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# Integrating telehealth in to 'business as usual': Is it really possible?

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**Abstract**

The Royal Children's Hospital, Melbourne, began offering web-based telehealth video consultation in 2011, with the principle being that telehealth should be integrated into 'business as usual'. In telehealth literature, key differences between telehealth and in-person consultations can make this hard to achieve, so an audit was performed that revealed many small gaps in the process. A total of 125 telehealth appointments were booked during the study period. Of these, 13% ($n = 16$) were rescheduled, cancelled or changed to face-to-face appointments, and up to two main issues were identified for the remaining appointments. Some 69% of the remaining 108 appointments ($n = 75$) were completed successfully, with 23% ($n = 25$) completely seamless end to end. Overall, 39 issues were administrative (40%), 34 technical (35%) and 24 scheduling (25%); nine (8%) required some minor troubleshooting. For long-term sustainability, integrating telehealth into business as usual needs to remain the target. Scheduling and technical glitches were the main barriers to seamless telehealth. Several issues have now been addressed with the introduction of an electronic medical record, and the development of standardised processes and staff training.

**Keywords**

Telehealth, telemedicine, business as usual, barriers, hospital

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## Introduction

The Royal Children's Hospital (RCH), Melbourne, is the major paediatric tertiary hospital in Victoria, Australia, it also provides several specialist services nationwide.

The RCH began offering web-based telehealth video consultations in 2011.[1,2] Most are run from within specialist clinics, with some from administrative offices, according to clinician preference. Approximately 70% of telehealth is administered to patients at home and 30% with the local doctor. In 2015, the RCH partnered with Healthdirect Australia and started using Healthdirect Video Call (HDV) – a video-calling platform custom-built for health.[3,4] HDV is designed to replicate typical service access patterns with crucial features that help make telehealth easier to integrate into existing processes. These features include a self-check process for video and audio capabilities for the patient and family as they check-in for the HDV appointment, a waiting room paradigm for the patient from where the clinician picks up the call and an alert system that there is a call in the waiting room.

Telehealth is well supported at a clinical and executive level and features in the RCH Strategic Plan. There have been a number of contextual changes at the RCH since the introduction of telehealth: a physical hospital move; a new patient queuing system; centralised appointment scheduling; a move from paper-based appointment requesting; changes to telehealth resourcing; and a scanned medical record, leading to a full electronic medical record (EMR). Telehealth methods that include a local provider is coordinated by the department administrators. Departments have varying levels of administrative support and scheduling is not a normal part of their role.

Specialist clinics are busy environments. More than 500 different doctors deliver between 800 and 1000 consultations each day, supported by 47 full-time equivalent administrative staff spread across nine specialist clinic desks, the contact centre and the billing team. There is one dedicated telehealth role whose primary function is to build activity and streamline telehealth.

Globally and nationally, telehealth potential remains under-realised[5–7] and RCH telehealth activity averages 2% of all rural, regional or interstate appointments. As also described in the literature, there seemed to be many small issues impacting on the delivery of telehealth and so, an audit was completed with an aim of understanding the gaps in current telehealth processes.

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## Methods

In February 2016, a one-month audit of booked telehealth was completed, looking for anything that impacted on the delivery or billing of telehealth. Each clinician was also asked for feedback on the day of their consultation.

A consultation was considered completely 'successful' if all end-to-end requirements for scheduling, delivering and billing the consultation was achieved, without the need for rework or follow-up. Minor troubleshooting managed by the clinician was considered 'successful'. Although a consultation where the clinician described a *poor connection or image* was still deemed successful, these appointments were identified in the data. This was reviewed to look at potential trends.

## Results

A total of 125 telehealth appointments were booked during the study period. Of these, 13% ($n = 16$) were rescheduled, cancelled or changed to face-to-face appointments. Up to two main issues were identified for each of the remaining appointments, as listed in Table 1.

Of the remaining 108 appointments, 69% ($n = 75$) were completed successfully, with 23% ($n = 25$) completely seamless end to end. Overall, 39 issues were administrative (40%), 34 technical (35%) and 24 scheduling (25%). Nine (8%) required some minor troubleshooting. Some 29% of the 108 booked appointments were billed to Medicare and 26% ($n = 28$) of potentially billable telehealth did not take place (See Table 2).

