# CURRICULUM INTERVENTIONS AND PEDAGOGICAL APPROACHES FOR VIRTUAL CARE:

## A LITERATURE REVIEW

December 2022

NSW GOVERNMENT

HETI HEALTH EDUCATION & TRAINING

HETI.NSW.GOV.AU

**COPYRIGHT AND CONTACT DETAILS**

Locked Bag 2030 St Leonards NSW 1590
www.heti.nsw.gov.au
info@heti.nsw.gov.au

© 2022 HETI (Health Education and Training Institute) NSW, Australia.

All rights reserved. This work is copyright. Apart from any use as permitted under the Copyright Act 1968, no part may be reproduced by any process without prior written permission from HETI.

This program is covered by NSW Health's Disclaimer Policy.

To view this policy, please visit www.health.nsw.gov.au/pages/disclaimer.aspx

# TABLE OF CONTENT

# EXECUTIVE SUMMARY

**Context and background:** For many years, virtual health was on the fringe of mainstream healthcare delivery. However, the onset of the COVID-19 pandemic has launched virtual care as a rapidly growing modality for care delivery to individuals who might not otherwise have access. While a number of positive outcomes have been reported, rapid growth has occurred without critical consideration of clinician education and training. Little is known about the expected values, behaviours and skills required of clinicians for virtual care preparation and practice, or the necessary education guidelines, frameworks and resources for building the confidence and capability of the workforce.

**Objectives of the review:** This document reviews the literature relating to curriculum and pedagogical approaches for preparing both current and future clinicians to deliver virtual care. It is presented in two parts: Part A, which provides an overview of the values, behaviours and skills that are required for virtual care delivery, and Part B, which outlines the education guidelines, frameworks and resources for building the capacity of the workforce to deliver virtual care.

**Methodology:** This review was undertaken by a small multidisciplinary project team drawn from the Health Education and Training Institute (HETI) and was informed by Arksey and O'Malley's (2005) five-stage methodological framework for scoping reviews. Using a clearly articulated search strategy and reporting process, 8199 pieces of literature were analysed to inform this review. A final 63 articles were included, 17 articles for Part A and 46 articles for Part B.

**Findings:** The majority of curricula studied and/or publications were generated by the USA, with Australia as the second most highly cited country. Other publications originated from Africa, Canada, Europe, Japan, the Middle East, the Pacific Islands, Russia, South America and Southeast Asia. Very few papers address the focus of this review as a primary objective, and details in many cases are vague and incomplete. Nonetheless, common themes emerge in relation to curricula content. These themes include (but are not limited to): roles and responsibilities, fostering positive attitudes, clinical applications and evidence-based practice, professional, ethical and legal aspects, licensing, regulations and reimbursement, service development/design and quality improvement processes, patient selection/appropriateness for virtual care, informed consent, privacy and confidentiality, interprofessional collaboration/training, cultural awareness/cultural competence, environmental considerations, including 'telepresence', establishing virtual care goals, communication (verbal and non-verbal), also including 'telepresence', clinical skills, patient safety considerations and documentation. These inclusions are also highlighted in the guideline literature. Standalone modules are recommended for delivering 'the basics' of virtual care, while the interactive/participative approach is endorsed as an appropriate method of instruction. A number of publications emphasise a domain-specific approach, with core competencies, sub-domains or entrustable professional activities (EPAs) as the most effective means of translating virtual care knowledge and skills to practice. Enabling resources for a systematic approach to virtual care education include virtual care checklists, clinical champions, and a model that involves stakeholders such as frontline clinicians, content/context experts and the care recipients themselves. Comprehensive evaluation as part of a continuous quality improvement process is also recommended.

**Recommendations:** The next stage(s) of this project could comprise (a) meeting with the HETI project team to use the review findings to agree on and finalise curriculum content for virtual care education; (b) deciding on a framework, drafting core domains (or similar) and subsets of core competencies or EPAs; (c) using a Delphi method with key stakeholders from NSW Health to reach consensus on the framework; and (d) piloting and evaluating the framework.

# GLOSSARY

| TERM | DEFINITION |
|---|---|
| AAMC | Association of American Medical Colleges |
| AAP | American Academy of Pediatrics |
| ACI | Agency for Clinical Innovation |
| ACGME | Accreditation Council for Graduate Medical Education |
| ACRRM | Australian College of Rural and Remote Medicine |
| AHPA | Allied Health Professions Australia |
| AHPRA | Australian Health Practitioner Registration Agency |
| ANF | Australian Nursing Federation |
| APA | American Psychological Association |
| Asynchronous | Not occurring in 'real time' e.g., in virtual care, using email or images outside of a clinical consultation |
| ATA | American Telemedicine Association |
| CALD | Culturally and Linguistically Diverse |
| CINAHL | Cumulative Index to Nursing and Allied Health Literature |
| COVID-19 | Novel Coronavirus Disease 2019 |
| CPD | Continuing Professional Development |
| CanMEDS | Canadian Medical Education Directives for Specialists |
| ECHO | Extended Community Healthcare Outcomes |
| EEIG | European Economic Interest Group |
| Encryption | The process of coding information or data, especially to prevent unauthorised access |
| EPA | Entrustable Professional Activity |
| GP | General Practitioner |
| HETI | Health Education and Training Institute |
| ICU | Intensive Care Unit |
| IPEC | Interprofessional Education Collaborative |
| IT | Information Technology |

| TERM | DEFINITION |
|---|---|
| LHD | Local Health District |
| MeSH | Medical Subject Headings |
| NASW | National Association of Social Workers |
| Netiquette | A combination of the words network and etiquette; defined as a set of rules for acceptable online behaviour |
| NP | Nurse Practitioner |
| OT | Occupational Therapist |
| OTA | Occupational Therapy Australia |
| PRISMA | Preferred Reporting Items for Systematic Reviews and Meta-Analyses |
| RACGP | Royal Australian College of General Practitioners |
| Remote patient monitoring | The monitoring of patients outside of conventional clinical settings (e.g., in their homes) |
| Remote monitoring | Using technology to collect and send medical and healthcare data to an app, device or service outside a conventional clinical setting |
| Store and forward | A mode of transmission involving data that have been acquired and saved in electronic format, e.g., photographic images, which are then saved and subsequently transmitted for evaluation |
| Synchronous | Occurring in 'real time', e.g., in virtual care using telephone, video etc. during a clinical consultation |
| Teleconferencing | Interactive electronic communication between two or more people at two or more sites, using voice transmission systems |
| TQG | Telehealth Quality Group |
| UK | United Kingdom |
| USA | United States of America |
| Videoconferencing | Connection of two or more people or locations via video camera and monitors, allowing all parties to speak to each other, see each other and in some cases exchange data simultaneously |
| Virtual care | Any interaction between patients and/or members of their care team occurring remotely, using any forms of communication or information technologies with the aim of facilitating or maximising the quality and effectiveness of patient care |

# INTRODUCTION

## VIRTUAL CARE DEFINED

Virtual care is a broad term that encompasses the numerous ways that clinicians use information technologies to interact remotely with healthcare consumers, their carers and/or other healthcare providers, in order to provide safe, quality care (Agency for Clinical Innovation [ACI], 2021). The definition of virtual care has evolved as technology and digital models have developed. The terms 'telehealth' and 'telemedicine' have been used interchangeably in the literature for many years, however both are being increasingly referred to as 'virtual care' to better reflect the broader range of information technologies and ways that these are incorporated into the delivery of health services. For the purpose of this review, virtual care refers to all asynchronous and synchronous ways that healthcare is provided across time and distance for assessment, intervention, education and/or supervision, using technologies such as:

- Telephone
- Teleconferencing
- Video conferencing
- Store and forward
- Remote monitoring devices
- Websites
- Apps

Technology-enabled modalities e.g., digital diagnostics, digital therapeutics (e.g., ACI, 2021; AHPA, 2020; AHPRA, 2020; ATA, 2014; Telehealth Quality Group [TQG] EEIG 2018/19).

## GROWTH OF THE VIRTUAL CARE SECTOR

For many years, virtual health was on the fringe of mainstream healthcare delivery. However, the onset of the COVID-19 pandemic has launched virtual care as a rapidly growing modality for care delivery to individuals who might not otherwise have access. In the USA for example, before COVID-19, it was estimated that virtual care delivery would grow at an annual rate of 16.8%. However, growth is now anticipated to reach 80% (Arizton, 2020). In Australia's first COVID-19 wave, there was an exponential increase in the healthcare services delivered virtually, from 8% in March 2020 to over 35% in April 2021 (Schlesinger et al., 2021).

Prior to COVID-19, the largest volume of research reported that virtual care produced positive results when used in the clinical areas of chronic conditions and behavioural health, for example, providing communication, counselling, monitoring and management (Totten et al., 2016). Specific reported benefits of virtual care have included:

- Improved access to healthcare and health-related education
- Increased ownership of, and access to, health information
- Increased patient engagement
- Improved patient satisfaction/experiences
- A reduction in direct and indirect costs
- Improved health outcomes (Field & Butler, 2018).

During the COVID-19 pandemic however, additional positive outcomes have been reported. Virtual care has allowed patients to be screened or triaged remotely, so that clinically stable patients remain at home, thereby reducing transmission and contraction rates (Siwicki, 2020). Vulnerable patients with chronic conditions (a major focus pre-pandemic) have been afforded continuous routine care, reducing potential exposure to the virus (Siwicki, 2020). Healthcare providers themselves have also reported a high level of satisfaction, with a large number expressing their intention to continue using a variety of virtual care platforms as part of overall care post-pandemic (Andrews et al., 2020). A number of patient, clinician and service benefits of virtual care in rural areas, such as improved access, reduced staff constraints and fatigue, sustainable care and continuity of care for patients in rural areas have also been reported (ACI, 2021).

Despite the benefits of virtual care delivery, rapid growth has occurred without critical consideration of clinician education and training (Rutledge et al., 2021). Individuals and healthcare organisations may lack the experience and skills that would be considered fundamental prerequisites to implementing virtual care in less urgent times (Galpin et al., 2021). There is a large body of literature on virtual care delivery that addresses clinical, economic, technological, system and organisational impacts (Henry et al., 2017; Tomlinson et al., 2018; Waseh & Dicker, 2019). Conversely, less is known about the expected values, behaviours and skills required of clinicians for virtual care preparation and practice, or the necessary education guidelines, frameworks and resources for building the confidence and capability of the workforce. Literature on virtual care education and training typically identifies specific delivery methods, or reports on single interventions in clinician training (Rutledge et al., 2021). However, a

comprehensive, multidisciplinary overview is needed. Without this overview of the curriculum interventions and pedagogical approaches for quality and safe virtual care, education delivery is likely to be fragmented (Rutledge et al., 2021).

## AIM OF THE LITERATURE REVIEW AND GUIDING QUESTIONS

This document reviews the literature relating to curriculum and pedagogical approaches for preparing both current and future clinicians to deliver virtual care. The overarching conceptual question guiding this review is:

***What curriculum interventions and pedagogical approaches best support the integration of virtual care into existing and new programs?***

Two important procedural questions to guide the literature search and review in answering the conceptual question are:

1. What values, behaviours and skills are required for the healthcare workforce to deliver virtual care?
2. What education guidelines, frameworks and resources are required to build the confidence and capability of the workforce to deliver virtual care?

The review has two parts. Part A is a review of virtual care curricula and pedagogies. Part B presents a separate literature review that integrates the literature review findings from Part A, with current virtual care guidelines, frameworks and resources. This review comprises one of the initial phases in a large virtual care workforce project that seeks to develop a comprehensive understanding of the skills, knowledge and workforce models to sustainably integrate virtual care into business as usual for NSW Health.

# METHODS

This literature review was undertaken by a small multidisciplinary project team drawn from the Health Education and Training Institute (HETI). HETI is a leading provider of high-quality education and training, supporting more than 110,000 clinical and non-clinical staff, trainers, managers and leaders across the NSW Health system. HETI works closely with Local Health Districts and Specialty Health Networks, health professionals and other public health organisations across NSW to ensure development and delivery of contemporary programs that are evidence-based, relevant and responsive to the needs of health professionals and patients.

## METHODOLOGICAL FRAMEWORK

Arksey and O'Malley's (2005) methodological framework for scoping reviews informed both Parts A and B of this literature review. This five-stage framework relies on: (a) identifying the research question(s); (b) identifying relevant studies; (c) study selection; (d) charting the data; and (e) collating, summarising and reporting the results (Arskey & O'Malley, 2005). This methodology was chosen as the most appropriate to capture assorted sources of information allowing for a rich and comprehensive understanding of the essential skills and educational approaches that best support clinicians to enact quality virtual care.

# PART A: VALUES, BEHAVIOURS AND SKILLS FOR VIRTUAL CARE DELIVERY

## THE RESEARCH QUESTION

Using Arksey and O'Malley's (2005) methodological framework, the research question for Part A was established as *"What values, behaviours and skills are required for the healthcare workforce to deliver virtual care?"*

## SEARCH STRATEGY

An extensive title and/or abstract search of the following databases: PubMed/Medline, CINAHL, ProQuest, Scopus, and PsycINFO was conducted in November and December 2021. Individualised search strategies were developed according to the indexing terms and search syntax of each database, including Boolean operators, truncations and Medical Subject Headings (MeSH). Manual searches of related articles and other papers citing included references, as well as bibliographic mining were carried out.

The two main concept groups and related search terms were determined by discussion amongst three team members and grouped into two main themes: telehealth and education. The initial searches located tens of thousands of articles, most likely due to the huge increase in demand for virtual care with the COVID-19 pandemic (Budakoğlu et al., 2021). With this in mind, and in view of the short time frame for the literature search, the project team agreed to limit publications to reviews only. The search strategy is described in Table 1.

## TABLE 1: SEARCH STRATEGY

| STEP | SEARCH TERMS |
|---|---|
| 1 | **Telehealth**<br>(a) MeSH terms: *telehealth* OR *telemedicine* OR *eHealth*<br>(b) Free text words: *telehealth* OR *telemedicine* OR *telenursing* OR *telerehabilitation* OR *telepsychiatry* OR *eHealth* OR *mHealth* or *digital health* OR *virtual care* |
| 2 | **Education**<br>(a) MeSH terms: *education* OR *curriculum* OR *pedagogy*<br>(b) Free text words: *education* OR *training* OR *curriculum* OR *pedagogy* OR *teaching* OR *competency* OR *skills* OR *attribute* OR *knowledge* OR *requirements* OR *behaviour* OR *value* OR *confidence* |
| 3 | **Limits**<br>Review papers, published in the English language, abstracts available, publication date between 2016 and 2021 |
| 4 | 1 AND 2 AND 3 |

## IDENTIFYING AND SELECTING RELEVANT LITERATURE

Literature relevant to the project's conceptual and first procedural question (i.e., virtual care values, behaviours and skills) were eligible for inclusion. No limitations were placed on the type of review, quality or location, however only articles available in the English language, and only articles for which abstracts were available, were included. As there were no limitations on review type which thereby increased the heterogeneity of the literature, an appraisal tool was not used.

Prior to conducting the searches, the in-scope workforce and associated key terms for the literature review was discussed and agreed upon by the project team to include:

- Clinicians
- Medical practitioners
- Nurses
- Midwives
- Dentists
- Allied health
- Physiotherapists
- Occupational therapists
- Speech therapists
- Psychologists/mental health professionals
- Nutritionists/dietitians
- Optometrists
- Podiatrists
- Orthoptists
- Social workers
- Students in any of the above disciplines.

## INCLUSION CRITERIA

Eligible records met the following inclusion criteria:

- Described an educational approach
- Referred to virtual care in general, or in specific settings
- Related to the in-scope workforce
- All care settings and patient cohorts e.g., primary/community-based care, tertiary settings such as critical care
- Any kind of virtual care modality e.g., asynchronous, real time, mobile, web-based etc.
- Review papers of any kind: integrative, systematic, scoping, meta-analysis, consensus, any paper with 'review' in title.

## EXCLUSION CRITERIA

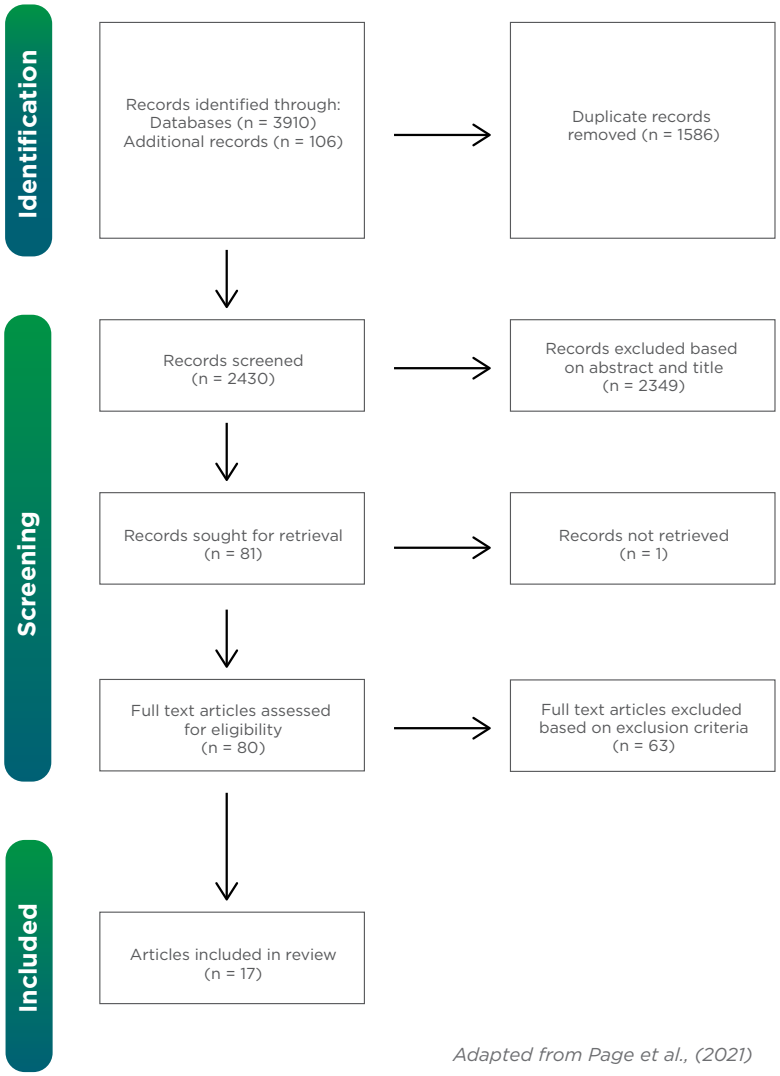
Records were deemed irrelevant if they met the following exclusion criteria:

- Referred only to a single educational intervention arising from a specific targeted educational activity (e.g., one curriculum or postgraduate short course in one institution reviewed), rather than to practice more generally
- Not clinician-focused i.e., reported on patient (end user) interventions or specific health conditions
- Reported exclusively on eLearning as a modality (i.e., use of digital resources to support education and training, rather than curriculum and pedagogy)
- Referred exclusively to the need for digital literacy or IT skills in virtual care delivery.

## DOCUMENT SELECTION

A systematic screening process was conducted whereby initial search results were screened for eligibility first by title, then by abstract, and finally by full text. Document eligibility was determined by the project team leader, while other team members were used to achieve consensus when discrepancies arose. The Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) adapted from Page et al., (2021) is used as the reporting guideline for literature identification and selection (Figure 1).

## FIGURE 1: PRISMA DIAGRAM: PART A




*Adapted from Page et al., (2021)*

### DATA EXTRACTION

Key information extracted from the 17 final articles included the citation, review type, review aim, country, healthcare setting and health professional cohort (Appendix 1). For Part A, curriculum considerations, format and education/training delivery methods were also extracted from the articles (Appendix 2). The project team leader extracted the information from the articles, while an additional team member checked.

## SYNTHESIS OF FINDINGS

### TYPES OF REVIEWS, COUNTRIES, COHORTS AND SETTINGS FOR VIRTUAL CARE

The 17 articles are classified as: systematic review (5); scoping review (4); literature review (3); integrative review (3); mixed methods review (1); and dimensional analysis (1). Aims of the reviews vary however, in general, they each intend to report on components and approaches to educating various health professional cohorts on virtual care in its various forms.

Reviews report on curricula from either multiple or single countries. While there may be duplication in the countries of origin for the virtual care education studies, curricula from the USA are most frequently reported (80), with Australia as the second most cited country (17). Curricula from Canada (9), Brazil (3), Germany (2), France (2), Norway (3), UK (2), Japan (2), Switzerland (2), Colombia (1), India (1), the Netherlands (1), Oman (1), Pacific Islands (1), Pakistan (1), Poland (1), Oman (1), Russia (1), Rwanda (1), Singapore (1), Turkey (1) and Zimbabwe (1) are also reviewed. One paper reviews curricula from Australia, France, Italy, the Netherlands, Sweden, UK and USA but does not specify the number of curricula from each country. Four articles originate from the USA; however, they do not specify the countries where the virtual care studies were conducted.

Virtual care curricula from university or tertiary education settings are most frequently reported (10), while other reviews consider a range of practice settings such as community-based (including home care and primary care, mental health and call centres), hospital (including critical care), and rural and remote practice settings. Two articles do not specify the setting for their reviews.

Given that university is most commonly reported as a setting for virtual care education, students (both undergraduate and postgraduate) are most strongly represented in the literature (12), including medical, nursing and allied health students. Trainees in the field such as medical residents, clinical psychology trainees and advanced practice RN trainees are also considered. Of the practising health professionals, virtual care education/training for doctors, nurses, physician assistants, allied health professionals, public health professionals, diagnostic imaging professionals, psychologists, behavioural therapists and counsellors is reviewed. Non-clinical cohorts include educators, health planners, administrators, policy makers, telehealth coordinators and project officers, librarians and IT professionals.

### CURRICULA PHASES

Using an inductive, qualitative approach, curriculum considerations are loosely grouped into three broad phases in which virtual care may be enacted:

1. General introduction to virtual care
2. Preparing for an actual virtual care episode
3. Virtual care provision.

These phases, along with their key curriculum content, are presented in Table 2. Although a number of reviews include IT and medical informatics as core components of a virtual care curriculum, please note that as these were excluded as search terms, they are not reported here.

