issues and strengthen the pharmacy workforce as an integral part of the health care system.

References


2. World Health Professions Alliance (WHPA) Press Release. Health Professionals Call for Priority on Patient Safety. Available at: www.whpa.org/pr07_02.htm
The FIP Global Pharmacy Workforce and Migration Study sought to collect global data on the following:

- The distribution of pharmacists according to country, gender and practice area
- Pharmacist shortages and country imbalances in pharmacist workforce distribution
- Continuing Professional Development (CPD) and Continuing Education (CE) programmes for pharmacists
- Regulation, training and certification of pharmacy technicians
- Migration of pharmacists worldwide and registration processes for foreign pharmacists

Surveys and follow up reminders were sent to FIP Member Organisations comprising of pharmacy professional and regulatory bodies. The FIP surveys were developed with the advice of the Human Resources for Health Department of WHO.

Three surveys were developed to focus on:

- Pharmacy workforce
- CPD/CE
- Migration of pharmacists

Literature searches were conducted through PubMed and the internet to find papers and reports on pharmacy workforce studies, CPD/CE systems, and the migration of health professionals.

Population data was taken from the Population Reference Bureau 2005 population statistics (www.prb.org). Country economic classifications were sourced from the World Bank. Data from the online surveys were downloaded into Excel. Other data responses were entered into Excel spreadsheet and analysed. All data was checked to ensure accuracy of data input and where necessary, clarified with the data source. Although very few articles have been published related to pharmacy, a number of country reports and background papers from professional associations and health agencies were used.

**Pharmacy Workforce Survey**

A survey comprised of 32 questions was designed in consultation with WHO to collect the following information from FIP Member Organisations (see appendix 1):

1. Contact details of personnel responsible for human resources for health
2. Total number of pharmacists
3. Gender distribution of pharmacists
4. Practice distribution of pharmacists
5. Continuous Professional Development programmes and requirements

The survey was available in English, French, Portuguese and Spanish and could be completed either online or in hard copy. A total of 83 member organisations were contacted on the 22nd of July 2005 and 34 organisations responded with data by the 20th January 2006. All member organisations were actively followed up with reminders sent by facsimile, email and telephone.

**Continuing Professional Development (CPD) / Continuing Education Survey (CE)**

This survey followed the Pharmacy Workforce Survey and was sent to all FIP Member Organisations that responded. The survey was sent to the respondent contact or contact persons responsible for CPD/CE programmes. The following information was collected (see appendix 2):

- Regulatory bodies organising or providing CPD and CE programmes
- Details on CPD and CE system
- Standards and accreditation of CPD and CE providers and programmes
- Incentives for completing CPD and CE programmes and penalties for failing to undertake CPD and CE

The survey was available in English, French, Portuguese and Spanish and could be completed either online or in hard copy. A total of 34 member organisations were contacted on the 24th of November 2005 and 17 organisations responded with data by the 10th of February 2006. Respondents to the pharmacy workforce survey also answered on whether CPD was compulsory in their country. All member organisations were actively followed up with reminders sent by facsimile, email and telephone.
Migration Study

Data was collected from ten countries including Australia, Canada, Ghana, Ireland, Kenya, New Zealand, South Africa, Uganda, United Kingdom, and United States of America. These countries were approached along with four other countries (Nigeria, Rwanda, India, and Zimbabwe) who were anecdotally described as having a significant inflow and outflow of pharmacists through migration.

Over 70 pharmacy regulatory boards, professional bodies, Ministries of Health, Pharmacy Faculties, and pharmacists around the world contributed to the collection of data. A survey was sent to professional and regulatory bodies, followed by the Ministry of Health and faculties of pharmacy where additional sources for data were required (see appendix 3). Countries were actively followed up through phone, email, fax and letters. The data was also used to examine imbalances in pharmacist distribution within a country.

Data was collected between the 27th of September 2005 and 10th February 2006. A literature search was also used to gather data where responses were missing and compile relevant findings. The number of active practicing pharmacists was used as the total number of pharmacists where differentiation was provided in the number of registered pharmacists.

The survey collected data on:
- The total number of registered pharmacists in 2005.
- The total number of foreign registered pharmacists in 2005.
- The number of pharmacists graduating per year from the year 2000 - 2005.
- The number of pharmacists that registered from abroad each year from 1995 – 2005.
- The number of pharmacists from abroad that applied for registration from the year 1995 – 2005.
- The countries from which pharmacists were originally registered as a pharmacist prior to application for registration and the corresponding numbers for each country.
- The number of pharmacists migrating to another country each year from 1995 – 2005.
- The application procedure for pharmacists from abroad to register as a pharmacist.

Pharmacy Technicians Study

A component of the Pharmacy Workforce Study focused on the pharmacy technician workforce.

The following information was collected from FIP Member Organisations:
- Total number of pharmacy technicians
- Education and training programmes of pharmacy technicians
- Certification requirements of pharmacy technicians

The survey was also available in English, French, Portuguese and Spanish and could be completed either online or in hard copy. A total of 83 member organisations were contacted on the 22nd of July 2005 and 34 organisations responded with data as of the 20th January 2006. All member organisations were actively followed up with reminders sent by facsimile, email and telephone (see appendix 1).

Study Limitations

The main limitation of this report is the lack of full details from all countries of the number, distribution, demographics, and migration of pharmacists. Whilst full response from countries in this study was not achieved, a significant wealth of information of the human resources issues in pharmacy in many countries was collected. Many countries were not able to account for pharmacists and describe their practice area or status. In this instance, data may be misleading and further information systems development is required at a country level. Numbers may also be misleading as the distribution of pharmacists within a country may be imbalanced between rural and urban areas. Regional data groupings may not be fully representative but give an indication of trends. Further data is required from non-respondent countries on the workforce and greater study is required to understand the extent of pharmacist migration in non-English speaking countries.

With the constraints of time and limitations of existing country level databases, we were not able to collect data on the age distribution of pharmacists.

Data on the total number of pharmacists was reliant on the information provided by national pharmaceutical associations and/or national pharmacy boards. No verification on the practicing status of the pharmacists was done.

The study did not look at the supply and demand of the global pharmacy workforce in all respondent countries. Pharmacy schools should be engaged in future studies on the pharmacy workforce in order to develop a greater understanding of the human resources situation.
Part 1: Workforce Description

Pharmacists represent the third largest healthcare professional group in the world. The majority of pharmacists practice in community pharmacies, hospitals and other medical facilities. Smaller numbers of pharmacists are employed in the pharmaceutical industry.

Although various national initiatives studying the pharmacy workforce have been developed, such as the recent 2005 pharmacy workforce project of the Royal Pharmaceutical Society of Great Britain, little or no published international data exists.

The size of the labour force depends on a number of issues, including the number in the labour market of working age, the participation rate of those who are working, and the availability of those no longer working but who may return to pharmacy employment. It is also important to look at the health and retirement age of pharmacists. Other priorities may include identifying the levels, causes and implications of turnover among different cohorts of pharmacists; research into the adequacy and suitability of undergraduate training; examining the job satisfaction levels and motivations of pharmacists; and ensuring ethical recruitment.

This part describes what is known about the current pharmacy workforce in 34 countries. It also looks at the total number of pharmacists in each country, pharmacist to population ratios, gender distribution, and distribution according to practice area. Further examination of country imbalances are also explored in three countries.

Table 1. Respondent countries according to WHO Regions:

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<tr>
<th>Africa (5)</th>
<th>Eastern Mediterranean (4)</th>
<th>Europe (16)</th>
<th>Pan America (4)</th>
<th>Western Pacific (4)</th>
<th>South East Asia (6)</th>
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The 34 respondent countries are spread over the six WHO regions with the highest number of countries from the European region.

1.1 Global Overview: Pharmacists density

The data collected revealed that the pharmacist to population ratios vary widely from less than 5 pharmacists per 100,000 population to as high as over 200 the pharmacists per 100,000 population in some countries.

The average ratio in the Western Pacific countries is about 25 times more than that of the countries in the African region and has the highest ratios compared to other regions. The ratio is also related to the economic status of the country as can be seen in figure 1, with the low income countries having the lowest ratio and high income countries having the highest ratio.

The low availability of pharmacists in many developing countries is exacerbated by geographical distribution disparity between the rural and urban areas (refer to 1.3: Workforce shortages and imbalances).

Figure 1. Pharmacist densities by country income categories (World Bank Country Classification).

Refer to appendix 4 for more detailed information on pharmacy densities by income classification and by WHO regions.

1.2 Pharmacist gender distribution

There is a higher percentage of female pharmacists in the European and Africa/Eastern Mediterranean region. A higher percentage
of male pharmacists appear in the Western Pacific/South East Asia region, although this is largely due to the high number of male pharmacists in India (300,000 males which accounts for 70% of India’s pharmacist workforce). A higher percentage of male pharmacists is also seen in the Pan American region.

Figure 2. Pharmacist gender distribution by percentage according to region.

### 1.3 Regional observations

Distinctly, we observe that the majority of pharmacists in the 34 countries practice in the community and hospital setting, about 73% in total. Europe has the highest percentage of pharmacists in the community pharmacy setting, about 71%. There is also a much higher percentage of pharmacists in the Western Pacific and South East Asia countries working in the hospital sector than pharmacists in other regions. (21% compared to an average of 9% in all other regions).

Across the regions, we also see that the percentage of pharmacists in the Western Pacific and South East Asia countries, working in the Sales and Marketing sector is significantly higher (6% compared to less than 1% in all other regions).

About 13% of pharmacists are not accounted for by the national pharmaceutical boards and pharmacy councils in the African and Eastern Mediterranean countries and almost 19% of the pharmacy workforce in the South American region is practicing in other areas of pharmacy. These missing numbers indicate that data reporting protocols need to be reinforced and more in depth information has to be collected in order to better understand the work patterns of the profession as part of a global workforce strategy.

Figure 3. Pharmacist distribution across pharmacy practice fields as percentage of total workforce according to region.

### South East Asia Region

Figure 4. Pharmacist distribution across pharmacy practice fields as percentage of total workforce in the South East Asia region.
Nearly 40% of pharmacists in Indonesia and 50% of pharmacists in Thailand are not accounted for in the data records of the national pharmaceutical associations. This could also be due to lack of centralised record keeping at the country level. Similarly, in other WHO regions, some national pharmaceutical associations represent only a particular field of practice and thus, do not have the data for other fields. There is a need to reinforce a system of data collection so as to enable reasonable trend watching on the workforce.

