Virtual Clinical Pharmacy Services: A New Initiative Project in Saudi Arabia

Yousef Ahmed Alomi*, (iD),
BSc. Pharm, MSc. Clin Pharm, BCPS, BCNSP, DiBA, CDE, Critical Care Clinical Pharmacists, TPN Clinical Pharmacist, Freelancer Business Planner, Content Editor, and Data Analyst, 100, Riyadh, Saudi Arabia.

Nouf Musleh Alassadi, Ph. D
Drug information specialist, Riyadh, Saudi Arabia.

Asma Mohammed Alzahrani, Bsc. Pharm Quality Coordinator, Pharmaceutical Care Department, Riyadh, Saudi Arabia.

Haifa Shabeeb Almutairi, Bsc. Pharm Medication Safety Officer, Pharmaceutical Care Department, Riyadh, Saudi Arabia.

Tahani Mohammed Alotaibi, Bsc. Pharm Inpatient pharmacy supervisor, Pharmaceutical care department, Riyadh, Saudi Arabia.

Mona Yousef Lubbad, Bsc. Pharm Counseling Clinic, Pharmaceutical care department, Riyadh, Saudi Arabia.

Nouf Abdurazaq Alhaza
Training, Research and media supervisor, Riyadh, Saudi Arabia.

Raghad Maluoh Alanazi
Medical Secretary, Riyadh, Saudi Arabia.

Correspondence:
Dr. Yousef Ahmed Alomi, BSc. Pharm, MSc. Clin Pharm, BCPS, BCNSP, DiBA, CDE, Critical Care Clinical Pharmacists, TPN Clinical Pharmacist, Freelancer Business Planner, Content Editor, and Data Analyst, 100, Riyadh 11392, Saudi Arabia.

Phone no: +966504417712
E-mail: yalomi@gmail.com

Access this article online

www.ptbreports.org

ABSTRACT

Objectives: The Virtual clinical pharmacy services were created to align with Saudi Vision 2030. This topic aims to declare the Virtual clinical pharmacy services as a new initiative in the Kingdom of Saudi Arabia. **Methods:** This new project is driven by local and international virtual pharmaceutical care services. It was formulated from guidelines of pharmacy projects, the international business model, and management institution guidelines for the new project. Project management professionals draft this initiative, consisting of several stages, from the initial until planning phases, execution, monitoring, and control stages. **Results:** Virtual clinical pharmacy services include electronic mediation history review, mediation reconciliation, medication safety, therapeutic guidelines implementation, pharmacist intervention, patient counseling, research and development. Furthermore, the risk management model description ensures the project's continuation. Besides, the monitoring and control of the services were declared. Finally, the analysis investigates the transition to the operation project through the closing project stage. **Conclusion:** Virtual clinical pharmacy services are a new initiative fit with Saudi Vision 2030. Virtual clinical pharmacy services education requires a clear vision, policy and procedures, and long-term patient satisfaction with services. Virtual clinical pharmacy services may be essential in developing an appropriate clinical pharmacy career plan focusing on virtual patient care to achieve targeted drug therapy management, prevent drug-related mortality and morbidity, and avoid burden costs on the healthcare system.

Keywords: Virtual, Clinical, Pharmacy, Clinic, Saudi Arabia.

INTRODUCTION

One of pharmaceutical care's general strategies goals was using new technologies.[1] That is alien with MOH and Saudi Vision 2030.[2,3] Clinical pharmacy services have been expanding since they were founded in the 1980s from various angles. The first angle with university education is that the pharmacy school had been changed from bachelor grade to Doctor of pharmacy level.[4] The hospital facility started with clinical pharmacy services in the late 1985s at King Faisal Specialist Hospital and King Khalid University Hospital.[5] Then, it extended to MoH Hospital with King Saudi Hospital and passed to overall government and private healthcare facilities. Clinical pharmacy services have been founded, such as total parenteral nutrition, anticoagulation therapy, pharmacokinetics services, and other services.[6,7] The number of clinical pharmacists per hospital required was established.[8] The residency of pharmacy practice was founded and expanded thoroughly.[9] However, various services were abandoned during coronavirus periods due to patient contact restrictions. Thus, another system must provide clinical pharmacy services to the patients.[10] The hydride or virtual clinical pharmacy services were founded through telemedicine and Tele-pharmacy, which used to provide most clinical pharmacy services through the electronic system.[10,11] The current review to declare virtual clinical pharmacy services as the new initiative program in Saudi Arabia

