



## *E-health*

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## Definition

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E-health is a rapidly evolving component of healthcare and is a basic requirement for providing general practice care in the 21st century.<sup>1</sup>

E-health has been defined as ‘the transfer of health resources and healthcare by electronic means’.<sup>2</sup>

E-health is ‘the electronic collection, management, use, storage and sharing of healthcare information. This information can include individual items such as referrals, test results, discharge summaries, vaccination history, medication history and diagnoses’.<sup>3</sup>

E-health encompasses products, systems and services including tools for supporting healthcare. These tools are used by:

- health professionals
- health authorities
- patients
- the wider general community.

‘E-health systems that securely and efficiently exchange data can significantly improve how clinical and administrative information is communicated between healthcare providers. As a result, e-health systems have the potential to unlock substantially greater quality, safety and efficiency benefits. E-health has the capacity to benefit all Australians – individual consumers, healthcare providers and organisations’.<sup>3</sup>

The scope of e-health includes desktop to bedside and population health activities. These present complex information management challenges in supporting individualised patient care and present challenges for GPs in both clinical practice and practice administration.

‘Telehealth’ relates to the direct (eg. video conferencing) or indirect (eg. website delivery) delivery of health information or healthcare to a recipient. Telehealth essentially means ‘healing at a distance’ and involves both the electronic transmission and storage of health information/images in the delivery of both clinical and nonclinical health services utilising a range of telecommunications technologies.<sup>4,5</sup>

This curriculum statement was formerly known as ‘Health informatics’, which refers to the interdisciplinary field that deals with the collection, storage, retrieval, communication and optimal use of health related data, information and knowledge using information science for the purposes of problem solving, decision making and assuring high quality healthcare in biomedical sciences.<sup>6</sup>

## Curriculum in practice

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The following case illustrates how the e-health curriculum applies to general practice:

- Barry, 42 years of age, injured his knee while yarding cattle. Determined to complete the job while he had the help of his neighbour, he used fencing wire and a post to make a splint to support his leg. His knee is grossly swollen by the time he presents for review, hours after the injury. Your small hospital has a digital X-ray machine and you access real-time reporting in consultation with a specialist at the base hospital. Together you make a diagnosis of complicated fracture of the tibial plateau. Barry is transferred to the base hospital for surgery. The surgeon accesses the electronic films and books the theatre. Before discharge, the orthopaedic team arrange a video consultation with you – the treating GP – and the local physiotherapist, to outline what will be needed to aid Barry's recovery and what outcome milestones are anticipated. Each fortnight the two teams meet with Barry and demonstrate, on camera, his slow progress in regaining mobility. Although Barry is frustrated at not being fit enough to yard cattle, he has already returned to driving a tractor on the farm. Barry's son tells you that Barry has taken over a large part of the family finances, which has enabled Barry's wife to take on a greater role on the farm. This has helped the family to meet production targets, which would have not been possible if the family had to travel to the city for Barry's many medical appointments.

## Rationale and general practice context

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The rise in computerisation of Australian general practice for patient and data records has changed the way in which practices operate, as well as the dynamics of the patient-doctor relationship.

In 2009–2010, almost two-thirds (64%) of GPs reported using electronic records exclusively, 85% producing prescriptions electronically and 72% receiving pathology results on line.<sup>7</sup>

E-health is seen to be increasingly important in ensuring system efficiencies and improving quality of patient care,<sup>1</sup> and the rise in computer use in general practice has been described as responsible for creating the largest electronic database of clinical information in the country.<sup>3</sup>

The introduction of new technologies into general practice presents challenges for GPs. Future developments in the areas of a national health record system, e-billing and telehealth will need to be monitored by GPs and practice teams.

The use of information management can assist GPs to keep up-to-date with clinical advances through guidelines, summary services (eg. clinical evidence) and decision support.

General practitioners must be mindful of the potential risks of information management, including security and privacy issues, and need to be familiar with computer security guidelines.<sup>7–10</sup>

Effective use of medical records data can assist GPs to better understand their practice's patient base, facilitating the provision of services and deriving business benefits.

Patients are referring to the internet for information and younger users are using web based technologies for routine day-to-day communication. The increasing use of social media requires general practice to be aware of the changing implications and standards of using such technologies.<sup>15</sup>

### Related curriculum areas

E-health impacts on many areas of general practice, but in particular, refer also to the curriculum statements:

- *Chronic conditions*
- *Population health and public health*
- *Practice management.*

# Training outcomes of the five domains of general practice

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## 1. Communication skills and the patient-doctor relationship

- EHET1.1** Acknowledge, in conjunction with practice staff, that data collection and retrieval involves a relationship between the patient, practice team and computer.
- EHET1.2** Be conscious of the impact of technology on patient-doctor communication (eg. the perception that the computer is ‘taking over’ the consultation).
- EHET1.3** Acknowledge the three-way relationship between the patient, doctor and computer while ensuring that the patient-doctor relationship remains paramount.
- EHET1.4** Have the skills to communicate via distance technologies (eg. telehealth). Acknowledge barriers to quality and safety.