Of the 33 failed appointments in the audit, 18% ($n = 6$) were due to a correspondence breakdown with the local doctor ($n = 3$) or patient ($n = 3$). 'The general paediatrician was not aware of the appointment. The child had not been scheduled in with her, and the parents had tried to notify us of this (Clinician).

Delays on the day also affected some consultations. The local doctor or patient called the RCH for 5% of appointments ($n = 5$) where the RCH doctor was more than 15 minutes late. '[RCH doctor] very late, desk staff helped set him up 45 minutes later' (Telehealth coordinator).

Technical issues affected 23% of consultations ($n = 25$) with 18 of these failing. Sometimes, consultations were completed by phone.

**Table 1.** Findings from one-month audit of booked telehealth appointments.

| | Primary finding | Secondary finding |
|---|---|---|
| **Successful** | **33** | |
| • Completely seamless | 25 | |
| • Some minor technical troubleshooting | 2 | 7 |
| • Poor connection, sound or image, but completed video consultation | 6 | 1 |
| **Administrative issues** | **31** | |
| • Missing information from clinician | 20 | 4 |
| • No linked referral | 5 | 2 |
| • No SMS consent | 4 | 2 |
| • Other | 2 | |
| **Scheduling issues** | **11** | |
| • Communication or correspondence issue with the patient or local doctor | 4 | |
| • Local doctor was more than 15 minutes late | 3 | |
| • RCH doctor was more than 15 minutes late (and patient called) | 3 | 2 |
| • Patient was not checked in | 1 | 1 |
| • Booking error or logistical problem | | 4 |
| **Failed consultations** | **33** | |
| • Correspondence with local doctor or patient | 6 | |
| • Inadequate connection or could not connect call | 13 | |
| • Patient software or hardware | 2 | |
| • RCH software or hardware | 3 | |
| • Patient did not attend | 8 | |
| • Other reason | 1 | |
| **Unconfirmed outcome** | **1** | 1 |
| ***Total scheduled appointments*** | ***108*** | |
| **Rescheduled** | **16** | |
| • Appointment was cancelled, rescheduled or changed to face-to-face appointment | 16 | |
| ***Total appointments*** | ***125*** | |

SMS: Short Message Service; RCH: Royal Children's Hospital.

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> I love telehealth but sometimes it does not work as planned and today it was one of those days. The young person I was going to speak with for a voice therapy session had left it to the last minute to download Google Chrome so his computer was still chugging away trying to download it by the time we were supposed to have a session. We spoke over the phone instead. (Clinician)

Nine consultations required some minor troubleshooting that resolved the issue – usually this meant fixing a simple audio issue such as volume and/or using the phone for audio. 'Would not recognise camera. Swapping camera crashed the computer. Left call then re-joined, camera then worked' (Clinician).

Seven consultations had some issues with the connection or image such as a repeated drop-out, pixelated, blurry or delayed image.

> Had some issues today: – first was my fault – I accidentally turned off my computer when I knocked the on/off switch plugging in the camera!! 5–7 minutes later (!) when I could restart my computer and login again (it's so slow to start!)…. Could get video but not audio. Had to refresh then disconnect call a few times, then it just started working – video and audio quality was poor today. I think it was the patient internet connection – kept pausing and missing chunks of words. Video was fuzzy. (Clinician)

22% of consultations ($n = 24$) had missing information such as Medicare item numbers or provider name. This impacted on billing and created significant follow-up for the billing team.

Medicare billing requires a valid referral and patient permission to bill. The billing team did not get a Short Message Service (SMS) response for six consultations.

Part of the scheduling process for all appointments is to link a valid referral, yet 6% (seven appointments) did not have a valid linked referral, meaning that they could not be billed. This is consistent with non-telehealth.

**Table 2.** Billing outcome from one-month audit of booked telehealth appointments.

| Billing criteria | Number | Percent |
|---|---|---|
| Billed to Medicare | 31 | 29% |
| Public clinic appointment | 18 | 17% |
| *Not billed:* | | |
| No referral | 10 | 9% |
| Missing information (e.g. item #, provider) | 10 | 9% |
| Did not meet Medicare criteria | 5 | 5% |
| Not billed (no SMS consent) | 4 | 4% |
| Not billed (other reason) | 1 | 1% |
| *Not billed as appointment did not take place:* | | |
| Appointment did not take place | 20 | 19% |
| Appointment failed – technical reason | 4 | 4% |
| Appointment failed – scheduling reason | 4 | 4% |
| Unknown billing outcome | 1 | 1% |
| *Total* | *108* | *100%* |

SMS: Short Message Service.