MATERIALS AND METHODS

It is a new initiative project derived from international and national virtual clinical pharmacy services guidelines and previous literature.[10-20] The task force team of virtual clinical pharmacy services formulated consisted of the author's expertise in pharmacy administration and clinical pharmacy practitioner. The committee unitized and drove the international and local literature from the virtual clinical pharmacy services guidelines and experiences.[10-20] It was written utilizing a new project's global business model, pharmacy project guidelines, and project management institution guidelines.[21-24] The virtual clinical pharmacy services were adjusted based on the types of nuclear pharmacy practice, general regulations, and the transformation to virtual clinical pharmacy services. Various project management professionals' tools to conduct the project. The project included multiple sections, such as the initial phase, the planning phase, the execution phase, and the monitoring and controlling phase.

Initiative phase

Assessment needs

Over the past years, clinical pharmacy services have expanded at various levels, from primary to advanced.[25] That included medication history assessment and medication reconciliation through set drug therapy management and patient counseling. Despite that level, there is still a high demand for clinical pharmacy services in public and private sector.[26,27] The majority of clinical pharmacists work in the public or governmental sector. While very seldom found clinical pharmacy services in private sectors. Besides, the limited number of clinical pharmacists are in high demand locally and in the future.[26,27] The best solution to overcome the demand is to start

virtual clinical pharmacy practice to cover more healthcare institutions in non-rural and rural areas throughout the country.[11] The starting basic level of clinical pharmacy practice is required, then expanded to the high level of operational virtual clinics operated by clinical pharmacists

SWOT analysis

SWOT analysis is a standard tool for any new project analysis. The acronym SWOT stands for strengths, weaknesses, opportunities, and threats. The project's strengths include establishing clinical pharmacy services, medication safety, and the prevention of manufacturer errors, supporting many pharmacy activities, and the presence of some specialized clinical pharmacy services Resources. The weak points require that the computer technology of Virtual clinical pharmacy services is absent for most predominantly rural healthcare facilities. The opportunities align with Saudi Vision 2030, the healthcare organization's patient safety program, and electronic governance.[2,3] The threat points are the non-existence of Virtual clinical pharmacy services and the unavailability of an administration planner.

Market Analysis

Pharmacy strategy planning started several years ago, emphasizing strategic goals.[1] They provided the best pharmaceutical care, medication safety elements, and complete pharmacy resources and used new technologies with the best economic prices. All those goals can push the pharmaceutical care services emphasizing clinical pharmacy services to convert to hybrid and virtual services. The use of virtual pharmacy services started during the corona virus situation and expanded later on. However, virtual clinical pharmacy services did not reach the optimal level locally or internationally.[10,28] Patient counseling and operating clinics were implemented virtually at most healthcare facilities. The American Society of Health-System Pharmacists suggested recommendations for implementing virtual clinical pharmacy services standards derived from the Australian experience.[11] Which are the best available resources and regulations to start implementing virtual clinical pharmacy services

Planning phase

Scope of the project

The project focuses on Virtual clinical pharmacy services. That includes a variety of program facets such as electronic mediation history review, mediation reconciliation, medication safety, therapeutic guidelines implementation, pharmacist intervention, patient counseling, research, and development, as well as education and training for pharmacy staff and health care professionals through telehealth software and applications in pharmacy practice.