## TABLE 2: CURRICULA ENACTMENT PHASES AND KEY CONTENT

| PHASE | KEY CONTENT | CITATIONS |
|---|---|---|
| **General introduction to virtual care** | Basic theoretical and clinical aspects | *Budakoğlu et al., (2021); Hui et al., (2021); Waseh & Dicker (2019)d clinical aspects* |
| | History, definitions and terminology | *Budakoğlu et al., (2021); Chike-Harris et al., (2021); Edirippulige & Armfield (2017); Rutledge et al., (2017)* |
| | National strategies | *Edirippulige & Armfield (2017)* |
| | Roles and responsibilities | *Chike-Harris et al., (2021)* |
| | Fostering positive attitudes | *Henry et al., (2017)* |
| | Benefits and barriers | *Gartz & O'Rourke (2021)* |
| | Clinical applications; evidence-based practice | *Budakoğlu et al., (2021); Edirippulige & Armfield (2017); Gartz & O'Rourke (2021); Hilty et al., (2021); Hui et al., (2021)* |
| | Professional, ethical and legal aspects | *Budakoğlu et al., (2021); Echelard et al., (2020); Hilty et al., (2021); Hui et al., (2021); Rutledge et al., (2017); Saeed et al., (2017); Stovel et al., (2020); Waseh & Dicker (2019)* |
| | Licensing, regulations and reimbursement | *Chike-Harris et al., (2021); Gartz & O'Rourke (2021); Rutledge et al., (2017); Saeed et al., (2017); Stovel et al., (2020); Waseh & Dicker (2019)* |
| | Service development/design, quality improvement | *Chike-Harris et al., (2021); Edirippulige & Armfield (2017); Gartz & O'Rourke (2021); Hilty et al., (2021); Stovel et al., (2020)* |
| **Preparing for an actual virtual care episode** | Patient selection for virtual care | *Stovel et al., (2020)* |
| | Privacy, confidentiality, consent | *Echelard et al., (2020); Henry et al., (2017); Hilty et al., (2021); Rutledge et al., (2017); Saeed et al., (2017)* |
| | Interprofessional collaboration/ training | *Calleja et al., (2022); Chike-Harris et al., (2021); Echelard et al., (2020); Hamilton et al., (2021); Hilty et al., (2021); Hui et al., (2021); Rutledge et al., (2017); Saeed et al., (2017); Stovel et al., (2020); Waseh & Dicker (2019)* |
| | Cultural awareness | *Hamilton et al., (2021); Henry et al., (2017); Hilty et al., (2021); Rutledge et al., (2017); Saeed et al., (2017); Waseh & Dicker (2019)* |
| | Environmental considerations | *Groom et al., (2021); Hamilton et al., (2021); Henry et al., (2017); Rutledge et al., (2017)* |
| | Establishing virtual care goals | *Echelard et al., (2020)* |
| **Virtual care provision** | Communication (verbal and non-verbal), including 'telepresence' | *Budakoğlu et al., (2021); Chike-Harris et al., (2021); Echelard et al., (2020); Gartz & O'Rourke (2021); Groom et al., (2021); Hamilton et al., (2021); Henry et al., (2017); Hilty et al., (2021); Hui et al., (2021); Rutledge et al., (2017); Stovel et al., (2020)* |
| | Clinical skills | *Calleja et al., (2022); Hamilton et al., (2021); Hilty et al., (2021); Saeed et al., (2017); Stovel et al., (2020); Tomlinson et al., (2018); Waseh & Dicker (2019)* |
| | Patient safety e.g., emergencies | *Chike-Harris et al., (2021); Hilty et al., (2021); Saeed et al., (2017); Stovel et al., (2020)* |
| | Documentation | *Echelard et al., (2020); Hilty et al., (2021); Saeed et al., (2017); Stovel et al., (2020)* |
| | Intervention and discharge planning | *Hui et al., (2021); Saeed et al., (2017)* |
| | Ensuring patient satisfaction | *Rutledge et al., (2017)* |

## GENERAL INTRODUCTION TO VIRTUAL CARE

Table 2 suggests that the majority of the reviews recommend 'the basics' as a key consideration in a virtual care curriculum for both students and practising clinicians, which may reflect the early stages of curriculum development (Hui et al., 2021). Aspects such as definitions and terminology, professional, ethical and legal aspects, and licensing, regulations and reimbursement are the most frequently recommended inclusions. Specific ethical and legal elements of virtual care are not always elaborated, however the importance of obtaining patient consent, and ensuring patient privacy and confidentiality, included in Table 2 as part of the actual virtual care delivery phase, are sometimes associated with professional and ethical practice (Echelard et al., 2020; Henry et al., 2017; Rutledge et al., 2017; Saeed et al., 2017).

## PREPARING FOR A VIRTUAL CARE EPISODE

When preparing for an actual virtual care episode, cultural awareness/cultural competence and interprofessional collaboration/training are the two most commonly reported themes. Of all the articles reviewed for this report, perhaps the most comprehensive curriculum is proposed by Hilty et al., (2021). Their scoping review outlines a detailed framework for embedding cultural content and competencies across a range of medical education curricula (novice to expert), listing a number of virtual care areas where cultural components should be included, such as patient history taking, assessment, management and treatment planning (Hilty et al., 2021).

The term 'interprofessional' relates to two or more members of different health professions learning together, from and about each other to improve a common goal in health or healthcare (Jadotte & Noel, 2021). The need for interprofessional collaboration or training for virtual care provision is mentioned in nine reviews, although the kind of collaboration required, and when it should take place (i.e., before, during or post virtual care episode) is not always clearly elaborated. Stovel et al., (2020) offer a description i.e., effectively participating in multidisciplinary care with members of other health disciplines such as social workers and physiotherapists. However, the most enlightening information is found in the literature review by Saeed et al., (2017), who suggest that in telepsychiatry, clinicians must be aware of other health professionals, institutions and agencies in the patient's local area, and/or demonstrate ability to coordinate such care with these team members.

## VIRTUAL CARE PROVISION

Embedding communication in a virtual care curriculum is the dominant recommendation emerging from the reviews. As with previous curricular suggestions, some reviews mention communication in very general terms, while others are more specific. One of the most detailed articles in this area is the systematic review of clinician behaviours by Henry et al., (2017). Three of the six themes that emerge from their review are related to communication: verbal e.g., types of clinician talk, pace and language clarity; non-verbal e.g., eye contact, body positioning, movement, facial gestures, voice quality and vocal tone; and relational communication e.g., communicating empathy, rapport building for fostering collaboration and therapeutic relationships (Henry et al., 2017). Some reviews discuss communication skills in terms of telehealth etiquette, which include the need to educate clinicians about modifying the environment (e.g., camera positioning, eliminating noise, removing personal objects from the frame, choice of clothing), along with the more 'traditional' communication skills such as eye contact and use of appropriate language to convey empathy (Rutledge et al., 2017). One review mentions patient empowerment as a curriculum inclusion but does not specify how this might be supported (Chike-Harris, 2021).

In at least two reviews, environmental modifications, non-verbal behaviours and relational communication to convey empathy and build trust and rapport is termed 'telepresence' (Groom et al, 2021; Hamilton et al., 2021). In their dimensional analysis of telepresence, Groom et al., (2021) conceptualise telepresence in terms of making connections with patients, technological mediation, building trust, being supportive, fostering patient-clinician collaboration, and experienced realism (i.e., conveying the sense of being fully present from a remote location, making a patient feel safe). They suggest that this conceptual model be used to improve clinician training in virtual care (Groom et al., 2021).

Besides communication skills and behaviours, teaching clinical skills/knowledge emerges as a strong theme from the reviews. Skills, such as taking patient histories in a virtual care setting (Hamilton et al., 2021; Stovel et al., 2020), conducting physical, mental and behavioural assessments (Hamilton et al., 2021; Saeed et al., Stovel et al., 2020; Tomlinson et al., 2018; Waseh & Dicker, 2019), and adapting topics specific to the specialty, are all considered to be important (Stovel et al., 2020; Tomlinson et al., 2018). Again, besides a brief mention of nurses practising the use of equipment such as stethoscopes and otoscopes to conduct virtual assessments (Hamilton et al., 2021; Rutledge et al., 2017), very little detail is offered about how to translate clinical skills to virtual care.

Patient safety in virtual care provision is mentioned in three reviews, although the most detail is disclosed by Saeed et al., (2017). In addition to recommending that clinicians working in a virtual care setting be familiar with local health professionals, agencies and facilities with whom they can liaise and/or refer a patient (interprofessional collaboration), Saeed et al., (2017) also state that an important inclusion in clinician training is the need to correctly identify both the patient and the clinician on commencement of the virtual care episode. These authors also emphasise the need for clinicians to be aware of local emergency resources e.g., nearest hospital or emergency department capable of managing specific emergencies e.g., psychiatric (Saeed et al., 2017).

In summary, while the articles reviewed provide a set of core inclusions for a virtual care curriculum, these inclusions are often mentioned in general terms and are not always well described. Nevertheless, strong themes around values, behaviours and skills are:

- The basics of virtual care, including terminology, history, attitudes, professional, ethical and legal aspects etc.
- Cultural awareness
- Interprofessional collaboration/training
- Telepresence, encompassing non-verbal, verbal and environmental considerations
- Adapting clinical skills for the virtual care environment.

The same articles reviewed also provide recommendations for education and training delivery methods. These methods are considered as part of the pedagogical approach to virtual care education and are discussed in the next section.

## DELIVERY METHODS

In addition to curriculum recommendations for virtual care, all sixteen reviews propose pedagogies that may best support their implementation, including time frames for delivery and methods of instruction.

### Integrated vs standalone

The review papers report mixed findings on whether virtual care programs should be integrated or standalone (Appendix 2). One paper makes no recommendations in this area (Henry et al., 2017), while one paper favours both formats (Echelard et al., 2020). Six of the virtual care curricula reviewed are reported as integrated, while nine are standalone, as one-off sessions (e.g., in webinar or brief presentation format), short courses (one – eight weeks in duration), elective subjects in undergraduate curricula, or one-year programs. Echelard et al., (2020) suggest reasons for the number of standalone programs as competing curricular priorities, a lack of dialogue with the healthcare system and, prior to COVID-19, no strong drivers for change. With the increased uptake of virtual care, however, this is expected to change, with integrated approaches to education and training more likely (Hilty et al., 2021).

### Methods of instruction

Regardless of whether the virtual care content is integrated into existing programs, or delivered as standalone, there is consensus amongst the reviews with regards to the need for opportunities to practise virtual care delivery as part of an education program. General approaches to virtual care education and training appear to fall into four categories:

1. Interactive/participative
2. Teacher-centred
3. Learner-centred
4. Content-focused.

These categories, along with associated methods of instruction, are presented in Table 3. Although a number of reviews describe the use of IT and audio-visual equipment as education delivery methods, please note that as these were excluded as search terms, they are not reported here.

## TABLE 3: METHODS OF INSTRUCTION

| APPROACH | METHOD | CITATIONS |
|---|---|---|
| **Interactive/ participative** | Simulation | *Chike-Harris et al., (2021); Echelard et al., (2020); Edirippulige & Armfield (2017); Foster et al., (2021); Gartz & O'Rourke (2021); Hamilton et al., (2021); Henry et al., (2017); Hui et al., (2021); Rutledge et al., (2017); Stovel et al., (2020); Tomlinson et al., (2018); Waseh & Dicker (2019)* |
| | Actual patient encounters (+/- supervision) | *Budakoğlu et al., (2021); Chike-Harris et al., (2021); Gartz & O'Rourke (2021); Hamilton et al., (2021); Saeed et al., (2017); Stovel et al., (2020); Tomlinson et al., (2018); Waseh & Dicker (2019)* |
| | Site visits | *Budakoğlu et al., (2021); Chike-Harris et al., (2021)* |
| | Observation | *Edirippulige & Armfield (2017); Hui et al., (2021); Rutledge et al., (2017); Saeed et al., (2017)* |
| | Video-based | *Budakoğlu et al., (2021); Henry et al., (2017); Hui et al., (2021); Tomlinson et al., (2018)* |
| | Workshops | *Budakoğlu et al., (2021); Henry et al., (2017); Hui et al., (2021); Stovel et al., (2020)* |
| | Discussion | *Edirippulige & Armfield (2017); Hui et al., (2021); Stovel et al., (2020)* |
| | Group activities | *Edirippulige & Armfield (2017); Stovel et al., (2020); Tomlinson et al., (2018)* |
| | Practical activities (not specified) | *Edirippulige & Armfield (2017); Tomlinson et al., (2018)* |
| | Modelling/animation | *Edirippulige & Armfield (2017)* |
| | Other clinical experiences | *Chike-Harris et al., (2021); Gartz & O'Rourke (2021); Henry et al., (2017); Hui et al., (2021); Rutledge et al., (2017); Saeed et al., (2017); Waseh & Dicker (2019)* |
| **Teacher-centred** | Lectures and tutorials | *Budakoğlu et al., (2021); Edirippulige & Armfield (2017); Hui et al., (2021); Rutledge et al., (2017)* |
| | Online presentations, videos, webinars | *Hui et al., (2021); Rutledge et al., (2017)* |
| | Demonstrations | *Budakoğlu et al., (2021); Hamilton et al., (2021)* |
| | Face-to-face instruction | *Chike-Harris et al., (2021)* |
| | Classroom training | *Henry et al., (2017)* |
| | Didactic (format not specified) | *Gartz & O'Rourke (2021); Saeed et al., (2017); Stovel et al., (2020); Waseh & Dicker (2019)* |
| **Learner-centred** | Reflection activities | *Reflection activities* |
| | Online modules | *Chike-Harris et al., (2021); Henry et al., (2017); Hui et al., (2021); Saeed et al., (2017); Stovel et al., (2020); Tomlinson et al., (2018)* |
| | Patient safety e.g., emergencies | *Chike-Harris et al., (2021); Hilty et al., (2021); Saeed et al., (2017); Stovel et al., (2020)* |
| | Student-led projects | *Chike-Harris et al., (2021); Gartz & O'Rourke (2021); Waseh & Dicker (2019)* |
| | Case studies | *Calleja et al., (2022); Edirippulige & Armfield (2017); Waseh & Dicker (2019)* |
| | Journal clubs | *Stovel et al., (2020)* |
| | Self-assessment | *Henry et al., (2017)* |
| **Content-focused** | Text-based | *Budakoğlu et al., (2021)* |
| | Reading | *Henry et al., (2017); Hui et al., (2021); Saeed et al., (2017); Tomlinson et al., (2018)* |

## THE INTERACTIVE/PARTICIPATIVE APPROACH

While Table 3 presents a variety of instructional methods, the reviews highlight the interactive/participative approach as the core instructional method for virtual care education. Activities comprising this approach include simulation, actual patient encounters, site visits to telehealth clinics, observation of virtual care episodes, interactive workshops, videoconferencing, group/discussion/practical activities, modelling and animation. 'Other clinical experiences' mentioned in passing include project work and virtual clinical practicums. Key to the interactive/participative approach in virtual care education appears to be simulation and actual patient encounters, which are detailed in the sections below.

### Simulation

While the precise nature of virtual care simulation is not always elaborated, commonly reported activities include:

- Standardised patients (Chike-Harris et al., 2021; Echelard et al., 2020; Gartz & O'Rourke, 2021; Hamilton et al., 2021; Rutledge et al., 2017; Waseh & Dicker, 2019)
- Pre-recorded video scenarios (Gartz & O'Rourke, 2021; Hamilton et al., 2021; Stovel et al., 2020)
- Equipment/technology practice (Hamilton et al., 2021; Hui et al., 2021; Rutledge et al., 2017)
- Interprofessional communication exercises (Chike-Harris et al., 2021; Gartz & O'Rourke, 2021)
- The use of telepresence robots (Chike-Harris et al., 2021; Hamilton et al., 2021)
- Role plays (Tomlinson et al., 2018).

For the most part the reviews do not elaborate on how or when simulation should be incorporated into an education program, although some reviews suggest simulation as a precursor to actual patient virtual care encounters (e.g., Rutledge et al., 2017).

### Actual patient encounters

A number of the reviews report actual patient encounters as a key instructional method for virtual care. However, besides Waseh and Dicker's (2019) suggestion of patient encounters in an undergraduate curriculum as a good opportunity for students to practise interview skills, specifics are missing about the objectives and content for these learning experiences. What is evident in some of the reviews though is a scaffolded approach, commencing with observation or shadowing of virtual care episodes (Saeed et al., 2017), moving to supervised episodes (Stovel et al., 2020), with live in-session coaching (Tomlinson et al., 2018) before independent practice.

## TEACHER-CENTRED, LEARNER-CENTRED AND CONTENT-FOCUSED APPROACHES

While the interactive/participative approach appears to be core in virtual care education, Table 3 also notes the teacher-centred, learner-centred and content-focused instructional methods discussed in the review papers, often reported in relation to tertiary institution curricula (Appendix 1). Lectures, tutorials and other didactic approaches are commonly reported for teaching the 'basics' of virtual care (Budakoğlu et al., 2021), as are content-focused approaches such as reading (Tomlinson et al., 2018). Rutledge et al., (2017) also suggests that introductory content could be conveyed through a standalone online module.

Regardless of the setting i.e., undergraduate, postgraduate, and continuing professional development, blended approaches to virtual care education using formats such as face-to-face and online (Edirippulige & Armfield, 2017), didactic and interactive (e.g., Gartz & O'Rourke, 2021; Hui et al., 2021; Rutledge et al., 2017; Saeed et al., 2017) are a strong theme in the literature. What may be most relevant here is that many of the reviews recommend these approaches for initial training i.e., preparing for an actual virtual care episode (Table 2), prior or as a supplement to simulated or actual patient care.

## ASSESSMENT AND EVALUATION

Where outcomes of virtual care education programs have been evaluated, data have been collected on various aspects such as:

- Effectiveness of the intervention on the patient (Budakoğlu et al., 2021; Calleja et al., 2022; Tomlinson et al., 2018)
- Clinician attitudes (Henry et al., 2017)
- Knowledge acquisition (Hamilton et al., 2021; Hui et al., 2021)
- Impact on practice (Calleja et al., 2022; Chike-Harris et al., 2021; Tomlinson et al., 2018)
- Curricular evaluation (Stovel et al., 2020).

Data collection methods include:

- Pre and post intervention multiple choice questionnaires (Budakoğlu et al., 2021; Hui et al., 2021)
- Self-reflective written assignments (Chike-Harris et al., 2021; Hui et al., 2021)
- Likert scale questionnaires (Chike-Harris et al., 2021).

Reviews that include assessment and evaluation of these programs report mixed results and no solid evidence (Budakoğlu et al., 2021; Calleja et al., 2022), and in many cases results are anecdotal only (Rutledge et al., 2017). This may be due to the fairly recent uptake of virtual care and indicates a need for more comprehensive evaluation of programs.

In summary, as with the curricular phases and content, the articles reviewed provide a set of core instructional methods for a virtual care curriculum, however these methods are often named only and lack detail. Nevertheless, the literature emphasises the interactive/participative approach to virtual care education (particularly simulation and actual patient encounters) while suggesting that preparatory content could be delivered using more of a traditional and/or didactic approach.

A brief snapshot of the five strongest themes around curricular content and methods of instruction are summarised in Table 4.

## TABLE 4: SNAPSHOT OF CURRICULAR CONTENT AND SUGGESTED INSTRUCTIONAL METHODS

| CURRICULAR CONTENT | INSTRUCTIONAL METHODS |
|---|---|
| The basics of virtual care including terminology, history, attitudes, professional, ethical and legal aspects etc. | Teacher-centred; learner-centred or content-focused<br>Could be delivered as a standalone module |
| Cultural awareness | Teacher-centred; learner-centred; content focused; interactive/participative<br>Could be delivered as a standalone module and supported by group activities, discussion, actual patient encounters +/- supervision |
| Interprofessional collaboration/training | Interactive/participative e.g., videoconferencing, simulation, group activities and discussions |
| Telepresence, encompassing non-verbal, verbal and environmental considerations | Interactive/participative e.g., simulation, actual patient encounters +/- supervision |
| Adapting clinical skills for the virtual care environment | Interactive/participative e.g., simulation, actual patient encounters +/- supervision |

Virtual care education programs need to be founded in evidence-based competencies that are consistent across disciplines and institutions, to ensure safe, effective and efficient care that improves patient health outcomes (Chike-Harris et al., 2021). One part of a coordinated approach is understanding the values, behaviours and skills for virtual care delivery (i.e., curricula and pedagogies), the focus for the first part of this literature review (Part A). What follows now is a separate review of literature that benchmarks these values, behaviours and skills against existing virtual care guidelines, frameworks and resources that may assist in building the confidence and capability of the NSW Healthcare workforce in integrating and delivering virtual care as part of their usual practice (Part B).

# PART B: GUIDELINES, FRAMEWORKS AND RESOURCES FOR BUILDING VIRTUAL CARE CAPACITY

## THE RESEARCH QUESTION

Using Arksey and O'Malley's (2005) methodological framework, the research question for Part B was established as: "*What education guidelines, frameworks and resources are required to build the confidence and capability of the workforce to deliver virtual care?*"

## SEARCH STRATEGY: SCHOLARLY LITERATURE

As with Part A, the two main concept groups and related search terms were determined by discussion amongst three team members and grouped into two main themes: telehealth and education. An extensive title and/or abstract search of the following databases: PubMed/Medline, CINAHL, ProQuest, Scopus, and PsycINFO was conducted in November and December 2021. Individualised search strategies were developed according to the indexing terms and search syntax of each database, including Boolean operators, truncations and Medical Subject Headings (MeSH). Manual searches of related articles and other papers citing included references, as well as bibliographic mining were carried out. Seven review papers from Part A that met the criteria for this second procedural question were also included. The search strategy is described in Table 5.

## SEARCH STRATEGY: GREY LITERATURE

The search terms in Table 5 were also used to locate grey literature. In addition, websites of organisations relevant to the conceptual and procedural questions were browsed using the search engines Google and Google Scholar. Manual searching and bibliographic mining was conducted. Some websites e.g., the American Telemedicine Association and the Australasian Telehealth Society provided lists of key resources which were also included as part of the grey literature search. Relevant local documents known to the project team which related to virtual care education guidelines, frameworks and resources were also included.

## TABLE 5: SEARCH STRATEGY

| STEP | SEARCH TERMS |
|---|---|
| 1 | **Telehealth**<br>(a) MeSH terms: *telehealth* OR *telemedicine* OR *eHealth*<br>(b) Free text words: *telehealth* OR *telemedicine* OR *telenursing* OR *telerehabilitation* OR *telepsychiatry* OR *eHealth* OR *mHealth* or *digital health* OR *virtual care* |
| 2 | **Education**<br>(a) MeSH terms: *education* OR *framework* OR *guideline* OR *competency*<br>(b) Free text words: *education* OR *framework* OR *guideline* OR *competency* OR *practice guideline* OR *consensus* OR *position statement* OR *policy statement* |
| 3 | **Limits**<br>Published in the English language, abstracts available (if relevant), publication date between 2016 and 2021 |
| 4 | 1 AND 2 AND 3 |

## IDENTIFYING AND SELECTING RELEVANT LITERATURE

Literature relevant to the project's conceptual and second procedural question (i.e., virtual care education frameworks, guidelines, resources) were eligible for inclusion. In identifying and selecting grey literature, no distinctions were made between types of guidelines, advisories, standards, practice guides, updates or codes, however only literature available in the English language was included. For consistency, the same publication dates (i.e., 2016 – 2021) were used to limit results, unless the publication was deemed to be a current guideline.

The initial search of Google for grey literature found over 2,000,000 results. For this reason, only the first 250 Google results were screened for eligibility based on the limiters in Table 5, and relevance to virtual care education frameworks, guidelines and resources. Beyond this number, results appeared repetitive and unrelated to the research question(s). As there were few limitations on what was identified as relevant literature, thereby increasing its heterogeneity, an appraisal tool was not used.

The in-scope workforce for this second part of the literature review is the same as Part A, i.e., clinicians, medical practitioners, nurses, midwives, dentists, allied health professionals, physiotherapists, occupational therapists, speech therapists, psychologists/mental health professionals, nutritionists/dietitians, optometrists, podiatrists, orthoptists, social workers and students in any of the aforementioned disciplines.

## INCLUSION CRITERIA

Eligible records met the following inclusion criteria:

- Described an educational approach
- Referred to virtual care in general, or in specific settings
- Related to the in-scope workforce
- All care settings and patient cohorts e.g., primary/community-based care, tertiary settings such as critical care
- Any kind of virtual care modality e.g., asynchronous, real time, mobile, web-based etc.
- Grey literature of any kind relevant to the question(s): guidelines, updates, codes of practice, frameworks, plans, conference proceedings
- Abstract available (if relevant)
- The first 250 results of the general search engine (i.e., Google) search.

