RACGP

Interoperability and useability requirements for general practice clinical information systems

Position statement – February 2024

Position

The RACGP:

- recognises clinical information systems (CISs) are vital tools in the delivery of safe, high-quality healthcare and good practice management in general practice. General practice CISs support the safety, quality and efficiency of care so GPs can focus on their patients
- accepts improvements to the useability and functionality of these products depend on cooperation among the key players in this sector
- considers there is a need to improve:
  - the interoperability across general practice CISs, the My Health Record, and other systems used across the healthcare sector to facilitate the sharing of patient information
  - the consistency of the display of electronic clinical decision support (eCDS) tools in CISs
  - channels for communication between clinicians and patients via CISs
  - data portability between CISs
  - the display of critical patient information
- asserts improving general practice CISs has the potential to improve individual patient and population health outcomes, enhance workflows and efficiency for clinicians, and benefit the research and evaluation of health initiatives and policy
- supports continued efforts to identify minimum requirements for general practice CISs with the aim of developing industry-led standards and an accompanying accreditation framework
- acknowledges the need for education to improve data capture within general practices
- recognises the need to improve data technologies across the healthcare system.

Definition

A general practice clinical information system (CIS) is software used in general practice to perform a range of clinical and administrative functions, including:

- managing patients' personal details and demographic information
- recording patients' healthcare and social histories
- providing reminders for preventive medicine and recalls for ongoing care
- managing patients' medications and generating prescriptions
- creating referrals and receiving reports, including specialist letters and discharge summaries
- creating diagnostic requests and receiving laboratory and radiology reports
- facilitating clinical audits
- providing decision support (eg, checking drug—drug interaction, checking drug—disease interaction, monitoring care of people with chronic conditions, providing prompts about evidence-based timing of preventive activities, and providing diagnostic or therapeutic suggestions)

- minimising unnecessary or duplicated requests that might compromise patient safety and/or waste resources
- streamlining systems so clinicians can focus on caring for their patients while working to the top of their practice.

Background

The evolution of general practice clinical information systems

General practice CISs have been used in Australia for comprehensive health record keeping since the 1990s, and now serve as sophisticated tools for managing a range of clinical data. General practice CISs are used as electronic health records for patient care, as well as for clinical audits, research, reporting, patient risk stratification, integrated care programs, and to help to populate My Health Record.[1]

There are a number of general practice CISs in use in Australia, each developed by private software vendors who continuously add new features and functionality to their products to support and attract users and to comply with government programs. Each update increases the volume of information generated by and held in general practice CISs. In some cases, CISs have retained older features which are now redundant or out-of-step with current healthcare delivery models, research evidence, clinical guidelines, and practice workflows.

The RACGP produced standards for computerised medical systems in the 1980s and worked with government-funded consultants to produce specifications for general practice software in the 1990s. However, there are no current Australian standards to guide the development of software for use in general practice, consistency of how health information (data) is recorded, or to support the sharing of data. General practice CISs each have unique methods for storing and recording information, including:[1]

- **data structures.** General practice CISs use different methods of linking related data elements within a record, such as a patient's presenting problem and management of that problem. They also differ in their use of free-text fields for capturing information.
- **data element names with associated definitions.** For example, depending on which general practice CIS is used, a GP might record a patient's reason for seeking healthcare under fields named 'reason for visit', 'reason for encounter', 'presenting symptoms', or 'presenting problem'. These terms are associated with different definitions that dictate how they should be populated.
- **systems of medical terminology and health coding.** The various terminologies or 'term sets' used by general practice CIS include Pyefinch/DOCLE, the MedicalDirector termset (a modified version of SNOMED-CT), and ICPC-2+.

Issues with general practice CISs

Lack of interoperability can compromise safety and quality of care

Interoperability refers to the ability of systems or software to share and make use of information – in this case, information pertaining to an individual's healthcare. Important gains have been made in interoperability within the Australian healthcare sector in recent years, such as the introduction of electronic prescribing, Provider Digital Access (PRODA), the Australian Medicines Terminology (AMT) and SNOMED-CT AU. However, gaps in interoperability mean general practices rely on antiquated methods like faxing and scanning for sharing and receiving data with other general practices, non-GP specialists, hospitals, allied health professionals, residential aged care facilities, and other organisations requesting healthcare information such as Centrelink. There are also missed opportunities to facilitate communication between clinicians and patients via CISs, particularly with regard to management plans and requests for care.

