Ahpra Board
Accreditation Committee

Information paper: good practice approaches to embedding clinical placements, pedagogical innovations and evidence-based technological advances in health practitioner education

November 2023

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Executive summary

In 2021, Australian Health Ministers asked the independently-chaired Accreditation Committee (the committee) to provide advice to National Scheme entities on good practice in providing clinically-relevant placements in a variety of settings, geographical locations and communities; evidence-based technological advances; and pedagogical innovations in the delivery of programs of study.

This information paper informs the committee's guidance on these topics. The information included in this paper was identified through an extensive search using online databases and search engines, and a defined set of criteria.

Clinical placements

Clinical placements give students the opportunity to gain real-world experience in a supportive environment that reflects the stages of their professional education. They may also influence a student's future work choices about professional specialisation, location and area of practice.

Students, education providers and employers have experienced multiple challenges to embedding clinical placements in health practitioner education. These include:

- disruption from the COVID-19 pandemic and downstream impacts
- reduced availability and increased demand for clinical placements
- increasing expectations for placements in diverse settings and reflecting future models of care
- issues related to the duration, type, cost and quality of clinical placements as well as the quality of supervision
- workforce issues, and
- the impact of clinical placements on student health and wellbeing.

Evidence on the value of clinical placements for student learning is mixed, with a lack of studies reporting objective, quantifiable learning outcomes. However, systematic reviews and qualitative studies show that students can develop their clinical as well as non-clinical skills on clinical placements.

The evidence shows that student learning outcomes from clinical placements are influenced by a number of factors. For example, evidence suggests clinical placements are valuable learning opportunities when they consist of learning activities that prepare students for practice in the real world and require students to actively participate.

Providing placements in diverse settings, using a placement model that suits the work context and longer, more continuous placements may also enhance students learning from clinical placements. Clinical placements in diverse settings can support students to develop a range of skills, both clinical and non-clinical. While no single model of clinical placement is suitable for all professions, the evidence shows the placement model must suit the workplace context, number of students, placement capacity, availability of supervisors, and have the ability to maximise student learning. The placements should encourage healthcare providers and education providers to collaborate when developing and delivering clinical placements. Student learning may also be enhanced when students participate in longer, continuous placements in the same setting.

Evidence shows that the quality of clinical supervision is key to student learning while on clinical placement. Effective supervisors should be trained in teaching and mentoring, establish a positive relationship with their students, provide progressive and structured learning opportunities and constructive feedback to students.

Supporting student health and wellbeing while on placement may support student learning outcomes from clinical placements. Evidence suggests that student learning outcomes from clinical placements must be assessed and measured using rigorous assessment methods and validated instruments.

New approaches to clinical placements have emerged over time, including during the COVID-19 pandemic. Several innovative clinical placement models were identified. These include:

- using telehealth to deliver clinical placements at a time when in-person placements were not possible
- using interprofessional placements to develop students' non-clinical skills, such as teamwork and communication
- using team-based approaches to increase the number of placement opportunities available
- using peer learning to embed student learning and enhance students' willingness to proactively address their weaknesses.

A range of other COVID-19 clinical placement innovations were also identified. These include the use of online synchronous and asynchronous learning activities to replace and/or supplement clinical placements, using online clinical examinations to assess students on clinical placement, development of 'virtual headsets' worn by health practitioners to allow for large-scale bedside teaching, among others.

A selection of clinical placement guidelines published by public and private sector health agencies, both nationally and internationally, provide examples of the possible roles and responsibilities that employers, education providers and students may have with respect to clinical placements.

Simulation-based learning

Simulation-based learning has become a common pedagogical tool used in health practitioner education, driven by advances in technology and increasing awareness of patient safety. Simulation-based learning experiences can be a valuable contributor to student learning. Some of the benefits of simulation-based learning are that it can help prepare students for real-world practice and provide consistent learning experiences in a safe environment. Often it is more convenient for students and can enable them to play an active role in their learning.

Evidence of the contribution simulation-based learning adds to student learning outcomes is mixed. For example, some systematic reviews and qualitative evidence suggest it can support the development of clinical, non-clinical and profession-specific skills and can have a valuable role both within and as a complement to traditional teaching methods. However other evidence suggests that simulation-based learning may be more valuable to students if they already have some real-world clinical exposure, and that it may not be the most effective pedagogy to develop student communication and organisation of health care delivery skills.

There are a number of technologies and techniques used to deliver simulation-based learning. These can be depicted on a spectrum from low-fidelity to high-fidelity based on how realistic the activity is. The evidence for the most effective level of fidelity for student learning is mixed, with some studies showing medium to high-fidelity simulations may be more effective than low-fidelity simulations and other studies showing little difference in student learning outcomes based on the degree of fidelity of the simulation activity.

The evidence suggests that, regardless of fidelity, the most effective technologies and techniques are peer simulation-based learning, standardised patient interviews and mannequin simulations.

The information reviewed for this paper shows that the value of simulation-based learning for students can be enhanced by a number of factors, including faculty education and engagement; briefing, debriefing and evaluation of student performance; providing realistic and active learning experiences in a safe, high-quality environment; opportunities for repeated practice and student satisfaction from simulation-based learning experiences.

Some jurisdictions have developed frameworks to guide the development and use of simulation-based learning by education providers. Examples from the United Kingdom (UK) are highlighted.

The key challenges associated with simulation-based learning are also noted and include high initial and ongoing maintenance costs, the potential for simulation-based learning activities to be under utilised, and

the fact that simulation-based activities cannot emulate all aspects of human behaviour or all signs and symptoms they may experience.

Virtual care

As virtual care is now part of mainstream healthcare, the evidence recommends that students gain familiarity with the skills required to deliver evidence-based care virtually. Virtual care has been a regular part of rural and remote healthcare experiences for a long time, and more recently has become progressively mainstreamed into other Australian healthcare settings, particularly in response to the COVID-19 pandemic. It is, therefore, important that education programs cover the skills and capabilities necessary for this type of practise.

Ahpra and the National Boards have published guidance on the use of virtual care to help set expectations for health practitioners and ensure they use this technology safely and effectively. In 2020, Ahpra and the National Boards published 'Telehealth guidance for practitioners' in response to the COVID-19 pandemic and to set expectations and give high-level guidance on how health practitioners are to use telehealth. More recently, the Medical Board of Australia released revised guidelines on 'Telehealth consultations with patients' (effective from 1 September 2023). Both documents provide guidance on what health practitioners should know and execute when delivering a telehealth service to a patient and give insight into what students are expected to know and do when delivering virtual care to patients.

Evidence reviewed for this paper identified a number of strategies to support education in virtual care. These included:

- having evidence-based, standardised and scaffolded curriculum that is a mandatory part of course requirements
- using a variety of teaching methods and technologies
- providing active learning experiences, opportunities for 'hands-on' practice and experiences with real patients
- providing telehealth training to educators
- ensuring education and healthcare providers work collaboratively to design virtual care learning activities for students.

There is, however, a gap in research literature in relation to what should be included in the telehealth curriculum and how it should be included in health practitioner education. Despite this, a number of virtual care education frameworks have been developed, including by New South Wales (NSW) Health, the Australian Medical Council (AMC), and the University of Ottawa. Common to these frameworks are the emphases on interprofessional collaboration, patient communication, patient safety and compliance with relevant legal, ethical and policy requirements.

1. Introduction

Australia has high standards for the education and training of its health practitioners. That education must reflect contemporary practice and ensure all health practitioners are equipped to meet evolving community needs and changing community expectations. Health practitioners must be able to meet high standards of safety and professionalism and be able to utilise the technologies of today – and the technologies of tomorrow – in a range of settings and locations.

Education providers meet these challenges through developing and using educational innovations. Clinical placements have long been an essential part of a health practitioner's education. They provide students with an opportunity to gain real-world experience, with appropriate oversight, in a supportive environment that reflects the stages of their professional education. There are ever-increasing demands for education providers to offer clinically relevant placements in a variety of settings, geographical locations and communities, and this can be challenging for providers, employers and students alike.

Education providers are also facing greater demands to incorporate pedagogical innovations, such as simulation-based learning and evidence-based technological advances in practice, such as virtual care, into the curriculum.These innovations and advances are central to a health practitioner's education to ensure they have the capabilities required for contemporary practice in Australia.

In 2021, Australian Health Ministers established the independently-chaired Accreditation Committee (the committee). The Committee was established in line with Ministerial Council Policy Direction 2020-1 (the policy direction). It provides independent and expert advice on accreditation reform and other National Scheme accreditation matters to National Scheme entities (National Boards, accreditation authorities and Ahpra).

Ministers asked the committee to provide advice to National Scheme entities on good practice in clinically relevant placements in a variety of settings, geographical locations and communities; evidence-based technological advances; and pedagogical innovations in the delivery of programs of study. This information paper forms the evidence-base that underpins the committee's guidance on these topics. Below is a brief outline of the contents of this information paper and the content of each chapter.

Chapter two of the paper explores good practice in relation to clinical placements. It begins by summarising the challenges facing students, education providers and employers, before examining the factors influencing the value of clinical placements and innovative approaches to clinical placements. Some of these factors include those related to the COVID-19 pandemic and examples of the roles and responsibilities of students, education providers and employers with regards to clinical placements.

Chapter three explores simulation-based learning as a pedagogical innovation in health practitioner education. It provides an overview of the evidence for the value of simulation-based learning; the technologies and techniques used; factors enhancing simulation-based learning; simulation-based learning frameworks; and the challenges facing students and education providers.

Chapter four explores health practitioner education in virtual care as a key technological advance in healthcare delivery. It outlines the existing National Scheme guidance for virtual care and draws on the evidence to identify strategies to support education in virtual care. Lastly, it explores existing virtual care education frameworks that have been developed by a number of authors.

1.1 Methodology

The information in this paper was identified through a search of peer reviewed and grey literature using the CINAHL, Medline and PsycInfo databases and the Google and Google Scholar search engines on the topics of 'clinical placements', 'simulation-based learning' and 'virtual care'.

The inclusion criteria for the information reviewed were:

1. peer-reviewed articles and grey literature from reputable sources (e.g. Health and Care Professions Council United Kingdom, Medical Council of New Zealand, Health Education England, the National Health Service, etc)

2. papers published between 1 Jan 2017 to 31 Dec 2022, with the exception of those listed in Appendix A.

3. papers including health professions in the scope of the National Scheme (with the exception of some papers that examined health and social care professions that are not regulated by the National Scheme, such as social work)

4. papers published in the English language

Papers were excluded if they were:

1. outside the specified date range (1 Jan 2017 to 31 Dec 2022), with the exception of the references listed in Appendix A

2. primarily about professions outside those regulated by the National Scheme, and

3. not in the English language.

2. Clinical placements

Clinical placements are an essential component of a health practitioner's education. They provide students with an opportunity to gain real-world experience, with appropriate oversight, in a supportive environment that reflects the stages of their professional education. Clinical placements may also influence a student's future work choices about professional specialisation, location and area of practice.

Different terms are used to describe clinical placements across the professions regulated by the National Scheme. Terms used include work-integrated learning (WIL), work-based learning, professional experience placement (PEP), professional placement, professional experience, work placement, midwifery practice experience (MEP), clinical experience, clinical attachments, practice placements, clinical internship, clinical rotation, clinical observation or experiential learning. For the purpose of this paper, the term clinical placement is used throughout.

The traditional clinical placement model is long-established and has been used across National Scheme professions for many years. The traditional model for clinical placements focuses on intraprofessional learning, where one student is supervised by one health practitioner from the same profession[1]. The model is commonly based on a student being immersed in a professional environment for a specific period of time. It has a number of benefits including that it enables direct one-to-one student supervision, facilitates skill modelling, enables students to easily demonstrate autonomy and provides more time for student feedback. However, the model also has limitations. These include its ability to provide collaborative/peer learning opportunities, it is often restricted to 'service delivery practicing skills within an existing and well-defined role', the clinical placement supervisor is relied on to provide student learning and it may limit placement availability.

2.1 Challenges facing students, education providers and employers

Evidence suggests students, education providers and employers encounter a range of challenges in relation to clinical placements. These are outlined in Table 1 below.

Table 1: Current challenges for clinical placements

Topic	Challenges
 ***Disruption from the COVID-19 pandemic and downstream impacts***	• Suspension of clinical placements led to a backlog of students needing to complete their clinical placement requirements, which impacted the availability of clinical placements in subsequent years, and delayed some student graduations[2, 3] • Exacerbated student financial concerns due to reduction or cessation of regular employment[4]
 ***Reduced availability and increased demand for placements***	• Availability of placements may be restricted due to constraints on health service funding and resources[5] • Shortening of clinical placements to help meet demand[6] • Possible decrease in clinically-relevant placements due to reduced availability of placements[6] • Impacts on course completion as education providers may not have access to sufficient suitable placements and may be unable to provide students with the clinical exposure they require to complete their course satisfactorily[6]
	• Increasing pressure for clinical placements in a diverse range of settings may place greater cost and pressure on clinical placement providers[5, 7]

Topic	Challenges
Expectations for placements in diverse settings and reflecting future models of care	• Poor student perceptions of placements outside hospitals, with some students believing placements in alternative settings are detrimental to their learning[8-11] • Increasing expectations on placements to reflect future models of care and community needs, including patient-centred care, interprofessional collaboration, specific demographic groups (e.g. Aboriginal and Torres Strait Islander Peoples)[7] • Different expectations held by culturally and linguistically diverse students[12] • Perceptions by clinical placement supervisors that clinical placements in private practice can put added stress on existing health practitioners and resources, particularly in relation to time and space constraints, and can also put added stress on clients to be willing to have students involved in their care[13]
 ***Quality***	• Broad variation in the quality of clinical placements[14] • Lack of a formal accreditation and monitoring system to ensure the quality of clinical placements[6]
 ***Supervision***	• Inadequate preparation, training, and workload pressures make it challenging for clinical placement supervisors to perform their role[6, 15] • Students may increase the perceived burden on health practitioners as time required for student supervision takes them away from routine patient-care responsibilities[14] • Limits healthcare resources and capacity of clinical placement supervisors and staff[11, 13, 14, 16] • Hesitancy of clinical placement supervisors to fail students if required[11, 17-20] • Uncertainty amongst clinical placement supervisors regarding how to effectively support student transition to different care settings[21] • Inconsistencies between clinical placement supervisors in the way they educate and provide feedback to students, and the amount of time they provide to students[11, 22, 23]
 ***Limited support for students in diverse settings***	• Primary care and aged care placements require more planning and preparation by education providers and students[6, 11, 24] • Students involved in these settings may not be sufficiently prepared for placement and have a limited understanding of the context. Some private practices also suggest they don't feel prepared to support students undertaking clinical placement[24] • Considerable variation and adaptation required by students for skills to be effective among different settings or population groups[21]

Topic	Challenges
	• The greater the difference in workplace contexts, the less likely the learner knowledge will translate[21] • Possibility that students could miss or avoid learning opportunities and have disrupted learning and confidence building[21] • Some clinical placement providers and students experience limited contact with, and involvement from education providers during the clinical placements[11, 24]
 ***Graduate knowledge gaps***	• Gaps in student capability are often associated with higher-level functions required for safe practice, such as professional judgment and problem-solving rather than a lack of technical or clinical skills[7]
 ***Lack of assessment methods***	• Underdeveloped assessment and measurement of student learning outcomes from traditional clinical placements[25]
 ***Student health and wellbeing***	• Exposure to trauma in some clinical settings can potentially interfere with students' learning, performance, and capacity to care[11, 26-28] • Students report increased stress associated with 'managing placements, paid employment and limited financial resources'[29]
 ***Clinical placement model issues***	• A focus on the number of placement hours acquired by a student does not ensure quality learning occurred or capability has been developed[14] • Student learning can be disrupted by traditional model rotations[11, 30] • Short clinical placements can be challenging for students, as the placement often ends just as students start to understand the expectations of their workplace and get to know their team members[31]
 ***Financial costs***	• Concerns about sustainability of funding for, and cost of clinical placements[5, 6, 32] • Increasing costs of clinical placements may result in placement providers passing these costs on to education providers[7] • Escalating costs of clinical placements may contribute to student financial insecurity, e.g., students may have to pay for their own accommodation and/or transport for regional and remote placements[29]; they may have to forego employment income; and may face extra costs associated with meals, work clothing, resources, and placement materials[33]. In some cases these added costs have prevented students from undertaking clinical placements[6]

Topic	Challenges
Workforce issues	• Establishing clinical placements requires buy-in from staff[14] • Workforce casualisation in the academic sector may lead to poorer student outcomes[34]

2.2 Factors influencing the value of clinical placements for student learning

Evidence for the value of clinical placements for student learning is mixed. A systematic review of clinical placements for nursing published in 2018[25] was unable to find any studies that reported on the effectiveness of different models of clinical placements against objective learning outcomes (n=118 studies). Study outcomes were self-reported perceptions. The authors concluded the findings indicate that the traditional clinical placement model has not evolved to meet the current demands facing the nursing profession which require higher-order thinking, the ability to prioritise and leadership skills in an inter-disciplinary environment. Therefore, the current methods used to evaluate student learning outcomes in clinical settings may be underdeveloped. This highlights a potential issue around the sector's understanding of the model's true effectiveness, and how clinical supervisors assess student learning when a traditional clinical placement model is used.

