

New Approaches to Pharmacy Practice: Telepharmacy

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Abstract: *Telepharmacy refers to providing pharmaceutical treatment when pharmacists and patients are not physically present in the exact location but may communicate and engage using information and communication technology (ICT) facilities [1]. However, due to demographic and geographical considerations, healthcare services are not always accessible to rural residents and communities. Telepharmacy is an emerging term for pharmaceutical service provision that allows qualified pharmacists to provide healthcare services to patients who live far away from a hospital, pharmacy, or other healthcare facility. These services include medication review, patient counseling, and prescription verification [2]. This article offers an in - depth review of the workings of Telepharmacy, along with its advantages and disadvantages in the pharmacy field.*

Keywords: Telepharmacy, community pharmacy, internet pharmacy

1. Introduction

The widespread distribution of pharmacies, at least in developed nations, allows them to provide health services capillary, making them an essential component of health systems. In addition to dispensing medications, licensed pharmacists can counsel patients on drug administration schedules and provide pharmacovigilance services [3].

Telepharmacy is an innovative approach that offers remote pharmacy services via telecommunication and technology. Early in the 2000s, Telepharmacy made its debut. Telepharmacy is seeing significant success and growth. In 2001, North Dakota became the inaugural state to implement rules permitting the practice [4]. However, Telepharmacy

did not prove its worth until the COVID - 19 outbreak began. As of 2020, 28 states have laws that allow telepharmacy, which will bring more pharmacy services to places that don't have enough of them. Telepharmacy is becoming more popular as people learn more about how safe and helpful it is. Many of the 22 states that do not currently allow telepharmacy plan to change their laws soon to make it legal. [5]. Healthcare institutions started to see a spike in the number of patients who tested positive for COVID - 19, leading to higher hospitalization rates, as the highly contagious and dangerous virus spread across the U. S. before the vaccine's introduction in 2020 [6]. Many people were scared and anxious, particularly those who needed to go to the doctor for reasons other than COVID - 19 [7].

Telepharmacy Permitted States



Therefore, clinical pharmacists can broaden their services to more patients across various facilities. Telepharmacy can obviate the necessity of having on - site pharmacists in a clinical environment for consultation [8]. Nevertheless, a platform is required to connect healthcare practitioners and pharmacists, enabling them to exchange information and communicate. Various chat - based software options exist, such as WhatsApp, Viber, Google Hangouts, Zoom, Telegram, and Skype [9]. These software options provide high - quality cameras and require a reliable internet connection. They provide immediate dissemination of essential information among healthcare practitioners. WhatsApp Messenger and similar messaging apps employ end - to - end encryption to bolster the security of shared data [10]. Messenger's widespread usage among healthcare

practitioners and compatibility with various smartphone operating systems made it the ideal choice for promptly implementing Telepharmacy services.

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Figure 1: Schematic of Telepharmacy working [11].

According to 2016 research, the expenses associated with hospitalizations that might have been avoided amount to billions of dollars. In the United States, the estimated yearly cost is close to \$15 billion, primarily due to cardiovascular disease and diabetes mellitus [12]. In addition to uncontrolled illness states, adverse drug reactions (ADRs) can have a role in avoidable hospitalizations, prolonged hospital stays, and overall mortality [13]. According to research conducted in 2012, adverse drug reactions (ADRs) caused by injectable drugs alone were predicted to cost the U. S. taxpayer between \$2.7 and \$5.1 billion per year for patients who are hospitalized [14].

Types of Telepharmacy [15]

There are four distinct categories of telepharmacy.

1) Inpatient (remote order - entry review)

Inpatient telepharmacy involves a pharmacist at a distant site who provides remote order - entry services for a hospital's inpatient pharmacy. The remote pharmacist evaluates medicine prescriptions before the hospital personnel administer the medications to the patient.

Inpatient telepharmacy gives hospitals and health systems the advantage of conducting immediate evaluation and verification of drug orders. Remote order - entry review in a health system functions as an expansion of the on - site pharmacy. Inpatient telepharmacy enables distant pharmacists to offer round - the - clock coverage or assist during busy periods, enhancing and reinforcing inpatient pharmacy services.

2) Remote dispensing (retail/outpatient/discharge)

A retail community telepharmacy, also known as a remote - dispensing site, is a physical pharmacy that employs one or more qualified pharmacy technicians, depending on the workload. Using technology, a pharmacist can carry out their tasks remotely, including supervising the technician and reviewing prescriptions. Picture a regular drugstore with the pharmacist working from a distant location.

Regardless of a patient's location, telepharmacy provides them with easy access to a pharmacist and their prescription medication. It is commonly utilized in retail community pharmacies and outpatient/discharge pharmacies. By distributing the expense of a pharmacist among several

locations, remote dispensing enables healthcare organizations to launch retail telepharmacy sites in regions where a conventional pharmacy would not be practical. In addition to enhancing financial performance, boosting patient adherence, and reducing readmission rates, telepharmacy also helps grow your geographic footprint, all while improving the patient experience.

3) IV admixture

IV admixture is defined by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) as "the preparation of pharmaceutical product requiring the measured addition of a medication to a bag or bottle of intravenous fluid of 50 mL or more." To put it simply, IV admixture is the process of combining IV solutions administered to hospitalized patients.

Hospital pharmacies can save time and cost by connecting IV - admixture cleanrooms to telepharmacy. By remotely reviewing the IV admixture, a pharmacist can prevent the necessity of wearing protective gear and entering the cleanroom to examine the solution. Facilitating the allocation of pharmacists' time permits them to concentrate on revenue - generating endeavors and clinical activities. Implementing an image - based telepharmacy workflow in a cleanroom additionally permits the documentation of each process step and the reduction of errors.

