Australian Health Care Homes trial

Case study

Jane Hall, Kees van Gool, Philip Haywood, Jim Pearse, Deniza Mazevska, Serena Yu, Michael Wright and Peyman Firouzi Naeim
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Acknowledgements

The authors of this case study are Jane Hall (University of Technology Sydney), Kees van Gool (The University of Sydney), Philip Haywood (University of Technology Sydney), Jim Pearse (Health Policy Analysis), Deniza Mazevska (Health Policy Analysis), Serena Yu (University of Technology Sydney), Michael Wright (University of Technology Sydney) and Peyman Firouzi Naeim (University of Technology Sydney) in Australia.

Sarah L Barber, World Health Organization (WHO) Centre for Health Development (WHO Kobe Centre – WKC), Japan, Luca Lorenzoni, Organisation for Economic Co-operation and Development (OECD), France, Inke Mathauer, WHO Department of Health Systems Governance and Financing, Switzerland, and Megumi Rosenberg, WKC, led the technical review and revision of the case study.

This case study was commissioned by OECD.

The Kobe Group, which includes Hyogo Prefecture, Kobe City, the Kobe Chamber of Commerce and Kobe Steel, in Japan, contributed financially to the development and production of this case study.
<table>
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<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>Aus$</td>
<td>Australian dollar</td>
</tr>
<tr>
<td>COVID-19</td>
<td>coronavirus disease 2019</td>
</tr>
<tr>
<td>CVD</td>
<td>cardiovascular disease</td>
</tr>
<tr>
<td>FTE</td>
<td>full-time equivalent</td>
</tr>
<tr>
<td>GP</td>
<td>general practitioner</td>
</tr>
<tr>
<td>GPMP</td>
<td>General Practitioner Management Plan</td>
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<tr>
<td>HbA1c</td>
<td>glycated haemoglobin</td>
</tr>
<tr>
<td>HCH</td>
<td>Health Care Homes</td>
</tr>
<tr>
<td>IT</td>
<td>information technology</td>
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<tr>
<td>MBS</td>
<td>Medicare Benefits Schedule</td>
</tr>
<tr>
<td>PBS</td>
<td>Pharmaceutical Benefits Scheme</td>
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<tr>
<td>TCA</td>
<td>Team Care Arrangement</td>
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The Australian primary care system largely consists of independent private medical practices funded by fee for service. A Health Care Homes model that included voluntary patient enrolment and voluntary provider participation, with an annual bundled payment for chronic disease management was implemented as a trial from October 2017 to June 2021. The model aimed to provide more flexible services delivered by multidisciplinary teams. Previous attempts to introduce patient enrolment supported by capitation had mixed results.

The trial design of this involved a variety of stakeholders. Practices did not become purchasers of other services, and careful attention was paid to identifying and risk-rating suitable patients.

The evaluation of the trial demonstrated some improved disease management and more use of a variety of practitioners without any significant change in hospital use. The decrease in fee-for-service revenue was more than compensated for by the capitated payments. There were no net savings in total health care costs.

Implementation was an issue, with insufficient time for practices to prepare and some opposition to the model. The short length of the trial and the impact of the coronavirus disease (COVID-19) pandemic were also factors. Practices volunteered to participate, yet 50% withdrew before trial completion. The design, including the strength of the financial incentives, was too weak to effect significant change in the model of care delivered to patients or too weak to capitalize on the potential benefits of greater continuity of care.

This case study provided information to the WHO and OECD joint publication *Purchasing for quality chronic care: summary report.*
The Australian health care system and the structure of primary care
This paper describes a recent Australian initiative that aimed to improve the quality of care for people with chronic and complex health conditions by introducing a new form of payment. Our work draws on our own experiences taking part in the evaluation of this new programme and is further detailed in published evaluation reports (1–3). For this vulnerable group of patients, the most appropriate form of care is comprehensive and coordinated, maintains continuity with their principal provider and is responsive to their needs and preferences (4). This is a challenge in health systems such as Australia’s in which care is fragmented and dominated by fee-for-service payments. Although the Australian health system provides universal coverage, there are separate funding programmes for hospitals, medical services and pharmaceuticals, although all tend to be described as Medicare. Private health insurance has a circumscribed role, covering inpatient treatment as a private patient in a public hospital or in a private hospital (i.e. supplementary care) and some dental and allied health services (i.e. complementary care). Benefits for out-of-hospital medical services under Medicare are paid by the Commonwealth (i.e. national) government, and there is no coverage of these by private health insurance, so any new funding arrangements within the medical service stream do not require the collaboration of multiple funders.

Primary care physicians (i.e. general practitioners, or GPs) play a significant role in the system because they act as gatekeepers – that is, specialist care requires a referral. GPs are the main point of contact with the health system for patients, and thus are key to providing care for chronic and complex conditions. Medicare provides funding through an established schedule of fees (i.e. the Medicare Benefits Schedule, or MBS) for listed medical services, often described as MBS items. While each MBS item has a schedule fee that is used to calculate the government’s contribution to the cost of a service to which a patient is entitled, doctors are not bound by this schedule and are free to set their own fees. In cases in which the doctor’s fee is higher than the MBS fee, the patient faces an out-of-pocket payment. While most GP services do not incur an out-of-pocket payment, there are areas where GPs do not bill Medicare directly and there are also areas where it is difficult to find GPs; thus disadvantaged patients can be deterred from seeking care (5).

In general practice, most services are time-based consultations that require a face-to-face interaction with the doctor. During the past two decades, some items have been introduced into the MBS to encourage more appropriate chronic disease care (Table 1), but practice revenue is still largely driven by fee-for-service payments. As a result of the coronavirus disease (COVID-19) pandemic, requirements for face-to-face interaction were relaxed and new MBS items introduced for telephone and video consultations.
Traditionally, Australian general practice has been a solo practitioner or a small group working in partnership. This has changed significantly during recent decades: while there are still some small group practices owned by the doctors themselves, increasingly, there are large group practices with a corporate structure and large practices owned by sizeable corporations. There is little publicly available information about the distribution of practice size and structure, although a recent report showed there were three corporate chains managing about 400 practices and employing 16% of GPs (6, 7). Larger and more corporate practices generally provide more administrative support and are better able to respond to changes in funding in a timely manner.

Medicare benefits, and hence practice fees, are billed in the name of the practitioner providing the service. The relationship between the individual practitioner and the practice is often opaque. Doctors are generally contractors rather than employees of a practice, but how practice income is shared between practitioners and the practice is not clear and can vary. This is pertinent to the design and implementation of any innovative payment scheme.

Australians are free to attend any general practice and be covered by Medicare. There is no patient enrolment. However, there is still poor coordination of medical records between practices. Various attempts at introducing transferable electronic records have not delivered on their promises. As such, GP care in Australia is often considered to be fragmented and lacking in continuity, particularly if patients attend multiple practices.

Older patients and those with chronic conditions are more likely to say that they have a usual doctor, but others may regularly attend more than one practice, often for convenience. Practices do not have insight into which patients are their regular patients (8); although a practice can identify the number of times that a particular patient has attended that practice, it cannot see attendances at other practices. This, in turn, makes it more likely for a GP to deal with issues that are presented to them on the day, rather than take an overall, longitudinal view of their patients’ needs.

Primary Health Networks are independent organizations whose principal purpose is to meet the needs of their community. They are geographically based, covering the country, and thus are able to identify gaps in services; they are able to commission services to meet needs and are expected to integrate services to improve efficiency and create a better experience for people. They largely play a coordinating and supportive role, working with the general practices in their area. Their importance in this case study is that they were responsible for providing education and training in the Health Care Homes (HCH) trial (9). Briefly, the key features of the HCH model include for patients, voluntary enrolment with a practice
or provider with improved access to after-hours care; for providers, the model offers flexibility in service delivery and the use of team-based care.
Funding reform in primary care: previous experience
The challenges that the increasing prevalence of chronic disease pose have long been recognized (10). Strategies to reform Australian general practice began in the late 1980s (11). There have been two types of policy response in Australia: new items have been added to the MBS and new approaches have been created to ensure better coordination and to change the business model by offering alternatives to the fee-for-service approach.

The new MBS items still fall clearly into fee-for-service payments, but they represent an attempt to recognize that different types of services are more appropriate for patients with a chronic disease (Table 1). For example, MBS item 721 (i.e. preparing a management plan for a patient who has a chronic or terminal medical condition with or without multidisciplinary care needs) still requires the patient to consult with a medical practitioner, but it is not time based. There are five general practice items for chronic disease care, including participating in multidisciplinary team care arrangements; also, patients with chronic disease are eligible for Medicare rebates for certain allied health services, but these require referral from their GP (12).

