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mHealth in general practice

A toolkit for effective and secure use of mobile technology

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mHealth in general practice: A toolkit for effective and secure use of mobile technology

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We recognise the traditional custodians of the land and sea on which we work and live.

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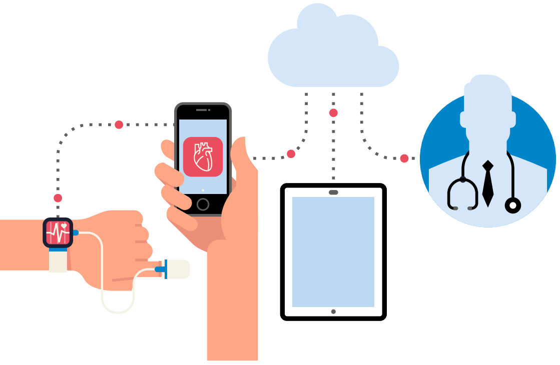
Introduction



There is growing interest in the role mobile health (mHealth) can play in general practice

Mobile technology has become part of our everyday lives and it is not an overstatement to suggest it has revolutionised the way we communicate and live our lives. Despite the itinerant nature of general practice, which goes far beyond the clinic walls and into patient homes, community care facilities and hospitals, adoption of mobile technology within the profession is a recent phenomenon.

Advances in mobile devices and applications ('apps'), better connections (mobile networks, Wi-Fi), and the ability to integrate new technology with existing services/ structures have all led to greater acceptance and uptake of mobile tools by industries and consumers alike.

There is growing interest in the role mobile health (mHealth) can play in general practice. There are potential benefits in terms of both care delivery and business efficiency through the use of mobile tools such as smartphones, tablets and other medical devices (eg wireless monitors). The mobile nature of general practice indicate these tools offer new opportunities and methods of reshaping current practice.

mHealth in general practice: A toolkit for effective and secure use of mobile technology (the 'toolkit') provides information and instructions for anyone considering incorporating mobile technology into general practice. It is designed to help you do so easily, effectively and securely – with minimal 'tech' expertise. The case studies illustrate how mHealth can provide effective solutions to address current demands in general practice.

The toolkit provides general practices already utilising mHealth with an opportunity to review and enhance their existing activities to ensure they are safe, secure and compliant with privacy and security legislation.

This toolkit is divided into four phases, with a total of 10 steps to consider when adopting an mHealth strategy:

Phase 1 – Planning an mHealth strategy

Helps identify if your practice will benefit from, and prepare your practice for, implementing a mobile technology strategy.

Phase 2 – Initial trial

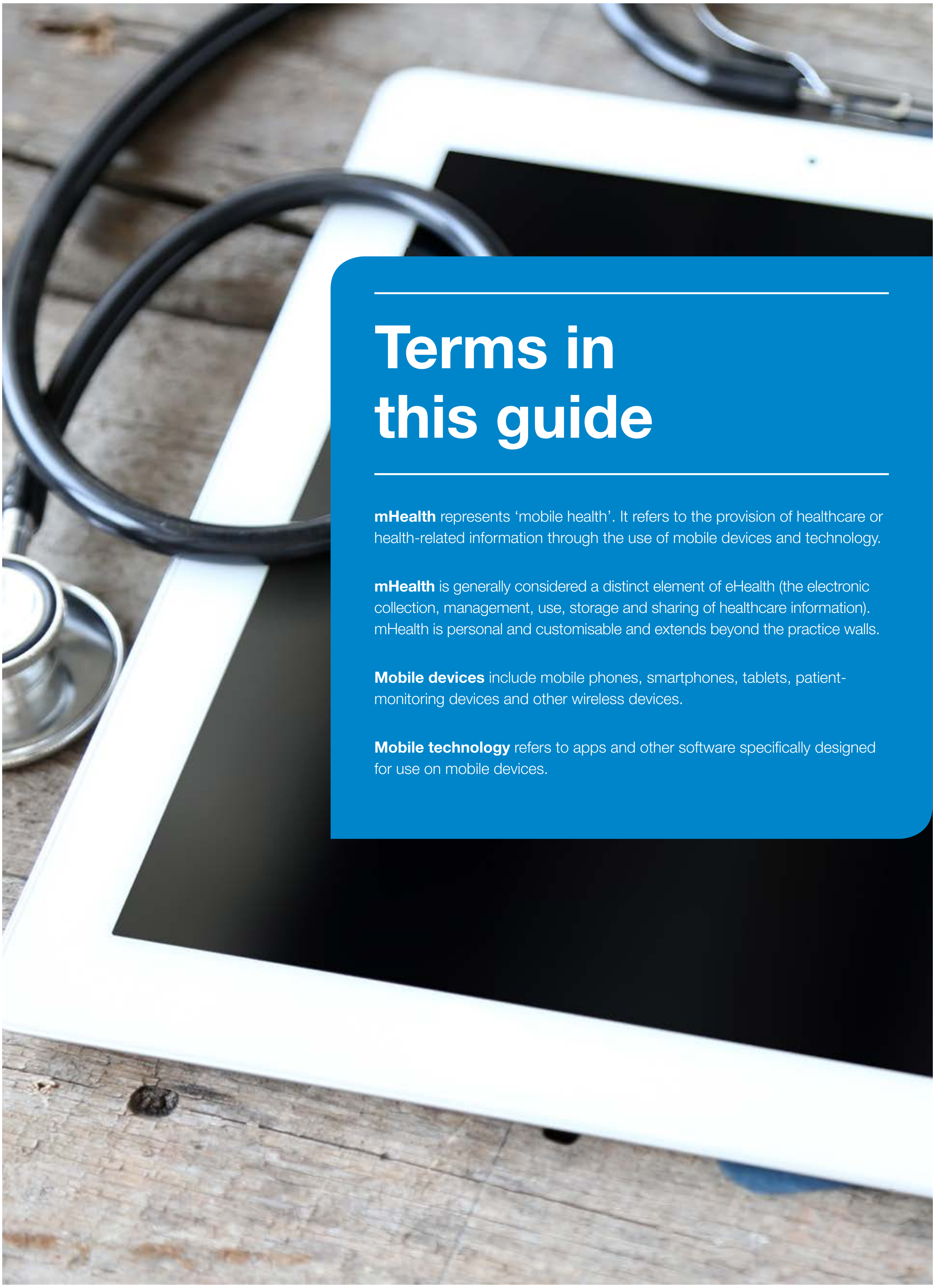
Guides you through establishing a mobile technology strategy for your practice, as well as the steps required to implement the strategy successfully.

Phase 3 – Delivery

The 'action' part of the toolkit, this provides you with easy-to-follow steps and practical tools to assist in implementing a mobile strategy.

Phase 4 – Reflection

Provides a checklist for your practice to review and assess the implementation plan and commitment to deploying a mobile strategy. The checklist is designed to start an internal discussion about how far your practice has gone in building a culture of mobile health. This section also provides a list of relevant links and recommended resources for future action.



Terms in this guide

mHealth represents ‘mobile health’. It refers to the provision of healthcare or health-related information through the use of mobile devices and technology.

mHealth is generally considered a distinct element of eHealth (the electronic collection, management, use, storage and sharing of healthcare information). mHealth is personal and customisable and extends beyond the practice walls.