## EXCLUSION CRITERIA

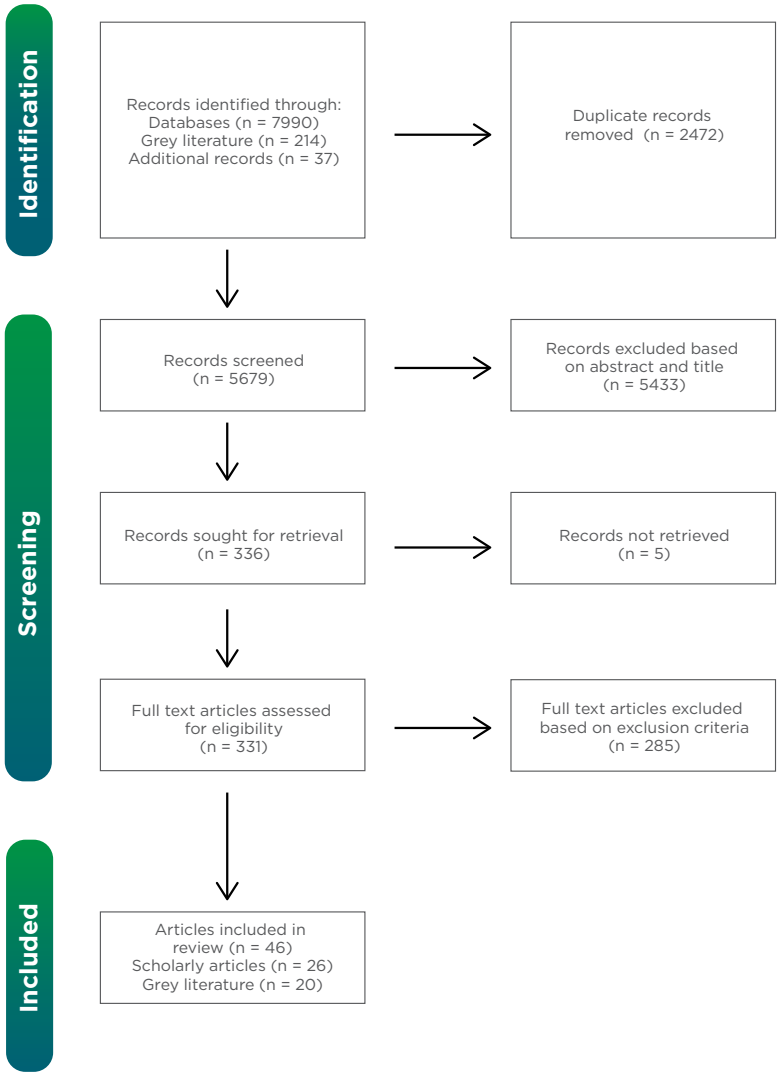
Records were deemed irrelevant if they met the following exclusion criteria:

- Not clinician focused i.e., reported on patient (end user) interventions or specific health conditions
- Reported on specific clinical aspects of a discipline e.g., psychiatric medication prescription, and not easily translatable to virtual care in general
- Reported exclusively on e-Learning as a modality (i.e., use of digital resources to support education and training, rather than curriculum and pedagogy)
- Related only to digital health e.g., Australia's My Health Record
- Referred exclusively to the need for digital competencies or informatics in virtual care delivery
- Product-related e.g., equipment, software
- Focused only on structural steps for setting up virtual care service models e.g., state licensure requirements
- 'How-to' guides for specific aspects of virtual care e.g., how to establish eye contact, how to set up a videoconference
- Blogs
- News articles
- Promotional brochures
- Any publication with an associated cost e.g., international quality standards.

## DOCUMENT SELECTION

As with Part A, a systematic screening process was conducted whereby initial search results were screened for eligibility first by title, then by abstract (if available and/or relevant), and finally by full text. Document eligibility was determined by the project team leader, while other team members were used to achieve consensus when discrepancies arose. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) adapted from Page et al., (2021) is used as the reporting guideline for literature identification and selection (Figure 2).

## FIGURE 2: PRISMA DIAGRAM: PART B




*Adapted from Page et al., (2021)*

### DATA EXTRACTION

Key information extracted from the 46 final articles included the citation, publication type, publication aim and country of origin (Appendix 3). For Part B, guidelines or frameworks that may inform virtual care education were also extracted from the articles (Appendix 4). Besides proposing a guideline or framework for building confidence and capability of the workforce for virtual care delivery, very few articles listed other resources. Therefore, 'resources' are not listed as a separate item/column on Appendix 4. However, where available, these data were extracted, and can be found in a subsequent section of this review. The project team leader extracted the information from the articles, while an additional team member checked the extracted information for accuracy and completeness.

## SYNTHESIS OF FINDINGS

### TYPES OF PUBLICATIONS, AIMS AND COUNTRIES

A total of 46 articles comprising 26 scholarly articles and 20 articles of grey literature are included for the review in Part B. The 46 articles are classified as: practice guidelines (12); review papers, including literature reviews (10); discussion or commentary papers (5); research papers (4); framework paper (1); guide documents (4); practice update (2); guideline paper (2); conference proceedings (2); code of practice (1); framework/strategic plan (1); professional standards (1); and dimensional analysis (1). Aims of the reviews vary, however in general, they are grouped around four main themes:

1. To provide information to support various clinicians to implement virtual care in its various forms in their clinical practice
2. To provide information to support ongoing use of virtual care as a care modality
3. To establish standards, codes of practice and industry guidelines for virtual care delivery, to be observed in conjunction with relevant legislation
4. To propose education frameworks e.g., core principles, skill sets, competency frameworks to inform virtual care education for clinicians.

Publications originate from eight different countries or regions. As with Part A, most of the publications arise from the USA (29), with Australia offering the second highest number of publications (11). Other countries or regions include Canada (1); New Zealand (1); South-East Asia (1); Saudi Arabia (1); Europe (1) and The Netherlands (1).

The literature encompasses a broad range of practice settings for virtual care delivery. Many of the articles are applicable to multiple or general settings and cohorts, whereas others focus on specific settings such as mental or behavioural healthcare, primary care or community-based practice, dermatology, burns, rural and remote practice, stroke, rehabilitation, ICU and pathology. Four articles specifically refer to interprofessional virtual care, while the remainder provide guidelines, frameworks and resources for nurses, nurse practitioners, midwives, doctors, physiotherapists, occupational therapists and allied health professionals in general.

### GUIDELINES, GUIDES, STANDARDS AND CODES FOR VIRTUAL CARE DELIVERY/ EDUCATION

Founded in 1993, the American Telemedicine Association (ATA) is solely focused on advancing telehealth and ensuring that everyone has access to safe, affordable, and appropriate virtual care (ATA, 2022). As a peak organisation that includes more than 400 organisations (e.g., academic institutions, clinical facilities, technology companies), the ATA is widely accepted as the legitimate voice or representative of telehealth (ATA, 2022).

Consequently, the greatest number of guidelines (n = 10) located for the purpose of this literature review are authored by the ATA, and many other non-ATA guidelines acknowledge this peak organisation in their reference lists. Developed in consultation with content specialists and other strategic stakeholders, each of the ATA guidelines undergoes consensus and rigorous review, including an open public commentary period, before final approval by the ATA Board (ATA, 2022). This same process also applies to revision and updating of existing guidelines (ATA, 2022).

Each of the ATA guidelines is intended to assure consistent quality of service to end-users, providing a clear set of expectations for both clients/patients and virtual care service providers, while at the same time describing specific training, skills and techniques that constitute safe and effective virtual care practices. Most of the ATA guidelines are organised into three domains: clinical, administrative and technical. For this reason the information from all guidelines, guideline papers, guides, standards and codes (i.e., from ATA and other sources) located for this literature review are arranged in the same way. These domains, along with key content that might inform an existing or new virtual care program, are presented in Table 6.

## TABLE 6: GUIDELINES, GUIDES, STANDARDS AND CODES: DOMAINS AND KEY CONTENT

| DOMAIN | KEY CONTENT | CITATIONS |
|---|---|---|
| **Clinical** | Credentialing and scope of practice | *ACI (2021); AHPRA (2020); ATA (2014a, May); ATA (2014b, May); ATA (2014, August); ATA (2014, November); ATA (2016a, April); ATA (2016b, April); ATA (2017b, March); Qureshi et al., (2021); Shore et al., (2018); TQG EEIG (2018/19)* |
| | Professional standards, regulations, codes | *AHPA (2020); AHPRA (2020); ATA (2014a, May); ATA (2014, November); ATA (2016b, April); ATA (2017, April); Intan Sabrina & Defi (2020); Sheperis & Smith (2021); Shore et al., (2018); TQG EEIG (2018/19)* |
| | Patient/provider identity verification | *ACRRM (2020); AHPA (2020); AHPRA (2020); ATA (2014a, May); ATA (2014, November); ATA (2016b, April); Qureshi et al., (2021); RACGP (2020); Shore et al., (2018); TQG EEIG (2018/19)* |
| | Patient/provider location verification | *ATA (2014a, May); ATA (2014, November); ATA (2016b, April); ATA (2017a, March); Sheperis & Smith (2021); Shore et al., (2018)* |
| | Patient or service selection/ suitability | *ACI (2021); ACRRM (2020); AHPA (2020); AHPRA (2020); ATA (2014, November); ATA (2016b, April); ATA (2017a, March); ATA (2017, April); Barberio & Jenkins (2021); Baumes et al., (2020); Myers et al., (2017); OTA (2020); Qureshi et al., (2021); RACGP (2020); Sheperis & Smith (2021); Shore et al., (2018)* |
| | Emergency situations | *ATA (2009); ATA (2014a, May); ATA (2014b, May); ATA (2014, November); ATA (2016b, April); ATA (2017a, March); ATA (2017b, March); Baumes et al., (2020); Myers et al., (2017); RACGP (2020); Sheperis & Smith (2021); Shore et al., (2018); TQG EEIG (2018/19)* |
| | Contact arrangements | *ATA (2014a, May); Sheperis & Smith (2021); Shore et al., (2018)* |
| | Interprofessional collaboration; care coordination | *ACRRM (2020); AHPRA (2020); ATA (2009); ATA (2014a, May); ATA (2014b, May); ATA (2014, November); ATA (2016a, April); ATA (2016b, April); ATA (2017a, March); ATA (2017b, March); Myers et al., (2017); Qureshi et al., (2021); Shore et al., (2018)* |
| | Patient and family education/ participation | *ACI (2021); AHPA (2020); ATA (2014b, May); ATA (2014, November); ATA (2017a, March); ATA (2017b, March); ATA (2017, April); Barberio & Jenkins (2021; Baumes et al., (2020); Myers et al., (2017); Powers et al., (2021); Qureshi et al., (2021); Sheperis & Smith (2021)* |
| | Goal setting | *ATA (2014b, May); ATA (2017b, March); Barberio & Jenkins (2021)* |
| | Communication and rapport | *ACI (2021); ANF (2013, April); AHPRA (2020); ATA (2009); ATA (2014, November); ATA (2016a, April); ATA (2017a, March); Gustin et al., (2020); RACGP (2020)* |
| | Cultural competence | *ACI (2021); AHPRA (2020); ATA (2014a, May); ATA (2014, November); ATA (2016b, April); ATA (2017a, March); Baumes et al., (2020); Myers et al., (2017); RACGP (2020); Sheperis & Smith (2021); Shore et al., (2018)* |
| | Environmental considerations | *ACI (2021); ACRRM (2020); AHPA (2020); ATA (2009); ATA (2014a, May); ATA (2016a, April); ATA (2017a, March); ATA (2017b, March); Baumes et al., (2020); Myers et al., (2017); OTA (2020); Powers et al., (2021); Qureshi et al., (2021); Sheperis & Smith (2021); Shore et al., (2018); TQG EEIG (2018/19)* |
| | Clinical examination/intervention | *AHPA (2020); ATA (2009); ATA (2014, November); ATA (2016a, April); ATA (2016b, April); ATA (2017a, March); Barberio & Jenkins (2021); Baumes et al., (2020); Myers et al., (2017); Qureshi et al., (2021); Sheperis & Smith (2021)* |

| | | |
|---|---|---|
| | Medications | *ATA (2009); ATA (2014a, May); ATA (2016b, April); Shore et al., (2018)* |
| | Infection control | *ATA (2014a, May); ATA (2014b, May); ATA (2017b, March); ATA (2017, April); Qureshi et al., (2021)* |
| **Administrative** | Policies and procedures | *ACI (2021); ATA (2014a, May); ATA (2014b, May); ATA (2014, November); ATA (2017a, March); Myers et al., (2017); Qureshi et al., (2021); Shore et al., (2018)* |
| | Staff orientation | *ATA (2014b, May); ATA (2017b, March); Qureshi et al., (2021)* |
| | Privacy and confidentiality | *Abbott et al., (2020); ACI (2021); AHPA (2020); AHPRA (2020); ANF (2013, April); ATA (2014a, May); ATA (2014b, May); ATA (2014, November); ATA (2016a, April); ATA (2016b, April); ATA (2017a, March); ATA (2017b, March); Baumes et al., (2020); Gustin et al., (2020); Intan Sabrina & Defi (2020); Myers et al., (2017); OTA (2020); Powers et al., (2021); Qureshi et al., (2021); RACGP (2020); Shore et al., (2018); TQG EEIG (2018/19)* |
| | Informed consent | *Abbott et al., (2020); ACI (2021); ACRRM (2020); AHPA (2020); ANF (2013, April); ATA (2014a, May); ATA (2016a, April); ATA (2016b, April); ATA (2017a, March); Barberio & Jenkins (2021); Baumes et al., (2020); Intan Sabrina & Defi (2020); Myers et al., (2017); OTA (2020); Qureshi et al., (2021); RACGP (2020); Sheperis & Smith (2021); Shore et al., (2018); TQG EEIG (2018/19)* |
| | Patient rights and responsibilities | *ACI (2021); ATA (2014, November); ATA (2016b, April); ATA (2017a, March); ATA (2017, April); TQG EEIG (2018/19)* |
| | Shared leadership | *ATA (2014b, May); ATA (2017b, March); Qureshi et al., (2021)* |
| | Documentation | *Abbott et al., (2020); ACI (2021); AHPA (2020); AHPRA (2020); ATA (2014b, May); ATA (2014, November); ATA (2016a, April); ATA (2017b, March); ATA (2017, April); Intan Sabrina & Defi (2020); Qureshi et al., (2021); RACGP (2020); TQG EEIG (2018/19)* |
| **Technical** | Device and software training | *ACI (2021); ANF (2013, April); ATA (2014a, May); Barberio & Jenkins (2021); Baumes et al., (2020); Qureshi et al., (2021); RACGP (2020); TQG EEIG (2018/19)* |
| | Data security | *Abbott et al., (2020); ACI (2021); AHPA (2020); ATA (2014a, May); ATA (2014b, May); ATA (2014, August); ATA (2014, November); ATA (2016a, April); ATA (2016b, April); ATA (2017b, March); Baumes et al., (2020); Intan Sabrina & Defi (2020); Myers et al., (2017); OTA (2020); Powers et al., (2021); Qureshi et al., (2021); RACGP (2020); Sheperis & Smith (2021); Shore et al., (2018); TQG EEIG (2018/19)* |
| | Image capture | *Abbott et al., (2020); ATA (2014, August); ATA (2016a, April); ATA (2016b, April); Myers et al., (2017)* |
| | Equipment testing and maintenance | *ACI (2021); ATA (2014, August); ATA (2017, April); Barberio & Jenkins (2021); Baumes et al., (2020); OTA (2020); Qureshi et al., (2021)* |

Guidelines, guides, standards and codes for virtual care are considered as part of this literature review because they can potentially comprise the content of new or existing education programs. In many cases, this same literature refers to their guidelines or standards as recommendations for education and training (e.g., RACGP, 2020 March; ATA, 2014b May; ATA, 2017b March). Similar to the reviews in Part A of this report however, detail is often brief and not overly prescriptive.

## The clinical domain

Key themes emerging from the clinical domain are: credentialing and scope of practice, patient selection/suitability for virtual care, emergency planning, interprofessional collaboration, therapeutic relationships, cultural awareness, environmental considerations, clinical examination/intervention skills and infection control.

### Credentialing and scope of practice

As demonstrated in Table 6, many of the guidelines, guides, standards and codes highlight credentialing and scope of practice as an important feature of virtual care, stating that providers must ensure compliance with appropriate regulatory and accrediting agencies. This compliance extends to orientation, training and CPD to ensure the necessary knowledge and competencies for safe provision of healthcare in the clinician's specialty area. Professional indemnity insurance that explicitly covers virtual care provision is also noted as essential (e.g., AHPRA, 2020; ATA 2014a May; OTA, 2020).

The guideline literature also emphasises that authorities and boards governing individual health professions have the same expectations of clinicians practising virtual care as they do when services are delivered face-to-face. These expectations include acting in accordance with legislative and jurisdictional requirements for confidentiality and privacy, informed consent, quality care and documentation. Indeed, following strict procedures for verifying the identity of both the care recipient and provider prior to commencement of any consultation feature strongly, as does verifying the geographical location of both parties, to ensure compliance with relevant jurisdiction and licensing laws, including prescribing requirements (e.g., ATA, 2014a, May; Shore et al., 2018).

### Patient selection

In the clinical domain, the most commonly reported theme from the guideline literature is the importance of assessing the appropriateness of both the patient and the actual service, prior to, and even during a virtual care consultation. In their guidelines for example, the ACCRM (2020) outline a number of factors for consideration when selecting appropriate patients for virtual care:

- Documented criteria for determining patient suitability
- The ability and willingness of the patient and/or their informal carer to participate in remote consultations
- Clinical factors such as continuity of care, shared care, and the best model of care for the individual patient
- Availability of resources such as specialists, local clinical staff and technology
- The patient's family, work and cultural situation.

According to the ACI (2021), clinicians should also be confident in their knowledge and ability to terminate a virtual care episode (i.e., prior to commencement or when consultation is in progress) if deemed inappropriate, for reasons such as a change in the patient's needs or condition, or when technology fails or is unfit for purpose. Patients and/or informal caregivers themselves should also be informed of their right to choose not to participate in virtual care, and/or to terminate the episode at any time (e.g., Telehealth Quality Group [TQG] EEIG, 2018/19). All parties should also be clear about the conditions under which virtual care services may be terminated and a referral made to in-person care (ATA, 2014a May).

### Emergency planning

Determining suitability of the recipient or service for the virtual care setting is associated with the need to have contingency plans in cases of emergencies (in addition to technological challenges or failure), another strongly reported theme in the guideline literature. This theme is consistent with the 'patient safety' theme identified for virtual care curriculum content in Part A of this review. Virtual care providers should be educated on basic patient safety protocols, including:

- Contact information of a family or support person who may be called upon in case of an emergency
- Identifying local emergency resources and phone numbers
- Familiarisation with location of nearest hospital emergency room capable of managing likely acute emergencies
- Emergency management between sessions (e.g., ATA, 2014a, May; Barberio & Jenkins, 2021; ATA, 2017a, March; Myers et al., 2017).

In addition to an emergency protocol, some of the guideline literature suggests a protocol which includes establishing contact arrangements and expectations for non-emergency situations, between virtual care consultations, including whether or not the provider will be available for contact between sessions and the conditions under which such contact is appropriate (ATA, 2014a May; Shore et al., 2018; Sheperis & Smith, 2021).

## Interprofessional collaboration

Knowledge of local resources and networks is important not only for emergency care, but also for effective interprofessional collaboration. In the primary care setting for example, guidelines suggest that virtual care affords an excellent opportunity to collaborate with pharmacists, medical specialists and allied health professionals to deliver comprehensive care. This is especially important for high-risk cohorts such as children and adolescents with mental health issues, older people, people with disabilities, or people with chronic conditions and co-morbidities, who have multiple agencies involved in their lives (e.g., AHPA, 2020; ATA, 2009; Myers et al., 2017; Qureshi et al., 2021). So too is managing the flow of people in and out of the virtual care space when there are many stakeholders involved (ATA, 2017a, March). Hence an understanding of how to develop and maintain effective interprofessional relationships and dynamics in the virtual care setting may be an important part of curricular content for virtual care education and training (see also Part A).

## Therapeutic relationships

Developing and maintaining therapeutic relationships with patients and their family members or informal caregivers also features strongly in the guideline literature. Providing a basic overview of virtual care: technological requirements, how it works etc., to patients and their families is noted (e.g., ACI, 2021, AHPA, 2020; March; ATA, 2017b, March), as is the importance of understanding how to establish and optimise rapport and adjust communication styles to obtain the most clinically relevant information and ensure positive health outcomes (e.g., ATA, 2009; RACGP, 2020). In initial appointments, suggestions are made to establish care goals with patients as a means of engaging them in virtual care settings (Barberio & Jenkins, 2021), and also with the multidisciplinary team in an effort to align with specific program outcomes and measures (ATA, 2017b, March).

Besides learning how to foster therapeutic alliances with patients, their families, and multiple health professionals, general communication skills are noted in the literature. As with Part A, embedding this content is a key theme, however again much of this is mentioned in general terms. Exceptions to this are publications such as those by Barberio and Jenkins (2021), who provide step-by-step points for person-centred communication, and Gustin et al., (2020), who provide a list of considerations for communication as part of telehealth etiquette, including verbal and non-verbal essentials, along with tips for communicating empathy.

## Cultural awareness

The need for cultural awareness and cultural competence is another strong theme (see also Part A), noted in relation to both assessment of patients' suitability for virtual care (e.g., ACCRM, 2020; ACI, 2021, March; Baumes et al., 2020), or as part of the communication process during a virtual care episode (e.g., ACI, 2021; ATA, 2017a, March). Consensus amongst the literature is that clinicians should pay close attention to both verbal and non-verbal communication cues and styles that may vary across cultures (e.g., storytelling in some Indigenous cultures), consider the impact of technology on cultural groups (e.g., appropriateness of using or recording images), and formulate a culturally sensitive protocol that inspires trust in patients to access and engage in the virtual care setting (e.g., ACI, 2021, March; ATA, 2014, November; ATA, 2017a, March; RACGP, 2020).

## Environmental considerations

Also consistent with Part A, environmental considerations for virtual care are highlighted in much of the guideline literature. Noteworthy in this part of the review are considerations for both the care recipient and clinician:

- Care recipient: the need to manage safety aspects in the environment e.g., in the mental health virtual care setting, considering risks to safety in the patient's physical environment, such as access to weapons in the home environment, proximity to windows, sharp objects or other household hazards (e.g., ATA, 2017a, March; Baumes et al., 2020); privacy considerations (e.g., ACI, 2021; ATA, 2009; ATA 2017a, March)
- Care provider: managing spatial aspects such as acoustics, privacy, wall and floor colours and finishes, room layout, furniture, removal of distracting photographs or items, removing confidential patient information (e.g., ACI, 2021; RACGP, 2020); size of the space (e.g., ACCRM, 2020); camera angle, lighting etc. (e.g., ACI, 2021).

## Clinical examination/intervention

In the review of curricular content, Part A identifies the need to adapt clinical skills for the virtual care setting as one of the five most common themes (see Table 4). This same theme is highlighted in the guideline literature. Some of the documents mention this briefly, while others provide lists of requirements.

The guidelines for telemental health, or telebehavioural health, the term now preferred by some authors (e.g., Drude et al., 2020) suggest that the absence of the need for a physical examination means that the mental healthcare is well suited to virtual care (ATA, 2017a, March). However, being able to take an accurate history is considered important across all disciplines (e.g., ATA, 2014, November; ATA, 2016a April; ATA, 2016b April; ATA, 2017a), with some guidelines offering step-by-step pieces of data to be collected (ATA, 2016a April; ATA, 2016b April; ATA, 2017a, March).

With regards to physical examinations, some guidelines suggest that this may be undertaken using an explicit, physician-guided self-examination, with/without the assistance of an informal caregiver as required. For example, patients may be asked to position their camera in a certain way for better visualisation of a wound or body area, or they may be instructed to push on various parts of their body and evaluate for tenderness or pain (e.g., ATA, 2014, November; Barberio & Jenkins, 2021). Other literature is more prescriptive about patient positioning, dressing removal and inspection, wound care and imaging (e.g., ATA, 2016b, April). Barberio and Jenkins (2021)

suggest that the simple act of patient repositioning may enable a clinician to assess for specific problems, or general issues such as fatigue, appearance, comprehension and cooperation.

In the absence of stethoscopes, clinicians may request that patients take deep breaths, or they may instruct the patient on how and where to palpate a pulse (Barberio & Jenkins, 2021). That said, rapid technological advances have resulted in more tools becoming available for virtual examinations, such as smartphone devices/apps with pulse oximeters and glucometers (Barberio & Jenkins, 2021). Hence being familiar with new and emerging technology is an important part of virtual care education, as is being able to educate and support patients and their families in its use.

Clinical specifics of virtual care e.g., psychotropic medication prescribing, comprised one of the exclusion criteria for Part B of this review. Nonetheless, medication management is mentioned in several of the guidelines, mainly in relation to the need for clinicians to know medication side effects and being able to recognise medication non-compliance (ATA, 2009; ATA, 2014a, May; ATA, 2016b, April). Linked to history-taking, communication, clinical examination, interprofessional collaboration and knowledge of local resources/emergency planning, these guidelines state that clinicians should be aware of prescribing and dispensation options, including how to manage any acute changes in medical conditions as a result of medications.