**Western Pacific Region**

Figure 5. Pharmacist distribution across pharmacy practice fields as percentage of total workforce in the Western Pacific region.

The WHO regions represent administrative categories, and some cover a broad range of countries with different characteristics. Thus it is interesting to look at some of the intra-regional differences. Large intra-regional differences can be observed in the Western Pacific region. Seventy percent of the pharmacists in Australia work in the community pharmacy sector while in Singapore and Taiwan, less than 20% of the workforce is in the community sector. This region also reflects some of the higher percentages of pharmacists working in the global sales and marketing sector, 11% (Singapore) and 9% (Taiwan).

**Pan American Region**

There are distinct differences in the work patterns of the pharmacy workforce between countries like Brazil and Uruguay even within the same WHO region. Over two thirds of pharmacists work in community pharmacy in Brazil compared to just a third in Uruguay. A large proportion of pharmacists in Uruguay are unaccounted for.

**African and Eastern Mediterranean Region**

The work patterns of the African and Eastern Mediterranean region is similar to the European region, with a distinct majority of pharmacists working in the community sector. This region reports the highest percentage of pharmacists not accounted for in their pharmacy workforce. Côte d’Ivoire reported about 24% of pharmacists working in other sectors. This figure included pharmacists working in laboratories, pharmaceutical wholesalers and other private dispensaries.
European Region

![Figure 8. Pharmacist distribution across pharmacy practice fields as percentage of total workforce in the European region.](image)

Within the European region, we observe that some countries (Denmark, Norway, and Iceland) have a notably higher share of pharmacists in the industry. Although community pharmacists represent about 70% of the European workforce, only 35% and 58% of the workforce are in community pharmacy in Iceland and Portugal respectively.

### 1.4 Workforce shortages and imbalances

The number of pharmacy graduates per year is escalating in many countries worldwide in an effort to provide enough pharmacists to meet demands and fill vacancies. The number of pharmacy schools worldwide currently stands at 914. The shortage of pharmacists has been attributed to increases in the volume of prescriptions; growth in the population over the age of 65; greater administrative requirements for handling third-party payments; the changing role of pharmacists; and the growing proportion of women in the profession who are less likely to work full time.

A shortfall of over 150,000 pharmacists by 2020 in the USA was projected in a study in 2002. Similarly, in Australia the demand for pharmacists is projected to increase between the years 2000 to 2010 from 13,000 to 17,200; thus leading to a shortfall of about 3,000 pharmacists by 2010. However, it was noted that a large pool of about 5,000 pharmacists are currently on the register in Australia but not working in pharmacy. In Zimbabwe, only 20% of the approved public sector positions for pharmacists were filled in 1999 with the majority of the 5,24 registered pharmacists opting to work in the private sector.

There is no internationally established minimum recommended pharmacist to population ratio. Many countries have developed their own recommendations based on demand for pharmaceutical services. In France, the l’Ordre National des Pharmaciens submits annual workforce statistics such as the number of practicing pharmacists, foreign pharmacists, and pharmacy students; attrition rate; regional distribution; and demographics to the Ministry of Health. These statistics are then used to determine the number of pharmacy students that may progress onwards from the first year of studies and additional foreign pharmacists that may practice in France each year. The demand for pharmacists and the required ratio to the population is specific to the local needs. These are determined by a range of factors including the population demographics; disease burden; economic status; market forces; pharmacist roles and competencies; legislation relating to medicines dispensing and prescribing; roles of other health workers; health systems and technology.

Workforce shortages are further compounded by imbalances in the distribution of existing pharmacists within countries. Current survey results show that the majority of the USA population live in areas that report at least a moderately high difficulty in filling vacant pharmacy positions.

About 10% of pharmacy positions in Canada were vacant in the year 2000. It was also noted that although the expansion...
of the roles of pharmacists has increased demand, shortages appear to place limitations on the counselling services provided by pharmacists. Long hours and increasing prescription numbers results in less time being spent counselling patients, a part of the pharmacists’ responsibilities that bring the greatest job satisfaction. Reduced staff morale, increased stress and risk of errors have been widely cited as consequences of pharmacist shortages. There are concerns that the excess demand for pharmacists is undermining the slow progress and development of clinical pharmacy.

Australia and Canada do not appear to have regional workforce distribution imbalances, compared to Ghana and Uganda, with the proportion of pharmacists in each region matching the proportion of the population. However, workforce imbalances have been reported within regions in workforce reports between urban and rural areas. Rural areas in Canada, Australia and New Zealand find it difficult to recruit younger pharmacists and are served by pharmacists who are looking to retire in the next ten years\textsuperscript{6,7,8}. Migrant workers are recruited in locations that are not easily filled by local workers, especially rural areas. Some countries have programmes in place to encourage pharmacists to work in rural settings and increase exposure to rural pharmacy practice, such as the Pharmacy Guild of Australia’s Rural and Remote Pharmacy Workforce Development Program (RRPWDP).

Ghana

In 2005 the total number of pharmacists registered by the Pharmacy Council in Ghana was 2162. Of these, 1579 were recorded to work as either private or public sector pharmacists. The country of 21 million people is served by a ratio of 10 pharmacists per 100,000 population\textsuperscript{12}.

Although 15\% of practicing pharmacists work in the public sector in hospital pharmacy, they are disproportionately distributed in the more urban areas of Ashanti and the Greater Accra regions in Ghana. Likewise, 67\% of pharmacists working in the private sector are based in the Greater Accra region\textsuperscript{12}. Imbalances in regional distribution leave regions other than the Greater Accra and Ashanti with around 2 pharmacists per 100,000. Delegating certain functions in pharmacy assistants has assisted to relieve pharmacists of excess workload.

Figure 9. Distribution of pharmacists working in private and public sector vs. population across each region in Ghana in 2005 (June).
Note: Data for Northern, Upper East and Upper West for private sector pharmacists was only available as pooled data and is given as an average value.

The Ghanaian pharmacist workforce has seen an increase of 79\% in the number of public sector pharmacists and 56\% for the number of private sector pharmacists between 2001 and 2005. The percentage increase is mostly seen to the number of pharmacists working in the Greater Accra region and less so in other regions. This trend may not continue unless the migratory flow of pharmacists from Ghana is reduced. Since 2001, Ghana has trained 700 pharmacists through its only pharmacy school although it is believed that a large proportion of these graduates have migrated abroad (refer to Part 3: Migration of Pharmacists).

Kenya

Kenya has a population of almost 34 million that is served by 1342 pharmacists registered with the Pharmacy and Poisons Board of Kenya in 2005. The number of graduates each year from the pharmacy school has doubled from 25 in 2000 to 53 in 2005. The Kenyan Pharmacy and Poisons Board estimates that over 190 pharmacists have migrated abroad in the last ten years, a loss that is equivalent to the total number of pharmacists that were trained since 2000.
In 2003, a WHO “3 by 5” emergency mission found that 160 pharmacists or pharmacy technicians were unemployed in Kenya; a readily available workforce that could be utilised to scale up HIV/AIDS medicines access.13

Uganda

Uganda, with a population of almost 27 million, struggles to effectively deploy their limited human resources of 249 pharmacists. There is a ratio of just 1 pharmacist per 100,000 population however nearly 90% of these pharmacists practice in the Central region leaving the other three regions greatly underserved. Up to 25 pharmacists graduate each year, a number that is grossly inadequate to meet needs. Pharmacist availability was estimated to be about 30% of the required number by the Ministry of Health.14

Figure 10. Distribution of pharmacists in Uganda across each region in 2006.

References

As pharmacists assume the increased responsibilities demanded in new roles, they must also make a corresponding commitment to improve their professional competence. Indeed the past four or five decades have seen an explosion of new knowledge relevant to the practice of pharmacy. In addition, particularly in the past decade, there have been vast changes in the practice of pharmacy. Keeping knowledge and skills up to date and addressing new concepts in the delivery of pharmaceutical services have been major challenges for pharmacists.

Healthcare professionals are expected to meet patients’ requirements for better and more accessible services, optimising the benefit they gain from their medicines, and reducing drug-related problems, while making the best use of pharmacists’ skills and knowledge within a multidisciplinary team.

Competence is the first and most fundamental responsibility of all health care providers and must be reinforced throughout the years of practice. After the degree is conferred, continuing professional education is the only real guarantee of the optimal quality of healthcare providers. Maintaining competence throughout a career during which new and challenging professional responsibilities will be encountered, is an ethical requirement for all health professionals. FIP has recognised this responsibility in its Code of Ethics for pharmacists “to ensure competency in each pharmaceutical service provided by continually updating knowledge and skills”.

The pharmacy degree is not an end point but the attainment of a standard. In the FIP Statement on Good Pharmacy Education, it is stated that continuing professional development must be a lifelong commitment for every practicing pharmacist.

The concept of Continuing Professional Development (CPD) was proposed as a culture of lifelong learning in which learning programmes are used to identify and meet the learning needs of individual health professionals. CPD can be defined as “the responsibility of individual pharmacists for systematic maintenance, development and broadening of knowledge, skills and attitudes, to ensure continuing competence as a professional, throughout their careers.”

It must be an ongoing and cyclical process of continuous quality improvement by which pharmacists seek to maintain and enhance their competence in both current duties and anticipated future service developments.

It is important to differentiate CPD and Continuing Education (CE). The latter can be defined as structured learning experiences and activities in which pharmacists can engage after they have completed their academic education so as to improve knowledge, skills and competencies. Comparatively, CPD requires pharmacists to take personal responsibility for the identification of their learning and development needs and, importantly, for subsequent evaluation of their success in meeting those needs.

In CPD, CE is just one component of the learning experiences in which pharmacists are being encouraged to engage.

FIP strongly recommends national pharmaceutical organisations to take action to ensure that pharmaceutical education, both pre-university and post-university qualification, is designed to equip pharmacists for the roles they have to undertake in community and hospital practice.

2.1 CPD and CE Survey Respondents

Seventeen countries responded to the CPD/CE survey following up from the Pharmacy Workforce survey. These countries represent all six of the WHO regions. Only three countries specifically identified their systems as being CPD systems (Japan, Portugal and the United Kingdom).

<table>
<thead>
<tr>
<th>Table 2. Respondent countries according to WHO regions:</th>
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<tbody>
<tr>
<td>Africa (2) Eastern Mediterranean (3) Europe (5) Americas (1) Western Pacific (1) South East Asia (0)</td>
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<tr>
<td>Kenya Zamb Win Cyprus Israel Mediterranean</td>
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</tbody>
</table>
2.2 Mandatory CPD and CE

A total of 37 countries, from both the Pharmacy Workforce Survey and the CPD/CE survey, responded to the question on whether CPD and/or CE is mandatory for pharmacists. Results showed that CPD and/or CE is mandatory in 9 countries and not mandatory in about 28 countries.

