ICU Telehealth Project
University Hospital Geelong

1. Project Overview

PROVISION OF INTENSIVE CARE SERVICES AND SUPPORT TO BARWON SOUTH WESTERN REGION – BARWON SOUTH WEST (BSW) INTENSIVE CARE UNIT (ICU) VIDEOCONFERENCING PROJECT

Background

The University Hospital Geelong (UHG) ICU is a tertiary level, adult, mixed medical, surgical and cardiothoracic ICU. It is the only tertiary level ICU in the Barwon South Western region. The UHG ICU provides critical care services to the Barwon South Western region. This project was designed to explore the role of telehealth in the provision of timely advice and support.

UHG ICU was ideally placed to coordinate the rollout of an effective telehealth model to both upstream and downstream hospitals within south-west Victoria as the unit had active, supported projects with The Alfred and The Royal Children's Hospitals, as well as evolving education and referral models with Warrnambool and Hamilton hospitals. Videoconferencing was enabled by the established South Western Alliance Rural Health (SWARH) Services network, and using the regional Polycom™ videoconferencing infrastructure platform.

The problem

Patients retrieved to the UHG ICU occupied a disproportionate amount of ICU bed days, were sicker, and had a higher mortality rate than non-retrieved patients. Frequently these were younger patients with reversible disease processes.

There were multiple obstacles to early, timely referral and seeking of advice, including: a lack of awareness of services available, delays to patient retrieval, a lack of feedback following retrieval, a lack of availability of expert advice, and a poor knowledge of and access to telehealth equipment.

It was proposed that the use of telehealth technology, including videoconferencing and data sharing, could be useful in addressing some of these barriers. The project was targeted at multiple levels, in order to apply a uniform process for hospitals within the Barwon South Western region to utilise telehealth as a referral, advice and feedback aid.

Project aims

To enable a functional and sustainable critical care telehealth platform involving a regional hub (UHG ICU) coordinating with upstream centres (The Alfred, The Royal Children's Hospital) and downstream referring hospitals (Warrnambool, Hamilton) in order to create a transferable critical care support and education model.

Strategies

Education: Videoconferencing and telehealth provided the opportunity for UHG and other hospitals within the region to benefit from joint education from service partners such as The Alfred and The Royal Children's Hospital. UHG ICU was also ideally placed to coordinate and provide critical care education to other hospitals in south-west Victoria.

Governance: The database of UHG ICU critical care protocols was readily available for other units within the region. The goal of routine, standardised and evidence-based patient care was pursued for all critically ill patients in the region.

Multidisciplinary teamwork: There is an ongoing relationship between UHG ICU and Adult Retrieval Victoria (ARV). Liaison and feedback occur between UHG ED, UHG ICU, and ARV. An ideal videoconferencing model included multiparty conferencing between these entities, and the referring hospitals.

Timely and appropriate provision of advice: Early videoconference calls for advice for critically ill patients were encouraged from referring centres. This included support to allow ongoing care in a regional centre, or timely retrieval (via ARV). Telehealth and videoconferencing with data sharing seemed ideally placed to fill this role.

Feedback: Regular feedback and patient audit sessions via videoconference were provided. Regional centres were alerted to the progress of their patients after referral in order to improve patient care, and UHG ICU sought this feedback in order to improve the quality of service.

Key components

Hardware: The existing SWARH network was used. Established platforms existed at Warrnambool and Hamilton hospitals, the Royal Children's Hospital and The Alfred. Further fixed and mobile Polycom platforms were installed at UHG ICU. Polycom desktop and mobile (e.g. iPad)installations were arranged for UHG ICU and regional partners without fixed platforms.

Project Officer: A Project Officer was appointed, who was responsible for protocol design and development, model start-up and logistics, coordination with telehealth partners, timing and development of educational activities, data-collection and audit of telehealth activities, reporting and feedback to telehealth partners, clinical and corporate governance and assistance with strategic planning.

Outreach consultant / senior registrar: Dedicated clinical time and resources were allocated to provide for: coordination with referral centres, videoconferencing on demand, the provision of critical care education to referring / referral centres, feedback of patient information / outcomes and coordination with Adult Retrieval Victoria.

Key activities

<u>**Clinical**</u>

Videoconferencing: The Alfred – UHG ICU – clinical

Consultation was performed on Extra Corporeal Membrane Oxygenation (ECMO*) patients on daily virtual ward rounds. Data sharing of x-rays and relevant pathology. Additional video-consultation was performed on demand.

*Extracorporeal Membrane Oxygenation (ECMO) can provide cardiac or respiratory (or both cardiac and respiratory) support in critically ill patients

Videoconferencing: RCH – UHG ICU – clinical

Consultation occurred regarding paediatric referrals with Paediatric Infant Perinatal Emergency Retrieval (PIPER) on demand. Children whose conditions were deteriorating were observed via videoconference for further assessment.

Videoconferencing: UHG ICU – Hamilton – clinical

On-demand video consultation occurred with Hamilton critical-care areas. Multi-party conferences were available with ARV on demand for patients requiring retrieval.

Videoconferencing: UHG ICU – Warrnambool – clinical

Video consultation was available on demand for critically ill or unstable patients.