## 2. Applied professional knowledge and skills

- EHET2.1** Be aware of appropriate and reliable websites for patient information.
- EHET2.2** Have basic knowledge of booking and billing systems.
- EHET2.3** Understand the role of the electronic health record in general practice.
- EHET2.4** Use electronic prescribing systems effectively and safely.
- EHET2.5** Be familiar with search strategies for evidence based resources (eg. PubMed and Cochrane).
- EHET2.6** Use appropriate electronic resources (eg. websites, smartphone applications, e-books, information portals) for current professional information (eg. e-medicine, Harrison’s Online, Dermnet, *BMJ*’s Clinical Evidence).
- EHET2.7** Understand or be aware of your limitations (so as to seek appropriate assistance) regarding e-health systems and applications, for example, security and data recovery, telehealth including teleconsults, email consultations, electronic billing via Medicare Online, the use of templates for medical summaries, medication lists, care plans and health assessments.

## 3. Population health and the context of general practice

- EHET3.1** Understand how e-health has a key role in improving general practice population health strategies.
- EHET3.2** Understand how general practices that have an information management strategy can produce clean data for use in their own practice.
- EHET3.3** Understand how electronic strategies (in the form of recalls, reminders and clinical audits) can assist general practices to engage in population health activities (eg. Pap tests) and other preventive health activities.

## 4. Professional and ethical role

- EHET4.1** Engage in appropriate skill development to keep up with evolving medical technology and understand that mastering a computer in healthcare is independent of medical experience and knowledge.
- EHET4.2** Acknowledge the role of e-health in complementing traditional general practice through better provision of information and knowledge.
- EHET4.3** Use change management to assist the uptake of electronic health records and other e-health applications in general practice.

## 5. Organisational and legal dimensions

- EHET5.1 Understand the importance of strategic and long term system security and privacy, including virus protection, server firewall set up, encryption of patient information through emails or system networks, data recovery and back up procedures, and where needed, delegate these tasks to information technology professionals.
- EHET5.2 Understand that the electronic health record is a patient record and, like the paper based record, is a legal document.
- EHET5.3 Ensure data quality and up-to-date record keeping strategies are used.
- EHET5.4 Ensure that practice systems have dedicated resources or a third party is available to ensure a reliable service for all users.
- EHET5.5 Monitor, where appropriate, the role of e-health developments and emerging technologies in general practice.

# Learning objectives across the GP professional life

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## Medical student

### 1. Communication skills and the patient-doctor relationship

- EHELM1.1 Describe how the use of a computer in a consultation can be a barrier to the patient-doctor relationship.
- EHELM1.2 Outline strategies that can assist in ensuring a patient centred consultation style while using a computer in a consultation.

### 2. Applied professional knowledge and skills

- EHELM2.1 Define basic computer literacy skills.
- EHELM2.2 Demonstrate basic computer literacy skills.
- EHELM2.3 Describe the role of electronic health records and prescribing systems in healthcare.
- EHELM2.4 Outline the role of the internet in patient care.

### 3. Population health and the context of general practice

- EHELM3.1 Outline how e-health can be used in preventive care.
- EHELM3.2 Outline how systems can be used for reminders and recalls.

### 4. Professional and ethical role

- EHELM4.1 Identify how e-health issues can impact on the GP, staff and patient.
- EHELM4.2 Identify change management issues that are associated with e-health.
- EHELM4.3 Describe the definitions of 'clean' data and data coding.
- EHELM4.4 Outline privacy issues for the patient and the practitioner in e-health issues including the role of social media.

### 5. Organisational and legal dimensions

- EHELM5.1 Describe issues that can affect e-health (eg. security and data protection).
- EHELM5.2 Outline legal implications in the usage of the electronic health record.
- EHELM5.3 Outline the basic infrastructure issues in relation to the day-to-day running of general practice (eg. program updates).

# Learning objectives across the GP professional life

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## Prevocational doctor

Assumed level of knowledge – medical student

### 1. Communication skills and the patient-doctor relationship

EHELP1.1 Demonstrate high level communication skills in the consultation (eg. the provision of information and the use of computer based decision aids in patient information).

### 2. Applied professional knowledge and skills

EHELP2.1 Demonstrate expertise in using the internet to gain evidence based information that supports current practice.

EHELP2.2 Outline e-health systems that support day-to-day general practice (eg. billing and booking systems, accounts keeping, Medicare Online).