## Discussion

Integrating telehealth means following a similar process to any other specialist clinic consultations, as outlined broadly in Figure 1.

### *Requesting telehealth*

Usually, telehealth is requested by the RCH clinician after an in-person appointment. This follows a straightforward rebooking process and is well integrated in to the usual processes. 'My telehealth call went well today. I found all of the instruction very helpful and quite easy. Thank you for your help and positivity' (Clinician).

The family or local doctor may also request telehealth. Telehealth is not always appropriate and the RCH only books telehealth with the agreement of the treating clinician. Contacting clinicians can be difficult and time

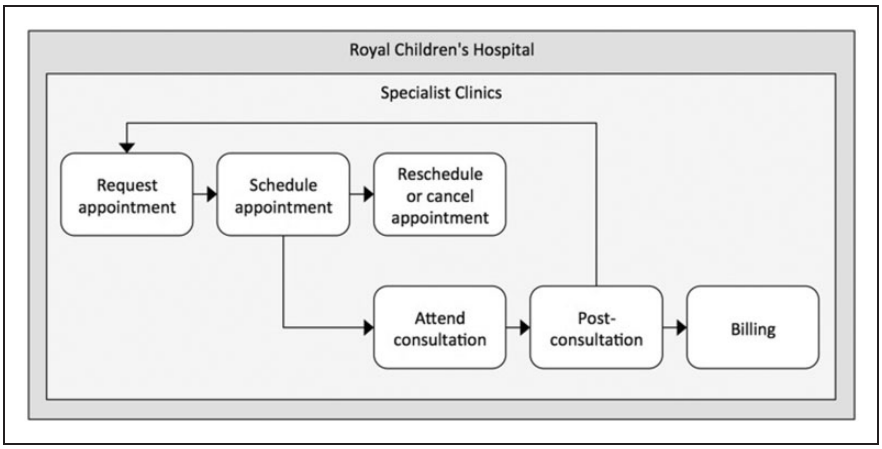


**Figure 1.** Specialist clinics appointment processes.

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consuming and is an additional task for schedulers who have a daily turnover of 1100 appointments to process.

## Scheduling telehealth

*Routine telehealth.* Specialist clinics' staff book routine telehealth consultations to the home – defined as *unsupported* telehealth. A telehealth *appointment type* in the usual booking system generates a telehealth letter with instructions. Telehealth is ideally booked at the start of clinic, but is often now booked in any slot throughout a clinic. This has facilitated easier scheduling and does not appear to have impacted on telehealth delivery.

*Supported telehealth.* Telehealth including a local clinician – defined as supported telehealth – requires administrative coordination between two provider schedules that is much more time consuming than simply booking the 'next available' appointment. It also requires additional specifically customised letters for the family and local doctor. Correspondence to local doctors sometimes gets lost within *their* processes – although a doctor may know they have a telehealth booked, they do not have the information on hand for how to join the call. 'Mum called asking what info to give local doctor as the GP had not received the letter' (Telehealth coordinator).

Additionally, supported telehealth is usually run outside of the clinic to facilitate scheduling – this creates an added task of ensuring the appointment is in the RCH clinicians' own calendar.

Scheduling, rescheduling and cancelling supported telehealth requires significant additional coordination that does not fit neatly within *business as usual*.

Being able to clearly differentiate between supported and unsupported telehealth is crucial. The RCH is about to update the telehealth appointment types in the recently introduced EMR to *Telehealth (supported)* and *Telehealth (unsupported)* to help streamline scheduling, rescheduling, correspondence and reporting.

## Attending the telehealth consultation

Historically, telehealth has often failed due to poor connectivity,[9–11] and the vey population telehealth is targeted towards – rural Australia – has the poorest Internet access.[10] An automated or built-in process for capturing connection data is planned, and would be very helpful, assuming something could then be done with the findings.