Non-clinical

Videoconferencing: The Alfred – UHG ICU – meetings and joint ECMO audit

A regular ECMO review and audit was conducted between UHG ICU and The Alfred. Patient outcomes and management of patients was discussed.

Videoconferencing: UHG ICU – Hamilton – Education

Quarterly patient audit and feedback sessions were arranged for patients jointly managed by these units. Monthly education sessions were provided by a senior registrar or consultant.

Videoconferencing: UHG ICU – Warrnambool – Audit / Education

Clinical audit was performed with the Emergency Department. Education was provided for medical students.

Videoconferencing: UHG ICU – ARV / PIPER / The Alfred / Warrnambool / Hamilton – Testing

Regular non-clinical testing was an essential component of the model.

Outcomes

Videoconferencing activity increased markedly over the project period. There was increased video-referral of patients from rural and remote centres as well as to metropolitan centres. Clinical audit and feedback sessions were conducted, as well as education sessions via videoconference. Participant satisfaction was very high for videoconference education sessions. The use of videoconference for referrals increased from <5% to >40% of 'videoconference opportunities' during the project period. Regular test calls were conducted, with staff reporting increased familiarity with videoconference equipment and improved relationships. Equipment faults and technical issues were identified and troubleshooting occurred. Clinician and stakeholder engagement improved markedly. A user toolkit was designed and developed.

Conclusions

Activities via videoconferencing have the potential to improve referral pathways and patient care in a regional critical care setting.

Videoconferencing may provide a more intimate medium than telephone, allowing multiple participants and the ability to visualise patients and clinicians.

Feedback via videoconfencing can enhance the clinical audit and feedback process.

Important elements of a critical care videoconference service are highlighted in a user toolkit which has been developed.

The optimal use of videoconference / telehealth in a critical care environment continues to be evaluated.

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2. Questions and Answers

WHAT WAS THE BACKGROUND TO THIS PROJECT?

University Hospital Geelong Intensive Care Unit (UHG ICU) is located in a large Victorian regional city, and provides tertiary-level care for the south-west region of the state. As a consequence, the UHG ICU receives referrals from a number of small regional ICUs and emergency departments.

In 2013, the then Victorian Department of Health funded a project aimed at facilitating the provision of specialist care for critically ill patients using telehealth. There have been many Victorian telehealth innovations, but the penetration into critical care areas has been variable. UHG ICU was keen to trial the use of this technology to address barriers to critical care patient referral (such as timeliness and accuracy) and to investigate any other benefits of this form of enhanced communication, such as education and governance.

Initially, site visits were conducted to other exceptional telehealth services (including the Royal Brisbane Hospital) and a concept for a model of care integrating telehealth was developed. The model was designed to be adaptable, in order to support other interested ICUs looking to adopt all or part of the processes. A telehealth project officer was employed for a year.

HOW DID THE PROJECT START?

UHG ICU wished to streamline referral processes, both incoming and outgoing. The ICU runs collaborative programs with Royal Children's Hospital (critically ill children) and Alfred Health (Extracorporeal Membrane Oxygenation), as well as referral pathways with Adult Retrieval Victoria (ARV) and other, smaller hospitals in the Barwon South West (BSW) region (Warrnambool ICU, Hamilton ICU, Colac Urgent Care). Videoconferencing (VC) infrastructure existed within the South West Alliance of Rural Health (SWARH) network (a health service IT alliance) which is used across the BSW. This technology was adapted and utilised, and a number of gaps in the existing infrastructure were identified. We began by identifying and engaging key stakeholders and local champions. We asked for their input, ideas and perceived barriers to using VC. Time was invested in visiting all project sites, and understanding their priorities and needs. It was agreed that a shared vision was important if we were to improve the way patient care was delivered. A face to face meeting allowed us to establish collective goals and develop a consultative plan.

WHAT HAPPENED NEXT?

A reference group was established as part of project governance with people from a range of other ICUs, the adult and paediatric retrieval services, and the Department of Health. A data collection form was developed in order to identify opportunities to use telehealth, and barriers to its use. A data collection phase allowed us to see the current patterns of use. We defined VC opportunities in our environment, and evaluated why VC was not being utilised. This audit tool allowed us to identify problems, such as lack of staff training and equipment needing an upgrade, as they occurred, and prioritise the three areas that required urgent attention: clinician engagement,

technological barriers, and the model itself. More technical common problems included non-functional videoconference numbers, intermittent picture and sound dysfunction, and picture freeze or drop-out.

WHAT WAS THE BIGGEST OBSTACLE DURING THE PROJECT?

The most challenging obstacles encountered during the project were related to technology. Though telehealth and VC have existed for some time, it quickly became apparent that multiple technical issues existed that were barriers to use in the acute setting. Legacy technology like large, hardwired, mobile video carts (sometimes known as Computers On Wheels – COWs), fixed units in impractical spaces, and poorly maintained equipment were all barriers to use. In order to encourage VC use, we undertook a gap analysis. While most health services had some VC equipment, in many cases it was poorly maintained, not current and cumbersome to use, or slow to start-up.

