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Innovative models of care for the health facility of the future: a protocol for a mixed-methods study to elicit consumer and provider views

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Manuscripts

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3 **Innovative models of care for the health facility of the future: a protocol for a mixed-**
4 **methods study to elicit consumer and provider views**
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ABSTRACT

Introduction: The delivery of healthcare is dramatically changing in the face of new and enhanced technologies, increasing social and economic burdens of ageing populations, and the prevalence of chronic disease. To address these growing challenges, governments and health services are increasingly emphasising healthcare delivery models that are flexible, person-centred, cost-effective and integrate hospital services more closely with primary healthcare and social services. In addition, such models increasingly embed consumer co-design and leverage digital technologies. Examples include clinical dashboards, decision support tools, telehealth and sophisticated medical records systems introduced into hospital workflows, to deliver care more seamlessly and continually improve their services.

Objectives: This paper provides a study protocol to describe a method to elicit consumer and healthcare provider needs and expectations for the development of innovative care models.

Methods and analysis: A mixed-methods study of consumer members' and health providers' needs and expectations. Data collection includes a short consumer- and provider-specific, demographic questionnaire (delivered during the recruitment process), facilitator-coordinated consultation workshops, and follow-up interviews. Data will be analysed thematically (qualitative) and statistically (quantitative).

Ethics and dissemination: The results will be actively disseminated through peer-reviewed journals, conference presentations and in a report to stakeholders. This study was reviewed and approved by the relevant Ethics Committee in New South Wales, Australia.

Strengths and limitations of this study

- The study will be the first of its kind to identify the key evidence-based, innovative models of health care, considering the benefits and implementation considerations for each model, as perceived by consumers and healthcare providers.
- The study design was developed in collaboration with the Local Health District where the health facility will be located.
- A key strength of the study is the use of mixed-methods and the triangulation of data from multiple sources.
- A key limitation of the study is that the structure of workshops focused on specific scenarios which may not be generalisable.

Peer review only

BACKGROUND

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Around the world, the delivery of quality hospital care is transforming in response to the availability of new and enhanced technologies and increasing demand for care.¹ Challenges to extant healthcare systems include an increase in the proportion of older adults in the population²⁻⁴ that will redirect the focus of health towards long-term and chronic care.³ Increased demand on the healthcare system comes from multiple sources, including higher prevalence of chronic diseases such as obesity, kidney failure⁵ and cognitive decline.³ The shift to patient-centred healthcare models³ will also have resource implications while aiming for improvements in patient and staff satisfaction and quality of care.⁶ To address the growing challenges globally, health services and governments are experimenting with more cost-effective care alternatives often delivered outside hospitals walls,⁷ prioritising greater consumer engagement^{8,9} and investing in digitised care services.¹⁰ Digital services allow care to be more personalised, integrated with existing models, and delivered remotely (e.g., telemedicine). In applying advanced technologies such as robotics, artificial intelligence (AI) and big data analytics into hospital workflows, architects of new care models are seeking to provide more seamless care and continual improvement in services.⁴ In 2018, Braithwaite and colleagues identified key trends shaping the health systems of the future: global demographic dynamics, work in creating sustainable health systems, evolving technologies such as genomics and AI, and new models of care. New models of care are emerging to meet new circumstances. For example, the COVID-19 global health pandemic in 2020 acted as a catalyst or trigger for change (e.g., rapid adoption of telehealth) that have been called for previously by those who suffer chronic conditions¹¹. E-health, telehealth and virtual care models allowed patients to remain socially distant rather than having physical contact with the community and health services, simultaneously reducing the risk of the virus

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3 spreading among patients and healthcare providers.¹² These innovative models take a novel
4 approach to provide high quality and safe care in and out of hospital settings.¹³
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7 In Australia, the New South Wales (NSW) government announced funding for a new health
8 facility at Rouse Hill. The Western Sydney Local Health District (LHD) is planning the new
9 health facility and is seeking innovative ways of delivering care that are more accessible,
10 efficient, and effective for healthcare providers, funders and the population. In consultation
11 with our research team, it was believed that there was an opportunity to create a different
12 kind of facility – a modern and digitally-enabled capability. Seeking views from consumers
13 and providers will ensure that the way the facility provides services is deeply connected to
14 community needs.
15

16
17 The goal of this project is to provide a research-based approach to develop an innovative
18 health facility and health service; one that delivers a high-quality care solution for the
19 community rather than simply establishing more hospital beds, departments, units, and wards.
20 Realising this vision will have far-reaching implications for the design and delivery of health
21 services in the future. But to develop any new model for integrating community and hospital
22 acute care and support services, we need to turn to the community and health care providers
23 to understand their expectations and the healthcare needs that may be met by innovative
24 models of care. While we are gaining data to inform the construction and design of a
25 “hospital”, we use the term “health facility” to reflect blue sky thinking and avoid being
26 constrained by language that implies a large conglomeration of buildings and beds.
27

28 **Identifying evidence-based models of care**

29
30 Before eliciting consumers’ and providers’ needs and expectations, we needed to assess the
31 evidence to identify candidate models of care. We therefore undertook a grey literature
32 review to identify potential models of care, followed by an academic review of the
33 international evidence supporting the efficacy of these models.
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3 The grey literature review involved an advanced search using Google and included websites
4 such as World Health Organization and Organization for Economic Co-operation and
5
6 Development (OECD) using search terms such as “future hospital”. Two reviewers
7
8 completed a title and abstract screen and three reviewed the full-text documents. Eighty-five
9
10 documents were included, comprising 55 reports, 17 online newspaper articles, 10 articles or
11
12 bulletins from organisation websites, two online articles and an opinion piece. From this
13
14 review, seven themes were deductively determined that were used to group innovative
15
16 models of health care (see Table 1). Benefits, drawbacks, and past implementation of the
17
18 models were also identified.
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24 The Preferred reporting Items for Systematic Reviews (PRISMA) was used to guide the
25
26 academic literature review to extract the evidence-based support for the models of care
27
28 identified in the grey literature.¹⁴ Search strings chosen from prevalence data of the focal
29
30 community in the context of the models were applied to three academics databases
31
32 (PsychINFO, Ovid MEDLINE, and CINAHL). For example, “virtual hospital” AND “cardiac
33
34 arrest”. Sixteen reviewers (eights pairs) completed a title and abstract screen and
35
36 subsequently reviewed the full-text documents. Given the large numbers of papers resulting
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38 from the searches (i.e., over 200,000 results), the researchers confined the searches to review
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40 papers only. Sixty-one peer-reviewed, English language review studies with human subjects,
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42 dated 2016-2021, met the criteria for inclusion. This review will be reported separately.
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Table 1: Seven evidence-based innovative models of care

