

Virtual Clinics in the Covid-19 Pandemic

R. Elhassan, F. Sharif, T.I. Yousif

Paediatrics department, Midlands Regional Hospital, Mullingar, Co. Westmeath.

Introduction

The Covid-19 pandemic crisis has posed great challenges to the health care services worldwide. This crisis necessitated the diversion of all efforts towards providing emergency care to those affected by the disease¹. The result of this was cancellation of many out-patient clinics and elective services¹. However, the growing demand for accessing specialized medical advice for non-Covid patients and the urge to enable continuation of patient's care stimulated looking for other feasible alternatives that can be used during this crisis.

Telehealth is defined as the entire spectrum of activities used to deliver care remotely, without direct physical contact with the patient². It could be either provider-to patient or provider-to-provider communications. Telehealth can take place synchronously (telephone and video), asynchronously (patient portal messages, e-consults), and through virtual agents (chatbox) and wearable devices². Tele-health has been utilised to support access to specialized medical advice in remote areas in many countries all over the world. The advantages of Telehealth include cost effectiveness, increased capacity, and improvement in quality of care provided to patients³. Virtual appointments were found to reduce the waiting times for consultation between appointments⁴. Use of virtual consultations improved patients' satisfaction and reduced the need for additional tests and investigations⁵. Safety, convenience and effectiveness of virtual clinics (VC) have been reported⁶.

Key elements of a VC used include the use of mobile communication devices, mobile health (M-health), videoconferencing (V-health), and communication with patients in an integrated manner, combined with additional online tools to improve accessibility and quality of care³. But for this virtual option to operate efficiently, appropriate selection of patients, significant service reorganization and provision of logistical support are important prerequisites⁵. There are still some complex challenges to establish wide virtual consultation services within different routine practices in many sectors⁶.

Table 1: Showing requirements, opportunities and limitations of some V.C Platforms. (adapted from wosik et al²)

| Platform | Technology requirements | Opportunities | Limitations |
|--|--|--|--|
| Patient-initiated texting | <ul style="list-style-type: none"> High-Tech infrastructure | <ul style="list-style-type: none"> Handling clear issues | <ul style="list-style-type: none"> Needs staffing Potential lack of context No physical exam |
| Phone calls | <ul style="list-style-type: none"> Minimum | <ul style="list-style-type: none"> Universally accessible Cost- effective Easy & quick | <ul style="list-style-type: none"> No physical exam |
| Videoconferencing | <ul style="list-style-type: none"> Moderate, Requires WiFi connection, a smart device with good camera and a microphone | <ul style="list-style-type: none"> Allows visible inspection Allows for non-verbal cues | <ul style="list-style-type: none"> Could be time consuming and costly |
| Tele-health Software | <ul style="list-style-type: none"> Complex | <ul style="list-style-type: none"> Confidential Allows visual inspection | <ul style="list-style-type: none"> Time and high Tech required, Cost |
| Video-Visit (e.g. for in patients during Covid) | <ul style="list-style-type: none"> Complex Requires Wi-Fi connection, a smart device with good camera and a microphone | <ul style="list-style-type: none"> Allows visual and verbal consultation | <ul style="list-style-type: none"> May need digital peripherals, e.g Stethoscope. Needs Infection control re: devices used |

Example of Telehealth Platforms - Attendanywhere^R

Attendanywhere^R is a platform used to connect clinicians and patients using video. It only requires both patient and healthcare provider to access a smart phone or computer with a webcam and have a good internet connection and a private, well lit area to allow uninterrupted consultation.

How it Works

Initially the patient agrees to have their appointment via video. Patients/carers will receive a letter and/or a text message with the link to the virtual waiting room on the website for their appointments. On the day and time of the appointment, patients/carers log to the site through the link. At the start, they will be asked to confirm name, date of birth and contact phone number. The healthcare provider will see them arrive and they will join them in the video room for the consultation. At the end of the appointment, the healthcare provider will disconnect the call and the web page will close. Dictation will be done as usual.