From the responses of the survey, we observe that many countries are in various developmental stages of CPD and CE implementation. The scenario can be unique in certain countries. For example, in Denmark there is no obligation for CPD or CE to renew or maintain pharmacist registration, however, Pharmakon (www.pharmakon.dk) is the central institution for providing CE programmes for pharmacists. Also the Danish University of Pharmaceutical Sciences (www.dfuni.dk) also offers a range of learning activities.

Embracing CPD will put pharmacists in a learning mode on a day-to-day basis; they will no longer separate learning from practice. Informal learning must be integrated into structured learning to meet identified specific learning and development needs in the CPD cycle.

There are questions that need to be asked to ensure effective mandatory CPD:

- Does it adequately address the learning needs of pharmacists?
- How can pharmacists access learning?
- Are we promoting learning or gathering hours?
- Are all required competencies for pharmacists addressed?
- How do we show evidence of practice change?
- How can we minimise fraudulent reporting?

Governments (national and sub-national pharmacy boards) were responsible for regulating CPD and CE for pharmacists in 7 of the respondent countries. In countries that had more than one pharmacy regulatory board, respondents were asked to explain the relationships between them. Information collected on the regulatory boards and CPD and CE systems can be referred in appendix 5.

Responses also showed that 7 of the CPD and CE systems were credits-based.

There is a wide variety of CPD and CE providers and most commonly, learning programmes are provided by national pharmaceutical associations, pharmacy boards, universities, teaching hospitals and pharmaceutical companies. In some countries like Finland, there are specialised pharmaceutical learning centres for training pharmacists like The Palmenia Centre for Continuing Education (www.helsinki.fi/palmenia/english/).

The establishment of CPD and CE standards and accreditation of providers vary from country to country and here we note some of the unique situations in these countries.

- In Canada, the provincial regulatory authority and/or the Canadian Council for Continuing Education in Pharmacy accredits CE programmes for pharmacists. The former is responsible for provincial programmes while the latter is responsible for national programmes.
- In Finland, each of the CE providers has set their own standards. For example, the Pharmaceutical Learning Centre and the universities provide most of the CE programmes for pharmacists and they follow their own standards.
- In Zambia, a standard for CE providers has yet to be established.
- In Portugal, each CPD activity is subject to a standards-based evaluation of its quality standards by the Portuguese Pharmaceutical Society. These encompass the definition of learning objectives, programme content and educators, applicability and relevance to practice, among others.

The data also indicated that only three countries have mandatory accreditation of their CPD and CE providers.

2.3 Incentives

The most common incentive for pharmacists to undergo CPD or CE is the renewal of a license to practice as a pharmacist in the country. In some provinces of Canada, pharmacists require proof of completion of a minimum number of hours of CE to renew their license. In some other provinces, during a quality assurance process, pharmacists may be required to have their learning portfolio reviewed.

In Finland, there are long-term professional development programmes for community pharmacists and these programmes aim to upgrade practicing pharmacists in management, busi-
ness and professional skills. In Finland, a license from the National Agency for Medicines is needed in order to own a retail pharmacy and if there are several applicants for a pharmacy ownership license, it shall be granted to the applicant who may be considered the best qualified to operate the pharmacy. When a pharmacist has received a certificate for undertaking professional development programmes, he/she usually has a better chance in owning a pharmacy.

In the United Kingdom, CPD is linked to registration and practising status. Pharmacists must sign a declaration to do CPD annually if they register as practicing pharmacists.

In Israel, certificates are issued. Negotiations are underway for the Managed Care Organisations (MCO) to better remunerate pharmacists who have completed CE courses.

2.4 Penalties

In most countries with mandatory CPD and/or CE, a failure to complete the requirements for CPD or CE often results in the inability to renew a pharmacy practice license or risk being struck off the pharmacy register.

In Kenya, in the event that a pharmacist does not comply with the CPD requirements, the Pharmacy and Poisons Board (PPB) may impose any or more of the following:
- Requiring the pharmacist to follow a remedial CPD programme.
- Requiring the pharmacist to write an examination.
- Registering the pharmacist in a category that requires supervision.
- De-registering the pharmacist.

Pharmacists who find difficulties in performing CPD may be supported in the United Kingdom with remedial programmes. In Portugal, pharmacists may have to undertake an extensive examination to maintain a license to practice or undergo a disciplinary action and be suspended from practice.

2.5 CPD and CE Learning Portfolios

Only four countries have specialised CPD/CE toolkits or portfolios for pharmacists undergoing CPD.

We recognise three important features of CPD:
- CPD is practitioner-centred and self-directed
- CPD is practice related
- CPD is outcomes orientated

In our literature search we found little evidence relating to the use of portfolios in self-directed learning outside a formal scheme of study. There was a study done in the University of Wales on piloting a toolkit to aid portfolio building. This project was based on qualitative methods using focus groups to explore the experience of 14 pharmacists using a “portfolio development toolkit”; a pack designed to help them start a CPD portfolio. The pack promotes a number of specific approaches to key aspects of the CPD process.

For more detailed information on each country’s CPD and CE system, see appendix 5.

References

6. The Accreditation Council for Pharmacy Education (ACPE). Available at: www.acpe-accredit.org
The WHO’s Mejia study published in 1978 was the first step of the organisation’s response to a mandate calling for a study of health workforce migration\(^1\). This study provided a statistical report on the stock and flow of physicians and nurses in 137 countries and an analysis of the characteristics of migrants, directions, possible determinants and consequences, and actions to regulate migration.

In 2002, the World Health Assembly asked the secretariat to “accelerate development of an action plan to address the ethical recruitment and distribution of skilled health care personnel, and the need for sound national policies and strategies for the training and management of human resources for health”. In the same year, FIP participated in the WHO Human Resources and National Health Systems - Shaping the Agenda for Action Workshop. This workshop involved a range of stakeholders including ministries of health and professional organisations to identify priorities for action and partnership in addressing human resources for health issues.

WHO resolutions passed in May 2004 urged Member States among others to develop and establish mechanisms to mitigate the adverse impact on developing countries of the loss of health personnel through migration, including means for recipient countries to support the strengthening of health systems, in particular human resources development. It also requested the Director General of WHO among others to establish and maintain in collaboration with relevant countries/institutions/organisations, information systems which will enable the appropriate international bodies to monitor independently the movement of human resources for health, as well as conducting research on the international migration of health workers.

Little has been published or is known about the extent of the international migration of pharmacists. Though the migration of pharmacists has been recognised as an issue in reports of the WHO and some papers, concrete data for the most part has been unavailable\(^2,3,4,5\). There is no data on the migratory flow and itinerary of pharmacists and this was not studied in this report. Such data would be useful to determine patterns in migration, as statistics on the migration of pharmacists from one country to another do not provide the complete picture. Pharmacists may migrate to certain countries as a ‘stepping stone’ to facilitate onwards migration to other countries. The FIP Global Pharmacy and Migration study targeted selected countries that had been anecdotally described as receiving (recipient countries) and losing (source countries) large volumes of pharmacists.

### 3.1 The extent of pharmacist migration

The number of overseas pharmacists registering in recipient countries is the most reliable data however this does not fully capture the extent of migration. Those who have been unsuccessful in registering as pharmacists and/or working as pharmacy technicians after migrating to other countries are often not detected. In many countries, a letter of good standing or confirmation of registration is required from overseas pharmacists to complete their registration application. Source countries are able to track this with some limitation the number migrating abroad. What is detectable may just scratch the surface of the issue. What is also unknown is the pattern of migration of pharmacists. In figure 11 it appears that the majority of foreign pharmacist registrations are from high income countries (World Bank Country Classification). Although the proportion of lower-middle and low income countries may appear to be less, this still represents a significant effect on the source countries.

#### Figure 11. Foreign pharmacists registering in Ireland, New Zealand and United Kingdom according to origin economic country classification.


The limitations of registration numbers demonstrating the extent of migration can be seen in the case of South Africa,
Part 3: Migration of pharmacists

where only 18 foreign pharmacists have registered with the Pharmacy Council since 2003. Overseas pharmacists seeking to register as a pharmacist must first apply to join the South African Ministry of Health’s Foreign Workforce Management Programme. Contrary the few that have registered, 184 pharmacists have applied to the Ministry’s Programme since 2003. The staff coordinating the Programme at the Ministry of Health stated that they were becoming increasingly overloaded with the growing number of inquiries from foreign health professionals, indicating an increasing trend for receiving health professionals from other countries. Many pharmacists migrating to South Africa do not successfully complete the registration requirements which includes one year of mandatory community public service. In 2001 about 1000 pharmacy students graduated from South Africa; in the same year 600 pharmacists emigrated abroad.

Many regulatory and professional bodies were not able to give accurate figures for the number of pharmacists migrating abroad or registering from abroad each year. This data is not routinely collected from pharmacists and difficulties exist in tracking this information. In large countries such as India, Canada, Australia and the USA, sub-national boards of pharmacy regulate the profession and individually collect information for each state/province, hence the level of detail of data collected is often inconsistent. Separate bodies may also be responsible for training or examining foreign pharmacists at a national or sub-national level. Lack of coordination and systematic reporting at a national level leads to difficulties in collating and interpreting detailed information about the workforce. Only 16 of 52 state boards of pharmacy responded in the USA, with just 5 states keeping records on the number of foreign trained pharmacists registered in their state. Data for the USA on foreign pharmacists is largely incomplete and requires further study before being reported. Foreign pharmacists employed in academia, industry and administration positions are not required to be registered so registration numbers may underestimate true figures.

The extent of data and information management is inconsistent in large countries with many sub-national unable to provide the required data relating to the number of foreign pharmacists, registrations per year, migrating pharmacists and pharmacy graduates. Figure 12 demonstrates the proportion of registered pharmacists that are foreign, however this is likely to be an underestimate as data is incomplete for large parts of Canada and Australia.

![Figure 12. Proportion of registered pharmacists that are foreign (2005).](image)


Data can also be variable between reports from the same sources and difficult to validate. Although the migration of pharmacists is not touted by the Pharmaceutical Society of Uganda to be an issue with just one pharmacist migrating abroad on average per year to their knowledge, Matowe et al published in 2004 that a third of registered pharmacists were working and residing outside of Uganda.