However, evidence from a systematic review that investigated the benefits and barriers of clinical practice for undergraduate/graduate paramedicine students and interns (n= 22 studies), and a mixed methods study on the advantages and disadvantages of nursing student clinical placements indicates that clinical placements could potentially contribute to a range of behavioural learning outcomes, as summarised in Figure A below.

Figure A: Core skills developed during a clinical placement[14, 35]

The studies included in this paper found student learning outcomes from clinical placements are influenced by several factors. These are:

a) student activities while on clinical placement

b) placement setting

c) placement model

d) duration and continuity of placement

e) the quality of clinical supervision

f) support for student health and wellbeing, and

g) assessment of student learning outcomes.

a) Student activities while on clinical placement

Evidence shows that student learning outcomes from clinical placements are perceived to be maximised when clinical placement activities:

- meet the student's learning needs and prepare students for practice in the real world[35]
- are delivered in realistic settings[35]
- are delivered with good quality supervision[35]
- are scaffolded from simple activities to more complex activities[14]
- involve the delivery of patient care[14]
- are goal-oriented, achievable and pedagogically rich[14]
- allow time for students to participate in reflective practice to enhance the consolidation of theory into practice[36]
- provide opportunities to discuss and engage with staff[14, 35], and
- help students feel useful and like they have contributed[14, 31].

Qualitative evidence involving nursing and medical students suggests that activities requiring students to actively participate in patient care maximise student learning, as summarised in Figure B below.

Figure B: Activities that enable maximum student learning during a clinical placement[14, 31]

b) Placement setting

Evidence shows that clinical placements in diverse settings can support students to develop a range of clinical and non-clinical skills[11, 12, 35, 37-40], their professional identity increase their motivation and provide realistic situations to apply their skills[21]. This is reflected in clinical placement requirements internationally. For example, the Medical Council of New Zealand requires all interns to complete at least one clinical placement in a community-based setting over the course of their education program[41].

The diverse settings in these studies include community-based care and allied health settings[11, 35] residential aged care[38], primary care[11, 42] ,mental health recovery camps[11, 43], private practice[13, 44-47], as well as placements in rural and remote locations[39, 48, 49], international placements[11, 50, 51] and placements in specialty clinical areas[11, 40], Aboriginal and Torres Strait Islander medical services[11, 52] and prisons[37].

In relation to skill development, the evidence found clinical placements in diverse settings helped students to develop:

- clinical skills and knowledge[11, 37-39, 53]
- communication skills[11, 35, 37, 40]
- their ability to engage with patients and staff[11, 35, 37, 40]
- clinical reasoning[11, 53]
- cultural competence[11, 54]
- community awareness[35]
- a greater perspective of global healthcare[11, 51, 55], and
- an understanding of holistic patient care[35].

These are summarised in Figure C below.

Figure C: Skills developed through diverse clinical placements[11, 35, 37-40, 51, 53-55]

Clinical placements in specialist settings were found to help students develop skills in working with diverse groups including Aboriginal and Torres Strait Islander Peoples[11, 48, 53], other cultural groups[53] and prisoners[37].

In addition, for some professions, placements in non-traditional settings enabled students to further develop their skills in ways they may not have been able to do in more traditional settings. For example, a systematic review investigated the benefits and barriers of learning and preparation for clinical practice for undergraduate paramedicine students, paramedic graduates/interns and their clinical placement supervisors (n= 22 studies)[35]. It found evidence that those undertaking community-based or allied health placements developed community awareness, interprofessional interactions, improved ability to build rapport and an understanding of holistic patient care. They also found these placements enhanced student self-confidence, clinical and patient communication skills in ways they may not have done in traditional paramedicine placements. Similarly, a qualitative study investigating pre-registration nursing student experiences of community based clinical placements found that primary care placements provided students with the opportunity to develop skills in working autonomously[42].

A meta-analysis (n= 27 studies) and a systematic review (n= 29 studies) on student rural clinical experiences found that clinical placements in rural settings may have a positive influence on a student's choice to work in a rural and/or remote location as a registered health practitioner[39, 49], although this may vary by profession. The systematic review also found that rural clinical placements are likely to influence a

student's choice to work in a rural area in the short-term. There is a lack of evidence, and a lack of research, for long-term career choices[49].

Some authors, however, suggest the more differences in workplace context there is, the less the student's knowledge from one setting is transferable to another setting, and the more effort it takes to transition students successfully between settings, both practically and emotionally[21]. Such transitions, even within the same location, may trigger anxiety, stress, frustration, intimidation and fear in students. In their 'Accreditation standards for clinical attachments', the Medical Council of New Zealand also states the need for specific guidelines and requirements to support effective student learning from alternative clinical placements due to the different skills, competencies and focus areas they have compared to traditional placements[41].

For professions using placements in private practice settings, a longitudinal study of physiotherapy students found no difference in performance scores between those who undertook their clinical placement in private practice, compared to those who completed it in the public sector[44]. In addition, physiotherapists working in private practice who provided a clinical placement for a physiotherapy student found the placement expanded team capacity, and was stimulating for staff because they provided new and more up to date perspectives on clinical reasoning[13]. Hosting a clinical placement also provided potential to screen students for future employment; and was seen as an opportunity to give back to the profession'.

However, some studies reported challenges for private practices[13, 47]. The main challenges were stress on resources, including time, space, and access to suitable clients so that student learning could occur. Other associated risks and barriers included the variable quality and consistency of student experiences, concerns about client satisfaction, practitioners feeling that they lack the knowledge and skills to provide clinical education and the cost to private practices. More time and resources may enable private practices to overcome these barriers and increase placement capacity and quality. A qualitative study on osteopathy students analysed the benefits of students participating in learning experiences at private clinics and suggests that universities may be more inclined to encourage students to participate in private practice placements if an accreditation system for private practitioner educators was developed because it would ensure they were of a sufficient standard for student benefit[45].

Strategies to support the integration of allied health placement students in private practice were identified from qualitative studies and fall under the following themes (see Appendix B for further information)[45, 46]:

1. seeking opportunities for the student to add value
2. managing client expectations and care
3. student preparation and learning
4. teamwork and seeking support
5. students developing 'personal learning plans' before starting placement

A summary of findings on the use of diverse placement settings is in Table 2 (below).

Table 2: Findings on the use of diverse placement settings

Setting	Findings
Rural and remote locations	High-quality rural clinical placements may positively impact student choices and intentions to practice in rural and remote locations[39, 49], increase student confidence and ability to communicate with Aboriginal and Torres Strait Islander patients[48], and provide better opportunities for medical students to develop procedural and minor surgery skills than metropolitan placements[39].
Allied health and community-based settings	Support student development in, and understanding of community awareness, interprofessional interactions, rapport building and holistic patient care, and enhances student confidence, clinical and patient communication skills and clinical reasoning skills[11, 35, 56].

Setting	Findings
Aboriginal and Torres Strait Islander Medical Services	Provide students with cultural learning and develops their capacity to provide culturally safe care[11, 52].
Diverse socio-cultural learning environments	Support development of student clinical reasoning skills[53].
International placements	May provide a positive experience and support student clinical skill development[11, 51]. These placements may help students develop greater perspective of global healthcare, grow through reflection and develop cultural competence that is sustained over time[11, 54, 55]. However, international placements vary significantly in terms of duration, the facilitator to student ratio and method of student assessment making it difficult to compare them[50]. Pre-placement training in cultural awareness and health system realities, along with strong supervisory support[51], are needed for these placements to succeed.
Mental health recovery camps	While students had some anxiety before commencing, these placement are found to provide a positive student learning environment where they can develop skills in patient engagement and therapeutic communication[11, 43].
Primary care	Provide nursing students with opportunities to be autonomous[11, 42].
Prisons	Enables students to analyse their views of disadvantaged populations, expand their clinical skills and knowledge, and become part of the nursing profession[37]. However, to strengthen student learning from prison settings they must participate in a placement induction and orientation beforehand and receive support from clinical placement supervisors and staff during the placement.
Residential aged care	Support nursing students growth and professional development, and students are more optimistic of the learning environment when they observe good practice[38]. However, students must enter residential aged care settings with prior knowledge of aged care, how to respond to challenging behaviours and the roles of care staff and unregulated care providers. In addition, students perceived the lack of regulated nurse mentors in residential aged care services negatively impacted their learning.
Speciality area placements	May provide greater opportunities for nursing students to 'observe excellence in teamwork, communication and assessment[11, 40].

c) Placement model

Evidence suggests there are multiple different models used to deliver student clinical placements. The clinical placement models identified from studies reviewed for this paper are outlined in Table 3 below.

Table 3: Types of clinical placement models[57]

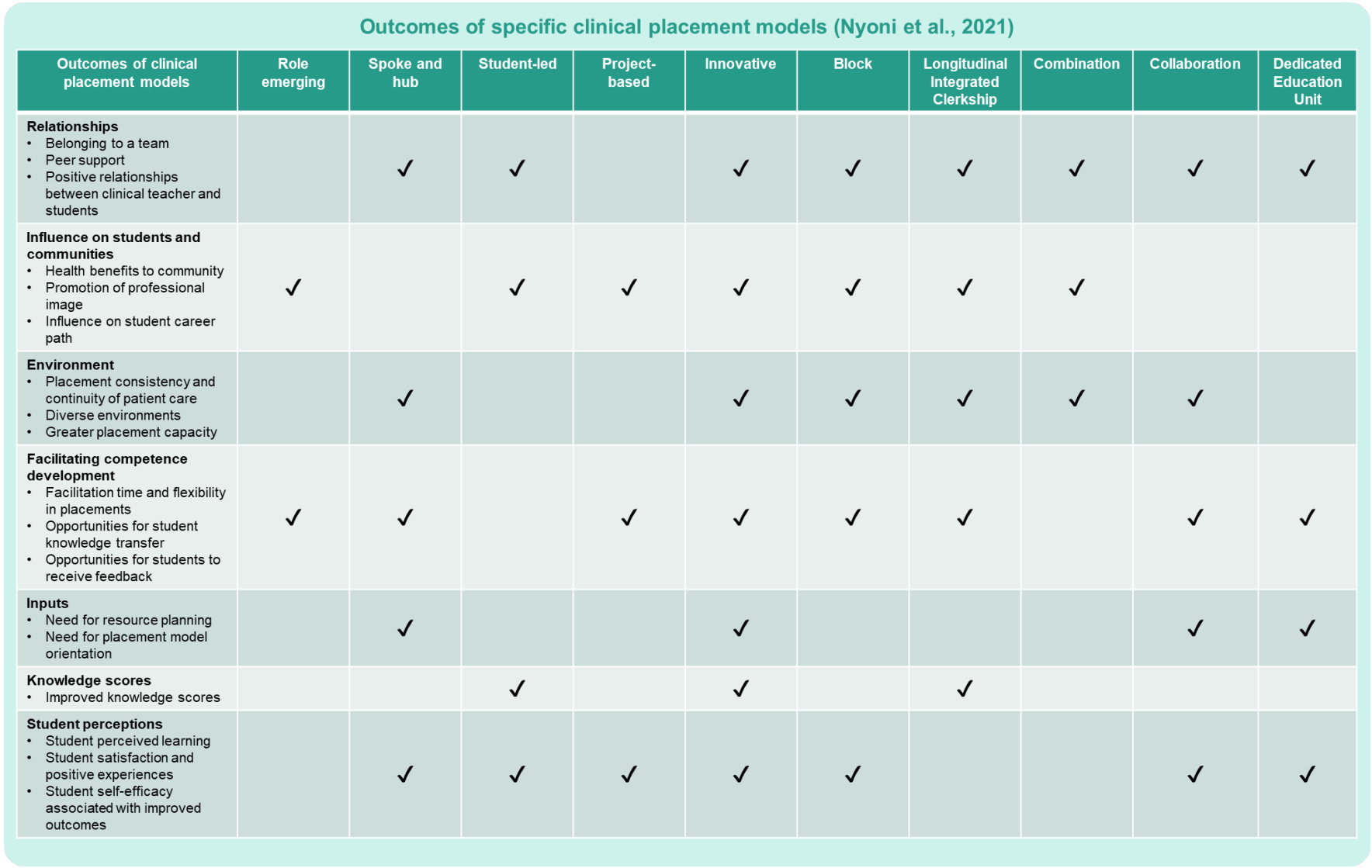
Placement model	Description
Block placement (also referred to as the	An apprenticeship learning method that combines full-time clinical placements for several weeks with study periods and student holidays.

traditional placement model)	Includes specific learning objectives that are aligned to the placement site which the student needs to achieve.
Collaborative placement	Where clinical placement supervisors are assigned two or more students.
Combination placement	A blend of multiple well-established clinical placement models.
Dedicated Education Unit	Imitate particular hospital units or wards to support the delivery of student clinical placements.
Longitudinal Integrated Clerkships	Students participate in patient care for prolonged periods of time (e.g up to one year).
Practice or project-based placement	Centred on a community-based placement approach where students analyse, plan, implement and evaluate community practice projects.
Role-emerging placement	Occur in non-traditional settings where the students' health profession is not currently delivered by a particular practice. Student supervision is provided by onsite employees and support from qualified practitioners of the same profession is provided by distance.
Spoke and hub placement	Students allocated to a specific practice 'hub', and then issued a 'spoke placement' that focuses on developing the skills/practice associated with the hub. Also aims to support student understanding of the patient journey through the healthcare setting.
Student led placement	Students lead the delivery of services under the supervision of a clinical facilitator.

A 2021 scoping review described 10 clinical placement models, mainly involving undergraduate nursing students from Australia[57]. The reviews found that different outcomes were associated with different clinical placement models. These are summarised in Figure D below. The review concluded while there is no single model that is suitable for all professions, specialties and contexts, the main factors taken into consideration when professional bodies select a suitable placement model appear to be the context, number of students, placement capacity and availability of supervisors. The authors also made several recommendations on key components that can be incorporated into clinical placement models to enhance student learning. They recommend all clinical placement models:

- prioritise the development of positive relationships between students, their peers and facilitators
- ensure students are assisted by experienced professionals
- ensure students receive individualised feedback
- provide students with orientation and resources, and
- integrate the development of positive student learning experiences and perceptions.