Vision, Missions, Goals

The project's vision is to investigate the best and highest-quality Virtual clinical pharmacy services, while the message is to provide electronic clinical pharmacy services to healthcare organizations and populations. The project aims to electronically support clinical pharmacy practice performance or wide distribution of clinical pharmacy activities to rural areas to reach patient's optimal clinical and economic outcomes and prevent drug-related errors. Open new Virtual clinical pharmacy services such as virtual clinics operated by pharmacists. In addition, implementing the Saudi Vision 2030 in electronic pharmacy practice, improving patient quality of life through activating monitoring patients' electronic records, and making accessible communication with the healthcare team and patient to avoid unnecessary and additional costs on pharmacy and healthcare organizations are priorities.

Project description

The following policies were implemented for all pharmacy staff and other healthcare personnel:

- Virtual Clinical Pharmacy Service (VCPS) committee should be established.
- The VCPS committee should comprise representatives from healthcare administration, pharmacy administration, general clinical pharmacist, specialized clinical pharmacist, pharmacy informatics, information technology specialist, nurse, physician, medication safety officer, and pharmacy quality management.
- The committee revises Virtual clinical pharmacy services of local and international hospitals and community standards and regulations.
- Define Virtual clinical pharmacy services that include electronic medication history, medication reconciliation, review therapeutic guidelines, electronic documentation of drug-related problems, electronic pharmacist intervention, virtual pharmacy, virtual clinic, virtual patient counseling on medication, and electronic medication follow-up.
- The proposed Virtual clinical pharmacy services plan included policy and procedures through telemedicine and telehealth.
- The committee educates Virtual clinical pharmacy services plan representatives and policy and procedures.
- The committee established key performance indicators to monitor Virtual clinical pharmacy services.
- All virtual clinical pharmacy services publish quarterly KPIs and percentages of implementation, as well as an annual final report.
- The Virtual clinical pharmacy services committee should evaluate the clinical outcome strategic plan.
- The committee should determine the Virtual clinical pharmacy service's economic impact.
- The committee should keep track of any Virtual clinical pharmacy services Plan and services and develop new virtual clinical pharmacy services.

Plan cost management

The administration team should establish an economical budget for each new project, including the cost of Virtual clinical pharmacy services education and instructional guides for pharmacists and healthcare providers, administration team meetings, and updated resources. The budget should be monitored until the project is completed and run.

Executing phase

Management team

Professionals in project management took several steps. The executing phase was one of the foundation's steps. It had a team that led the project from the start until the operating systems were switched at the healthcare organization. The team comprised several individuals, including representatives from healthcare administration, pharmacy administration, general clinical pharmacist, specialized clinical pharmacist, pharmacy informatics, information technology specialist, nurse, physician, medication safety officer, and pharmacy quality management. The team is responsible for implementing and monitoring the new services and regularly updating key performance indicators. Additionally, the team should educate and train pharmacy staff and health care about the new virtual clinical pharmacy system and track the project's clinical and economic outcomes.

Education and training

Each new challenge necessitates unique training and coaching for concerned individuals. This endeavor seeks to educate clinical pharmacists, healthcare providers, health facility administrators, and pharmacy staff. Additionally, the team administration hopes to provide orientation training for all clinical pharmacists and healthcare professionals regarding the endeavor. The orientation emphasis for all new workforce pharmacists and healthcare providers had been joining

virtual clinical pharmacy practice and healthcare institutions.

Monitoring and controlling phase

Project total quality management

Numerous tools are used to manage the total quantity with a new project of Virtual clinical pharmacy services during the implementation phase and to reflect the impact. Among them were the balance-scored cards.[29-31] The monitoring tools were divided into four sections: customer satisfaction, finance, internal processes, education, and innovation. The assessment of healthcare services in Virtual clinical pharmacy services was an example of an internal process. The clinical outcome of Virtual clinical pharmacy services may reflect the education and competency of clinical pharmacists, distributive pharmacists, and pharmacy technicians employed by the company as one of the education types. The financial had another way of calculating the cost avoidance of Virtual clinical pharmacy services in the healthcare system. The fourth type was the customer type, which assessed patient satisfaction with clinical pharmacists and healthcare providers in Saudi Arabia, including pharmacists and pharmacy technicians employed by Virtual clinical pharmacy services.