### Table 1. Medicare Benefits Schedule items that address chronic disease management, Australia

<table>
<thead>
<tr>
<th>Medicare Benefits Schedule item no.</th>
<th>Brief description</th>
<th>Can be claimed once every</th>
</tr>
</thead>
<tbody>
<tr>
<td>721</td>
<td>General practitioner preparing a management plan for a patient with a chronic or terminal condition</td>
<td>12 months</td>
</tr>
<tr>
<td>723</td>
<td>General practitioner coordinating the development of team care arrangements</td>
<td>12 months</td>
</tr>
<tr>
<td>729</td>
<td>General practitioner contributing to or reviewing a multidisciplinary care plan prepared by another provider</td>
<td>3 months</td>
</tr>
<tr>
<td>731</td>
<td>General practitioner contributing to or reviewing a multidisciplinary care plan for a patient in residential aged care or before a patient is discharged from a hospital</td>
<td>3 months</td>
</tr>
<tr>
<td>732</td>
<td>General practitioner reviewing a management plan or team care arrangements</td>
<td>3 months</td>
</tr>
</tbody>
</table>

A more substantial approach to improving care for patients with a chronic disease has been based on building a coordination role into primary care practice, essentially a non-GP care coordinator is introduced to manage multidisciplinary services. The Australian Coordinated Care Trials were conducted during 1997–1999 (Round 1) and 2002–2005 (Round 2) (5). These trials targeted patients with complex conditions who were experiencing difficulty finding appropriate services. Care coordinators were responsible for planning for care needs, supporting patients in self-management and linking patients with appropriate services, which were purchased by funds pooled from disparate programmes (5). In fact, the funds pooling was notional, and practices were not at financial risk. While this aspect of the design provided an important safeguard, as most trials did not generate savings, it may also have affected providers’ behaviour because, essentially, they had less risk. There have been other disparate attempts at implementing integrated care, but few have had the scale or robust evaluation of the Coordinated Care Trials.

The next significant reform attempt was the Diabetes Care Project, a trial that was conducted between 2011 and 2014 and was, again, aimed at improving the quality and outcomes of care through general practices. At this time, increasing attention was being paid to the HCH model developed in the United States as a way to organize and strengthen primary care through the use of multidisciplinary teams, although the translation to Australia, with its much stronger primary care sector, was not straightforward. The Diabetes Care Project was intended as a pilot for an alternative approach to funding chronic disease care, but was limited to a particular patient group, selected volunteer practices (13), and a relatively short time frame (i.e. a maximum of 18 months’ enrolment). While there was strong support from some parts of the general practice profession, not all medical groups were supportive. Under the Diabetes Care Project, general practices received a risk-based annual payment per patient enrolled in the trial. This was flexible funding and not tied to activities; practices could continue to claim MBS items for services other than chronic disease management items. Practices could purchase allied health services for patients within an individual budget, although funds were not held by the practice but paid directly by Medicare, according to the activity. Additional payments for quality improvement were made on a performance basis. Care coordinators, termed facilitators in this project, were not employed by practices but rather contracted by the government to cover several practices (13).

A robust evaluation compared outcomes and costs across three groups: a minimal intervention group given an integrated information platform that provided shared information for all providers, including a risk score and care plan, and a patient portal.
that allowed patients to read their own health records and track their self-care, such as by entering physical exercise sessions; an intensive intervention group (i.e. that had care facilitators with flexible funding, pay for performance and purchasing); and a usual care (control) group. The results showed improvements in the primary end point (i.e. glycated haemoglobin, HbA1c) for both trial groups. In the intensive intervention group, there were significant improvements in a wide range of clinical measures as well as fewer hospitalizations associated with diabetes; however, the reductions in hospitalizations did not reach statistical significance. The costs of care were higher for the intervention groups than for the control group. The wide variability in costs, particularly hospital costs, led to the conclusion that, “While there is uncertainty around the pilot’s cost-effectiveness, it is unlikely that the particular funding model [i.e. the flexible funding and purchasing model] implemented in the [Diabetes Care Project] would be cost-effective if rolled out more broadly” (13).

In sum, the various trials of payment reform discussed above have failed to live up to expectations. The payments involved have been relatively small compared with total practice revenue. Substantial cost recovery from new programmes has depended on reducing hospitalizations, and this has proved difficult to achieve.
Design of the Australian Health Care Homes trial
The impetus for implementing the Australian HCH trial was the recommendations of the specialist Primary Health Care Advisory Group, although these followed earlier recommendations from the Diabetes Care Project (13) and the Australian Coordinated Care Trials (5). This Group was chaired by the immediate past president of the Australian Medical Association and a practising GP, and it included members of allied health services and pharmacy groups, as well as consumer groups. It reported to the Minister for Health, thus ensuring direct communication to the political level, and the expertise of and representation on the group ensured it had wide support from stakeholders.

The key recommendation of the Advisory Group was to establish an Australian version of the HCH model to improve services and ensure better outcomes for patients with chronic conditions (14). While the report focused on the shortcomings of the Australian system in caring for people with chronic conditions, it also noted aspects of primary care that work well for most Australians. The key features of the HCH model are voluntary patient enrolment with a practice or an individual provider, reinforced by a bundled payment, so that the HCH can connect patients better with other services, including allied health, medical specialists and hospitals. This was to be implemented alongside the predominant fee-for-service model. The Advisory Group recognized the challenges of implementation and recommended a staged roll out.

Funding for the HCH trial was provided in the government’s 2016–2017 budget. The introduction was overseen by a national Implementation Advisory Group, with four working groups covering patient identification, payment, education and training, and evaluation. The advantage of the early establishment of the evaluation working group was that a logic model was developed for the programme, which articulated the theory of change that lay behind the model (1, 2). However, there was no requirement for practices to implement any specific changes, and practices were given total flexibility about which changes they did make.
3.1 Training and support for implementation

Training materials were developed nationally. Primary Health Networks were responsible for providing local support as well as training in areas such as team-based care, the patient–team partnership and population management. This meant that the rollout was limited to practices in regions covered by a participating Network. Participation was voluntary, and participating practices varied in size, type of ownership (i.e. independent or corporate) and location. The main motivation for participation was the attraction to HCH principles and dissatisfaction with fee-for-service funding. Clearly, practices that chose to participate did so based on their assessment of the benefits to the practice and their patients. Thus, random assignment of practices was not considered feasible.

3.2 Identification of eligible patients and risk adjustment

A risk stratification tool was developed and provided to practices as software to help them (i) identify patients at high risk of hospitalization within the next 12 months and (ii) assess clinical factors (e.g. the presence of chronic conditions) and other factors using the Hospital Admission Risk Program to confirm eligibility for enrolment and assign patients to a tier for payment. The risk stratification tool identified patients with high needs for coordination and care and allocated them to a complexity tier, with tier 3 indicating the most complex cases and for which practices received the highest payment. Table 2 describes the three tiers. Clinical judgement could be used to override the risk of hospitalization predicted by the tool and to include or exclude patients.
### Table 2. Tiers stratifying patients needing care for chronic disease in the Health Care Homes trial, Australia, 2017–2021

<table>
<thead>
<tr>
<th>Tier</th>
<th>Expected proportion of population and description</th>
<th>Description of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10%, with multiple morbidities, low complexity</td>
<td>Patients are largely high-functioning but would gain significant long-term benefits from improved engagement and more structured support from primary health care</td>
</tr>
<tr>
<td>2</td>
<td>9%, with multiple morbidities, increasing complexity</td>
<td>Most should be managed in primary care. Increased risk of potentially avoidable presentation to emergency department and hospitalization. Require clinical and nonclinical support. Would benefit from support for self-management.</td>
</tr>
<tr>
<td>3</td>
<td>1%, with multiple morbidities, high complexity</td>
<td>Many require ongoing clinical care within an acute care setting. Require a high level of clinically coordinated care. Some could be supported through having better access to palliative care.</td>
</tr>
</tbody>
</table>

*a Estimates were based on an analysis of data about populations, hospitalizations and Medicare use.

*Source:* Adapted with permission from Pearse et al. (2), p. 40.

### 3.3 Patient enrolment

Patient enrolment was voluntary. Although this was a trial, there was no attempt to randomize patients within practices. Because the changes were expected to occur at the practice level, this was not feasible. The trial was able to collect detailed data on participating patients but not on other patients attending HCH practices, so any spillover effects on non-enrolled patients could not be investigated.