The leading alternative to VC appeared to be telephone use. For this reason we attempted to make our VC interactions as intuitive as possible, utilising a clinician's own devices, and making the interface more easily accessible. Firewalls – an IT system's barrier to unauthorised access – presented further challenges, as did clinical staff turnover, particularly with doctors rotating through other hospitals. Any connectivity issues, such as sound dropouts or distorted images, quickly lead to clinician disillusionment and disengagement.

It became increasingly clear that, while we could develop great relationships, educate staff and develop documents, until we had technology that was user friendly and reliable we were not going to succeed.

WHAT WAS THE BIGGEST MISTAKE DURING THE PROJECT?

Twelve months is a relatively short period of time in which to deliver a project that requires fundamental changes to work processes. In hindsight, we perhaps should have concentrated on sorting out the technology sooner given that we had identified a number of issues in this area early in the project. By attempting to implement use of VC before having a smooth technical interface we lost some user engagement and faith in the medium.

WHAT WAS THE PROJECT'S BIGGEST SUCCESS?

Our biggest success has been the improvement in patient care as a direct result of the improvement in our relationship with referral partners. By repeatedly visiting the project sites, and providing education, feedback and information, we fundamentally improved our relationship with the other hospitals. We have augmented very successful relationships with the Royal Children's Hospital (Melbourne), The Alfred Hospital, and several Barwon South West rural hospitals and care centres. We have found the VC medium to be more interactive and personal than the telephone, and clinicians said they genuinely felt more connected with a face-to-face encounter. There was a sense of the consultation being more collegial, warm, and in many cases more supportive than telephone conversations. It seems to be more difficult to be rude or dismissive when using a wider array of non-verbal cues, as allowed by this medium.

It was important to ensure that the relationship with all hospitals was supportive and equal, rather than a top-down approach. This principle underpins the primary objective of the pilot, which was to enhance the referral processes between urban and regional units: if the remote clinicians did not

feel comfortable or supported by a larger hospital's approach, they would not initiate the referral and patients may not benefit.

WHAT TYPES OF TECHNOLOGY WERE USED FOR THIS PROJECT?

Geelong ICU already had fixed Polycom videoconference units (remote controlled cameras, microphone and software), which were supported through the SWARH network. One fixed unit was located in a consultant's office, making it ideal for confidential consultations. This was supported at the bedside by the use of mobile devices (e.g. a tablet) using a Polycom application. This was easily downloaded, and the hospital's licence agreement allowed a number of staff to be given log-in identification so they could videoconference from their own mobile device. (Geelong ICU has recently commenced work with another independent provider in order to further streamline the VC interface. An important part of this agreement is the inclusion of 24/7 support, with an ability to troubleshoot and arrange connectivity in emergent situations.)

Regardless of which platform is chosen, it should be industry standards based, allowing as much compatibility as possible, and be device agnostic. The benefit of having a good relationship with a provider is the ability to use secure log-ins, dedicated bandwidth, traceability in the event of undesired traffic, call quality and data analysis and robust technical support. For instance if a GP at a remote clinic had difficulty initiating a VC call after hours, this could be done manually by a technical support service. By the same token, the individual call can be analysed from start to finish to pinpoint why a technical problem occurred, and how to ensure it does not recur. After hours calls are often the most stressful, and technically difficult, so it is important that support exists for these.

WAS THERE ANY CLINICIAN RESISTANCE AND IF SO, HOW WAS THAT MANAGED?

Implementing any change is likely to be met with some resistance. We anticipated some push-back and managed this with understanding, education and timely communication. We also identified early adopters within each group (registrars, consultants and nurses) and these clinical champions assisted the case for change. When there were beneficial uses of VC in the unit – and particularly if we received positive feedback from patients or their significant others – we made sure that this was communicated so that staff could begin to identify actual situations where VC had improved patient care. An example of this was the successful use of VC by a senior consultant communicating with a junior doctor at one of the project sites to better explore the best care for a patient with end-stage disease. The VC allowed the consultant to talk with the patient, review his x-rays and other results, while consulting with the junior doctors at the remote site. The patient was able to make an informed decision about his own care. You can view the medical team's perspective via a video at this link (password 'health'): https://vimeo.com/101686990. Several previously sceptical clinicians were won over by the ability of the VC medium to accurately identify this patient's values and palliative care needs.

HOW DID UNIVERSITY HOSPITAL GEELONG ENGAGE WITH THE ALFRED AND THE ROYAL CHILDREN'S HOSPITAL?

The Royal Children's Hospital Paediatric ICU and The Alfred ICU are specialist centres for paediatric and adult intensive care, respectively. UHG ICU was already heavily engaged with both of these units before we began the project: Royal Children's Hospital for our developing paediatric capability, and The Alfred for extracorporeal membrane oxygenation (ECMO) interventions. The models of paediatric and ECMO care that are utilised in UHG ICU involve regular interaction,

feedback and support from these metropolitan centres. We established excellent collaborative relationships with advocates of telehealth in both The Alfred and the Royal Children's Hospital, and we were able to identify mutual benefits as a result of its successful implementation. Clinicians were encouraged to use VC on a daily/every-other day basis when patients were on ECMO, but particularly at cannulation and decannulation. The medium allows for such insights as checking cannulation sites, assessing ventilator settings, and reviewing chest x-rays. For medically unstable children, a dedicated camera in the paediatric ICU bay allows a clinician at the Royal Children's Hospital to review work of breathing, high-flow connections and or bubble CPAP / ventilator settings. The model of care for both these programs was recognised by a Victorian Public Healthcare Award (Collaborating to improve regional critical care: saving lives - Secretary's Award for improving patient outcomes and patient experience).