Figure D: Outcomes related to clinical placement models used in undergraduate health practitioner education (simplified from Nyoni et al. 2021)[57]



Outcomes of specific clinical placement models (Nyoni et al., 2021)

Outcomes of clinical placement models	Role emerging	Spoke and hub	Student-led	Project-based	Innovative	Block	Longitudinal Integrated Clerkship	Combination	Collaboration	Dedicated Education Unit
Relationships • Belonging to a team • Peer support • Positive relationships between clinical teacher and students		✓	✓		✓	✓	✓	✓	✓	✓
Influence on students and communities • Health benefits to community • Promotion of professional image • Influence on student career path	✓		✓	✓	✓	✓	✓	✓		
Environment • Placement consistency and continuity of patient care • Diverse environments • Greater placement capacity		✓			✓	✓	✓	✓	✓	
Facilitating competence development • Facilitation time and flexibility in placements • Opportunities for student knowledge transfer • Opportunities for students to receive feedback	✓	✓		✓	✓	✓	✓		✓	✓
Inputs • Need for resource planning • Need for placement model orientation		✓			✓				✓	✓
Knowledge scores • Improved knowledge scores			✓		✓		✓			
Student perceptions • Student perceived learning • Student satisfaction and positive experiences • Student self-efficacy associated with improved outcomes		✓	✓	✓	✓	✓			✓	✓

A systematic review on nursing students analysed several academic-practice partnership models to understand if they are beneficial for enhancing nursing student learning compared to traditional clinical placements (n=14 studies)[15]. The review compared the effectiveness of the collaborative teaching model, Dedicated Education Unit (DEU), Dedicated Education Centre, Clinical Education Units (CEU), education partnership, collaborative educational-practice and collaborative clinical practicum models. There was limited evidence that the interdependent clinical faculty and clinical mentor roles, and commitments from education and health institution managers, may aid student learning.

A longitudinal study of medical students found different clinical placement models, including block rotations, longitudinal integrated clerkships, or community and hospital integrated learning placements, impact a student's ability to transform from learners to beginner clinicians[58]. The different models also influenced changes in student's perceptions of 'self-awareness, patient centredness, systems thinking, self-care, clinical scepticism and understanding of diversity'[58]. The authors found that regardless of the model used, all students experienced this transformation in relation to their procedural learning, problem-solving and communication skills. However, the study suggests that longitudinal placement models, including longitudinal integrated clerkships and community and hospital integrated learning placements, were more likely to provide a learning environment that encouraged students to examine and understand their individual values as clinicians.

Lastly, in their '*Guidance on undergraduate clinical placements'*, the General Medical Council in the UK outlines the need for education providers to offer students continuous training to support their time on clinical placement, and consistent of topics including harassment, mental health, discrimination and speaking up[59]. It also highlighted the need for the quality of clinical placements to be actively improved to support the needs of culturally diverse students.

d) Duration and continuity of clinical placements

As noted above, student learning in the workplace can be complex, and evidence shows a student's ability to learn can be challenged when there are frequent transitions between workplaces[21]. Evidence suggests that longer, more continuous clinical placements in the same setting may be more beneficial for preparing students for practice and for their future careers. A systematic review (n=15 studies) of research related to 'readiness to practice and types of clinical support offered to newly registered nurses and preregistration nurses' suggests it is important students receive enough clinical exposure throughout their curriculum and/or program to achieve the clinical skills they need for safe practice[60].

For instance, longitudinal placements may better prepare medical students for independent clinical practice compared to block placement models[61]. Factors related to longitudinal training models that stimulate students to work independently centre around their relationships with preceptors and the health care team. These longer placements allow students to establish deeper relationships with their clinical placement supervisor and other clinical staff. These stronger relationships create a safe learning environment for the student and allow them to become part of the healthcare team, resulting in greater opportunities for students to provide patient care independently. Once students are trusted to deliver patient care, they have the opportunity to establish longer relationships with patients which promotes student professional development and increases clinical placement supervisor and staff trust in the student's ability to provide patient care.

The systematic review of academic-practice partnerships in nursing discussed above in section c (n=14 studies) also found that clinical placements of a longer duration provided greater learning opportunities to students, greater time for students to develop skills and build relationships with patients, as well as more time for students to learn how to work with clinical staff[15]. The authors noted a student's capacity to acquire these skills through short placements is challenging.

The argument for longer student clinical placements in the same setting is also supported by a qualitative study of midwifery students. The authors findings suggest, similar to the studies discussed above, the familiarity and consistency established through participating in clinical placements within the same clinical setting on a weekly basis, may offer students greater learning and early professional socialisation opportunities than traditional block placements[62]. The study found students valued the ability to learn skills and theory in the classroom, and apply these skills in practice in the same week, through participation in the continuous placement.

A narrative review of medical education literature suggests medical schools in the United States of America (USA), UK and Australia have used the Longitudinal Integrated Clerkship (LIC) model in which students participate in the provision of comprehensive care of patients over time[63]. Students participate in continuing learning relationships with these patients and their clinicians, and students meet the majority of the year's core clinical competencies across multiple disciplines simultaneously through these experiences. The review found students who participated in LICs achieved academic results equivalent to, if not better than those in traditional block rotations. They also developed better patient-centred communication skills and approaches to practice, interprofessional teamwork skills, understanding of psychosocial contributions, higher-order clinical and cognitive skills, and were more likely to take increased responsibility with patients and have greater confidence in handling ethical issues.

However, there are contrasting findings including a qualitative study of GenZ student nurses in the USA which found no difference in readiness to practice, anxiety and self-confidence between those who completed a four-week clinical placement compared to those who completed a 14-week clinical placement (n=46 student nurses born after 1995)[64]. This suggests that the length of time spent in clinical placements may not directly influence student readiness to practice.

e) The quality of clinical supervision

A number of studies reaffirm the importance of quality clinical supervision of students during clinical placements. An early literature review by Kilminster and Jolly (2000) examined the research on effective supervision and found the quality of the relationship between a student and their clinical placement supervisor is likely to be the single most important factor for effective supervision, and more important than the methods of supervision employed[65]. The authors concluded:

- feedback is an essential component and must clearly communicate the student's strengths and weaknesses
- it is important the student has some control and input into how they are supervised
- in-person student supervision positively impacts patient outcomes and student development such that insufficient student supervision may lead to poor patient safety and outcomes
- there were not enough solutions to address their finding that there is an issue with providing sufficient time for supervision

The authors also found the quality of supervision was not addressed in the research literature, and supervisory practice in medicine at that time lacked a sound empirical or theoretical basis. Their review called for better research into supervision in practice settings to support the development of effective supervision models that could inform practice.

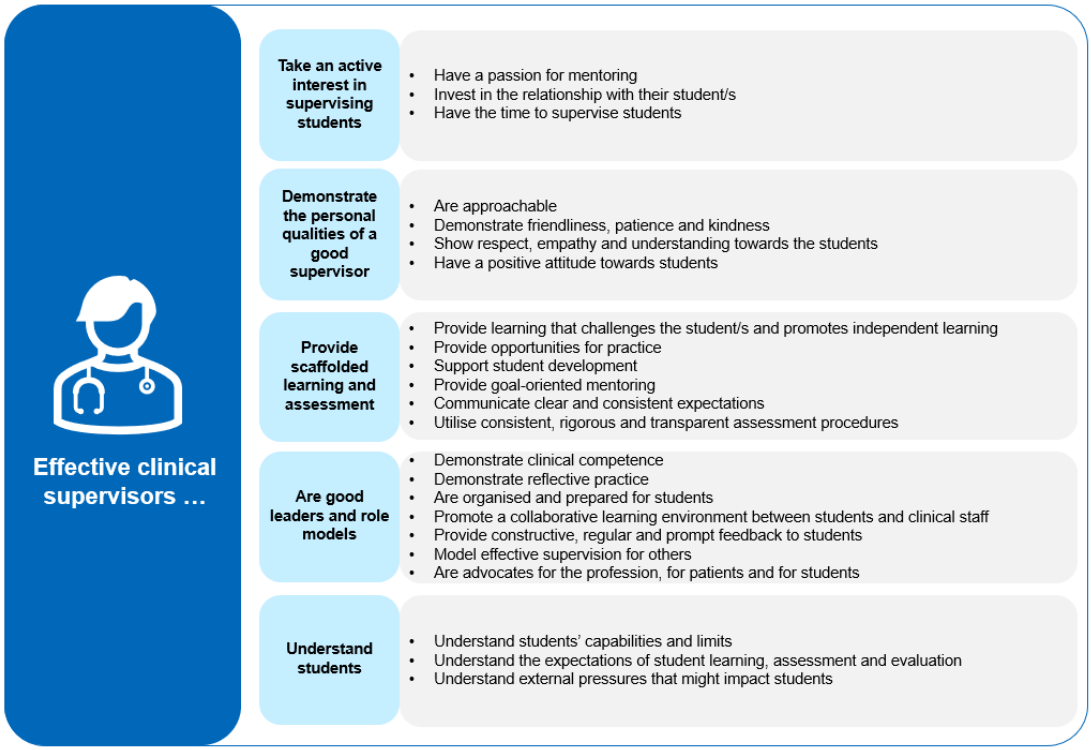
A systematic review of clinical placements for paramedicine students found that clinical supervision was necessary to assist students with their transition from university learning to learning in a real-world clinical setting (n= 26 studies)[35]. The authors suggest that clinical placement supervisors:

- should support the same student throughout their entire clinical placement experience so they can become confident in the student their supporting and better assist student skill progression
- develop an understanding of their students and their unique learning needs
- receive support from both the health practice/their profession and universities
- have a degree of experience in their profession before supporting students
- receive recognition for being a clinical placement supervisor/mentor to students
- receive feedback from students on their capability as a supervisor.

Another systematic review (n=15 studies) discussed previously in this section advocates for the use of a model to support consistency in the approach to student supervision as currently, clinical placement supervisors use a variety of methods to supervise students[60].

Evidence shows clinical placement supervisors require a range of skills and qualities to effectively support students, as shown in Figure E below.

Figure E: Skills required for effective supervision[41, 60, 66-71]



While some health practitioners receive formal training in supervising clinical placement students, some do not. Multiple studies suggest the need for more education for clinical placement supervisors on how to supervise and assess students on clinical placement[15, 35, 60, 72, 73]. There are currently no standards in place for training clinical placement supervisors suggesting that training should be established as a core skill for graduates and defined by the regulating registration authority[35]. Training for nurse mentors enhances the support and guidance they provide to students, improves nursing student competence, aids patient safety and ensures patients receive better care[71]. Therefore, healthcare providers that deliver student clinical placements should emphasise the importance of growing mentoring competence through training, support for mentors and enable an open learning environment. The provision of clinical placement supervisor training is mentioned as a requirement in key documents from health practitioner regulators in New Zealand (NZ), the United Kingdom (UK) and Ireland[36, 41, 74].

In response to the same issue, Australian Nuclear Medicine University partners wrote a paper to educate medical radiation health practitioners how to supervise and assess students[72]. Strategies to enable high-quality clinical supervision and assessment outlined in that paper are summarised in Table 4 below.

Table 4: Strategies that support the delivery of high quality clinical supervision and assessment[72]

To support students during clinical placements, supervisors should:	To support assessment of students during clinical placements, supervisors should:	To support provision of feedback to and from students during clinical placements, supervisors should:
• provide a 'welcoming clinical environment' • build rapport	• be assigned to a student at the start of their clinical placement • explain how the student will be assessed and how evidence about a student's performance	• engage students in feedback processes • provide opportunities for the student to give feedback so they can advocate for their

To support students during clinical placements, supervisors should:	To support assessment of students during clinical placements, supervisors should:	To support provision of feedback to and from students during clinical placements, supervisors should:
• be respectful towards students • take the time to get to know the student on their first day • act as an interim clinical supervisor if the appointed supervisor is not available • adapt supervision styles to match each student's teaching and learning needs • set aside time with students to discuss their learning experience • provide opportunities for students to experience different teaching and learning styles by pairing the student with different clinical supervisors	is collated to support assessment • notify the university as soon as possible when a student is not meeting learning outcomes or achieving them within an expected timeframe	learning needs and preferred learning styles • provide formative feedback • prepare for feedback conversations • schedule a mutually appropriate time for feedback conversations • engage in two-way conversations • discuss primary areas for a student's improvement • base feedback on observable performance and ensure it can be measured against goals/objectives • ensure the student understands the feedback and work with students to develop identified areas for improvement • use non-judgemental language and not generalise when providing feedback

f) Support for student health and wellbeing

Clinical placements may maximise value when they support student health and wellbeing, however, the evidence for this topic is weak. The systematic review of clinical placements for paramedicine students quoted above (n= 26 studies) identified the importance of students being able to manage their emotions, in order to communicate with patients, family members and other health professionals[35]. The authors suggest that training be provided to students to increase their ability to manage their emotions, build resilience and their interpersonal skills. Developing these skills might reduce the possibility of students developing poor mental health. Another systematic review found that a trustworthy learning culture stimulates the development of resilience in nursing students (n= 8 studies)[75]. Factors identified as contributing to the development of resilience were role modelling by nurse educators, increased awareness that the individual has the power to endure in adverse situations, reframing bad experiences, structured and supportive learning in first year. Other studies of nursing students[76, 77] found that students who are more assertive or have stronger resilience skills may experience better wellbeing while on clinical placement.

Qualitative research suggests that a positive and welcoming workplace is valuable to students[72, 78]. Collaborative partnership models of clinical placement have the potential to provide better support for students as shown by an integrative literature review of nursing students, clinicians and clinical facilitators' experiences in an acute care setting[79]. Collaborative clinical placements are a model where education

providers, healthcare organisations and undergraduate students work in partnership to deliver the students' clinical placements. Health practitioners work with students throughout their placement, and the student completes most of their placement at one organisation. Faculty support is provided to both clinical placement supervisors and students. This model differs from others as the length of time students spend at the one organisation enables them to familiarise themselves with the environment and requirements of that organisation. The authors identified the sense of belonging and acceptance, familiarity and continuity, confidence and competence, preparedness, and supervising relationships and faculty support produced from collaborative clinical placement models are important factors in contributing to positive clinical placement experiences for students. Students who participated in the collaborative clinical placement models also experienced reduced anxiety often found with participating in placements in new settings.

An evaluation of an immersive orientation program for medical students in Australia established to support student transition to regional clinical placements, identified the program improved students' knowledge of factors that could enhance their wellbeing when transitioning into their clinical placement[80]. These factors included their knowledge and understanding of mental health first aid; student support services; connectedness with students and staff; and self-management of health and workload. The evaluation also highlighted the importance of providing opportunities to students to interact with peers and staff outside the formal education setting.

In the UK, an evidence-based digital package to support health profession workers and students mental health and wellbeing during the COVID-19 pandemic was developed and evaluated[81]. The package provides health profession workers and students with information on psychological impacts, psychologically supportive teams, communication, social support, self-care, managing emotions and further resources to support mental health and wellbeing. It was found to be appropriate, meaningful, useful and met the needs of health profession workers and students in community and hospital-based settings. The authors suggest while the package was developed for a UK-based audience, it is likely to be relevant to an international audience with the exception of UK-specific resources (e.g. telephone help lines).