Nationally produced information was given to patients.
3.4 Payment

Payments were determined as annual amounts, based on each patient’s tier of complexity and were designed to replace fee-for-service MBS items. However, these payments were to cover services directly related to chronic disease care for the patient. The payment was intended to provide more financial certainty to practices and more flexibility in how funds were used. For example, instead of being bound by the constraint of providing face-to-face care with doctors, practices could use the funding to employ nurses or other providers, such as allied health professionals, whose time was not usually reimbursed under the MBS system.

Payments were not intended to be comprehensive capitation – that is, to cover the comprehensive health care needs of enrolled patients. The descriptions of the trial use the term bundled payment, so that term is used here to refer to a bundled payment for chronic disease management. Doctors, even though participating in the HCH trial, could still bill Medicare for other acute conditions for enrolled patients. Furthermore, patients, even though enrolled with one practice or provider, could still consult other primary care providers who would then be reimbursed in the regular way. There were no penalties for patients seeking care outside of their HCH. Payments were expected to cover a range of services for each patient including:

- a comprehensive health assessment and a care plan developed jointly by the doctor and the enrolled patient;
- regular reviews of and updates to the care plan, as well as consultations related to the patient’s chronic conditions;
- team-based care and case conferences; however, while practice nurses and other health staff (e.g. dietitians) could be employed within the practice;
- enhanced access to care for patients, including telephone, email and videoconferencing support, after-hours support and access to practice nurses and other staff.

The payments did not include a budget for purchasing services from outside the HCH practice. Payments were made retrospectively on a monthly basis. Payment levels were determined by using existing payment patterns. The bundled payment rates were set as shown in Table 3.

---

1 Bundled payments for chronic disease management set a payment for all care provided to patients with well-defined recoverable (e.g., cancer, diabetes) or long-term (e.g., multiple sclerosis, lupus) chronic conditions. They are thus similar to episode-based bundles in that they bundle multiple services into a single payment. In contrast to episode-based bundled payments for acute care, however, the services covered in chronic care bundles are not defined by a treatment or care episode but include the services required to care for a patient with one or multiple chronic conditions. While episode-based bundled payments have a start and a finish, bundled payments for chronic care management normally repeat for an individual patient.
Table 3. Tier payments per patient in the Health Care Homes trial, Australia, 2018

<table>
<thead>
<tr>
<th>Health Care Homes tier</th>
<th>Annual payment in Australian dollars (in US$)</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>591 (442)</td>
</tr>
<tr>
<td>2</td>
<td>1 267 (947)</td>
</tr>
<tr>
<td>3</td>
<td>1 795 (1 341)</td>
</tr>
</tbody>
</table>

Payments set in 2018 were indexed annually thereafter.

Source: Extracted from Pearse et al. (2), p.250.

For comparison, the fee for a standard GP consultation lasting between 6 and 20 minutes is 39.10 Australian dollars (Aus$) (US$ 29). In recognition of the need for practices to make changes to participate in the trial, an initial Aus$ 10 000 (US$ 7472) sign-up grant was made to participating practices.

3.5 Information sharing

Information sharing is key to ensuring effective team-based care. Australia had introduced a national electronic health record (known as My Health Record) to promote access to key information across providers, although take up has been patchy. Participating practices and patients had to sign up to My Health Record.

Many, if not most, practices were already using practice management software for scheduling appointments, maintaining records, making referrals, prescribing and billing. Various practice software solutions were available, and there was no requirement to use a specific programme. Participating practices also had to install and use shared-care planning software to develop the care plan and share it with providers outside of the practice, as well as with the patient and their family or carer. Although information technology (IT) enables information sharing, the complexity of installing and learning new software and a lack of effective interfaces across different systems can be burdensome.
Implementation
The HCH trial started on 1 October 2017 and ended on 30 June 2021. Ten Primary Health Networks across Australia were selected to participate, chosen to maximize geographical and socioeconomic diversity among patient populations. Practices within those Primary Health Networks were invited to submit expressions of interest. After assessment for compliance with eligibility criteria, practices were selected according to a sampling frame that ensured representation by ownership, size and location. Overall management and coordination of the trial was undertaken by the Commonwealth Department of Health with the Implementation Advisory Group and the four working groups described previously.

The COVID-19 pandemic hit part way through the trial. This affected general practices, first through their having to adapt to different delivery modes, such as telehealth, to protect patients and the community and, second, because general practices were the main point of delivery for vaccines, they had additional responsibilities (15). The COVID-19 pandemic plausibly had several impacts on implementation: with the increased availability of telephone consultations generally, enrolling in the HCH trial may have been less attractive to patients and providers; and the effects of lockdowns and general concern about the pandemic may have affected patients’ sense of well-being.

4.1 Practices

The initial recruitment drive resulted in 200 practices joining the trial; however, practices continued to be recruited until mid-2018 because not all selected practices proceeded with the trial and others withdrew soon after joining. The trial was originally intended to run between October 2017 and June 2019, with patients able to be enrolled until December 2018. An extension was announced in the second half of 2018, with patient enrolment extended to June 2019 and the trial to June 2021.

Over the course of the trial, 227 practices participated. At the end of the trial on 30 June 2021, 106 practices remained. Most of the 121 practices that withdrew had not enrolled any patients or had enrolled fewer than 10. Table 4 summarizes the characteristics of the practices that participated. The data show that sole-practitioner, large and corporate-owned practices were more likely to withdraw, as were those located in less socioeconomically disadvantaged or urban areas.
Table 4. Practices participating and number of patients enrolled in the Health Care Homes trial, Australia, 2017–2021

<table>
<thead>
<tr>
<th>Practice characteristics</th>
<th>No. (%) of patients in active practices</th>
<th>No. (%) of practices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. (%) of practices</td>
<td>Active at end of trial</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>Active</td>
</tr>
<tr>
<td>Total</td>
<td>7 754</td>
<td>106 (46.6)</td>
</tr>
</tbody>
</table>

**Practice size**

- **Sole practitioner**
  - 460 (5.9) patients
  - 11 (10.4) active
  - 9 (15.3) enrolled
  - 8 (12.9) not enrolled
  - 28 (12.3) total
  - 60.7 % withdrawn

- **Small**
  - 3 028 (39.1) patients
  - 53 (50.0) active
  - 30 (50.8) enrolled
  - 29 (46.8) not enrolled
  - 112 (49.3) total
  - 52.7 % withdrawn

- **Medium**
  - 2 404 (31.0) patients
  - 23 (21.7) active
  - 9 (15.3) enrolled
  - 11 (17.7) not enrolled
  - 43 (18.9) total
  - 46.5 % withdrawn

- **Large**
  - 1 862 (24.0) patients
  - 19 (17.9) active
  - 11 (18.6) enrolled
  - 14 (22.6) not enrolled
  - 44 (19.4) total
  - 56.8 % withdrawn

**Practice ownership**

- **Aboriginal medical services**
  - 1 297 (16.7) patients
  - 16 (15.1) active
  - 7 (11.9) enrolled
  - 9 (14.5) not enrolled
  - 32 (14.1) total
  - 50.0 % withdrawn

- **Independent**
  - 5 626 (72.6) patients
  - 76 (71.7) active
  - 38 (64.4) enrolled
  - 23 (37.1) not enrolled
  - 137 (60.4) total
  - 44.5 % withdrawn

- **Corporate**
  - 831 (10.7) patients
  - 14 (13.2) active
  - 14 (23.7) enrolled
  - 30 (48.4) not enrolled
  - 58 (25.6) total
  - 75.9 % withdrawn

**Australian Bureau of Statistics Index of Relative Social Disadvantage**

- **Deciles 1–3 (most disadvantaged)**
  - 3 202 (41.3) patients
  - 44 (41.5) active
  - 23 (39.0) enrolled
  - 25 (40.3) not enrolled
  - 92 (40.5) total
  - 52.2 % withdrawn

- **Deciles 4–7**
  - 3 702 (47.7) patients
  - 43 (40.6) active
  - 24 (40.7) enrolled
  - 22 (35.5) not enrolled
  - 89 (39.2) total
  - 51.7 % withdrawn

- **Deciles 8–10 (least disadvantaged)**
  - 850 (11.0) patients
  - 19 (17.9) active
  - 12 (20.3) enrolled
  - 15 (24.2) not enrolled
  - 46 (20.3) total
  - 58.7 % withdrawn

---

^a Does not include strata in the dimension relating to range of clinical staff available at the practice.

