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### *Pharmacy Practice in Europe*

Modern day pharmacy in Europe represents an increasingly specialized service and profession in the healthcare field. The integration of advanced technology and medical science research has helped to expand the role of well-trained pharmacists beyond traditional dispensing and compounding. Similar to pharmacy practice in the United States, many European countries have adopted new therapy management and ambulatory care services in the community pharmacy setting. Additionally, well-developed pharmacy education programs produce thousands of clinically trained practitioners who practice as generalists and specialists in hospitals, researchers in industry, and primary care providers in the community. Due to the diverse cultural, socioeconomic, and structural differences in European healthcare systems, analysis of the pharmacy profession must be considered in the context of multiple factors. Currently, the European Union (EU) consisting of twenty-eight member states has moved to harmonize higher education throughout Europe under the Bologna Declaration of 1999. By providing a more standardized length of bachelors, masters, and Ph.D. degrees, the Bologna process works to shape curricula so that graduates are able to work in other countries that accept the Bologna Degree.<sup>1</sup> Well-structured pharmacy programs contribute greatly to the progressiveness of pharmacy practice in many EU countries. However, advanced healthcare and pharmacy services are not limited to EU countries, as is modeled by Switzerland. Conversely, political and economic struggles hinder the growth of pharmacy practice in other countries. The diversity of pharmacy in Europe can be captured through examining a sampling of representative countries throughout the continent.

#### *Background:*

The region of Western Europe contains many powerhouse countries that are known for their affluent tourist sites, dominant political influence, and military successes. The United Kingdom (UK), consisting of England, Scotland, Wales, and Northern Ireland, houses London, the richest and one of the most densely populated cities in Europe. London alone contains a population of 8 million people and demonstrates extreme economic disparity within a small geographical area.<sup>2</sup> The western “home counties” of London e.g. Kent, Surrey, Sussex, and Buckinghamshire carry a high-class lifestyle with high salary jobs and wealth of education. Traveling eastward through London, communities become poorer and receive lower education than their west-side neighbors. A powerful image from 2004-2008 data shows a map of the London Underground at which every two tube stops from east to west represent an average decrease in life-expectancy by one year.<sup>3</sup> Radiating out from London, the population becomes more sparse and the economy is dominated by agriculture and manufacturing. Smaller countries in central Europe, such as Switzerland and Hungary, were historically driven by

industry and agriculture; however, limited government regulation of the financial sector has allowed for small businesses to thrive and international business to flourish.<sup>4,5</sup> The tumultuous history of Soviet rule and communism has left many eastern European countries in political and social unrest. Despite improvement in recent years, countries including Albania and Slovakia struggle with extensive poverty, unemployment, and economic corruption.

Healthcare in many of European countries follow a universal healthcare model with varying services and quality of care. In the UK, the National Health Service (NHS), funded predominantly through taxation, provides free health coverage for all UK citizens. Covered services include management of chronic diseases, wellness visits, antenatal care, emergency and hospital services, end-of-life care, and dental and eye care for specific populations. Prescription drugs are completely covered in Scotland, Wales, and Northern Ireland while England has a flat co-pay of £6.50 per prescription. Private insurance plans are also available; however, affordable healthcare through the NHS is often frustrated by long waits for primary care visits and surgeries due to the dense population. Switzerland, with its total population of 8 million people, follows a compulsory healthcare model through which all citizens are mandated to purchase basic care private health insurance. Basic care typically covers but is not limited to hospital stays, outpatient visits, maternity care, rehabilitation, nutrition coaching, and chronic disease management. For those earning below a certain income, subsidies are provided through local regulatory bodies, which also regulate the distribution of healthcare services within their region. By maintaining competition in the insurance market, prices are driven down and services are appropriately balanced. Premiums and deductibles vary per plan and encourage health-consciousness among citizens in order to limit out-of-pocket costs.<sup>6</sup> In contrast to Switzerland's decentralized healthcare Albania is regulated centrally by the Ministry of Health. The ex-communist country continues to recover from an era of neglect in the area of healthcare. Challenges facing the Albanian system include lack of standardized training and practice guidelines for healthcare providers, paucity of supplies, inefficient use of medications, and ineffective incentivizing for promotion of quality healthcare. The high poverty level and sparse distribution of polyclinics make access to first-stop referral centers difficult for many Albanians. Additionally, a broken reimbursement system results in most people paying all medical and prescription expenses out-of-pocket with no assistance.<sup>7</sup> International surveyors from USAid published a report that shows the Ministry of Health working to develop policies that aim to manage healthcare practice and distribution of cost-effective medications in hospitals. Despite the government's newly devoted efforts toward healthcare, failed implementation of practice guidelines jeopardize quality of care and citizens continue to struggle due to high costs.<sup>7,8</sup> Being that most healthcare providers are employed by the government in Albania and other ex-communist countries, medical training and education undoubtedly drive the pace of healthcare reform by adding well-trained managerial staff and practitioners to the workforce.