Mobile devices include mobile phones, smartphones, tablets, patient-monitoring devices and other wireless devices.

Mobile technology refers to apps and other software specifically designed for use on mobile devices.

Background and basics

The case for GPs using mHealth

Greater use of mHealth in a planned and strategic way should help support, complement and enhance the way general practice delivers care and in the way it communicates and engages with patients and other health professionals. mHealth's potential advantages for general practice include:

- accessing medical information and resources anywhere and at anytime
- gaining immediate access to patient records and prescriptions from any location (eg aged care facilities, home visits)
- using video conferencing for remote diagnosis and professional support/education
- monitoring patients remotely through video or information collected by devices/apps
- supporting patients to adhere to medication schedules by sending direct/personalised reminders
- delivering online consultations to patients who cannot attend the practice.

As the functionality and accessibility of mHealth tools continues to expand, so will its possible uses.

The aim of implementing an mHealth strategy is to harness these advantages in order to reap the benefits of improved communication and accessibility to information, which should ultimately lead to improved health outcomes.

Why haven't we already adopted mHealth?

When considering how other sectors, such as banking and retail, have embraced mobile technology, it seems as though the health sector has lagged behind, even though the potential benefits here are huge.

Mobile health by its very nature implies that users (patients and healthcare providers) are always part of a connected network. This increases the variety, velocity and volume of information that is received, sent and available to users. It also increases the complexity of potential issues around security and responsibility.

Several factors have acted as barriers to mHealth's adoption in general practice.

> The aim of implementing an mHealth strategy is to harness advantages for patients and health professionals in order to reap the benefits of improved communication and accessibility to information, which should ultimately lead to improved health outcomes

Privacy and security

Privacy plays an essential part in establishing trust with GPs and the general practice team. Australia has robust legislation to protect individual privacy, including legislation governing health information.

The healthcare sector has traditionally relied on providers retaining complete control of end-to-end health information systems, ensuring patients' privacy and confidentiality are respected, protected and contained. However, the rise of mobile health devices and technologies means government regulators and health practitioners have had concerns about ensuring patients have the same level of confidence in the health sector within a more open system.

The challenge is to allow innovation that still ensures data safety, reliability and security.

Privacy plays an essential part in establishing trust with GPs and the general practice team

Regulation

Regulatory issues related to the use of mobile technology in healthcare arise due to different motivations. While the motivation for regulation is market driven in other sectors, healthcare regulations focus is on patient safety, which results in a less dynamic environment for information and technology innovation.

The usual approach to regulation in healthcare is to require the provider to maintain a closed system. While this provides privacy and security, there is a lack of interoperability between different communication systems.

Mobile health technologies need to be interoperable in order to achieve the benefits mHealth offers to healthcare delivery.

The challenge is allowing interoperability between systems while maintaining the safety of services and high levels of privacy protection for healthcare information.

Incentives

In order to increase the uptake of mHealth in general practice, Medicare Benefits Schedule (MBS) rebates need to reflect the amount of work required to help patients improve health outcomes with mobile tools.

32% of health consumers say they have a healthcare, wellness or medical app on their smartphone

Why mHealth matters

While barriers to mHealth in general practice remain significant, its adoption is progressing at an increasingly rapid rate due to external factors (national policies such as the National eHealth Strategy, demographic shifts) and internal factors (individuals accepting and adapting to changes in the way we communicate and do business).

Overall, the drivers for the growth in mHealth are similar to those in other sectors: rising consumerism, increasing information dependence and need for greater efficiency.

External drivers of mHealth adoption

For some time, major trends in healthcare have included:

- reforms focusing on the automation of aged care and chronic disease management, driven by technologies such as electronic medical records and remote monitoring
- a move towards 'personalised medicine' and customisation of care.

These trends have now been accelerated by advances in mHealth and the possibility of productivity gains that come from its use. For example, in the United States (US), using remote monitoring technologies to manage chronic diseases is predicted to save nearly $200 billion over the next 25 years. Savings come from improved workflow for clinicians working remotely, better point-of-care information delivery and enhanced efficiencies in routine management, such as billing, scheduling and claims processing.[1]

GPs are familiar with the growing pressures on the health system due to the ageing population and the rise in chronic and complex conditions. The traditional episodic and illness-oriented healthcare delivery models need to shift toward a model that is prevention-based and patient-focused – similar to the person-centred medical home.

The use of technology has the potential to be a key enabler of the person-centred medical home. Effective use of mHealth helps shift healthcare from a 'doctor provides cure' model to one where patients are active partners in care, making choices and more able to take increasing responsibility for their own health. Mobile technology can provide access to patient records regardless of where clinicians or patients are located, facilitating better communication and information sharing. As a result, mobile technologies have the capacity to enhance care delivery. Additionally, there is potential to use data collected via mobile tools to:

- develop customised care plans for patients
- identify high-risk patients
- anticipate problems and provide early interventions.

80%

of patients have one or two health apps they use on at least a weekly basis

Internal drivers of mHealth adoption

Every general practice uses communication tools (eg voice calling, email, video conferencing), information systems (eg electronic health records, practice administration and laboratory information systems), and information resources and clinical software applications.

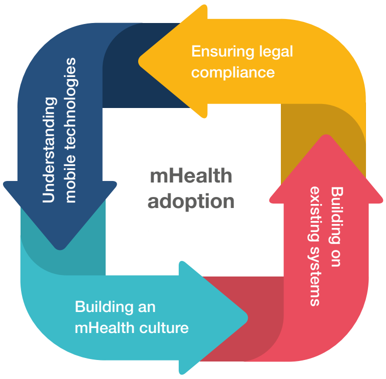
While most of this functionality was previously only available via a desktop computer, more and more clinical information is now available on mobile devices. Driving forces leading health professionals to adopt mHealth in their day-to-day practice include:

- increase in business efficiency and patient care by providing services to individuals who usually face a number of barriers to access at any time or location
- cost-reduction opportunities (eg SMS appointment reminders substantially reduce costs from missed attendance)
- greater flexibility in care workflows
- better communication and access to information resources at the point-of-care
- timely access to patient and clinical data
- consumers who want greater transparency, convenience and value.

A recent survey conducted by PwC's Health Research Institute found that 32% of patients say they have a healthcare, wellness or medical app on their smartphone or tablet, more than double than in 2013, and 80% have one or two health apps they use on at least a weekly basis.[2] While few doctors are prescribing health apps today, most say they are willing to prescribe them for sleep monitoring, exercise/weight management and chronic disease management.[2]

Patients, family and carers		
General practice	**Community care**	**Home**
Telehealth to assist with self-care	Video conferencing with care team and patient	Internet-based therapeutic interventions and support
Teleconsultation for those who are hard to reach or have mobility issues	Telehealth to maintain helpful behaviours and apps to support people to self-care	Telehealth for post-operative recovery assessment
Telemedicine with specialists	Medication management apps to encourage correct use of medication	Telehealth to support rehabilitation

Figure 1. mHealth: Connecting patients and the general practice team


Ensuring legal compliance
Understanding mobile technologies
mHealth adoption
Building on existing systems
Building an mHealth culture

What do I need to know before adopting mHealth into my practice?