A seven-step framework was introduced to implement a Virtual Community of Practice (VcoP) to determine how useful it is in promoting knowledge sharing and reduced isolation for Australian general practitioner students[82]. VcoPs are a method of connecting individuals online by facilitating virtual face-to-face communication and collaboration with the support of virtual technologies, mainly through social media technology. The seven-step framework involved:

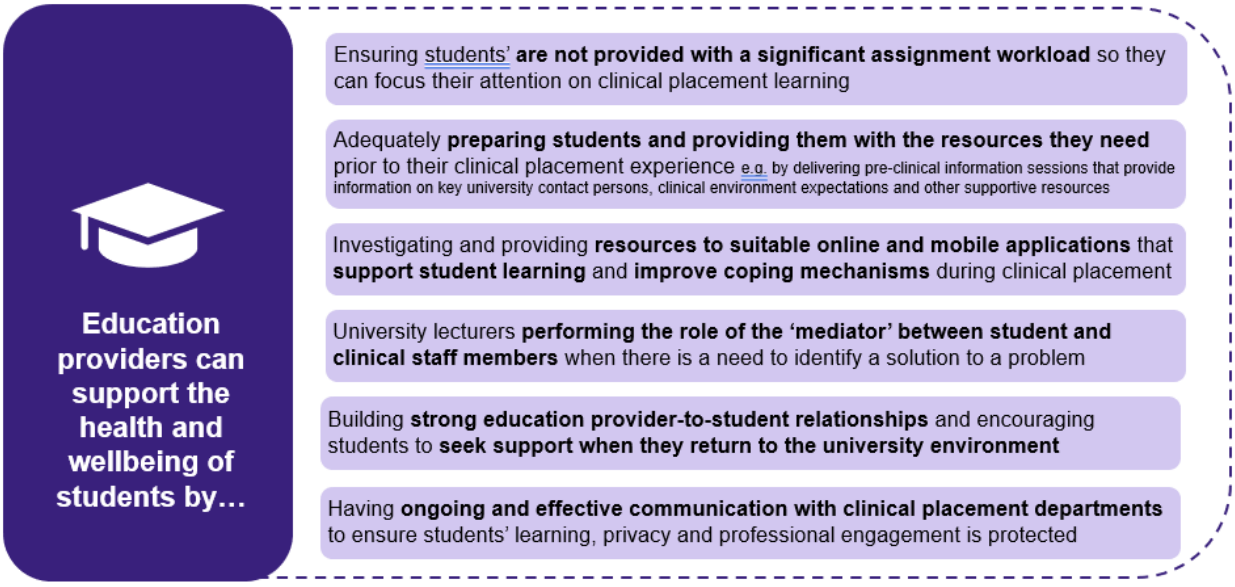
1. organising facilitation
2. sourcing champions and supporters
3. establishing goals
4. having a broad group of users
5. ensuring a supportive environment
6. providing benchmarking and feedback
7. considering technology and community factors that promote usage.

Feedback showed that the framework reduced isolation, improved connectedness and built trust between students. There were, however, some barriers including chat-based communication as it was slow and required fast typing, and time including allocating time and finding time slots that suited all students involved. In interpreting the findings, it should be noted there was an over-representation of active users of the VcoP which may have led to skewed positive results. While isolation and knowledge score outcome-data was collected, the changes were not statistically significant.

This model was adapted to alleviate the impact of social isolation on medical education Doctor of Philosophy students during the COVID-19 pandemic which was positively received by students, and increased their morale, feelings of collegiality and satisfaction[83]. It also increased the degree of support offered to students leading the students to ask for the virtual postgraduate community of practice to be continued following the return to in-person education.

A narrative review of medical radiation practice students undertaking clinical placements identified a number of factors that put them at risk of developing psychological problems[84]. The main risk factors were financial and workload stressors, patient death, bullying and harassment, poor physical wellbeing, mental illness, burn-out, unkind criticism from clinical staff and fear of making mistakes. The review identified several ways education providers can support students to ensure they maintain their health and wellbeing while on clinical placement which are outlined in Figure F (below).

Figure F: Ways education providers can effectively support student health and wellbeing while on clinical placement[84]



g) Assessment of student learning outcomes

A study by Leighton et al., 2021 indicates that robust methods to measure student learning outcomes from clinical placement experiences have yet to be developed[25].

As discussed above, the systematic review of learning outcomes for student nurses who had undertaken a clinical placement in the USA (n= 118 studies) was unable to find any articles that reported quantitative outcomes[25]. The authors suggested that despite changes in patient care and scope of practice over time, traditional clinical models may not have evolved as rapidly leading to the means of assessment, evaluation and measurement of student learning outcomes being underdeveloped. The authors emphasised the importance of using robust methods to measure student learning outcomes.

A further systematic review identified the best available evidence for assessment of nursing student competence in clinical practice (n= 6 studies)[73]. The findings suggest there is a need for consistent approaches to student assessment and the use of valid assessment instruments. It concluded that mentors find assessing student competence challenging. Having clear assessment criteria, receiving support from nurse educators and education on student assessment were shown to be important. The authors suggested that developing feedback practices, and providing students with moments for reflection, are also important to enable continuous learning.

2.3 Innovative approaches to clinical placements

New approaches to clinical placements have emerged over time, including during the COVID-19 pandemic. Evidence suggests some of these innovations may support the achievement of clinical and non-clinical student learning outcomes. Key clinical placement model innovations identified from the evidence reviewed for this paper include:

- using telehealth to continue to deliver clinical placements for students at a time when in-person placements were not possible

- using interprofessional placements to develop students' non-clinical skills, such as teamwork and communication
- using team-based approaches to increase the number of placement opportunities available
- peer learning to embed student learning.

The evidence for these innovations is summarised in Table 5 below.

Table 5: Innovations in clinical placement models

Innovation	Examples	Findings
Use of telehealth to deliver clinical placements	Clinical research placement[85] Tele-ICU clinical rotation[86]	• Increased student clinical skills and confidence (including assessment patients using remote monitoring systems)[85, 86] • Improved understanding of how clinical research is developed and applied in health practice[85] • Improved information presentation skills[85]
Interprofessional placements	Rural Interprofessional Education and Supervision[87] Virtual interprofessional education sessions[88] Interprofessional service learning[89]	• Improved interprofessional understanding and interprofessional collaborative practice[87-89] • Improved teamwork and professional development skills in students[87] • Enabled students to learn patient management skills earlier[87] • Enhanced student readiness for work[87] • Improved student patient crisis management skills[88]
Team-based approaches	Paired placement[90] Group supervision[91]	• Increased number of placement offerings[90, 91] • Strong student and supervisor satisfaction[90, 91]
Peer-learning	Communities of practice[92] Hull evaluation appraisal student integration[93]	• Increased student placement capacity, level of support, mentorship and learning among students[92, 93] • Enhanced students' willingness to proactively address weaknesses[93] • Raised student independence[93]

Other innovations identified include distance supervision, various preceptorship models, blended models, use of virtual learning to deliver clinical placements and simulated placement models. See Appendix C for the other innovative models reported.

Innovations in clinical placement education delivery during the COVID-19 pandemic

The COVID-19 pandemic was a catalyst for innovation as education providers tried to minimise the impact of pandemic-related interruptions on student education and clinical placements. A systematic review of changes in medical education (including continuing professional development) in response to the early stages of the COVID-19 pandemic noted that education delivery experienced a rapid shift to embracing synchronous and asynchronous online learning environments and suggested this shift is likely to remain

into the future (n=49 studies)[94]. Studies in the review reported on alternative education methods to replace and/or supplement clinical placement learning. For example:

- **Online synchronous and asynchronous activities:** surgical clinical placements used online synchronous and asynchronous learning activities, including videoconferencing, flipped classrooms with question-and-answer time, video review of surgical procedures and surgical simulations). Several other studies in the review used asynchronous learning activities (e.g. practice questions, independent projects, interpretations of example slides, procedural videos, videoconferencing and e-learning modules) to replace and/or supplement clinical placements.

- **Virtual clinical elective:** established using synchronous seminars, role plays and small group discussions.

- **Re-design of undergraduate curriculum:** one study reported the re-design of the undergraduate curriculum including shortening the duration of all undergraduate clinical placements by one-third and supplementing them with online virtual clinical placements. While these interventions were necessary to enable continued learning, evidence suggests they could not replace some in-person activities such as operating room experience.

The review also reported on studies that found ways to enable students to continue to experience direct patient contact throughout the COVID-19 pandemic, including using supervised telephone/video consultations, and virtual ward rounds using an 'iPad on wheels' that allowed students to witness and engage with COVID-19 patients.

A systematic review identified the challenges faced by medical and surgical educators during the COVID-19 pandemic (n= 46 studies)[3]. The main innovations identified in this review were virtual care and telehealth. For example, one study included in the review described student participation in 'structured, video-based encounters' with real emergency department patients and supported patient triage at a US teaching hospital. This enabled medical students to continue to receive clinical exposure.

Qualitative evidence also suggests the pandemic encouraged education providers to adapt to telehealth. A study of nursing students indicated telehealth placements improve student confidence in therapeutic engagement and clinical assessment[95]. Use of online teaching techniques to support student learning usually obtained through clinical placements was also reported[96]. For example, online banks of clinical cases, including patient interviews and interactive case studies, were provided to support student continuation of clinical study and virtual headsets were developed and worn by health practitioners to give medical students a 'first-person' view of patient examinations to allow large-scale bedside teaching.

Other innovative approaches used during the pandemic included the use of digital applications and simulation-based learning activities. One UK hospital increased the use of digital applications due to difficulties providing students with ward-based learning opportunities[97]. These applications include the 'OSLR' application which enabled students to 'sign up' for teaching sessions offered throughout the placement, request teaching sessions and provide feedback to educators and the 'Pando' application which allowed students and clinical teaching fellows to share details regarding unique patient cases.

At the same UK hospital, a novel 'simulation package' was introduced that comprised a series of 'bleep simulations' combined with virtual reality simulations and ward rotations all within a nine-week rotation to enable students to experience common clinical scenarios and develop prioritisation skills[97]. A 'bleep' is a communication solution that enables health practitioners to communicate and collaborate both within, and across healthcare organisations. For example, students were placed in a hospital with a 'bleep' and called to a ward where a folder was provided with a scenario the students had to solve while receiving 'bleeps' about other tasks. Preliminary student feedback indicated students found the simulation package helped them build confidence and develop clinical judgement.

In Alberta, Canada, a virtual simulation program, *Sentinel City®3.1,* was used in lieu of clinical placements for out of region students who had decided to isolate or could not enter the province due to COVID-19 restrictions[98]. This is the first time the program, which allows students to examine the health, social and environmental issues faced by citizens of a typical American city, was applied to community nursing students. Students were asked to complete a project in their neighbourhood as well as the virtual simulation exercise. Qualitative feedback from students showed that while they acknowledged the role of the virtual simulation and found it a safe and helpful way to educate community and population health

concepts and skills, they would have preferred more interaction with 'real' people. Educators on the other hand reported being able to teach population health concepts more easily.

Innovations in clinical placement student assessment

The information reviewed for this paper also revealed some innovations in student assessment used during the COVID-19 pandemic. A systematic review of approaches taken internationally to adapt clinical examinations for medical students during the COVID-19 pandemic (n= 36 studies) found adaptations to both in-person and on-line examinations[99]. In-person adaptations included using simulated patients instead of real patients and using mannequins/task trainers for assessment of student practical and/or physical examination skills. Online clinical examination innovations included the development of OSCE circuits using online software (such as Zoom or Microsoft teams) and modified station content to enable online delivery of examinations. The authors concluded that longer term, on-line clinical examinations could be used to assess students, particularly those participating in remote clinical placements and the assessment of student telehealth skills. However, the authors suggest this can only be done if sufficient planning and development is undertaken. The authors also signalled that the studies in the review were likely to be highly biased.

In Australia, a hybrid Objective Structured Clinical Examination (OSCE) was developed to assess final year osteopathy students which combined online and face-to-face components and were video streamed to an assessor located in a separate room[100]. Informal feedback from students (n=86) and examiners (n=18) was positive. The authors suggest that hybrid OSCEs could possibly be used in future to enable 'online synchronous assessment of students during their clinical placements in regional and remote clinics'.

2.4 Current roles and responsibilities with respect to clinical placements

Employers, education providers, students and accreditation authorities all have different roles in relation to clinical placements. For the purpose of this paper, we reviewed a selection of clinical placement guidelines published by public and private sector health agencies[101-106]. These guidelines provide an example of the roles and responsibilities employers, education providers and students may have with respect to clinical placements. While there are some differences between jurisdictions and between employers, an example of possible responsibilities is provided in Table 6.

Table 6: Examples of the roles and responsibilities of employers, education providers and students with respect to clinical placements[101-106]

Employers and Clinical Supervisors	Education providers	Students
Compliance documentation verification: verify student compliance documentation and require student compliance with mandatory training	**Student compliance:** ensure students nominated for placement are compliant with law, protocol and policies; are fit and proper; ready for exposure to practical learning and execute clinical supervisor instructions	**Comply with workplace requirements:** comply with protocols, guidelines, procedures and policies of the health service. Ensure these requirements are submitted before commencing clinical placement and maintained throughout their placement experience. This may include evidence of vaccinations and working with children check
Orientation and induction: provide orientation and induction for students and education provider staff	**Student pre-placement preparation:** ensure students have met relevant learning objectives, and are registered	**Placement preparation:** prepare for their clinical placement experience. This may include revising relevant theory/skills, checking details about the

Employers and Clinical Supervisors	Education providers	Students
	with Ahpra before commencing placement	workplace they are attending, contacting their student coordinator before placement, and completing any mandatory training
Resources, equipment and facilities: provide resources, equipment and facilities to support the student placement, such as space for the education provider to hold discussions with students	**Student discipline:** discipline of students	**Orientation, induction & conduct:** complete orientation and induction, and comply with education provider and health service codes of conduct for students on placement
Partner with education providers: work with education providers to provide clinically relevant and appropriate opportunities to students, and notify education provider when student absenteeism occurs	**Student absence:** notify clinical placement provider of student absence from placement	**Understand learning objectives:** identify and understand their unique learning objectives, goals and strategies
Assign student to a clinical supervisor: match students with a suitably skilled and qualified supervisor	**Share student learning objectives and competency level:** ensure clinical supervisor and employer is aware of student learning objectives to be met during the placement, and the student's current competency level associated with their education programme	**Follow the direction of their clinical supervisor:** students should follow the direction of, only provide patient care under, and report to their clinical supervisor. This includes informing their clinical supervisor when they are unwell, and recognising the limits of their knowledge and actively seek assistance to fill gaps
Student assessment: clinical supervisor assigned by the employer will assess student outcomes from the placement	**Operation and monitoring of clinical placements:** administer and manage the student's clinical placement program	**Executing feedback and self-reflection:** actively execute feedback provided to develop clinical competencies and reflect on learning regularly via self-assessment
Access to patients: provide students with access to patients and patient information necessary to complete the placement	**Student supervision:** supervision of and teaching to students	

3. Simulation-based learning

Simulation-based learning, also known as simulation-based education and training, has become a common pedagogical tool used in health practitioner education. It has been used to support clinical education in Australia for many years. In 2010, for example, at least 12 occupational therapy programs at Australian universities included simulation-based learning activities, of which three counted simulation-based learning activities towards the field work required for their qualification[107].

Studies suggest that simulation-based learning may complement traditional teaching methods, such as clinical placements[108, 109]. They also suggest that simulation-based learning can provide comparable student learning outcomes and capability development as other teaching methods.