Risk Management

Numerous risks are considered, including those related to the schedule, scope, budget, personnel, technical, and quality risks. The project is primarily exposed to personnel, budget, technical, and quality risks.[32,33] Personal threats adequately threatened the project due to a lack of trained healthcare professionals and clinical pharmacists. The budget risk does not cover all pharmacy staff and healthcare professionals' education and training. Additionally, there is a technical risk that may be exposed. The technical aspect is limited to electronic resources or a computer system that is not user-friendly in pharmacy practice. Finally, the project may face quality risks due to the absence of Virtual clinical pharmacy service safety tools or inexperienced personnel.

Closing of the project

Virtual clinical pharmacy services must have a strategic plan for all public and private healthcare organizations. This ensures high-quality services from Virtual clinical pharmacy services, prevents drug-related errors that result in morbidity and mortality, and alleviates economic strain on the pharmacy and healthcare systems in Saudi Arabia, including hospitals and primary healthcare centers. The project should be continued at clinical pharmacy services on a pharmacy-by-pharmacy basis, with oversight provided by relevant committees. Virtual clinical pharmacy services should be carried out appropriately. Pharmacy administration strategic plans, including Virtual clinical pharmacy services, should be updated regularly, and the virtual clinical services and activities should be expanded in the future. In Saudi Arabia, the annual meeting of Virtual clinical pharmacy services and pharmacy personnel, including clinical pharmacists, distributor pharmacists, and pharmacy technicians, is highly recommended.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

CONSENT FOR PUBLICATIONS

Informed consent was obtained from all the participants.

ETHICAL APPROVAL

This research was exempted from research and ethical committee or an Institutional Review Board (IRB) approval. https://www.hhs.gov/ohrp/regulations-and-policy/decision-charts-2018/index.html

ABBREVIATIONS

MOH: Ministry of Health; **KSA:** Kingdom of Saudi Arabia; **VCPS:** Virtual Clinical Pharmacy Service; **SWOT:** Strengths, Weaknesses, Opportunities, and Threats; **KPI:** Key Performance Indicator.

REFERENCES

1. Yousef Ahmed Alomi SJA, Radi Abdullah Alattyh. Strategic Plan of General Administration of Pharmaceutical Care at Ministry of Health in Saudi Arabia 2012 – 2022. JPharm Pharm Scien. 2015;1(3):1-8.

2. Chowdhury S, Mok D, Leenen L. Transformation of health care and the new model of care in Saudi Arabia: Kingdom's Vision 2030. J Med Life. 2021;14(3):347-54. Epub 2021/08/12. doi: 10.25122/jml-2021-0070. PubMed PMID: 34377200; PubMed Central PMCID: PMCPMC8321618.

3. Alasiri AA, Mohammed V. Healthcare Transformation in Saudi Arabia: An Overview Since the Launch of Vision 2030. Health Serv Insights. 2022;15:11786329221121214. Epub 2022/09/10. Doi: 10.1177/11786329221121214. PubMed PMID: 36081830; PubMed Central PMCID: PMCPMC9445529.

4. Asiri YA. Emerging frontiers of pharmacy education in Saudi Arabia: The metamorphosis in the last fifty years. Saudi Pharmaceutical Journal: SPJ: the official publication of the Saudi Pharmaceutical Society. 2011;19(1):1-8. doi: 10.1016/j.jsps.2010.10.006. PubMed PMID: 23960737; PubMed Central PMCID: PMC3744965.

5. Alomi YA, Alghamdi SJ, Alattyh RA. The Top Influence Pioneer Pharmacy Leaders in Saudi Arabia. International Journal of Pharmacology and Clinical Sciences. 2019;8(4).