| Model | Description | Example |
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| Consumer focused care | During planning, delivery, and evaluation, consumers, carers, and families are placed at the centre of care. | Individualised self-management support in early chronic kidney disease transition of care plan ⁵ |
| Ambulatory care and diagnostic hospitals | Non-admitted services, where patient care does not involve an overnight stay and usually involves diagnosis and treatment on the same day. | Same day joint arthroplasty ¹⁵ |
| Digital hospitals | Hospitals that make extensive use of new technologies to provide streamlined care, improve patient safety and care quality, and improve overall care cost effectiveness. | Machine learning algorithm for prediction of post-total hip arthroplasty complications ¹⁶ |
| Hospital in the home | Some or all of patient care and consultation which is typically delivered in the hospital settings is delivered to patients in their own home. | Early discharge hospital at home care for chronic obstructive airways disease managed by a community service ¹⁷ |
| Integrated care | Multidimensional needs of the patient are delivered in a coordinated manner by an interdisciplinary team or network of healthcare professionals | Orthogeriatric fracture service ¹⁸ |

| | | |
|---|--|--|
| Virtual care | Patient care and consultation delivered through telephone or video communication. | Telehealth management in patients with heart failure ¹⁹ |
| Specialist hospitals and population specific care units | Specialist hospitals provide selective care services for targeted patient groups. Population-specific care units are pathways within general hospitals dedicated to treatment of specific conditions | Comprehensive cancer centres ²⁰ |

METHODS

Study Aim

The study aims to elicit health consumers' and healthcare providers' needs drawn from the local community and expectations of a new health facility, and how these needs may be met through the delivery of innovative models of care.

Study Design

We will conduct a mixed-methods study of consumer and provider needs and expectations in relation to innovative models of care delivery for a new health facility. As illustrated in Figure 1, the design comprises collections of consumer and provider data via a short expression of interest (EOI) questionnaire comprising demographic information (as part of the recruitment process), facilitator-coordinated workshops, and supplementary interviews. Data collection will occur in a sequential manner, where results from the EOI questionnaire will inform workshop design. In addition, interview design and recruitment will be informed by the learnings from the workshops. Together, these methods of data collection will facilitate a varied and dynamic exploration of community and provider needs and expectations for innovative models of healthcare (see Figure 1).

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3 FIGURE 1 HERE
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8 **Study Setting**

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10 The project will be conducted online and in person. Specifically, the recruitment
11 demographic questionnaire will be hosted and completed online. The face-to-face workshops
12 will be held at public metropolitan hospitals and community centres in New South Wales
13 (NSW), Australia. Participants will be provided with options to attend workshops during, or
14 outside of working hours. For face-to-face workshops, we will follow all current COVID-19
15 guidelines that are current at the time of data collection (e.g., social distancing, wearing of
16 masks). In addition, the meeting format will be adjustable to being video-enabled to respond
17 to any face-to-face restrictions in place associated with the COVID-19 pandemic.
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20 Supplementary interviews with interested participants identified in the workshops will be
21 conducted via an online platform such as Zoom or over the telephone for participant
22 convenience.
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24

25 The catchment area where a new health facility is currently being planned comprises a land
26 area of almost 500 square kilometres and a population estimated in 2019 to be 300,000
27 residents estimated in 2019. Between the 2006 and 2016 population censuses, the catchment
28 experienced a population growth rate of 29% and this growth rate was predicted to rise when
29 assessed using the 2021 census data.^{21 22} The 2016 Census reported that adults aged 35-44
30 years and school aged children aged 5-9 years were the largest age groups, 37% of the
31 population was born outside Australia and 0.9% identified as Aboriginal and/or Torres Strait
32 Islander.²³
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35 **Procedures**

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56 *Recruitment:*
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3 Consumer members will include residents and patient representatives within the new health
4 facility catchment (49 suburbs) as defined by the LHD's planning team on 16th July 2021.

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7 The participants will be recruited through the LHD's network and connections via email,
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10 postings in local newspapers and through Facebook invitations. For providers, emails will be
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12 sent by the LHD to potential participating providers such as healthcare professionals and
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14 support staff, and community members via their established connections. These connections
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16 include, but are not limited to, consumer networks, LHD community newsletters, migrant
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18 resources centres, the Primary Health Network, and the Youth Advisory Council. To reach
19
20 potential consumer participants who may not have access to email or the internet, the
21
22 invitation will also be posted in local newspapers and advertised as flyers at LHD hospitals.
23
24 For providers, emails will be distributed via the LHD's Broadcast system, the Primary Health
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26 Network, and from the Chief Executive Officer.
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31 As 37% of the consumers are from culturally and linguistically diverse (CALD) backgrounds,
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33 non-English speaking participants will invited to participate in the study, aided by bi-lingual
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35 interpreters from the LHD. The research materials comprising the invitation, EOI
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37 questionnaire, workshop and interview scripts will be translated into the five most prevalent
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39 non-English languages in the community - Hindi, Punjabi, Mandarin, Korean and Arabic.
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43 For those accessing the research invitation electronically (via email or Facebook
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45 advertisements), the invitation will include a link to an online EOI questionnaire using
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47 REDCap electronic data capture tools.²⁴ The questionnaire will collect demographic data
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49 including age, gender, location, ethnicity and contact information. The providers will be
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51 asked to indicate their role and specialty, and the consumers will be asked for pertinent health
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53 information such as whether they have a chronic health condition. Responses to the
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55 questionnaire will be taken as implied consent for collection of the demographic information.
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3 The provided contact information will be used to send the participant details about the
4 location and time of the workshops (either via phone or email – as selected by the
5 participant). For all participants who attend a workshop, we will ask for written informed
6 consent prior to commencement of the workshop. Participants will be sent the Participant
7 Information and Consent Form (PICF) prior to the workshop so that they can come prepared
8 with questions for the research team. Once participants sign the consent form, the research
9 staff will photocopy the PICF and provide a copy to each consenting participant. In the event
10 of delivering the workshops online, a link will be sent to the participants for access to the
11 PICF presented using REDCap tools.²⁴

12
13
14 Interview participants will be recruited following the workshops. After each workshop, those
15 who express interest will be contacted for a follow-up interview to confirm the findings. The
16 PICF for the workshop informs participants that they may be contacted after the workshop to
17 be invited to a follow-up interview. Figure 2 provides a map of the recruitment process for
18 consumers and providers.