^b Practice size was determined based on the number of full-time equivalent (FTE) general practitioners (GPs). A large practice was defined as > 8 FTE GPs; a medium-sized practice was defined as 5–8 FTE GPs; a small practice was defined as < 5 FTE GPs.

^c A small number of Aboriginal Medical Services were included in the trial. Aboriginal Medical Service is used to refer to both Indigenous Health Services and Aboriginal Community Controlled Health Services (ACCHS). As these face special issues and challenges, they are not further discussed in this case study.

*Source:* Reproduced with permission from Pearse et al. (2), p.10.
To facilitate implementation, the Department of Health and Aged Care provided a range of supporting resources, including funding for three full-time positions to help with practice transformation (e.g. enrolment of patients). It is not clear how those three positions were allocated in participating practices.

It is important to note that although practices were selected to participate, within the practice individual doctors also needed to agree to participate – that is, a practice could participate without all of its doctors participating. There was no minimum requirement for the number or proportion of the practice’s doctors who needed to participate.

Practices used different approaches to enrol patients. Some opportunistically enrolled patients as they attended for their appointments. Others were more strategic, for example, holding a forum to explain the trial to their patients. Sometimes patients were not approached because the practice thought that enrolling the patient would not be financially viable based on the patient’s past attendance patterns – that is, the revenue from fee-for-service attendances exceeded the bundled payment. Practices generally contacted patients about enrolment who were already motivated to manage their health and who seemed willing to try new approaches. The enrolment process was regarded as time-consuming, involving explaining the programme to the patient, getting consent, assessing the patient’s eligibility and tier, creating a care plan and registering patients on multiple IT platforms.

Practices found implementing the bundled payment a significant challenge. This challenge related to determining how to distribute the patient-level payment among staff sharing the care of an HCH patient because financial arrangements between a practice and its individual doctors are regarded as confidential, and there was no guidance from the Department of Health and Aged Care or in the conceptual model of the HCH. So, the flow of financial incentives from the practice to the individual practitioner remained unclear, particularly for those who were contractors and employees rather than practice owners. Further, practices had to determine which particular services to assign to the bundle and which remained outside the bundle and were to be billed to Medicare as usual.

While practices perceived the benefits of bundled payments to include certainty in funding, additional financial flexibility and potential time savings for GPs because they could delegate certain tasks to other team members, the disadvantages were perceived to be an increased workload and the amount of time it took to understand and implement the HCH model. The Department anticipated that the bundled payment under the HCH model would result in practices receiving about 10% more than under the fee-for-service arrangements; however, many practices perceived the
payment to be inadequate and recommended increasing the level of funding by tier or expanding the tiers to recognize patients whose care was more costly.

The implementation of changes to the model of care ranged from minor – for practices whose approach to care was already aligned with features of the HCH model – to substantial. There is considerable heterogeneity in the way practices are run and managed, with the personal preferences of practice owners and staff, local market conditions, the ability to charge higher fees and local workforce capacity all playing roles in defining the characteristics of a practice. Some of the most common changes made included:

- developing comprehensive care plans for HCH patients;
- implementing routine team meetings to review HCH patients' care needs;
- implementing shared-care software and planning tools;
- delegating care from a GP to a practice nurse and other team members;
- recruiting new practice staff, including nurses and administrative and medical assistants (paid for by the HCH trial);
- improving access to care and follow up, including ensuring patients could telephone the practice and speak with a nurse or GP and refill a prescription without a consultation.

Overall, key enablers for implementing the HCH model were leadership and staff participation, adequate enrolment and resources, and a focus on team-based and patient-centred care. However, there was a high rate of withdrawal by practices. The first step towards voluntary participation was to submit an expression of interest. Primary Health Networks reported that there was insufficient information available at the beginning of recruitment, so some interested practices withdrew once they were given more detailed information. There were concerns expressed about the burden of installing and developing familiarity with new software. There were administrative tasks involved in enrolling patients, and individual patient consent was required because this was a change to the universal benefits available under Medicare. Finally, there was no direction about how the bundled payments should be allocated within the practice, so each practice had to determine its own arrangements, particularly how to compensate doctors working as contractors and how to adjust for the loss of fee-for-service income.

In the middle and later stages of the trial, practices cited other reasons for withdrawal. Implementation of the model was difficult if only a small number of the GPs in a practice were participating. The
loss of key staff, particularly those involved in championing the HCH model, also led to withdrawal. Some practices felt the payments were inadequate. Towards the end of the trial, there was uncertainty as to whether the funding would continue, so practices were reluctant to remain in the programme.

Rural and remote practices faced additional challenges compared with those in metropolitan areas and major rural centres. These were especially acute during the early implementation phase and included difficulties in setting up IT and internet connections, recruiting and retaining staff, and difficulties with a shortage of other services, such as allied health services in the community.

### 4.2 Patients

Between October 2017 and June 2019, 11,332 patients were enrolled in the HCH trial. Patients were most commonly assigned to tier 2 at enrolment (49.2% of patients), followed by tier 3 (33.1%) and tier 1 (17.8%). At the end of the trial on 30 June 2021, 7,742 (68%) patients remained. More than one third of patients who withdrew did so because their practice withdrew. Among all patients who enrolled in the trial, 7.3% (824/11,332) opted out. In interviews with practices, staff commented that patients who opted out did not understand the HCH model or wanted more time with their GP. It seems that these patients felt that the HCH model would reduce access to their individual doctor.

Table 5 summarizes the characteristics of HCH patients. The data show that enrolled patients were more likely to be female, and more than 85% (9,701/11,332) were older than 45. Those who were older than 75 or in tier 3 were more likely to withdraw.
### Table 5. Key characteristics of patients enrolled in the Health Care Homes trial, Australia, 2017–2019

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>No. (%) patients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Active</td>
</tr>
<tr>
<td>No. of patients</td>
<td>7 742</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>4 189 (54.1)</td>
</tr>
<tr>
<td>Male</td>
<td>3 553 (45.9)</td>
</tr>
<tr>
<td>Age group at enrolment</td>
<td></td>
</tr>
<tr>
<td>0 to 17</td>
<td>134 (1.7)</td>
</tr>
<tr>
<td>8 to 24</td>
<td>167 (2.2)</td>
</tr>
<tr>
<td>25 to 44</td>
<td>971 (12.5)</td>
</tr>
<tr>
<td>45 to 64</td>
<td>2 580 (33.3)</td>
</tr>
<tr>
<td>65 to 74</td>
<td>1 965 (25.4)</td>
</tr>
<tr>
<td>75 to 84</td>
<td>1 461 (18.9)</td>
</tr>
<tr>
<td>≥85</td>
<td>464 (6.0)</td>
</tr>
<tr>
<td>Risk tier at enrolment</td>
<td></td>
</tr>
<tr>
<td>Tier 1</td>
<td>1 427 (18.4)</td>
</tr>
<tr>
<td>Tier 2</td>
<td>3 909 (50.5)</td>
</tr>
<tr>
<td>Tier 3</td>
<td>2 406 (31.1)</td>
</tr>
</tbody>
</table>

1Active means patients in the trial on 30 June 2021. Withdrawn means patients who were enrolled any time from 1 October 2017 to 30 June 2019 but withdrew before 30 June 2021.

2Difference between active and withdrawn patients not significant (p=0.365).

3Difference between active and withdrawn patients is significant (p<0.001).

Source: Health Professional Online Data Sources (HPOS) data to 30 June 2021. Reproduced with permission from Pearse et al. (2), p.16.

Although practices had to use the risk stratification tool to identify suitable patients, doctors could override the tool. Of the 12 377 patients for whom valid baseline data were available, 30% (3745) had their assessment for eligibility completed after their GP overrode their score. The main issues in using the tool reported by practices were that all chronic diseases were scored equally irrespective of severity, and some chronic diseases were missing (e.g. cancer). Others felt that the tool did not account appropriately for extreme levels of socioeconomic disadvantage.