4) Remote counseling

Remote - patient counseling refers to pharmacists offering patient counseling using live and interactive video sessions or other forms of telecommunication.

Remote patient counseling enables pharmacists to offer patients various pharmacy - care services through secure, real - time video chats. In addition to benefiting retail independents, community, clinic, and hospital - based pharmacies, remote counseling also offers options for specialized counseling, such as for people with diabetes and HIV/AIDS, discharge counseling, and different clinical encounters with pharmacists.

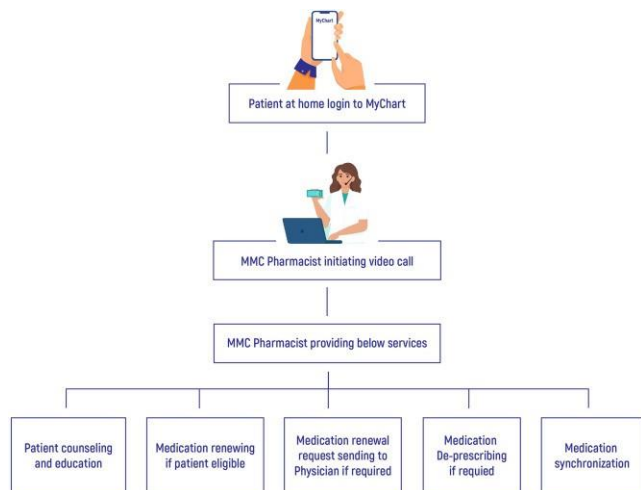


Figure 2: Flow chart of the virtual medication management clinic (MMC) consultation process [16].

2. Advantages of telepharmacy

1) Healthcare service accessibility

The main benefit of telepharmacy is the convenient availability of healthcare services in distant and rural areas. Regular availability of prescribed medicine and access to pharmacists are essential components in providing patient-centered healthcare in distant and rural areas [17].

2) Patient Satisfaction

A study in the United States aimed to determine the factors influencing patient satisfaction based on healthcare delivery mode and community-specific factors. The study found that patients in rural communities highly appreciate access to pharmacy services through telepharmacy, as it eliminates the need to travel outside their neighborhood [18]. Using telehealth to provide medication access and information in remote locations can enhance patient satisfaction. An obstacle frequently encountered at the clinic was elderly patients who frequently skipped their appointments due to their reluctance to leave their residences. Implementing this remote technology enables pharmacists to assess patients' prescriptions without requiring them to go. This has resulted in an augmentation of patient confidence and contentment with the provided service [19].

3) Cost - effectiveness

Cost-effectiveness assessments in health and medicine consider the monetary expenses of a healthcare service and the resulting health outcomes [20]. Commencing a new pharmacy shop entails a significantly higher expenditure than the costs associated with acquiring equipment and hiring a pharmacy technician for telepharmacy [21].

4) Patient counseling

Patients can get medication education and pharmacist advice through phone or video consultations. Patients will be adequately informed about their drugs, including how to take them, any possible adverse effects, and any other pertinent information. To improve the administration of pharmaceutical treatment by pharmacists utilizing current telecommunication technologies, particularly by telephone or televideo, RxLive® was established as a unique, active intervention telepharmacy service. Through one-on-one

interactions with patients, RxLive pharmacists collect and analyze unique data. There is a direct channel of communication between patients and RxLive pharmacists, who can then access and add to relevant medical records, communicate with prescribers, create and update medication lists, offer suggestions to both patients and their prescribers, and support various population health initiatives and prescribers' participation in value-based programs.

3. Disadvantages of telepharmacy

1) Obstacles in Technology:

Reliable and readily available technology, such as internet connectivity and appropriate equipment, is essential for telepharmacy. Telepharmacy services may be complex for patients to obtain in areas with poor technical infrastructure, which might lead to healthcare access inequities.

2) Data Security and Patient Privacy:

There are valid worries regarding the security and privacy of patient data when it is sent electronically. Strong security measures must be in place to protect sensitive information, and telepharmacy providers must ensure that patient data remains confidential and intact.

3) Problems with Regulations:

The rules and regulations surrounding telepharmacy are constantly changing, and it may be challenging to stay in line with all the rules at the federal and state levels. There may be obstacles to the universal implementation of telepharmacy techniques due to potential regional differences in regulations and standards. Patients are still responsible for covering the costs of telepharmacy services as they have not been paid yet [22].

4. Conclusion

Finally, telepharmacy signifies a revolutionary strategy for healthcare delivery by utilizing technology to offer pharmaceutical treatments remotely. While it provides various advantages, including better accessibility, convenience, and significant cost savings, major obstacles must be addressed for appropriate deployment.

Careful evaluation of the potential drawbacks is required, which include the capacity to do a physical examination, a possible decrease in human engagement, and worries about patient privacy and data security. Other considerations include technological hurdles, regulation difficulties, and the possible effects on local populations.

Despite these obstacles, telepharmacy has shown promise in improving patient care, especially in rural or disadvantaged locations. It allows pharmacists to collaborate with other medical experts in patient care, provide medication advice, and administer prescriptions remotely. Addressing legal frameworks, improving technology infrastructure, and prioritizing ethical and privacy issues are expected to be continuing processes in advancing telepharmacy.

Developing uniform guidelines, addressing regulatory issues, and promoting the proper integration of telepharmacy into the more extensive healthcare system must be a joint

effort among healthcare professionals, lawmakers, and stakeholders as telepharmacy continues to progress. Patients from all walks of life can benefit significantly from telepharmacy provided it is precise, is well - trained, and emphasizes patient - centered care.

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