The factors encouraging pharmacists to leave their country (push factors) or move to a country (pull factors) have not been studied. Studies examining reasons for migration in physicians and nurses have found factors such as income, job satisfaction, career opportunity, working conditions, management and governance and social and family. Individuals may also choose to train in health as a means to facilitate migration.

Despite these limitations, the data collected in the FIP Global Pharmacy Workforce and Migration Study has identified a growing trend of international migration of pharmacists, an issue that not only affects developing countries but also developed countries.

3.2 Australia

Since 1995, over 1100 foreign pharmacists have registered in Australia in five of the eight states where data was available. The supply of pharmacists from overseas has increased since the mid 1980’s. The Department Immigration and Multicultural Affairs found an increase of over 40% in the number of individuals with pharmacy qualifications permanently migrating to Australia between 1993-1994 and 1997-1998. Foreign pharmacists account for over a quarter of registered pharmacists in Western Australia with most pharmacists...
originating from the United Kingdom and South Africa. Only two state boards kept data on the country of origin of foreign pharmacists and three on the total number of foreign pharmacists currently registered. The proportion of pharmacists that are foreign is under 10% though it may be higher given that no data is available for five state boards.

Table 3. Total number of pharmacists registered in each state of Australia (2005).

<table>
<thead>
<tr>
<th>State</th>
<th>Total Registered Pharmacists</th>
<th>Total Foreign Registered Pharmacists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Australia</td>
<td>1930</td>
<td>516</td>
</tr>
<tr>
<td>Victoria</td>
<td>5301</td>
<td>Not Available</td>
</tr>
<tr>
<td>New South Wales</td>
<td>7668</td>
<td>1016</td>
</tr>
<tr>
<td>South Australia</td>
<td>1399</td>
<td>28</td>
</tr>
<tr>
<td>Queensland</td>
<td>3930</td>
<td>Not Available</td>
</tr>
<tr>
<td>ACT</td>
<td>401</td>
<td>Not Available</td>
</tr>
<tr>
<td>Tasmania</td>
<td>570</td>
<td>Not Available</td>
</tr>
<tr>
<td>Northern Territories</td>
<td>205</td>
<td>Not Available</td>
</tr>
<tr>
<td>Total</td>
<td>21,434</td>
<td>1,560</td>
</tr>
</tbody>
</table>

Source: State boards of pharmacy

The number of foreign pharmacists registering in Australia appears to have steadily increased since 1995 with the vast majority of foreign pharmacists registering in New South Wales. Statistics relating to Australian pharmacists migrating abroad was only tracked by the Pharmacy Board of Tasmania.

**Australian pharmacy graduates**

![Graph showing number of graduates](image)

The number of pharmacy graduates per year has been steadily increasing since 1985 to meet demand. One thousand pharmacy students graduated in Australia in the year 2004 with more expected in the near future. Two new schools of pharmacy have opened in the state of New South Wales with their graduates expected in 2006. The University of Sydney graduated its first students through the Master of Pharmacy programme in 2004 in addition to graduates of the standard programme. The Master of Pharmacy programme is a graduate entry course that can be completed in two years by applicants with a Bachelor degree.

### 3.3 Canada

Foreign pharmacists registered in Canada originated, in descending order, from Egypt, USA, India, Pakistan, Philippines, Pakistan, United Kingdom, South Africa, Yugoslavia, and Korea. Information relating to the number of Canadian pharmacists migrating abroad was not collected by any provincial board of pharmacy. The number of registrations of foreign pharmacists has steadily increased over the last ten years as seen in figure 15 with the majority of registrations in Ontario. Due to lack of data from Quebec prior to 2005 and three other provinces it is difficult to interpret the rate of increase.
3.4 Ghana

With an existing workforce of 10 pharmacists per 10,000 population, the migration of nearly two thirds of its 140 graduates in 2003 and continued upward trend has significant effects.

3.5 Ireland

The number of foreign pharmacists registering in Ireland has almost doubled since 2001. Foreign pharmacists constitute almost half of the number of registered pharmacists in the country. A new pharmacy school was opened in 2006 to supply more trained pharmacists. Pharmacists from the United Kingdom (276) made up half of the foreign pharmacists whose country of origin was recorded by the Society. Pharmacists trained in Spain, Australia and New Zealand were the other most common. Ireland loses a significant proportion of its workforce to migration each year. Between 2001 and October 2005, 113 Irish pharmacists registered in the United Kingdom alone, over a third of the number graduating in the same period (source: Royal Pharmaceutical Society of Great Britain, 2005).

3.6 Kenya

The Kenyan Pharmacy and Poisons Board estimates that over 190 pharmacists have migrated abroad in the last ten years, a loss that is equivalent to the total number of pharmacists that were trained since 2000. Kenya receives around 30 applications from foreign pharmacists to register a year, half of these are successful. This can equate to half the number of pharmacists graduating. Most of the foreign pharmacists are from India or Kenyan pharmacists who have trained in India.

3.7 New Zealand

The number of pharmacists migrating abroad from New
Zealand between 2000 and 2004 has been consistently greater than the number graduating. The migration abroad may be mostly temporary but it is not clear and the consequent impact on the pharmacy workforce in New Zealand is difficult to ascertain.

Figure 18. Number of pharmacists graduating vs. migrating abroad from New Zealand.
Source: Pharmacy Council of New Zealand (2005).

Eight pharmacists were registered from Africa, Middle East or Asia between 1980 and 1989. This has increased to 113 between 1990 and 1999. Most of the foreign pharmacists that currently practise in New Zealand are from the United Kingdom, followed by South Africa and Australia. There are as many foreign pharmacists registered in New Zealand as there are registered pharmacists listing overseas addresses.

Figure 19. Country of origin of registered foreign pharmacists in New Zealand.
Source: Pharmacy Council of New Zealand (2005)

3.8 United Kingdom

The number of pharmacists migrating to the United Kingdom has increased since 2000. Although foreign pharmacists account for less than 10% of the pharmacist workforce, this is still a large number of pharmacists compared to other countries, especially source countries. Pharmacists who listed an address outside of the United Kingdom represented just over 10% of pharmacists on the register in 2002. Over three quarters of these are pharmacists who graduated from the UK. The United States of America was the most common destination country with 14% of overseas pharmacists, half of which are working in industry or academia where registration is not required. The number of pharmacists registering in the United Kingdom from Zimbabwe and New Zealand accounts for the majority of the number of pharmacists produced in those countries over 2001-2004 (figure 20). What is unknown is whether the migration is temporary or permanent. For most pharmacists registering in the United Kingdom from New Zealand and Australia, it is suspected to be temporary. The effect on these source countries may not be as great compared with countries where migration is more likely to be permanent, such as Zimbabwe.

Figure 20. Number of pharmacists registering in the United Kingdom vs. graduating from source countries between 2001 - 2004.
Source: Royal Pharmaceutical Society of Great Britain, Pharmacy Council of New Zealand, Pharmaceutical Society of Great Britain

Figure 21. Pharmacists entering the workforce per year in the United Kingdom (2001-2004).
Source: Royal Pharmaceutical Society of Great Britain
The numbers of pharmacy schools in the United Kingdom has increased to 20 schools with more graduates each year. Four new schools of pharmacy have yet to produce any graduates.

Figure 22. Number of pharmacists registering each year in the United Kingdom according to Source countries (2001-2005 Oct).

Figure 22 demonstrates the trend over 2001-2005 of the total number of pharmacists registering in the United Kingdom from selected countries. Data for 2005 is incomplete for the calendar year. Most notably pharmacists from Spain and Australia are registering in the United Kingdom in great numbers.

### 3.9 Registration of foreign pharmacists

The registration requirements of foreign pharmacists varies greatly between countries though common elements exist. Pharmacists from countries that have reciprocal arrangements or special recognition of their own nationals who have trained abroad have less requirements for registration. Greater movement from pharmacists of these countries can be seen where such arrangements are present. Many countries require foreign pharmacists to undertake pre-registration practice training in a pharmacy setting and successful completion of examinations and language requirements. Refer to appendix 6 for full information.

### References

Part 4: Pharmacy Technicians

Pharmacy technicians are defined as individuals working in a pharmacy, who under the supervision of a licensed pharmacist, assist in pharmacy activities not requiring the professional judgment of a pharmacist. In a United States paper on pharmacy technicians in 2002, it is stated that although pharmacy technicians are employed in all pharmacy practice settings, their qualifications, knowledge and responsibilities are markedly diverse. There are many issues regarding the development of the potential of pharmacy technicians in playing a role in health-care delivery. These issues may include the education and training of skilled dispensing support staff, accreditation of training institutes and certification.

There is a legal requirement for the certification of pharmacy technicians in 13 respondent countries and most of the countries do have some form of structured training and curricula in place. These learning programmes usually consist of a period of vocational training with some aspects of continuing education in a higher institution like a training college/hospital or university. Formal technician training programmes differ in many aspects, especially in duration.

In Europe, we observe that there are 11 countries (out of 16) that have formal education for pharmacy technicians. In the Western Pacific and Southeast Asia region, education is often informal and competency requirements are based on training. Training involves learning through specialised instruction, repetition and practice of a series of tasks until proficiency is achieved. Education, on the other hand, involves a deeper understanding of a subject, based on explanation and reasoning, through systematic instruction and training. A distinction between modes of training and learning needs to be made to best prepare for the future development of pharmacy technicians.

Without a formal education and professional regulatory systems in place, it is challenging to define the size of the workforce.

FIP is proactive in recognising the need to understand the status and development of the pharmacy technician workforce today. A new survey has been initiated to investigate the certification requirements and numbers of pharmacy technicians to further explore the issues highlighted in this report.

A summary of findings is provided in appendix 7.

References

Part 5: Actions and directions

Pharmacists play a vital role in health care systems and despite variances in practices worldwide, common workforce issues have been reported. These common workforce issues fall under four broad themes:
1. Workforce regulation and description
2. Workforce shortage
3. Distribution imbalance
4. CPD and practice development

FIP recognises that there is a need for global concerted action to evaluate, regulate, document and develop the pharmacy workforce. In order to meet this need, knowledge gaps about pharmacists, pharmacy technicians and other support staff must be identified and filled. Without an accurate picture and adequate monitoring or documentation systems, it is difficult to prepare the workforce for future developments and implement policies to correct imbalances and shortages.