EHELP2.3 Demonstrate mastery of the electronic health record in daily practice (eg. prescriptions, reports, results checking, updating past history, recall systems, patient databases).

### 3. Population health and the context of general practice

EHELP3.1 Demonstrate how e-health can improve the care of patients using recall and data-specific patient searches.

### 4. Professional and ethical role

EHELP4.1 Demonstrate the correct use of coding in the electronic health record.

EHELP4.2 Describe coding and the impact of data quality on patient care and practice administration.

### 5. Organisational and legal dimensions

EHELP5.1 Identify when e-health is complementary to practice management.

EHELP5.2 Identify legal implications for evolving technologies (eg. email consultations).

EHELP5.3 Discuss critically privacy issues surrounding e-health and general practice.

EHELP5.4 Discuss the role of encryption technologies for patient and population data transfer (eg. email).

EHELP5.5 Describe the legal status of the electronic health record.

EHELP5.6 Describe e-health infrastructure and systems in the general practice setting.

# Learning objectives across the GP professional life

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## Vocational registrar

Assumed level of knowledge – prevocational doctor

### 1. Communication skills and the patient-doctor relationship

- EHELV1.1 Demonstrate high level communication skills in the consultation (eg. the provision of information and the use of computer based decision aids in patient information).
- EHELV1.2 Demonstrate, where appropriate to the patient's needs, how to consult via telehealth.

### 2. Applied professional knowledge and skills

- EHELV2.1 Demonstrate expertise in searching the internet for evidence based information that supports day-to-day practice.
- EHELV2.2 Outline high level e-health systems that support day-to-day general practice (eg. billing and booking systems, accounts keeping, Medicare Online).
- EHELV2.3 Demonstrate mastery of the electronic health record in daily practice (eg. prescriptions, reports, results checking, updating past history, recall systems, patient databases).

### 3. Population health and the context of general practice

- EHELV3.1 Demonstrate e-health principles to improve patient care using recall databases and data specific patient searches.

### 4. Professional and ethical role

- EHELV4.1 Demonstrate correct usage of coding in the electronic health record.
- EHELV4.2 Be familiar with professional responsibilities and requirements as detailed in e-health general practice guidelines (eg. RACGP *Standards for general practices*, *Computer information and security standards*, telehealth guidelines, social media guidelines).

### 5. Organisational and legal dimensions

- EHELV5.1 Identify characteristics which make e-health complementary to practice management.
- EHELV5.2 Identify legal implications for evolving technologies (eg. email consultations).
- EHELV5.3 Discuss critically privacy issues surrounding e-health and general practice.
- EHELV5.4 Discuss the role of encryption technologies for patient and population data transfer.
- EHELV5.5 Describe the legal status of the electronic health record.
- EHELV5.6 Describe e-health infrastructure and systems in the general practice setting.
- EHELV5.7 Understand the legal responsibility of recall and reminder systems.
- EHELV5.8 Ensure familiarity with general practice standards for e-health (eg. computer security guidelines, privacy for telehealth guidelines).

# Learning objectives across the GP professional life

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## Continuing professional development

Assumed level of knowledge – vocational registrar

### 1. Communication skills and the patient-doctor relationship

- EHELC1.1 Demonstrate continuing evaluation of consultation skills for patient centred practice.
- EHELC1.2 Demonstrate effective communication skills with colleagues and staff when using e-health systems.

### 2. Applied professional knowledge and skills

- EHELC2.1 Demonstrate mastery of skills in using the internet for patient and self education purposes.
- EHELC2.2 Demonstrate high level skills in using the electronic health record for care planning, health assessments and monitoring of up-to-date data (eg. medications and past history).
- EHELC2.3 Describe billing and booking systems that assist patient focused service delivery.

### 3. Population health and the context of general practice

- EHELC3.1 Identify ongoing issues with data quality and how this might be improved.
- EHELC3.2 Identify patient key performance indicators to inform practice quality.

### 4. Professional and ethical role

- EHELC4.1 Demonstrate effective change management principles, especially toward colleagues and general practice staff.
- EHELC4.2 Outline continuing professional development activities that could be provided for topics where traditional training and education are not available (eg. RACGP online learning).

### 5. Organisational and legal dimensions

- EHELC5.1 Describe the processes in place at your practice that initiate data recovery in the event of a system shutdown.
- EHELC5.2 Describe practice processes in relation to hardware and software update requirements.
- EHELC5.3 Identify issues to consider when a third party is responsible for information technology infrastructure.
- EHELC5.4 Demonstrate consideration of legal and privacy issues in e-health, including encryption of patient data and patient ownership of electronic data.
- EHELC5.5 Describe strategies that could assist GPs in the transition to the paperless patient record.
- EHELC5.6 Describe coding and its impact on clean patient information for self and third party information requirements.

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