A systematic review of nursing students (n=33 studies) found no significant differences in student clinical competency, critical thinking, knowledge acquisition and self-confidence from substituting clinical placements with simulation-based learning, even when simulation supported 50 per cent of clinical hours[110]. However, the authors noted this finding required further consideration. A randomised controlled trial of occupational therapy students (n=275 in the simulated clinical placement arm and n=265 in the traditional clinical placement arm) across six Australian universities also found no significant differences in learning outcomes[111]. A three round Delphi consensus study of nursing and allied health managers, clinicians and lecturers from the UK reached agreement that simulation could support between 11 to 30 per cent of clinical training time[112], while a qualitative study of occupational therapy student placements showed that simulation could effectively support 50 per cent of clinical training time over a four week period[113]. A preliminary study of osteopathy students (n=10 students) suggests that for simulation to most effectively support the delivery of traditional clinical placements and result in an equivalent student learning experience, simulation-based learning activities should align with activities undertaken in traditional clinical placements[114]. The systematic review mentioned above (n=33 studies) suggests that simulation-based learning should be used to complement clinical placements rather than replacing them entirely[110].

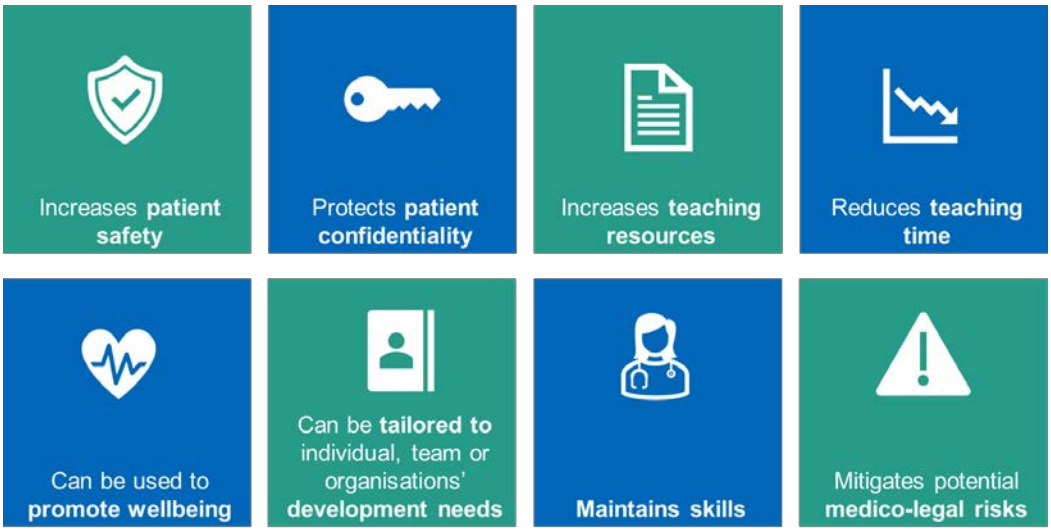
3.1 The value of simulation-based learning

Simulation-based learning can be a valuable contributor to student learning. Studies suggest simulation-based learning[108-110, 115-117]:

- helps prepare students for and supports their transition to real-world practice
- ensures consistent student learning experiences
- enables students to play an active role and be in control of their learning
- provides a safe practice environment for students
- opportunity to practice situations that are rare or difficult to experience in a clinical placement
- allows students to develop expertise with minimal instruction
- enables students to decrease mistakes and increases flexibility in practice
- may be more convenient for students as it's accessible at times that suit the learner
- allows standardisation of experience for an entire cohort of students
- in clinical settings, can increase the availability of clinical placement spaces and relieve the work of clinical placement supervisors
- in academic settings, can alleviate the financial burden of the number of human resources necessary to manage clinical placements

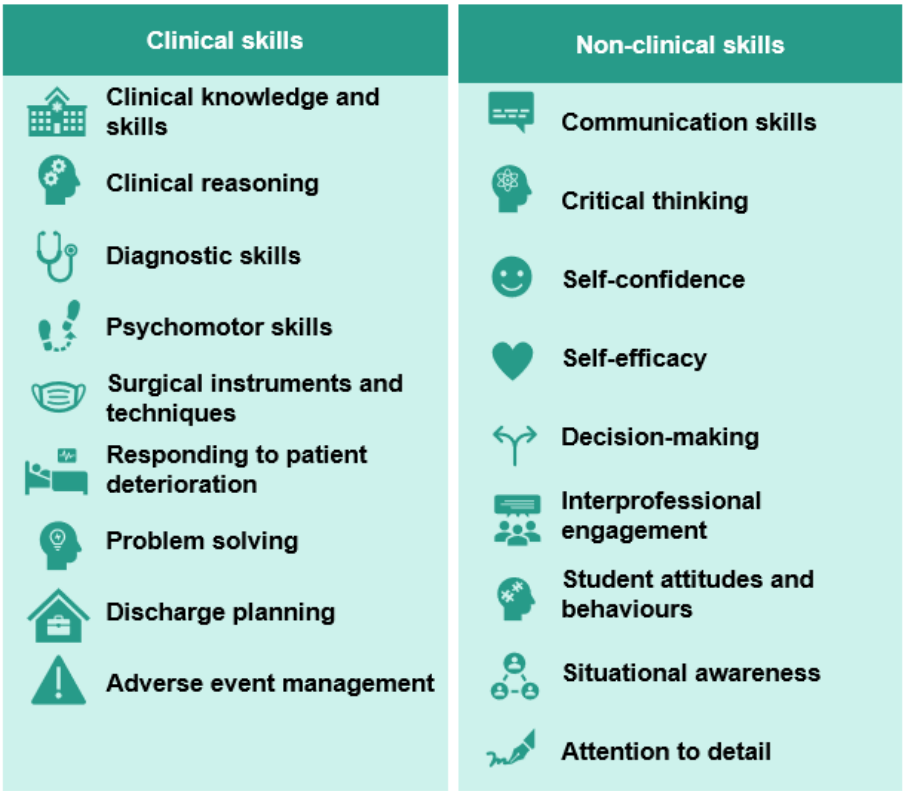
The Health Education England (HEE) and the National Health Service (NHS) describe the benefits of simulation-based learning as summarised in Figure G below.

Figure G: Benefits of simulation-based learning[117, 118]



Evidence suggests that simulation-based learning can enhance students' clinical and non-clinical skills, as outlined in Figure H below[108-110, 119-127], although the evidence is mixed[11, 128]. For example, a 2017 systematic review (n= 30 studies) found simulation-based learning shows clinically quantifiable improvements in student clinical skills (n= 20 studies), knowledge (n= 14 studies), self-confidence (n=19 studies) and satisfaction (n= 7 studies)[119]. However, a 2015 systematic review (n= 33 studies) indicates simulation-based learning may have challenges advancing student communication and organisation of health care delivery skills[110]. In addition, simulation-based learning activities have been found to be more valuable if students have already had some real-world clinical exposure[11, 129]. Furthermore, poor simulation design or student attitudes can result in negative student learning experiences.

Figure H: Clinical and non-clinical skills that may be enhanced through the use of simulation-based learning[108-110, 119, 121-127]



A meta-analysis of studies of simulation-based learning in higher education found that simulation was highly effective for teaching complex skills and had a moderate effect on outcomes for non-clinical skills, such as communication and teamwork (n=145 studies)[120]. The greatest effect was found using live simulations with standardised patients, followed by hybrid simulations, (a simulation involving the use of multiple types of simulations during a learning phase) and for medical students, mannequins. Role plays and virtual objects had a moderate effect on learning, whereas simulations using documents were least effective. Higher levels of technology support and scaffolding were associated with better learning outcomes. A study by Grossman et al., 2009 included in the meta-analysis of studies of simulation-based learning in higher education discussed above also supports the idea that simulation-based learning can be more tailored to student needs, as it can easily be adjusted to facilitate certain aspects of student learning and practice and allow for greater experience-based learning than traditional clinical placements[130].

A randomised controlled trial that compared mannequin-and screen-based simulation for nursing students with traditional clinical experience on their cognitive learning and performance of patient care outcomes during their first inpatient clinical course[131]. Students participated in two hours of mannequin-based simulation (n=44 nursing students), two hours of screen-based virtual gaming simulations (n=57) and four hours of traditional clinical experience (n=51). Although there were no significant differences between groups for cognitive learning, students who were randomised into the mannequin-based simulation performed as well as, or better than students randomised to one of the other two groups. Students randomised to a traditional clinical experience performed better than those assigned to the screen-based virtual gaming simulations. Patient safety was also significantly lower in the screen-based group compared to the other groups.

Evidence also suggests simulation-based learning may enhance profession-specific skills including breaking 'bad news' to patients, families and carers[132], palliative care[110, 133] , mental health care[127], patient deterioration[134], patient resuscitation[110, 135], acute and critical care[136] and telehealth[137].

3.2 Technologies and techniques for simulation-based learning

Technologies used to deliver simulation-based learning in health practitioner education blend virtual and physical environments and include[138, 139]:

- augmented reality (AR): an interactive experience using technologies that superimpose computer-generated information onto the real world.
- virtual reality (VR): technologies where the users are fully immersed in a computer-generated simulation of a three-dimensional virtual environment that can be interacted with in the real world using special equipment (e.g. a headset)
- mixed reality (MR): lies on a spectrum between augmented and virtual reality. It has two main subtypes –
    - augmented reality subtype in which the user navigates the real world and technology enables digital information to be superimposed onto the real world to interact with the environment
    - virtual reality subtype in which the user navigates a digital environment in which real-world objects are integrated.

Commonly used simulation technologies and techniques are outlined in Table 7 below.

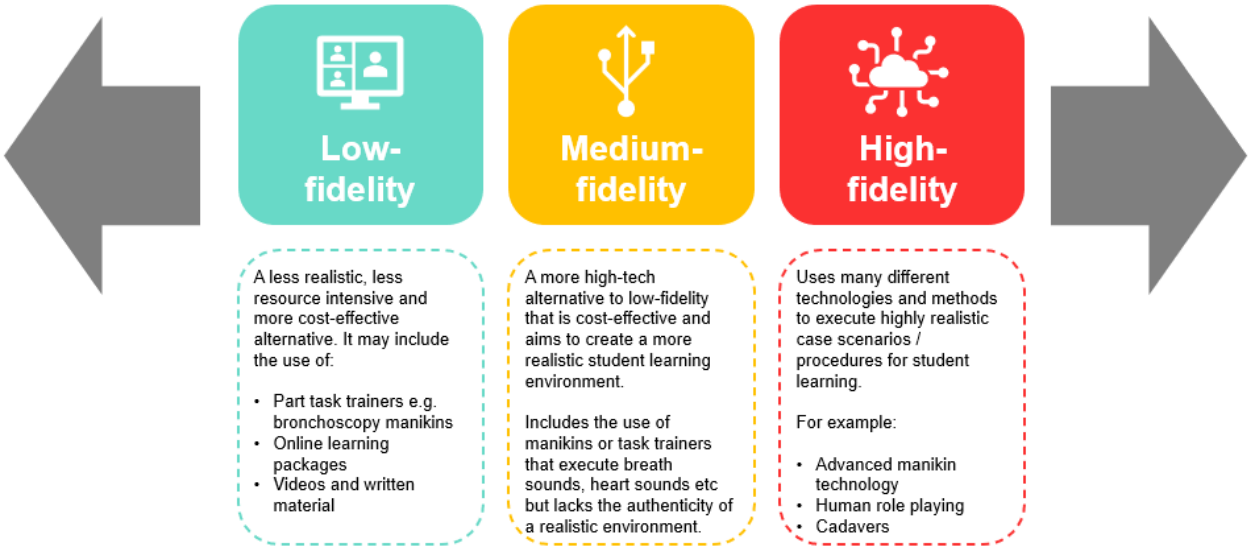
Table 7: Common simulation-based learning technologies and techniques[117, 140]

 **Part-task trainers**	Physical replicas of a body part or screen-based representations or combination of the two. Used to help train specific tasks or skills which are new to the practitioner.

 **Advanced procedural trainers**	Physical or screen-based devices designed to help train and assess the safe performance of clinical procedures that require a series or sequence of tasks to be completed. Can also provide different levels of challenge according to learner experience. Some devices can produce objective feedback on the performance without needing a tutor or supervisor present.
 **Full body (patient) mannequins**	Replicate patients more completely in form and function, and often used in combination with patient monitoring adjuncts and other consumables used in the clinical setting. Provide a useful opportunity for individual or team-based training exercises to help develop broader professional capabilities, teamworking skills or orientation to new work procedures, protocols and environments.
 **Simulated / standardised patients**	Interaction between a learner and an ‘actor’ that simulates the role of a patient, family member etc. A powerful way to focus on training or assessment of communication skills when applied in the context of patient consultations, taking consent, breaking bad news, or speaking up.
 **Immersive learning technologies**	Includes the use of virtual reality, augmented reality and incorporation of artificial intelligence to enhance clinical decision-making in diagnostic or interventional contexts.
 **Mental / verbal rehearsal and ‘serious gaming’**	Mental rehearsals that can be verbalised out loud and be structured to follow a checklist or cognitive aid and performed at convenience with little need for specific adjuncts or resources.
 **In-situ simulation**	Simulation activities that are deliberately designed for delivery within a workplace or clinical setting. Provides a realistic environment for individual and/or team-based training and provides an opportunity to orientate or clarify interactions with equipment, information technologies or one another when required to perform specific tasks or drills. Most commonly used to rehearse emergency drills.
 **Moulage**	A method requiring a low-level of technology that makes simulation realistic. It includes using make-up and moulds to simulate illness/injury. Moulage is often placed on a mannequin or standardised patient.

These technologies and techniques can be depicted on a broad spectrum based on how realistic the simulation is as shown in Figure I. The term fidelity refers to the degree of realism created through the simulation equipment, setting and scenario.

Figure I: The spectrum of simulation-based learning[141, 142]



Studies investigating the most effective level of fidelity for student learning have returned conflicting findings[108, 110, 140, 143, 144]. On the one hand, there is evidence suggesting medium to high fidelity simulations may be more effective than low-fidelity simulations in achieving student learning outcomes[108, 110, 129, 140, 144, 145].This is because they can provide more detailed student feedback[144], help students navigate interprofessional and multidisciplinary scenarios[140] and provide a safe practice environment for students that complements clinical placements[146].

On the other hand, other studies found no difference in learning outcomes for nursing students using high-fidelity and low-fidelity mannequins based on student knowledge, satisfaction or self-confidence[116, 144]. This suggests that high-fidelity simulation experiences may cause students to overestimate their abilities and require significant cognitive demand from students which may decrease their ability to learn[140].

Factors that should be considered when selecting the level of fidelity to be used for a simulation-based learning activity include[116, 140]:

- the level of the student should determine the degree of fidelity used to ensure the simulation activity is tailored to their learning needs – that is, simulation-based learning activities should be scaffolded so students first build knowledge, skills and confidence with low-fidelity simulations before progressing to high-fidelity simulations
- the level and type of fidelity should inform the simulation technique/technology used, and
- student training, management and the length of the simulation activity are equally important aspects to consider

Simulation-based learning activities for students can be enhanced by replicating ‘real life’, narratives[147] and integrating multiple types of simulation-based learning over a full treatment period or using standardised patients[120].

Simulation-based learning technologies and techniques that enhance student learning include:

- peer simulation-based learning: physiotherapy students perceived simulation-based learning to be valuable in preparing them for clinical placements, enabling them to identify knowledge and skill deficits, and improving clinical reasoning, time management and communication[148]

- standardised patient interviews: a systematic review of undergraduate nursing students and clinical nursing staff (n=24 studies) found standardised patient interviews significantly improve skill performance[116]

- mannequin simulations: a different systematic review on nursing students (n=17 studies) found mannequin simulations to significantly improve student knowledge acquisition outcomes compared to computerised simulations (n=5 studies using mannequin simulation, n=6 computer simulation studies)[108]

3.3 Factors enhancing the implementation of simulation-based learning

The review found the value of simulation-based learning experiences can be enhanced by a number of factors, including:

a) faculty engagement in simulation-based learning

b) briefing, debriefing and evaluation of student performance

c) provision of realistic and active learning experiences, a quality simulation environment and opportunities for repeated practice

d) student satisfaction with simulation-based learning experiences

a) Faculty education and engagement in simulation-based learning

Systematic reviews (n=15 studies and n=24 studies respectively) suggest that providing faculty education on simulation-based learning is key for effective student simulation experiences[115, 116], and is just as important as investments in equipment and teaching. Educating faculty will help improve their teaching style, management and facilitation of student simulation activities[116]. Faculty should be educated in evidence-based 'writing, programming, delivery and evaluation' teaching and learning strategies for student simulation-based learning experiences[115].

