Futuristic Trend in Pharmacy & Nursing

Pharmacy is the science and practice of discovering, producing, preparing, dispensing, reviewing, and monitoring medications, aiming to ensure the safe, effective, and affordable use of medicines. It is a miscellaneous science as it links health sciences with pharmaceutical sciences and natural sciences. The professional practice is becoming more clinically oriented as most of the drugs are now manufactured by pharmaceutical industries. Based on the setting, pharmacy practice is either classified as community or institutional pharmacy. Providing direct patient care in the community of institutional pharmacies is considered clinical pharmacy.

The scope of pharmacy practice includes more traditional roles such as compounding and dispensing medications. It also includes more modern services related to health care including clinical services, reviewing medications for safety and efficacy, and providing drug information. Pharmacists, therefore, are experts on drug therapy and are the primary health professionals who optimize the use of medication for the benefit of the patients.

An establishment in which pharmacy (in the first sense) is practiced is called a pharmacy (this term is more common in the United States) or chemist (which is more common in Great Britain, though pharmacy is also used). In the United States and Canada, drugstores commonly sell medicines, as well as miscellaneous items such as confectionery, cosmetics, office supplies, toys, hair care products, magazines, and occasionally refreshments and groceries.

In its investigation of herbal and chemical ingredients, the work of the apothecary may be regarded as a precursor of the modern sciences of chemistry and pharmacology, prior to the formulation of the scientific method.

Artificial intelligence in healthcare is an overarching term used to describe the use of machine-learning algorithms and software, or artificial intelligence (AI), to mimic human cognition in the analysis, presentation, and comprehension of complex medical and healthcare data, or to exceed human capabilities by providing new ways to diagnose, treat, or prevent disease. Specifically, AI is the ability of computer algorithms to approximate conclusions based solely on input data. The primary aim of health-related AI applications is to analyze relationships between clinical data and patient outcomes. AI programs are applied to practices such as diagnostics, treatment protocol development, drug development, personalized medicine, and patient monitoring and care. What differentiates AI technology from traditional technologies in healthcare is the ability to gather larger and more diverse data, process it, and produce a well-defined output for the end-user. AI does this through machine learning algorithms and deep learning. These processes can recognize patterns in behavior and create their own logic. To gain useful insights and predictions, machine learning models must be trained using extensive amounts of input data. AI algorithms behave differently from humans in two ways: algorithms are literal: once a goal is set, the algorithm learns exclusively from the input data and can only understand what it has been programmed to do, and some deep learning algorithms are black boxes; algorithms can predict with extreme precision, but offer little to no comprehensible explanation to the logic behind its decisions aside from the data and type of algorithm used.

As the widespread use of AI in healthcare is relatively new, research is ongoing into its application in various fields of medicine and industry. Additionally, greater consideration is

being given to the unprecedented ethical concerns related to its practice such as data privacy, automation of jobs, and representation biases.

Health care, or healthcare, is the improvement of health via the prevention, diagnosis, treatment, amelioration, or cure of disease, illness, injury, and other physical and mental impairments in people. Health care is delivered by health professionals and allied health fields. Medicine, dentistry, pharmacy, midwifery, nursing, optometry, audiology, psychology, occupational therapy, physical therapy, athletic training, and other health professions all constitute health care. It includes work done in providing primary care, secondary care, and tertiary care, as well as in public health.

Access to health care may vary across countries, communities, and individuals, influenced by social and economic conditions as well as health policies. Providing health care services means "the timely use of personal health services to achieve the best possible health outcomes" Factors to consider in terms of healthcare access include financial limitations (such as insurance coverage), geographical and logistical barriers (such as additional transportation costs and the possibility to take paid time off work to use such services), sociocultural expectations, and personal limitations (lack of ability to communicate with health care providers, poor health literacy, low income). Limitations to health care services affects negatively the use of medical services, the efficacy of treatments, and overall outcome (well-being, mortality rates).

Health systems are organizations established to meet the health needs of targeted populations. According to the World Health Organization (WHO), a well-functioning healthcare system requires a financing mechanism, a well-trained and adequately paid workforce, reliable information on which to base decisions and policies, and well-maintained health facilities to deliver quality medicines and technologies.

An efficient healthcare system can contribute to a significant part of a country's economy, development, and industrialization. Health care is conventionally regarded as an important determinant in promoting the general physical and mental health and well-being of people around the world. An example of this was the worldwide eradication of smallpox in 1980, declared by the WHO, as the first disease in human history to be eliminated by deliberate healthcare interventions

The delivery of modern health care depends on groups of trained professionals and paraprofessionals coming together as interdisciplinary teams. This includes professionals in medicine, psychology, physiotherapy, nursing, dentistry, midwifery, and allied health, along with many others such as public health practitioners, community health workers, and assistive personnel, who systematically provide personal and population-based preventive, curative, and rehabilitative care services.