A lack of interoperability creates data silos. Not having ready access to patient information through the local CIS can create delays that compromise safety and the delivery of quality care, a problem brought into sharp relief by the COVID-19 pandemic. Having to seek or provide information about patients creates an administrative burden for GPs and general practice staff. Reliance on paper letters and outdated technologies like the fax to transfer sensitive data increases the risk of patient privacy breaches and makes the information more difficult to use.

The RACGP has previously drawn attention to the problems created by a lack of interoperability in CISs in residential aged care settings,[2] and in the shared care of patients with complex, chronic conditions.[3]

Effects for patient consultations

General practice CISs can have a profound influence on patient interactions. The display of the CIS directs the GP to clinical information of many kinds, and directs with prompts, alerts, and fields to complete. The CIS should be a tool to assist in the collection of data, but it should not dictate the shape or nature of the patient consultation. It should not require the GP to gather information redundant to the interaction, or distract from the development of the therapeutic relationship by diverting the GP's attention away from the patient to the screen.[4]

GPs must be involved in the development of general practice CISs to ensure their functionality is compatible with clinical workflows.

Inconsistent integration of electronic clinical decision support

General practices often use electronic clinical decision support (eCDS), tools that use inputs such as clinical guideline recommendations and data from medical devices to generate information to support clinical care. However, most eCDS tools are not integrated into general practice CISs where their recommendations could be used most effectively. As previously argued by the RACGP, this impedes clinical workflows.[5]

Efforts to regulate the development of eCDS tools so that they can be used more consistently within CIS products would enhance the delivery of evidence-based care. Uptake of eCDS might be improved by the use of a common Application Programming Interface (API) for CISs, which would provide a single target for eCDS development. Ensuring that eCDS tools are deployed in a consistent fashion across eCDS might help with the problem of maintaining their currency, ensuring that relevant and up-to-date guideline recommendations will be seen by the user and can inform their clinical practice where relevant.

Implications for research and public health policy

Data held in general practices are used primarily for the provision of clinical care and related business functions. However, elements of this data might also legitimately be used for secondary purposes such as research and public health planning (with the consent of the general practice, respect for Indigenous data sovereignty, and a commitment by third parties to extract and store those data in both an ethically and legally sound manner).[6]

While general practices are under no obligation to provide data to third parties for secondary uses, this is a common practice, and as it stands, it is difficult to extract comparable data from different general practice CIS because of their different systems of storing and recording information. Data might also be of variable quality due to differences in ease of entering data and the knowledge and education of users. Researchers are unable to harness the true power of this data to compare healthcare delivery across sites, identify individuals at risk of developing a particular condition, investigate the efficacy of an intervention, map care pathways and long-term health outcomes, or improve pandemic readiness.

Failure to capitalise on benefits of patient-led and automated data provision

Just as general practice CIS are not interoperable with CISs in other general practices or secondary and tertiary healthcare settings, they are unable to upload data from patient wearables (technological devices for capturing health information) and have limited ability to incorporate data from in-clinic devices (eg, blood pressure machines, thermometers, scales and pulse oximeters). There is a missed opportunity to harness automated data collection about patients using machines already in use to assist in medical management, improve data quality, help patients better understand their own health, and facilitate behaviour change.

Poor data portability

When a general practice switches to a different CIS, GPs and general practice staff need training and practice in the use of the new system as a result of the critical differences between platforms. This is expensive and time-consuming. This acts as a deterrent to move to a different CIS.

Changing from one CIS to another might also lead to a loss of data in transfer, and where data cannot be transferred to a new CIS, there are large costs associated with maintaining legacy records.[7]

Patient medical records cannot be transferred from one practice to another, so a record from another practice has to be manually entered into the new GP's CIS.

Effects for use of My Health Record information

General practice CISs differ in the ways in which they send, receive and display information from My Health Record. At present, it is difficult to navigate a patient's My Health Record through a CIS. Patient data that might be useful to the GP is hidden in .pdf files that are not machine-readable, so GPs searching for information in the My Health Record must open each document to find it. This is becoming increasingly more time-consuming for clinicians as uptake increases and more information is stored in the My Health Record.

Moreover, it is not possible to download clinical information (eg, current medications, immunisation history, or known allergies) from a patient's My Health Record to the general practice CISs. After the time-consuming process of searching for relevant clinical information in the My Health Record, the GP manually enters it in the patient's record in the CIS.

My Health Record is not designed to be a complete patient health record,[8] but if it is to be a useful clinical tool, it should be interoperable with all general practice CISs to facilitate the seamless sharing of patient information.