The HEE and the NHS regard faculty engagement in the development and delivery of simulation-based learning as key for the development of effective, safe simulation experiences[149]**.** Faculty engagement with simulation-based learning is influenced by their level of comfort, understanding and technical expertise with relevant technologies[138].

To ensure faculty feel equipped to effectively deliver simulation-based learning to students, HEE, the UK's national leadership organisation for health sector education, training and workforce development, outlines the following guidelines for supporting the development of a simulation-based learning faculty[150]. The guidelines stipulate that simulation-based learning should:

- provide educational rigour by building simulation on foundations of sound educational principles that align with learner needs and those of the service and/or organisation

- provide appropriate support and training to enable continuous development

- be an appropriate blend of outcomes-based and process-led pedagogies

- provide a supportive and sustainable environment for training

- enable collaboration and sharing of best practice within and across education programs

- be sustainable in the long-term and agile to adapt

- be streamlined, efficient and provide value for money

b) Briefing, debriefing and evaluation of student performance

There is good evidence that briefing, debriefing and evaluation of student performance are essential to enhance student learning and confidence from simulation-based learning experiences[108, 110, 115, 151]. A briefing should include student orientation to the learning objectives, structure and process of the simulation, and it should provide students an opportunity to familiarise themselves with the simulation environment (e.g. equipment, environment, mannequins and monitoring devices)[115, 151]. A debriefing should be delivered immediately after the simulation and be led by an appropriate educator in a safe environment[151]. In the debriefing students should receive error corrections and feedback, be encouraged to reflect on practice during the simulation, evaluate their performance and discuss non-technical skills used[108, 151].

A best practice framework for simulation synthesised from guidelines for Australian undergraduate nursing simulation education[151]. It comprises four phases of implementation:

i. strategically plan where simulation should be placed within the education program

ii. design the simulation based on a learning pedagogy, with clearly stated learning objectives that are made available to staff and students before the simulation, and utilising activities that are close to real life scenarios

iii. operationalise the simulation. Ensure staff and students are adequately prepared and that a debriefing is conducted immediately after the simulation, led by a facilitator with relevant clinical knowledge and understanding of course objectives

iv. evaluate student performance

A copy of the framework is provided at Appendix D.

c) Provision of realistic and active learning experiences, a quality simulation environment and opportunities for repeated practice

Simulation-based learning activities enhance student learning more when they are realistic[108, 144], give an active learning experience for students, and opportunities for repeated practice[108, 115]. The environment the simulation-based learning experience is delivered in should also be considered (e.g. people and professional identities involved, organisation structures encountered, ensuring it is safe, and depicts a realistic environment.

d) Student satisfaction with simulation-based learning experiences

A meta-analysis of outcomes of simulation-based learning by students (n=17 studies) found a small positive improvement in satisfaction compared to using traditional teaching methods (n=five studies)[108]. The meta-analysis found student satisfaction with simulation-based learning activities is a necessary contributor to student learning and development.

3.4 Simulation-based learning frameworks

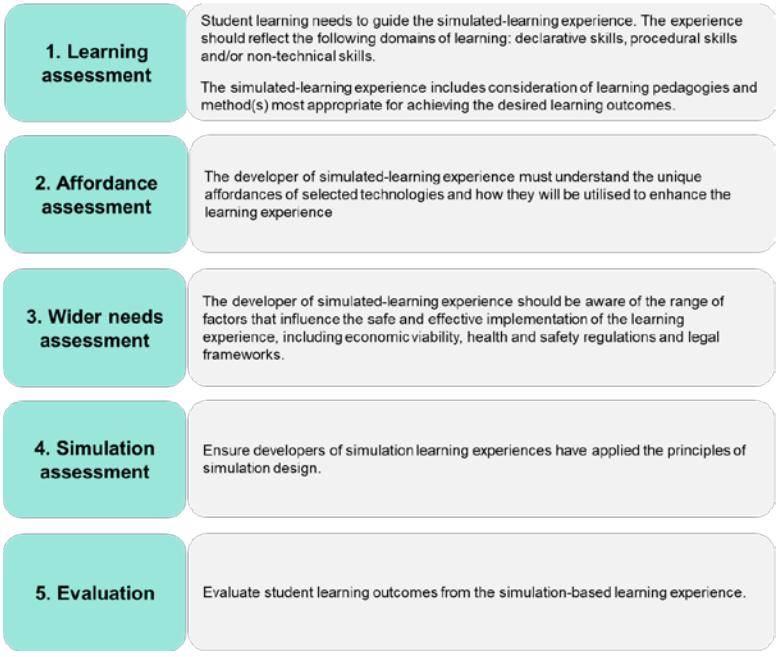
The HEE and the NHS established a National Framework for Simulation-based Education (the Framework) that defines the vision and expectations for a national approach to the delivery of simulation-based learning across the UK[152]. The framework is based on five guiding principles, as outlined in Table 8 below.

Table 8: HEE and NHS National Framework for Simulation-based education – the five guiding principles[152]

1	**Quality outcomes – delivery of safe, effective care through workforce development:** simulation-based learning is aligned with the delivery and continuing improvement of high-quality, safe, effective care and enhancing the learner experience
2	**Leadership and governance:** simulation-based learning and its leadership are clearly defined, and the appropriate governance model and processes are described
3	**Strategic approach and resource allocation:** each local area's strategic approach is aligned with the national approach. Where applicable, simulation-based learning should be multi-professionally delivered and arrangements for resource allocation modelling are shared and understood
4	**Multi-profession faculty development:** There is a clear and consistent approach to multi-professional faculty development across all local areas
5	**Quality assurance:** there is a well-defined method for quality assuring the content and delivery of simulation-based learning using appropriate national standards and quality frameworks

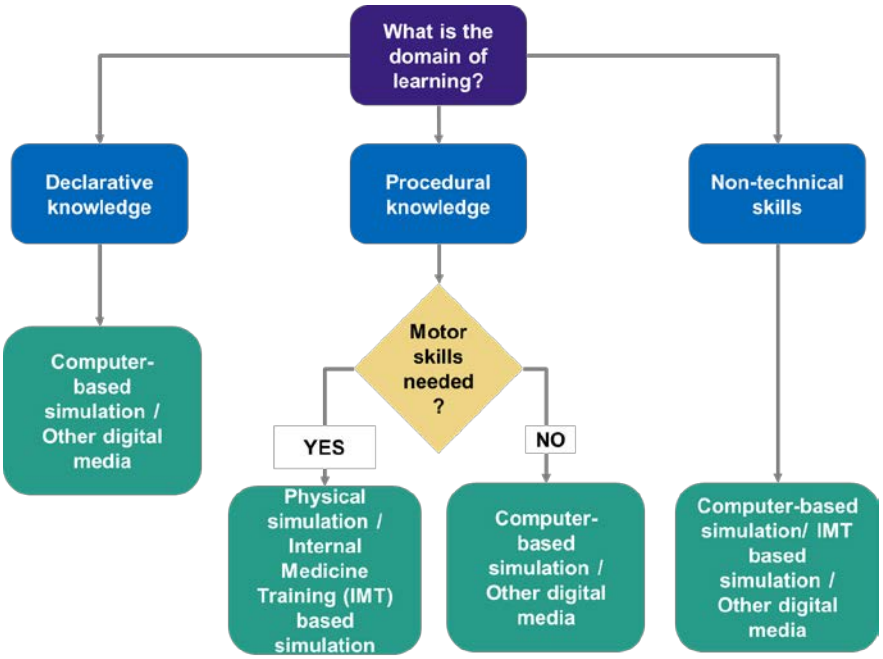
The HEE and NHS also introduced a Healthcare Immersive Technologies (HIT) Framework to assist educators in developing and verifying the quality of simulation-based learning experiences, especially those with limited timeframes or minimal expertise in simulation-based learning[153]. The HIT Framework includes five domains which should be addressed when developing a simulation-based learning experience, as outlined in Figure J below.

Figure J: The five domains to be addressed in the development of an immersive experience[153]



The HIT Framework also provides guidance on which simulation techniques or technologies best suit each domain of learning[118], as outlined in Figure K below.

Figure K: Process of determining the suitable simulation technology for each domain of learning[118]



3.5 The challenges of simulation-based learning

Challenges associated with simulation-based learning include:

- high initial and ongoing maintenance costs[11, 110, 115, 118, 154], including:
    - significant time required to develop simulation-based learning experiences
    - significant time required to train staff and develop resources to support the simulation-based learning experience taking them away from clinical practice
    - delivery costs can be high
- Simulation-based learning experiences may be under-utilised where[115, 118, 154]:
    - they require a dedicated learning environment
    - students must schedule time to use the simulators as they may not be available at the most convenient time for the student
    - they are poorly maintained
- Simulation-based activities cannot emulate all aspects of human behaviour or signs and symptoms[118]

4. Virtual care

Virtual care has been a regular part of rural and remote healthcare for a long time and has become progressively mainstreamed into other Australian healthcare settings. Virtual care is defined by the Agency for Clinical Innovation as 'any interaction between patients and/or members of their care team occurring remotely, using technology with the aim of facilitating or maximising the quality and effectiveness of patient care'[155]. It may be provided through a variety of modalities, including telephone, videoconferencing, store and forward activities[1], remote monitoring, websites and applications.

Although the term 'telehealth' is sometimes used interchangeably with the term 'virtual care', telehealth refers to one type of virtual care only, involving a telephone or video-enabled patient consultations. It does not encompass the broader nature of virtual healthcare. For the purpose of this paper, and unless otherwise specified, the term 'virtual care' will be used as it is the most current and all-encompassing term.

In 2020, the COVID-19 pandemic created an urgent demand for innovative ways for health practitioners to continue to deliver high-quality patient care safely that led to the rapid expansion of virtual care across Australia and internationally[156]. Virtual care is now a mainstream modality for patient care and many Australians now expect to be able to access care virtually. As a result, it is essential that students gain the skills and capabilities required to safely use virtual care in health service delivery[157].

In Australia, telehealth was embedded in healthcare delivery and health practitioner education during the COVID-19 pandemic to ensure student clinical learning opportunities could be continued. An Australian qualitative study of stakeholder experiences with telehealth placements for allied health students from six disciplines found that stakeholders (n=6 students, clinical educators n=8, placement coordinators n=5 and clients n=7) believed that telehealth placements supported competency development and graduate employability, enabled students to provide patient-centred care and enabled innovation[158]. However, the authors noted that there were challenges associated with medico-legal, issues, access to reliable, secure internet communication platforms, and platform capacity issues that still needed to be addressed.

A systematic review of adaptations/innovations implemented during the COVID-19 pandemic (n=55 studies) found telehealth to be the most valuable innovation for continuing undergraduate medical education[159]. The use of telehealth consultations during this time increased opportunities for students to receive high quality feedback that was more timely and more focused. However, the this was not without challenges including lack of personal interactions, the need for faculty time and technical resources, and the lack of a standardised curriculum.

4.1 Current National Scheme guidance

In 2020, in response to the rapid expansion of telehealth during the COVID-19 pandemic, Ahpra and the National Boards published 'Telehealth guidance for practitioners'[160]. More recently, the Medical Board of Australia revised its 2012 *'Guidelines for technology-based patient consultations'* (add ref here) which are now known as *Guidelines: Telehealth consultations with patients (effective 1 September 2023)*[161].

A summary of the guidance provided by Ahpra and the National Boards is outlined in Table 9 below.

Table 9: Summary of 'Ahpra and the National Boards Telehealth guidance for practitioners'[160]

Using telehealth to advise or treat patients/clients	• Assess (and regularly re-assess) whether telehealth is safe and clinically appropriate for the patient or client, and whether a direct physical examination is necessary to provide good care • Ensure that you do not try to provide a service that puts patient or client health or safety at risk

[1] Store and forward activities are where a patient or practitioner captures, stores and forwards digital images to another health practitioner for review and opinion. Medical Board of Australia's *Guidelines: Telehealth consultations with patients*. https://www.medicalboard.gov.au/Codes-Guidelines-Policies/Telehealth-consultations-with-patients.aspx

	• If, because of the limits of technology, you are unable to provide a service to the same standard as an in-person consultation then you must advise the patient or client of this
At the beginning of a telehealth consultation	• Identify yourself and confirm the identity of your patient or client • Provide an explanation to your patient or client of what to expect from a telehealth consultation • Ensure information is provided to your patient or client in a way they understand, and that informed consent is obtained, in particular, in relation to fees, proposed treatment, sharing of information with others in their care team and if you are recording the consultation • Ensure you protect your patient or client's privacy and their rights to confidentially, particularly if you are working from home
During a telehealth consultation	• Ensure you effectively communicate with your patient or client to establish their current condition and past health and medication history. Use qualified language or cultural interpreters where needed • Use strategies and evidence-informed practices to reflect the standard of care expected in a face-to-face consultation, as far as possible • Ensure you maintain clear and accurate health records of the consultation
Ensure continuity of care	• Make appropriate arrangements to follow the progress of your patient or client and, with the consent of the patient or client, inform other relevant health practitioner(s) of the treatment provided, including any medications prescribed • Where appropriate, keep other practitioners informed of the patient or client's condition and the treatment you have provided when you are sharing the care of the patient • Where direct physical examination is required to continue providing good care, support your patient or client to attend a face-to-face consultation

The 2020 guidance by Ahpra and the National Boards also reminds health practitioners that, as well as practicing in accordance to their National Board's regulatory standards, codes and guidelines, they must be aware of and comply with their relevant state and territory legislative, regulatory and policy requirements[160].

4.2 Strategies to support virtual care education

A virtual care is only now becoming a more mainstream form of healthcare delivery, research in this area appears to have only just started and is often lower-level evidence. The evidence examined for this paper pointed to various strategies to support education in virtual care. These included:

- having an evidence-based, standardised and scaffolded curriculum that is a mandatory part of course requirements[159, 162-164]
- using a variety of teaching methods and a variety of technologies[162, 163, 165]
- providing students with opportunities for 'hands-on practice' using real-world technologies (rather than a simulated environment) and participatory/interactive activities[163, 166]
- ensuring educators receive training in the delivery of virtual care experiences[162], and

- ensuring education providers work collaboratively with healthcare providers to design virtual care learning activities[167].

These findings are explored in more detail below.

Multiple studies advocate the need for an evidence-based and standardised virtual care curriculum for student health practitioner education[159, 162-164], and for virtual care content to be incorporated systematically across curricula for all health professions[158]. Some studies also pointed to the need for more research on the most effective teaching methods for virtual care[162], best approaches to integrating virtual care into education programs[167] and the development of guidance for educators, to ensure the delivery of evidence-based virtual care education[162] occurs.

An unpublished literature review by the University of South Australia on the regulation of telehealth and virtual care was conducted to support Ahpra and the National Boards' update of their telehealth guidance[157].

This review identified gaps in the literature regarding telehealth education. These gaps identified are:

- what should be included in the telehealth curriculum and how should it be included (e.g., as stand-alone units or incorporated into clinical placements)
- who should lead and be involved in telehealth education
- when should the concept of telehealth be introduced, e.g. as a foundational course, scaffolded throughout various courses or integrated into clinical placements

As telehealth and virtual care tools are increasingly being used, it is important they are integrated into curriculum so that health practitioners have the capability to use virtual care in their clinical practice[168]. For this to occur, digital health competencies need to be established and implemented.