### Infection control

Finally, as part of the clinical domain in the guideline literature, the need to observe infection control procedures is noted, although no real detail is offered. The suggestion is that staff are aware of infection control policies and procedures that relate to the use of virtual care equipment e.g., cameras, microphones, monitors, and peripheral devices used on patients e.g., measurement tools, sensor technologies. In particular, equipment and devices that are re-used by multiple clients should have strict cleaning and sterilisation protocols in place, aligning with any organisational and national regulations, standards or public health directives (e.g., ATA, 2017, April).

### Summary: clinical domain

In summary, key content in the clinical domain identified from the review of guidelines, guides, standards and codes includes:

- Credentialing, scope of practice, knowledge of professional standards, codes and regulations etc., including correct verification of the patient and provider
- Patient selection/appropriateness for virtual care
- Emergency planning, including knowledge of local resources
- Interprofessional collaboration
- Therapeutic relationships (including communication, patient and family education/support)
- Cultural awareness
- Environmental considerations
- Clinical examination/intervention skills, including medication management
- Infection control.

In their review of telehealth guidelines, Powers et al., (2021) state that the literature is, in most cases, vague and incomplete, which appears to be the case for this review. But nonetheless they might be helpful. What is noteworthy here, is that much of the key content in the clinical domain is overlapping. For example, communication intersects with interprofessional collaboration, cultural awareness, environmental considerations, clinical examinations, patient and family support/education; environmental considerations intersect with clinical examinations in the virtual care setting; medication management is closely associated with local resources and emergency planning, and so on. Together, these themes emerge strongly from the literature, and build a solid case for inclusion in a virtual care education program for clinicians.

## The administrative domain

Table 6 reveals a number of key themes in the administrative domain that emerge from the review of the guideline literature, including policies and procedures, orientation to the virtual care setting, informed consent, privacy and confidentiality, and documentation.

### Policies and procedures

The general consensus in the reviewed literature is that the same clinical care standards, clinical guidelines, policies and procedures that apply to face-to-face consultations also apply in the virtual care setting, although these may need to be revised and modified accordingly as virtual care modalities become more prevalent (ACI, 2021; ATA, 2014, November). Since interprofessional collaboration is a key component of effective virtual care, policy development and review should also be a consultative process and involve professionals from multiple health disciplines (Qureshi et al., 2021).

Policies and procedures that should refer specifically to virtual care include:

- Federal, state, local, and other regulatory agency and ethical requirements (e.g., ATA, 2014a, May)
- Fiscal management (ATA, 2014a, May)
- Use of equipment, devices and technology including peripheral devices, network hardware and associated software (ATA, 2014a, May)
- Human resource management, including credentialing and scope of practice (ATA, 2014a, May; ATA, 2014 November)
- Technical and medical competence in the service provided, including training of all personnel involved in the telehealth operations (ATA, 2014a, May; ATA, 2014b)
- Privacy and confidentiality (ATA, 2014a, May; Qureshi et al., 2021)
- Network and data transmission, storage and access security (ATA, 2014a, May; Qureshi et al., 2021; Shore et al., 2018)

- Use, storage and management of recordings (ACI, 2021)
- Ownership of patient data and/or records (ATA, 2014a, May)
- Policies and procedures for provider verification and authentication (ATA, 2014, November)
- Patient and clinician rights and responsibilities, including boundaries (ATA, 2014a, May; Shore et al., 2018)
- Medication prescribing policies (ATA 2014a, May; 2014, November)
- Documentation, including use of electronic health records (ATA, 2014a May; Qureshi et al., 2021)
- Infection control policies and procedures (ATA, 2014a May; Qureshi et al., 2021)
- Research protocols (if applicable) (ATA, 2014a, May)
- Evaluation criteria (ATA, 2014a, May)
- Availability of organisation information (e.g., ownership, location, website, contact information) (ATA, 2014a, May).

Myers et al., (2017) propose that a thorough knowledge and understanding of relevant policies for virtual care should comprise part of clinician education and training in this setting.

## Orientation to the virtual care setting

Access to, and understanding of policies and procedures, is often a feature of a staff member's orientation to their workplace, another theme that emerges from the guideline literature. In this review, orientation is recommended not only for staff, but also for virtual care recipients.

Some of the literature refers generally to orientation and training, while other publications are more prescriptive in their recommendations for education and training topics. Topics for staff orientation and/or training in virtual care include:

- Clear articulation of a shared vision and goals for the virtual care model, (ATA, 2017b, March)
- The actual process (ATA, 2017b, March; RACGP, 2020)
- Benefits of virtual care – fostering positive staff attitudes (ATA, 2014b, May; ATA, 2017b, March)
- Troubleshooting IT difficulties (ATA, 2017b, March; RACGP, 2020)
- Benchmark times (ATA, 2017b, March)
- Specific roles and responsibilities of virtual care stakeholders, including the 'chain of command' (ATA, 2014b, May; ATA, 2017b, March; Qureshi et al., 2021)
- Team leadership (ATA, 2014b, May; ATA, 2017b, March; Qureshi et al., 2021)
- Mock codes (ATA, 2017b, March)
- Documentation (ATA, 2017b, March)
- Selecting appropriate patients for virtual care (ATA, 2014b, May; ATA, 2017b, March)
- Conducting relevant examinations (e.g., neurological assessments) in the virtual care setting (ATA, 2017b, March)
- Cultural awareness (RACGP, 2020)
- Informed consent (RACGP, 2020
- Privacy and confidentiality, including data security (RACGP, 2020)
- Communication protocols and consultation etiquette (RACGP, 2020).

Consistent with Myers et al., (2014), the ATA (2014, August) state that staff training should be determined by local policies and procedures, although standardised and documented programs are recommended.

Educating and orientating patients and their families/informal caregivers is also a strong theme in the guideline literature. Recommendations for information to be conveyed in written and/or electronic format (e.g., brochure, checklist, website, practice run) prior to a virtual consultation include:

- The benefits and risks of telehealth (AHPA, 2020)
- The actual process (AHPA, 2020; Barberio & Jenkins, 2021)
- IT set-up and testing, including a contingency plan for IT challenges (AHPA, 2020; Barberio & Jenkins, 2021)
- Environmental considerations (AHPA, 2020)
- Option (or necessity) for an accompanying family member or caregiver, e.g., for mental health consultations, falls risks (ACI, 2021; AHPA, 2020; ATA, 2017a, March).

The ATA (2014a, May) also suggest that an additional brief orientation is provided in real-time, just prior to commencement of the virtual care encounter.

## Informed consent

Orientation to virtual care enables patients and families/caregivers to exercise informed choices and give consent regarding their acceptance (or not) of virtual care services. Consistent with the review in Part A, most of the guideline literature reviewed in Part B refers to the need for informed consent prior to the commencement of a virtual care episode.

The manner of obtaining informed consent must adhere to the relevant healthcare profession's standards and codes of practice, and therefore may be implied or explicit (Intan Sabrina & Defi, 2020). That said, explicit consent (verbal or written) that informs patients of their rights and responsibilities in relation to virtual care, risks, benefits, limitations and expectations, service options, financial implications, arrangements for termination of, or withdrawal from the service, complaints resolution and privacy considerations (e.g., recordings, how the data will be used, information sharing), is recommended in most publications (e.g., AHPA, 2020; ANF, 2013; Intan Sabrina & Defi, 2020; Sheperis & Smith, 2021; TQG, 2018/19). Barberio and Jenkins (2021), and Intan Sabrina and Defi, (2020) refer health professionals to their relevant councils for inclusions in an informed consent, while at least one guideline document provides an informed consent template (AHPA, 2020).

## Privacy and confidentiality

Closely linked to informed consent, privacy and confidentiality are recurring themes in the reviewed literature (Parts A and B). Virtual care raises additional concerns and complexities with regard to upholding patient privacy and confidentiality (Abbott et al., 2020; AHPA, 2020), and becomes even more challenging when there are multiple stakeholders involved e.g., caregivers, school officials, justice personnel, interprofessional collaborations in mental healthcare settings (ATA, 2017a March; Myers et al., 2017; Shore et al., 2018).

While some publications simply flag privacy as an issue, others provide details for consideration, including:

- Compliance with relevant privacy legislation and requirements e.g., professional codes of conduct (Abbott et al., 2020; ACI, 2021; AHPA, 2020; AHPRA, 2020; ANF, 2013; ATA, 2014b, May; ATA, 2014, November; ATA, 2016b, April; ATA, 2017b March; Baumes et al., 2020; OTA, 2020; Qureshi et al., 2021; Shore et al., 2018)
- Risk assessment prior to virtual care episode (ACI, 2021; AHPA, 2020)
- Patient and provider verification i.e., ensuring all people in a video-consultation are visible 'on screen' and identified (Abbott et al., 2020; Intan Sabrina & Defi, 2020), and/or authorised to be present (Baumes et al., 2020)
- Environmental considerations to ensure video and auditory privacy for both the care provider and the recipient (Abbott et al., 2020; ACI, 2020; AHPA, 2020; ATA, 2014a, May; ATA, 2014b, May; ATA, 2014, November; ATA, 2016a, April; ATA, 2017a March; ATA, 2017b March; Baumes et al., 2020; Myers et al., 2017; Qureshi et al., 2021; RACGP, 2020; Shore et al., 2018; TQG EEIG 2018/19)
- Physically securing storage services (Abbott et al., 2020)
- Secure (e.g., password protected) platforms, networks and devices for real-time consultations (ACI, 2021; AHPA, 2020; ATA, 2014a, May; ATA, 2014b, May; ATA, 2014, November; ATA, 2016a, April; ATA, 2016b, April; ATA, 2017b March)
- Videoconferencing privacy features e.g., audio muting, video muting, ability to easily change from public to private audio mode (ATA, 2014a, May)
- Data encryption for transmitted information (Abbott et al., 2020; AHPA, 2020; ATA, 2014a, May; ATA, 2016a, April; Powers et al., 2021)
- Providing information to patients about how their privacy will be upheld (ACI, 2021; AHPA, 2020; ATA, 2014a, May; ATA, 2014b, May; ATA, 2014, November; ATA, 2016b, April; Baumes et al., 2020; Gustin et al., 2020; OTA, 2020; TQG EEIG 2018/19), along with how they can safeguard their privacy when using their own devices (ATA, 2016a, April; Powers et al., 2021).

Almost all of the publications cited here recommend these inclusions for a comprehensive privacy policy, procedures, risk management protocols, or a privacy manual.

## Documentation

Similar to informed consent and privacy/confidentiality, documentation of virtual care episodes is a strong theme in the administrative domain of the guideline literature, recurring frequently through both Parts A and B of this review. The general consensus is that documentation requirements for virtual care episodes correspond to those for face-to-face encounters i.e., notes should be taken contemporaneously, documentation formats and retention should observe both local policies along with relevant legislation. Nonetheless, some aspects of documentation may be compromised when using virtual care as a modality.

Timeliness, completeness, and information security may be challenging (Qureshi et al., 2021). Some of the guidelines outline content to be documented in a virtual care episode, highlighting the importance of documenting the precise modality used (Abbott et al., 2020; AHPA, 2020), names and roles of all participants in the consultation (ACI, 2021; AHPA, 2020; ATA, 2017b, March; Qureshi, RACGP, 2020), location of the patients (ATA, 2014, November) and the adequacy of technology/connections used (ATA, 2017b, March). Other publications provide suggestions for language to be used in documentation (e.g., ATA, 2016a, April).

In any case, as with informed consent and privacy/confidentiality, comprehensive documentation policies, procedures and risk management protocols, and training of staff in this area, are strongly supported by the guideline literature. Any stipulated documentation requirements should also be subject to auditing processes for compliance and as part of the continuous quality improvement process (ATA, 2017, April; Intan-Sabrina & Defi, 2020; Qureshi et al., 2021).

## Summary: administrative domain

In summary, key content in the administrative domain identified from the review of guidelines, guides, standards and codes includes:

- Policies and procedures
- Orientation training for staff and virtual care recipients
- Informed consent
- Privacy and confidentiality
- Documentation.

As previously stated in relation to the clinical domain, the information provided in relation to the aforementioned areas is sometimes vague and incomplete (Powers et al., 2021). There is also overlapping content e.g., policies and procedures should inform responses to training, consent, privacy/confidentiality and documentation, privacy and confidentiality intersects with documentation etc. However again, these same themes reappear regularly, contributing to a solid structure for a virtual care education program for clinicians.

## The technical domain

Table 6 presents a number of aspects related to the technical domain which can be found in the guideline literature: device and software training, data security, image management, and equipment testing and maintenance. As explained in Part A, device and software training, although considered in the literature as core components of a virtual care education/training program, were excluded as search terms in this review and hence are not reported here. Equipment testing and maintenance are also excluded here, since in many cases this aspect is associated with device and software training. Moreover much of the guideline literature refers to data security as an element of privacy and confidentiality in the virtual care setting, and as such this has been addressed in 'the administrative domain'. Consequently, within the technical domain, the only aspect to be discussed here is image capture, since it has the potential to inform both clinical (e.g., to aid assessment and intervention) and administrative (e.g., should be considered in relation to consent, documentation, privacy and confidentiality) domains of virtual care.

### Image capture

Abbott et al., (2020) consider that in disciplines such as dermatology, diagnosis using photographic images has high sensitivity and variable specificity. Predictably then, particular attention is paid to digital imaging in the guideline literature for dermatology (ATA, 2016a April), burns/wound assessment (ATA, 2016b, April) and pathology (ATA, 2014, August). Telemental or telebehavioural health, too, relies on quality imaging and videoconferencing for aspects of a mental status examination, such as tics, dysmorphia, or abnormalities in relatedness (ATA, 2009; Myers et al., 2017). Synchronous and asynchronous modalities are outlined, as are requirements for viewing devices, software, resolution, video and audio compression standard, connection speed/bandwidth and storage.

Consequently, the guideline literature recommends that current standards and guidelines related to image capture and review should be followed, and clinicians in the virtual care setting should be trained in these (Abbott et al., 2020; ATA, 2016b, April). Elements to be covered in training include:

- Camera positioning i.e., stipulated distance from the image subject, stipulated camera angle
- Speed of camera movement
- Use of flash
- Lighting, and calibration for 'white balance' to ensure an accurate depiction of the colour of the image
- Removal of distracting clothing or jewellery from the field
- Identification markers for both size and perspective
- The need for the clinician to verbally describe the image as it is being captured (ATA, 2016a, April, ATA, 2016b, April).

### SUMMARY OF KEY CONTENT FROM GUIDELINES, GUIDES, STANDARDS AND CODES

In summary, the guideline literature provides consistent references to inclusions for a virtual care training program. To reiterate, topics for consideration are:

- Clinical: credentialing and scope of practice, knowledge of professional standards, codes and regulations etc., patient selection/appropriateness for virtual care, emergency planning, including knowledge of local resources, interprofessional collaboration, therapeutic relationships, cultural awareness, environmental considerations, clinical examination/intervention skills, infection control
- Administrative: policies and procedures, orientation, informed consent, privacy and confidentiality, documentation
- Technical: besides software, equipment training (not within the scope of this review), image capture.

While the inclusions are often mentioned only briefly and lack detail, they nonetheless are recurring, intersecting and in many cases reflect the recommendations from Part A. Table 8 in a subsequent section provides an overview of all curriculum content considerations covered in this review, along with the type of literature recommending them. This table also includes recommendations from the competencies and frameworks literature located as part of the search for Part B, which now follows.

### COMPETENCIES AND SKILLS FOR VIRTUAL CARE DELIVERY/EDUCATION

The literature located as part of this review (i.e., Part B) was also scrutinised in relation to competencies and/or skills, and frameworks. First, Table 7 provides an overview of the competencies and/or skills that are proposed in the literature (a review of frameworks follows). For reasonable consistency, these competencies and/or skills have been loosely grouped according to the phases proposed for enactment of the curriculum content in Part A (see Table 2).

## TABLE 7: COMPETENCIES AND/OR SKILLS FOR VIRTUAL CARE

| PHASE | COMPETENCY/SKILL | CITATIONS |
|---|---|---|
| **General introduction to virtual care** | History, definitions and terminology | *Rutledge et al., (2017); Rutledge et al., (2021) Galpin et al., (2021); Jadotte & Noel (2021); NSW Ministry of Health (2016)* |
| | Fostering positive attitudes | *Davies et al., (2021); Field & Butler (2018); Henry et al., (2017); NSW Ministry of Health (2016)* |
| | Benefits and barriers | *Rutledge et al., (2021)* |
| | Evidence-based care | *Davies et al., (2021); Maheu et al., (2018);* |
| | Compliance – i.e., legal, regulatory, reimbursement issues | *Davies et al., (2021); DeJong (2018); Drude et al., (2020); Galpin et al., (2021); Maheu et al., (2018); Rutledge et al., (2017); Rutledge et al., (2021); Saeed et al., (2017); Sharma et al., (2019); Stovel et al., (2020)* |
| | Ethical practice | *DeJong (2018); Drude et al., (2020); Galpin et al., (2021); Hilty et al., (2021); Jadotte & Noel (2021); Maheu et al., (2018); Rutledge et al., (2017); Saeed et al., (2017); Stovel et al., (2020)* |
| | Technology skills | *Davies et al., (2021); Drude et al., (2020); Field & Butler (2018); Galpin et al., (2021); Hilty et al., (2021); Maheu et al., (2018); Rutledge et al., (2021); Sharma et al., (2019)* |
| **Preparing for an actual virtual care episode** | Protocol development | *Rutledge et al., (2021); Stovel et al., (2020)* |
| | Patient or service selection/suitability | *Davies et al., (2021); Drude et al., (2020); Galpin et al., (2021); Galpin et al., (2021); Rutledge et al., (2021); Stovel et al., (2020)* |
| | Informed consent | *Davies et al., (2021); Henry et al., (2017); Hilty et al., (2021); Rutledge et al., (2017); Rutledge et al., (2021)* |
| | Interprofessional collaboration | *Calleja et al., (2022); Davies et al., (2021); Drude et al., (2020); Field & Butler (2018); Galpin et al., (2021); Hilty et al., (2021; Jadotte & Noel (2021); Maheu et al., (2018); NSW Ministry of Health (2016); Rutledge et al., (2017); Saeed et al., (2017); Sharma et al., (2019); Stovel et al., (2020); van Houwelingen et al., (2016)* |
| | Cultural awareness/competence | *Drude et al., (2020); Field & Butler (2018); Galpin et al., (2021); Henry et al., (2017); Hilty et al., (2021); Maheu et al., (2018); Rutledge et al., (2017); Saeed et al., (2017)* |
| | Environmental considerations | *Davies et al., (2021); Drude et al., (2020); Field & Butler (2018); Galpin et al., (2021); Henry et al., (2017); Hilty et al., (2021); Maheu et al., (2018); Rutledge et al., (2017); Rutledge et al., (2021); Sharma et al., (2019)* |
| | Patient and family education/information | *Davies et al., (2021); Drude et al., (2020); Field & Butler (2018); Galpin et al., (2021)* |
| | Establishing virtual care goals | *Sharma et al., (2019)* |
| **Virtual care provision** | Patient/provider location verification | *Davies et al., (2021); Galpin et al., (2021)* |
| | Communication (verbal and non-verbal), including 'telepresence' | *Davies et al., (2021); Galpin et al., (2021); Groom et al., (2021); Henry et al., (2017); Hilty et al., (2021); Jadotte & Noel (2021); Maheu et al., (2018); Rutledge et al., (2017); Rutledge et al., (2021); Sharma et al., (2019); Stovel et al., (2020)* |
| | Adapting clinical skills/assessments | *Calleja et al., (2022); Davies et al., (2021); Drude et al., (2020); Galpin et al., (2021); Hilty et al., (2021); Maheu et al., (2018); Saeed et al., (2017); Sharma et al., (2019); Stovel et al., (2020); van Houwelingen et al., (2016)* |
| | Emergency procedures | *Davies et al., (2021); DeJong (2018); Saeed et al., (2017); Sharma et al., (2019); Stovel et al., (2020)* |
| | Documentation | *Galpin et al., (2021); Hilty et al., (2021); Maheu et al., (2018); Saeed et al., (2017); Stovel et al., (2020)* |
| | Intervention, follow up and discharge planning | *Saeed et al., (2017); Sharma et al., (2019); van Houwelingen et al., (2016)* |
| | Patient and/or service evaluation; continuous quality improvement | *Davies et al., (2021); Hilty et al., (2021); Rutledge et al., (2017); Rutledge et al., (2021); Stovel et al., (2020)* |

Table 7 demonstrates common findings in the recommendations for curricular content between the literature reviewed for both Parts A and B. For the most part, this content has been discussed in Part A and therefore will not be revisited in any great detail here. However, some publications in this section do provide further information for consideration in relation to the topics already discussed, which should be elaborated. These topics are: compliance, ethical practice, the virtual care environment, communication skills and clinical skills.

## Compliance

In some of the reviewed competencies and/or skills literature, compliance in virtual care provision is grouped generally under 'professional, ethical and legal aspects' (see Table 2) or more specifically under 'licensing, regulations and reimbursement (see also Table 2), 'credentialing and scope of practice', 'professional standards, regulations, codes', (see Table 6), including 'privacy and confidentiality' and 'informed consent' (see Tables 2, 6 and 7). In their core capability framework to support physiotherapists' virtual care delivery, Davies et al., (2021) provide a set of competencies within the 'Compliance' domain for virtual care, that include:

- "Identify any limitation to their individual scope of telehealth practice as dictated by relevant laws, registration requirements, organisational regulation, and/or the funding/reimbursement model relevant to the patient
- Comply with the regulatory requirements associated with practising as a [clinician] in the practitioners' geographical location, the geographical restrictions associated with their professional registration and the geographical location(s) of the patient
- Have professional indemnity insurance that covers the intended scope of telehealth practice
- Determine a patient's eligibility for receiving care via telehealth in accordance with federal and state regulations and/or the funding/reimbursement model relevant to the individual patient
- Obtain and document informed consent from the patient and/or helper that is appropriate for the intended telehealth interactions
- Align practice with relevant organisational telehealth procedures and protocols
- Record and manage clinical documentation about telehealth interactions in accordance with professional association standards, state/federal regulations and medico-legal requirements" (pp 295).

While the Davies et al., (2021) framework provides helpful clarification of the term 'compliance', the term is nonetheless, in its various conceptions, a strong theme throughout the literature for informing both a new virtual care curriculum and ongoing CPD.

## Ethical practice

Similarly, ethical practice is sometimes referred to generally in the competencies and/or skills literature, or in relation to privacy, confidentiality and consent, standards and guidelines (e.g., Saeed et al., 2017; Stovel et al., 2020). However, in their proposed domains/skillsets for clinicians' virtual care provision, Galpin et al., (2021) classify 'ethics' as a distinct domain, describing ethical practice as "[p]rioritizing patient interests to preserve and enhance the provider/patient relationship" (pp 822). These authors elaborate the required skills in their ethics domain as:

- "Explain the patient's right to decline care by telehealth in place of in-person care
- Discuss potential conflicts of interest and biases with the patient when recommending therapeutic and/or diagnostic modalities
- Apply ethical principles, including autonomy, justice, beneficence, and nonmaleficence, to telehealthcare" (Galpin et al., 2021, pp 822 – 823).

Rutledge et al., (2017) also warn against potential ethical 'pitfalls' in virtual care implementation, including forcing a 'one-size-fits-all' approach, along with the service or clinician's assumption that virtual care must be the most effective modality.

In their consideration of what constitutes ethical practice in telebehavioural health, Drude et al., (2020) highlight the use of social media by both the patient and the clinician as being potentially deleterious in the virtual care setting e.g., compromising professional boundaries by communicating through social media platforms, compromising privacy through sharing and collecting information via social media. These authors suggest that while students and clinicians may have the technological skills and knowledge to provide virtual care, they may not understand the ethical framework within which they should be used (Drude et al., 2019). Also in the mental health setting, Hilty et al., (2021) and Maheu et al., (2018) refer to the need for clinicians to understand and manage the ethics of media use, such as texting and social media, in order to maintain a professional identity in the virtual care setting. DeJong (2018) warns against 'friending' or 'following' patients online, stating that this blurs professional boundaries and raises concerns about voyeurism on the part of the clinician.