6. Ahmed Alomi Y. National Pharmacy Practice Programs at Ministry of Health in Saudi Arabia. Journal of Pharma and Pharmaceutical Sciences. 2015;1(2):17-8. doi: 10.24218/vjpps.2015.10.

7. Alomi YA. National pharmacy anticoagulation program at Ministry of Health in Saudi Arabia. BAOJ Pharm Sci 2017;3(3):1-7.

8. Alomi YA. A new guideline on hospital pharmacy manpower in Saudi Arabia. Journal of Pharmacy Practice and Community Medicine. 2016;2(2).

9. Al-Haidari KM, Al-Jazairi AS. Establishment of a national pharmacy practice residency program in Saudi Arabia. American Journal of health-system Pharmacy: AJHP: official journal of the American Society of Health-System Pharmacists. 2010;67(17):1467-70. doi: 10.2146/ajhp090536. PubMed PMID: 20720247.

10. Konstantinos Danas. Panayiotis Ketikidis AR. A virtual hospital pharmacy inventory: An approach to support unexpected demand. International Journal of Medical Marketing. 2002;2(2):125-9.

11. Chambers B, Fleming C, Packer A, Botha L, Hawthorn G, Nott S. Virtual clinical pharmacy services: A model of care to improve medication safety in rural and remote Australian health services. American Journal of health-system Pharmacy: AJHP: official journal of the American Society of Health-System Pharmacists. 2022;79(16):1376-84. Epub 2022/03/16. doi: 10.1093/ajhp/zxac082. PubMed PMID: 35291005; PubMed Central PMCID: PMCPMC9353697.

12. Karattuthodi MS, Thorakkattil SA, Kuzhiyil AK, Chandrasekhar D, Bhojak KN. Implementation of virtual clinical pharmacy services by incorporating medical professionals and pharmacy students: A novel patient-oriented system to advance healthcare in India. Explor Res Clin Soc Pharm. 2022;5:100126. Epub 2022/04/29. doi: 10.1016/j.rcsop.2022.100126. PubMed PMID: 35478504; PubMed Central PMCID: PMCPMC9031439.

13. Mohiuddin SI, Thorakkattil SA, Abushoumi F, Nemr HS, Jabbour R, Al-Ghamdi F. Implementation of pharmacist-led telemedicine management clinic in ambulatory care settings: A patient-centered care model in COVID-19 Era. Explor Res Clin Soc Pharm. 2021;4:100083. Epub 2021/11/02. doi: 10.1016/j.rcsop.2021.100083. PubMed PMID: 34723240; PubMed Central PMCID: PMCPMC8548048.

14. Al Ammari M, AlThiab K, AlJohani M, Sultana K, Maklhafi N, AlOnazi H, *et al.* Tele-pharmacy Anticoagulation Clinic During COVID-19 Pandemic: Patient Outcomes. Front Pharmacol. 2021;12:652482. Epub 2021/09/28. Doi: 10.3389/fphar.2021.652482. PubMed PMID: 34566632; PubMed Central PMCID: PMCPMC8459665.

15. Bushra Muraywid LEB, Brad Myers. Effect of a Virtual Pharmacy Review Program: A Population Health Case Study. J Manag Care Spec Pharm. 2020;26(1):24-9.

16. Muner Abdulrahman Alshehri, Layth Khalid Alsulaiman, Ayman Afify, Kholoud Habib, Mostafa Kofi. Patients' Satisfaction on Virtual Clinic in Primary Health Care Centers in Prince Sultan Military Medical City, 2020-2021: A Qualitative Study. Family Medicine and Primary Care: Open Access. 2022;6(3). doi: 10.29011/2688-7460.100096.