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INSERT FIGURE 2 HERE

Workshops:

There will be a total of 16 workshops across two streams of eight: one stream for health providers and another for consumer members. Each workshop has been designed to elicit responses to the seven models of care. To do this, we will divide participants into smaller parallel groups that each will examine three models of care in detail, rather than present all seven models and induce fatigue. The models have been counterbalanced across the eight workshops, to ensure that the presentation and order of each model is balanced. There will be up to eight facilitators and scribes at each workshop (a facilitator and scribe per group).

Where needed, some groups within the workshops will be supported by bi-lingual

1
2
3 interpreters. The number of participants in each workshop group has been designed based on
4 our collective research experience as an appropriate number for elicitation of the data we are
5 seeking and is consistent with the number of participants in focus groups where people feel
6 relatively comfortable speaking to others.²⁵
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11
12 The workshops will start with a short explanation by a research team lead, explaining that the
13 purpose of the workshop is to capture the needs of the consumers or providers and their
14 perspectives on innovative models of care delivery. They will then allocate the researchers
15 and participants to the groups. Within each group, the researchers will take notes, facilitate
16 discussion, and ask probing questions. Audio-recording devices, and researcher notes will be
17 used to capture the content of discussions.
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20
21 After a brief icebreaker activity, the researchers will then ask questions to probe the
22 participants' digital literacy (e.g., "How comfortable are you using a smart phone/smart
23 watch/computer?"). Workshop scenarios and questions have been designed around the seven
24 innovative models of care identified in the literature review (Table 1). The priority conditions
25 used in the scenarios have been identified from the demographic data provided by the LHD
26 as the most common burdens of disease in the new health facility catchment and are listed
27 below:
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- 42 1. Cardiac arrest, chest pain, acute myocardial infarction, congestive heart failure.
 - 43 2. Fractures, knee replacement, hip replacement, joint replacement, abnormal gait, bone
44 disease, osteoporosis.
 - 45 3. Abdominal pain, pelvic pain, gastrointestinal pain.
 - 46 4. Pneumonia, asthma, chronic obstructive pulmonary disease.
 - 47 5. Postnatal depression.
 - 48 6. Dialysis (haemodialysis etc.), kidney disease, end stage kidney disease.
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Scenarios will be presented to participants for each model of care (see Table 2). Three of the seven models along with the scenarios will be presented in each workshop.

Table 2: Models of care and scenarios

| Model | Scenario |
|--|--|
| Ambulatory care and diagnostic hospitals | “Maria is a 45 year old woman who is able to walk unaided and travels to a centre for treatment 2-3 times per week (e.g., renal dialysis in a shopping centre, or chemotherapy).” |
| Digital Hospital | “John is a 70-year-old man who has a heart condition that causes dizziness (e.g., irregular heartbeat). As this places him at a high risk of falls, he has been admitted to hospital for monitoring. Beside his bed is a digital matt that detects and alerts the staff if he has had a fall.” |
| Hospital in the Home | “Jenny is a 35-year-old, single mother of three who developed a breast infection with an abscess following the birth of her baby. She was treated with intravenous antibiotics (on a drip) and a tube was placed into her breast to drain the infected fluid. After 24 hours, she returned home to her children and is provided wound care and support in her home from a visiting nurse.” |
| Integrated Care | “Steve is a 50-year-old man with Type II diabetes who is obese and smokes a packet of cigarettes a day. He is having trouble walking so visits his local Emergency Department where he sees a General Practitioner (GP), who has a practice in an office next to the Emergency Department. The GP diagnoses a foot ulcer and identifies that Steve requires a full review of his care. Steve will be looked after in hospital by a |

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| | multidisciplinary team of healthcare professionals (e.g., endocrinologist, ulcer team, nutritionist) using an electronic medical record system for communication.” |
| Virtual /Consumer Focused Care | “Ivy is a 40-year-old woman who developed chest pain along with an irregular heartbeat following a dental procedure. She visited the local Emergency Department where no abnormality was found and was discharged. As she was still concerned about a sudden heart attack, she was fitted with a digital heart monitor with chest leads that talked to an application on her smart watch. Ivy was shown how to indicate an unusual heart event using her watch. Anytime Ivy tagged an event, the information was sent to a health care professional at the moment it happened.” |
| Specialist hospitals and population specific care units: | “Harrold is an 82-year-old man with mild dementia, who develops a urinary tract infection. He has been referred to a specialist dementia unit in a geriatric care ward at the local hospital. Harrold and his family are reassured that he will receive the highest level of evidence-based care for dementia from a specialised team of health professionals.” |

Following the presentation of each scenario, we will ask general questions about the model’s strengths and weaknesses, usability and safety for themselves and people in their care. For providers, we will ask them about barriers and enablers from their own and their patients’ perspective, with respect to each model of care. At the end of each workshop, the participants will be asked to indicate their preferred model of care via a poll. Example facilitator scripts for the consumer and provider groups are provided in Supplementary File 1.

Each workshop will be planned for a two-hour duration with a five-minute break after the first hour. Each participant will be invited to participate in one workshop but will be offered a