5.1 Workforce regulation and description

The pharmacy workforce should be regularly documented at a sub-national and national level and reported to stakeholders and policy makers. Pharmacy professional and regulatory bodies have an important role to play in monitoring the pharmacy workforce and developing strategies to address issues such as shortages, skill mix and imbalances. The practice area, practice status (practicing or non-practicing) and demographics of pharmacists should also be recorded. Many sub-national regulatory boards did not track data on foreign pharmacists such as the number registering per year or the country from which they originated. This data is useful to monitor trends in migration and understand the extent of it. The same is also the case for pharmacists migrating abroad, although this is more difficult to track. Data collected on registered pharmacists by regulatory bodies should have basic consistencies and be collated at a national level on a regular basis if there is more than one in a country. This information is crucial to identify issues, project future trends and prepare the workforce at a national level, especially if there is considerable movement between regions in a country.

The WHO Global Atlas of the Health Workforce serves as a useful tool to examine the distribution of health professionals. As of October 2004, data on the number of pharmacists was not available from 54 countries on the Global Atlas, with half of the missing figures from countries in the Pan American Region. Many reports have also cited that data was not presented or discussed on the pharmacy workforce due to...
lack of information. Despite the data that has been collected from Ministries of Health in 2004, the comparison to the number of pharmacists collected by FIP in the Global Pharmacy Workforce and Migration Study shows an average variance of 30% between figures leaving the accuracy of the information available in question. Sub-national and national regulatory bodies are in a unique position to inform their Ministry of Health of workforce statistics. This has the downstream effect of inclusion in international workforce strategy and planning reports. Documentation and recognition of the whole pharmacy workforce is required, including technicians and assistants.

5.2 Workforce shortage

The shortage of pharmacists is said to be due to an aging population and increased disease burden, as well as pharmacy specific issues such as role diversification, increasing proportion of female pharmacists that are likely to work less hours and greater time requirements of administrative work related to managing third party payments. In many countries around the world the number of pharmacists graduating from training institutes are not enough to meet the rising vacancies. The number of pharmacy schools and graduates has increased steadily in recent years and with further schools opening, the number of pharmacists entering the workforce will grow. For some countries, especially those affected by high rates of migration abroad, the loss of health professionals cannot be abated by increasing the number of graduates due to resource and capacity limitations. Training institutions are also facing shortages in academic staff and are limited in their capacity to train the required number of pharmacists but maintain an adequate quality of education. In some countries it has been shown that a considerable section of the workforce is not working in pharmacy. Root causes to attrition must be identified and trends analysed. Without workforce retention the investment in workforce generation is lost.

5.3 Distribution imbalance

Should trends in the imbalanced distribution and shortage of pharmacists within countries continue; patient safety may be compromised through the increased risk of unsafe and stretched practices; job satisfaction reduced due to an exacerbation of difficult working conditions; and increases in attrition rate may be seen due to pharmacists leaving the country workforce through migration abroad and career changes. Although the workforce is growing in urban areas to meet demand within countries, this is not necessarily matched by increases in the rural areas. Regional and rural imbalances require greater investigation to better understand what needs to be addressed to encourage pharmacists to work in such areas.

5.4 CPD and practice development

Pharmacy practice in all sectors and settings should be based on competencies and maintained through CPD. CPD systems should be flexible and focused on needs based learning to ensure practicability and valid incentives. Such systems should be designed to facilitate career development and are also important to sustain and retain pharmacists, and increase job satisfaction and specialisation in areas of need. It is also important to distinguish between CPD and CE. Support for CPD such as learning portfolios and toolkits may be useful to manage and direct learning.

References:

Appendix 1: Global Pharmacy Workforce Survey
Appendix 2: Continuing Professional Development (CPD) /Continuing Education (CE) Survey
Appendix 3: Migration Study Survey
Appendix 4a: Pharmacist densities per 100,000 population by income classification
Appendix 4b: Pharmacist densities per 100,000 population by WHO regions
Appendix 5: Summary of CPD and CE systems by country
Appendix 6: Registration of foreign pharmacists
Appendix 7: Summary of data on pharmacy technicians
Appendix 8: Acknowledgements
APPENDIX I: GLOBAL PHARMACY WORKFORCE SURVEY

INTRODUCTION

In preparation for the WHO World Health Report 2006, FIP intends to collect data from all its Member Organisations for a global description of pharmacists. This questionnaire serves to find out the international distribution of pharmacists by country, gender and skills. FIP also aims to explore the various models of continuing professional development (CPD) for pharmacists.

Human resources for health are becoming important assets for governments around the world. Recognising this, FIP wishes to establish a global network of contact persons who are responsible for human resources issues for pharmacists in the national associations of our member countries. Please provide information of the personnel responsible for human resources for health in your national organisation.

For these reasons, FIP requests you to give as much information as you can and feel free to send the survey to others who are able to provide more information.

If you prefer, you may print this survey and send it via postal service to the FIP secretariat. Please mail the completed survey to:

International Pharmaceutical Federation,
FIP World Pharmacists Count Survey,
Andries Bickerweg 5,
Postbus 84200, 2508 AE
The Hague, The Netherlands

If you experience technical problems with submitting the survey, please contact Xuanhao Chan via email: xuanhao@fip.org or via telephone: +31703021988.

SECTION I: COUNTRY INFORMATION

1) Name of Country ............................................................................................................................................................................
2) Name of your organisation ..........................................................................................................................................................
3) Name of personnel responsible for human resources for health ..............................................................................................
4) Email address ..................................................................................................................................................................................
5) Telephone number(s) .....................................................................................................................................................................
**Section 2: Pharmacists**

A pharmacist is a person licensed to practice pharmacy in your country.

Questions 7 to 9 require you to provide data on pharmacists in 2004 by total numbers and numbers by gender.

FIP requires data from 2004. If you do not have data from 2004, please state the year in which your data was from.

6) **Year of data** ..................................................................................................................................................................................

7) **In 2004, how many pharmacists were there in your country?** ..................................................................................................

8) **Out of the total number of pharmacists, how many of them were FEMALE?** ..........................................................................

9) **Out of the total number of pharmacists, how many of them were MALE?** ..........................................................................

10) **Addition comments** .....................................................................................................................................................................

**Section 3: Pharmacy Technicians**

Pharmacy technicians assist and support licensed pharmacists in the delivery of pharmaceutical care and medications to patients.

They may work in various settings such as the hospital, community, or long-term care facilities.

FIP requires data from 2004. If you do not have data from 2004, please state the year in which your data is from.

11) **Year of data** .................

12) **Is there a legal requirement for pharmacy technicians to be certified in your country?**

Yes ................. No..................

13) **What is the training programme / certification necessary to be a certified pharmacy technician in your country?**

...........................................................................................................................................................................................................

14) **In 2004, how many pharmacy technicians were certified in your country?** ..........................................................................

15) **Additional comments** .....................................................................................................................................................................
Section 4: Pharmacy Practice Distribution

Questions 17 to 23 require you to fill in the number of pharmacists in various pharmacy practice settings, where applicable.

FIP requires data from 2004. If you do not have data from 2004, please state the year in which your data was from

16) Year of data ................................................................................................................................................................................

17) Academic and Research .............................................................................................................................................................

18) Community ................................................................................................................................................................................

19) Hospital ...................................................................................................................................................................................

20) Industrial ...................................................................................................................................................................................

21) Regulatory ...................................................................................................................................................................................

22) Pharmaceutical Sales and Marketing ....................................................................................................................................

23) Others ......................................................................................................................................................................................

24) Additional comments
...........................................................................................................................................................................................................
...........................................................................................................................................................................................................
...........................................................................................................................................................................................................

Section 5: Continuing Professional Development (CPD)

The concept of Continuing Professional Development (CPD) can be defined as “the responsibility of individual pharmacists for systematic maintenance, development and broadening of knowledge, skills and attitudes, to ensure continuing competence as a professional, throughout their careers.”

25) Does your country have Continuing Professional Development (CPD) programmes for pharmacists?
Yes ......................                               No......................

26) If you have answered YES in question 25, are these CPD programmes mandatory for a pharmacist licensure?
Yes ......................                               No......................

If you have answered YES in question 25, FIP would like to find out more about the CPD model(s) in your country. Please provide us with details of the person(s) whom FIP should contact for more information. (Questions 29 and 30)

A pharmacy regulatory body is the organisation responsible for the registration/licensing of pharmacists whereby the pharmacists are entitled to practice their profession, and for the oversight of the pharmacists’ professional conduct. The pharmacy regulatory body could be public, non-governmental or a mix of both.
27) Name of the national pharmacy regulatory body in your country

28) If there are more than one pharmacy regulatory bodies in your country, could you please describe the relationships between these regulatory bodies?

29) Name of person to contact for more information on the CPD model(s) in your country

30) Email address

31) Additional comments

Section 6: General Comments

32) We welcome you to provide any additional information or feedback to this survey.
APPENDIX 2: CONTINUING PROFESSIONAL DEVELOPMENT / CONTINUING EDUCATION SURVEY

This survey is focused on collecting information about the various Continuing Professional Development (CPD) / Continuing Education (CE) programmes for pharmacists in different countries.

SECTION 1: RESPONDENT INFORMATION

1. Respondent Name: ...........................................................................................................................................................................

2. Respondent Title and Occupation: .................................................................................................................................................

3. Email address..................................................................................................................................................................................

4. Telephone/Fax..................................................................................................................................................................................

5. Name of pharmacy body (Ministry, National Institution, Professional Association, etc) ..........................................................................

SECTION 2: PHARMACY REGULATORY BODY DESCRIPTION

1. How many pharmacy regulatory bodies for pharmacists (at both the national and sub-national level) exist in your country?
   a. National ..................................................................................................................................................................................
   b. Sub-National ...........................................................................................................................................................................

2. Please provide details of your regulatory body..........................................................................................................................................
   a. Full postal address .................................................................................................................................................................
   b. Phone number ........................................................................................................................................................................
   c. Email address ...........................................................................................................................................................................
   d. URL of website (if any)...............................................................................................................................................................
   e. Date when established ..............................................................................................................................................................

Additional information and comments (Optional)
..........................................................................................................................................................................................................
..........................................................................................................................................................................................................
...............................................................................................................................................................................................................
.............................................................................................................................................................................................................
Section 3: Continuing Professional Development (CPD) / Continuing Education (CE)

The concept of Continuing Professional Development (CPD) can be defined as "the responsibility of individual pharmacists for systematic maintenance, development and broadening of knowledge, skills and attitudes, to ensure continuing competence as a professional, throughout their careers." In some countries, this is also referred as Continuing Education (CE).