Implementing mHealth in a way that maximises benefits and minimises issues requires an understanding of how it affects a practice's culture and processes/policies.

Ensuring legal compliance

The Australian Privacy Principles (AAPs) and the RACGP's *Standards for general practices* (4th edition) require confidentiality and privacy of personal health information be safeguarded.

Neither standard SMS nor emailing is considered a secure method of communication. Your practice is legally obliged to consider patients' privacy and confidentiality in all decision-making processes related to the implementation of a mobile strategy. Patients may consent to use of these unsecured systems if they fully understand the security risk.[3]

Understanding how mobile technologies intersect with general practice

Whether you're a GP, practice manager or practice nurse, being aware of the potential benefits of mHealth and how mobile technologies affect delivery of care and patient experience can enhance your capacity to lead and inspire other members of the general practice team.

Building an mHealth culture

General practice staff members are encouraged to be proactive in empowering patients to understand their rights and responsibilities in relation to mHealth. This toolkit can help your practice build a culture of mHealth in which the rights and responsibilities of everyone involved in care, including patients, are secured and respected.

Building on existing systems

Many general practices are already utilising mHealth. This toolkit provides an opportunity for your practice to review and, where applicable, enhance your current activities in the area of mobile technology.

Mapping activities

Reviewing you practice’s existing activities and initiatives can help you determine where you may already be using mHealth. Each general practice is unique in its structure and patient cohort, and this section is designed to get your practice looking at what activities are being undertaken and what supporting structures may already be in place to enable a more focused mHealth strategy.

Use the table below to map out what activities and initiatives your practice is already using in each of these areas. Mapping out your current activities will help your practice choose the most relevant sections and topics within this toolkit.

Computer and information standards	**Your practice’s activities and initiatives in this area**
Our practice has: • documented policies and procedures for managing computer and information security, including monitoring access to health information and the use of mobile electronic devices • a documented ‘bring your own device’ policy/strategy.	
Training and professional development	
Our practice: • provides training opportunities to staff to increase their understanding of the benefits of technology in a healthcare setting.	
mHealth activities	
Our practice currently uses: • online appointments • SMS alerts, including appointment reminders for patients • mobile medical devices for remote monitoring • reporting tools to recruit patients for research and clinical trials • store and forward technologies to electronically send patient data (eg reports or images) • mobile devices to access evidence-based information, tools and practice systems • health and fitness tracking software and apps that we recommend to our patients.	
Telework	
Our practice provides: • opportunities for staff to perform work functions from locations other than the general practice • engagement in telework by using email, instant messaging, Voice over Internet Protocol (VoIP) and/or videoconferecing for team meetings, broadcast emails, web cams or web-conferencing.	
Telehealth	
Our practice uses: • video consultations as an alternative to physical consultations.	
Remote monitoring devices	
Our practice uses: • data collected by patients using a mobile device to regularly monitor medical conditions.	

Practice insight

Healthcare delivery in rural and remote communities

General practice is the frontline of healthcare in rural and remote Australia. GPs have a broad scope of practice outside of the country's main centres – they cover emergencies, deliver babies, and visit people in hospitals, aged care facilities and in their homes.

The advent of tablet devices and mobile broadband technology, coupled with improved connectivity, is transforming the way GPs in rural and remote communities deliver quality care. These GPs can save time and improve quality and safety with access to patient records (including medications, allergies and history), email and other practice resources on the go.

By using their tablets for a visit to an aged care facility, for example, rural GPs can record consultation details and immediately upload them into a patient's file, eliminating the potential for human error inherent with written notes or recall.

Increased access to numerous medical database applications, including Merck Index, MIMs and UpToDate, also facilitates safe and high-quality practice and provides professional development opportunities.

Case study

Delivery model for chronic disease management

Alicia is practice manager in a small rural general practice located three hours from the nearest regional town and base hospital. All of the general practices in the region have arranged to share health resources and facilities, and are interested in using mHealth to improve access and delivery of care to their patients.

GPs in Alicia's practice manage a number of patients with chronic conditions. They feel mHealth could improve care, as so many of their patients across different socioeconomic backgrounds and age groups use devices such as smartphones.

Alicia decided to run an eight-week pilot program in order to test the benefits of automated SMS self-management reminders to patients with type 2 diabetes. Medication reminders were sent up to twice a day based on when patients said they took their medications and how often they wanted reminders. The messages consisted largely of reminders ('Time to take your diabetes medication'), tips ('Keep your medications next to the sink so they become part of your morning routine'), assessments ('On how many of the last seven days did you take all of your diabetes medications?') and feedback ('Great job!')

Patients eligible to be part of the pilot were aged 18 and older and referred to the pilot by their GP. Practice nurses were responsible for registration and training patients on how to utilise the mobile health software program used for automated SMS reminders.

Initial concerns from GPs and practice nurses included:

- pilot roll-out after a difficult electronic health record implementation
- lack of time to enrol and monitor patients in the SMS system
- responding to incoming patient messages.

With clinician input, Alicia developed protocols to increase care in response to incoming patient messages. She also designed the pilot so GPs and nurses would only be required to respond to emails from the practice administrators regarding clinical issues, as emails are already part of the workflow. Messages were written with no protected health information and without naming diabetes or specific medications that could link the patient to the condition.

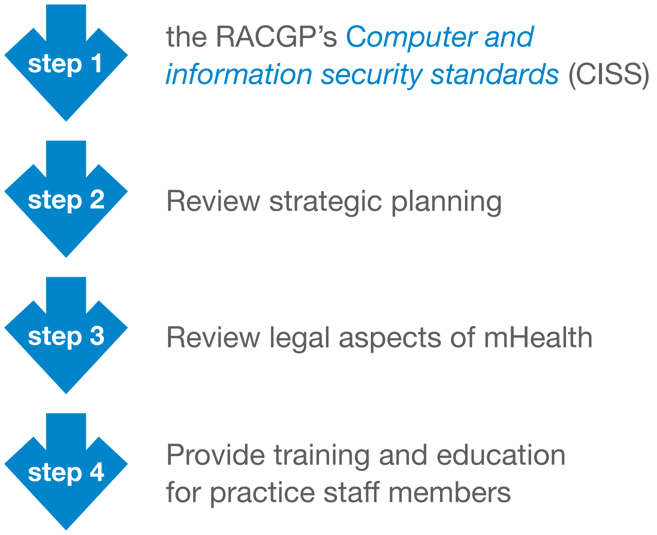
The pilot showed a number of benefits to the patients and the practice:

- High levels of patient engagement and satisfaction, with improvement in self-management.
- The mobile technology leverages existing health resources in the clinic– as the system is largely automated and designed for self-management support, dedicated staff members are not required.
- Cost savings – the model piloted requires one full-time equivalent (FTE) care manager per 300 enrolees, while other face-to-face care management programs reported in the literature typically serve 30–100 patients per FTE staff member.

Phase 1: Planning an mHealth strategy

Developing an overarching vision and clear strategy for your mHealth plan will help each member of the practice team understand what needs to be done.

