



Use of chronic disease management software in Australia

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Computer based chronic disease management or clinical decision software packages are being developed partly in response to the barriers to optimal care identified by general practitioners: complexity of care regimens, administrative burden, and need for communication within multidisciplinary teams.¹ The premise is that the cost of implementation may be offset by improved patient outcomes resulting in reduced complications and/or hospitalisation events. Achieving this is likely to require ongoing management and monitoring to ensure individuals receive optimal care over the long term, as well as practice support to manage the increasing numbers of patients and improve adherence to best-practice. This RESEARCH ROUNDup summarises the latest evidence and current status of computer software use for chronic disease management in Australia.

Standard practice computer software generally allows for administrative functions including patient registration and billing, and clinical functions such as recording of clinical detail and medication prescribing.² There are more than 10 general practice data audit software packages in use across Australia, with two tools dominating the market: Medical Director and Best Practice.³ Some, but not all practice software include data extraction tools designed to generate an overview of the practice population.⁴ However, targeting patients with chronic diseases either as part of a practice quality improvement strategy (cohort level) or as part of individual level care planning is often achieved using a dedicated data extraction software tool. PenCAT and Canning Data Extraction Tool are two examples commonly used in Australian general practice. Both are compatible with standard practice software and identify patients with specific chronic diseases such as diabetes, coronary heart disease and chronic obstructive pulmonary disease. In this way, the quality and completeness of practice patient information for those with chronic diseases can be assessed, and patients with specific profiles targeted for care. Both tools have contributed to the Australian Primary Care Collaborative quality improvement programme delivered by the [Improvement Foundation](#).

A third layer of software tools for chronic disease management primarily targets individual patient care. These tools either integrate with the data extraction tools or directly with the practice software to provide a range of functions to improve care delivery and coordination. Their functions include generation of patient summaries and management plans in line with Medicare items, clinical decision support and ongoing review with guideline based alerts and targeting of high risk patients; and shared access to data for different health care providers to better coordinate multidisciplinary care. While many of these tools have capacity across a number of these areas they generally have a core function that is a central strength of the tool. Some are designed to manage patients within a single practice, while others aim to connect communities of care providers (e.g. RecordPoint, cdmNet). The choice of tools will depend on individual practice needs and operating context, but many have been designed to work together to improve work flow and ease of information exchange.

In Table 1, examples of available tools are provided including some of the general functions covered; interested readers are encouraged to investigate further using the links provided. Most

practice and chronic disease software have or will be configured to enable uploading of patient information to the Australian Government's Personally Controlled Electronic Health Record (PCEHR, recently renamed as *myHealth Record*) that will contain an overview or summary of an individual's health information. In this way selected patient information can be accessed in hospitals and by providers not involved in the routine management of a particular individual's care. A list of PCEHR conformant software registered with the National E-Health Transition Authority (NEHTA) is available at www.nehta.gov.au.

Computer use in Australian general practice

Australian general practice is highly computerised, the Bettering the Evaluation and Care of Health (BEACH) survey for 2013–14 showed that approximately 98% of practices use computers.³ The successful move towards computerisation of Australian general practice from 1998 onwards was driven by an identified need, incentives and support.⁵ Recognising the need to simplify prescribing processes, government incentives encouraged use of prescribing software and, within a decade, almost all Australian general practices had been supported to adopt the use of computers, with training via the Divisions of General Practice.⁵ However, computerisation of practices does not necessarily imply comprehensive use of computer software. A key component of the widely accepted chronic care model is regular follow-up and review, but less than 20 per cent of Medicare-rebated care plans are regularly reviewed.¹

Although we were unable to identify nationally representative data on current levels or types of chronic disease management software use in Australian general practice, a 2014 survey of 56 general practices indicated that 74% of practices used a data extraction tool to drive quality improvement, with Pen Cat identified as the most popular.⁶ In that sample 91% had a system in place to identify patients with chronic disease. Data extraction tools are used widely for practice audits, national indicator programmes, and increasingly for research.⁷ Practice level data on actual use of different tools for chronic disease management are lacking.

Evidence

Trial based evidence has generally provided support for clinical decision software associated improvements in processes of care (adherence to best-practice standards), but not patient-related

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clinical outcomes. A number of systematic reviews have found marginal or no overall support for positive clinical effects with the possible exception of certain conditions such as asthma and schizophrenia.^{8–10} A meta-regression analysis of 162 randomised trials found evidence for greater success with systems requiring the provision of reasons when over-riding advice or providing advice concurrently to patients and practitioners.¹¹ As noted by Blum⁸, the software is only as effective as the specific guidelines referred to and depends on uptake into routine practice.

Lessons from large scale trials in Australia

The Diabetes Care Project (DCP) was conducted at a cost of \$33.4 million to investigate the potential of flexible funding arrangements and use of an integrated information platform (cdmNet) to improve the organisation and delivery of diabetes care.¹² After 18 months, significant improvements in care plan creation and review by 11–23% were achieved for approximately 5 000 people.¹² While only very modest or non-significant improvements in clinical outcomes were achieved, international experience with disease management programs suggests the need for much longer follow up.¹³ Overall it was concluded that the quality of diabetes care improved with cdmNet plus financial incentives, although this was more limited with cdmNet alone. However the funding model was unlikely to be cost-effective on a broader scale.¹² Outcomes following implementation of HealthTracker, a cardiovascular disease screening and management algorithm designed to integrate with practice software, also fell short of expectations.¹⁴ Implemented as part of the TORPEDO trial with almost 39 000 participants cared for in general practice, after almost 18 months there was an absolute improvement in screening for cardiovascular risk by 10% but no change in prescribing of guideline recommended medications for those at greatest risk. This was evident in both general practice and Aboriginal Community Controlled Health Services. However, where medications were taken, significant improvements in dose adjustment were noted.¹⁴ The authors concluded that computerised quality-improvement tools offer a partial solution to improved cardiovascular disease risk management, and commented on the need for greater patient-focus.