To have telehealth available within clinicians' usual workflows requires a webcam in all 150 clinic rooms. A decision had already previously been made to not purchase computer screens with inbuilt cameras as these were considered to be too poor a quality. The alternative was a shared webcam between several rooms. This causes driver installation problems – even 'plug-and-play' webcams needed an automated driver installed for every unique logged-in user and for each Universal Serial Bus (USB) port. Although the installation only takes a few minutes, this is a long wait, especially when it looks like a 'failed video'.

Now, cameras are being left permanently plugged in to some computers used more frequently for telehealth.

At the patient end, there were sometimes conflicting programs blocking camera access. HDV are working on some solutions to troubleshoot this.

## Post-consultation administration

A significant number of consultations had missing information such as Medicare item numbers or provider name. This impacted on billing and created significant follow-up for the billing team. The EMR *post-consult* forms now prompt clinicians to enter two telehealth item numbers, and the provider name is also automatically attached to every encounter.

## Billing

Medicare has eligibility criteria to bill for telehealth including, broadly, the patient being rural or regional and the provider being a medical consultant.[12] All Medicare billing requires a valid referral and patient permission to bill.[13]

The RCH uses a very effective email-to-SMS program to obtain consent to bill Medicare, but this is reliant on having the correct mobile number and the parent replying. A number of SMS responses were not received, with the most likely reason being an incorrect mobile number. A process of updating mobile phone numbers at each contact with a family is now being initiated. This should improve this aspect of billing.

Part of the scheduling process for all appointments is to link a valid referral; however, a number of appointments did not have valid linked referrals, meaning they could not be billed. The numbers in our audit were similar to that with non-telehealth. However, in-person appointments without a referral can still generate some revenue through billing a non-referred Item,[14] but these are not eligible for telehealth – thus, for telehealth, no referral means no revenue.

The new EMR has a much-improved process for linking valid referrals.

At the RCH, consultants who provide Medicare-billable services must have a '100% donation model agreement' signed with the hospital – meaning the hospital pays them a fixed salary and bills Medicare on their/the patients behalf. Most doctors working in public (non-Medicare) clinics do not have such an agreement in place; 17% of telehealth was provided in public clinics – as such, telehealth did not generate Medicare income.

Additionally, many RCH clinics are run by registrars, fellows, nurses or allied health professionals – not eligible to bill under Medicare rules.

Although the EMR is expected to have overcome some administrative barriers to billing, it is yet to be seen if telehealth will be financially sustainable based on Medicare billing.

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## Summary

Many issues have been identified in this audit; in particular, non-technical issues relating to the context within which telehealth operates rather than telehealth per se. Overall, 39 issues were administrative (40%), 34 technical (35%) and 24 scheduling (25%). Since this audit, the following enhancements are expected to further support the integration of telehealth:

### *Administrative*

1. *Easier linking of referrals* in the new EMR supports increased Medicare billing.
2. *Required administrative information is more automatically and easily obtained* through designs to the EMR post-consult form.

### *Technical*

1. *A built-in process for capturing connection or technical data* at the time of a failed or poor video call is being explored.
2. *Webcams remaining permanently plugged in to some clinic room computers* has reduced camera 'fail' rates caused by the need for repeated driver installation.
3. *RCH information and communications technology (ICT) is now better placed to provide technical support* after receiving video-call technical training from Healthdirect Australia.

### *Scheduling*

1. *With and without local doctor telehealth appointment types* in the EMR will help streamline scheduling, rescheduling and cancelling, correspondence and reporting.
2. *'Telehealth clinics' in the EMR help differentiate processes* required for telehealth run outside of clinic compared to a routine, in-clinic telehealth consultation.
3. *Alerts in the EMR prompt clinicians that a patient is Medicare-eligible for telehealth* – whereas, previously, clinicians may not have considered telehealth.
4. *There is an opportunity to formally embed telehealth in specialist clinic roles and processes* as part of a current comprehensive specialist clinics review.

To seamlessly embed telehealth in to 'business as usual' in a busy health service, telehealth needs to be integrated in to all relevant service planning and redesign, instead of an 'add-on'. Clear, documented processes are required and all relevant staff must be competent in these processes.

When telehealth is 'just another way of delivering services', there is no limit to potential activity – other than clinical appropriateness and patient preference.

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