17. Richardson CL, White S, Chapman S. Virtual patient technology to educate pharmacists and pharmacy students on patient communication: a systematic review. BMJ Simul Technol Enhanc Learn. 2020;6(6):332-8. Epub 2020/11/01. doi: 10.1136/bmjstel-2019-000514. PubMed PMID: 35515492; PubMed Central PMCID: PMCPMC8936658.

18. Marchese M, Heintzman A, Pasetka M, Charbonneau F, DeAngelis C, Peragine C. Development of a process map for the delivery of virtual clinical pharmacy services at Odette Cancer Centre during the COVID-19 pandemic. Journal of Oncology Pharmacy Practice. 2021;27(3):650-7.

19. Chambers B, Fleming C, Packer A, Botha L, Hawthorn G, Nott S. Virtual clinical pharmacy services: A model of care to improve medication safety in rural and remote Australian health services. American Journal of Health-System Pharmacy. 2022;79(16):1376-84.

20. Allison A, Shahan J, Goodner J, Smith L, Sweet C. Providing essential clinical pharmacy services during a pandemic: virtual video rounding and precepting. American Journal of Health-System Pharmacy. 2021;78(17):1556-8.

21. R M. Writing a Business Plan for a New Pharmacy Service. 2010.

22. American College of Clinical P, Harris IM, Baker E, Berry TM, Halloran MA, Lindauer K, *et al.* Developing a business-practice model for pharmacy services in ambulatory settings. Pharmacotherapy. 2008;28(2):285. Epub 2008/01/30. Doi: 10.1592/phco.28.2.285. PubMed PMID: 18225974.

23. Sachdev G. Sustainable business models: a systematic approach toward successful ambulatory care pharmacy practice. American Journal of health-system Pharmacy: AJHP: official journal of the American Society of Health-System Pharmacists. 2014;71(16):1366-74. Epub 2014/07/31. doi: 10.2146/ajhp140078. PubMed PMID: 25074956.

24. Guide P. A Guide to the Project Management Body of Knowledge. Sixth Edit ed: Project Management Institute, Inc; 2017.

25. Alomi YA, Shorog E, Alshahrani A, Alasmary S, Alenazi H, Almutairi A, *et al.* National survey of pharmacy practice at MOH hospitals in Saudi Arabia 2016-2017: Clinical pharmacy services. Journal of Pharmacy Practice and Community Medicine. 2018;4(1s).

26. Alomi YA, Alhennawi K, Khayayt N. Clinical pharmacy services and workforce requirements at MOH hospitals during ten years mass gathering hajj (2006-2015) in Makkah and Al-Madina Regions, Saudi Arabia. Journal of Pharmacy Practice and Community Medicine. 2017;3(4s).

27. Alomi YA, Alghamdi SJ, Alattyh RA. Forecasting the demand of clinical pharmacist workforce in future fifteen years (2016-2030) at all healthcare institutions in Saudi Arabia. Journal of Pharmacy Practice and Community Medicine. 2018;4(1s).

28. Marriott JL. Use and evaluation of "virtual" patients for assessment of clinical pharmacy undergraduates. Pharmacy Education. 2007;7(4).

29. Chung H-T, Park H-G. Studying a Balance Scored Card-driven System Dynamics Model for Enhancing Hospital Key Performances. The Journal of Information Systems. 2011;20(3):25-40.

30. Mwakithi J. Application Of Balance Scorecard In Strategy Implementation At Kenya Bureau Of Standards: University of Nairobi; 2017.

31. Wu M. Verifying the influences of leadership styles upon organizational performances: Balance-scored card implementation as a moderator. Journal of International Management Studies. 2014;9(1):25-37.

32. S R. The Risk Management Process in Project Management - ProjectManager. com [cited 2002 Mar 15]. Available from: https://www.projectmanager.com/blog/risk-management-process-steps.

33. Kaplan RS MA. Managing Risks: A New Framework Harvard Business Review. 2012 [cited 2020 Mar 15]. Available from: https://hbr.org/2012/06/managing-risks-a-new-framework.