The planning phase is divided into several steps.



step 1 the RACGP's *Computer and information security standards* (CISS)

step 2 Review strategic planning

step 3 Review legal aspects of mHealth

step 4 Provide training and education for practice staff members

Step 1. Map your practice activities against the RACGP's CISS

Why?

Mapping practice activities will get you started on the right path creating a strategy and a positive practice culture around mHealth.

How?

You will need to begin by looking at your existing information security policies.
The following table will allow you to determine the state of your practice's competency and capacity in computer and information security.

Mapping practice activities against CISS

Standard	Yes	No	If answered no
Roles and responsibilities Our practice has: • designated team members who champion and manage computer and information security • appropriate position descriptions to document these roles and responsibilities.			• Include a written policy that is communicated to practice team members. • Assign and train a computer security coordinator.
Information security policies and procedures Our practice has: • documented policies and procedures for managing computer and information security.			• Include a policy that covers practice team and external service provider agreements. • Where applicable, include an eHealth records system policy.
Managing access Our practice: • establishes and monitors authorised access to health information.			Include a clearly defined and communicated policy that contains directions on access rights, password maintenance and management, remote access controls, auditing and appropriate software configuration.
Business continuity and information recovery Our practice has: • documented and tested plans for business continuity and information recovery.			Include implementable business continuity and information recovery plans to ensure prompt restoration of clinical and business information systems.
Internet and email use Our practice has: • processes to ensure the safe and proper use of internet and email in accordance with practice policies • procedures for managing information security.			• Include details of configuration and use of internet and email. • Provide practice team members with training in appropriate internet, email and social media practices.
Information backup Our practice has: • a reliable information backup system to support timely access to business and clinical information.			Include information for which systems are to be backed up and how often it must be done.
Malware, viruses and email threats Our practice has: • reliable protection against computer malware, viruses and email threats.			• Include automatic updating of the virus protection software. • Educate the practice team to be aware of risks.
Computer network perimeter controls Our practice has: • reliable computer network perimeter controls.			Ensure the firewall is correctly configured and the log files examined periodically.
Mobile electronic devices Our practice has: • processes to ensure the safe and proper use of mobile electronic devices in accordance with practice policies • procedures for managing information security.			Define the use and secure management of practice-owned and personal mobile devices used for clinical and business purposes.
Physical facilities Our practice: • manages and maintains its physical facilities and computer hardware, software and operating system with a view to protecting information systems			Ensure the physical protection of equipment and the use of an uninterruptible power supply 'UPS'.
Security for information sharing Our practice has: • reliable systems for the secure electronic sharing of confidential information.			Ensure the appropriate configuration of secure messaging, digital certificate management and the practice website.

From: Computer and information security standards for general practices and other office-based practices. 2nd edn. East Melbourne, Vic: RACGP, 2013. Available at www.racgp.org.au/your-practice/standards/computer-and-information-security-standards

The RACGP Digital Business Kit (DBK) can help your practice assess its uptake of eHealth technologies. The DBK can be accessed at www.racgp.org.au/digital-business-kits

General practices using webGP to improve practice efficiency and patient outcomes

The Hurley Group consists of 17 general practices across 10 London boroughs, with 100,000 registered patients who are treated for 350,000 minor illnesses and injuries each year at eight of the clinics.

The group began piloting technology services in 2014, building a platform to source frontline peer and specialist advice. Virtual surgeries conduct online consultations with patients, aimed at improving the patient experience and outcomes, and enhancing practice efficiency. The practice website enables patients to email their own GP and select a secure e-consult or 24/7 call back.

A review of 133,000 patient contacts revealed better access, improved health outcomes, practice efficiency and cost savings, as well as less patient overflow in urgent care settings. In addition to empowering patients with access to their medical records, scalable technology solutions are delivered to the frontline of primary care. These solutions have resulted in:

- 36,000 website hits in six months
- 83% of patients saying they would recommend this service
- 95% of interactions rated as very good or excellent
- one third of patients go on to self-manage.

Other outcomes included patients being more open about their health issues in an online environment (eg in the case of mental health concerns), care starting sooner, fewer GP appointments, shorter waiting times, and more time for complex cases.[4]

Step 2. Review strategic planning

Why?

Strategic planning provides an overarching framework that determines how your practice performs all of its operations. Placing mHealth at the strategic level ensures that it filters down and across the practice, effectively creating a forward-thinking culture.

How?

Review your strategic planning documents to check their compatibility with an mHealth strategy. The table below will assist in determining which current policies and procedures need to be modified in order to ensure compatibility with an mHealth plan.

Reviewing strategic plans before implementing an mHealth strategy	
Must consider	
Platform and device choice	As technology rapidly evolves, your practice will need to adopt a flexible and adaptable solution to ensure your mHealth strategy remains current and viable. It is also vital that all required functional elements of your running systems are available to those using mobile devices. The mHealth strategy should be seen as a natural extension of the practice's information technology (IT) culture.
Application types	Your mHealth strategy should reflect the different demands and types of users in your practice. For example, if your practice has a high number of patients with mobility issues, you may wish to consider an app to provide self-monitoring capabilities for patients in their own home.
User engagement	If the devices and platforms are not user-friendly, there will be natural reluctance for staff members to adopt and regularly use them.
Connectivity	Although mobile data coverage is improving throughout Australia, inconsistencies remain and there will be occasions on which practice staff will be unable to access and/or submit data. There are apps available that allow mobile users to carry out their job when internet connectivity is not available, and seamlessly update when internet connectivity is re-established.
Interoperability	Mobile devices are of most value when they integrate directly into the practice's operational systems and data infrastructures. Integration with core systems is critical to the relevance and impact of mobile devices.
Data management	When implementing an mHealth strategy, it may be important to have the ability to work with more than one system. For example, an increasing number of GPs use their own tablets for note taking when visiting aged care facilities. As a result, GPs need to enter data from their tablet into sytems at their practice and the aged care facility, and retrieve information from both systems when later assessing the case.
Security	An effective mHealth solution should provide a secure, encrypted connection between the device and server in order to eliminate the risk of data breach.

Do we need to supply staff members with mobile devices?

This is up to you. If your practice decides to allow the use of personal devices for work purposes, you will need to define the risks of a 'bring your own device' strategy. The major concerns revolve around lost and stolen devices, physical access, ownership, data access and lack of eHealth literacy.

Lost and stolen devices, and devices shared between friends and family members, can have their content accessed by someone other than their owner. This highlights the importance of having key basic features such as password protection, encryption and robust procedures to wipe the device of all data once it is lost. Lost and stolen devices can also enable physical access to the hardware. Older iPhone models, for example, lack hardware encryption and security functionality, which can compromise data security.

Staff members tend to have an increased sense of ownership when they use their own devices for work purposes. This might lead to breaches of security and greater vulnerability if a staff member tries to remove restrictions from the operating system.

Access to clinic and patient data outside of the practice can also pose risks, as a lost or stolen mobile device can allow access to data located on that device and accessible via remote channels. Practices also need to consider how the access for mobile devices is disabled when staff members leave the business or no longer require remote access.