### *Pharmacy Education:*

Pharmacy education in Europe has evolved according to the changing needs within each country's healthcare system. The Bologna Declaration of 1999 instigated "harmonization" of many pharmacy programs across Europe, particularly EU member states. By upholding certain

expectations in the pharmacy curriculum and standardizing length of degrees, pharmacists who earn these “Bologna degrees” often can easily transfer their practice rights between EU countries with minimal added training.<sup>9</sup> Prior to this movement, the UK held one of the shortest pharmacy programs at four years while the Netherlands and Sweden held nine year programs. Currently, the accepted MPharm degree in the UK consists of four years of didactic education and one year of pre-registration training in order to practice as a pharmacist. Week-long rotation experiences in community pharmacy are woven into the didactic years, in which students study pharmacokinetics, biotechnology, medicinal chemistry, immunology, therapeutics, and many elective subjects. Historically, pharmacy education in the UK directed their focus toward mastery of the physical sciences and pharmaceutical research, which led many students to complete their pre-registration training in pharmaceutical industry. Programs have more recently developed stronger emphasis on performance-based exams, which allows for practical training in order to provide clinical services in community and hospital settings. Students are now expected to complete pre-registration training almost exclusively in either the community or hospital; however, due to increasing numbers of accredited pharmacy programs and graduates, securing pre-registration sites has become increasingly difficult and stymies students from fulfilling their requirements.<sup>10-12</sup> Other non-EU states, such as Switzerland and Albania have followed suit in tailoring their pharmacy programs to the Bologna guidelines. In Switzerland, students earn a three-year bachelors degree in basic medical or pharmaceutical sciences followed by a two-year masters degree in either pharmacy or industrial pharmaceutical sciences. The masters program consists of didactic work, a research project, and experiential rotations in community and hospital pharmacy. Passing the Federal Exam for Registered Pharmacists certifies pharmacists to practice in the community while an advanced masters degree is required to practice in hospital, policy and economics, public health, or other specialized areas.<sup>13,14</sup> The main pharmacy program in Albania is a five-year masters degree at the University of Medicine Tirana in the capital. The first two years cover basic sciences while the last three years focus on pharmaceutical development, drug quality and safety analysis, medicinal chemistry, pharmacology, legislation, and pharmaceutical technology. A survey conducted at the University of Medicine Tirana reflects students’ desires to gain more hands-on, clinical opportunities in hospitals that will prepare them to provide better continuing care in outpatient and non-emergency situations.<sup>15,16</sup> Unique to many programs in Europe, France carries a doctor of pharmacy (PharmD) degree as its professional practice degree. All high school graduates are able to enter into the first year of a university PharmD program; however, an intensive, institution-specific examination at the end of first year filters the class so that only those who excel academically continue in the program. In addition to weighty therapeutics courses and intricate science training, programs in France and the UK also conduct administrative classes in order to prepare graduates for ownership or management of community and institutional pharmacies. Beyond the six-year PharmD, for which students must defend a thesis in order to graduate, many opportunities for highly specialized training are available in France. Graduates can apply to a competitive four-year paid internship called the *internat*, which provides specialty degrees in areas such as genomics, pharmacoconomics, specialty hospital practice, public health, and biotechnology.<sup>17</sup> This additional training opens the way for many independent practice privileges, especially in hospitals.