WHAT KIND OF EDUCATION WAS PROVIDED VIA VC?

VC is an ideal platform for regular remote medical education sessions. Specialist consultants and senior registrars were able to plan monthly sessions with the medical education coordinators at a remote sites so that topics offered the most value. The sessions were interactive and the technology allowed data sharing so that presentations, x-rays and other diagnostic tests could be synchronously viewed and discussed. We instituted clinical reviews, or audits, with sites that refer patients to UHG. These audits consisted of a review of a patient's journey from remote hospital to destination hospital. For instance, if a patient had suffered a cardiac arrest in a clinic, the remote clinicians would talk about the cardiopulmonary resuscitation, the intensive care team would review the care in the unit, and then, in many cases, the remote clinic would talk about the patients progress once they had returned to their community. This face-to-face clinician interaction built a better understanding between health services and gave an opportunity to highlight issues, give bilateral feedback and improve the patient referral process. These audits continue to be requested by referring health services.

WAS DOCUMENTATION AN ISSUE IN CLINICAL CONSULTATIONS?

Documentation of external referrals was a significant problem in our environment, as in many critical care referral areas, and VC is no exception. Barriers to good documentation of such interactions include: clinical workload, appropriate information systems, cultural expectations and ownership of advice and referral of the non-present patient. It is becoming increasingly clear that adequate documentation of referrals and advice given by phone, VC or any other medium is a cornerstone of good clinical care. An ideal system would include ability to document patients who are not retrieved, or incorporate notes from advice given by phone or VC who then arrive later. An example might be a patient who is intubated after taking an overdose at a remote hospital – all advice given via VC or phone should be recorded using a minimum dataset, and stored in case further advice is required or the patient is retrieved. If documentation is poor, it not only provides exposure to medicolegal risk, but also allows for duplication of work and/or information loss. We are exploring the most appropriate system and we will update our web-based toolkit accordingly.

WAS THERE ANYTHING SURPRISING DURING THE PROJECT?

The degree to which clinicians felt that VC assisted clinical decision-making was surprising.

Of the emergent VC's completed across the project implementation phase, 83% of clinicians stated that the VC had "assisted with clinical decision making". This is less surprising reflecting on some

of the interactions during the project term: exploring a patient's attitudes towards palliative care at a remote site, reassuring parents of unwell children, observing ventilator settings remotely, and reviewing ECMO cannula positions on x-ray.

On a less positive note, we had not expected that technological problems would be such a barrier. Telehealth videoconferencing has been around for quite some time, and is used successfully elsewhere in Australia (Qld) and internationally (North America). However, the tangled web of mis-aligned and mis-matched connections, hardware and software continues to bedevil seamless videoconferencing in Victoria.

WHAT INVOLVEMENT DID NURSING AND ALLIED HEALTH STAFF HAVE IN THE PROJECT?

Not a great deal. Nursing and allied health staff were not deliberately excluded, but there was not specific time or resource allocated to these groups. It is expected that nurse-to-nurse VC information sharing or clinical advice will occur, but each group will need to be confident in their ability to provide, document and be responsible for advice within their own field. It will be interesting to see how each field deals with these practicalities. The technology and many of the principles are clearly transferable.

IN RETROSPECT, WHAT WOULD THE IDEAL TELEHEALTH VIDEOCONFERENCE SET-UP BE?

An ideal setup would include: a statewide set of standards-based VC technologies, with a centrally updated contacts directory. Secure access and communication would exist between all sites, with firewalls allowing data-sharing, guaranteed bandwidth and signal-quality. Each site would have clearly defined VC user protocols including the principles of confidentiality and documentation. A network of local stakeholders would coordinate a range of non-clinical testing to increase local familiarisation and to demystify the use of VC activities (such as meetings, audits, or teaching), ensuring the medium was available and familiar for clinical and emergency use. A data collection and audit tool would be implemented and ongoing to identify barriers to use and to tease out the best use in each setting. Multiparty conversations between the remote hospital, the destination hospital and the retrieval service would be encouraged.

WILL UNIVERSITY HOSPITAL GEELONG CONTINUE WITH THE PROJECT?

Yes. UHG ICU is very fortunate to have ongoing support for VC through our executive team. We will continue to evolve as technology develops. Our aim is to further enhance regional and metropolitan relationships in order to deliver excellent patient-centred care.

IS THERE AN AVAILABLE CONTACT TO DISCUSS THE PROJECT FURTHER?

We are more than happy to be contacted and also to showcase our technology and set-up if you would like to arrange a site visit or have any queries. Please contact:

Ms Gerry Keely
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3. Clinical Governance in Telehealth

The more closely aligned and integrated a telehealth service is with the mainstream requirements and provisions of healthcare in that field, the more likely it is to be successful. We suggest that clinical governance aligns with the National Safety and Quality Health Service (NSQHS) Standard 1 – Governance for Safety and Quality in Health Service Organisations. The NSQHS standards provide a good starting point for the principles of governance of a telehealth service, incorporating the following components.