Issues with the display of patient information

Patient information is displayed differently across general practice CISs, and the user interface is not always customisable to the individual practitioner's workflow. Allowing users to customise the display can help make navigation easier, particularly for those with particular sensory, language, or learning needs.

There are also ways in which problems with the user interface might affect the safety and quality of care provision. Current or outstanding recalls and reminders are displayed inconsistently across platforms. General practice CISs do not provide comprehensive, actionable information about patients' preventive care needs.[9] Often, recalls and reminders do not appear prominently on the user's screen and can be easily dismissed. Moreover, they cannot be prioritised according to clinical urgency, and there are no facilities to enter structured information about how the reminder has been actioned by the GP. Only some products use audit logs to track and trace completion of follow-ups, or explicitly label data imported from external sources with details of the sender.

Barriers to change

Development and implementation of a set of standards would require the cooperation of government, industry bodies, software vendors that operate in competition with one another, and representation by GPs as the end users of these products.

The RACGP has long been involved in discussions with the various stakeholders, culminating in the 2018 report for the Australian Digital Health Agency entitled, Minimum requirements for general practice clinical information systems to improve useability.[10] Unfortunately, there have been several impediments to adoption of the recommendations outlined in the report, in particular:

- the absence of an overarching policy framework to guide change
- a lack of industry incentives for change
- the competing priorities of policy makers, software vendors, and end users
- limitations on the technical design capacity of software vendors
- a lack of funding for adoption by general practices.

Policy response

Identification of minimum requirements

Work must continue to reach agreement on priorities for the development of minimum requirements for general practice CISs. There is a need for an open and continuing dialogue between GPs, software vendors, and experts in clinical informatics to ensure these tools are well designed and support clinical and business workflows.

When surveyed for the RACGP/ADHA's 2018 report,[10] key stakeholders identified a number of minimum requirements for general practice CISs. Many of the ideas in the report are still relevant. There remains a need for standardisation of data element labels, definitions, clinical terminology, and coding systems. Of critical importance is strengthening the facility to exchange or share data between care teams, across disciplines, and between care sites.

Other important priorities include improving the user experience, supporting the capture of critical data, ensuring critical patient information appears prominently in the display, incorporating high-quality clinical guidelines for clinical decision support, and providing actionable information about patients' preventive care needs.

General practice CISs must be designed to optimise the end user's experience, with the end goal of enhancing patient care and safety. Efforts should be taken to ensure any new design features do not increase the non-clinical requirements of GPs in documenting clinical care. GPs must be involved in user experience testing prior to implementation, as should general practice staff, such as Aboriginal and Torres Strait Islander Health Practitioners, practice nurses, practice managers, and administrative staff.

Development of a standards framework

Many countries have already moved to regulate general practice CIS products with standards. If CIS standards are to be used in an Australian context, there will need to be an accreditation process for these products, ideally underpinned by a legislative framework and managed by an independent body.

Other legislative levers

In addition to the development of standards, there might be other ways to address some of the issues affecting general practice CISs. For example, some jurisdictions have moved to stifle the practice of information blocking with legislation that makes it illegal for software vendors to restrict health information exchange for treatment and other permitted purposes, including exchange of information between certified health information technologies.[11]

Fast Healthcare Interoperability Resources (FHIR)

Health Level Seven (HL7)'s Fast Healthcare Interoperability Resources (FHIR) allow for the exchange of patient healthcare information between different platforms. FHIR provides a shared 'language' by which systems can communicate. Many countries are already using FHIR to improve healthcare interoperability.

Work is currently underway to develop implementation guidelines to support the use of FHIR in the Australian healthcare context. Sparked AU is a consortium of government and industry stakeholders working to deliver a core set of FHIR standards for Australia. The RACGP is already providing clinical input to Sparked AU.

Support for general practices

If standards for general practice CISs are adopted, a long-term plan for implementation will be required to support general practices. A grant scheme or similar, managed by the Australian Government, could assist general practices to bear the costs of upgrading their CISs and investing in the necessary technical training for staff.

Education for GPs and general practice staff

An important parallel consideration is the need for education to improve data capture and sharing practices within general practices. Improving the interoperability and useability of general practice CISs has the potential to greatly

improve the quality of general practice data, but GPs and general practice staff must also apply best practice principles for data entry for the benefits to be fully realised. This requires a culture of good data quality within general practices, where all staff are trained and encouraged to keep records that are accurate, complete, consistent, easily read and understood, accessible, and up-to-date.[12]

Improving data collection and sharing across other arms of the healthcare sector

Equivalent efforts to improve clinical information systems and data entry practices are required across the healthcare sector, particularly within the non-GP medical specialist, aged care, and allied health sectors, but also within hospitals. Data quality, consistency, and sharing are issues for the healthcare sector as a whole, not merely for general practice.