While DeJong (2018), Drude et al., (2020), Galpin et al., (2021), Hilty et al., (2021), Maheu et al., (2018) and Rutledge et al., (2017) consider ethical practice in terms of patient encounters, Jadotte and Noel (2021) view ethics in terms of interprofessional collaboration, utilising the Interprofessional Education Collaborative (IPEC) competencies to emphasise the importance of working with members of other professions to maintain a climate of mutual respect and shared values (Jadotte & Noel, 2021). Through interprofessional ethical practice, Jadotte and Noel (2021) claim that clinical and population health outcomes are improved by increasing the effectiveness of care coordination and promoting more holistic patient care.

In summary, ethical practice is an important inclusion for a balanced virtual care curriculum. Not only should this encompass privacy, confidentiality and consent, standards, guidelines and professional codes of conduct, but other carefully considered minutiae of virtual care.

## The virtual care environment

Table 7 again highlights environmental considerations as an important inclusion for virtual care education. Part A of this report discussed environment largely as it relates to communication, telepresence and telehealth etiquette (e.g., Groom et al., 2021; Rutledge et al., 2017). The guideline literature reviewed for Part B considers environment in terms of the care recipient's privacy and safety (e.g., ATA, 2009; ATA, 2017a March; Baumes et al., 2020) and the clinician's need to modify their environment (e.g., ACI, 2021; RACGP, 2020).

The abovementioned aspects are also found in the competencies and/or skills literature. However, notable inclusions in this part of the review are details about the clinician's need to educate the patient about setting up their space for a virtual care encounter (Davies et al., 2021; Drude et al., 2019). For example, the Davies et al., (2021) core competency framework lists points such as:

- "Instruct the patient how to set up the physical environment to optimise acoustics
- Instruct the patient to set up the camera angle so that he/she is in centre frame with the head and shoulders visible, allowing for eye contact
- Instruct the patient to set up the camera angle to visualise other patient assessment and treatment tasks appropriately" (pp 295).

Galpin et al., (2021), too, notes a specific skill for clinicians is to incorporate a patient's observed personal environment into a clinical assessment, leveraging the environment to improve the clinical evaluation, treatment plan, and therapeutic relationship. Partnering with patients in this way improves the virtual care experience for both the patient and clinician and is likely to lead to better health outcomes (Australian Commission on Safety and Quality in Healthcare [ACSQHC], 2017).

## Communication skills

Effective verbal and non-verbal communication skills is reiterated in the competencies and/or skills literature, and in some cases is presented in significant detail. For example, Galpin et al., (2021) have 'communication using telehealth' as a discrete domain, van Houwelingen et al., (2016) list communication skills as a competency against several of their entrustable professional activities (EPAs) and Groom et al., (2021) outline seven dimensions of 'telepresence' that each relate to communication.

Several of the competencies and/or skills publications emphasise the need for clinicians to understand the different capacities and nuances of digital vs. in-person communication, and the ways in which such communication might affect the therapeutic relationship (DeJong, 2018, Gustin et al., 2020). Emphasis is also placed on netiquette (DeJong, 2018; Gustin et al., 2020), and the importance of developing a 'webside manner' (Rutledge et al., 2021; Sharma et al., 2019). In one of their core competency domains, Davies et al., (2021) suggest that effective communication also includes providing written or digital information to support the consultation. As noted in previous sections, the importance of interprofessional communication is also highlighted (Galpin et al., 2021; Jadotte & Noel, 2021).

## Clinical skills

Again the need to educate clinicians on adapting clinical skills for the virtual environment is discussed in the competencies and/or skills literature, with some publications outlining specific details for obtaining and managing clinical information in a remote care setting. For example, Field and Butler (2018) view clinical care in terms of interprofessional collaboration. Galpin et al., (2021) outline five separate skills for competency assessment in their 'remote clinical evaluation and care' domain:

- Acquiring adequate information to support the goals of the virtual care encounter
- Demonstrate how to conduct a remote physical examination, and/or collaborate with the patient or assistant in obtaining data
- Incorporating the patient's environment into the clinical assessment
- Incorporating patient-generated data into the clinical assessment
- Using appropriate documentation.

Davies et al., (2021) detail clinical assessment skills in separate domains of telehealth delivery, assessment and diagnosis, and care planning and management. One salient point that they make is the need for clinicians to follow a structured process to identify risk of falls or other safety considerations prior to a virtual care episode. In their competency framework, Maheu et al., (2018) divide their clinical domain into three sub-domains: assessment and treatment, cultural competence and diversity, and documentation and administrative procedures.

To reiterate, while there are a number of common themes identified in this part of the literature review, only those with extra detail have been discussed here. What follows now, is Table 8 which provides an overview of all curriculum content identified as part of this review, and the various types of literature in which it is found.

## TABLE 8: OVERVIEW OF CURRICULUM CONTENT IDENTIFIED IN THE LITERATURE REVIEW

| CONTENT | REVIEWS | GUIDELINES ETC. | COMPETENCIES AND/OR SKILLS |
|---|---|---|---|
| **General introduction to virtual care (administrative and technical domains)** | | | |
| Basic theoretical and clinical aspects | ✓ | | |
| History, definitions and terminology | ✓ | | ✓ |
| National strategies, vision, goals of the virtual care model | ✓ | ✓ | |
| The actual process | | ✓ | |
| Roles and responsibilities | ✓ | ✓ | ✓ |
| Leadership, teamwork, chain of command | ✓ | ✓ | |
| Credentialing and scope of practice | | ✓ | |
| Standards, codes, regulations | | ✓ | ✓ |
| Policies and procedures | | ✓ | |
| Fostering positive attitudes | ✓ | ✓ | ✓ |
| Benefits and barriers | ✓ | | ✓ |
| Clinical applications; evidence-based practice | ✓ | ✓ | ✓ |
| Professional, ethical and legal aspects | ✓ | ✓ | ✓ |
| Licensing, regulations and reimbursement | ✓ | ✓ | ✓ |
| Service development/design, quality improvement | ✓ | ✓ | ✓ |
| **Preparing for a virtual care episode (clinical domain)** | | | |
| Protocol development | | | ✓ |
| Patient selection/appropriateness for virtual care | ✓ | ✓ | ✓ |
| Informed consent | ✓ | ✓ | ✓ |
| Interprofessional collaboration/training | ✓ | ✓ | ✓ |
| Cultural awareness/cultural competence | ✓ | ✓ | ✓ |
| Environmental considerations, including 'telepresence' | ✓ | ✓ | ✓ |
| Patient and family education/participation, including rights and responsibilities | | ✓ | ✓ |
| Establishing virtual care goals | ✓ | ✓ | ✓ |

| CONTENT | REVIEWS | GUIDELINES ETC. | COMPETENCIES AND/OR SKILLS |
|---|---|---|---|
| **Virtual care provision (clinical, administrative, technical domains)** | | | |
| Patient/provider identification | ✓ | ✓ | ✓ |
| Communication (verbal and non-verbal), including 'telepresence' | ✓ | ✓ | ✓ |
| Clinical skills | ✓ | ✓ | ✓ |
| Image capture | | ✓ | ✓ |
| Patient safety (e.g., emergency situations, contact arrangements) | ✓ | ✓ | ✓ |
| Documentation | ✓ | ✓ | ✓ |
| Infection control | | ✓ | |
| Intervention and discharge planning | ✓ | | ✓ |
| Ensuring patient satisfaction | ✓ | | ✓ |

In summary, there are common themes across the review papers (Part A), guideline literature and competencies and/or skills literature (Part B). As outlined in Table 8, common to all three types of literature are:

## General introduction to virtual care

- Roles and responsibilities
- Fostering positive attitudes
- Clinical applications and evidence-based practice
- Professional, ethical and legal aspects
- Licensing, regulations and reimbursement
- Service development/design, quality improvement.

## Preparing for a virtual care episode

- Patient selection/appropriateness for virtual care
- Informed consent
- Privacy and confidentiality
- Interprofessional collaboration/training
- Cultural awareness/cultural competence
- Environmental considerations, including 'telepresence'
- Establishing virtual care goals.

## Virtual care provision

- Patient/provider identification
- Communication (verbal and non-verbal), including 'telepresence'
- Clinical skills
- Patient safety (e.g., emergency situations, contact arrangements)
- Documentation.

While these are common to all three categories of reviewed literature (i.e., reviews, guideline literature and competencies/skills), this does not suggest that those content themes identified in only one or two categories of the literature should be excluded. This is because some publications refer to broad categories e.g., professional, ethical and legal practice, while others are more specific e.g., consent, privacy, standards, policies and procedures, credentialing and scope of practice. Some publications provide scant detail, while others provide specifics and breakdowns of broader domains. Moreover, as previously mentioned, a lot of the key content is overlapping. Communication intersects with environmental considerations and clinical skills, communication and clinical skills comprise part of ethical practice, and so on. Consequently all themes identified in this review and in Table 8 are worthy considerations for virtual care education. Broad domain frameworks, with subsets of required skills, competencies or capabilities, may assist.

## FRAMEWORKS FOR VIRTUAL CARE EDUCATION

Once curriculum content has been agreed upon, one pedagogical approach to implementation may be use of a specific framework, to guide virtual care skills and ensure uniformity across the curriculum (Hamilton et al., 2021). Table 9 below provides an overview of the various frameworks found in the literature, along with the relevant citations. More detail of these frameworks, domains and skill sets can also be found at Appendix 4.

### The ACGME framework

The Accreditation Council for Graduate Medical Education (ACGME) defines and outlines six core competencies as the cornerstones for practicing resident physicians (AGME, 2020). These competencies are:

1. Medical knowledge: must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioural sciences, as well as the application of this knowledge to patient care
2. Interpersonal and communication skills: must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals
3. Patient care and procedural skills: must demonstrate ability to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health
4. Practice-based learning and improvement: must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning
5. Systems-based practice: must demonstrate an awareness of and responsiveness to the larger context and system of healthcare, as well as the ability to call effectively on other resources in the system to provide optimal healthcare
6. Professionalism: must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles.

Each of these core competencies is broken down into sub-competencies, milestones and benchmarks (DeJong, 2018). In their scoping review of curricular needs for training telehealth physicians, Stovel et al., (2020) list each of the six core competencies and provide examples against each for how these roles might be enacted in virtual care delivery. So too, do DeJong (2018) and Hilty et al., (2021).

The use of the ACGME framework does not appear to be limited to physicians in the literature however. Hilty et al., (2021) adapt the ACGME framework for their mobile technology cultural competencies for a range of clinicians, suggesting elements against each of the ACGME competencies ranging from novice to experts. The ACGME framework is also reportedly used to inform curricula for telemental/telebehavioural health for children and adolescents (ATA, 2017a, March; Myers et al., 2017). While Saeed et al., (2017) consider the ACGME competencies as a useful framework for

## TABLE 9: FRAMEWORKS IDENTIFIED IN THE LITERATURE

| FRAMEWORK | CITATIONS |
|---|---|
| ACGME Framework | Hilty et al., (2021); saeed et al., (2017); Stovel et al., (2020) |
| CanMEDs | Hilty et al., (2021); Stovel et al., (2020) |
| AAMC domains | Galpin et al., (2021); Jadotte & Noel (2021) |
| IPEC domains | Drude et al., (2020); Jadotte & Noel (2021) |
| Project ECHO | Calleja et al., (2022) |
| Other domains, frameworks or skillsets | Davies et al., (2021); DeJong (2018); Drude et al., (2020); Field & Butler (2018); Maheu et al., (2018); Rutledge et al., (2017); Rutledge et al., (2021); Sharma et al., (2019); van Houwelingen et al., (2016) |
| Conceptual map | Groom et al., (2021) |
| Conceptual framework | Henry et al., (2017) |

informing virtual health curricula, they also suggest that the competencies are very general in their current form and require extensive adaptation.

## The CanMEDS framework

Some of the reviewed literature also recommends utilising the CanMEDS physician roles as a pedagogical approach to virtual care education. This framework identifies and describes the necessary abilities required for physicians to competently meet the healthcare needs of their care recipients (Frank et al., 2015). These abilities are grouped thematically under seven roles:

1. Medical expert
2. Communicator
3. Collaborator
4. Leader (formerly manager)
5. Scholar
6. Professional
7. Health advocate (Frank et al., 2015).

The suggestion is that a competent professional is able to integrate the competencies of all seven CanMEDS roles.

Stovel et al., (2020) use these CanMEDS roles as an organising framework to examine a number of virtual care curricula for physicians. Of the 29 curricula evaluated in their scoping review, they found that 'hands-on' curricula utilised the CanMEDS framework more often. Like their appraisal of the ACGME competencies, Stovel et al., (2020) provide examples against each role for how it might be represented in virtual care delivery. Hilty et al., (2021) also advises that the evidence-based CanMEDS framework may assist clinicians and trainees in practice, with careful consideration of how it might be adapted for virtual care.

## The AAMC domains

Before the pandemic, the Association of American Medical Colleges (AAMC) convened an expert panel to identify, articulate and gain consensus on a set of telehealth skills for physicians (Galpin et al., 2021). Skills are grouped into nine domains:

1. Using Telehealth: Patient and Practice Readiness and Impact
2. Remote Clinical Evaluation and Care
3. Communication Using Telehealth
4. Professionalism
5. Information Technology
6. Privacy and Legal
7. Ethics
8. Patient Safety
9. Access and Equity.

While the AAMC competency framework was originally developed to guide medical education, there are common themes that may be applied to health professionals from multiple disciplines (Jadotte & Noel, 2021). Each domain and skill is designed to assist healthcare systems and facilities develop their policies, procedures, workforce and training as they rapidly transition to the virtual care delivery model.

## The IPEC domains

Jadotte and Noel (2021) draw parallels between the AAMC competencies and the Interprofessional Education Collaborative (IPEC). They consider the four IPEC core competencies of:

1. "Values/ethics for interprofessional practice: Work with individuals of other professions to maintain a climate of mutual respect and shared values
2. Interprofessional communication: Communicate with patients, families, communities, and professionals in health and other fields in a responsive and responsible manner that supports a team approach to the promotion and maintenance of health and the prevention and treatment of disease
3. Teams and teamwork: Apply relationship-building values and the principles of team dynamics to perform effectively in different team roles to plan, deliver, and evaluate patient/population-centred care and population health programs and policies that are safe, timely, efficient, effective, and equitable
4. Roles and responsibilities: Use the knowledge of one's own role and those of other professions to appropriately assess and address the healthcare needs of patients and to promote and advance the health of populations" (pp 100054).
5. The IPEC competencies have been widely adopted in health professional education, with both Drude et al., (2020) and Jadotte and Noel (2021) suggesting that they may be helpful in implementing virtual care best practices.

## Project ECHO

In their integrative review of virtual care education for rural and remote clinicians, Calleja et al., (2022) consider the Extension for Community Healthcare Outcomes (ECHO) model as the one of the most promising for virtual care, in view of its replicability and relatively low-resource intensive approach. Their review of literature pre-dating the scope for this one found that Project ECHO is a model used throughout the world, particularly in the USA, and accounted for over half of their retrieved literature (Calleja et al., 2022). In their account, Project ECHO is a knowledge-sharing network model comprising a virtual learning space where health professionals from multiple disciplines come together to discuss clinical topics such as pain, chronic disease management or mental health (Calleja et al., 2022). Sessions usually consist of a short didactic, followed by de-identified patient case presentations inviting discussion and peer-led review (Calleja et al., 2022).

## Other domains and frameworks

Appraisal of the guideline literature shows that many of the ATA guidelines, along with guideline literature informed by the ATA (e.g., the ACCRM [2020] framework), are set out under three broad domains: clinical, administrative and technical. As these three domains have already been discussed, they will not be revisited here. However, like the panel convened by Galpin et al., (2021) to reach consensus on the AAMC telehealth competencies, the ATA and other publications report on Delphi studies and/or expert panels used to reach agreement on other domains and frameworks, each with skillsets, capabilities or 'entrustable professional activities' (EPAs), defined as observable practice elements (Stovel et al., 2020; van Houwelingen et al., 2016). Appendix 4 provides detail of these frameworks, however a brief snapshot of these is provided in Table 10.

In the two remaining frameworks presented in Table 9, Henry et al., (2017) presents a four-stage conceptual framework of clinician behaviour during telehealth encounters, and Groom et al., (2021) expands the concept of telepresence into seven dimensions. In some ways, these could be considered as subsets of broader virtual care domains, such as communication or environment.

Many of the domains/frameworks and their subsets presented in the literature are not novel in healthcare. They are fundamental to care as a whole and therefore also essential for virtual care (van Houwelingen et al., 2016).

### TABLE 10: DOMAINS/FRAMEWORKS AND SUBSETS

| CITATION | DOMAINS/FRAMEWORKS | SUBSETS |
|---|---|---|
| ACCRM (2020) | 4 domains | 12 sub-domains; 31 guideline items |
| ATA (2014a, May; 2014b, May; 2014, November; 2016a April; 2016b, April; 2017b, March; 2017, April) | 3 domains | - |
| Davies et al., (2021) | 7 domains | 60 capabilities |
| DeJong (2018) | 3 competencies | Suggested but not specified |
| Drude et al., (2020) | 7 domains | 51 behavioural objectives |
| Field & Butler (2018) | 8 dimensions | - |
| Maheu et al., (2018) | 7 domains | 5 sub-domains; 51 behavioural objectives |
| Rutledge et al., (2017) | 8 telehealth topics | - |
| Rutledge et al., (2021) | 4 domains | 15 competencies |
| Sharma et al., (2019) | 3 domains | 11 competencies |
| van Houwelingen et al., (2016) | 14 EPAs | 52 competencies |

## RESOURCES FOR VIRTUAL CARE EDUCATION

The final aim of this literature review is to catalogue a range of resources that may assist with or inform a virtual care education program. The emphasis here is on those resources that support virtual care education and training, not necessarily the implementation of an actual virtual care program. In fact, some publications suggest training as the actual resource (e.g., Field & Butler, 2018). That said, some of the resources suggested in the literature for program implementation may also support virtual care education for students and clinicians. Literature located for both Parts A and B offer education resource suggestions, including checklists, mentors and/or champions, along with care providers (i.e., clinicians) and care recipients (i.e., patients, their families, informal caregivers) themselves.

### Checklists

Complementary to frameworks, some of the literature offers checklists for aiding virtual care service implementation and/or ongoing services. The rationale for checklists includes assisting students and/or clinicians to learn critical virtual care knowledge in a relatively short period of time (Gustin et al., 2020), to translate clinical knowledge to the virtual care setting (Gustin et al., 2020), to promote patient comfort (Baumes et al., 2021), and to ensure the delivery of quality, safe services (ACCRM, 2020; AHPA, 2020). A list of checklists and overview of their content is found in Table 11.

The checklists in Table 11 may prove to be useful resources for educators and/or clinicians in the virtual care education setting.

## TABLE 11: CHECKLISTS TO AID VIRTUAL CARE ENCOUNTERS

| CITATION/CHECKLIST | CONTENT |
|---|---|
| *ACCRM (2020)* Guiding Framework | Risk-based framework with domains, sub-domains and 31 guideline/checklist items for assessing the safety and quality of virtual care services for people in rural and remote communities |
| *ACI (2021)* Implementation Checklist | Provides a list of key inclusions for virtual care service set-up in the initial phase and/or for identifying improvements in ongoing services. Three broad areas for consideration, with 30 checklist items |
| *AHPA (2020)* Privacy Checklist | Refers to the Australian Government Department of Health's 'Privacy Checklist for Telehealth Services' (2020). Checklist contains six areas for consideration |
| *Barberio & Jenkins (2021)* Patient-Orientation Checklist | Suggests six items to promote patient comfort and assist patients to organise their questions and expectations |
| *Baumes et al., (2020)* Ethical Services Checklist | Outlines six categories with 24 checklist items for assessing readiness to deliver ethical services in applied behaviour analysis practice. Also refers to the Council of Autism Service Providers (2020) checklist for assessing the environmental and safety aspects of virtual care delivery settings |
| Gustin et al., (2020) Telehealth Etiquette Checklist | Outlines six categories with 34 checklist items for observing telehealth etiquette |

## Mentors and/or clinical champions

Mentored clinical practice is central to demonstrating achievement of educational standards, as it facilitates critical reflection and leads to deeper learning and enhanced knowledge translation (Heneghan et al., 2021). 'Mentoring' as a pedagogical approach and 'mentors' or 'clinical champions' as a key education resource is suggested in the literature, although how this approach could be enacted is mostly unclear (e.g., Echelard et al., 2020; Hamilton et al., 2021). The ACI (2021) however, provide some detail about the role of clinical champions, particularly in safe, quality care provision.

The ACI (2021) states that dedicated, appropriately skilled, well informed and knowledgeable clinical champions should be in place at the local level (i.e., each site where virtual care is provided) to support individual care models. According to the ATA (2017b, March), a clinical champion is familiar with the relevant disease processes and treatment protocols, technology platforms, criteria for transfer to higher levels of care, referral arrangements, and telehealth in general.

Clinical champions also play an important role in leading the change management process (ACI, 2021; Field & Butler, 2018). Through promotion of virtual care interventions, modelling appropriate behaviour and attitudes, and motiving colleagues to adopt new practices, clinical champions can facilitate clinician acceptance of virtual care and also support patients and their families to embrace the modality (Field & Butler, 2018).

Further, developing virtual care champions may lead to sustained care models that support interprofessional collaboration and ultimately enhance patient care (ATA, 2017b, March; Calleja et al., 2022; Hamilton et al., 2021). The NSW Ministry of Health (2016) supports a telehealth coordination role, incorporating both technical and clinical knowledge, acting as a single point of contact for all queries and vital to the strategic direction of virtual care.

## Shared leadership

Some of the reviewed literature correlates mentors and/or clinical champions with shared leadership, claiming this as a critical success factor for virtual care implementation and/or education. A multidisciplinary approach is more likely to lead to positive attitudes and enhance workplace readiness to adopt virtual care (ATA, 2017b; Field & Butler, 2018). Key stakeholders include:

### Clinicians

- Learning activities and methodologies should be driven by the specific needs of the clinician, and therefore these needs must be clearly understood (Edirippulige & Armfield, 2017)
- Need to be involved in the design, selection and implementation of new technology and work routines (Field & Butler, 2018)
- Clinicians with previous experience in virtual care (ACI, 2021).

### Content or context experts

- Specialist clinicians/clinical leads: familiar with relevant disease processes, interventions, escalation processes etc. (ATA, 2017b, March), along with how these may present or be enacted in the virtual care setting (Echelard et al., 2020)
- Curriculum designers: to assist with integrating virtual care into existing curricula (Edirippulige & Armfield, 2017)
- Experienced managers to champion innovation, change, clinical redesign, oversee planning/ projects and to manage virtual care networks (ACI, 2021)
- IT support managers and/or chief information officers (ACI, 2021)
- Finance/performance team members (ACI, 2021)
- Media training: to develop clinicians' digital communication skills and 'webside' manner (Sharma et al., 2019)
- Cultural liaison officers or advisors: to better understand if any specific adjustments are needed to ensure that virtual care is culturally appropriate and person-centred (ACI, 2021)
- Bilingual care providers: from the same cultural background as the care recipients (ATA, 2017a, March)
- Interpreters: to address care recipients' written and verbal communication needs (ATA, 2017a, March)
- Schools or other community organisations: may be able to provide information about the local community, values, available resources; and assist with virtual care sessions and ongoing engagement with the patient and family (ATA, 2017a, March)
- Administrative and technical support: e.g., booking and scheduling systems, electronic records management systems, support to set up equipment and provide technical advice to clinicians (NSW Ministry of Health, 2016).

### Virtual care recipients and their families/ informal caregivers

- Care and education models should be patient-centred rather than expert driven (Field & Butler, 2018)
- Need to include people with lived and living experience when developing cultural components (ATA, 2017a, March; Hilty et al., 2021).

## Evaluation of virtual care education

The experiences of patients, their families/informal caregivers and clinicians play an important role in virtual care provision and education (ACI, 2021). However the lack of agreed measures of what comprises quality virtual care make it difficult to evaluate the effectiveness of the approach (Calleja et al., 2022). As mentioned in Part A, this is likely due to the relatively recent espousal of virtual care and the fact that at this stage, most publications describe rather than evaluate a new approach (Budakoğlu et al., 2021; Calleja et al., 2022; Rutledge et al., 2017). Nonetheless, as the uptake of this modality increases, evaluation will prove to be a valuable resource for development and continuous improvement of virtual care programs.