GOVERNANCE AND QUALITY IMPROVEMENT SYSTEMS

- There are integrated systems of governance to actively manage patient safety and quality risks.
- For example:
  - A system of routine audit and review, both of telehealth communications and patient outcomes.
  - Clinical audit (refer to Document 8: Videoconference clinical auditing guideline).
  - Regular testing and non-clinical use of telehealth equipment.
  - Performance and evaluation of telehealth education sessions.
  - Appropriate guidelines and policies, for example:
    - Document 2: Victorian Retrieval Services & Telehealth
    - Document 6: Telehealth Troubleshooting Guide
    - Document 11: Telehealth Etiquette Guide
  - A set of minimum technical standards are adhered to, in line with industry best-practice and legislative requirements.

CLINICAL PRACTICE

- Care provided by the clinical workforce is guided by current best practice.
- In the case of medical practitioners:
  - Adherence to the current Industry Standards and professional guidelines; for example, Good medical practice: A code of conduct for doctors in Australia (Medical Board of Australia, 2014)
  - Evidence based industry standards are accessible and adhered to (refer to Document 1: Remote site telehealth guideline & resources).

PERFORMANCE AND SKILLS MANAGEMENT

- Managers and the clinical workforce have the right qualifications, skills and approach to provide safe, high quality health care.
  - Orientation and ongoing education and training for relevant staff are provided.
  - Currency of professional registrations is maintained through relevant professional bodies.
  - Audits undertaken to validate compliance with required standards (competence / confidentiality etc.).

INCIDENTS AND COMPLAINTS MANAGEMENT

- Patient safety and quality incidents are recognised, reported and analysed, and this information is used to improve safety systems.
- For example:
    - Clinical audits are performed and/or follow up contact is made after telehealth sessions to allow for feedback and/or incident reporting.
    - Telehealth consultations are documented appropriately to allow for incident review.
    - An organisation-wide risk register is used in order to ensure system integrity.

PATIENT RIGHTS AND ENGAGEMENT

- Patient rights are respected and patient engagement in their care is supported.
- For example:
    - Compliance is met for all relevant legislative requirements.
    - Consent is obtained where practicable and carers are informed at the earliest opportunity to facilitate their engagement in the patient's treatment.
    - Patient privacy and confidentiality are protected (as with face to face consultations) in line with each health care worker's obligation to their own professional standards.

4. Telehealth Special Interest Group (TSIG) - Terms of Reference

As with any change to work practices, identifying champions is important and a Special Interest Group (SIG) is one way to canvas ideas and harness support that will assist to drive changes to workflow.

BACKGROUND

The Telehealth Special Interest Group (TSIG) operates to advance the use and understanding of telehealth videoconferencing (VC) by sharing knowledge and experience that will assist with the uptake.

PURPOSE

The TSIG was developed to support the sustainability of ICU telehealth and assist with the dissemination of information, both to and from the staff working within ICU/ED.

The SIG can also link with other TSIG's and Telehealth Networks in order to share useful information.

MEMBERSHIP

- ICU/ED clinicians, managers and educators.
- Staff representative from the IT department.
- Staff interested in challenging current practice and improving the patient's journey.
- Staff with a particular interest in current technologies.

MEETINGS

Bimonthly meetings may be an appropriate meeting frequency. A meeting Chair, agenda and post-meeting action items will give structure and focus, with responsibility to be allocated at initial meeting. Every attempt should be made to consider the members shift work schedules when organising meetings as this will support attendance. A suggested quorum for meetings is 50 per cent of committee members, plus one.

In between meetings communication should be in person or via email. Consider a blog or a newsletter for other staff. Decisions and issues should be fed back to the unit director or appropriate line manager.

Consider feeding back meeting outcomes through to a hospital executive level committee.

5. Telehealth Referral Form

It was found to be important during the project to be able to track telehealth activity, both in order to identify issues and to monitor the number of telehealth consultations. In this way, we were able to increase the number of videoconferences that were conducted, relative to the number of opportunities to do so. Further opportunities could be: a paediatric referral; a referral from a rural hospital for more advanced support; an appropriate local context referral (this will vary according to referring and destination centre staff-mix). Data collected in this manner could be used to inform processes such as:

- Clinician preferences or barriers to telehealth
- Technical review – common faults
- Identification of greater telehealth use in particular patient groups or health services

A data form such as the one below will assist in collection of this information.

VIDEO-CONFERENCING & TELEHEALTH CRITICAL CARE REFERRAL FORM

Date: _____

Patient diagnosis:

_____

_____

_____

Patient UR/Label

Referral appropriate for telehealth consult? ☐ Yes   ☐ No

If yes, type: ☐ Video   ☐ Phone

If consult appropriate but unable to proceed, please indicate reason(s):

☐ Remote provider declined   ☐ Local provider declined

☐ Equipment not working/faulty   ☐ Unfamiliar with equipment

☐ Time constraints/urgency   ☐ Other: _____

Participants

Name:_____ Designation: _____

Name:_____ Designation: _____

Local / Remote / Adult Retrieval Service (ARV) / Paediatric Infant Perinatal Emergency Retrieval (PIPER) / Other:_____

Conference details

Scheduled / Emergent

Duration: _____ minutes

Note:
- Scheduled = prearranged conference for care, education or clinical audits.
- Emergent = as required conference to support immediate care.