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2
3 series of dates to choose from. Participants will not be paid for their participation but those
4
5 who attend in-person will be provided with refreshments.
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8 *Participants:*
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10 The consumer workshops will include residents of the new health facility catchment area.
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12 Provider workshops will comprise health providers that provide care or are likely to provide
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14 care, and stakeholders who make decisions about provision of care such as LHD executives
15
16 and administrators, for the catchment population. In a first wave of data collection, we will
17
18 recruit 15-30 participants for each of the workshops (this estimation takes into consideration
19
20 participant loss to follow-up). Six workshops will result in approximately 120 health
21
22 providers and 120 consumer member participants (240 participants in total). However, the
23
24 number of participants invited to each workshop may be influenced by government mandated
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26 COVID-19 restrictions at the time of data collection. In a second wave, up to 40, non-English
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28 speaking, CALD participants will be recruited with the support of the LHD's Multicultural
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30 Health Team.
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34 In parallel, there will be a third, but separate but aligned, wave of data collection, to include
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36 consultation with Aboriginal and Torres Strait Islander Elders. Consultation with these
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38 community members will involve a formal process of consultation with Aboriginal Liaison
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40 Officers in the LHD to develop an Aboriginal Health Impact Statement and associated ethics
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42 proposal. This consultation will be conducted in-person to ensure this is conducted in a
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44 culturally respectful manner as directed by the Aboriginal Liaison Officers in the LHD.
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49 *Inclusion criteria:*
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51 All participants will be 18 or older and will either have English language competence
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53 (written and spoken), or interpreter assisted non-English language (written and spoken),
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55 sufficient to provide verbal informed consent. The study is open to all community members,
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57 but we will also specifically seek to recruit participants representative of the six specific
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3 health conditions/services by targeting recruitment of condition networks associated with
4 these health conditions.
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7 Those who currently provide care to those residing in the catchment for the new health
8 facility, or who make decisions about provision of care for those residing in the catchment,
9 are eligible to participate. This will include general practitioners and other health providers
10 such as community nurses and services, allied healthcare professionals, aged care facilities,
11 community care organisations, the primary health network, community care providers, the
12 ambulance service, and other identified stakeholders. The inclusion criteria are broad enough
13 to capture any health provider in the LHD or new health facility catchment, but we will also
14 target participants whose work relates to patients in the six specific listed conditions or
15 services.
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28 *Interviews:*

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30 Supplementary to the workshop, we will invite those participants who are key stakeholders
31 but were unable to participate in the workshop, or those who indicate an interest during the
32 workshops to participate in semi-structured interviews. The purpose of these interviews is to
33 expand on areas of interest and verify the findings from the workshop data. Interviews will be
34 audio-recorded and are expected to last approximately 45 minutes. The interview script
35 commences with “For Model X, can you please elaborate on what you think is meant by the
36 strengths/barriers/enablers/safety issues...”, and is deliberately open ended to allow the
37 participant to freely express their views. The interview script is provided in Supplementary
38 file 2.
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51 *Data collection:*

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53 Participants’ demographic information (e.g., age, gender) and health-relevant data will be
54 collected through the EOI questionnaire. Consumers will be asked about their experiences
55 using acute, chronic and outpatient services, their ethnicity, language spoken at home, and
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3 residential postcode. Providers will be asked to indicate their role, specialty, whether they are
4 employed by the LHD, and work postcode. In the case of workshops being delivered online,
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6 participants will be sent their information and consent forms to sign prior to attending.
7
8

9
10 The workshops and supplementary interviews will be run by a team of experienced health
11 services researchers and will explore the experiences and views of participants with respect to
12 innovative models of care. Responses will be audio recorded. Key themes and different
13 points of view will be identified and recorded for qualitative analysis. Each group within a
14 workshop will provide their written notes and observations to the workshop facilitator who
15 will collate the data. The data will then be aggregated across all the workshops for analysis,
16 separately for consumers and providers.
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26 *Planned data analyses:*
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28 The quantitative data that includes demographic and health related data from the EOI
29 questionnaire will be analysed using SPSS V.22.0 and weighted against the Australian
30 Bureau of Statistics data for the catchment, to assess representativeness of the sample.
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33 Consumer and provider workshop and interview data for each model will be merged into two
34 aggregated, narrative summaries, one for consumers and one for providers. All participants
35 will be de-identified, and any identifiable features of the experiences or personal details
36 shared in the group will be changed (e.g., if a unique service or practitioner is mentioned; or
37 features of the disease which identifies the patient). Data collected in the focus groups and
38 interviews will only be used for the purpose of this research project.
39
40

41 Aggregated data sets will be analysed separately for consumers and providers. Qualitative
42 data (i.e., facilitator notes and key elements of the workshop recordings) will be thematically
43 analysed independently using an open coding process by two members of the research team.
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46 Themes will be extracted that characterise the expectations and needs of the consumer
47 members and health providers of the new health facility catchment. Data collection and
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3 analysis will occur iteratively; questions used for workshops and guides for observations will
4
5 be refined and expanded as new findings emerge.
6

7
8 *Synthesising and integrating results:*
9

10 Data will be synthesised using a triangulated approach, whereby literature review findings,
11
12 community characteristics, and findings from the focus groups and interviews will be
13
14 integrated to arrive at a set of evidence-based, community-and-provider-supported strategies
15
16 for delivering care to those in the healthcare catchment. Figure 3 illustrates the data
17
18 collection, analysis and synthesis strategy for the project. Triangulated findings will be used
19
20 to inform planning options and feasibility of implementation of the options for development
21
22 of the new health facility.
23
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28 INSERT FIGURE 3 HERE
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32 *Patient and Public Involvement*
33

34 No patient involved. No patient data is reported in this paper.
35
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39 **Discussion**
40

41 This study seeks to examine consumer and provider needs and expectations for the
42
43 development of an innovative care model for a health facility, specifically pertaining to seven
44
45 evidence-based models of care and the health conditions that form major burdens of disease
46
47 found in a diverse catchment area in metropolitan NSW, Australia. The study investigates
48
49 community perspectives on each model of care in detail, each presented within a purpose-
50
51 designed, contextualised health scenario. Healthcare delivery is changing due to the
52
53 introduction of new and enhanced technologies, the increasing social and economic burdens
54
55 of ageing populations, and the prevalence of chronic disease, amongst other factors.
56
57
58 Therefore, it is important that we use these findings to guide the development of new
59
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1
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3 healthcare facilities to ensure that both consumer and provider needs are met. These findings
4
5 may be used to inform policies on how to design new healthcare facilities in consideration of
6
7 consumer and provider needs.
8
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10 The limitations of this study may include the following factors. Due to the scope of the
11
12 project, we cannot include an exhaustive list of health conditions. We have used a data-driven
13
14 approach to stratify the main diseases reported in the new catchment as defined by the LHD.
15
16

17 In addition, this study is limited to the local health district under investigation and the specific
18
19 needs of the consumer and providers in that district. Finally, the catchment area could change
20
21 as the LHD redefines its boundaries.
22
23