How can I ensure our mobile devices meet security requirements?

It is critical that your practice team is aware of security risks and has adequate support to maintain data security.

Mobile device security considerations

- Use anti-virus programs specifically designed for mobile devices
- Ensure security processes cover mobile apps
- Ensure your desktop environments and mobile devices have encrypted data transmission
- Consider the use of remote data wipes and auto-locks that allows lost, misplaced or stolen mobile devices to be remotely wiped clean
- Use mobile ID authentication mechanisms
- Use a mobile device management (MDM) product that will enable devices to be secured, maintain user privacy and allow control over business data
- Ensure your IT security plan has the right processes in place to support your mHealth strategy

Step 3. Review legal aspects of mHealth

Why?

It is essential that all staff members are aware of the legal implications around the use of mobile technology in the practice. It is required by law that any identifiable patient information is kept secure and your practice is legally obliged to ensure that patient's privacy and confidentiality is protected. Refer to Chapter 3. Collection of solicited personal information of the *Australian Privacy Principles*, available at www.oaic.gov.au/agencies-and-organisations/app-guidelines/chapter-3-app-3-collection-of-solicited-personal-information

How?

All mobile devices are at risk of being lost, stolen or left unsecure, which increases the risk of unauthorised access to data. Practice computer and information security measures may need to be broadened to include all mobile devices. This can be achieved by having a practice policy that addresses:

- password protection for all mobile devices
- encrypted transfer of data from all mobile devices
- anti-virus software for all mobile devices.

It is also important to be aware of the fact there may be other devices that need to be considered as part of an mHealth strategy. For example, you may implement policies related to accessing work data from home computers and from shared computers, such as at internet cafes and third-party mobile devices.

Refer to the RACGP's Computer and information security standards (CISS) and Handbook for the management of health information in general practice for more information.

Mobile apps: are they regulated

The Therapeutic Goods Administration (TGA) is responsible for ensuring that therapeutic goods available for supply in Australia are safe and fit for their intended purposes. This includes medical devices, from bandages to complex technologies like heart pacemakers.

According to the TGA definition, a medical device is any instrument that has a physical or mechanical effect on the body or is used to measure or monitor functions of the body. As a result, the TGA only regulates software that can diagnose, prevent, monitor, treat or alleviate a disease, injury or condition.[5]

Software that would satisfy the definition of a medical device includes, for example, smartphone apps that measure blood glucose levels and patient body temperature, x-ray image-processing software and diagnostic software. Medical records management systems or a dosage calculator would not come under this definition unless they also incorporate a therapeutic or diagnostic function.

Visit www.tga.gov.au/regulation-medical-software-and-mobile-medical-apps for more information.

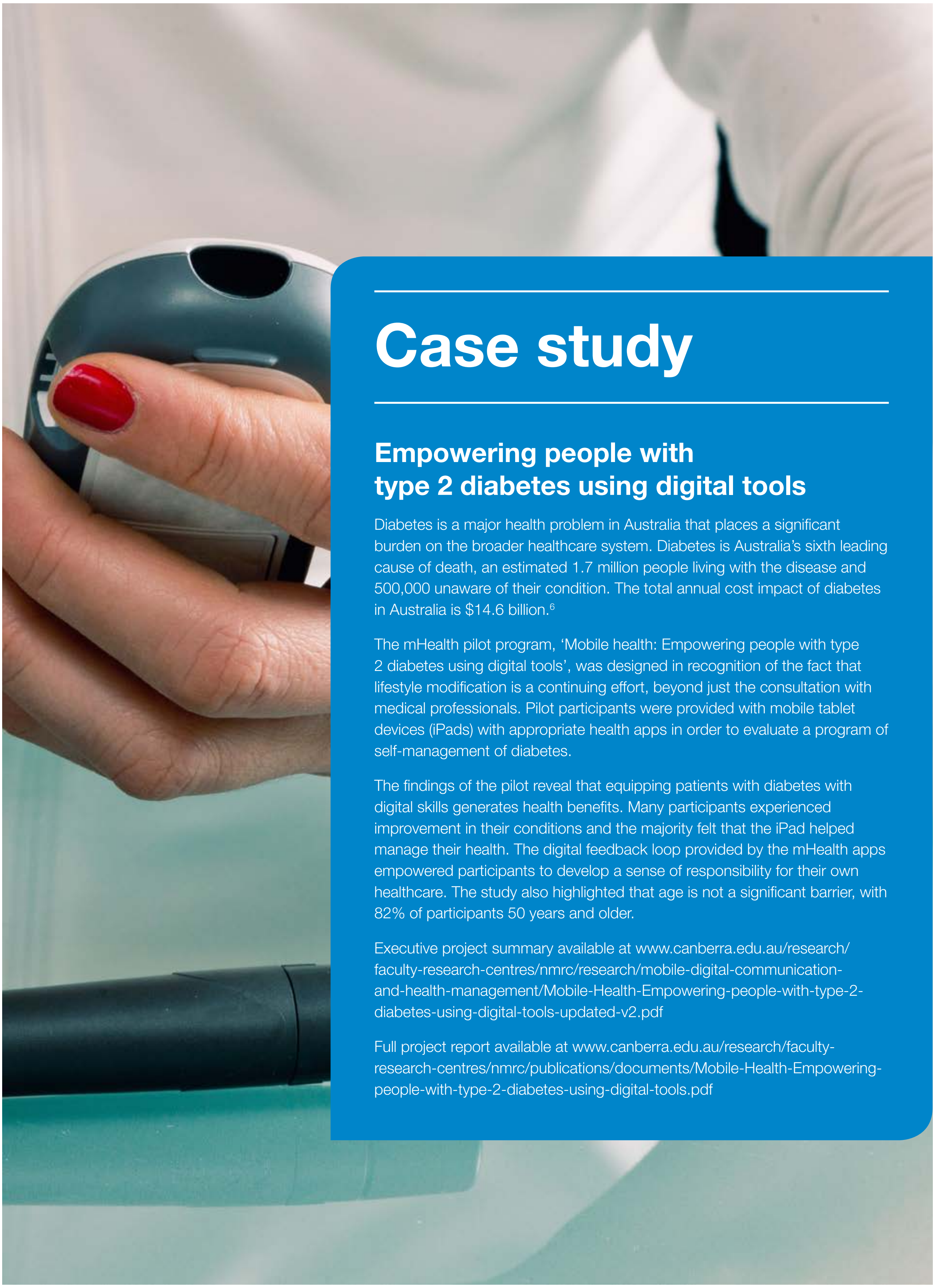
Apps that bring patient and clinical information together

Patients know best (PKB) – a patient-owned healthcare record system in the United Kingdom (UK) that stores information behind the secure National Health Service (NHS) network. Patients monitor their own vital signs and link to a PKB app or website via more than 100 wearables and other devices. Each patient's record is uniquely encrypted and information is uploaded and shared with doctors and researchers if the patient agrees. Only the people to whom the patient gives consent can decrypt and access the record. PKB integrates fully into any health records system, including the NHS secure network, and is available for use by patients and clinicians worldwide.

Visit www.patientsknowbest.com for more information.