### *Pharmacy Regulation:*

The blossoming role of the modern-day pharmacist in Europe has also introduced the need for greater pharmacy regulation. Professional organizations that represent and advocate for the profession exist in each country. In the UK, the Royal Pharmaceutical Society of Great Britain (RPSGB) and General Pharmaceutical Council (GPhC) hold regulatory power in pharmacy practice, policies surrounding pharmaceutical sales, and appropriate pharmacist credentialing. The RPSGB is the face of the pharmacy profession and advocates for its advancement and achievement, including officially recognizing excellent contributions made by individual pharmacists. The RPSGB is also the diplomatic entity which harmonizes international pharmacy degrees to practice in the UK. With a much different goal, the GPhC focuses heavily on responsible pharmacy practice in order to protect the convenience of the patient. The GPhC stance on expanded pharmacy roles occasionally introduces debate when services are argued to cause patient inconvenience. For example, the GPhC opposed the policy of pharmacists counseling on expanded “Pharmacist’s list” medications due to its perceived hindrance to patient access.<sup>9</sup> However, when pharmacists are referred for disciplinary action, they are subject to be tried by the RPSGB Disciplinary Committee.<sup>18</sup> In France, the Minister of Health federally regulates community and hospital pharmacy practice. It also strictly regulates the community pharmacy-to-population ratio of 1 pharmacy per 2500 people. Most community pharmacies in France are independently owned instead of chain pharmacies and, similar to policies the United States, pharmacists practice within their scope and spend much time counseling on over-the-counter (OTC) medications. In non-emergent situations, pharmacists must contact the physician in order to make appropriate changes to prescriptions. Legislation in hospital pharmacy allows for pharmacists to participate in a wide variety of activities compared to other European countries, as will be discussed later on. Interestingly, medications dispensed by technicians in the hospital often do not pass through a second check by pharmacists even though pharmacists are fully responsible for any medication errors.<sup>19,20</sup> Disciplinary action is initiated by complaints filed to the Minister of Health, and attempts to resolve conflicts via a regular legal advisor are made prior to handing cases over to the elected Council of the Chamber, which can take action up to revoking pharmacists’ practice rights.<sup>21</sup> Clearly defined roles of pharmacy in countries with developing healthcare systems is almost non-existent. As demonstrated by Albania, healthcare providers including physicians and pharmacists, practice in a rather unregulated manner with pharmacists taking orders from physicians who often conduct inappropriate medical tests and referrals. With the University of Medicine Tirana being the only established pharmacy program in the country, the university takes the leading role in discussing pharmacy practice issues with the Ministry of Health, who has thus far placed most of their attention in creating numerous committees to regulate drug manufacturing, quality control of pharmaceuticals, and fraudulent supply handling in hospitals. Pharmacy students completing a masters degree need to pass a national licensure exam distributed by the Professional Regulation Commission in order to practice as a pharmacist; however, obtaining a license still leaves most pharmacists in the basic role of processing physician orders and dispensing medications with little clinical participation. The current lack of reimbursement and organized hospital technology have resulted in physicians practicing according to commercial incentives and rampant undocumented drug distribution leading to further devaluing of trained pharmacists. According to the report written by USAid, firmer

guidelines for pharmaceutical management and commitment to the established guidelines are crucial to implementing organized healthcare and expanded clinical services.<sup>8</sup>