For clinicians, possible outcome measures include:

- Satisfaction with education programs
- Level of self-reported confidence
- Increased knowledge/skills
- Increased self-efficacy and engagement
- Increased acceptability of virtual care
- Measurable change in practice (Calleja et al., 2022).

For the pedagogy of virtual care education, evaluation may comprise:

- Presenter approachability/connection
- Presenter comfort with equipment/technology
- Presenter expertise
- Presenter ability to adapt to virtual care education
- Teaching style (Calleja et al., 2022).

Most importantly, patients and families should be considered experts in their own reality, including the potential and challenges of virtual care (Field & Butler, 2018). Not only could patient satisfaction with the virtual care experience inform education programs, but also health outcomes (Calleja et al., 2022; Field & Butler, 2018; Rutledge et al., 2017).

In summary, the literature located for this review suggests resources such as checklists, mentors and/or clinical champions, and a shared leadership model which includes the care recipient(s) as having potential to inform virtual care education. However more outcomes-focused research and evaluation is needed to support program development and continuous improvement.

# CONCLUSION AND RECOMMENDATIONS

In conclusion, the exponential growth of virtual care provision has occurred without critical consideration of clinician education and training. Such education is needed and valued however, not unexpectedly, much of the recent literature describes single educational interventions and lacks a systematic approach. Consequently, individuals and healthcare organisations may lack the experience and skills that would be considered fundamental prerequisites to implementing virtual care in less urgent times. A comprehensive, multidisciplinary overview is needed.

A total of 63 pieces of scholarly and grey literature informed this review of the curriculum interventions and pedagogical approaches for supporting the integration of virtual care into existing and new programs. While in most cases the literature is vague and incomplete, conclusions may still be drawn given the recurring and overlapping themes.

Values, behaviours and skills required for the healthcare workforce to deliver virtual care (in three phases) include (but are not limited to):

- General introduction to virtual care: roles and responsibilities, fostering positive attitudes, clinical applications and evidence-based practice, professional, ethical and legal aspects, licensing, regulations and reimbursement, service development/design and quality improvement processes;
- Preparing for a virtual care episode: patient selection/appropriateness for virtual care, informed consent, privacy and confidentiality, interprofessional collaboration/training, cultural awareness/cultural competence, environmental considerations, including 'telepresence', and establishing virtual care goals; and
- Virtual care provision: communication (verbal and non-verbal), including 'telepresence', clinical skills, patient safety (e.g., emergency situations, contact arrangements) and documentation.

These curriculum inclusions are also supported in the guideline literature. Most of the guidelines located for this review are either authored or informed by the ATA. Each publication consistently refers to the content above, locating it within the domains of clinical, administrative or technical.

The reviewed literature most commonly cites interaction and participation as the preferred method of instruction for virtual care, with activities such as simulation, actual patient encounters, site visits to telehealth clinics, observation of virtual care episodes, interactive workshops, videoconferencing, group/discussion/practical activities frequently reported. Standalone modules to cover off the 'basics' of virtual care are also recommended.

Establishing frameworks for systematic virtual care education is posited as a major challenge. Many publications emphasise a domain-specific approach as the most effective means of translating virtual care knowledge and skills to practice. A number of new domain frameworks have been tailor-made for specific disciplines, while well-established frameworks such as the ACGME, CanMEDS, AAMC, IPEC and ECHO have been adapted for virtual care education.

Integration of virtual care involves a significant change in traditional healthcare practice, and therefore requires a systematic approach. The approach may be facilitated by virtual care checklists, clinical champions, and a model that involves stakeholders such as frontline clinicians, content experts (e.g., clinical leads, curriculum designers, managers, cultural liaison officers, IT personnel etc.) and the care recipients themselves. Moreover, any endeavour to integrate virtual care should be carefully evaluated as part of a continuous quality improvement process.

Five directions are now suggested in light of this literature review. Firstly, and perhaps most importantly, very few papers addressed the focus of this review as a primary objective. As a consequence, it is not possible to finalise the curriculum content here. Therefore, the first direction is to reconvene with the HETI project team and use the findings to agree on and finalise curriculum content for virtual care education.

The second is to decide on an approach that will accommodate the range of NSW Health clinicians, settings and cohorts most likely to adopt virtual care as a modality. If a domain-specific approach is to be adopted, then consensus should be obtained regarding the domains, along with the subsets of core competencies or EPAs. The Delphi method may be an appropriate method for achieving consensus on draft domains and their subsets.

Third, a set of resources for enacting the framework should be established. Following on, the fourth direction could be to pilot the education framework, culminating in an examination of the perceptions of both virtual care providers and recipients on the extent to which their education has addressed the pre-determined competencies and supported interprofessional collaboration.

Finally, work with specific and diverse patient cohorts, including vulnerable populations e.g., Indigenous Australians, CALD communities, to explore ways in which the education framework meets their needs and is socially and culturally appropriate. It is anticipated that these recommendations may assist in identifying gaps in virtual education, facilitate continuous improvement, and better prepare healthcare professionals to meet the needs of patients and their families in the virtual care setting.

# LIMITATIONS OF THE LITERATURE REVIEW

A comprehensive literature review was undertaken, however due to the plethora of virtual care publications in recent years and our subsequent year limiters (i.e., 2016 – 2021), along with the fact that very few papers addressed the focus of this review as a primary objective, relevant material may have been excluded. The review is also open to biases inherent in relying only on existing reviews (Part A), along with the numerous sources of heterogeneity and absence of an appraisal tool (Parts A & B). We consider these biases were addressed through including a large number of publications (n = 63), ensuring as a wide coverage as practicable. Use of a systematic screening and reporting process, along with regular consultation with other project team members, may also have mitigated these limitations.

# REFERENCES


Abbott, L. M., Miller, R., Janda, M., Bennett, H., Taylor, M. L., Arnold, C., ... & Caffery, L. J. (2020). A review of literature supporting the development of practice guidelines for teledermatology in Australia. *Australasian Journal of Dermatology*, 61(2), e174-e183.

Agency for Clinical Innovation (ACI) (2021, March). Virtual Care in Practice. Sydney, NSW ACI, Telehealth Network.

Allied Health Professions Australia (AHPA) (2020, May Telehealth Guide for Allied Health Professionals. https://ahpa.com.au/resources/telehealth-guide-allied-health-professionals/ahpa-telehealth-guide_allied-health-professionals-may-2020/

Accreditation Council on Graduate Medical Education. (2020). Common Program Requirements. https://www.acgme.org/

American Telemedicine Association (ATA) (2022, January). https://www.americantelemed.org/

American Telemedicine Association (ATA) (2009, October). Evidence-Based Practice for Telemental Health. https://info.americantelemed.org/practice-guidelines

American Telemedicine Association (ATA) (2014a, May). Core Operational Guidelines for Telehealth Services Involving Provider-Patient Interactions. https://info.americantelemed.org/practice-guidelines

American Telemedicine Association (ATA) (2014b, May). Clinical Guidelines for Tele-ICU operations. https://info.americantelemed.org/practice-guidelines

American Telemedicine Association (ATA) (2014, August). Clinical Guidelines for Telepathology. https://info.americantelemed.org/practice-guidelines

American Telemedicine Association (ATA) (2014, November). Practice Guidelines for Live, On-Demand Primary and Urgent Care. https://info.americantelemed.org/practice-guidelines

American Telemedicine Association (ATA) (2016a, April). Practice Guidelines for Dermatology. https://info.americantelemed.org/practice-guidelines

American Telemedicine Association (ATA) (2016b, April). Practice Guidelines for Teleburn Care. https://info.americantelemed.org/practice-guidelines

American Telemedicine Association (ATA) (2017a, March). Practice Guidelines for Telemental Health with Children and Adolescents.

https://info.americantelemed.org/practice-guidelines

American Telemedicine Association (ATA) (2017b, March). Practice Guidelines for Telestroke. https://info.americantelemed.org/practice-guidelines

American Telemedicine Association (ATA) (2017, April). Principles for Delivering Telerehabilitation Services. https://info.americantelemed.org/practice-guidelines

Andrews, E., Berghofer, K., Long, J., Prescott, A., & Caboral-Stevens, M. (2020). Satisfaction with the use of telehealth during COVID-19: An integrative review. *International Journal of Nursing Studies Advances*, 2, 100008.

Arizton (2020, July). Telehealth Market - Global Outlook and Forecast 2020-2025 https://www.arizton.com/market-reports/telehealth-market-size-analysis

Arksey, H., & O'Malley, L. (2005). Scoping studies: towards a methodological framework. *International journal of social research methodology*, 8(1), 19-32.

Australian College of Rural and Remote Medicine (ACRRM) (2020). ACRRM Framework and Guidelines for Telehealth Services. https://www.acrrm.org.au/resources/digital-health/telehealth

Australian Commission on Safety and Quality in Healthcare. (2017). Standard 2: Partnering with Consumers National Safety and Quality Health Service Standards. Second Edition. Sydney: ACSQHC.

Australian Nursing Federation (ANF) (2013, April). Telehealth Standards: Registered Nurses.

Australian Health Practitioner Registration Agency (AHPRA) (2020, July). Telehealth guidance for practitioners. https://www.ahpra.gov.au/News/COVID-19/Workforce-resources/Telehealth-guidance-for-practitioners.aspx

Barberio, J. A., & Jenkins, M. L. (2021). Transitioning to Telehealth: Today's Guidelines for Future Sustainability. *The Journal for Nurse Practitioners.* 17, 795e798.

Baumes, A., Čolić, M., & Araiba, S. (2020). Comparison of telehealth-related ethics and guidelines and a checklist for ethical decision making in the midst of the COVID-19 pandemic. *Behavior Analysis in Practice*, 13, 736-747.

Budakoğlu, I. İ., Sayılır, M. Ü., Kıyak, Y. S., Coşkun, Ö., & Kula, S. (2021). Telemedicine curriculum in undergraduate medical education: a systematic search and review. *Health and Technology*, 11, 773–781.

Calleja, P., Wilkes, S., Spencer, M., & Woodbridge, S. (2022). Telehealth use in rural and remote health practitioner education: an integrative review. Rural and remote health, 22(1), 6467-6467.

Chike-Harris, K. E., Durham, C., Logan, A., Smith, G., & DuBose-Morris, R. (2021). Integration of telehealth education into the healthcare provider curriculum: a review. *Telemedicine and e-Health*, 27(2), 137-149.

Davies, L., Hinman, R. S., Russell, T., Lawford, B., Bennell, K., Billings, M., ... & Roots, R. (2021). An international core capability framework for physiotherapists to deliver quality care via videoconferencing: a Delphi study. *Journal of Physiotherapy*, 67(4), 291-297.

DeJong, S. M. (2018). Professionalism and technology: competencies across the tele-behavioral health and E-behavioral health spectrum. *Academic Psychiatry*, 42(6), 800-807.

Drude, K. P., Hertlien, K. M., Maheu, M. M., Hilty, D. M., & Wall, K. (2020). Telebehavioral health competencies in interprofessional education and training: A pathway to interprofessional practice. *Journal of Technology in Behavioral Science,* 5(1), 30-39.

Echelard, J. F., Méthot, F., Nguyen, H. A., & Pomey, M. P. (2020). Medical student training in eHealth: scoping review. *JMIR medical education*, 6(2), e20027.

Edirippulige, S., & Armfield, N. R. (2017). Education and training to support the use of clinical telehealth: A review of the literature. *Journal of telemedicine and telecare*, 23(2), 273-282.

Field, A., & Butler, R. (2018, March). Virtual Health: Rapid review of evidence and implications. Hamilton New Zealand, Waikato District Health Board.

Frank, J.R., Snell, L. & Sherbino, J. (Eds). (2015). CanMEDS 2015 Physician Competency Framework. Ottawa: Royal College of Physicians and Surgeons of Canada.

Foster, M., Lioce, L., & Howell Adams, M. (2021). Telehealth in Nursing Education: A Systematic Review. *Journal of Nursing Education*, 60(11), 633-635.

Galpin, K., Sikka, N., King, S. L., Horvath, K. A., Shipman, S. A., & AAMC Telehealth Advisory Committee. (2021). Expert consensus: telehealth skills for healthcare professionals. *Telemedicine and e-Health*, 27(7), 820-824.

Gartz, J., & O'Rourke, J. (2021). Telehealth educational interventions in nurse practitioner education: an integrative literature review. *Journal of the American Association of Nurse Practitioners*, 33(11), 872-878.

Groom, L. L., Brody, A. A., & Squires, A. P. (2021). Defining Telepresence as Experienced in Telehealth Encounters: A Dimensional Analysis. *Journal of Nursing Scholarship*, 53, (6), 709-717.

Gustin, T. S., Kott, K., & Rutledge, C. (2020). Telehealth etiquette training: a guideline for preparing interprofessional teams for successful encounters. *Nurse educator*, 45(2), 88-92.

Hamilton, H., Iradukunda, F., & Aselton, P. (2021). The Integration of Telehealth in Nursing Education: A New Frontier. *Journal of Informatics Nursing*, 6(1), 18-25.

Heneghan, N. R., Nazareth, M., Johnson, W. J., Tyros, I., Sadi, J., Gillis, H., & Rushton, A. B. (2021). Experiences of telehealth e-mentoring within postgraduate musculoskeletal physical therapy education in the UK and Canada: a protocol for parallel mixed-methods studies and cross-cultural comparison. *BMJ open*, 11(2), e042602.

Henry, B. W., Block, D. E., Ciesla, J. R., McGowan, B. A., & Vozenilek, J. A. (2017). Clinician behaviors in telehealthcare delivery: a systematic review. *Advances in Health Sciences Education*, 22(4), 869-888.

Hilty, D. M., Crawford, A., Teshima, J., Nasatir-Hilty, S. E., Luo, J., Chisler, L. S., ... & Lu, F. G. (2021). Mobile health and cultural competencies as a foundation for telehealthcare: Scoping review. *Journal of Technology in Behavioral Science*, 6(2), 197-230.

Hui, K. Y., Haines, C., Bammann, S., Hallandal, M., Langone, N., Williams, C., & McEvoy, M. (2021). To what extent is telehealth reported to be incorporated into undergraduate and postgraduate allied health curricula: A scoping review. *Plos one,* 16(8), e0256425.

Intan Sabrina, M., & Defi, I. R. (2021). Telemedicine guidelines in southeast Asia—a scoping review. *Frontiers in Neurology*, 11:581649

Jadotte, Y. T., & Noel, K. (2021). Definitions and core competencies for interprofessional education in telehealth practice. *Clinics in Integrated Care,* 6, 100054.

Maheu, M. M., Drude, K. P., Hertlein, K. M., Lipschutz, R., Wall, K., & Hilty, D. M. (2017). An interprofessional framework for telebehavioral health competencies. *Journal of Technology in Behavioral Science*, 2(3), 190-210.

Myers, K., Nelson, E. L., Rabinowitz, T., Hilty, D., Baker, D., Barnwell, S. S., ... & Bernard, J. (2017). American telemedicine association practice guidelines for telemental health with children and adolescents. *Telemedicine and e-Health*, 23(10), 779-804.

NSW Ministry of Health (2016, March). NSW Health telehealth framework and Implementation strategy 2016–2021.

Occupational Therapy Australia (2020). Telehealth Guidelines 2020. https://otaus.com.au/publicassets/553c6eae-ad6c-ea11-9404 005056be13b5/OTA%20Telehealth%20Guidelines%202020.pdf

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., ... & Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ*, 372: n71. doi: 10.1136/bmj.n71

Powers, S. A., Perry, K. N., Ashdown, A. J., Pacailler, M., & Scerbo, M. W. (2021, September). Human Factors Considerations for Patients: A Cursory Review of Telehealth Guidelines. In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting* (Vol. 65, No. 1, pp. 943-947). Sage CA: Los Angeles, CA: SAGE Publications.

Qureshi, Ullah, S., Aldajani, A. A., Basson, P., AlHabter, A. M., Ali, T., Almubark, B. M., AlAtwi, M., AlIbrahim, F., Alsuhaibani, A., & Al Jadid, M. S. (2021). Telerehabilitation Guidelines in Saudi Arabia. *Telemedicine Journal and e-Health*, 27(10), 187–1098. https://doi.org/10.1089/tmj.2020.0355

Royal Australian College of General Practitioners (RACGP) (2020, March). Guide to providing telephone and video consultations in general practice. East Melbourne, Vic, RACGP.

Rutledge, C. M., Kott, K., Schweickert, P. A., Poston, R., Fowler, C., & Haney, T. S. (2017). Telehealth and eHealth in nurse practitioner training: current perspectives. *Advances in medical education and practice*, 8, 399 - 409.

Rutledge, C. M., O'Rourke, J., Mason, A. M., Chike-Harris, K., Behnke, L., Melhado, L., ... & Gustin, T. (2021). Telehealth competencies for nursing education and practice: The four P's of telehealth. *Nurse Educator*, 46(5), 300 - 305.

Saeed, S. A., Johnson, T. L., Bagga, M., & Glass, O. (2017). Training residents in the use of telepsychiatry: review of the literature and a proposed elective. *Psychiatric Quarterly,* 88(2), 271-283.

Schlesinger, N., Hardy, I., Connolly, M., Chia, K., & Jere, A. (2021). The rise of virtual health: The future of hybrid healthcare in Australia https://www.pwc.com.au/health/virtual-health/future-of-hybrid-healthcare-in-australia.html

Siwicki, B. (2020, March 19). Telemedicine During COVID-19: Benefits, limitations, burdens, Adaptation. Healthcare IT News https://www.healthcareitnews.com/news/telemedicine-during-covid-19-benefits-limitations-burdens-adaptation

Sharma, R., Nachum, S., Davidson, K. W., & Nochomovitz, M. (2019). It's not just FaceTime: core competencies for the medical virtualist. *International Journal of Emergency Medicine*, 12(8), 1-5.

Sheperis, D. S., & Smith, A. (2021). Telehealth Best Practice: A Call for Standards of Care. *Journal of Technology in Counselor Education and Supervision*, 1(1), 4.

Shore, J. H., Yellowlees, P., Caudill, R., Johnston, B., Turvey, C., Mishkind, M., ... & Hilty, D. (2018). Best practices in videoconferencing-based telemental health April 2018. *Telemedicine and e-Health*, 24(11), 827-832.

Stovel, R. G., Gabarin, N., Cavalcanti, R. B., & Abrams, H. (2020). Curricular needs for training telemedicine physicians: a scoping review. *Medical teacher*, 42(11), 1234-1242.

Telehealth Quality Group EEIG. International Code of Practice for Telehealth Services 2018/19 v2. Telehealth Quality Group (Europe)/Global Community Resourcing (Australia)

Tomlinson, S. R., Gore, N., & McGill, P. (2018). Training individuals to implement applied behavior analytic procedures via telehealth: A systematic review of the literature. *Journal of Behavioral Education*, 27(2), 172-222.

Totten, A.M., Womack, D.M., & Eden K.B. (2016, June). Telehealth: mapping the evidence for patient outcomes from systematic reviews (Technical brief no. 26.). Rockville, MD: Agency for Healthcare Research and Quality

van Houwelingen, C. T., Moerman, A. H., Ettema, R. G., Kort, H. S., & Ten Cate, O. (2016). Competencies required for nursing telehealth activities: A Delphi-study. *Nurse education today*, 39, 50-62.

Waseh, S., & Dicker, A. P. (2019). Telemedicine training in undergraduate medical education: mixed-methods review. *JMIR medical education*, 5(1), e12515.

# APPENDIX 1: PART A INCLUDED LITERATURE: REVIEW TYPE, AIM, COUNTRY, SETTING AND COHORT

| CITATION | REVIEW TYPE | REVIEW AIM | COUNTRY | SETTING | COHORT |
|---|---|---|---|---|---|
| Budakoğlu et al., (2021) I. İ., Sayılır, M. Ü., Kıyak, Y. S., Coşkun, Ö., & Kula, S. (2021). Telemedicine curriculum in undergraduate medical education: a systematic search and review. Health and Technology, 11, 773-781 | Systematic review<br><br>(7 studies) | Effectiveness of telemedicine curriculum<br><br>Methods used to teach telemedicine | Reviewed curricula from USA (4) Australia (2) and Switzerland (1) | University | Undergraduate medical students |
| Calleja, P., Wilkes, S., Spencer, M., & Woodbridge, S. (2022). Telehealth use in rural and remote health practitioner education: an integrative review. Rural and remote health, 22(1), 6467-6467. | Integrative review<br><br>(60 articles) | Examine what telehealth education is available to rural practitioners; evaluate the existence and characteristics of telehealth education for rural staff; evaluate current telehealth education models; establish the quality of education provided; identify enablers of a successful service; make recommendations for an education model | Reviewed curricula from USA (>50%), Australia, Canada, UK, US-affiliated Pacific Islands, Africa, Guatemala, India, Norway and Madagascar, although numbers not specified | Rural and remote care settings | Range of practitioners: primary healthcare practitioners; nurses, physiotherapists, psychiatrists, and psychiatrist trainees |
| Chike-Harris, K. E., Durham, C., Logan, A., Smith, G., & DuBose-Morris, R. (2021). Integration of telehealth education into the healthcare provider curriculum: a review. Telemedicine and e-Health, 27(2), 137-149. | Systematic review<br><br>(8) programs | To identify the presence and modalities of documented telehealth educational integration into the curricula of physician and APP training programs | USA | Tertiary education | Students in physician, physician assistant and advanced practice RN training programs |
| Echelard, J. F., Méthot, F., Nguyen, H. A., & Pomey, M. P. (2020). Medical student training in eHealth: scoping review. JMIR medical education, 6(2), e20027 | Scoping review<br><br>(25 studies) | Examines eHealth education – barriers, enhancing factors, and propositions for improving the medical curriculum | USA (10); Canada (3); Australia (2); Germany (2); France (1); Oman (1); Russia (1); Rwanda (1); Singapore (1); Turkey (1); UK (1); Zimbabwe (1) | University | Medical students |

| CITATION | REVIEW TYPE | REVIEW AIM | COUNTRY | SETTING | COHORT |
|---|---|---|---|---|---|
| Edirippulige, S., & Armfield, N. R. (2017). Education and training to support the use of clinical telehealth: A review of the literature. Journal of telemedicine and telecare, 23(2), 273-282. command | Literature review<br><br>(9 studies) | To describe the delivery of education and training in telehealth, with particular focus on content, modes of delivery, types of institutions, and target clinician groups | Australia (2); Brazil (2); UK (2); USA (2); Japan (1); Pacific Islands (1) | University and CPD programs across a range of settings | Undergraduate and postgraduate students (physios, occupational therapy, psychology, health sciences, nursing, audiology, speech therapy, dentistry); clinical psychology trainees; doctors; nurses; allied health professionals; public health professionals; diagnostic imaging professionals; educators; health planners; administrators and policy makers; telehealth project officers and/or coordinators and/or employees; e-Health coordinator; librarian; IT professionals |
| Foster, M., Lioce, L., & Howell Adams, M. (2021). Telehealth in Nursing Education: A Systematic Review. Journal of Nursing Education, 60(11), 633-635. | Systematic review<br><br>(13 studies) | To identify nursing education research on telehealth | Paper originated from USA. Countries where studies were conducted not specified. | University | Nurse practitioner students |
| Gartz, J., & O'Rourke, J. (2021). Telehealth educational interventions in nurse practitioner education: an integrative literature review. Journal of the American Association of Nurse Practitioners, 33(11), 872-878. | Integrative literature review<br><br>(15 articles) | To evaluate the efficacy of telehealth educational interventions synthesizing current literature | Paper originated from USA. Countries where studies were conducted not specified. | University | Nurse practitioner students |
| Groom, L. L., Brody, A. A., & Squires, A. P. (2021). Defining Telepresence as Experienced in Telehealth Encounters: A Dimensional Analysis. Journal of Nursing Scholarship, 53 (6), 709-717 | Dimensional analysis<br><br>(13 articles) | To conceptually define telepresence | UK; USA; Italy; France; Australia; the Netherlands; Sweden (no. from each country not specified) | Not specified | Nurses, physicians, clinicians (role not specified) |