The most common chronic disease groups for enrolled patients were diabetes and/or renal failure and/or liver disease (prevalence: 43.1%), cardiac conditions (e.g. congestive heart failure or angina,
33.2%) and chronic respiratory conditions (33.7%). The steepest gradient in prevalence across tiers was for a diagnosis of complex care needs in frail aged patients, such as dementia, falls and incontinence (prevalence: 4.7% in tier 1, 11.6% in tier 2 and 34.5% in tier 3). High prevalences of lifestyle risk factors (> 50%) – including high blood pressure, high cholesterol and being overweight or obese – were more common among patients in tier 1, but patients in tier 3 had substantially higher levels of physical inactivity (prevalence: 73.8% in tier 3, 53.3% in tier 2, 29.8% in tier 1) and polypharmacy (prevalence: 79.5% in tier 3, 63.3% in tier 2, 46.6% in tier 1).
Impact on quality of care
The impact of the HCH model on patients’ quality of care was examined through changes in the management of their chronic disease as well as in patients’ and carers’ experiences. The analysis used a range of data sources and, when possible, compared patients enrolled in the HCH programme with a group of patients attending practices not enrolled in the trial and who had similar baseline characteristics to the HCH patients. For each HCH patient, an enrolment date was known. For each comparator patient, the time period considered was matched to the HCH patient enrolment period. Data for the comparator group were restricted to administrative data. As such, many outcome measures, including clinical outcomes, are available for patients enrolled in the trial but not for those in the comparator group.

### 5.1 Changes to chronic disease management

Changes in chronic disease management in HCH practices were assessed using data extracted from the practices’ clinical management systems. These data contained information about a range of risk factors, clinical measures and indicators of access to care within the practice. Of the 165 participating practices that recruited patients, 117 provided extracts with relevant markers for their HCH patients, allowing for investigation of chronic disease management. Of the 10 174 patients, 96.1% (9777) had follow-up data for at least one year, 92.2% (9380) had follow-up data for at least two years and 9.3% (946) had follow-up data for three or more years. Importantly, these data captured only the services provided to patients in the HCH practice, not the services patients might receive from other practices, their use of allied health care outside the practice and their hospital use.

HCH patients had more contact with GPs after enrolment than before enrolment, whereas comparator patients tended to have less contact with GPs in the same period. In the year following enrolment, 84.8% (8319/9811) of HCH patients had five or more GP encounters compared with only 77.2% (7574/9811) of comparator patients. After enrolment, the proportion of HCH patients receiving care from practice nurses increased. In the six months before enrolment, 18.4% (1805/9811) of HCH patients had at least one recorded encounter with a practice nurse; at six months following enrolment, the proportion of these patients having an encounter with a practice nurse increased to 22.6% (2217/9811) and remained stable thereafter. This information was not collected for the comparator group.

A small percentage of HCH patients received care from podiatrists, nutritionists and psychologists within their practice. This proportion
barely changed after enrolment, but few practices employ allied health professionals. It is more usual for patients to be referred to allied health professionals outside a practice.

A higher proportion of HCH patients received an annual influenza vaccination than did patients in the comparator group. More than half of HCH patients (57.4%, 5631/9811) had a record of immunization against influenza at their practice in the year before enrolment. This increased to 66.2% (6494/9811) of HCH patients after one year of enrolment compared with a slight decline in immunization for the comparator patients. At two years after enrolment, clinical measures – including blood pressure, lipid tests, HbA1c and renal function tests – were recorded for a greater proportion of HCH patients than for comparator patients. Fig. 1 shows that three-quarters (74.2%, 7280/9811) of HCH patients had their weight recorded in the year prior to enrolment, which decreased slightly at one and two years following enrolment. Although similar to HCH patients in the pre-enrolment phase, a significantly lower proportion of comparator group patients had their weight recorded at 12 months (57.9%, 5680/9811) and 24 months (48.9%, 4797/9811) after enrolment.

**Fig. 1.** Recording of body weight among Health Care Homes trial and comparator patients, Australia, 2017–2021

<table>
<thead>
<tr>
<th>% of patients with body weight recorded</th>
<th>Health Care Homes patients</th>
<th>Comparator patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-enrolment</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>Recording of body weight in the past 12 months</td>
<td>100</td>
<td>80</td>
</tr>
<tr>
<td>Recording of body weight in the past 6 months</td>
<td>100</td>
<td>80</td>
</tr>
</tbody>
</table>

* People whose follow up was shorter than the yearly and 6-monthly measurement periods were excluded from the analyses.

*Source:* Reproduced with permission from Pearse et al. (2), p.184.

Differences in the course of treatments observed between HCH and comparator patients in the postenrolment period may be due to the HCH trial, but they may also reflect improvements in data quality.
5

Australian Health Care Homes trial

and completeness in the HCH study. This may have occurred when practices realized that the data would be used for risk stratification and care planning, including planning for shared care. The HCH practices were also aware that data would be collected for assessment purposes and benchmark reports would be generated to compare the completeness of the data.

Data were also collected via four surveys that asked practices about their experiences implementing the HCH programme. In the final survey, practices were asked about the impact of the COVID-19 pandemic on delivering care to HCH patients.

Between April 2021 and June 2021, 37% (27/73) of practices indicated that the pandemic had temporarily reduced the regularity of measurements and screenings, but they were catching up to their usual schedule. About 29% of practices (21/73) reported no impact from the COVID-19 pandemic on the regularity of measurements, and 25% (18/73) reported that although the pandemic reduced their regularity, they later caught up and reached their pre-pandemic regularity.

5.2 Experiences of patients and caregivers

This section draws on results from three patient surveys, with the first conducted soon after enrolment, as well as interviews that were undertaken as part of qualitative case studies of participating practices. Patients were randomly sampled from participating practices. Overall, patients and carers were satisfied with their experiences.

When asked about their relationship with their GP and practice, most HCH patients reported having a strong, long-term relationship with their GP. The first round of patient surveys found that 65% (1315/2018) of HCH patients had been with their practice for five years or more, and another 16% (315/2018) for three to five years.

Some HCH patients seemed unaware of what the model involved and reported little change in their treatment after enrolment. About 57% (1159/2018) of patients surveyed said they were aware of a treatment or shared-care plan. Of these, about 42% (485/1159) said they had discussed the plan with their GP or other practitioners in most consultations, and 43% (500/1159) said they sometimes discussed it.

Some patients observed that the practice nurse was more actively involved in their care after they were enrolled in the trial and this allowed them to ask more questions about managing their health and disease. Patients and carers frequently mentioned the benefit of being able to contact the clinic by phone or email for repeat
prescriptions or advice. With the onset of the COVID-19 pandemic and lockdown restrictions, telephone consultations and electronic prescribing were introduced generally, thereby removing one of the potential advantages of the HCH model over the existing funding model. Patients were surveyed about receiving patient-centred care and developing self-management behaviours based on questions from the Patient Assessment of Chronic Care Illness instrument. Positive perceptions about these did not change significantly between the first and second surveys, but declined between the second and third surveys. The possible reason for the decline was that the COVID-19 pandemic had reduced services and increased staff turnover.

Overall, most patients were satisfied with their care and thought it was well organized; that their values, beliefs and traditions were considered by the doctor or nurse when recommending treatment; and that they were shown how self-care could affect their condition. Less common features of treatment included being encouraged to take part in community programmes, receiving a written list of activities that could improve their health, and being contacted by the practice after the visit.

Many practices reported that patients participating in the HCH trial were already motivated to manage their own health. GPs also tended to proactively enrol patients they thought would be active participants or willing to try new approaches. Some practices observed that the HCH model makes patients more aware of their role in managing their own health.

### 5.3 Changes in health care use

Changes in patients’ use of primary care, secondary care and community services were analysed using linked, routinely collected health data, including data about their use of Medicare services, medicines listed on the Pharmaceutical Benefits Scheme (PBS) and hospital stays. Observed changes in HCH patients were contrasted with those in comparator patients who were not enrolled in the HCH programme but matched on baseline pre-enrolment demographics and patterns of health service utilization.

During the pre-enrolment phase, a greater proportion of HCH patients had received services related to establishing a GP management plan (GPMP) and a Team Care Arrangement (TCA) and to reviewing these plans relative to comparator patients. Under the HCH model, these services were included in the bundled payments. After enrolment, claims for these services for HCH patients fell significantly. In the two years before enrolment, 76.0% (8117/10 682) of HCH patients had a claim for GPMP development.
compared with 59.7% (6374/10,682) of comparator patients. After enrolment, there were still claims for fees for GPMPs from the MBS for 19.3% (1970/10,196) of HCH patients after two years (54.6% [5586/10,224] for comparator patients).

It is surprising that GPs were still claiming GPMP items on a fee-for-service basis for the HCH cohort, given that the bundled payment was intended to capture these types of services. After enrolment, HCH patients had fewer MBS fee-for-service GP consultations than did the matched patients. In the year following enrolment, the mean number of GP fee-for-service consultations for HCH patients fell from 11 to 7 in contrast to little change seen for comparator patients. A fall was expected for HCH patients, as the bundled payments replaced fee-for-service payments for chronic disease care. However, because practices were still able to claim fees for services delivered outside the HCH bundle, there remained a substantial number of MBS claims.