### *Pharmacy Practice:*

Ultimately, European education and legislation supporting pharmacy practice has led to advancements in community, hospital, industry, and research settings. In countries with well-established healthcare systems such as the UK, France, and Switzerland, community pharmacists play an increasingly important role in providing accessible primary care. With increasing specialization within the medical field, many countries face shortages of general practitioners and, in the case of the UK, long lines for wellness appointments. Pharmacists in the UK are active in providing “medicine use reviews”, which equates to a \$40 service that is reimbursed by local trust funds and the NHS per patient appointment. During the 10-15 minute session, pharmacists remove themselves from the regular workflow to assess patients’ disease state management with their current medication therapies. Pharmacists are also trained to evaluate vital signs, educate on therapeutic lifestyle modifications, and provide special counseling on smoking cessation and contraceptives. Because of the ease of accessibility, patients are often motivated to seek the expertise of their local pharmacist before making an appointment with their general practitioner.<sup>12,13</sup> In all community pharmacies, the responsibility of pharmacists checking physician orders and correctly dispensing medications is standard practice. In the UK, OTC and Pharmacist’s list medications require different levels of pharmacist interaction before sale of the product. Some medications deemed higher risk are moved to and from the Pharmacist’s list, which does not require a prescription but patients must receive verbal counseling prior to purchase. Similarly, community pharmacists in France are able to spend extensive amounts of time counseling on medications due to the unique aspect that medications in France are packaged and dispensed as unit-doses, which eliminates the manual dispensing and double checking by pharmacists. France’s strict pharmacy-to-population ratio and shortage of primary care providers also creates an opportune environment for pharmacists to devote time to clinical services. The intensive practical and clinical training of pharmacists in both the UK and France are effectively applied in the community setting due to well-structured reimbursement systems and the national shortages of primary care. In Switzerland, clinical services called “cognitive pharmaceutical services” can be initiated by pharmacists or requested by physicians. In addition to medication reviews, pharmacists also monitor medication adherence of referred patients and participate in direct observed therapy (DOT). These services may consist of preparing patients’ pill organizers for the week and supervising medication administration in the pharmacy, respectively. According to this model of adherence checks, pharmacists are reimbursed on a “rated-points” system in which each point equaled 0.72 Euros in 2009.<sup>22</sup>

Specialized pharmacy practice takes place mostly in hospital settings where pharmacists work as members of multidisciplinary teams to care for patients. In the UK, France, and Switzerland, specialty pharmacists often work directly with physicians and are under institutional protocols that allow them to independently assess and manage patients with specific diseases. Currently in both community and hospital settings, pharmacists are required to contact the prescribing physician in order to approve clinical recommendations or changes to

a prescription; however, specialty pharmacists in the UK are able to obtain independent prescribing rights through additional training and secondary prescribing rights in order to write prescriptions for previous diagnoses made by the physician.<sup>9</sup> Pharmacy departments in the hospital often handle distribution of medical equipment, compounding of oral and intravenous medications, drug-information, investigational drugs, and some may participate in microbiology culture analysis.<sup>20</sup> A common challenge for these more advanced pharmacy systems is the failure to consistently document pharmacist interventions, which is important for outcomes measures and further establishment of important clinical services to which pharmacists can contribute.<sup>20,23</sup>

### *Conclusion:*

The evolving science and pharmacy education in both countries with advanced and basic pharmacy services will be the dominant instigator that shapes future pharmacists of Europe. Through examining countries like the UK, France, Switzerland, and Albania, it is apparent that the vision and practice of clinical pharmacy sets apart those countries that are able to stay current with their citizens' health and social needs. Albania's slowly recovering healthcare system has hindered implementation of the pharmacy profession that students are trained for at University of Medicine Tirana. While social and government instabilities shake the infrastructure of basic healthcare in many ex-communist countries, the pharmacy profession flourishes in countries that are able to provide support and subsidies to help cover basic needs of their citizens. The UK, France, and Switzerland are examples of social and economic leaders with varying but highly advanced healthcare systems. Regardless of each country's current state, the every-changing healthcare scene in Europe creates a bright opportunity for pharmacists to advocate for better care, better health outcomes, and training of future visionaries to continue advancing clinical pharmacy services in all healthcare settings.

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