Health fabric – an online, tablet-based solution that enables patients to control their own health and social care record. This record integrates this with patients' general practice systems so personalised and integrated care planning can be executed, with the patient 'owning' their own information accessed via tablet, mobile or web. This helps multi-disciplinary teams achieve patients' personal outcome goals and allows more patients to live independently, increasing real-time access to clinical information at the point of care.

Visit www.healthfabric.co.uk/index.html for more information



Case study

Empowering people with type 2 diabetes using digital tools

Diabetes is a major health problem in Australia that places a significant burden on the broader healthcare system. Diabetes is Australia's sixth leading cause of death, an estimated 1.7 million people living with the disease and 500,000 unaware of their condition. The total annual cost impact of diabetes in Australia is $14.6 billion.[6]

The mHealth pilot program, 'Mobile health: Empowering people with type 2 diabetes using digital tools', was designed in recognition of the fact that lifestyle modification is a continuing effort, beyond just the consultation with medical professionals. Pilot participants were provided with mobile tablet devices (iPads) with appropriate health apps in order to evaluate a program of self-management of diabetes.

The findings of the pilot reveal that equipping patients with diabetes with digital skills generates health benefits. Many participants experienced improvement in their conditions and the majority felt that the iPad helped manage their health. The digital feedback loop provided by the mHealth apps empowered participants to develop a sense of responsibility for their own healthcare. The study also highlighted that age is not a significant barrier, with 82% of participants 50 years and older.

Executive project summary available at www.canberra.edu.au/research/faculty-research-centres/nmrc/research/mobile-digital-communication-and-health-management/Mobile-Health-Empowering-people-with-type-2-diabetes-using-digital-tools-updated-v2.pdf

Full project report available at www.canberra.edu.au/research/faculty-research-centres/nmrc/publications/documents/Mobile-Health-Empowering-people-with-type-2-diabetes-using-digital-tools.pdf

Step 4. Provide training and education for practice staff members

Why?

Educating staff members to increase their understanding of mHealth benefits is an important step in your implementation plan. Mobile technologies can act as workflow facilitators, reducing in-office patient visits and allowing other types of visits, such as telehealth video consultations. The deployment of an mHealth strategy can be greatly enhanced when staff members are equipped with knowledge and tools that improve their understanding of how mHealth relates to service delivery and care improvement.

How?

Encourage and support staff members to attend face-to-face training and education sessions or participate in online training. Increasing the use of mobile devices can provide opportunities to deliver care via mHealth technologies such as remote monitoring devices and can increase the overall eHealth capabilities of the practice team.

Visit the *gplearning* portal (www.racgp.org.au/education/courses/gplearning) for information on training and education programs run by the RACGP.

Benefits of mobile technology to medical education

With increasing use of portable devices by general practice staff members, it is logical to incorporate these devices into professional development and educational activities.[7]

Online resources and textbook apps are available to reduce the need for people to physically carry around cumbersome textbooks, these include:

- medical references, eg Medscape, Skyscape
- databases, eg PubMed Mobile, EBSCOhost Mobile, Cochrane (iPad only), Dynamed
- drug references, eg *Australian Medicines Handbook* (AMH) app, MIMS mobile
- electronic Therapeutic Guidelines (eTG), eg Mini TG
- decision-making tools, eg VisualDx, Epocrates, ECG Guide
- dictionaries, eg *Taber's Medical Dictionary*
- education tools, eg Prognosis: Your Diagnosis, AccessMedicine, *British Medical Journal* (BMJ) apps
- calculators, eg Calculate by QxMD.

Pre-implementation checklist

This checklist will help you define details regarding users, devices and systems required for the successful rollout of your mHealth strategy.

□ Define your users

The most important decision is to choose who needs and would like to use a mobile device, then considering the type of devices they will need. Keep the following questions in mind:

- Does the device promote efficient workflow?
- Can the device secure patient information properly?
- Are there other devices that could be more appropriate for specific workflows?

□ Determine what systems your staff will need to access

After determining who your users are, you can identify which systems they will need to access. This includes drug references, electronic medical records and alerts from clinical systems.

It is important to determine what information users will be able to access, as this will determine what security requirements are needed.

□ Identify which mobile devices are in use at your practice

This well help you plan your practice operational processes and the level of support you can offer to your staff. This includes any staff members' personal mobile devices that are also used for work-related and patient-related purposes. Your practice can then decide whether it allows practice-issued devices only, or a mix of practice-issued and personal devices.

You will also need to ensure that your current systems are compatible with the different operating systems on mobile devices and ensure the way they present information creates a positive user experience.

□ Establish who will pay for device data plans

Deciding whether your practice will allow a 'bring your own device' policy will help determine who pays for data plans, and will also impact on the level of control your practice has regarding device utilisation. For example, you may choose to pay for data plans or pay an allowance to staff members in order to cover a portion of their data plan based on their expected usage.

□ Consider a disaster response procedure

How do mobile devices fit into your disaster response procedure? For example, in the event of flooding, where landline phones are not working due to infrastructure being damaged, mobile networks often remain functional. Mobile devices are therefore often a key way of communicating to staff and the wider practice community in the event of a disaster.

□ Roll out a pilot

Run a small pilot with selected staff members in order to test the solution and policies.

Phase 2: Initial trial

This section describes three further steps to assist your practice to successfully deliver an mHealth strategy and build a culture that values innovation.

step 5 Review policies and procedures

step 6 Review staff code of conduct

step 7 Establish an evaluation plan

You may wish to assign priority to the steps within Phase 2 according to your resources and how far your practice has advanced on its mHealth implementation path. For example, actions within the practice may be:

- **essential** – must be finalised in order to meet the minimum requirements to implement an mHealth strategy (eg ensuring your policy is aligned with the legal requirements of patient privacy and confidentiality)
- **expected** – should be performed in order to meet the criteria under the RACGP's *Standards for general practices* (4th edition) and CISS (2nd edition)
- **desirable** – could be performed in order to ensure there is an ongoing focus on prevention, self-help and self-care, and ongoing improvement of care.

Step 5. Review policies and procedures

Why?

Practice policies and procedures govern the everyday work of staff members. Embedding an mHealth culture within policies and procedures can:

- help people in the practice team conduct their existing activities within an mHealth framework, rather than seeing it as a separate area of general practice
- enhance and facilitate the practice's activities in areas such as medication adherence, public health, and monitoring of conditions including heart disease, diabetes and asthma
- help your practice improve its quality of care by reaching patients with information alerts via SMS and remote monitoring of patients in aged care facilities.

How?

Consider reviewing your current policies and procedures for compatibility with an mHealth strategy (refer to Steps 1 and 2).

Step 6. Review staff code of conduct

Why?

Mobile devices have become part of everyday life for most people, with the boundary between mobile personal and professional lives becoming less significant, particularly for those using their own device for work purposes. Given the use of mobile devices represents a new way of sharing and storing information, expected behaviours in the area may not yet be included in your staff code of conduct. The use of mobile devices imposes different obligations on staff members to be more mindful of how and where they use these devices in order to stop inadvertent sharing of patient information. You will need to update your code of conduct accordingly to ensure staff members use their devices in an appropriate manner.