Worldwide Experiences of Virtual Clinics

Advances with internet offered a great opportunity to improve communication at a distance. Telemedicine using videoconferencing allowed valuable direct interaction, but asynchronous telemedicine using e-mail or Websites was considered a cheaper and much more flexible in both time and place⁷. Telemedicine has been used successfully in dermatology consultations avoiding long waiting times for a dermatologist opinion in out-patient clinics when referred by GPs⁷. A study involving two hospitals in London and Shrewsbury and 29 general practices in inner London and Wales showed that conducting virtual outreach clinics was associated with reduced costs to patients and lower losses in productivity compared with conventional outpatients' clinics. However; the costs of virtual outreach consultation was greater for the NHS than the conventional clinics⁸. In Australia telemedicine has been used widely in health care. Since 1996 Tele-health services have been growing steadily, and in 2002 there were over 30,000 Tele-radiology transmissions and 1250 clinical occasions of service via videoconference⁹. Appropriately targeted video consultations have improved the delivery of primary health care in Australia, particularly in rural and remote regions¹⁰. The same result was noticed in India, where V.Cs are considered a new concept, V.Cs show promise and seem to be of great benefit especially in rural areas where access to specialized medical advice can be difficult¹¹. In paediatrics, a Dutch RCT study showed that implementing frequent virtual Asthma clinic improved asthma control and increased symptoms-free days significantly when compared with conventional outpatients' clinics¹². In Irish setting, using a physician assisted video OPD consultations for some patients who underwent low-risk surgical procedures was proved to be helpful with potential to reduce already increasing pressure on stretched surgical OPD¹³.

Examples of Virtual Clinics during the Covid-19 Pandemic

In the US the Covid-19 crisis has presented healthcare service delivery system with hard challenges. To overcome this tough situation rapid adoption of Telehealth was pursued to enable providing health service at a distance. Telehealth has played a vital role in transforming healthcare delivery during the three phases of the US Covid-19 pandemic; Stay-at-Home Outpatient Care, initial Covid-19 Hospital Surge, and post-Pandemic Recovery². Use of telemedicine proved helpful in sustaining the continuity of outpatient care during the pandemic keeping in pace with the Stay at Home orders and physical distancing measures, while limiting community and nosocomial spread². E-consults, remote patient monitoring, telephone calls, video calls and messaging systems have all been used efficiently in triaging and managing patients through the pandemic². These methods have been of great help in reducing the need for face to face interactions². Furthermore, telemedicine proved to be of great benefit not only in outpatient settings but also in inpatient settings reducing the need for PPEs and saving HCWs efforts².

Our Experience with V.C in the Covid-19 Pandemic

Virtual phone clinics were implemented in the paediatric department at the midlands regional Hospital, Mullingar at the start of the pandemic even before the regulations generated to minimize patients' risk of contracting Covid-19.

Previously scheduled outpatients' appointments before the pandemic were switched to V.C appointments in the same prescheduled dates. Patients/Carers were contacted and informed regarding date and time of the V.C appointments. They were asked to record the weight and height of the child and have it to hand during the V.C. The doctors in the clinic were asked to call the patients/carers after reviewing their charts. The phone calls start with clinicians identifying their names, purpose of the call, confirming identity of receiver of the call. Clinicians then proceed to take consent for pursuing the call as part of V.C procedure. Limitations of the VCs are then explained. The doctor would start taking relevant history and updates regarding the patient's condition. The weight and height of the child measured are taken and plotted on centile charts in patients' records. Although this needs to be interpreted with caution, it can give a fair idea of the child's growth status. Doctors then address any parents/carers concerns and formulate a plan of action which is discussed with the responsible consultant. This in turn is conveyed to parents/carers. Management plans can involve sending prescriptions by post, ordering investigations, referrals to other specialties or scheduling a ward review appointment where patients can be seen and examined when necessary. We have also used the V.C opportunity to give medical advice to parents /carers regarding keeping healthy during Covid-19 pandemic. While the phone call conversation model is considered accessible and relatively cheap, it also has the advantage of using minimal resources compared with more sophisticated telemedicine measures. However, phone calls based V.C model has the limitation of inability to examine patients and respond to patient's /carer's non-verbal cues.

Conclusion

V.Cs and telemedicine have been used in the past widely in different specialties and proved to be helpful and effective in reducing patients costs ,improving accessibility and reducing need for face to face interactions with HCWs in hospital settings .During the current pandemic of Covid-19, V.Cs have gained more focus. Despite some understandable limitations, V.Cs can represent a feasible alternative to conventional outpatients' clinics during this challenging time of Covid-19 pandemic. V.Cs when used appropriately can allow continuation of patient's care, improve accessibility and reduces the risk of nosocomial transmission.