Summary/Outcome (of care):

Issues (procedural or technical):

Document any problems for follow-up.

6. Victorian Retrieval Services & Telehealth

Telehealth is not a standalone process and should fit into the over-arching Victorian retrieval structure.

Telehealth may augment the provision of retrieval services by providing point-to-point or multiparty videoconferencing support. Both Adult Retrieval Victoria (ARV) and Paediatric Infant Perinatal Emergency Retrieval (PIPER) have videoconferencing capabilities.

The current primary pathways for retrieval of adult and paediatric patients are as follows.

ADULT RETRIEVAL VICTORIA (ARV)

ARV is a single contact point for major trauma advice (adult and paediatric), adult critical care advice, critical care bed access and retrieval of critical care adult patients state wide.

This statewide service is available 24 hours, 365 days a year.

- Telephone ARV on **1300 368 661**
- Outline the reason for the call and ascertain suitability to telehealth videoconference (VC)
- Confirm a mutually suitable time for the VC, confirm that ARV will initiate the call and confirm the VC number to dial.

PAEDIATRIC INFANT PERINATAL EMERGENCY RETRIEVAL (PIPER)

PIPER is used for all paediatric, neonatal and perinatal emergency calls.

This statewide service is available 24 hours, 365 days a year.

- Telephone PIPER on **1300 137 650**
- Outline the reason for the call and ascertain suitability to telehealth videoconference (VC)
- Confirm a mutually suitable time for the VC, confirm which site will initiate the call and confirm the VC number to dial.

7. Remote Site Telehealth Guideline & Resources

PURPOSE

Telehealth is another method of healthcare delivery and requires an understanding of the process of conducting a telehealth consultation.

This guideline will assist clinicians at remote hospital sites to use telehealth videoconferencing (VC). Videoconferencing allows the remote site to receive support and advice for critically unwell patients from specialists at tertiary health services or retrieval services.

TARGET AUDIENCE

Remote clinicians in ICU's, Emergency Departments and Urgent Care Centres who want to use VC at the patient end to consult with specialists.

DEFINITION

Telehealth refers to technology-based patient consultations that use any form of technology, including, but not limited to videoconferencing, internet and telephone, as an alternative to face-to-face consultations.

GUIDELINE

1. The remote clinicians will phone the appropriate retrieval service for advice or to request retrieval. Either the remote clinician or the retrieval service can suggest a consultation via VC, if required. Telehealth consultations are to be initiated via mutual agreement.
2. Consider patient consent. Usual procedures for informed consent should be applied. Consent may not be possible at the time of consultation, particularly if telehealth represents part of a patient's emergency care.
3. Once the use of VC is agreed, confirm a mutually agreeable time and decide which party will dial in and confirm the number.
4. The remote clinician needs to ensure that their VC system is turned on and ready to accept an incoming call.
5. The clinician at the remote site needs to also check that the system is not on mute and that the volume is at an acceptable level.
6. The far sites (retrieval service or receiving hospital) can control the remote end camera. This allows the remote clinician to focus on the patient and not on moving the camera.
7. At the end of the consultation a recap of advice given should be done and any arrangements confirmed.
8. Once the call is finished press the hang up button located on the remote control. Do this regardless of who initiated the call.
9. Documentation needs to occur at both ends and be filed in the patient's medical record.

EVALUATION

Regular document revision.

KEY ALIGNED DOCUMENTS

The following documents provide further information, if required:

1. Telehealth video-consultation policies and procedures, Royal Children's Hospital, Melbourne (Contact RCH Telehealth team: http://www.rch.org.au/telehealth/Contact_us/)
2. Telehealth Troubleshooting Guide, Barwon Health (in this Toolkit)
3. Telehealth Etiquette Guide, Barwon Health (in this Toolkit)

KEY LEGISLATION, ACTS & STANDARDS

The following documents outline and support the potential legal implications of providing/receiving care at a distance:

1. ATHAC Telehealth Standards Framework 2012
2. Australian College of Rural & Remote Medicine, Telehealth Standards
3. Australian Nursing and Midwifery Federation, Telehealth Standards: Registered Midwives, 2013
4. Australian Nursing and Midwifery Federation, Telehealth Standards: Registered Nurses, 2013
5. Department of Health and Ageing (2012), Telehealth Technical Standards Position Paper
6. Health Records Act 2001 (Vic)
7. Health Practitioner Regulation National Law (Victoria) Act 2009
8. International Organization for Standardization (ISO) (2014) ISO/TS 13131 Technical Specification. Health informatics – Telehealth services – Quality planning guidelines.
9. Medical Board of Australia. (2012). Guidelines: Technology-based patient consultations
10. Medical Board of Australia, Good medical practice: A code of conduct for doctors in Australia, 2014.
11. Privacy and Data Protection Act 2014 (Vic)
12. RACGP Telehealth (Royal Australian College of General Practitioners) Telehealth standards and guidelines

FURTHER RESOURCES

In addition to the above resources, the hyperlinks below are designed to give you one click access to some of the important documents/guidelines and statements, written by various groups, that pertain to telehealth in the acute care setting. These links should answer many of the questions that you or your colleagues have with regard to the clinical application of telehealth.