Barriers to use

Engagement with clinical decision tools may also influence outcomes. Practice Nurses were more likely to use cdmNet in the DCP compared to GPs, and most patients did not access their shared electronic health record (7% and 18% with and without GP financial incentives, respectively).¹² A reluctance to engage has been observed previously, and is likely to represent an important challenge.¹⁵ Security and safety concerns also represent potential barriers to uptake.^{15,16} The Bayside ImproveIT project including 53 general practices identified a need for education and support, with general practices the most digitally proficient provider but almost half using outdated operating systems.¹⁷ Routine but frequent updates of software together with inaccurate record migration when changing to a new software package have been identified as particular safety issues in general practice.¹⁶ One estimate of the time spent by Australian GPs in dealing with IT problems was two hours per week.¹⁶

Conclusions

Chronic disease computer software programs have been associated with process level improvements, but there is a lack of evidence for impact at the patient level. Improvements in process parameters are likely to represent an important basis for improved health outcomes, but long-term evaluation may be needed to reveal these changes. Outcomes with currently available software suggest that achieving full patient and provider engagement can be a challenge. In the case of poor uptake or an absence of strong guidelines, as is currently the case for chronic disease multimorbidity, effectiveness and cost-effectiveness is likely to be compromised. Concerns about data security and safety issues have been raised and need to be addressed, including more general support for practices. Program technology needs to balance the cost of implementation against the potential for improved care management and cost savings, but also the likelihood of use. With many similar, but not identical, chronic disease management tools currently available, it would be useful to have a coordinated and comparative demonstration of these products as done elsewhere to improve understanding and encourage informed choice.¹⁸

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Table 1 Examples of chronic disease management software tools

| | Provider | Clinical software compatibility | Examples of application | Pricing model | Core function | Software function with reference to defined tasks 1-8* | | | | | | | | |
|---|---|---------------------------------|--|---|--|--|---|---|----------------|----------------|---|----------------|---|---|
| | | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| Medical Director PracSoft ^δ | medicaldirector.com/ | MD Sidebar, MD Clinical | Routine Australian general practice | Software license | Standard practice patient entry, billing, prescribing | x | | | | | | | | |
| Canning Data Extraction tool ^δ | Arche Health | MD, BP, PX, M32, ZM | Improvement Foundation qiConnect Adelaide PHN | Software license | Data extraction- Target patient data for quality improvement | x | | | | x | | | | |
| Pen CAT4 | PenCS | MD, BP, MMex | South Eastern NSW PHN | Software license | Data extraction- Target patient data for quality improvement | x | | | | x | | | | |
| Topbar (RACGP Primary Care Sidebar) | PenCS | PenCat | See PenCS for examples | Software license | Guideline based Alerts | x | | | | | x | | | |
| Doctors Control Panel | Doctors Control Panel | MD, BP, Medinet | Preventive care trials | Free | Guideline based Alerts | x | x | x | | x | x | | | |
| cdmNet | Precedence health | MD, BP, ZM, Monet | Diabetes Care Project , Additional projects list | Percentage of MBS fee for each item claimed | Data and care plan sharing across care providers | x | x | x | x | x | x | x | x | x |
| MMEX | ISA Healthcare Solutions | PenCat | Pilbara and Kimberley Indigenous healthcare | Software license | Data and care plan sharing across care providers | x | x | x | x | x | x | x | x | x |
| Multiprac CP (Care Planning) | Ocean Informatics | MD, BP | Northern Territory My eHealth Record Western Sydney PHN as LinkedEHR | Software license based on cohort size | Data and care plan sharing across care providers | x | x | x | x | x [¥] | x | x | x | x |
| Patient Assistance Tool | PAT Pty.Ltd. | BP | See website | Annual subscription fee | Guideline based care plan development | | | x | | x | x | x | x | x |
| RecordPoint/ RecordConnect | Extensia | MD, BP, PX, SH, G, C | GPpartners, Goldfields Esperance GP Network | Community based license | Data sharing and coordination across providers | x | x | x | x [#] | x | x | x [#] | x | x |
| Connected Care Management Systems (CCMS) | HSA Global (now owned by Whānau Tahi, NZ) | MD, BP | NZ National Shared Care Plan Singapore Agency for Integrated Care | Access fee per GP | Data and care plan sharing across care providers | x | x | x | x | x ^δ | x | x | x | x |

*Functions: 1. Identify patients with chronic disease; 2. Enrol or register patients for care; 3. Create and store care management plans; 4. Schedule procedures/tests or make referrals as appropriate; 5. Highlight problems or gaps in the patient data set; 6. Link to guideline recommendations; 7. Share plans with other clinicians and/or allied health workers; 8. Store the completed files.

MD=Medical Director; BP=Best Practice; PX=PractiX; M32=Medtech32; ZM=Zedmed; SH=StatHealth; G=Genie; C=Communicare.

δ details not confirmed by software developer; ¥ via partner pen; # via Electronic patient exchange (EPRX).