| CITATION | REVIEW TYPE | REVIEW AIM | COUNTRY | SETTING | COHORT |
|---|---|---|---|---|---|
| Hamilton, H., Iradukunda, F., & Aselton, P. (2021). The Integration of Telehealth in Nursing Education: A New Frontier. Journal of Informatics Nursing, 6(1), 18-25. | Integrative Review<br><br>(20 articles) | Reviews the use of telehealth technology to provide and support remote learning,<br><br>and patient and professional health-related education for undergraduate nursing education | USA (14); Australia (1); Jordan (1); the Netherlands (2); Norway (1); Poland (1) | University | Nursing students – undergraduate or postgraduate; nursing leaders |
| Henry, B. W., Block, D. E., Ciesla, J. R., McGowan, B. A., & Vozenilek, J. A. (2017). Clinician behaviors in telehealthcare delivery: a systematic review. Advances in Health Sciences Education, 22(4), 869-888. | Systematic review<br><br>(45 articles) | To identify interpersonal healthcare provider (HCP) behaviours and attributes related to provider–patient interaction during care in telehealth delivery. | Paper originated from USA. Countries where studies were conducted not specified. | Home care, primary care, mental health, call centres, critical care | Nurses, physicians, counsellors, medical students, medical trainees (residents etc.) |
| Hilty, D. M., Crawford, A., Teshima, J., Nasatir-Hilty, S. E., Luo, J., Chisler, L. S., ... & Lu, F. G. (2021). Mobile Health and Cultural Competencies as a Foundation for Telehealthcare: Scoping Review. Journal of Technology in Behavioral Science, 6(2), 197-230. | Scoping review<br><br>(183 papers) | Identify components and approaches for competent, telepsychiatric clinical care including mobile health | Paper originated from USA (primary author); countries where information extracted were UK, USA, Canada, Australia | Range of healthcare settings<br><br>University | Psychiatrists, psychologists, counsellors and social workers |
| Hui, K. Y., Haines, C., Bammann, S., Hallandal, M., Langone, N., Williams, C., & McEvoy, M. (2021). To what extent is telehealth reported to be incorporated into undergraduate and postgraduate allied health curricula: A scoping review. Plos one, 16(8), e0256425 | Scoping review<br><br>(11 studies) | Understand aims, objectives, content, format, delivery, timeline and assessments of allied health curricula | Australia (4); USA (5); UK (1); Norway (1) | University | Allied health students of the following: audiology, chiropractic, diabetes education, dietetics, exercise physiology, OT, orthoptist, osteopathy, physiother-apy, podiatry, psychology, speech pathology, social work |

| CITATION | REVIEW TYPE | REVIEW AIM | COUNTRY | SETTING | COHORT |
|---|---|---|---|---|---|
| Rutledge, C. M., Kott, K., Schweickert, P. A., Poston, R., Fowler, C., & Haney, T. S. (2017). Telehealth and eHealth in nurse practitioner training: current perspectives. Advances in medical education and practice, 8, 399 - 409 | Literature review<br><br>(no. of articles not specified) | Review topics and techniques utilized for training nurse practitioners and nurse practitioner students in telehealth | Paper originated from USA.<br>Countries where studies were conducted not specified. | Range of practice settings – rural/ remote, hospital | Nurse practitioner and nurse practitioner students |
| Saeed, S. A., Johnson, T. L., Bagga, M., & Glass, O. (2017). Training residents in the use of telepsychiatry: review of the literature and a proposed elective. Psychiatric Quarterly, 88(2), 271-283. | Literature review<br><br>(no. of articles not specified) | Outline benefits of using telepsychiatry, its clinical applications, relevant technology basics, and required competencies for future psychiatrists with respect to telepsychiatry and technology. | Paper originated from USA.<br>Countries where studies were conducted not specified. | Practice settings | Psychiatry medical residents |
| Stovel, R. G., Gabarin, N., Cavalcanti, R. B., & Abrams, H. (2020). Curricular needs for training telemedicine physicians: a scoping review. Medical teacher, 42(11), 1234-1242. | Scoping review<br><br>(43 articles) | Establish the ideal curriculum for educating physicians to practice telehealth | USA (24); Canada (6); Australia (5); Brazil (1); UK (1); India (1); Switzerland (1); Pakistan (1); Japan (1); Colombia (1); and France (1) | Settings not specified | Physicians practising in telepsychiatry, teleradiology, and teledermatology |
| Tomlinson, S. R., Gore, N., & McGill, P. (2018). Training individuals to implement applied behavior analytic procedures via telehealth: A systematic review of the literature. Journal of Behavioral Education, 27(2), 172-222. | Systematic review<br><br>(20 studies) | Summarise literature relating to training individuals to implement applied behaviour analytic procedures via telehealth | USA (19); Norway (1) | Community based | Behavioural therapists, psychologists, families and patients |
| Waseh, S., & Dicker, A. P. (2019). Telemedicine training in undergraduate medical education: mixed-methods review. JMIR medical education, 5(1), e12515. | Mixed methods review<br>70 institutions contacted<br>7 interviews<br>4 peer-reviewed research papers<br>6 online documents<br>3 completed survey responses. | Outline the current experiences and learnings that have been generated as medical schools have sought to implement telemedicine capacity-building into undergraduate medical education | USA | University | Medical students |

# APPENDIX 2: PART A INCLUDED LITERATURE: CURRICULUM CONTENT, FORMAT AND DELIVERY

| CITATION | CURRICULUM[1] | INTEGRATED OR STANDALONE | DELIVERY[2] |
|---|---|---|---|
| Budakoğlu et al., (2021) | ***General introduction to virtual care***<br>Basic theoretical and clinical aspects<br>Virtual care history<br>Professional, ethical and legal aspects<br>Clinical applications<br>***Virtual care provision***<br>Communication | Integrated into undergraduate curriculum | ***Interactive/participative***<br>Actual patient encounters (+/- supervision)<br>Site visits<br>Video-based<br>Workshops<br>***Teacher-centred***<br>Lectures and tutorials<br>Demonstrations<br>***Learner-centred***<br>Reflection activities<br>***Content-focused***<br>Text-based |
| Calleja et al., (2022) | ***Virtual care provision***<br>Clinical skills/practice changes | Standalone telehealth programs offered as part of CPD. Ranging in duration from short sessions to whole day courses. | ***Interactive/participative***<br>Discussion and real-time interaction<br>Group activities<br>***Teacher-centred***<br>Short didactic presentations<br>***Learner-centred***<br>Case presentations |
| Chike-Harris et al., (2021) | ***General introduction to virtual care***<br>Definitions and terminology<br>Roles in virtual care<br>Licensing, regulations and reimbursement<br>Service development/design, quality improvement<br>***Preparing for an actual virtual care episode***<br>Interprofessional collaboration/training<br>***Virtual care provision***<br>Communication<br>Patient safety | Standalone telehealth programs ranging in duration from 1 hour to 8 weeks | ***Interactive/participative***<br>Simulation<br>Actual patient encounters (+/- supervision)<br>Site visits<br>Other clinical experiences<br>***Teacher-centred***<br>Face-to-face instruction<br>***Learner-centred***<br>Online modules<br>Student-led projects |

***1*** *For the most part, IT and related content not included*
***2*** *Use of IT, audio-visual equipment not included*

| CITATION | CURRICULUM[1] | INTEGRATED OR STANDALONE | DELIVERY[2] |
|---|---|---|---|
| Echelard et al., (2020) | ***General introduction to virtual care***<br>Professional, ethical and legal aspects<br>***Preparing for an actual virtual care episode***<br>Establishing virtual care goals<br>Interprofessional collaboration/training<br>***Virtual care provision***<br>Communication<br>Privacy, confidentiality, consent<br>Documentation | Offered as interventions within existing subjects, standalone short courses or an elective, one-semester subject | ***Interactive/participative***<br>Simulation |
| Edirippulige & Armfield (2017) | ***General introduction to virtual care***<br>Definitions and terminology<br>National strategies<br>Clinical applications<br>Evidence-based practice<br>Service development/design, quality improvement | Offered as a standalone university course (1 semester) or short CPD programs, from 1 week – 6 months | ***Interactive/participative***<br>Simulation<br>Observation<br>Discussion<br>Group activities<br>Practical activities (not specified)<br>Modelling/animation<br>***Teacher-centred***<br>Lectures and tutorials<br>***Learner-centred***<br>Case studies |
| Foster et al., (2021) | Did not specify | Reported on brief single telehealth interventions and standalone short courses | ***Interactive/participative***<br>Simulation |
| Gartz & O'Rourke (2021) | ***General introduction to virtual care***<br>Benefits and barriers<br>Clinical applications<br>Licensing, regulations and reimbursement<br>Service development/design, quality improvement<br>***Virtual care provision***<br>Communication | Integrated into existing curriculum | ***Interactive/participative***<br>Simulation<br>Actual patient encounters (+/- supervision)<br>Other clinical experiences<br>***Teacher-centred***<br>Didactic (format not specified)<br>***Learner-centred***<br>Student-led projects |
| Groom et al., (2021) | ***Preparing for an actual virtual care episode***<br>Environmental considerations<br>Communication | Integrated into existing virtual care encounters | Did not specify |

| CITATION | CURRICULUM[1] | INTEGRATED OR STANDALONE | DELIVERY[2] |
|---|---|---|---|
| Hamilton et al., (2021) | ***Preparing for an actual virtual care episode***<br>Interprofessional collaboration/training<br>Cultural awareness<br>Environmental considerations<br><br>***Virtual care provision***<br>Communication<br>Clinical skills | Integrated into existing curriculum e.g., in a physical assessment subject | ***Interactive/participative***<br>Simulation<br>Actual patient encounters (+/- supervision)<br><br>***Teacher-centred***<br>Demonstrations |
| Henry et al., (2017) | ***General introduction to virtual care***<br>Attitudes<br><br>***Preparing for an actual virtual care episode***<br>Cultural awareness<br>Environmental considerations<br>Communication<br>Privacy, confidentiality, consent | Did not specify | ***Interactive/participative***<br>Simulation<br>Video-based<br>Workshops<br>Other clinical experiences<br><br>***Teacher-centred***<br>Classroom training<br><br>***Learner-centred***<br>Online modules<br>Self-assessment<br><br>***Content-focused***<br>Reading |
| Hilty et al., (2021). | ***Preparing for an actual virtual care episode***<br>Cultural awareness | Integrated into existing curriculum, although suggested that training models may shift with increased uptake of telehealth | Did not specify |
| Hui et al., (2021) | ***General introduction to virtual care***<br>Basic theoretical and clinical aspects<br>Evidence-based practice<br>Professional, ethical and legal aspects<br><br>***Preparing for an actual virtual care episode***<br>Interprofessional collaboration/training<br><br>***Virtual care provision***<br>Communication<br>Intervention and discharge planning | Standalone programs varied from eight weeks to one year | ***Interactive/participative***<br>Simulation<br>Observation<br>Video-based<br>Workshops<br>Discussion<br>Other clinical experiences<br><br>***Teacher-centred***<br>Lectures and tutorials<br>Online presentations, videos, webinars<br><br>***Learner-centred***<br>Online modules<br><br>***Content-focused***<br>Reading |

| CITATION | CURRICULUM[1] | INTEGRATED OR STANDALONE | DELIVERY[2] |
|---|---|---|---|
| Rutledge et al., (2017) | ***General introduction to virtual care***<br>Definitions and terminology<br>Professional, ethical and legal aspects<br>Licensing, regulations and reimbursement<br>***Preparing for an actual virtual care episode***<br>Interprofessional collaboration/training<br>Cultural awareness<br>Environmental considerations<br>***Virtual care provision***<br>Communication<br>Privacy, confidentiality, consent<br>Ensuring patient satisfaction | Standalone courses, online modules, presentations or webinars | Interactive/participative<br>Simulation<br>Observation<br>Other clinical experiences<br>Teacher-centred<br>Lectures and tutorials<br>Online presentations, videos, webinars |
| Saeed et al., (2017) | ***General introduction to virtual care***<br>Professional, ethical and legal aspects<br>Licensing, regulations and reimbursement<br>***Preparing for an actual virtual care episode***<br>Interprofessional collaboration/training<br>Cultural awareness<br>***Virtual care provision***<br>Clinical skills<br>Patient safety<br>Privacy, confidentiality, consent<br>Documentation<br>Intervention and discharge planning | Standalone elective subject | ***Interactive/participative***<br>Actual patient encounters (+/- supervision)<br>Observation<br>Other clinical experiences<br>***Teacher-centred***<br>Didactic (format not specified)<br>***Learner-centred***<br>Online modules<br>***Content-focused***<br>Reading |
| Stovel et al., (2020) | ***General introduction to virtual care***<br>Professional, ethical and legal aspects<br>Licensing, regulations and reimbursement<br>Service development/design, quality improvement<br>***Preparing for an actual virtual care episode***<br>Patient selection for virtual care<br>Interprofessional collaboration/training<br>***Virtual care provision***<br>Communication<br>Clinical skills<br>Patient safety<br>Documentation | Standalone courses | ***Interactive/participative***<br>Simulation<br>Actual patient encounters (+/- supervision)<br>Workshops<br>Discussion<br>Group activities<br>***Teacher-centred***<br>Didactic (format not specified)<br>***Learner-centred***<br>Reflection activities<br>Online modules<br>Journal clubs |

| CITATION | CURRICULUM[1] | INTEGRATED OR STANDALONE | DELIVERY[2] |
|---|---|---|---|
| Tomlinson et al., (2018) | Did not specify | Standalone sessions | ***Interactive/participative***<br>Simulation<br>Actual patient encounters (+/- supervision)<br>Video-based<br>Group activities<br>Practical activities (not specified)<br><br>***Learner-centred***<br>Reflection activities<br>Online modules<br><br>***Content-focused***<br>Reading |
| Waseh & Dicker (2019) | ***General introduction to virtual care***<br>Basic theoretical and clinical aspects<br>Professional, ethical and legal aspects<br>Licensing, regulations and reimbursement<br><br>***Preparing for an actual virtual care episode***<br>Interprofessional collaboration/training<br>Cultural awareness<br><br>***Virtual care provision***<br>Clinical skills | To be integrated into existing curriculum | ***Interactive/participative***<br>Simulation<br>Actual patient encounters (+/- supervision)<br>Other clinical experiences<br><br>***Teacher-centred***<br>Didactic (format not specified)<br><br>***Learner-centred***<br>Student-led projects<br>Case studies |

# APPENDIX 3: PART B INCLUDED LITERATURE: PUBLICATION TYPE, AIM AND COUNTRY

| CITATION | PUBLICATION TYPE | PUBLICATION AIM | COUNTRY |
|---|---|---|---|
| Abbott, L. M., Miller, R., Janda, M., Bennett, H., Taylor, M. L., Arnold, C., ... & Caffery, L. J. (2020). A review of literature supporting the development of practice guidelines for teledermatology in Australia. A*ustralasian Journal of Dermatology*, 61(2), e174-e183. | ***Scholarly:*** Review paper | Report findings from a literature review undertaken to inform the development of Australian-specific guidelines for teledermatology. | Australia |
| Agency for Clinical Innovation (ACI) (2021, March). Virtual Care in Practice. Sydney, NSW ACI, Telehealth Network. | ***Grey:*** Guide | Provide information to support the uptake and ongoing use of virtual care, to be used in conjunction with national, state or locally developed clinical standards, protocols, policies and procedures. | Australia |
| Allied Health Professions Australia (2020, May). Telehealth Guide for Allied Health Professionals | ***Grey:*** Guide | Provide information to support allied health professionals to implement telehealth in their clinical practice. | Australia |
| American Telemedicine Association (ATA) (2009, October). Evidence-Based Practice for Telemental Health | ***Grey:*** Practice guidelines | To assist to provide effective and safe virtual medical care that is founded on current information, available resources, and patient needs. | USA |
| American Telemedicine Association (ATA) (2014, May). Guidelines for Tele-ICU Operations | ***Grey:*** Practice guidelines | As above | USA |
| American Telemedicine Association (ATA) (2014, May). Core Operational Guidelines for Telehealth Services Involving Provider-Patient Interactions. | ***Grey:*** Practice guidelines | As above | USA |
| American Telemedicine Association (ATA) (2014, August). Clinical Guidelines for Telepathology | ***Grey:*** Practice guidelines | As above | USA |
| American Telemedicine Association (ATA) (2014, November). Practice Guidelines for Live, On-Demand Primary and Urgent Care | ***Grey:*** Practice guidelines | As above | USA |

| CITATION | PUBLICATION TYPE | PUBLICATION AIM | COUNTRY |
|---|---|---|---|
| American Telemedicine Association (ATA) (2016, April). Practice Guidelines for Dermatology. | ***Grey:*** Practice guidelines | As above | USA |
| American Telemedicine Association (ATA) (2016, April). Practice Guidelines for Teleburn Care | ***Grey:*** Practice guidelines | As above | USA |
| American Telemedicine Association (ATA) (2017, March). Practice Guidelines for Telemental Health with Children and Adolescents | ***Grey:*** Practice guidelines | As above | USA |
| American Telemedicine Association (ATA) (2017, March). Practice Guidelines for Telestroke | ***Grey:*** Practice guidelines | As above | USA |
| American Telemedicine Association (ATA) (2017, April). Principles for Delivering Telerehabilitation Services | ***Grey:*** Practice guidelines | As above | USA |
| Australian College of Rural and Remote Medicine (ACRRM) (2020). ACRRM Framework and Guidelines for Telehealth Services | ***Grey:*** Practice guidelines | Provide health and medical colleges, clinicians and healthcare organisations with a common approach to the development of craft specific guidelines to assist in the establishment of quality telehealth services.<br>Support the delivery of telehealth services for primary care in the context of rural and remote general practice. | Australia |
| Australian Health Practitioner Registration Agency (AHPRA) (2020, July). Telehealth guidance for practitioners | ***Grey:*** Guide | Provide high-level guidance about safe and effective use telehealth. | Australia |
| Australian Nursing Federation (ANF) (2013, April). Telehealth Standards: Registered Nurses | ***Grey:*** Professional standards | Develop and disseminate professional standards and guidelines to guide nurses, midwives, nurse practitioners and eligible midwives in the provision of health services via Telehealth technology, | Australia |
| Barberio, J. A., & Jenkins, M. L. (2021). Transitioning to Telehealth: Today's Guidelines for Future Sustainability. *The Journal for Nurse Practitioners.* 17, 795e798 | ***Scholarly:*** Discussion paper | Discuss the structure, process, and outcomes of telehealth, addresses provider and consumer concerns and sets up guidelines for incorporating telehealth and patient satisfaction into NP practice | USA |
| Baumes, A., Čolić, M., & Araiba, S. (2020). Comparison of telehealth-related ethics and guidelines and a checklist for ethical decision making in the midst of the COVID-19 pandemic. *Behavior Analysis in Practice*, 13, 736-747 | ***Scholarly:*** Discussion paper | Organise the American Academy of Paediatrics (AAP), the American Psychological Association (APA), and the National Association of Social Workers (NASW) guidelines into seven domains and subdomains for telehealth practice in the area of Applied Behaviour Analysis. | USA |

| CITATION | PUBLICATION TYPE | PUBLICATION AIM | COUNTRY |
|---|---|---|---|
| Calleja, P., Wilkes, S., Spencer, M., & Woodbridge, S. (2022). Telehealth use in rural and remote health practitioner education: an integrative review. *Rural and Remote Health,* 22(1), 6467-6467. | ***Scholarly:*** Integrative literature review | Examine what telehealth education is available to rural practitioners; evaluate the existence and characteristics of telehealth education for rural staff; evaluate current telehealth education models; establish the quality of education provided; identify enablers of a successful service; make recommendations for an education model. | Australia |
| Davies, L., Hinman, R. S., Russell, T., Lawford, B., Bennell, K., Billings, M., ... & Roots, R. (2021). An international core capability framework for physiotherapists to deliver quality care via videoconferencing: a Delphi study. *Journal of Physiotherapy*, 67(4), 291-297. | ***Scholarly:*** Research paper | Outline core capabilities for physiotherapists to provide quality care via videoconferencing. | Australia |
| DeJong, S. M. (2018). Professionalism and technology: competencies across the tele-behavioral health and E-behavioral health spectrum. *Academic Psychiatry*, 42(6), 800-807. | ***Scholarly:*** Commentary paper | Outline a telebehavioural skillset and professional competencies for clinicians in the area of telepsychiatry. | USA |
| Drude, K. P., Hertlien, K. M., Maheu, M. M., Hilty, D. M., & Wall, K. (2020). Telebehavioral health competencies in interprofessional education and training: A pathway to interprofessional practice. *Journal of Technology in Behavioral Science*, 5(1), 30-39. | ***Scholarly:*** Discussion paper | Propose a set of interprofessional telebehavioral (TBH) competencies as a framework to organise and provide TBH education and training. | USA |
| Field, A., & Butler, R. (2018, March). Virtual Health: Rapid review of evidence and implications. Waikato District Health Board, New Zealand. | ***Grey:*** Literature review | Explore approaches to virtual health technologies and services, including the benefits and challenges of their delivery, technology adoption and their potential to support patient-centred care. | New Zealand |
| Galpin, K., Sikka, N., King, S. L., Horvath, K. A., Shipman, S. A., & AAMC Telehealth Advisory Committee. (2021). Expert consensus: telehealth skills for healthcare professionals. *Telemedicine and e-Health,* 27(7), 820-824. | ***Scholarly:*** Literature review and Delphi study | Identify and articulate a consensus set of critical telehealth skills for clinicians. | USA |
| Groom, L. L., Brody, A. A., & Squires, A. P. (2021). Defining Telepresence as Experienced in Telehealth Encounters: A Dimensional Analysis. *Journal of Nursing Scholarship.* | ***Scholarly:*** Dimensional analysis | To conceptually define telepresence. | Paper originated from USA |
| Gustin, T. S., Kott, K., & Rutledge, C. (2020). Telehealth etiquette training: a guideline for preparing interprofessional teams for successful encounters. *Nurse Educator*, 45(2), 88-92. | ***Scholarly:*** Research paper | Present a training program that prepares students with the unique skill set necessary to conduct telehealth visits. | USA |

| CITATION | PUBLICATION TYPE | PUBLICATION AIM | COUNTRY |
|---|---|---|---|
| Henry, B. W., Block, D. E., Ciesla, J. R., McGowan, B. A., & Vozenilek, J. A. (2017). Clinician behaviors in telehealthcare delivery: a systematic review. *Advances in Health Sciences Education*, 22(4), 869-888. | ***Scholarly:*** Systematic review | To identify interpersonal healthcare provider (HCP) behaviours and attributes related to provider–patient interaction during care in telehealth delivery. | Paper originated from USA |
| Hilty, D. M., Crawford, A., Teshima, J., Nasatir-Hilty, S. E., Luo, J., Chisler, L. S., ... & Lu, F. G. (2021). Mobile Health and Cultural Competencies as a Foundation for Telehealthcare: Scoping Review. *Journal of Technology in Behavioral Science,* 6(2), 197-230. | ***Scholarly:*** Scoping review | Identify components and approaches for competent, telepsychiatric clinical care including mobile health. | Paper originated from USA |
| Intan Sabrina, M., & Defi, I. R. (2021). Telemedicine guidelines in southeast Asia—a scoping review. *Frontiers in Neurology*, 11: 581649 | ***Scholarly:*** Scoping review | To explore and compare guidelines on telehealth and telemedicine in Southeast Asian countries. | Southeast Asia |
| Jadotte, Y. T., & Noel, K. (2021). Definitions and core competencies for interprofessional education in telehealth practice. *Clinics in Integrated Care, 6,* 100054. | ***Scholarly:*** Discussion paper | Review evidence on the development of interprofessional competencies and proposes ways in which interprofessional competencies can be incorporated into telehealth practice. | USA |
| Maheu, M. M., Drude, K. P., Hertlein, K. M., Lipschutz, R., Wall, K., & Hilty, D. M. (2017). An interprofessional framework for telebehavioral health competencies. *Journal of Technology in Behavioral Science,* 2(3), 190-210. | ***Scholarly:*** Framework paper | Propose a framework for interprofessional telebehavioural health competencies. | USA |
| Myers, K., Nelson, E. L., Rabinowitz, T., Hilty, D., Baker, D., Barnwell, S. S., ... & Bernard, J. (2017). American telemedicine association practice guidelines for telemental health with children and adolescents. *Telemedicine and e-Health,* 23(10), 779-804. | ***Scholarly:*** Guideline paper | Provide a clinical guideline for the delivery of child and adolescent mental health and behavioural services through real-time videoconferencing. | USA |
| NSW Health telehealth framework and implementation strategy 2016–2021. | ***Grey:*** Framework/ strategic plan | Outline actions, timeframes and responsibilities to embed telehealth in core business in NSW Health by 2021. | Australia |
| Occupational Therapy Australia (2020). Telehealth Guidelines 2020. | ***Grey:*** Practice guideline | Assist OTs to reduce professional and clinical risk and engage in responsible service provision. | Australia |
| Powers, S. A., Perry, K. N., Ashdown, A. J., Pacailler, M., & Scerbo, M. W. (2021, September). Human Factors Considerations for Patients: A Cursory Review of Telehealth Guidelines. In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting* (Vol. 65, No. 1, pp. 943-947). Sage CA: Los Angeles, CA: SAGE Publications. | ***Scholarly:*** Conference proceedings | Review current telehealth guidelines and identifies gaps where human factors can be considered. | USA |