HCH patients had broadly similar Medicare claims for specialist consultations, imaging and pathology services as matched patients before and after enrolment. In the postenrolment period, there was a similar decline in the proportion of both HCH and comparator patients receiving lipid tests, but HCH patients received significantly more HbA1c tests than matched patients. Fig. 2 illustrates this difference in the periods before and after enrolment.

**Fig. 2. Claims for patients with type 2 diabetes for HbA1c tests among patients enrolled in the Health Care Homes trial and comparator patients, Australia, 2017–2021**

![Diagram showing claims for HbA1c tests](image)

*Source: Reproduced with permission from Pearse et al. (2), p.235.*
The proportion of HCH patients receiving at least one Medicare-funded allied health service increased from 46.7% (4993/10,682) in the year before enrolment to 52.5% (5493/10,454) one year after enrolment in contrast to a slight decline seen in the use of these services among the comparator patients. Up to five of these services form part of a Medicare entitlement for patients with a GPMP or TCA. Practices do not hold a budget for these services, and this did not change under the HCH trial.

More than half of HCH patients were on five or more unique medicines before enrolment. This remained consistent after admission and was similar for comparator patients. Similar hospital and emergency department utilization patterns were observed in HCH and comparator patients before and after enrolment, including in the categories of all-cause admissions, length of hospital stay, emergency department presentation and potentially avoidable hospitalizations. Among patients who had not used residential aged care services prior to enrolment, similar small proportions of HCH patients and comparator patients were admitted to an aged care facility during follow up.

Overall, the HCH patients had improvements in the processes of managing chronic disease, including in care planning and the recording of clinical measurements, as well as in patients’ and carers’ experiences in accessing care. There were more limited impacts on health care utilization beyond the anticipated reductions in the number of GP consultations billed outside the HCH bundle.
Impact on health outcomes
A range of health outcomes were measured beyond the clinical measurements and health service use that are reported above. Information about patients’ self-reported health was drawn from surveys. For self-reported measures, no data were available from comparator patients. Data about cardiovascular disease (CVD) events and mortality were obtained from administrative data sets.

The proportion of HCH patients whose self-reported health status was assessed as very good or excellent increased in waves 2 and 3 of the survey; however, it was statistically significant only in the second wave (Fig. 3). Although the proportion of patients who rated their mental and emotional health as very good or excellent decreased in waves 2 and 3, neither decrease was found to be statistically significant; notably wave 2 coincided with the early part of the COVID-19 pandemic, and wave 3 with its later stage. In addition, the EuroQol EQ-5D-5L instrument was used to measure quality of life, but results showed no changes across the survey waves.

**Fig. 3.** Patients’ responses to the question “In general, how would you rate your overall health?” in the Health Care Homes trial, Australia, 2017–2021

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>00% Excellent</td>
<td>Fair</td>
</tr>
<tr>
<td>00% Very good</td>
<td>Poor</td>
</tr>
<tr>
<td>00% Good</td>
<td>Good</td>
</tr>
</tbody>
</table>

*Source:* Reproduced with permission from Pearse et al. (2), p.217.
Drawing on diagnosis codes attached to hospitalization data, an analysis of major cardiovascular events was also undertaken, comparing HCH patients with matched comparator patients. A major CVD experience was defined as a hospitalization or death due to a major CVD diagnosis. The analysis found comparable patterns in both the proportion of events and time to an event in the HCH and comparator patients. Between enrolment and 30 June 2020, 621 of approximately 9132 (6.8%) HCH patients experienced a serious CVD event. (The denominator is imprecise due to the different follow-up periods.) Of these, 36 (5.7%) died of ischaemic heart disease or stroke. Among those who experienced an event, on average, the length of time from enrolment to the CVD hospitalization or death was 9.3 months. Among the comparator patients, 604 of approximately 9151 (6.6%) had a CVD event, and 40 (6.6%) of these died of ischaemic heart disease or stroke. Among comparator patients who experienced an event, the mean length of time from enrolment to the CVD event was 10.3 months.

Finally, mortality was determined using data from the National Death Index as of 30 June 2021. During follow up, 689 of approximately 10 600 (6.5%) HCH patients and 646 of 10 590 (6.1%) comparator patients died. This difference was not statistically significant. On average, the number of months from enrolment to death was 17.2 months for HCH patients and 17.1 months for the matched patients.
Impact on economic outcomes
For both practices and patients, participation in the HCH trial included a range of financial incentives that differ from those present under the fee-for-service model. These incentives may affect economic outcomes in ways that should be clearly understood in order to assess whether the programme delivers value for money as well as improved outcomes, both health and financial, for patients, taxpayers and providers. Taking the overall societal perspective as well as the multiple stakeholder’s perspectives are important in a programme like HCH in which implementation depends on all stakeholders being willing to participate.

The analysis in this section used administrative health data about hospital admissions, and Medicare and PBS claims for both the HCH patients and comparator patients matched on baseline characteristics, including on health care use. Results are presented as a graphical analysis that examines changes in economic outcomes at 6-month periods before and after enrolment in the HCH programme, from 12 months before to 24 months after. A difference-in-difference event study was also conducted because this estimates the causal impact of the HCH programme by calculating the change in outcomes for HCH patients relative to the comparator patients. Further details on the methodology are available in the data and methods supplement to the HCH evaluation report (3).

### 7.1 Practices

For HCH practices, the shift from fee-for-service to bundled payments had a positive impact on financial outcomes. While practices experienced a significant fall in average per-patient fee revenues under the conventional fee-for-service model, this fall was more than compensated for by the value of the bundled payment. These annual payments were: Aus$ 591 (US$ 442) for tier 1 patients (the least complex), Aus$ 1267 (US$ 947) for tier 2 patients and Aus$ 1795 (US$ 1341) for tier 3 (the most complex) patients. This suggests that once the HCH model was established, the revenue impact on practices was positive. However, these data do not identify which practice or which doctor these patients attended so it is possible that some of these fees went to practices other than the HCH in which patients were enrolled.

Fig. 4 shows the total MBS provider fees charged on average for GP services, by 6-month period before and after enrolment. The results are shown for all HCH patients, patients in each HCH tier, as well as for comparator patients. It is likely that the fall in utilization for the comparator group was associated with the COVID-19 pandemic, both due to the lockdowns and pressures on general practices.
Overall, the fees charged for GP services fell for HCH patients following enrolment compared with comparator patients. The fall in total fees continued during the follow-up period. In addition, services for tier 3 patients were charged at higher rates relative to tier 1 and 2 patients across all periods, likely reflecting both a greater volume of services as well as greater use of higher-cost services (e.g. longer consultations).

These graphical results were borne out in the difference-in-difference regression model that compared changes in fees between HCH patients and comparator patients, which found statistically significant reductions in total fees charged for HCH patients in each 6-month period following enrolment. The main report has complete results (2).

**Fig. 4. Changes in fees charged per patient per 6-month period in Australian dollars for general practitioners’ services, by tier in the Health Care Homes (HCH) trial, Australia, 2017–2021**

![Graph showing changes in fees charged per patient per 6-month period.](image)

In addition to changes in fee revenue, the financial impact on practices was also measured through a survey of 67 practices that participated in two surveys during the HCH trial. The surveys asked practices about their staffing levels across a range of occupational categories, with practices reporting changes in staffing levels between the first survey conducted during March and June 2018 and a final survey conducted during April and June 2021.

Table 6 shows the change in full-time equivalent (FTE) levels by staff category. At the time of implementation, HCH practices had an average of 4.6 FTE GPs, and more than 1 in 2 (60% average participation rate) GPs participated in the HCH programme within
each practice. Each practice employed 2.6 FTE nursing staff on average, most commonly a registered practice nurse. HCH practices also employed an average of 0.8 FTE allied health professionals, most commonly a psychologist or physiotherapist. In addition, about two thirds of practices had a practice manager, and on average each practice employed 2.8 FTE administrative staff.

At the time of the final survey (completed from April to June 2021), practices had increased their GP headcount on average by almost 1. However, the proportion of GPs participating in the HCH programme had fallen slightly, to 43% (153/356). Changes in staffing in other categories were smaller, with a drop in administrative and managerial staff and an increase in allied health staff. However, by the final (third) survey, practices were dealing with the impact of the COVID-19 pandemic. General practices were facing considerable challenges that may have made them risk averse and, therefore, reluctant to take on more staff who would not generate fee-for-service revenue. The pandemic could also have made it more difficult to recruit new staff. Further, practices were undergoing substantial changes due to their role in the vaccination roll out and adapting to using electronic delivery of services. Thus, yet more change may simply have felt to be too much to deal with.