Australasian College for Emergency Medicine,

- Policy on the provision of emergency medical telephone support to other health professionals

- Statement on responsibility for care within an Emergency Departments

Australasian Telehealth Society

- [Towards a National Strategy for Telehealth in Australia 2013-2018](#)

Australian Nursing and Midwifery Federation

- [ANMF, Guidelines for Telehealth online video consultation funded through Medicare, 2013](#)

College of Intensive Care Medicine

- [Guidelines on the Use of Telemedicine in Intensive Care](#)

Royal Australian College of Physicians

- [RACP Telehealth](#)

Victorian Managed Insurance Authority (VMIA),

- Health services should contact VMIA to access individual advice in relation to provision of advice or care via Telehealth.

8. Case Studies

During the course of the project, videoconferencing was found to be highly useful on a number of occasions. Some examples where telehealth augmented patient-centred care and clinical decision making are described here.

1. PAEDIATRIC CARE

An 8 week old infant was admitted to University Hospital Geelong ED and after initial treatment transferred to the ICU. The baby had generalised symptoms including lethargy, fever, irritability and tachycardia. After a septic workup and the commencement of antibiotics the decision was made to videoconference (VC) with the Royal Children's Hospital (RCH) for advice, to discuss a management plan and the potential need for transfer to RCH.

The VC facilitated visualisation of the infant by the Paediatric Infant Perinatal Emergency Retrieval (PIPER) consultant and enhanced the overall clinical decision making because the PIPER consultant could visualise the infant's work of breathing, skin colour and turgor and thereby assist in the overall assessment of the infant's condition. Once the infant had been visualised the PIPER consultant was satisfied that the infant could stay safely in Geelong. Telephone descriptions can be subjective and rely on a level of trust in the level of experience of the remote clinician. The PIPER consultant felt "more comfortable" with his decision to leave the patient in Geelong and suggested a periodic VC review as required.

A management plan was agreed. The baby's maternal grandmother who consented to the initial VC said that she felt "most reassured by the fact that the RCH had seen her grandchild and that they could videoconference again if her condition changed". The grandmother felt that local care was optimal as long as it was the right care. The VC reassured her that it was the right care. The infant had siblings who needed caring for and the parents were less stretched given that they could remain local and take it in turns to be in between University Hospital Geelong and their own home.

2. "SUPPORTING END OF LIFE" DVD

DVD available from: https://vimeo.com/101686990 (password 'health')

This DVD demonstrates clinicians at a rural hospital who were considering transfer of a patient to Barwon Health for further intensive management. However, it was not clear whether this would be appropriate. Through the use of videoconferencing, the patient was able to interact with intensive care specialists at University Hospital Geelong. The intensivist was able to explain to the patient the likely management options if the patient was transferred. The patient was able to make his own decision about his ongoing care. Clinicians were reassured by this patient-centred approach.

3. LORNE COMMUNITY HOSPITAL

Lorne Community Hospital (LCH) receives around 2,500 presentations to their Urgent Care Centre (UCC) each year. A large proportion of these presentations occur between October and April;

however, the UCC remains open and staffed all year around. The medical and nursing staff at LCH are experienced, however telehealth videoconferencing (VC) linkage with specialists from University Hospital Geelong (UHG) and other hospitals provides an additional level of support. The expert knowledge from tertiary referral centres is important for smaller health services that normally provide generalist care and not specialist care.

A 55 year old male self-presented to Lorne UCC with a 60 minute history of bilateral arm and epigastric pain. He was pale and diaphoretic. His ECG revealed inferior changes. The UHG Emergency Department (ED) was contacted and LCH was advised to transfer the patient as soon as possible to UHG for a time-critical cardiac catheter. Given it was the height of summer a road transfer would not have been timely and the retrieval helicopter was not available, so the decision was made to thrombolyse the patient at LCH with a VC link to a UHG Emergency consultant for expert support. The staff at LCH were supported with both the dosage and administration of the thrombolytic drug because the doctor in UHG ED could visualise the patient and the patient's ECG and the staff at LCH could work hands free rather than hanging on to the phone. The instructive support was real time, rather than being relayed by staff on the phone to staff with the patient. The staff at the remote end felt reassured that they were under the visual guidance of ED staff who deal with cardiac emergencies on a daily basis. There were some complications with this man's condition and he was later transferred to UHG by road ambulance anyway, where he received a cardiac stent and was discharged three days later.

9. Telehealth Education Evaluation Form

During the project, educational opportunities with remote sites were utilised in order to engage in telehealth activity in a non-emergent context. It was important to assess the efficacy of this activity and to identify problems both with technology and format. A simple evaluation form such as the one presented below was useful.

This form was used after every educational session and was filled out by the remote clinicians as the last part of the activity. The response rate was 100%.