Therefore, the authors of the University of South Australia literature review suggest that[157]:

> 'Regulators will need to collaborate and partner with academic institutions, professional societies and associations and consumer groups to map the required digital health competencies, integrate them within the curriculum and provide ongoing support during and after training and education'.

Systematic reviews (n=14 studies and n=7 studies respectively) suggest that students can develop skills in virtual care through a variety of teaching methods[162, 163], most commonly simulation-based learning[165], clinical placements[162], lectures and patient encounters[163].

A systematic review of telemedicine curriculum in undergraduate medical education found most research was carried out on lectures and patient encounters (n=7 studies)[163]. Lectures were found to be useful for introducing telehealth to students, students preferred 'hands-on practice' for developing telehealth skills as they provided greater opportunity for students to apply their knowledge. Two studies in the review found that using patient encounters in the assessment process changed behaviour. However, the authors also suggest there may be limited opportunities for students to participate in telehealth education, and that the learning strategies currently used are supported by strong evidence.

A systematic review of online education to develop health practitioner students telehealth skills (n=38 studies) found students value virtual care learning experiences that require them to apply their skills using real-world technology rather than in a simulated environment[167]. The authors suggest there may be a need to create suitable strategies for online placements to enable students to further develop their skills for virtual environments. These authors suggest that students may be better prepared for real-world virtual care practice if education providers work collaboratively with healthcare providers to design and integrate virtual care learning experiences.

A different systematic review of telehealth education in undergraduate healthcare and social work education (n=14 studies) found that students want to be educated on a range of virtual care technologies and processes[162]. It also found that providing telehealth training to educators may improve their self-confidence and increase student intake into telehealth units of study. The authors suggest, however, that further research on effective execution of telehealth education in undergraduate education was required.

Internationally, the shift towards the use of telehealth for student learning required academic institutions to modify their curricula to incorporate the new way of learning. For example, a USA university conducted a pilot study to integrate medical students into a tele-intensive care unit (ICU) in response to COVID-19 with a view to extending the service into the future[169]. A clinical elective 'eICU rotation: COVID-19 and Beyond' was developed in March 2020 when it became clear that in-person clinical placements for students were no longer viable because of the pandemic. The four-week course had 60 hours of remote clinical engagement with severe COVID-19 patients in an ICU, multiple choice pre- and post-testing, faculty supervised student-led case and topic presentations, faculty-led debriefing sessions, evidence-based medicine discussion forum and final reflection. Five students completed the course, following 16 patients over three weeks and documenting 70 clinical interventions, most of which were routine rather than urgent. Pre- and post-test scores demonstrated improved knowledge and feedback from students was positive, whereas preceptors would have liked more preparation.

A national survey of internal medicine clerkship directors at USA medical schools assessed the prevalence of telehealth education and clinical experiences in clinical clerkships before the COVID-19 pandemic, during interruptions in clinical clerkships, and following the return to in-person activities[170]. The survey results indicated that none of the 101 respondents used telehealth in their curriculum before the pandemic. During the pandemic, 39.3 per cent of institutions that continued to offer a clerkship included telehealth, and at the time of the survey, 24.7 per cent continued to include telehealth components. There was higher uptake among clerkships with an ambulatory component than those without. The authors suggest this demonstrates telehealth's potential as an educational tool and concluded that curricula and faculty development will be needed to support the continued value of telehealth as part of the formal education of students during the medicine clerkship. Based on the survey responses, the authors identified specific aspects of medicine clerkships that should change as telehealth curricula evolve. For example, the authors suggest training and deliberate practice, via interactive modules, standardised patients, or simulation, are essential to ensure students develop skills needed for active participation in telehealth practice. They recommend observatory experiences such as shadowing should be replaced with active, experiential learning opportunities that can drive both learning and assessment. The authors recommend further research should be conducted regarding the use of telehealth as a means of assessing student progress in pre-established EPAs and in telehealth-specific competencies.

4.3 Existing education frameworks

A number of efforts have been made to develop virtual care education frameworks, including:

a) *NSW Health Virtual Care Education Framework 2022-2026*[171]

b) AMC *Capability framework on digital health in medicine*[172]

c) University of Ottawa's virtual care curriculum[173]

These frameworks are described below. Common elements across the frameworks include an emphasis on ensuring students are educated in the following areas as they relate to virtual care:

- interprofessional collaboration[171-173]
- patient communication[171, 173]
- patient safety[171-173], and
- compliance with relevant ethics, policy, and legislative requirements[171, 172].

These common elements also align with the guidance provided in the Ahpra and National Boards 'Telehealth Guidance for Practitioners'.

a.) NSW Health Virtual Care Education Framework 2022-2026

In the first of two phases of work to develop the *NSW Health Virtual Care Education Framework*, the Health Education and Training Institute (HETI) conducted a scoping review to understand which 'curriculum interventions and pedagogical approaches best support the integration of virtual care into existing and new programs'[166]. The scoping review comprises two parts:

- Part A: examines the values, behaviours and skills required for virtual care delivery
- Part B: examines curriculum interventions and pedagogical approaches for virtual care, including education and training content, guidelines, frameworks and resources for building virtual care capacity.

The review recommended that learning to develop these components is aligned to three curriculum stages – general introduction, preparation and delivery. A summary of these is provided in Table 10.

Table 10: Virtual care curricula phases and key values, behaviours and skills/competencies[166]

Phase 1: General introduction to virtual care	Phase 2: Preparing for an actual virtual care episode	Phase 3: Virtual care delivery
History, definitions and terminology Fostering positive attitudes Benefits and barriers Evidence-based care Compliance Ethical practice Technology skills	Protocol development Patient and service selection/suitability for virtual care Informed consent Interprofessional collaboration Cultural awareness Environmental considerations Patient and family education/information Establishing virtual care goals	Patient/provider location verification Communication (verbal and non-verbal) including 'telepresence' Adapting clinical skills/assessments Emergency procedures Documentation Intervention, follow up and discharge planning Patient and/or service evaluation; continuous quality improvement

The scoping review found interactive/participative activities, such as simulation and patient encounters, were the core approaches used in published information about virtual care[166]. Other activities included site visits to telehealth clinics, observation of virtual care sessions, interactive workshops, videoconferencing, group/discussion/practical activities, modelling and animation. Standalone units to cover the 'basics' of virtual care were also recommended.

Although the literature did not explicitly identify when simulation should be incorporated into education, the study concluded that virtual care experience in a simulated environment should be completed before students engage in actual patient virtual care delivery[166]. The review proposed that information technology and medical informatics should become core elements of a virtual care curriculum and experience in virtual care delivery with actual patients should be integrated through a scaffolded approach starting with observation or shadowing of virtual care sessions, progressing to supervised sessions with live in-session coaching and finally to independent practice.

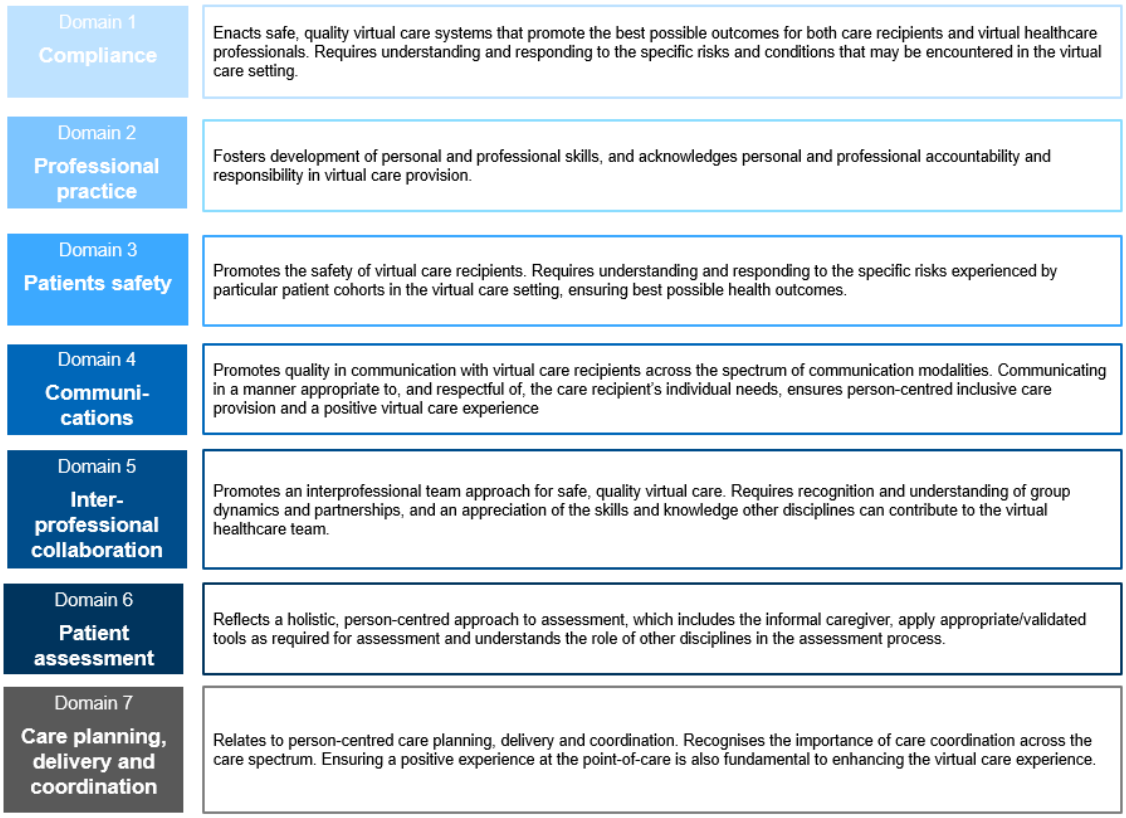
Lastly, the scoping review suggests the inclusion of virtual care will result in a substantial change to traditional healthcare delivery[166]. Therefore, the inclusion of virtual care into education programs requires a systematic approach, including the use of appropriate resources to support and inform virtual care education programs. The authors suggest resources including virtual care checklists, clinical champions, and models that involve healthcare stakeholders, e.g., frontline health practitioners, content experts and patients may be useful. They also suggest any integration of virtual care into health practitioner education curriculum must be evaluated.

The second phase of HETI's work aimed to achieve consensus on the domains and competencies to be included in the multidisciplinary virtual care education framework[171]. Medical practitioners, nurses,

midwives, allied health professionals, administrators, educators, specialist telehealth providers and healthcare consumers from across rural, remote, regional and metropolitan NSW participated in a two-round Delphi process to shape the *NSW Health Virtual Care Education Framework 2022-2026*.

The NSW Health Virtual Care Education Framework 2022-2026 is designed to be a foundation upon which different health disciplines can develop, revise or map new or existing education programs or design professional development activities for virtual care[171]. It is organised into seven 'domains', each with an accompanying statement of intent which are shown in Figure L below.

Figure L: Domains within NSW Health Virtual Care Education Framework 2022-2026[171]

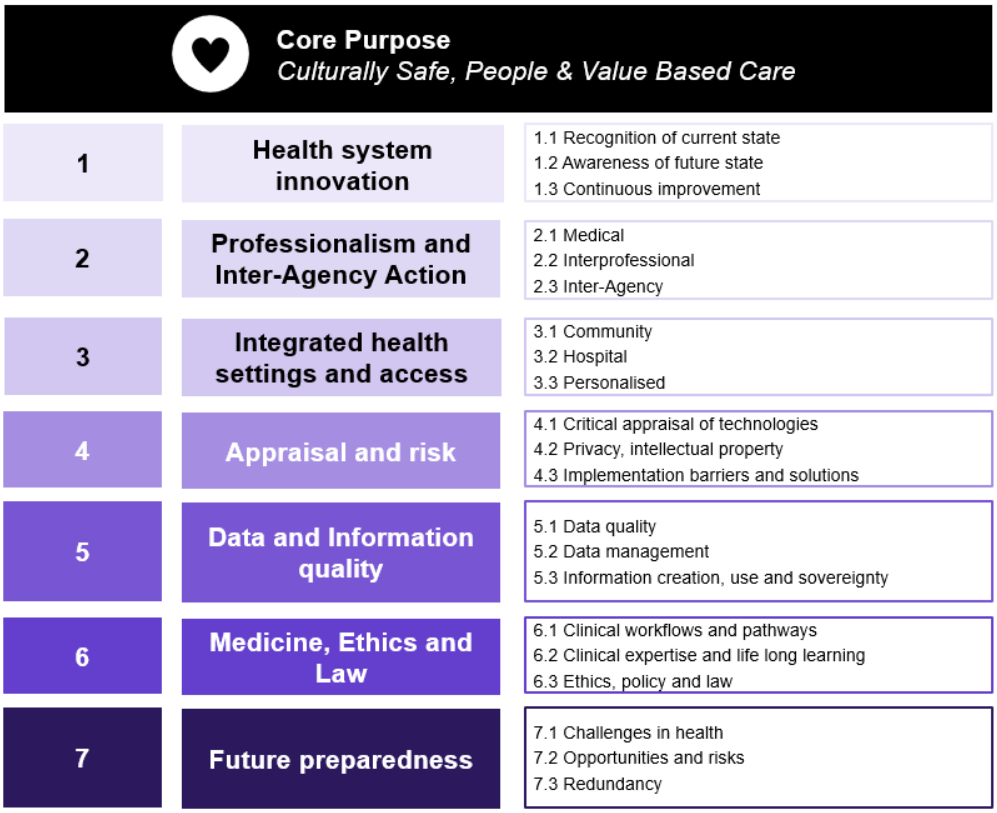


Each domain is underpinned by several competency statements that describe relevant professional capabilities in virtual care[171]. The statements are designed to be 'sufficiently broad as to enable individual disciplines to determine the appropriate depth of knowledge and level of engagement with each competency, and upon which further discipline-specific and highly specialised competencies may be built'.

b.) AMC Capability framework on digital health in medicine

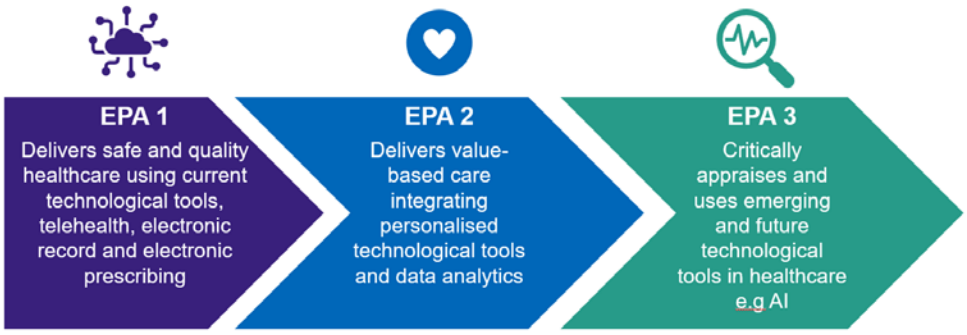
The AMC, in collaboration with the Australian Digital Health Agency, published a capability framework on digital health in medicine in 2021[172]. The Framework aims to guide medical educators towards developing a more digitally capable Australian medical workforce. The Framework comprises of the domains and sub-domains below that outline, the expertise needed to be developed by doctors across the continuum of medical education. These domains align with the three horizons of the *National Digital Workforce and Education Roadmap* and are integrated into learning outcomes of the associated Entrustable Professional Activities (EPA) and are reinforced in medical education teaching, learning and assessment programs. In addition, they form key metrics to measure success and impact of the digital health program. Figure M below summarises the Framework.