1. Is CPD/CE mandatory for pharmacists to maintain their pharmacy license to practice?
   a. Yes............................
   b. No..............................

2. What is/are the responsible organisation(s) for regulating CPD/CE for pharmacists? Please select as applicable.
   a. Pharmacy profession (National/Sub-National pharmaceutical association)............................
   b. Government (National/Sub-National Pharmacy board).........................................................
   c. Others............................

If there are more than one pharmacy regulatory bodies in your country, please describe the relationships between these regulatory bodies.

...........................................................................................................................................................................................................
...........................................................................................................................................................................................................
...........................................................................................................................................................................................................

Additional information and comments (Optional)

3. Is the model of CPD/CE system credits-based?
   (For example, a pharmacist is required to accumulate a minimum number of credits per year)
   a. Yes.................................
   b. No.................................

4. Please describe the CPD/CE system.
   (For example, in terms of the minimum requirements for CPD/CE, the value of 1 credit, the process of CPD/CE - if self-evaluation and recording is necessary and any other useful information.)

...........................................................................................................................................................................................................
...........................................................................................................................................................................................................
...........................................................................................................................................................................................................
5. Who are the providers of CPD/CE programme?
   ...........................................................................................................................................................................................................
   ...........................................................................................................................................................................................................

6. Is an accreditation of the CPD providers mandatory?
   a. Yes..............................
   b. No..............................

7. Is the accreditation of the CPD providers based on established standards for pharmacy education?
   a. Yes..............................
   b. No..............................

8. If YES, which standards are followed?
   ...........................................................................................................................................................................................................
   ...........................................................................................................................................................................................................

9. Describe the incentives for pharmacists to undergo CPD/CE?
   (For example, pharmacists who complete the CPD programme will receive a certificate or a license to practice in the country)
   ...........................................................................................................................................................................................................
   ...........................................................................................................................................................................................................

10. Describe the penalties for pharmacists who do not undergo CPD/CE?
    (For example, the right to practice removed)
    ...........................................................................................................................................................................................................
    ...........................................................................................................................................................................................................

11. Does your association have a toolkit/package for pharmacists who undergo the CPD/CE programme?
    a. Yes.........................
    b. No.........................

If Yes, FIP would like to request you to send a CPD toolkit/package to the below address by the 9 January 2006:

To: FIP Global Pharmacy Workforce and Migration Study
   International Pharmaceutical Federation (FIP)
   Andries Bickerweg 5
   2517 JP The Hague
   The Netherlands
SECTION 4: GENERAL COMMENTS

We welcome you to provide any additional information or feedback to this questionnaire.
APPENDIX 3: MIGRATION OF PHARMACIST SURVEY

To Whom It May Concern:

The International Pharmaceutical Federation (FIP) is currently collecting data on the migration of pharmacists worldwide with the intention to publish an international report. It is anticipated that this data will be included in the 2006 WHO World Health Report focusing on the theme of Human Resources for Health alongside data relating to the global description, professional development, and training of pharmacists.

The issue surrounding the migration of highly skilled professionals in the health care fields has been widely discussed in the literature and international forums. Available data on this phenomenon has focused mainly on physicians and nurses with little published or brought to the international agenda on the migration trends of pharmacists. Your assistance to provide data is greatly appreciated and will contribute significantly to this research as well as to highlight the migration of pharmacists as an important issue on an international level.

Specifically FIP is seeking data on the following:

1. The total number of registered pharmacists in your country in 2005.
2. The total number of migrant registered pharmacists in your country in 2005.
3. The number of pharmacists with an overseas forwarding address on your register.
4. The number of pharmacists graduating per year from your country from the year 2000 - 2005.
5. The number of pharmacists that registered from abroad each year in your country from the year 1995 – 2005.
6. The number of pharmacists from abroad that applied for registration from the year 1995 – 2005.
7. The countries from which pharmacists were originally registered as a pharmacist prior to application for registration and the corresponding numbers for each country.
8. The number of pharmacists migrating from your country to another country each year from 1995 – 2005.
9. The application procedure for pharmacists from abroad to register as a pharmacist in your country.

If you have any statistics, background papers, reports or contacts that may be useful, I would be most pleased to receive them. Please let me know by the 3rd of October if you are able to contribute data to the research. All sources will be acknowledged in the final report. Data will be required by the 17th of October.

Thank you kindly for your assistance and consideration.

International Pharmaceutical Federation (FIP)
PO Box 84200
2508AE Den Haag
The Netherlands
## APPENDIX 4A: PHARMACIST DENSITIES PER 100,000 POPULATION

### Low-income economies

<table>
<thead>
<tr>
<th>Country</th>
<th>Population at mid 2005</th>
<th>Total number of pharmacists</th>
<th>Pharmacists density per 100,000 pop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cameroon</td>
<td>16,326,100</td>
<td>957</td>
<td>5.81</td>
</tr>
<tr>
<td>Côte d'Ivoire</td>
<td>18,554,000</td>
<td>858</td>
<td>4.58</td>
</tr>
<tr>
<td>Ghana</td>
<td>22,699,000</td>
<td>1,624</td>
<td>7.21</td>
</tr>
<tr>
<td>India</td>
<td>1,098,500,000</td>
<td>5,500</td>
<td>4.93</td>
</tr>
<tr>
<td>Kenya</td>
<td>33,812,800</td>
<td>1720</td>
<td>5.09</td>
</tr>
<tr>
<td>Madagascar</td>
<td>17,786,600</td>
<td>353</td>
<td>1.96</td>
</tr>
</tbody>
</table>

### Lower-middle-income economies

<table>
<thead>
<tr>
<th>Country</th>
<th>Population at mid 2005</th>
<th>Total number of pharmacists</th>
<th>Pharmacists density per 100,000 pop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesia</td>
<td>222,912,000</td>
<td>15,486</td>
<td>6.97</td>
</tr>
<tr>
<td>Iran</td>
<td>68,669,000</td>
<td>6,500</td>
<td>9.49</td>
</tr>
<tr>
<td>Iraq</td>
<td>28,572,000</td>
<td>6,000</td>
<td>2.10</td>
</tr>
<tr>
<td>Thailand</td>
<td>55,722,000</td>
<td>4,493</td>
<td>8.07</td>
</tr>
</tbody>
</table>

### Upper-middle-income economies

<table>
<thead>
<tr>
<th>Country</th>
<th>Population at mid 2005</th>
<th>Total number of pharmacists</th>
<th>Pharmacists density per 100,000 pop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Czech Republic</td>
<td>10,372,000</td>
<td>973</td>
<td>9.36</td>
</tr>
<tr>
<td>Hungary</td>
<td>10,568,000</td>
<td>774</td>
<td>7.24</td>
</tr>
<tr>
<td>Turkey</td>
<td>73,952,000</td>
<td>201,500</td>
<td>27.12</td>
</tr>
<tr>
<td>Uruguay</td>
<td>3,419,000</td>
<td>1,700</td>
<td>50.77</td>
</tr>
</tbody>
</table>

### Annex:

1. 2003 data
2. 2004 data
3. 2005 data

---

**Note:** The data was extracted and adapted from a source that is not visible in the image. The text specifies the year of the data (2003, 2004, or 2005) in some cases.
### Global Pharmacy Workforce and Migration Report

#### Western Pacific

<table>
<thead>
<tr>
<th>Country</th>
<th>Population at mid 2005</th>
<th>Total number of pharmacists</th>
<th>Pharmacists density per 100,000 pop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>22,738,000</td>
<td>2,605^2</td>
<td>23.62</td>
</tr>
<tr>
<td>Iran</td>
<td>64,738,000</td>
<td>2,431,44</td>
<td>37.88</td>
</tr>
<tr>
<td>Singapore</td>
<td>4,296,000</td>
<td>2,436^1</td>
<td>56.79</td>
</tr>
<tr>
<td>Taiwan</td>
<td>22,738,000</td>
<td>2,063,34</td>
<td>90.32</td>
</tr>
</tbody>
</table>

#### Africa/Eastern Mediterranean

<table>
<thead>
<tr>
<th>Country</th>
<th>Population at mid 2005</th>
<th>Total number of pharmacists</th>
<th>Pharmacists density per 100,000 pop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cameroon</td>
<td>16,738,000</td>
<td>960^1</td>
<td>5.81</td>
</tr>
<tr>
<td>Central Africa</td>
<td>16,338,000</td>
<td>610^1</td>
<td>3.71</td>
</tr>
<tr>
<td>Ghana</td>
<td>22,751,000</td>
<td>1,613^2</td>
<td>7.06</td>
</tr>
<tr>
<td>Iraq</td>
<td>16,338,000</td>
<td>610^1</td>
<td>3.71</td>
</tr>
<tr>
<td>Israel</td>
<td>6,975,000</td>
<td>610^1</td>
<td>8.81</td>
</tr>
<tr>
<td>Kenya</td>
<td>33,531,000</td>
<td>1,329^2</td>
<td>3.97</td>
</tr>
<tr>
<td>Madagascar</td>
<td>17,532,000</td>
<td>485^1</td>
<td>1.06</td>
</tr>
</tbody>
</table>

#### Europe

<table>
<thead>
<tr>
<th>Country</th>
<th>Population at mid 2005</th>
<th>Total number of pharmacists</th>
<th>Pharmacists density per 100,000 pop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>8,620,000</td>
<td>4746^1</td>
<td>55.42</td>
</tr>
<tr>
<td>Belgium</td>
<td>10,421,000</td>
<td>7053^1</td>
<td>67.44</td>
</tr>
<tr>
<td>Denmark</td>
<td>5,445,000</td>
<td>3,485^1</td>
<td>64.22</td>
</tr>
<tr>
<td>France</td>
<td>64,738,000</td>
<td>7053^1</td>
<td>110.68</td>
</tr>
<tr>
<td>Germany</td>
<td>84,738,000</td>
<td>53,549^1</td>
<td>63.26</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>60,054,000</td>
<td>4701^1</td>
<td>78.26</td>
</tr>
<tr>
<td>Hungary</td>
<td>10,421,000</td>
<td>7053^1</td>
<td>77.44</td>
</tr>
<tr>
<td>Ireland</td>
<td>4,445,000</td>
<td>2,060^1</td>
<td>85.04</td>
</tr>
<tr>
<td>Italy</td>
<td>55,742,000</td>
<td>69,092^1</td>
<td>112.32</td>
</tr>
<tr>
<td>Norway</td>
<td>4,445,000</td>
<td>2,060^1</td>
<td>46.46</td>
</tr>
<tr>
<td>Portugal</td>
<td>10,421,000</td>
<td>9,247^1</td>
<td>88.40</td>
</tr>
<tr>
<td>Switzerland</td>
<td>7,446,000</td>
<td>53,68^1</td>
<td>72.49</td>
</tr>
<tr>
<td>Turkey</td>
<td>74,907,000</td>
<td>2,445^2</td>
<td>33.12</td>
</tr>
</tbody>
</table>