While the definitions of the various types of health care vary depending on the different cultural, political, organizational, and disciplinary perspectives, there appears to be some consensus that primary care constitutes the first element of a continuing health care process and may also include the provision of secondary and tertiary levels of care. Health care can be defined as either public or private. The word "nurse" originally came from the Latin word "nutrire", meaning to suckle, referring to a wet nurse; only in the late 16th century did it attain its modern meaning of a person who cares for the infirm.

From the earliest times, most cultures produced a stream of nurses dedicated to service on religious principles. Both Christendom and the Muslim World generated a stream of dedicated nurses from their earliest days. In Europe before the foundation of modern nursing, Catholic nuns and the military often provided nursing-like services. It took until the 19th century for nursing to become a secular profession.

The early history of nurses suffers from a lack of source material, but nursing in general has long been an extension of the wet-nurse function of women.

Buddhist Indian ruler (268 BC to 232 BC) Ashoka erected a series of pillars, which included an edict ordering hospitals to be built along the routes of travelers, and that they be "well provided with instruments and medicine, consisting of mineral and vegetable drugs, with roots and fruits"; "Whenever there is no provision of drugs, medical roots, and herbs, they are to be supplied, and skillful physicians appointed at the expense of the state to administer them." The system of public hospitals continued until the fall of Buddhism in India ca. AD 750.

About 100 BC the Charaka Samhita was written in India, stating that good medical practice requires a patient, physician, nurse, and medicines, with the nurse required to be knowledgeable, skilled at preparing formulations and dosage, sympathetic towards everyone, and clean. The first known Christian nurse, Phoebe, is mentioned in Romans 16:1. During the early years of the Christian Church (ca. AD 50), St. Paul sent a deaconess named Phoebe to Rome as the first visiting nurse.

From its earliest days, following the edicts of Jesus, Christianity encouraged its devotees to tend the sick. Priests were often also physicians. According to the historian Geoffrey Blainey, while pagan religions seldom offered help to the infirm, the early Christians were willing to nurse the sick and take food to them, notably during the smallpox epidemic of AD 165-180 and the measles outbreak of around AD 250; "In nursing the sick and dying, regardless of religion, the Christians won friends and sympathizers"

Following the First Council of Nicaea in AD 325, Christianity became the official religion of the Roman Empire, leading to an expansion of the provision of care. Among the earliest were those built ca. 370 by St. Basil the Great, bishop of Caesarea Mazaca in Cappadocia in Asia Minor (modern-day Turkey), by Saint Fabiola in Rome ca. 390, and by the physician-priest Saint Sampson (d. 530) in Constantinople, Called the Basiliad, St. Basil's hospital resembled a city, and included housing for doctors and nurses and separate buildings for various classes of patients. There was a separate section for lepers. Eventually, the construction of a hospital in every cathedral town was begun.

Christian emphasis on practical charity gave rise to the development of systematic nursing and hospitals after the end of the persecution of the early church.[9] Ancient church leaders like St. Benedict of Nursia (480-547) emphasized medicine as an aid to the provision of hospitality.12th-century Roman Catholic orders like the Dominicans and Carmelites have long lived in religious communities that work for the care of the sick.

Some hospitals maintained libraries and training programs, and doctors compiled their medical and pharmacological studies in manuscripts. Thus in-patient medical care in the sense of what we today consider a hospital, was an invention driven by Christian mercy and Byzantine innovation.[12] Byzantine hospital staff included the Chief Physician (archiatroi), professional nurses (hypourgoi), and orderlies (hyperemia). By the twelfth century, Constantinople had two well-organized hospitals, staffed by doctors who were both male and female. Facilities included systematic treatment procedures and specialized wards for various diseases.

In the early 7th century, Rufaidah bint Sa'ad (also known as Rufaida Al-Aslamia) became what is now described as the first Muslim nurse. A contemporary of Muhammad, she hailed from the Bani Aslam tribe in Medina and earned her medical skills from her father, a traditional healer. After she had led a group of women to treat injured fighters on the battlefield, Muhammad gave her permission to set up a tent near the Medina mosque to provide treatment and care for the ill and the needy

Nursing is a healthcare profession that focuses on the care of individuals and their families to help them recover from illness and maintain optimal health and quality of life.

Nurses are distinct from other healthcare providers as they have a wide scope of practice and approach to medical care. They play an integral role in promoting health, preventing illness, and caring for all individuals, including those who are disabled or are physically or mentally ill.

- ## Why Is the Future of Information Technology in the Pharmaceutical Sector?

Innovations propel the modern world. To keep up, pharmaceutical companies should be ready to embrace the most recent technological breakthroughs to create quality medicines and satisfy patients.

Thus, the IT in the pharmaceutical sector is primarily about improving drug production's efficiency and distribution among the population. What else can innovation in the pharmaceutical industry do?