Corresponding Author:

Dr. Taha I Y Hassan
Paediatric Consultant
Midlands Regional Hospital,
Mullingar,
Co. Westmeath.
Email: Drtaha2002@yahoo.com

References:

1. Conner .M.J,Winkler.M and Miah.S ,(2020),COVID-19 pandemic – is virtual urology clinic the answer to keeping the cancer pathway moving? , *BJU International*, 30 March 2020,[online],available at :<https://bjui-journals.onlinelibrary.wiley.com/doi/full/10.1111/bju.15061> ,(Accessed on : 07 May ,2020)
2. Wosik.J, Fudim.M, Cameron.F, Gellad .Z.F ,..et al, (2020),1 Telehealth Transformation: COVID-19 and the rise of Virtual Care, *Journal of the American Medical Informatics Association*, Oxford University, [online], available at:<https://academic.oup.com/jamia/advance-article/doi/10.1093/jamia/ocaa067/5822868> ,(Accessed 16 May,2020)
3. Krausz M., Ward J., Ramsey D. (2016) From Telehealth to an Interactive Virtual Clinic. In: Mucic D., Hilty D. (eds) *e-Mental Health*. Springer, Cham e-Mental Health pp 289-310,[online], available at : https://link.springer.com/chapter/10.1007/978-3-319-20852-7_15#citeas ,(Accessed on 7 May ,2020)
4. Parish.T, Ratnaraj.M, Ahmed.T.J ,(2019),AB1421-HPR Virtual Clinics in The Present - a Predictor for The Future?, *BMJ Journals* ,Annal Rheumatology ,[online],available at : https://ard.bmj.com/content/78/Suppl_2/2172.3.abstract ,(Accessed on 8 May ,2020)
5. Wallace .P, Haines .A, Harrison.R et al ,(2002),Joint Tele-consultations (Virtual Outreach) Versus Standard Outpatient Appointments for Patients Referred by Their General Practitioner for a Specialist Opinion: a Randomized Trial , *The Lancet* ,Volume 359, Issue 9322, 8 June 2002, Pages 1961-1968 ,[online],available at :[https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(02\)08828-1/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(02)08828-1/fulltext) ,(Accessed 07 May ,2020)

6. Shaw.S, Wherton.J, Vijayaraghavan.S, Morris.J, Bhattacharya . S, Hanson.P,.. et al, (2018), Advantages and Limitations of Virtual Online Consultations in a NHS Acute Trust: the VOCAL Mixed-Methods Study, *NIHR Journals Library Health Services and Delivery Research*, No. 6.21
7. Eminovic .N ,Keizer .N.F ,Wyatt.J.C,..et al ,(2009),Teledermatological Consultation and Reduction in Referrals to Dermatologists A Cluster Randomized Controlled Trial, *Arch Dermatol.*2009;145(5):558-564 ,[online],available at :<https://www.ncbi.nlm.nih.gov/pubmed/19451500>, (Accessed 07 May ,2020)
8. Jacklin, Roberts.JA,Wallace .P, Haines .A, Harrison .R,Barber.J.A,...et al ,(2003), Virtual Outreach: Economic Evaluation of Joint Teleconsultations for Patients Referred by Their General Practitioner for a Specialist Opinion ,*BMJ* ,doi:10.1136/bmj.327.7406.84 2003;327;84- ,[online],available at: <https://www.bmj.com/content/327/7406/84.full> ,(Accessed 08 May ,2020)
9. Dillon E and Loermans J (2003) Telehealth in Western Australia: The Challenge of Evaluation. *Journal of Telemedicine and Telecare* ,9, 15–19. December 1, 2003, [online], available at:<https://journals.sagepub.com/doi/abs/10.1258/135763303322596147>, (Accessed 08 May ,2020)
10. Raven .M, Butler.C and Bywood.C, (2013), Video-Based Telehealth in Australian Primary Health Care: Current Use and Future Potential,19(4) 283-286, October, [online], available at : <https://doi.org/10.1071/PY13032> ,(Accessed 08 May ,2020).
11. Angrish S, Sharma M, Bashir MA, Tripathi S, Hossain MM, Bhattacharya S, Singh A.,How effective is the virtual primary healthcare centers? An experience from rural India.,*J Family Med Prim Care*. 2020 Feb 28;9(2):465-469. doi: 10.4103/jfmpc.jfmpc_1124_19. eCollection 2020 Feb.
12. Wijngaart.L.S.V.D, Roukema.J, BoehmerA.L.M ,..et al ,(2017),A Virtual Asthma Clinic for Children: Fewer Routine Outpatient Visits, Same Asthma Control ,*European Respiratory Journal* ,Paediatrics Pulmonagy and Asthma , 2017; 50:, 1700471, [online],available at :<https://doi.org/10.1183/13993003.00471-2017> ,(Accessed 11 May ,2020)
13. Meehan.M, Balhareth. A, Gnanamoorthy M, Burke. J, McNamara. D, (2019), Efficacy of Physician Associate Delivered Virtual Outpatient Clinic. *Int J Health Care Qual Assur* ,2019 Aug 12;32(7):1072-1080. doi: 10.1108/IJHCQA-09-2018-0233., [online], available at: <https://www.ncbi.nlm.nih.gov/pubmed/31411096>, (Accessed 15 May ,2020)