How?

Your practice's code of conduct should include a section that outlines employees' expected standard of behaviour when using mobile devices. It should be designed to assist staff members in understanding their responsibilities and obligations, and provide guidance on expected behaviour when using mobile devices for work purposes. Patient information on mobile devices must be kept secure and private.

Staff code of education – mHealth considerations

- Educate staff members on behaviours when using mobile devices (eg keeping information confidential and secure, ensuring only you use the device, being aware of who else around you might inadvertently see the information on your device).
- Use passwords and encryption.
- Segment practice environment and data from personal staff data as much as possible.
- Regularly review, monitor and revise policies.
- Ensure mHealth policy addresses the risks associated with mobile devices.
- Ensure correct IT strategy includes the appropriate processes to support the policy.

Step 7. Establish an evaluation plan

Why?

An evaluation plan allows your practice to assess the effectiveness and success of its mHealth strategy, and helps to decide whether the strategy should be continued and/or there are any changes that can be made to improve it.

How?

You should document your evaluation plan as soon as the mHealth trial begins in order to effectively measure its impact. Considering questions such as, 'How will I know the trial is on track to achieve success?' or 'What will success look like at the end of the trial?' will help identify performance measures.

Assessing mHealth strategy for appropriateness, effectiveness and efficiency

Determine the key evaluation questions you need to answer in order to measure the success of the planning process, implementation process and outcomes:

Planning process:

- What processes worked well?
- Was there adequate time and resources for planning?

Strategy implementation:

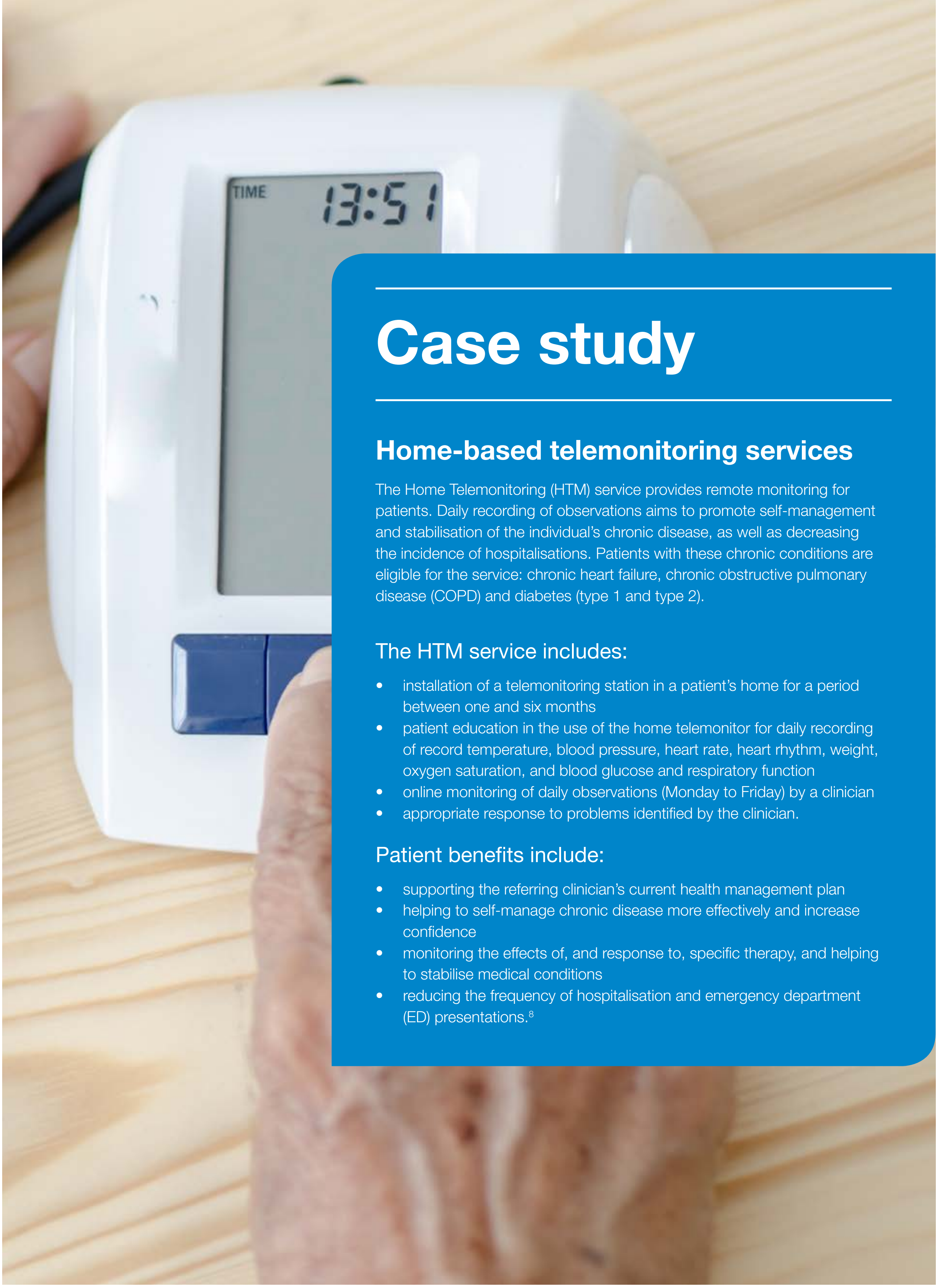
- What could have been done differently?
- Did we adequately identify and manage risks?
- Did we have enough time and resources?

Outcomes:

- What has changed in terms of policy in our practice?
- Has the increased use of mobile devices increased the adoption of other mHealth technologies?
- How has the relationship between team members and patients changed?

Decide what data you want to collect and for what time period it will be collected:

- Will you collect qualitative data (views, opinions), quantitative data (number of interactions with patients in which a mobile device was used), or both?
- What methods of collecting data (observation, surveys, questionnaires, listening to staff members' views during meetings) will you use?
- Which staff members will be responsible for data collection?
- What timelines will be set for data collection?



Case study

Home-based telemonitoring services

The Home Telemonitoring (HTM) service provides remote monitoring for patients. Daily recording of observations aims to promote self-management and stabilisation of the individual's chronic disease, as well as decreasing the incidence of hospitalisations. Patients with these chronic conditions are eligible for the service: chronic heart failure, chronic obstructive pulmonary disease (COPD) and diabetes (type 1 and type 2).

The HTM service includes:

- installation of a telemonitoring station in a patient's home for a period between one and six months
- patient education in the use of the home telemonitor for daily recording of record temperature, blood pressure, heart rate, heart rhythm, weight, oxygen saturation, and blood glucose and respiratory function
- online monitoring of daily observations (Monday to Friday) by a clinician
- appropriate response to problems identified by the clinician.

Patient benefits include:

- supporting the referring clinician's current health management plan
- helping to self-manage chronic disease more effectively and increase confidence
- monitoring the effects of, and response to, specific therapy, and helping to stabilise medical conditions
- reducing the frequency of hospitalisation and emergency department (ED) presentations.[8]

Initial trial checklist

This checklist will help you define details regarding users, devices and systems required for the successful rollout of your mHealth strategy.