Table 6. Impact of the Health Care Homes trial on full-time equivalent staffing levels, Australia, 2017–2021

<table>
<thead>
<tr>
<th>Staff type</th>
<th>No. of FTE staff</th>
<th>Survey 1 (March to June 2018)</th>
<th>Survey 2 (April to June 2021)</th>
<th>Change in no. of FTE staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>General practitioner</td>
<td>4.7</td>
<td>5.4</td>
<td>0.7</td>
<td></td>
</tr>
<tr>
<td>Nursing</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Allied health</td>
<td>0.5</td>
<td>0.7</td>
<td>0.2</td>
<td></td>
</tr>
<tr>
<td>Practice manager</td>
<td>0.6</td>
<td>0.5</td>
<td>-0.1</td>
<td></td>
</tr>
<tr>
<td>Administrative</td>
<td>2.8</td>
<td>2.4</td>
<td>-0.4</td>
<td></td>
</tr>
</tbody>
</table>

FTE: full-time equivalent.

*a Nursing staff include enrolled and registered nurses, nurse practitioners, Aboriginal Health Practitioners, practice nurses, remote area nurses and nursing assistants. Administrative staff include receptionists, administrative assistants and medical practice assistants. Allied health staff include audiologists, dentists, dietitians, exercise physiologists, optometrists, pharmacists, physiotherapists, psychologists, social workers and allied health assistants.

Source: Adapted with permission from Pearse et al. (2), p.251.
Impact on economic outcomes

7.2 Government

Since financial year 2016–2017 to the end of the trial, the Australian Government committed Aus$ 84.7 million (US$ 63.3 million) to the HCH trial, including Aus$ 54.6 million (US$ 40.8 million) for clinical purposes. An assessment of whether these outlays represented value for money would traditionally be informed by an analysis of the costs for delivering improved outcomes to HCH patients compared with the costs for care delivered under the conventional model. However, because the evaluation found little improvement in health or health care-use outcomes for enrolled HCH patients, this analysis was not formalized. While there may be improvements over time, the evaluation was unable to conclude that the HCH trial delivered value for money.

Instead, the impact on government was measured by assessing changes in public expenditures, including those relating to the use of Medicare services, pharmaceuticals and hospital admissions.

7.2.1 Medicare expenditures

Fig. 5 shows the changes in Medicare expenditures for GP attendances for enrolled patients, according to the complexity tier, as well as for comparator patients. Given the shift from a fee-for-service model to bundled payments, a fall in Medicare expenditures was expected, and this is illustrated in the results in Fig. 5. The data show that Medicare expenditures rose in line with the complexity of a patient’s needs, with tier 3 patients accounting for the highest Medicare spending in the pre-enrolment period. For enrolled HCH patients overall, MBS expenditures for GP services fell following enrolment, excluding the value of the bundled payment. This finding is also consistent with the Department of Health and Aged Care’s compliance audit of MBS billing of practices during the trial, which demonstrated that MBS billing for chronic disease items for HCH patients was reduced by more than 77%. By contrast, a slight decline in Medicare expenditures was observed among comparator patients; it is likely that this was a result of changes induced by the COVID-19 pandemic.
Australian Health Care Homes trial

Fig. 5. Changes in per-patient Medicare Benefits Schedule expenditures (in Australian dollars) for general practitioners’ (GP) services, excluding bundled payments, in the Health Care Homes (HCH) trial, Australia, 2017–2021

When the value of the bundled payment is included with all Medicare services, public expenditures relating to HCH patients were substantially higher following enrolment. As Fig. 6 shows, the inclusion of the bundled payment resulted in an increase in overall MBS expenditures in the period immediately following enrolment, with expenditures proportionately higher in line with the complexity of patients’ needs. However, no further increase was observed during the 2-year follow up.

Source: Reproduced with permission from Pearse et al. (2), p.252.
These changes were also observed in the regression results, which showed that there were substantial and statistically significant drops in MBS expenditures associated with GP services for HCH patients compared with comparator patients. However, this decrease was more than offset by the value of the bundled payments. Consequently, this shift in costs from conventional fee-for-service payments to bundled payments resulted in MBS expenditures falling slightly after the first 6 months of enrolment, but they remained well above expenditures for the comparator group, as shown in Fig. 6.

### 7.2.2 Pharmaceutical Benefits Scheme expenditures

Fig. 7 illustrates the change in per-patient government expenditures on medicines funded through the PBS for HCH patients as well as for comparator patients. The data show that the cost of PBS medicines rose substantially in line with the complexity of patients’ needs, as evidenced by the difference in expenditures by patient tier. There were moderate increases in PBS expenditures for tiers 1 and 2 HCH patients, as well as comparator patients. Expenditures for tier 3 patients were stable across the study period. Overall, the figure shows that the HCH trial had no impact on PBS expenditures for enrolled patients. This was also reflected in the regression model results, which did not find any statistically significant impact on public PBS expenditures. This suggests there was little change in the medicines prescribed for HCH patients, while new medicines listed on the PBS could have driven small increases.
7.2.3 Hospital expenditures

There was little change in hospitalizations after enrolment as measured by the number of admissions, number of bed-days and potentially preventable admissions. There were few differences in hospital use between the HCH patients and the comparator patients. Fig. 8 shows the changes in average hospitalization costs per admission, both before and after HCH enrolment.

The data indicate that for patients who were admitted to hospital, tier 3 HCH patients had the highest admission costs, but there was little difference in cost between tiers 1 and 2 patients. The regression results also found that the HCH trial had no consistent or statistically significant impact on the cost of hospital admissions. While the analysis found no clear trends following enrolment in the HCH trial compared with the comparator patients, whose hospital costs were stable throughout follow up, the 2-year follow up may have been too short to observe substantial downstream effects.

Source: Reproduced with permission from Pearse et al. (2), p.254.
Impact on economic outcomes

Fig. 8. Changes in hospitalization costs (in Australian dollars) during the Health Care Homes (HCH) trial per admission, by patient tier, Australia, 2017–2021

<table>
<thead>
<tr>
<th>No. of months from enrolment</th>
<th>All HCH patients</th>
<th>Tier 1 HCH patients</th>
<th>Tier 2 HCH patients</th>
<th>Tier 3 HCH patients</th>
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Fig. 8 plots the average cost per hospital admission for the 12 months before and 24 months after enrolment. Hospital costs have been assigned according to the Australian Refined Diagnosis Related Groups versions 7.0 and 8.0 and mapped to cost estimates from the annual reports of the National Hospital Cost Data Collection for public admissions and Hospital Casemix Protocol for private admissions and indexed to 2019 Australian dollars.

Source: Reproduced with permission from Pearse et al. (2), p.255.

7.3 Patients

The economic impact of the HCH trial on patients was measured through changes in their out-of-pocket costs for Medicare services and PBS medicines. Under the fee-for-service model, patients potentially face an out-of-pocket cost for each Medicare service, and this is the difference between the provider’s fee and the associated Medicare rebate. A possible response by a practice to a fall in government (i.e. Medicare) income would increase in patients’ out-of-pocket payments. Fig. 9 illustrates changes in average out-of-pocket costs for patients across all Medicare services for HCH patients, according to tier, and comparator patients. Fig. 10 and Fig. 11 focus on, respectively, out-of-pocket costs only for GP attendances and for non-GP attendances.

Across all Medicare services (Fig. 9), the results showed an overall increase in costs for HCH patients in tier 1, but little change for HCH patients overall as well as for comparator patients. Fig. 10 shows that these were not driven by changes in out-of-pocket costs for GP attendances, which declined slightly from a low baseline for HCH patients. Rather, Fig. 11 shows that the increase in out-of-pocket
costs for tier 1 HCH patients was driven by non-GP services (e.g. allied health profession services). The regression results showed a small but statistically significant decline of around Aus$ 3–4 (US$ 2–3) in out-of-pocket costs for GP services for HCH patients in each 6-month period following enrolment. No other results were statistically significant.

Fig. 9. Changes in patients’ out-of-pocket costs (in Australian dollars) for all Medicare services in the Health Care Homes (HCH) trial, by patient tier, Australia, 2017–2021

Source: Reproduced with permission from Pearse et al. (2), p.256.