#### Latin America

<table>
<thead>
<tr>
<th>Country</th>
<th>Population at mid 2005</th>
<th>Total number of pharmacists</th>
<th>Pharmacists density per 100,000 pop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>184,843,000</td>
<td>9,955^1</td>
<td>50.19</td>
</tr>
<tr>
<td>Canada</td>
<td>34,238,000</td>
<td>5,137^1</td>
<td>50.56</td>
</tr>
<tr>
<td>United States</td>
<td>296,043,000</td>
<td>22,820^1</td>
<td>76.66</td>
</tr>
<tr>
<td>Uruguay</td>
<td>3,415,000</td>
<td>1,155^1</td>
<td>33.12</td>
</tr>
</tbody>
</table>

1. 2001 Population
2. 2001 Data
3. 2003 Data

---

**APPENDIX 4B**: PHARMACISTS DENSITIES PER 100,000 POPULATION

**BY REGION CLASSIFICATION**
<table>
<thead>
<tr>
<th>Country</th>
<th>Continuing Professional Development / Continuing Education</th>
<th>CPD Regulators</th>
<th>CPD Programmes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portugal National Board of the Portuguese Pharmaceutical Society</td>
<td>Yes Moderate practice, licence</td>
<td>Pharmacy board and government</td>
<td>Professional associations, pharmacy schools and other authorities, industry employers</td>
</tr>
<tr>
<td>Canada Canadian Pharmacists Association</td>
<td>Yes</td>
<td>Moderate practice, licence (variable)</td>
<td>Pharmacy associations, university pharmacy schools, industry employers</td>
</tr>
<tr>
<td>Germany Federal Union of German Associations of Pharmacists</td>
<td>No</td>
<td>Certification (mandatory)</td>
<td>Pharmacy associations, university pharmacy schools, industry employers</td>
</tr>
<tr>
<td>Singapore Pharmaceutical Society of Singapore</td>
<td>No</td>
<td>Certification and maintenance of professional licence</td>
<td>Pharmacy associations, university pharmacy schools</td>
</tr>
<tr>
<td>Malaysia Pharmacy Councils</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Country</td>
<td>Continuing Professional Development / Continuing Education</td>
<td>CPE Regulations</td>
<td>CPE Programmes</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------------------------------------------</td>
<td>-----------------</td>
<td>---------------</td>
</tr>
<tr>
<td>USA, Accreditation Council for Pharmacy Education</td>
<td>Yes</td>
<td>Multiple year duration</td>
<td>State Board of Pharmacy.</td>
</tr>
<tr>
<td></td>
<td>Mandatory</td>
<td>Incentives</td>
<td>Penalties</td>
</tr>
<tr>
<td></td>
<td>YES</td>
<td>Multiple year duration</td>
<td>The system operates as a small group of pharmacy educators who review their learning every 2 years. The most common practice is the voluntary participation in the American College of Pharmacists (ACP) accredited CE programs. ACP requires a minimum of 70 hours of approved CE every 2 years. The minimum requirement is 40 hours over a period of two years or one hour per year. Some states have no requirements, and the requirements vary from state to state. The minimum number of hours must be 70 hours (in most cases). In Iowa, for example, there is no minimum number of hours. CE courses can be approved by ACP, and State Board of Pharmacy is responsible for evaluation and approval of CE programs.</td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Cyprus, Medical Representatives Council</td>
<td>NO</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>England, College of Pharmacists</td>
<td>Yes</td>
<td>Certificate</td>
<td>The National Pharmacy Board is currently developing a CPE system.</td>
</tr>
<tr>
<td></td>
<td>Mandatory</td>
<td>Incentives</td>
<td>Penalties</td>
</tr>
<tr>
<td></td>
<td>YES</td>
<td>Certification</td>
<td>The system is based on the National Board of Pharmacy (NBP) guidelines. Many pharmacists are required to complete this course every year. Many states have implemented CE programs, but the requirements vary from state to state. The minimum number of hours must be 70 hours (in most cases). In Iowa, for example, there is no minimum number of hours. CE courses can be approved by ACP, and State Board of Pharmacy is responsible for evaluation and approval of CE programs.</td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>United Kingdom, Royal Pharmaceutical Society of Great Britain</td>
<td>Yes</td>
<td>Multiple years</td>
<td>Pharmacy professionals are required to complete their CPE programs every 2 years. The system operates as a small group of pharmacy educators who review their learning every 2 years. The most common practice is the voluntary participation in the American College of Pharmacists (ACP) accredited CE programs. ACP requires a minimum of 70 hours of approved CE every 2 years. The minimum requirement is 40 hours over a period of two years or one hour per year. Some states have no requirements, and the requirements vary from state to state. The minimum number of hours must be 70 hours (in most cases). In Iowa, for example, there is no minimum number of hours. CE courses can be approved by ACP, and State Board of Pharmacy is responsible for evaluation and approval of CE programs.</td>
</tr>
<tr>
<td></td>
<td>Mandatory</td>
<td>Incentives</td>
<td>Penalties</td>
</tr>
<tr>
<td></td>
<td>YES</td>
<td>Multiple years</td>
<td>The system is based on the National Board of Pharmacy (NBP) guidelines. Many pharmacists are required to complete this course every year. Many states have implemented CE programs, but the requirements vary from state to state. The minimum number of hours must be 70 hours (in most cases). In Iowa, for example, there is no minimum number of hours. CE courses can be approved by ACP, and State Board of Pharmacy is responsible for evaluation and approval of CE programs.</td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Country</td>
<td>Continuing Professional Development / Continuing Education</td>
<td>Mandatory</td>
<td>Incentives</td>
</tr>
<tr>
<td>---------</td>
<td>---------------------------------------------------------</td>
<td>-----------</td>
<td>------------</td>
</tr>
<tr>
<td>Iraq, Syrian Arab Republic</td>
<td>Continuing Professional Development</td>
<td>No</td>
<td>Certificate</td>
</tr>
<tr>
<td>Jordan, Pharmaceutical Association of Jordan</td>
<td>Continuing Professional Development</td>
<td>No</td>
<td>Certificate</td>
</tr>
<tr>
<td>Nepal, Pharmacists Board</td>
<td>Continuing Professional Development</td>
<td>Yes</td>
<td>Renewal of Annual Practicing Licence (APL)</td>
</tr>
<tr>
<td>Nepal, Kathmandu University</td>
<td>Continuing Professional Development</td>
<td>No</td>
<td>N/A</td>
</tr>
<tr>
<td>Pakistan, Pakistan Society of Health System Pharmacists</td>
<td>Continuing Professional Development</td>
<td>No</td>
<td>Maintenance of practice licence</td>
</tr>
<tr>
<td>Zambia, Pharmaceutical Society of Zambia</td>
<td>Continuing Professional Development</td>
<td>Yes</td>
<td>Renewal of practice licence</td>
</tr>
</tbody>
</table>

Additional Notes:
1. CDP credits are awarded for successful completion of a minimum of one CEU per year. Essential continuing education modules include mandatory training in safe and effective use of drugs.
2. The requirement for CEUs is only applicable to fully registered pharmacists.
3. The requirement is based on the following principles:
   - A minimum of 36 hours of education per year is required.
   - A maximum of 60 hours of education per year is allowed.
   - A maximum of 90 hours of education per year is recommended for continuing education.
   - The minimum number of hours that will be accumulated for a specific day of training is 6 hours.

A workshop will be awarded on the basis of one hour equals one point.
<table>
<thead>
<tr>
<th>Country</th>
<th>Registering authority</th>
<th>Country/Institution agreements</th>
<th>Registration requirements for all other countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>State Pharmacy Boards</td>
<td>N/A</td>
<td>47</td>
</tr>
<tr>
<td>Canada</td>
<td>Provincial Pharmacy Boards</td>
<td>N/A</td>
<td>51</td>
</tr>
<tr>
<td>China</td>
<td>Pharmacy Council</td>
<td>N/A</td>
<td>54</td>
</tr>
<tr>
<td>Kenya</td>
<td>Pharmacy and Pharmacists Board (PPhB)</td>
<td>N/A</td>
<td>57</td>
</tr>
</tbody>
</table>

**APPENDIX 6: REGISTRATION REQUIREMENTS FOR FOREIGN PHARMACISTS**
<table>
<thead>
<tr>
<th>Country</th>
<th>Registration authority</th>
<th>Country/institution agreement</th>
<th>Requirements</th>
<th>Exam</th>
<th>Pre-requisite requirements</th>
<th>Language</th>
<th>Examinations</th>
<th>Fees</th>
<th>Supervised practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ireland</td>
<td>Pharmacy Council of Ireland</td>
<td>EU/ETA Australia/New Zealand</td>
<td>Pharmacy qualification. 4 weeks supervised practice (Australia and New Zealand). Council of Pharmaceutical Society approval of registration.</td>
<td>N/A</td>
<td>nil-including unit suspended until further notice.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>New Zealand</td>
<td>Pharmacy Council</td>
<td>Australia inside United Kingdom</td>
<td>4 weeks supervised practice. Interview</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>South Africa</td>
<td>Pharmacy Council</td>
<td>South Africa inside South Africa (inner ring &gt; 70%) South Africa inside South Africa (70% &lt; 70%) South Africa inside South Africa (outer ring &lt; 70%)</td>
<td>1 year pharmaceutical community service in public sector. 1 year of registration</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Uganda</td>
<td>The Council of the Pharmaceutical Society of Uganda</td>
<td>Uganda</td>
<td>Completion of pharmacy degree and pre-registration training in the country of study. Registration approval subject to Council's discretion.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Pharmacy degree and pre-registration training in country of study. Preliminary examination of pharmacy curricula, academic transcripts, and exam results</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Country</td>
<td>Registering authority</td>
<td>Country or Institution</td>
<td>Requirements</td>
<td>Fees</td>
<td>Prerequisite requirements</td>
<td>Language</td>
<td>Examinations</td>
<td>Fees</td>
<td>Supervised practice</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------------------------------------</td>
<td>--------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>------------</td>
<td>--------------------------</td>
<td>----------</td>
<td>-------------------------------</td>
<td>------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Royal Pharmaceutical Society of Great Britain</td>
<td>USA, Australia, New Zealand</td>
<td>12 months employment in pharmacy following registration in original country; 4 years supervised practice in the UK; Approved residency training</td>
<td>£250 GBP</td>
<td>Adjusting to UK&lt;br&gt;Pharmacy registration; 4 years supervised practice&lt;br&gt;Pre-registration training&lt;br&gt;Pharmacy degree</td>
<td>IELTS</td>
<td>Registration Examination</td>
<td>£356 GBP</td>
<td>12 months supervised practice (Pre-registration Training)</td>
</tr>
<tr>
<td>Singapore</td>
<td>Original pharmacy qualification must be &gt; 5 years total; Application if qualifying country; Variable (may include): - 12 months pre-registration training - Registration - Language: English</td>
<td>Application fee = £356 GBP; Interview fee = £356 GBP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>United States of America</td>
<td>State Boards (GR)</td>
<td>NA</td>
<td>Pharmacy degree must be &gt; 5 years; English: TOEFL&lt;br&gt; IELTS</td>
<td></td>
<td>FPGE Examination&lt;br&gt;NAPLEX Examination&lt;br&gt;MPJE Examination</td>
<td>FPGE Examination = $750 USD&lt;br&gt;NAPLEX Examination = $400 USD&lt;br&gt;MPJE Examination = $750 USD</td>
<td>State board fee = $100-150+ USD (MPC)</td>
<td>State dependent (usually 2 years)</td>
<td></td>
</tr>
</tbody>
</table>