□ Develop a business plan that incorporates a cost–benefit analysis

- Vision – define the role of mobile devices and how they will support the practice's overall vision of increasing access to care and efficiency
- Objectives – define success metrics and clarify the specifics of the vision. For example, your clinic may want to ensure that GPs and nurses can keep records of their outreach visits (ie ensure 100% of GPs and nurses using mobile devices for outreach visits can securely record consultation details, including photos of the progress of a patient's condition)
- Expenses and budget – clarify how expenses will be covered and describe funding sources
- Ownership and future steps – clarify responsibilities and plan execution; outline who will be responsible for identifying requirements, purchasing devices, and implementation and training

□ Build operational processes

- Determine how devices will be set up to access the necessary software for mobile use
- Policy for lost or stolen devices
- Communication protocols during a patient consultation (eg should staff members answer their phone while in a consultation?)
- Overall communication processes (eg should staff members reply to messages from patients? What are the escalation rules?)

□ Trial participants

- Select staff members across your practice to participate in the trial
- Find a clinical leader to champion the efforts of establishing an mHealth strategy, as this will help overcome obstacles more easily

□ Establish an evaluation plan

□ Provide training

- Determine the best way to train staff members participating in the trial
- Training modes include one-on-one, webinars and a 'champion' within the team who can help with training needs
- Ensure support is readily available to answer questions that are likely to come up during the trial and troubleshoot any technical issues

□ Communicate consistent messages

- Consider the key messages to be communicated to the team before implementing your strategy
  - What can actually change?
  - How will the practice team be involved in final decision-making?
  - What level of input is required from the team?
  - What are the benefits for the team?

Phase 3: Delivery

Here we put Phases 1 and 2 into action. The key step in this phase is demonstrating leadership.

step 8 Demonstrate leadership

Step 8. Demonstrate leadership

Why?

In order to move towards a practice that embraces their use, it is important to think about mobile devices as doing more than just improving communication flow.

mHealth can also have a strong emphasis on prevention, self-help and self-care.

How?

Your practice can demonstrate leadership in mHealth in many different ways:

- Explain to patients that the practice is ‘going mobile’ and staff members will be able to access their information more easily and efficiently when working outside of the practice, outlining the advantages and benefits.
- Appoint a practice mHealth ambassador/coordinator who can promote discussions about how to best utilise mobile technologies.
- Ensure there is a practice policy in place to which staff members can refer if there is any confusion or uncertainty.
- Ensure there is training and support available for staff members to encourage involvement in mHealth, and to provide updates on technology changes and advances.

Delivery checklist

□ Plan for questions

Expect to receive a number of questions when you release your mHealth strategy

□ Communicate value

- Ensure mobile devices’ value for patients is communicated
- Given messages from other clinicians will be most powerful at supporting organisational change, you could use ‘champions’ within the practice to promote the benefits of mobile devices

□ Monitor usage

- Examine the adoption rate
- Are there areas where more communication would be beneficial?
- Are there workflow areas that could be modified to promote greater adoption of mobile devices?

Phase 4: Reflection

In this phase you review the initial trail of your mHealth strategy and communicate to the practice team what worked, what didn't and where improvements can be made.

step 9 Review the implementation plan

step 10 Report on progress to staff

Step 9. Review the implementation plan

Why?

Following implementation of your mHealth strategy, it is important to assess its effectiveness and learn from the experience. This will enable you to reflect and re-think your practice's wider project and policies.

How?

Once your evaluation has been completed, you should review and share the key learnings with the practice team. Reflect on the expectations and whether these were met as part of the implementation. Evaluate whether the mHealth strategy has changed the delivery of care at your practice and how to best provide feedback to those involved in the implementation of the plan.

Evaluation checklist

□ **Assess program aspects, including delivery, activities, impacts and outcomes**

- Effectiveness – were the intended outcomes achieved?
- Efficiency – were resources used in a cost-effective way?
- Appropriateness – did the plan address the needs of the targeted groups?

□ **Advise whether the mHealth plan should be continued beyond its initial time frame**

□ **Inform team members of the evaluation results**

Further resources

Useful links and recommended resources

Resource name	Summary	Author	Link
Computer information and security standards (CISS)	Provides practices with a framework for evaluating risks, and guidance and solutions to improve competency and capacity in computer and information security	RACGP	www.racgp.org.au/your-practice/standards/computer-and-information-security-standards
Standards for general practices	Provides a framework for the continuing development of practice teams to enable them to focus on quality care and risk management	RACGP	www.racgp.org.au/your-practice/standards/standards4thedition
Digital Business Kit (DBK)	Provides a suite of resources to promote the adoption and meaningful use of technologies in general practice	RACGP	www.racgp.org.au/your-practice/ehealth/digital-business-kit
Privacy resources	The RACGP has a number of resources to ensure general practices are not exposed to breaches of privacy and confidentiality	RACGP	www.racgp.org.au/your-practice/ehealth/protecting-information/privacy
A guide for hardware and software requirements in general practice	Assists general practices in choosing what type of IT requirements are required for their business	RACGP	www.racgp.org.au/your-practice/ehealth/additional-resources/requirements
Effective solution for e-waste in your practice	Provides information and advice to GPs, practice owners and practice managers on how to safely, thoughtfully and correctly recycle and dispose of e-waste	RACGP	www.racgp.org.au/your-practice/ehealth/protecting-information/e-waste
Guide for the use of social media in general practice	Provides information on social media advantages and disadvantages, and risks and benefits, online conduct, security, privacy requirements, advertising and testimonials, and the use of disclaimers	RACGP	www.racgp.org.au/your-practice/ehealth/social-media/guide
Using email in general practice – privacy and security matrix	Helps practices make informed decisions regarding the use of email	RACGP	www.racgp.org.au/your-practice/ehealth/protecting-information/email
Healthy living apps guide	Reviews 200 healthy living apps available for Apple and Android devices between May and August 2015	VicHealth	www.vichealth.vic.gov.au/media-and-resources/vichealth-apps
Developing a framework for evaluating patient engagement, quality and safety of mobile health applications	Provides a framework for evaluating mobile health apps	The Commonwealth Fund	www.commonwealthfund.org/~/media/files/publications/issue-brief/2016/feb/1863_singh_framework_evaluating_mobile_health_apps_ib_v2.pdf
Mobile application rating scale (MARS)	Provides a multidimensional measure for trialling, classifying and rating the quality of mobile health apps	Young and Well Cooperative Research Centre	http://mhealth.jmir.org/2015/1/e27
Young and Well Cooperative Research Centre	A suite of publications from the Young and Well Cooperative Research Centre exploring the role of technology in young people's lives, and how it can be used to improve their mental health and wellbeing	Young and Well Cooperative Research Centre	http://pandora.nla.gov.au/pan/141862/20160405-1343/www.yawcrc.org.au/index.html
Digital Dog	A suite of publications focusing on how to use technology to address mental health problems	Black Dog Institute	www.blackdoginstitute.org.au/public/research/digitaldog.cfm
My health apps	A suite of healthcare apps recommended by health consumers, patients and carers	PatientView	http://myhealthapps.net

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