24 **Expected outcomes**

25
26 Adopting an evidence-based approach, we will elicit opinions from consumers and providers
27
28 within the catchment of a new healthcare facility about the barriers and enablers pertaining to
29
30 seven innovative models of care. This will provide a care model for future health facility
31
32 development, in Australia and globally. Ultimately, the outcomes will help to ease the
33
34 burdens that many health facilities face such as the increasing social and economic burdens of
35
36 ageing populations, and the prevalence of chronic disease.
37
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42 **Ethics and Dissemination:** There are no known health or safety risks associated with
43
44 participation in any aspect of the described study. Ethics approval for conducting the study
45
46 was obtained from the Local Health District Human Research Ethics Committee
47
48 (2021/PID01000). The results will be actively disseminated through peer-reviewed journals,
49
50 conference presentations and reports to stakeholders.
51
52

53 **Contributors:** GL, JB, RCW and PH conceptualised the study. AC, NR, CP, ZM, RCW, PH,
54
55 KM and JB contributed to the design of the study. AC drafted the initial manuscript, assisted
56
57
58
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1
2
3 by NR, CP, ZM, RCW, PH and JB. All authors contributed to the refinement of the paper and
4
5 approved the final manuscript.
6

7
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11
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13
14 District's Multicultural Unit for their assistance with CALD recruitment and interpretation
15
16 services.
17

18
19 **Data availability statement:** No additional data available.
20

21
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23
24 independent consultancy to support a larger project developing and implementing a new
25
26 health facility in Sydney, Australia. Grant number HI20314. The funder did not play a part in
27
28 the design, conduct or reporting of this study.
29

30
31 **Competing interests:** Nil to declare
32

33
34 **Disclaimer:** The views expressed herein are the personal views of the authors and not
35
36 necessarily those of Western Sydney Local Health District, Health Infrastructure, or the NSW
37
38 Ministry of Health, and are not to be understood or quoted as being made on behalf of or
39
40 reflecting the positions of those organisations.
41

42
43 **Patient consent for publication:** Participants will provide written consent in accordance
44
45 with the HREC-approved Patient Information and Consent Form, which detailed how the
46
47 findings would be disseminated. No patient data is reported in this paper.
48

49
50 **Provenance and peer review:** Not previously submitted or under consideration elsewhere.
51

52
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38 Figure 1: Data collection points over time for consumer and provider groups.

39 Figure 2: Recruitment process map

40 Figure 3: Recruitment process and data plan for the project
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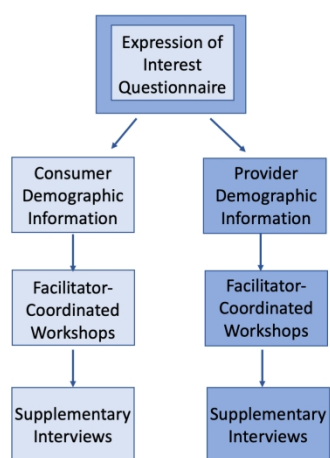


Figure 1: Data collection points over time for consumer and provider groups.

338x190mm (225 x 225 DPI)

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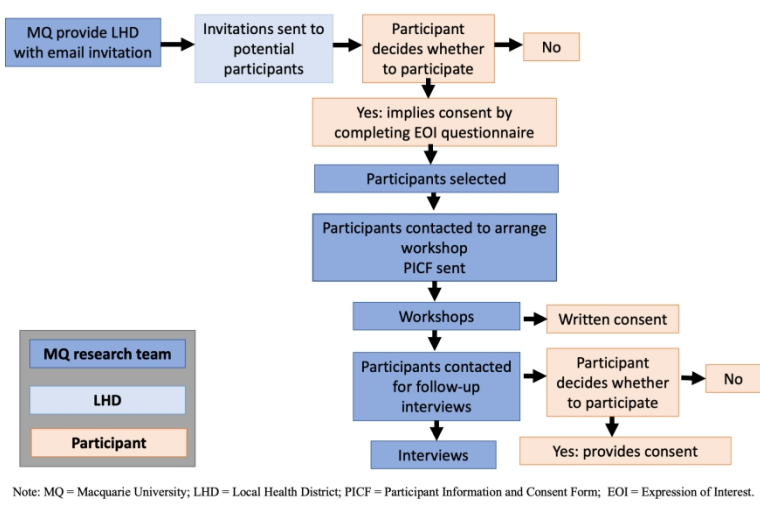


Figure 2: Recruitment process map
338x190mm (225 x 225 DPI)

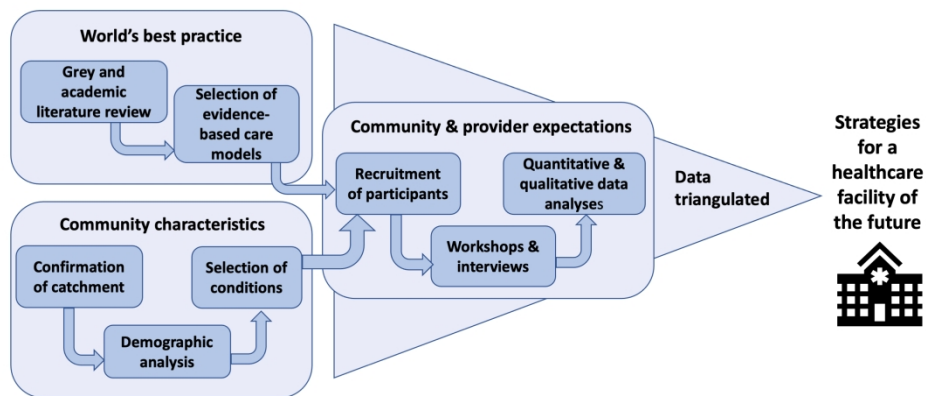


Figure 3: Recruitment process and data plan for the project

338x190mm (225 x 225 DPI)

Consumer: General Welcome

“Thank you for coming along today and participating in our study. My name is XXX.

Acknowledgement of Country

Bathrooms, fire exits.

The purpose of this workshop is to capture the needs of the Rouse Hill community and their perspectives on new ways of delivering acute care. What we talk about today will inform the development of the new hospital in Rouse Hill. We really appreciate your time and thank you very much for being here today.

Consumer stream: As consumers of healthcare, your experiences as patients are very valuable. However, please note that there is no obligation to disclose details of personal healthcare issues.

Throughout the workshop a researcher/facilitator will be with each table group to take notes, facilitate discussion and ask you questions. The workshop will go for 2 hours with a 10-minute break with refreshments after the first hour.”

Audio-recording devices, flipcharts, and notes will be used to capture discussions. You will remain unidentifiable in the analysis and write-up of any findings relating to this research.