Conclusion

CISs are sophisticated tools vital to the business operations of general practice and the delivery of safe and high-quality patient care. Minimum requirements for these products and the implementation of standards for their core features would improve data quality, security, and information sharing which in turns supports improved patient safety. It would increase the ease of use of these products, freeing up GP time. With government investment and clinical and technical collaboration, the implementation of standards for general practice CIS products has the potential to enhance and streamline patient care.

References

1. Gordon, J.; Miller, G.; Britt, H. Deeble Institute Issues Brief no. 18: Reality Check - Reliable National Data from General Practice Electronic Health Records. Canberra, ACT: Deeble Institute for Health Policy Research; 2016. Available from: https://ahha.asn.au/publication/issue-briefs/deeble-institute-issues-brief-no-18-reality-check-reliable-national-data (accessed 8 September 2023).
2. Royal Australian College of General Practitioners. Position statement: Seamless exchange of information between aged care and general practice. Melbourne: RACGP, 2022. Available from https://www.racgp.org.au/advocacy/position-statements/view-all-position-statements/clinical-and-practice-management/seamless-exchange-of-information (accessed 8 September 2023).
3. Royal Australian College of General Practitioners. Position statement: Shared care model between GP and non-GP specialists for complex chronic conditions. Melbourne: RACGP, 2023. Available from https://www.racgp.org.au/advocacy/position-statements/view-all-position-statements/clinical-and-practice-management/shared-care-model-between-gp-and-non-gp-specialist (accessed 8 September 2023).
4. Swinglehurst D, Greenhalgh T, Roberts C. Computer templates in chronic disease management: ethnographic case study in general practice. BMJ Open. 2012 Jan 1;2(6):e001754.
5. Royal Australian College of General Practitioners. Position statement: Electronic clinical decision support in general practice. Melbourne: RACGP, 2021. Available from https://www.racgp.org.au/advocacy/position-statements/view-all-position-statements/clinical-and-practice-management/electronic-clinical-decision-support (accessed 8 September 2023).
6. Royal Australian College of General Practitioners. Three key principles for the secondary use of general practice data by third parties. Melbourne: RACGP, 2023. Available from https://www.racgp.org.au/running-a-practice/security/managing-practice-information/secondary-use-of-general-practice-data/de-identified-general-practice-data (accessed 8 September 2023).
7. Huang C, Koppel R, McGreevey JD 3rd, et al. Transitions from one electronic health record to another: challenges, pitfalls, and recommendations. Appl Clin Inform. 2020 Oct;11(5):742-754.
8. Royal Australian College of General Practitioners. My Health Record: A brief guide for general practice. Melbourne: RACGP, 2018. Available from https://www.racgp.org.au/running-a-practice/technology/clinical-technology/electronic-records/my-health-record-in-general-practice/my-health-record-resources (accessed 8 September 2023).
9. Frank OR. Clinical software packages can be improved to help general practitioners increase the provision of preventive care. Aust J Prim Health. 2022 Jun;28(3):204-206.
10. Royal Australian College of General Practitioners. Minimum requirements for general practice clinical information systems to improve useability. Melbourne: RACGP, 2018. Available from https://www.racgp.org.au/running-a-practice/technology/reports/minimum-requirements-for-cis (accessed 8 September 2023).

11. The Office of the National Coordinator for Health Information Technology (U.S.). Information blocking. Washington, DC: ONC. Available from https://www.healthit.gov/topic/information-blocking (accessed 8 September 2023).
12. Royal Australian College of General Practitioners. Improving health record quality in general practice: What is 'quality'?. Melbourne: RACGP, 2020. Available from: https://www.racgp.org.au/running-a-practice/practice-resources/general-practice-guides/improving-health-record-quality/what-is-quality (accessed 8 September 2023).

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RACGP Mission statement

The RACGP's mission is **to improve the health and wellbeing of all people in Australia by supporting GPs, general practice registrars and medical students through its principal activities of education, training and research** and by assessing doctors' skills and knowledge, supplying ongoing professional development activities, developing resources and guidelines, helping GPs with issues that affect their practice, and developing standards that general practices use to ensure high quality healthcare.