Fig. 10. Changes in patients’ out-of-pocket costs (in Australian dollars) for general practitioners’ services in the Health Care Homes (HCH) trial, by patient tier, Australia, 2017–2021

Source: Reproduced with permission from Pearse et al. (2), p.256.
Unlike for Medicare services, for PBS-listed medicines patients pay a fixed copayment, which is substantially lower for those receiving the Age Pension or income support (i.e. concession-card holders). While the HCH model did not change this eligibility or the copayment level, a change in the number of prescribed medicines would increase patients’ out-of-pocket payments. Fig. 12 and Fig. 13 illustrate the changes in patients’ contributions to the cost of PBS medicines for, respectively, those holding a concession card and those who do not have a card. These groups are analysed separately due to the operation of the PBS Safety Net, which provides lower copayments for concession card-holders. About 68% (12 734/18 688) of all patients in the sample had concession cards. Both figures show that almost all patients’ contributions were stable, regardless of their clinical complexity or participation in the HCH trial, with the exception of tier 1 HCH patients without a concession card, for whom there were moderate increases. Costs faced by general patients (i.e. those without a concession card) were both substantially higher relative to patients with a concession card and also slightly more differentiated by clinical complexity, with tier 3 HCH patients facing the highest out-of-pocket costs. Across both types of patients, there was no clear change in outcomes for either the HCH or the comparator patients, a result that was confirmed by the regression analysis.
Overall, the results suggested that the HCH trial had little effect on out-of-pocket costs for patients once the model was established, a likely positive impact on practice financial outcomes and higher expenditures for the government on Medicare services that decreased over time.
Conclusions and recommendations
The formal evaluation concluded that the HCH trial was of limited effect and that while there were some changes evident in disease management within practices, these were not translated into improved health outcomes or reduced hospital use (2).

The report then comments that the lack of impact could be due to the short time period of the study: the trial had a mean follow up of 20 months for hospitalizations. Improvements made to the quality of care for patients with a chronic disease will take much longer than 20 months to affect health outcomes or reduce hospitalizations. Further, since practices volunteered to participate in the trial, they were likely to be providing care that was already more aligned with best practices, and they selected patients with whom they had established relationships and who were already actively engaged in their own care. Thus, there may have been less room for improvement with these patients than with other vulnerable groups of patients.

Clearly, the voluntary nature of participation ensured that the results could not be generalized to other practices and to the broader Australian population. This selection effect could have worked to engage the practices most likely to make changes and the patients most likely to accept a new approach. So, the results do not provide strong evidence for wider implementation of the HCH model.

The high withdrawal rate of practices from the trial is also worth noting. More than half the practices (53%) did not complete the trial. While there were various reasons given for this (Sections 8.1 and 8.2), the HCH model in this trial was not acceptable to or sustainable for most practices, even though they had been attracted to the model initially.

8.1 Design and payment

The payment and, therefore, the financial incentive was targeted at the practice. In contrast, MBS fee-for-service payments are billed in the name of the doctor providing the service. In many practices, doctors work as contractors, with their remuneration linked to the MBS fees they generate. It is not clear what the exact financial arrangements are between the practice and the individual, whether as a co-owner or a contractor, and therefore what the incentives are for the individual when the remuneration for the practice changes. In a practice in which not all doctors participate in the trial, determining how to pay staff becomes more complicated because practices need to consider how the blended payment could be used for additional resources, how it could be used across the practice and its implications for individual remuneration. These considerations may explain the high rates of withdrawal of corporate practices.
Conclusions and recommendations

One reason given for withdrawal by practices was that the level of the bundled payments was insufficient for what it was intended to cover. The risk stratification tool provided three tiers of payment. This approach had the benefit of applying a small number of classes, but it had the disadvantage of a lack of sensitivity to diverse patient needs. This implies a greater exposure to financial risk. A greater number of tiers would give greater separation of risk groups, but it would also mean that practices were required to manage the risk that the costs for any individual patient would exceed the bundled payment. More costly patients could be balanced with less costly patients relative to the bundled payment. The ability to manage these risks requires a sufficiently large patient population to allow for pooling of these risks and the development of risk-management expertise. And, of course, this pooling is further complicated in a practice where most doctors are contractors.

8.2 Implementation

Implementation was identified as the major issue in the disappointing results of the trial. In particular, the limited time allowed for the changes required and the opposition to the concept from some parts of the medical profession contributed to the poor results (2).

The development of team-based care was limited to what could be achieved within a practice, as the funds did not allow for integration with other services or purchasing from other providers, which would have been a true purchasing model. It is clear that the bundled payment was considered by many practices as too small to warrant the investment in changing their procedures and hiring new staff. It is plausible that it was also too weak because it was confined to being used for changes within the practice and it failed to encourage engagement with other relevant services. At a practice level, this is an economies of scale issue whereby participation and, hence, new revenue are insufficient to warrant the additional costs of establishing and implementing a new model of care with, for example, allied health professionals. This difficulty was exacerbated by the distinction between the practice and the doctors within the practice. While such problems could be overcome through contracting or outsourcing with firms that specialize in chronic disease management, this type of health care supply is not commonly found in Australia, and the small size of the HCH would have been insufficient for the market to respond to this potential demand. Implementation of contracting or outsourcing would also require practices to become purchasers of care, rather than just adapting to a new payment model.
Another key message from the evaluation is the need to make all aspects of participation as seamless as possible. It is clear that the time required to implement the change to the HCH model was underestimated. Staff needed education about the goals and benefits of the new model and training in new administrative processes. The HCH trial had a strong focus on IT to help practices with enrolment, education, monitoring and evaluation. However, rather than reduce the administrative burden, many aspects of the technology were regarded as time-consuming: it took time to explain the programme to the patient, obtain consent, assess the patient’s eligibility and tier, create a care plan and register patients on multiple IT platforms. The need for individual consent would not be required in a system-wide change. This trial involved limiting a patient’s access to MBS services, which are a universal benefit, even though they were replaced by other services. One of the reported issues for patients was the sense that they would have less access to their doctor. Combined with a sense that the HCH trial was of limited duration, these factors may have led practices and patients to question their own long-term commitment to the trial.

The COVID-19 pandemic commenced just more than two years into the trial. In response to the pressure on health services and the lockdowns, changes were made to primary care delivery. These included new MBS items for telephone consultations, thus diluting the impact of the HCH trial. The addition of fee-for-service telehealth items to the MBS meant there was an additional opportunity cost for practices when providing services to their HCH patients. The pandemic also generated a great deal of uncertainty, and this may have led to practices becoming more risk averse around increasing their staffing or affected their ability to attract staff. The additional urgent responsibilities, such as the COVID-19 vaccine roll out, increased stress and the workload within practices. These factors are likely to have reduced the potential for changes within a practice.

8.3 Lessons

Trials are a valuable approach to testing new policies and identifying unintended consequences, but they are complex, and likely to be few and limited in their scope. Therefore, each trial should be designed to maximize the chance of success and ensure that evidence is collected that can aid future policy development. It is exceptionally unlikely that one trial will answer all relevant policy questions and, therefore, it is important to recognize that successive trials should be considered to build on the lessons from previous trials.
Implementing payment reform is a complex intervention, usually requiring changes in data systems, the workforce, organizations and risk management. Providers and patients may use the opportunities of such reform differently, changing their behaviour in ways that impact health system performance. Understanding behavioural responses to changed incentives, financial and nonfinancial, and understanding how they vary by provider and patient characteristics are important bases for designing new systems. Information gained from studies that evaluate these aspects will allow for simulation, or modelling, of the effects of different design features.

Changes in funding and purchasing involve changes in risk for funders and insurers, providers and fund holders. It is vital to understand the risk borne by different parties and how they are likely to respond to changes. It is also important to recognize that trials may affect the same group of stakeholders (e.g. GP practices) in different ways because they enter the trial from different starting points and face different local circumstances.

The risks for patients in changes to funding may involve reduced financial protection and reductions in the quality or extent of clinical services, or both. Most new purchasing instruments aim to protect patients both clinically and financially while improving value for money, and these aims generally entail exposing providers to more risk. Consequently, it is critical to understand how new approaches affect providers’ costs and revenue. Small private providers can be expected to be much more risk averse than large groups, for whom cross-subsidies are feasible, or government-run services.

Finally, much needs to be learned about the process of change and the need for certainty. The lack of certainty about the future of the HCH model discouraged continued participation in the Australian HCH trial. Investing in infrastructure and change is less attractive the shorter the period is for a return on that investment. It is recommended that those making similar changes commit to a long-term strategy.
References