- ## Deliver a Better Patient Experience

A Deloitte survey shows that 92% of healthcare sector respondents believe SME digital transformation will positively impact patients' experiences. It will be possible through the use of a customer-oriented approach in the implementation of technological solutions.

Technology innovation in the pharmaceutical industry can improve the relationship between pharmaceutical businesses and their customers. For example, the ability of a patient to order medication through a website or mobile app will significantly increase loyalty to a pharma company.

- ## Spread More Information Online

Today's patients must access data on medications online. Thus, pharmacy customers can study drug performance and common side effects independently. It makes them more prepared when

discussing treatment with their doctor and knows what to expect from taking a specific medicine in advance.

- **Remain Competitive**

The use of pharmaceutical IT allows companies to remain competitive. It applies to both internal and external competition.

For example, information technology in the pharmaceutical industry allows businesses to compete with large companies like Apple. How so? This tech giant has access to a wealth of patient health data via smart gadgets such as the Apple Watch. If pharmaceutical companies implement IT, they will also get this opportunity. That is why the future of information technology in the pharma industry has high hopes.

- **Solve the Counterfeiting Issue**

IT in the pharmaceutical sector can also help combat counterfeiting. Any patient can use digital technology to verify the authenticity of medications, for example, by scanning the barcode on the packaging.

- **Enhance Drug Development**

Digital technology in the pharma industry can increase the efficiency, quality, and speed of drug development. For example, artificial intelligence can process large amounts of data and detect relationships and patterns.

Let's look at the major pharmaceutical IT trends to find out what awaits this industry in the future.

- **Artificial Intelligence and Machine Learning**

Artificial intelligence is becoming increasingly prominent in the healthcare sector. The global healthcare AI market is expected to reach $31.3 billion by 2025. It will show a rapid annual increase of more than 40%.

AI and ML benefit the pharmaceutical industry by offering decent data analysis and forecasting potential. Artificial intelligence can process large amounts of information much faster and more accurately than pharma lab workers. As a result, drug creators can improve the efficiency and quality of drug manufacturing.

- **Digital Therapeutics**

Digital therapeutics provide treatment to patients using evidence-based software and digital devices. It reduces or eliminates drug use. And yet, it is one of the latest pharma health tech trends. We will explain to you why.

Pharmaceutical companies can partner with technology businesses to supply the necessary medicines for disease prevention. That is, digital therapy can support the use of conventional drugs.

- **Cloud Technology**

Cloud technology is a steady trend for businesses in various industries. In the pharmaceutical field, this innovation allows for more efficient work. It provides the opportunity for data analysis, increased information security, and scaling ability, which allows you to store a huge amount of patient data.

- **Big Data**

The use of big data is also one of the pharmaceutical information technology trends. Businesses in the pharmaceutical sector can profit greatly from analyzing these data sets. Let's go into further depth about these benefits.

Big data analytics can help create more effective drugs and make scientific discoveries in pharmacology. It is an opportunity to develop personalized medicines by studying genomic data. It is also a chance to cut expenses by analyzing metrics like the average cost of ingredients, the overall medication spending, etc.

- **Digital Training**

Digital training provides the acquaintance of pharmaceutical workers with the latest available innovations. These include, for example, an electronic signature or software for maintaining electronic documentation on the administration of medicines.

Introducing employees to technology is incredibly significant these days. This way, you can set up and speed up some processes in your pharmaceutical business.

- **Precision Medicine**

Precision medicine is a new step in healthcare. It offers an innovative approach to diagnosing, treating, and preventing diseases by studying the genes and patient lifestyle.

By 2024, the value of the precision medicine market will reach more than $96 billion. This growth is largely due to the popularity of bioinformatics, which allows you to analyze data and make prescriptions and treatments as personalized as possible.

- **Blockchain Technology**

New blockchain technology can help the pharmaceutical industry in many ways. First, thanks to this innovation, it is possible to set up efficient production and distribution of medicines. Second, it helps with the data analysis and, as a result, will lead to better results in drug development.

Blockchain technology also offers a high level of security and transparency. With it, pharmaceutical companies can fight against counterfeit and poor-quality drugs.

- **Advanced Analytics**

Advanced analytics is one of the main pharmaceutical industry trends that can change the approach to drug manufacturing. Companies use AI, ML, big data, and cloud technologies to implement it.

Processing and analyzing large data sets can help pharmacists draw more accurate conclusions about the effectiveness of drugs and side effects.

Digital transformation for pharmaceutical businesses is an inevitable step. The reason for this is the large number of opportunities that technology will give to this sector.

Pharmaceutical IT trends that you should pay attention to include blockchain technology, AI and ML, cloud technologies, big data, precision medicine, and advanced analytics. By applying such innovations to your digital products, you will be able to drive the pharmaceutical industry.

If you want to create pharmaceutical software according to the latest pharma trends, you need skilled developers. With Softermii, finding such qualified workers is not a concern. We provide dedicated professionals with extensive experience in the healthcare field.