If you have any questions throughout the day, please ask one of the Macquarie University staff members (**introduce all staff members**).

Before we begin, we ask that you read and sign the PICF on your tables. If you have any questions before signing, now is the time to ask (**pause for questions**). Once you’ve signed, we will photocopy the documents and provide you with your own version.”

Group Introduction

“Good afternoon (morning/evening etc.) and welcome to the workshop. Thanks for taking the time to talk with us about what you would like to see in the new Rouse Hill Hospital. My name is (**insert name here**), and I am from the Australian Institute of Health Innovation at Macquarie University. We are working in partnership with Health Infrastructure and the Western Sydney Local Health District. My role as moderator will be to guide the discussion today.

Please note that there are no right or wrong answers but rather differing points of view. Please feel free to share your point of view even if it differs from what others have said. You don't need to agree with others' opinions, but we ask that you listen respectfully as others share their views.

You've probably noticed the microphone. We are taping the session because we don't want to miss any of your comments. People often say very helpful things in these discussions, and we can't write fast enough to get them all down. However, to make the recording as clear as possible, we ask that only one person speak at a time. And to remind you, no-one is identifiable on the recording.

Let's get started! Before we begin, if you wouldn't mind writing your name on the (name card/sticker in front of you. We will be on a first name basis today, but we won't use any names in our reports."

Icebreaker Activity

"To get everyone thinking, we have planned a brief icebreaker activity. The purpose of this activity is to encourage thinking outside of the box.

- As a group, let's try to come up with 15 different ways that you can use a paperclip. The more inventive, the better. Who would like to start? We have 3 minutes!

(Separate sheet of paper)

Please rate on the scale below the following:

1. How comfortable are you using:

A smart phone?

Extremely Uncomfortable, Somewhat Uncomfortable, Neutral, Somewhat Comfortable, Extremely Comfortable

A smart watch?

Extremely Uncomfortable, Somewhat Uncomfortable, Neutral, Somewhat Comfortable, Extremely Comfortable

Computers?

Extremely Uncomfortable, Somewhat Uncomfortable, Neutral, Somewhat Comfortable, Extremely Comfortable

"Now that we have gotten to know each other a little better we would like you to reflect on a patient or patients who may or may not benefit from different "models of care". Today, we will talk about three different models of care in our workshop today. These are not the only models of care we are exploring, but we only have two hours, so will be talking about different models with different groups. We are interested in your ideas and would like you to reflect broadly as well as on

1
2
3 your experience as a person who may or may not benefit from these three different “models of
4 care”.

5
6
7
8 **Model 1: Ambulatory Care and diagnostic hospitals:** Non-admitted services, where patient
9 care does not involve an overnight stay and usually involves diagnosis and treatment on the
10 same day.

11
12
13 SHOW images: Home vs. Hospital (Images 1/2)
14 Maria (Image 3)

15
16
17 Your name is Maria and you are a 45 year old patient who is able to walk unaided and travels to a
18 centre for treatment 2-3 times per week (e.g., renal dialysis in a shopping centre, chemotherapy)

19
20
21 **We would like to ask questions from Maria’s as well as your own perspective. Let’s start with**
22 **Maria:**

23
24
25 **From Maria’s perspective:**

- 26
27 **1. What is good about this model for Maria?**
28
29 **2. What about this model might make it difficult for Maria?**

30
31
32 *Additional prompts*

33 Can you think of anything about it that might be impractical?

34 Can you think of anything about it that might be unachievable?

- 35
36
37
38
39 **3. What needs to be in place for this to work for Maria?**

40
41
42 **For example, systems, processes, people, skills and equipment?**

43 **Now from your perspective:**

- 44
45 **4. What about this model might be good for you and your family?**
46
47 **5. What about this model might make it difficult for you and your family?**

48
49
50 *Additional prompts*

51 Can you think of anything about it that might be impractical?

52 Can you think of anything about it that might be unachievable?

- 53
54
55
56
57 **6. How easy is this to use for you?**
58
59
60

1
2
3 **7. What would stop you using it?**
4

5
6 **8. Can you think of other people who would have difficulty using this model?**
7

8
9 **9. We have already asked for Maria but what other things needs to be in place for this to**
10 **work for you?**
11

12 **For example systems, processes, people, skills and equipment**
13

14
15
16 **General questions:**
17

18
19 **10. Is there anything about the model that concerns you?**

20 **11. Can you see any safety issues for yourself?**

- 21
22 Why is that?
23
24 *Can you suggest a better way?*
25

26
27 *(Additional prompts)*
28

29 *Are there any potential risks that you can identify?*

30 **12. What other illness and injuries might this model work for?**
31
32

33
34
35 **Model 2: Digital Hospitals/Consumer Focused Care**
36

37 Hospitals that make extensive use of new technologies to provide streamlined care, improve
38 patient safety and care quality, and improve overall care cost effectiveness.
39

40
41 SHOW images: Home vs. Hospital (Images 1/2)

42 John (Image 4)
43

44
45 John is an 70-year-old man who has a heart condition that causes dizziness (e.g., irregular
46 heartbeat). As this places him at a high risk of falls, he has been admitted to hospital for monitoring.
47 Beside his bed is a digital matt that detects and alerts the staff if he has had a fall.
48
49

50
51 Repeat questions
52

53
54
55 **Model 3: Hospital in the Home**
56
57
58
59
60

1
2
3 Patient care and consultation which is typically delivered in the hospital settings is delivered
4 to patients in their own home (e.g., intravenous therapy (antibiotics), anticoagulation, wound
5 care, and chemotherapy).
6
7

8
9
10 SHOW images: Home vs. Hospital (Images 1/2)

11 Jenny (Image 5)

12 Jenny is a 35-year-old, single mother of three who developed a breast infection with an abscess
13 following the birth of her baby. She was treated with intravenous antibiotics (on a drip) and a tube
14 was placed into her breast to drain the infected fluid. After 24 hours, she returned home to her
15 children and is provided wound care and support in her home from a visiting nurse.
16
17

18
19
20 Repeat questions
21
22

23 **At end of focus group**

24 **Concluding remarks:** Now that we have come to the end of the workshop, we'd like to ask you:
25
26

27
28 **How important is it for you to be able to choose a model of care?**

29 Prompt: What if you have no option to choose? (only use if needed)
30
31

32
33 **From your perspective, please rate your preference for each model:** (Note: Models X, Y, and Z will
34 be replaced with the relevant models discussed at each workshop).
35
36

| | | | | |
|---------|---------|------------------|---------|----|
| 37 | 38 | 39 | 40 | 41 |
| Model X | No pref | Neither suitable | Model Y | |
| Model Y | No pref | Neither suitable | Model Z | |
| Model Z | No pref | Neither suitable | Model X | |
| 42 | 43 | 44 | 45 | 46 |

47 Is there anything else you would like to communicate to us about the new hospital?
48
49

50 **Concluding remarks:**

51 We will be looking at your data to find commonalties between consumers.
52

53 We are conducting exploratory research to gather information only, and all models may not be
54 implemented. Thank you for your time.
55
56

57
58 **Note: All images were publicly available and downloaded from Google.**
59
60

Provider: General Welcome

“Thank you for coming along today and participating in our study. My name is XXX.