| CITATION | PUBLICATION TYPE | PUBLICATION AIM | COUNTRY |
|---|---|---|---|
| Qureshi, Ullah, S., Aldajani, A. A., Basson, P., AlHabter, A. M., Ali, T., Almubark, B. M., AlAtwi, M., AlIbrahim, F., Alsuhaibani, A., & Al Jadid, M. S. (2021). Telerehabilitation Guidelines in Saudi Arabia. *Telemedicine Journal and e-Health,* 27(10), 187–1098. https://doi.org/10.1089/tmj.2020.0355 | ***Scholarly:*** Guideline paper | Facilitate rehabilitation clinicians in Saudi Arabia to consult, counsel, educate, assess, monitor, treat and follow up patients remotely using telemedicine communication technologies. | Saudi Arabia |
| Royal Australian College of General Practitioners (2020, March). Guide to providing telephone and video consultations in general practice. East Melbourne, Vic, RACGP. | ***Grey:*** Guide | Aid specialist GPs and broader practice teams provide safe and effective telephone and video consultations. Outlines the clinical, administrative and technical considerations for practices introducing virtual care for the first time. | Australia |
| Rutledge, C. M., Kott, K., Schweickert, P. A., Poston, R., Fowler, C., & Haney, T. S. (2017). Telehealth and eHealth in nurse practitioner training: current perspectives. *AdvancesIn Medical Education And Practice,* 8, 399 - 409. | ***Scholarly:*** Literature review | Review topics and techniques utilized for training nurse practitioners and nurse practitioner students in telehealth. | Paper originated from USA. |
| Rutledge, C. M., O'Rourke, J., Mason, A. M., Chike-Harris, K., Behnke, L., Melhado, L., ... & Gustin, T. (2021). Telehealth competencies for nursing education and practice: The four P's of telehealth. *Nurse Educator*, 46(5), 300 - 305. | ***Scholarly:*** Reserach paper | Describe the development of standardised telehealth competencies for advanced nursing education and practice. | USA |
| Saeed, S. A., Johnson, T. L., Bagga, M., & Glass, O. (2017). Training residents in the use of telepsychiatry: review of the literature and a proposed elective. *Psychiatric Quarterly,* 88(2), 271-283. | ***Scholarly:*** Literature review | Outline benefits of using telepsychiatry, its clinical applications, relevant technology basics and required competencies for future psychiatrists with respect to telepsychiatry and technology. | Paper originated from USA. |
| Sharma, R., Nachum, S., Davidson, K. W., & Nochomovitz, M. (2019). It's not just FaceTime: core competencies for the medical virtualist. *International Journal of Emergency Medicine*, 12(8), 1-5. | ***Scholarly:*** Practice update paper | Outline core competencies for training program development for practicing physicians, medical students and other clinicians. | USA |
| Sheperis, D. S., & Smith, A. (2021). Telehealth Best Practice: A Call for Standards of Care. *Journal of Technology in Counselor Education and Supervision*, 1(1), 4. | ***Scholarly:*** Conference proceedings | Draw from current literature and guidelines across counselling, psychology, psychiatry, family therapy, and social work to provide a Proposed Standards of Practice for Telehealth. | USA |
| Shore, J. H., Yellowlees, P., Caudill, R., Johnston, B., Turvey, C., Mishkind, M., ... & Hilty, D. (2018). Best practices in videoconferencing-based telemental health April 2018. *Telemedicine and e-Health,* 24(11), 827-832. | ***Scholarly:*** Best practice update paper | Update and consolidate previous guidance developed by The American Telemedicine Association (ATA) and The American Psychiatric Association (APA) on the development, implementation, administration, and provision of telemental health services | USA |

| CITATION | PUBLICATION TYPE | PUBLICATION AIM | COUNTRY |
|---|---|---|---|
| Stovel, R. G., Gabarin, N., Cavalcanti, R. B., & Abrams, H. (2020). *Curricular needs for training telemedicine physicians: A scoping review.* Medical Teacher, 42(11), 1234-1242. | ***Scholarly:*** Scoping review | Establish the ideal curriculum for educating physicians to practice telehealth. | Paper originated from Canada |
| Telehealth Quality Group EEIG. International Code of Practice for Telehealth Services 2018/19 v2. Telehealth Quality Group (Europe)/Global Community Resourcing (Australia). | ***Grey:*** Code of practice | Provide a high-level quality benchmark for telehealth services for all countries, aligning with the World Health Organisation's resolutions, the European Commission's eHealth Action Plan 2012-2020 and quality planning guidelines set out in the ISO Technical Specification 13131 (Health Informatics – Telehealth Services – Quality Planning Guidelines). | Europe |
| van Houwelingen, C. T., Moerman, A. H., Ettema, R. G., Kort, H. S., & Ten Cate, O. (2016). Competencies required for nursing telehealth activities: A Delphi-study. *Nurse education today,* 39, 50-62. | ***Scholarly:*** Research paper | Delphi study to reach consensus on a set of nursing telehealth entrustable professional activities (NT-EPAs) and associated competencies. | The Netherlands |

# APPENDIX 4: PART B INCLUDED LITERATURE: GUIDELINES, COMPETENCIES AND FRAMEWORKS

| CITATION | GUIDELINES, COMPETENCIES OR FRAMEWORKS |
|---|---|
| Abbott et al., (2020) | Reports on literature review findings informing the development of Australian-specific practice guidelines for teledermatology in six (6) sections:<br>1. Modalities of teledermatology<br>2. Patient selection and consent<br>3. Imaging<br>4. Quality and safety<br>5. Privacy and security<br>6. Communication<br>7. Documentation and retention |
| Agency for Clinical Innovation (ACI) (2021, March) | 'Safety' section outlines:<br>1. Core principles for virtual care: governance and leadership, standards and policies, skilled and confident healthcare providers<br>2. For clinicians: clinical considerations, environment, equipment<br>3. Patient considerations: patient selection, patient support, patient communication |
| Allied Health Professions Australia (2020, May) | Outlines seven (7) areas for consideration when implementing telehealth into clinical practice, with specific detail for each:<br>1. Safety and quality<br>2. Getting started<br>3. Technical considerations<br>4. Preparing for the consultation<br>5. During the consultation<br>6. After the consultation<br>7. Practice processes |
| American Telemedicine Association (ATA) (2009, October) | Provides evidence-based practice guidelines for telemental health in the following areas:<br>1. Mental health evaluation<br>2. Ongoing mental healthcare<br>3. Populations of special focus |

| CITATION | GUIDELINES, COMPETENCIES OR FRAMEWORKS |
|---|---|
| American Telemedicine Association (ATA) (2014a, May) | Provides guidelines for patient-provider interactions in three domains: clinical, administrative and technical. |
| American Telemedicine Association (ATA) (2014b, May) | Provides guidelines for tele-ICU in three domains: clinical, administrative and technical. |
| American Telemedicine Association (ATA) (2014, August) | Provides brief information for telepathology services in the following areas:<br>1. Clinical guidelines, applications and responsibilities<br>2. Technology and technical specification<br>3. Facility responsibilities<br>4. Training<br>5. Documentation and archiving<br>6. Quality assurance. |
| American Telemedicine Association (ATA) (2014, November) | Provides guidelines for live, on-demand primary and urgent care in three domains: clinical, administrative and technical. |
| American Telemedicine Association (ATA) (2016a, April) | Provides guidelines for dermatology telehealth practice in three domains: clinical, administrative and technical. |
| American Telemedicine Association (ATA) (2016b, April) | Provides guidelines for teleburn care in three domains: clinical, administrative and technical. |
| American Telemedicine Association (ATA) (2017a, March) | Provides guidelines specific to child and adolescent telemental health:<br>1. Administrative guidelines<br>2. Legal and regulatory issues<br>3. Specific patient cohort considerations: environment, presenter assistance, patient appropriateness, accessing clinical data and reports<br>4. Technology considerations<br>5. Ethical considerations<br>6. Tele-mental health competency for providers<br>7. Clinical supervision<br>Also refers to the ACGME competency framework. |
| American Telemedicine Association (ATA) (2017b, March) | Provides guidelines for stroke care in three domains: clinical, administrative and technical. |
| American Telemedicine Association (ATA) (2017, April) | Outlines principles for telerehabilitation in four areas: administrative, clinical, technical and ethical. |

| CITATION | GUIDELINES, COMPETENCIES OR FRAMEWORKS |
|---|---|
| Australian College of Rural and Remote Medicine (ACRRM) (2020) | Provides a three-domain framework and associated detailed checklist for telehealth services:<br>1. Clinical aspects<br>2. Technical aspects<br>3. Contextual aspects |
| Australian Health Practitioner Registration Agency (AHPRA) (2020) | Refers each health profession to their Code of Conduct and states that it is applicable for telehealth practice. Also provides some specific items around telehealth practice:<br>1. Using telehealth to advise or treat patients/clients<br>2. Commencing a telehealth consultation<br>3. During a telehealth consultation<br>4. Ensuring continuity of care<br>5. Use of technology |
| Australian Nursing Federation (ANF) (2013). | Aligns the RN standards for practice with considerations for telehealth. |
| Barberio & Jenkins (2021) | Outlines the process, including a checklist, for an outpatient telehealth visit.<br>Also outlines a format for a virtual encounter based on the SOAP format:<br>1. Subjective information<br>2. Objective findings<br>3. Assessment of all findings<br>4. Plan of care |
| Baumes et al., (2020) | Organises the American Academy of Pediatrics (AAP), the American Psychological Association (APA), and the National Association of Social Workers (NASW) guidelines into seven domains and associated subdomains for telehealth practice in Applied Behaviour Analysis:<br>1. Therapist suitability<br>2. Client suitability<br>3. Standards of care<br>4. Informed consent<br>5. Data confidentiality<br>6. Testing and assessment<br>7. Legal aspects |

| CITATION | GUIDELINES, COMPETENCIES OR FRAMEWORKS |
|---|---|
| Calleja et al., (2022) | Highlights the Extended Community Healthcare Outcomes (ECHO) model for virtual care education. Applies four principles:<br>1. Use technology to influence limited resources<br>2. Impart evidence-based practices<br>3. Individual patient-based education<br>4. nternet database to monitor outcomes |
| Davies et al., (2021) | Delphi study to reach consensus on seven (7) domains and 60 associated capabilities for physiotherapists to provide care using videoconferencing:<br>1. Compliance (7 capabilities)<br>2. Patient privacy and confidentiality (4 capabilities)<br>3. Patient safety (7 capabilities)<br>4. Technology skills (7 capabilities)<br>5. Telehealth delivery (16 capabilities)<br>6. Assessment and diagnosis (7 capabilities)<br>7. Care planning and management (12 capabilities) |
| DeJong (2018) | Foreshadows a telebehavioural skill set for clinicians in the area of psychiatry for three competencies:<br>1. Initial evaluation/assessment/consultation<br>2. Appropriate triage, intervention, and treatment<br>3. Creating and maintaining a professional identity<br>Refers to the ACGME framework and proposes two prototypes for professionalism competency:<br>1. Confidentiality and privacy<br>2. Psychotherapy and boundaries |
| Drude et al., (2020) | Proposes a set of interprofessional telebehavioural (TBH) competencies as a framework to organise and provide TBH education and training. Specific objectives aligned with seven (7) domains and 51 specific objectives:<br>1. Clinical evaluation and care<br>2. Virtual environment<br>3. Technology<br>4. Legal and regulatory issues<br>5. Evidence-based practice and ethical practice<br>6. Mobile health and applications<br>7. Telepractice development<br>Also refers to the IPEC framework. |

| CITATION | GUIDELINES, COMPETENCIES OR FRAMEWORKS |
|---|---|
| Field, A., & Butler, R. (2018). | Suggests eight (8) dimensions for patient-centred care to be incorporated into telehealth:<br>1. Respect for patients' values, preferences and expressed needs<br>2. Coordination and integration of care<br>3. Information, communication and education<br>4. Physical comfort<br>5. Emotional support and alleviation of fear and anxiety<br>6. Involvement of family and friends<br>7. Continuity and transition<br>8. Access to care<br>Reports seven (7) supporting factors for patient-centred care:<br>1. Leadership<br>2. A clearly communicated strategic vision<br>3. Involvement of patients and families<br>4. A supportive work environment<br>5. Systematic measurement and feedback<br>6. Quality of the built environment<br>7. Supportive technology<br>States needs for a robust virtual healthcare system:<br>1. Technology<br>2. Organisational factors<br>3. Privacy and security<br>4. Other system needs e.g., pilot program, change management |
| Galpin et al., (2021) | Expert consensus reached by the AAMC on nine (9) skill domains for physicians:<br>1. Using Telehealth: Patient and Practice Readiness and Impact<br>2. Remote Clinical Evaluation and Care<br>3. Communication Using Telehealth<br>4. Professionalism<br>5. Information Technology<br>6. Privacy and Legal<br>7. Ethics<br>8. Patient Safety<br>9. Access and Equity |

| CITATION | GUIDELINES, COMPETENCIES OR FRAMEWORKS |
|---|---|
| Groom et al., (2021) | Seven core dimensions of telepresence exploded on a concept map:<br>1. Connection<br>2. Technological mediation<br>3. Experienced realism<br>4. Trust<br>5. Being supportive<br>6. Collaboration<br>7. Emotional consequence |
| Gustin et al., (2020) | Propose six (6) categories for a telehealth etiquette checklist:<br>1. Appearance<br>2. Distractors<br>3. Privacy<br>4. Non-verbal communication<br>5. Verbal communication<br>6. Empathy |
| Henry et al., (2017) | Synthesise literature on clinician behaviour during telehealth delivery into a four-stage conceptual framework:<br>1. Provider-based support for telehealth delivery (pre-interactional)<br>2. Provider–patient interactions during the telehealth event (verbal, non-verbal and relational communication skills)<br>3. Environmental components (not technology related)<br>4. Educational interventions or evaluation of clinician interpersonal skills and interactions |
| Hilty et al., (2021) | Propose a set of cultural competencies to be based on the ACGME framework. Also refers the CanMEDS framework. |
| Intan Sabrina & Defi (2021) | Synthesise three (3) domains from a review of guidelines:<br>1. Clinical aspects<br>2. Ethical and legal aspects<br>3. Operational and technical aspects |

| CITATION | GUIDELINES, COMPETENCIES OR FRAMEWORKS |
|---|---|
| Jadotte & Noel (2021) | Describes the four (4) IPEC competencies for interprofessional telehealth:<br>1. Values/ethics for interprofessional practice<br>2. Interprofessional communication practices<br>3. Interprofessional teamwork and team-based practices<br>4. Roles and responsibilities for collaborative practice<br>Competencies adapted from the AAMC telehealth competencies for physician professional development in the US:<br>1. Patient safety and appropriate use of telehealth<br>2. Access and equity in telehealth<br>3. Communication via telehealth<br>4. Data collection and assessment via telehealth<br>5. Technology for telehealth<br>6. Ethical practices and legal requirements |
| Maheu et al., (2018) | Establishes seven (7) domains for telebehavioural health:<br>1. Clinical evaluation and care<br>2. Virtual environment and telepresence<br>3. Technology<br>4. Legal and regulatory issues<br>5. Evidence-based and ethical practice<br>6. Mobile health and apps<br>7. Telepractice development<br>Each domain has subdomains and specific objectives. |
| Myers et al., (2017) | Provides guidelines specific to child and adolescent telemental health:<br>1. Administrative guidelines<br>2. Legal and regulatory issues<br>3. Specific patient cohort considerations: environment, presenter assistance, patient appropriateness, accessing clinical data and reports<br>4. Technology considerations<br>5. Ethical considerations<br>6. Tele-mental health competency for providers<br>7. Clinical supervision<br>Also refers to the ACGME framework. |

| CITATION | GUIDELINES, COMPETENCIES OR FRAMEWORKS |
|---|---|
| NSW Ministry of Health (2016) | Outlines key actions against six (6) priority areas:<br>1. Governance<br>2. Embedding telehealth in clinical practice<br>3. Training and change management<br>4. Technology and infrastructure<br>5. Funding<br>6. Monitoring and evaluation |
| Occupational Therapy Australia (2020) | Provides guidelines for telehealth practice in seven (7) areas:<br>1. Getting started<br>2. Equipment<br>3. Security<br>4. Informed consent<br>5. Privacy and confidentiality<br>6. Risk management<br>7. Professional indemnity |
| Powers et al., (2021) | Reviews a sample of telehealth guidelines and summarizes requirements for:<br>1. Technology<br>2. Security<br>3. Environmental<br>and proposes human factors recommendations on how to conduct a telehealth encounter. |
| Qureshi et al., (2021) | Describes four (4) main principles for delivery of telerehabilitation services in KSA, based on American Telemedicine Association (ATA) standards:<br>1. Administrative aspects of telerehabilitation<br>2. Clinical practice<br>3. Technical standards<br>4. Ethical considerations |
| Royal Australian College of GPs (2020) | Provides guidance for appropriate use of telephone and video-consultations in general practice; principles for conducting telehealth consultations; practice tips and related resources. Principles include:<br>1. The GP–patient relationship providing and documenting care<br>2. Risk management<br>3. Consent, privacy and confidentiality<br>4. Training |

| CITATION | GUIDELINES, COMPETENCIES OR FRAMEWORKS |
|---|---|
| Rutledge et al., (2017) | Identifies eight (8) telehealth 'topics' for training nurse practitioners in virtual care:<br>1. Defining telehealth e.g., how it differs from telemedicine<br>2. Telehealth etiquette e.g., environmental considerations, dress, eye contact, conveying empathy<br>3. Interprofessional collaboration<br>4. Regulations<br>5. Reimbursement<br>6. Security/Health Insurance Portability and Accountability Act (HIPAA) – security, privacy and confidentiality<br>7. Ethical practice in telehealth<br>8. Satisfaction |
| Rutledge et al., (2021) | Outline the domains of the '4 P's' telehealth framework, learner outcomes and 15 associated competencies:<br>1. Planning (six competencies)<br>2. Preparing (four competencies)<br>3. Providing (four competencies)<br>4. Performance evaluation (one competency) |
| Saeed et al., (2017) | Twelve (12) guidelines proposed for an elective virtual care subject:<br>1. Ethical and professional standards of care<br>2. Correct identification of the patient + provision of provider ID<br>3. Awareness of local emergency resources e.g., location of nearest hospital or ED<br>4. Awareness of other local professionals, institutions, agencies; ability to coordinate such care with a team member in case a local referral is needed<br>5. Discussion of contact methods and management of patient concerns in between appointments, how to handle emergencies, etc.<br>6. Understanding laws, regulations, requirements e.g., consent, providing care across jurisdictional borders<br>7. Obtaining and documenting informed consent, communication of risk to patients<br>8. Security, privacy, confidentiality<br>9. Cultural competence<br>10. Knowing when to discontinue telehealth services<br>11. Assessment<br>12. Documentation, understanding of billing processes<br>Refer to the ACGME framework. |

| CITATION | GUIDELINES, COMPETENCIES OR FRAMEWORKS |
|---|---|
| Sharma et al., (2019) | Propose a virtual care curriculum based on their own experience as clinicians/teachers, with three domains and associated competencies, differences between bedside practice and virtual care, and a list of helpful resources:<br>1. Digital communication and webside manner (three competencies)<br>2. Scope and standards of care (five competencies)<br>3. Virtual clinical interactions (three competencies) |
| Sheperis & Smith (2021) | Propose twelve (12) standards of practice for telehealth in mental health settings:<br>1. Providers shall become appropriately trained in the specific skills required to administer teletherapy and continue with ongoing education<br>2. Providers shall review the variety of teletherapy platforms and mental health applications available and select mediums that are secure, evidence-based, and support clinical integration<br>3. Providers shall consider the physical environment that they practice in and that of their clients in order to collaborate on optimal set-ups for videoconferencing<br>4. Providers shall thoroughly review and always comply with the federal and state laws dictating the regulations for conducting teletherapy<br>5. Providers shall maximise the accessibility of services for all populations and consider the culture of each client when assisting them in the uptake of technologies<br>6. Providers working with couples, families, and groups shall consider how teletherapy technology can be used successfully with multiple parties<br>7. Providers shall ensure that the teletherapy services they provide meet the needs of the specific populations they work with<br>8. Providers shall obtain voluntary informed consent through a process that details the benefits, risks, and expectations specific to teletherapy<br>9. Providers shall assess and have plans to mediate the specific risks associated with data security<br>10. Providers shall create an emergency management protocol with each individual client upon intake and proceed with ongoing modification as necessary<br>11. Providers shall consider the unique factors involved in setting professional boundaries in online spaces<br>12. Providers shall adapt assessment and treatment processes to the teletherapy environment to uphold the integrity of theoretical approaches when services are delivered virtually. |
| Shore et al., (2018) | Represent a collaboration between the American Psychiatric Association (APA) and the American Telemedicine Association (ATA) to provide a single guide on best practices in clinical videoconferencing in mental health. Provides detail for consideration in three (3) domains:<br>1. Administrative<br>2. Technical<br>3. Clinical |

| CITATION | GUIDELINES, COMPETENCIES OR FRAMEWORKS |
|---|---|
| Stovel et al., (2020) | Recommend telemedicine curricula are based on a competency-based, outcomes-oriented framework such as CanMEDS or ACGME |
| Telehealth Quality Group EEIG (2018/19) | Outline a framework for telehealth service provision with nine (9) domains:<br>1. General considerations<br>2. Ethical perspectives<br>3. Governance and financial issues<br>4. Personal information management<br>5. Staff and staff management<br>6. Contact with users and carers<br>7. Interpretation of and responses to information<br>8. Communications networks<br>9. Hardware and technological considerations<br>In the 'staff and staff management' section, recommends training for staff to include appropriate communications methods that take account of the needs of users and carers, thorough attention to cyber (information) security issues with an emphasis on shared responsibility. Also emphasises the need for staff to have clinical expertise in the area in which they are providing services. |
| van Houwelingen et al., (2016) | Delphi study to reach consensus on fourteen (14) entrustable professional activities (EPAs) with 52 associated competencies for nursing education and practice:<br>1. Supporting patients in the use of technology<br>2. Training patients in the use of technology as a way to strengthen their social network<br>3. Providing health promotion remotely<br>4. Triaging incoming calls and alarms<br>5. Analysing and interpreting incoming data derived from (automatic) devices for self-measurement<br>6. Monitoring body functions and lifestyle<br>7. Providing psychosocial support<br>8. Encouraging patients to undertake health promotion activities<br>9. Instructing patients and family care givers in self-care<br>10. Assessing patient capacity to use telehealth<br>11. Evaluating and adjusting the patient care plan<br>12. Coordination of care with the use of telehealth technology<br>13. Independent double-check of high-risk medication<br>14. Guidance and peer consultation |

## HEALTH EDUCATION AND TRAINING INSTITUTE

**Postal address**
HETI Locked Bag 2030
St Leonards NSW 1590

**Street address**
Level 2, 1 Reserve Road
St Leonards
NSW 2065
T: 02 9844 6551
F: 02 9844 6544
E: heti-info@health.nsw.gov.au


© Health Education and Training Institute (HETI)
DECEMBER 2022

NSW GOVERNMENT | HETI HEALTH EDUCATION & TRAINING