Figure M: Domains within the AMC's *Capability framework on digital health in medicine*[172]



This Framework embeds EPAs for each of the three horizons of the National Digital Workforce and Education Roadmap. The EPAs are designed to support the integration of competency-based training in complex systems such as healthcare. EPAs describe priority professional activities which have specific learning outcomes, scaffolded teaching and learning support. Direct observation is used to assess a health professional and/or student's evolving level of performance[172]. The three EPAs outlined in the Framework are shown in Figure N.

Figure N: The three EPAs outlined in the AMC Capability Framework on Digital Health in Medicine 2021[172]



c.) University of Ottawa virtual care curriculum

A working group of clinical experts in virtual care at the University of Ottawa, Canada established a virtual care curriculum and learning objectives to train future health practitioners to deliver high-quality virtual care[173]. The curriculum incorporates virtual care training longitudinally with an emphasis on communication and critical reasoning skills. It comprises a theoretical component delivered online, including videos and patient testimony, and a practical component comprising of five sessions of

teleconsultation with a standardised patient. The components and objectives are outlined in Table 11. Below.

Table 11: University of Ottawa's innovative virtual care curriculum and core components[173]

Component	Learning objective
Part 1: Theoretical component	1. Describe the technical requirements, proposed benefits and challenges of providing healthcare to patients through telemedicine
	2. Explain the differences between the various categories of telemedicine (teleconsultation, tele-expertise, medical telemonitoring, tele-medical assistance and emergency telemedicine)
	3. Describe the technical requirements that must be in place to provide patient care safely through a telemedicine platform
	4. Describe the patient groups that would benefit from participation in a telemedicine program
	5. Describe the components of a telemedicine patient consultation
Part 2: Practical component	6. Demonstrate effective communication skills with individual patients or family members during a telemedicine consultation
	7. Demonstrate effective listening and motivational interviewing skills during a telemedicine patient consultation
	8. Develop a management plan (additional investigations, treatment options, consultations) for patients assessed through a telemedicine platform in an ambulatory care setting
	9. Demonstrate effective communication skills with other healthcare team members caring for patients through a telemedicine platform
	10. Describe the emotions that facilitate rapport with patients during virtual care visits
	11. Explain how the principles from social-behavioural sciences can assess the impact of accessing or seeking care using telemedicine
	12. Describe how a hybrid model of virtual care and in person visits complement each other and provide value to the patient and the clinician experience

Initial feedback from students was positive however, the author stated that the competencies outlined above were demonstrated from written and simulated patient care scenarios and information demonstrating this outcome was not provided.

4.4 Proposed education framework for telehealth competencies

In the USA, a set of proposed telehealth competencies for use in post-graduate medical education were developed that could be adapted to undergraduate education[164]. A modified Delphi process, comprising a systematic review and focus groups with telehealth experts, resulted in consensus to recommend 34 competencies. Ten were systems-based practice competencies, seven professionalism, six patient care, four practice-based learning and improvement, four interpersonal and communication skills, and three medical knowledge competencies. Each was mapped to one of the six Accreditation Council for Graduate Medical Education (ACGME) core competencies. These are presented in Table 12.

Table 12: Proposed telehealth curriculum competencies for graduate medical education[164]

ACGME core competency	Competency
Professionalism	Demonstrate onscreen professionalism
	Demonstrate an understanding of the ethics of telemedicine and HIPAA
	Demonstrate ability to create a professional appearance (body language, eye contact, nonverbal cues) in a telemedicine visit
	Demonstrate an understanding of the ethics of telemedicine specific situations (crimes on camera, sexual harassment, suicidal statements on camera, etc.)
	Demonstrate an understanding of the ethics of telemedicine and the doctor–patient relationship and provider–provider relationship
	Demonstrate an understanding that patients have a right to access records of telemedicine interactions as with regular encounters
	Demonstrate an understanding of the ethics of informed consent for telemedicine visits and stored audio/video/images
Systems-based practice	Demonstrate ability to appropriately end telemedical care when patient's status is inappropriate for modality available
	Demonstrate ability to assess appropriate level of care and need for consultants using patient records, remote access of imaging, and video interview
	Understand the benefits and disadvantages of synchronous and asynchronous care in telemedicine
	Use teleconference services for home telemedicine visits
	Verbalise limitations of the care able to be provided via telemedicine (e.g.: inability to place behavioural health hold, sign AMA)
	Use telemedicine to consult, provide and coordinate care across healthcare settings in which you will practice
	Demonstrate willingness to provide and/or use timely consultative services via telemedicine to improve outcomes
	Demonstrate an understanding that the technology should be as user-friendly as possible for patients

ACGME core competency	Competency
	Demonstrate capability to provide and/or use timely consultative services via telemedicine to improve outcomes
	Verbalise importance of awareness of local emergency resources and ways to access them (e.g. location of nearest hospital or emergency room for psychiatric emergencies in the location of the patient)
Patient care	Demonstrate the ability to appropriately identify and help manage emergencies through local protocols, and determine the need for intervention in the telemedicine setting
	Perform physical assessments, including in specific populations, and incorporate vital signs using telemedicine tools as appropriate to the patient's condition
	Demonstrate the ability to triage and assess patients for suitability of telemedicine, current physical location of care
	Demonstrate awareness of the importance of patient identification, location and contact information of patients, and the need to provide their own identification before the service proceeds
	Demonstrate an understanding of how to obtain and document informed consent through telemedicine
	Perform physical assessment using peripherals and in person provider, including defining equipment/skill-set of in-person provider needed for assessment
Practice-based learning and improvement	Understand the required documentation for medical care, liability and billing for a telemedicine visit
	Demonstrate appropriate patient care in simulation or in-person training
	Complete directly supervised telemedicine delivery until competent via assessment for anticipated practice
	Demonstrate an understanding of the normal quality improvement/quality assurance processes that apply to telemedicine services and maintain confidentiality of such programs
Interpersonal and communication skills	Demonstrate teleconferencing skills that ensure the patient is confident they have the clinician's full attention to build trust and improve patient experience
	Demonstrate ability to work effectively to create a rapport with remote medical support staff

ACGME core competency	Competency
	Demonstrate ability to manage difficult patient situations via telemedicine
Medical knowledge	Understand the requirements of special needs populations, including veterans, child/adolescent, parent/family, geriatric, chronic illnesses and diverse communities
	Demonstrate the ability to appropriately triage, determine need for interventions, and manage emergencies in public health emergencies via telemedicine

Limitations of the review

It is important to note that this information paper has some limitations. These include:

- the narrative nature of this paper may lead to significant bias
- much of the evidence is also limited to the nursing and medical professions, with some on physiotherapy and occupational therapy, and less evidence available for other professions regulated by the National Scheme
- the majority of the published literature used relies on qualitative and lower-level evidence, and
- evidence for some of the topics is rapidly advancing and there may be some information that would be valuable that was not included.

Conclusion

This information paper has explored good practice in relation to the delivery of student clinical placements, the use of the pedagogical innovation simulation-based learning in student health practitioner education, and student education in virtual care as a key technological advance in healthcare delivery.

The information in this paper reflects the best available evidence at the time of writing. It reflects contemporary and innovative practice in the health and education sectors globally, as well as leading practice by some accreditation authorities in the National Scheme.

The paper was written to provide the evidence base for the independently-chaired Accreditation Committee's good practice guidance on these topics for National Scheme entities.

Appendices

Appendix A

Papers outside of specified date range

The following papers are outside of the specified date range for this information paper (as noted in the Methodology section). However, they have been included as either they are original citations from a more current source (e.g Currie et al., 2019), or they were recommended for inclusion by experts.

i. Algoso M, Peters K, Ramjan L, East L. Exploring undergraduate nursing students' perceptions of working in aged care settings: A review of the literature. Nurse Education Today. 2016;36:275-80.

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Appendix B

Possible strategies to support the integration of students within private practices while on clinical placement[45, 46]

Strategy 1: **Involvement of student within teams to add value to staff, clients and practices**	Involvement of student in: • Direct client-care e.g. by providing longer therapy sessions to clients • Planning and leading group therapy classes, or being an 'extra pair of hands' to support the running of group sessions • Establishment of a student 'role' where extra sessions are offered to clients and billed
Strategy 2: **Managing client expectations and care**	Effectively manage client expectations in relation to student delivery of care
Strategy 3: **Student preparation and learning**	Minimising disruption caused by student involvement by: • introducing and orienting student to the wider team through planned strategies, e.g. online learning modules to minimise burden on staff time • use of 'peer learning' where more than one student placement is hosted at a time and students support each other to spread the learning load
Strategy 4: **Teamwork and seeking support**	Including the student as part of the broader team by: • providing additional allocated time in clinical supervisor's calendar to allow for student education • ensuring the student has access to client care and supervision
Strategy 5: **Students developing 'personal learning plans' before starting placement**	A study of Australian osteopathy students outlined a key learning support strategy known as the 'Personal Learning Plan' that originated in the UK. It involves the student developing a 'learning plan' before commencing placement, with the plan being subsequently shared among all staff to ensure the students' learning requirements were understood by the student's clinical supervisor, and across the broader team.

Appendix C

Innovations in clinical placement models

Name of model	Model description	Finding
Australian Innovations		
Clinical research placement[85]	This was established in Australia in response to the COVID-19 pandemic. It is a fully, online placement model where health practitioners led telehealth clinical assessments and therapeutic delivery, with students in health practitioner support and research roles.	Increased student clinical skills while increasing their confidence, understanding of how clinical research is developed, and applied in health in practice. Students also gained and applied skills associated with presentation of information.
Clinical Educator[174]	Model includes the development of a 'clinical educator' position responsible for overseeing placements and assisting with student supervision.	Increased student confidence, facilitated quality assessment and effectively supported the management of underperforming students.
Clinical School Supervision[175]	A model where theory is taught by university academics, and clinical skills by hospital clinical education staff with student supervision by hospital preceptors.	Increased student sense of belonging, increased ability for students to receive / take advantage of support from both the academics and hospital staff in a clinical setting. This model enabled for the effective consolidation of student knowledge and reflective practice.
Communities of Practice[92]	Developed to address the deficit in workforce shortages and facilitate greater peer-to-peer learning and increase the support between junior and senior students.	Increased student placement capacity, level of support, mentorship and learning among students.
Distant Supervision[176]	Use of information and communication technology to facilitate distant supervision of students by clinical supervisors.	Enhanced student communication, leadership skills and confidence. However, it had challenges associated with communication quality, technology failure and an inability for supervisors to provide hands-on assistance
Paired placement[90]	Where two students attend one placement allocation together, as opposed to one student.	Increased number of placement offerings without 'negatively impacting clinical service provision' with strong student and clinical supervisor satisfaction.
Rural Interprofessional Education and Supervision (RIES)[87]	Used to 'enhance pre-qualification student clinical education capacity in rural and remote services.'	Improved interprofessional, teamwork and professional development skills in students. This model enabled students to learn patient management skills earlier and the structured manner of the placement enhanced student readiness for work. Also minimised workplace hierarchies.

Name of model	Model description	Finding
International Innovations		
Clinical Teaching Fellow Program[177]	In the UK, a model where Clinical Teaching Fellows (CTF) have defined roles and lead most of the student teaching	Improved 'undergraduate student experience and learning' and could provide a 'financial benefit to hospital trusts.'
Experience-based Learning[178]	Established in Ireland in response to the COVID-19 pandemic, this model supports student learning through participation in clinical activities, either through observation, rehearsing own practice or contributing to patient care.	Enhances 'quality of informal student learning on clinical placements despite the reduced clinical placement time'. The 'integration of cognitive coaching and simulation opportunities' meant students were more prepared to participate in the clinical team. However, it 'increased the workload of clinical teachers.'
Group Supervision[91]	In the UK, a designated clinical educator model that takes eight students in each five-week placement block. The two clinical educators have little to no clinical caseload during placement block, enabling them to focus on the education of the eight students.	Suggested to be just as effective, if not more, than the traditional placement model in terms of both capacity, quality and student satisfaction.
Hull Evaluation Appraisal Student Integrated (EASI) model[93]	In the UK, a form of peer learning model that 'emphasises a team approach' for enhancing a student's clinical placement experience 'rather than it being the sole responsibility of the clinical supervisor'.	Enabled the movement from a passive to active style of learning, increased opportunities for students to review each other. Increasing student proactive-ness while addressing weaknesses and growing student independence.
Interprofessional service-learning[89]	In the USA, this model enables students from multiple professions to deliver healthcare to areas in the community, e.g. rural and regional areas, mental health organisations, aged care, schools, kindergartens, private practice and health services.	Enables provision of greater interprofessional learning experiences to students. This model supports an understanding of the role of other health professions and positive team behaviours.
Hybrid model[179]	Established in South Korea in response to the COVID-19 pandemic, it was developed as a blended approach, incorporating in-person and online approaches to student teaching.	Enhanced student self-motivation and self-regulated learning.
Safe and effective clinical outcomes clinic (SECO)[180]	Established in the UK, supervised exposure of students undertaking simulated GP emergency telephone consultations through a simulated GP surgery experience.	Students reported the model helped to identify gaps in their learning and was highly valued as one of the few opportunities for them to practice patient telephone consultations.

Name of model	Model description	Finding
Tele-ICU Clinical Rotation[86]	In the USA, in response to the COVID-19 pandemic, this is a clinical rotation incorporating the use of telemedicine and tele-ICU technology, with remote monitoring systems to strengthen student knowledge on clinical placement.	Increased student confidence in assessing patients through remote monitoring systems.
Virtual Interprofessional Education sessions[88]	Established in the UK in response to the COVID-19 pandemic, suggested the implementation of sessions that provide virtual, group based interprofessional education (IPE) to discuss and solve clinical vignettes.	Might improve student understanding of other health professions competencies and interprofessional collaboration, and improved student patient crisis management skills.
Virtual placement using "Plan-Do-See-Act" method[181]	In the UK, a model combining virtual placement and the Plan-Do-See-Act quality improvement methodology. This 'combines shadowing a broad range of virtual clinics with the delivery of patient-facing online exercise classes' and 'completion of virtual projects to support knowledge consolidation.'	Enabled an increase in student capacity of over 400 per cent using widely available technology e.g. Facebook Live and requiring no additional investment.

Appendix D

Synthesised framework developed for evaluating quality in simulation design and implementation (Evaluation Criteria)[151]

Progressive / systemic integration of simulation activity within the course / program	Strategically planned: • where does simulation fit within a course? • is simulation a single activity or does it fit across multiple phases?
Design for progressive development of skill / capacity	Simulation is based on a learning theory / pedagogy / framework, with learning objectives that are: • clear • aligned with the structure of simulation • available to all staff before implementation • available to students before simulation session • Scenario is authentic (likely to be commonly encountered and / or have significant impact) • Scenario is realistically staged (fidelity) • created to integrate knowledge, skills and ability, such as: • psychomotor skills • communication, teamwork and professional behaviour • clinical reasoning / problem solving • reflective thinking
Operationalisation	Preparation of staff: • adequately trained to facilitate simulation • understand the purpose, aims, and learning outcomes • learned how to facilitate / coach in simulation • prepared to lead debriefing • cognisant of level of learning participants Preparation of students: • structure briefing and engagement with pre-learning • orientation to environment, equipment, mannequin and monitoring devices. Structured debriefing: • a safe environment • led by the appropriate person

	• Areas addressed: psychomotor skills; communication, teamwork and professional behaviour; clinical reasoning and problem solving; and reflective thinking
Evaluation	Evaluation of student performance is: • formative or summative • formal or informal • comprehensive / holistic • psychomotor skills • communication, teamwork, and professional behaviour • clinical reasoning / problem solving • reflective thinking
Comprehensive evaluation of simulation experience	• participant(s) • facilitator(s) • the simulation-based experience • the facility • support team.

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