Acknowledgement of Country

Bathrooms, fire exits.

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Individual Group Introduction

1
2
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5 **name here**), and I am from the Australian Institute of Health Innovation at Macquarie University. We
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7
8 My role as moderator will be to guide the discussion today.
9
10

11
12 Please note that there are no right or wrong answers but rather differing points of view. Please feel
13 free to share your point of view even if it differs from what others have said. You don’t need to
14 agree with others’ opinions, but we ask that you listen respectfully as others share their views.
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18 You’ve probably noticed the microphone. We are taping the session because we don’t want to miss
19 any of your comments. People often say very helpful things in these discussions, and we can’t write
20 fast enough to get them all down. However, to make the recording as clear as possible, we ask that
21 only one person speak at a time. And to remind you, no-one is identifiable on the recording.
22
23

24
25 Let’s get started! Before we begin, if you wouldn’t mind writing your name on the (name
26 card/sticker in front of you. We will be on a first name basis today, but we won’t use any names in
27 our reports.”
28
29

30
31
32 (Separate sheet of paper)
33

34 Please rate on the scale below the following:
35

36 **2. How comfortable are you using:**
37
38

39 **A smart phone?**
40

41 Extremely Uncomfortable, Somewhat Uncomfortable, Neutral, Somewhat Comfortable, Extremely Comfortable
42
43

44 **A smart watch?**
45

46 Extremely Uncomfortable, Somewhat Uncomfortable, Neutral, Somewhat Comfortable, Extremely Comfortable
47
48

49 **Computers?**
50

51 Extremely Uncomfortable, Somewhat Uncomfortable, Neutral, Somewhat Comfortable, Extremely Comfortable
52
53

54 **3. What proportion of your patients would be comfortable using:**
55
56

57 **A smart phone?**
58

59 Extremely Uncomfortable, Somewhat Uncomfortable, Neutral, Somewhat Comfortable, Extremely Comfortable
60

1
2
3 **A smart watch?**
4

5 Extremely Uncomfortable, Somewhat Uncomfortable, Neutral, Somewhat Comfortable, Extremely Comfortable
6

7 **Computers?**
8

9 Extremely Uncomfortable, Somewhat Uncomfortable, Neutral, Somewhat Comfortable, Extremely Comfortable
10
11

12 **4. So that we can understand you a bit better, what is your discipline?**

13 **5. Are you mostly:**

14 Office based, facility based, a combination of both?
15
16

17 **6. What main problems do you currently encounter around delivering high quality care?**

18 **7. Can you suggest ways to overcome? (5 minutes)**

19 **8. What are you looking for in a new hospital?**

20 For example: IT/Scheduling/Accessibility
21
22
23

24
25
26
27
28 “Now that we have gotten to know each other a little better we would like you to reflect on a
29 patient or patients who may or may not benefit from different “models of care”. Today, we will talk
30 about three different models of care in our workshop today. These are not the only models of care
31 we are exploring, but we only have two hours, so will be talking about different models with
32 different groups. We are interested in your thoughts about each of these models of care from your
33 perspective and your patients’ perspective. Some of these scenarios describe models you may have
34 already encountered or engaged with. We would like you to think broadly.”
35
36
37

38 **Model 1:**

39 Maria is a 65 year old patient who is ambulant and travels to a facility for routine care 2-3 times per
40 week (e.g., renal dialysis, chemotherapy)
41

42 Please answer the following questions:
43

44 **1. In an ideal world, how would her care be delivered?**

45 *Additional prompt:* how could you best model this?
46
47
48

49 **Model 1: Ambulatory Care and diagnostic hospitals**

50 Non-admitted services, where patient care does not involve an overnight stay and usually
51 involves diagnosis and treatment on the same day.
52
53
54

55 **From your perspective:**
56

57 **2. How would this model help to solve the big problems for you?**
58 **(What are the pros/strengths for you?)**
59
60

- 1
2
3
4 **3. What barriers limit this model for you?**
5
6 **4. What enablers would need to be in place for this to work?**
7
8
9

10
11
12 **From your patients' perspective:**
13

- 14 **5. How would this model help to solve the big problems for your patients?**
15
16 **6. What might be the pros/strengths?**
17
18 **7. What barriers might limit this model for your patients?**
19
20 **8. What enablers would need to be in place for this to work?**
21
22

23
24
25 **General questions:**
26

- 27
28 **9. What proportion of your patients would this model work for?**
29

30
31 Low – Mid – High
32

- 33 **10. Can you think of anything about it that might be impractical?**
34
35
36 **11. Can you think of anything about it that might be unachievable?**
37
38
39 **12. To what extent could this model be applicable to other health conditions? What**
40 **conditions?**
41
42
43 **13. Can you think of any clinicians or patients who might find this model of care difficult to**
44 **access?**
45
46
47
48 **14. Is there anything about the model that concerns you?**
49
50
51
52 **15. What might be the safety issues for your patients?**
53
54
55
56 **16. Do you see any risks to you as the healthcare provider?**
57
58
59
60

1
2
3 (Additional prompts)
4

5 Are there any potential risks that you can identify?

- 6 ○ "Why is that?"
7
8 ○ Can you suggest a better way?
9

10
11
12
13 **Model 2:**

14 You are in a place you usually work at, and the facility has digital technology in place such as
15 intravenous fluid charts, bed sensors to alert staff that a patient needs moving in bed, floor mats
16 that alert staff when patients are out of bed, and interactive monitors for patients and staff about
17 daily schedules.
18
19