**Abbreviations:**
- APE: Australian Pharmacy Examination
- EPTA: European Pharmacy Test Assessment
- IELTS: International English Language Testing System
- NAPLEX: North American Pharmacist licensure Examination (USA)
- PSPTA: Pharmacy Practice Test Assessment Program (Great Britain)
- FPGE: Pharmacy Practice Examination (Canada)
- TOEFL: Test of English as a Foreign Language

Information correct as of 26th October 2023.

EU: European Union
FPGE: Foreign Pharmacy Graduate Equivalency Examination (USA)
MPJE: Multiple Pharmacy Jurisdiction Exam (USA)
TOEFL: Test of English as a Foreign Language
PSNZ Inc: Pharmaceutical Society of New Zealand Incorporated
IELTS: Test of English as a Foreign Language
<table>
<thead>
<tr>
<th>Country</th>
<th>Year of Intro</th>
<th>Legal requirement for certification</th>
<th>Number certified</th>
<th>Training programme/certification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>2004</td>
<td>No</td>
<td>N/A</td>
<td>Traineeship completed in addition to GPhC Foundation Training</td>
</tr>
<tr>
<td>Austria</td>
<td>2003</td>
<td>No</td>
<td>45-22</td>
<td>3 years work and training after pharmacy school. In Austria there are only pharmaceutical-technical graduates with vocational training, emphasis is laid on commercial, legal and technical aspects of pharmacy. They do not have a right to dispense medicinal products. Therefore, they are not comparable with pharmacy technicians elsewhere.</td>
</tr>
<tr>
<td>Brazil</td>
<td>2002</td>
<td>No</td>
<td>N/A</td>
<td>In Brazil, the activity of pharmacy technicians is not regulated.</td>
</tr>
<tr>
<td>Cameroon</td>
<td>2004</td>
<td>No</td>
<td>80</td>
<td>There is a school for pharmacy technicians in Cameroon but there is no education programme for becoming a pharmacy technician.</td>
</tr>
<tr>
<td>Canada</td>
<td>2004</td>
<td>No</td>
<td>N/A</td>
<td>There is no regulated training in Canada. There are no pharmacy technician courses that result in a diploma or certificate. The Pharmacy Technician title is poorly documented, little data is available.</td>
</tr>
<tr>
<td>Colombia</td>
<td>2004</td>
<td>Yes</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>2003</td>
<td>Yes</td>
<td>264</td>
<td>Upper Secondary Paramedical Schools; field of study, Pharmaceutical Technician/ GCP technician (ISCED level 5)</td>
</tr>
<tr>
<td>Denmark</td>
<td>2004</td>
<td>N/A</td>
<td>5,400</td>
<td>Twenty months to three years to the education is a qualifying practical training certificate following at least one year of practical and theoretical training. During the last years of the education, the students follow a distance learning programme with theoretical teaching at the pharmacy.</td>
</tr>
<tr>
<td>Finland</td>
<td>2004</td>
<td>No</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>France</td>
<td>2004</td>
<td>Yes</td>
<td>33,200</td>
<td>Pharmacy technicians hold a diplomas prepared by a 2 year vocational programme. In some cases (until 2004), it could be followed by continuous education programme. For more information on the content of the education, <a href="http://www.sante.gouv.fr/hlt/dp/inf/mhtc_formations/p">http://www.sante.gouv.fr/hlt/dp/inf/mhtc_formations/p</a> paramedicales_diploma.htm</td>
</tr>
<tr>
<td>Germany</td>
<td>2004</td>
<td>Yes</td>
<td>53,500</td>
<td>2 years education on a special school for pharmacy technicians, 1 1/2 year to the job training.</td>
</tr>
<tr>
<td>Ghana</td>
<td>2004</td>
<td>No</td>
<td>N/A</td>
<td>There are plans to develop legislation for technicians/technologists.</td>
</tr>
<tr>
<td>Hungary</td>
<td>2004</td>
<td>No</td>
<td>5,500</td>
<td>2 years vocational school after 3 years practical training (at the age 18). In addition to the qualification is possible after 3 years of practical.</td>
</tr>
<tr>
<td>Ireland</td>
<td>2004</td>
<td>Yes</td>
<td>33,600</td>
<td>3-4 years academic and 13 weeks practical work.</td>
</tr>
<tr>
<td>India</td>
<td>2004</td>
<td>No</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Indonesia</td>
<td>2004</td>
<td>Yes</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Italy</td>
<td>2004</td>
<td>Yes</td>
<td>250</td>
<td>3 years academic and professional study after high school study.</td>
</tr>
<tr>
<td>Ireland</td>
<td>N/A</td>
<td>No</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Israel</td>
<td>2004</td>
<td>Yes</td>
<td>1,500</td>
<td>Technicians are not able to dispense medications</td>
</tr>
<tr>
<td>Country</td>
<td>Year of Data</td>
<td>Legal requirement for certification</td>
<td>Number certified</td>
<td>Training programme/certification</td>
</tr>
<tr>
<td>----------------</td>
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<td>----------------------------------</td>
</tr>
<tr>
<td>Italy</td>
<td>2017</td>
<td>No</td>
<td>NA</td>
<td>Pharmacy technicians are not trained in Italy. However, generally pharmacists with a bachelor's degree in Pharmacy Science work as pharmacy technicians. This policy is due to be in place by 2020.</td>
</tr>
<tr>
<td>Ireland</td>
<td>2017</td>
<td>No</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Kenya</td>
<td>2015</td>
<td>Yes</td>
<td>1,573</td>
<td>Diploma in Pharmaceutical Technology. Legislation mechanism has been put in place in 2015.</td>
</tr>
<tr>
<td>Malawi</td>
<td>2004</td>
<td>No</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Malta</td>
<td>2017</td>
<td>Yes</td>
<td>467</td>
<td>NA</td>
</tr>
<tr>
<td>Norway</td>
<td>2004</td>
<td>No</td>
<td>3,897</td>
<td>3 years of general education with specialization in the last year. There is no legal requirement to be certified to work as a pharmacy technician; however, some specialist pharmacy technicians have received education and qualifications in areas such as specialty areas or for the role of pharmacist.</td>
</tr>
<tr>
<td>Portugal</td>
<td>2017</td>
<td>No</td>
<td>3,706</td>
<td>Certified Pharmacy Technician Course.</td>
</tr>
<tr>
<td>Singapore</td>
<td>2017</td>
<td>No</td>
<td>34</td>
<td>Certified Pharmacy Technician Course.</td>
</tr>
<tr>
<td>Switzerland</td>
<td>2004</td>
<td>No</td>
<td>420</td>
<td>NA</td>
</tr>
<tr>
<td>Taiwan</td>
<td>2017</td>
<td>Yes</td>
<td>742</td>
<td>A certification examination is required. There are no pharmacy technicians; however, there are associated pharmacists with at least 2 years' experience in pharmacy related fields. Certificate in Pharmacy Technology is awarded after completion of the programme.</td>
</tr>
<tr>
<td>Thailand</td>
<td>2004</td>
<td>No</td>
<td>235</td>
<td>There are many training programmes provided by private and public sectors for the training of pharmacy technicians needed in small and community pharmacy options. Firstly, the programme was established by the ministry but is now offered by the private sector. The Ministry of Public Health by the Pharmaceutical Council of Thailand, under the Food and Drug Administration in the Public Health Department (Pharmacy and Medicines) will provide certification in pharmacy technicians. Other programmes by other institutions are not accredited, except they are certified by means of professional certification.</td>
</tr>
<tr>
<td>Turkey</td>
<td>2005</td>
<td>No</td>
<td>154</td>
<td>Under a EU project currently</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>2015</td>
<td>No</td>
<td>1,723</td>
<td>Registered as pharmacy technician by NCPG/NAATT. From work experience and national vocational qualification level III. In 2015, voluntary registration is being introduced.</td>
</tr>
<tr>
<td>United States</td>
<td>2017</td>
<td>Yes</td>
<td>About 2,000,000</td>
<td>No training required. Women's Certification Program (WCP) through the Pharmacy Technician Certification Board (PTCB). Some states have recommendations that all technicians be PTCB certified, some have requirements that only those who have attained certification if they perform certain duties, some states have a requirement using a variety of ways, because certification is not the requirement for employment.</td>
</tr>
<tr>
<td>Uruguay</td>
<td>2004</td>
<td>Yes</td>
<td>3,000,000</td>
<td>Specialist pharmacy technicians and pharmacy assistants for a specialized pharmacy technical assistant. The training courses for pharmacy assistants must be approved by the Ministry of Education and Culture and the Ministry of Public Health and be provided by several institutions.</td>
</tr>
</tbody>
</table>
APPENDIX 8: Acknowledgements

Australia
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Professor Sodsai Asravilai, The Pharmaceutical Association of Thailand Under, Royal Patronage

Turkey
Sanem Asli Yurur, Turkish Pharmacists' Association

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James William Tamale, Secretary; Pharmaceutical Society of Uganda

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International Organization for Migration
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International Pharmaceutical Students' Federation
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