TELEHEALTH SESSION EVALUATION FORM

Thank you for taking a moment to complete this survey. Your feedback will assist us to make any necessary improvements to our telehealth consultations in the future.

Date …………………… **Purpose of session**………………………………………………

Please circle the most appropriate response and provide comments, where relevant.

Have you used telehealth for education, training or clinical review purposes prior to this occasion?

Yes	No

Was today's picture of acceptable quality?

Yes	No	Comments

Was today's sound of acceptable quality?

Yes	No	Comments

Did the equipment work properly?

Yes	No	Comments

What was your overall level of satisfaction with this session and why?

Poor	Fair	Good	Excellent
Comments			

I would be willing to participate in another telehealth session

Yes	No	Comments

Do you have any suggestions for improvements to these telehealth sessions?

Comments

10. Videoconference Clinical Auditing Guideline

WHAT IS A CLINICAL AUDIT?

A clinical audit is a systematic process to improve the quality and delivery of patient-centered care. A clinical audit reviews clinical work practices and, where necessary, recommends service improvements. Videoconferencing lends itself to multiparty, case-based audit and discussion.

During the project, University Hospital Geelong Intensive Care Unit would run reports on the number and source of external admissions/transfers and then offer referring hospitals in our region the opportunity to discuss particular cases in a non-threatening, learning environment.

WHAT IS THE PURPOSE OF A CLINICAL AUDIT?

The aims of a clinical audit are to:
- improve professional relationships between referring hospitals
- improve understanding of the referring hospital's capabilities and limitations
- provide feedback to referring and destination sites regarding patient care and quality improvement opportunities
- promote and enable best practice through the sharing of expertise and knowledge

WHAT ARE THE RULES OF ENGAGEMENT?

- Project officer or delegate confirms dates, patient lists, attendees, videoconferencing details and set up.
- Clinicians are responsible for having reviewed the patient's notes prior to activity.
- Suggested format (case-based):
  - Begin with a concise overview of the patient. The referring hospital may highlight relevant information.
  - The receiving hospital may recount the patient's ICU / critical care admission and current status, if known.
  - Questions and identification of areas for improvement and /or follow up are then discussed.
  - Quality improvements and suggestions are documented and actioned as necessary.

WHAT ARE THE FREQUENCY AND DURATION OF THE CLINICAL AUDITS?

- Audits are conducted quarterly, or as required, depending on the number of patients referred.
- Case-based audits usually require a maximum of 10 minutes per patient.

WHO IS INVOLVED?

Referring hospital, receiving hospital and relevant retrieval service (if applicable).

WHAT OUTCOMES ARE ANTICIPATED?

These audits encourage the use of telehealth in a non-urgent setting which has the added benefit of increasing familiarity with the equipment and the general use of telehealth. It demystifies the idea of distance connection and improves the relationship between sites, as staff can see familiar faces rather than hear a voice on the end of the phone.

Quality improvements and suggestions are documented / actioned as necessary.

Feedback is conveyed to relevant staff.

11. Telehealth Troubleshooting Guide

Some of the biggest barriers to regular telehealth activity are technical issues. Robust technical support is essential for a functional telehealth program, and a local solution will need to be individualised. There is however a commonality to frequently encountered technical problems. Some of the most common problems are listed below, with simple solutions which were often successful.

When simple measures fail to quickly resolve technical issues it is important to have ready access to clinicians who are experienced with telehealth use and / or timely technical support.

Issue	Cause	Potential solution
Screen blank	• Power off • In sleep mode	• Check all switches • Refresh system by using telehealth remote or pressing any button
No visual	• No/poor cable connection • Other site not available	• Check cables are connected and camera is on and in correct position • Telephone the other site to check that they are connected
No audio	• System muted • Volume turned down	• Check mute button at both ends • Turn volume to an audible level at both ends
No audio or visual / unable to place a call	• Any of the above • Number incorrect • Other site not available	• Try all the above solutions and if no resolution then hang up and reinstitute the call at both ends • Telephone the other site and confirm numbers • Telephone and check if other site available
Call failed / drops out	• Loss of power • Other site ended call • Network issues	• Check power is still on • Telephone other site and reinstitute the call • Contact IT to check if there are network issues; and/or ask advice

Barwon Health

12. Telehealth Etiquette Guide

This document outlines some basic rules to assist those who are new to telehealth. It is mostly common sense; however, applying this etiquette will ensure the consultation is as smooth as possible.

Audio/sound	• Reduce unnecessary noise – close door • Check your audio volume is at an appropriate level • Mute your microphone when not talking • Allow a few seconds before responding when the other site is finished talking • In reverse, give the other site a moment to unmute and respond when you have finished speaking • Use a normal voice tone, don't shout
Behaviour	• Introductions are necessary at the commencement of the videoconference and when talking for the first time (especially if you are not known to those at the other site). Start with your name and designation • Do not start local conversations when the other site is talking • Indicate your intention to speak with a hand wave so that you don't talk over others • Assume the other site can hear you even if you can't hear or see them
Visual	• Check that everyone present is able to be seen on the screen • Be aware of glare from light • Each site should have their location identified at the bottom of the screen to assist participants