20
21 **Model 2: Digital Hospitals/Consumer Focused Care**

22 Hospitals that make extensive use of new technologies to provide streamlined care, improve
23 patient safety and care quality, and improve overall care cost effectiveness.
24
25

26
27
28
29 Repeat questions
30

31
32
33 **Model 3:**

34 Your patient has undergone a procedure or surgery and after treatment in the hospital is discharged
35 home for follow-up care. For example: Jenny is a 35-year-old, single mother of three who developed
36 complicated mastitis with an abscess following the birth of her baby. She was treated with
37 intravenous antibiotics and a drain was placed into the abscess. After 24 hours, she returned home
38 to her children and is provided wound care and support from a nurse.
39
40
41
42

43
44
45 **Model 3: Hospital in the Home**

46 Patient care and consultation which is typically delivered in the hospital settings is delivered
47 to patients in their own home (e.g., intravenous therapy (antibiotics), anticoagulation, wound
48 care, and chemotherapy).
49
50

51
52
53 Repeat questions
54

55
56 **At end of focus group**
57
58
59
60

1
2
3 **Thinking broadly, from your perspective, please rate your preference for each model:** (Note:
4 Models X, Y, and Z will be replaced with the relevant models discussed at each workshop).
5
6
7

| | | | |
|------------|---------|------------------|---------|
| 8 Model X | No pref | Neither suitable | Model Y |
| 9 Model Y | No pref | Neither suitable | Model Z |
| 10 Model Z | No pref | Neither suitable | Model X |

11
12
13
14
15 **Thinking broadly, from your patients' perspective, please rate your preference for each model:**
16 (Note: Models X, Y, and Z will be replaced with the relevant models discussed at each workshop).
17
18

| | | | |
|------------|---------|------------------|---------|
| 19 Model X | No pref | Neither suitable | Model Y |
| 20 Model Y | No pref | Neither suitable | Model Z |
| 21 Model Z | No pref | Neither suitable | Model X |

22
23
24
25
26 **Concluding remarks:**

27 We will be looking at your data to find commonalties between providers.

28 We are conducting exploratory research to gather information only, and all models may not be
29 implemented. Thank you for your time.
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For peer review only

BMJ Open

Innovative models of care for the health facility of the future: a protocol for a mixed-methods study to elicit consumer and provider views

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3 **Innovative models of care for the health facility of the future: a protocol for a mixed-**
4 **methods study to elicit consumer and provider views**
5
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7

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1
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4

5 **ABSTRACT**
6

7 **Introduction:** To address the challenges of rapidly changing healthcare, governments and
8 health services are increasingly emphasising healthcare delivery models that are flexible,
9 person-centred, cost-effective and integrate hospital services more closely with primary
10 healthcare and social services. In addition, such models increasingly embed consumer co-
11 design, integration of services, and leverage digital technologies such as telehealth and
12 sophisticated medical records systems.
13
14

15 **Objectives:** This paper provides a study protocol to describe a method to elicit consumer and
16 healthcare provider needs and expectations for the development of innovative care models.
17
18

19 **Methods and analysis:** A literature review identified six key models of care, supported by a
20 common theme of consumer focused care, along with the international evidence supporting
21 the efficacy of these models. A mixed-methods study of the needs and expectations of
22 consumer members and health providers who reside or work in the area of a new hospital
23 catchment will be undertaken. They will complete a community- and provider-specific, short
24 demographic questionnaire (delivered during the recruitment process) and be assigned to
25 facilitator-coordinated, online workshops comprising small focus groups. Follow-up
26 interviews will be offered. Culturally and linguistically diverse members and Aboriginal and
27 Torres Strait Islander Elders and their communities will also be consulted. Data will be
28 analysed thematically (qualitative) and statistically (quantitative), and findings synthesised
29 using a triangulated approach.
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50 **Ethics and dissemination:** The results will be actively disseminated through peer-reviewed
51 journals, conference presentations and in a report to stakeholders. This study was reviewed
52 and approved by the relevant Ethics Committee in New South Wales, Australia.
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Strengths and limitations of this study

- The study will be the first of its kind to identify the key evidence-based, innovative models of health care, considering the benefits and implementation considerations for each model, as perceived by consumers and healthcare providers.
- The study design is developed in collaboration with the Local Health District where the health facility will be located.
- A key strength of the study is the use of mixed-methods and the triangulation of data from multiple sources.
- A key limitation of the study is that the structure of workshops focused on specific scenarios which may not be generalisable.

Peer review only

BACKGROUND

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Around the world, the delivery of quality hospital care is transforming in response to the availability of new and enhanced technologies and increasing demand for care.[1] Challenges to extant healthcare systems include an increase in the proportion of older adults in the population[2-4] that will redirect the focus of health towards long-term and chronic care.[3] Increased demand on the healthcare system comes from multiple sources, including higher prevalence of chronic diseases such as obesity, kidney failure[5] and cognitive decline.[3] The shift to patient-centred healthcare models[3] will also have resource implications while aiming for improvements in patient and staff satisfaction and quality of care.[6] To address the growing challenges globally, health services and governments are experimenting with more cost-effective care alternatives often delivered outside hospitals walls,[7] prioritising greater consumer engagement[8, 9] and investing in digitised care services.[10] Digital services have the potential to support more personalised care, integrated with existing models, and delivered remotely (e.g., telemedicine). Additionally, advanced technologies such as robotics, artificial intelligence (AI) and big data analytics may provide more seamless and efficient care.[4]

In 2018, Braithwaite and colleagues identified key trends shaping the health systems of the future: global demographic dynamics, work in creating sustainable health systems, evolving technologies such as genomics and AI, and new models of care. New models of care are emerging to meet new circumstances. For example, the COVID-19 global health pandemic in 2020 acted as a catalyst or trigger for change (e.g., rapid adoption of telehealth) that have been called for previously by those who suffer chronic conditions[11]. E-health, telehealth and virtual care models allowed patients to remain socially distant rather than having physical contact with the community and health services, simultaneously reducing the risk of the virus

1
2
3 spreading among patients and healthcare providers.[12] These innovative models take a novel
4
5 approach to provide high quality and safe care in and out of hospital settings.[13]
6

7
8 In Australia, the New South Wales (NSW) government announced funding for a new health
9
10 facility at Rouse Hill. The Western Sydney Local Health District (LHD) is planning the new
11
12 health facility and is seeking innovative ways of delivering care that are more accessible,
13
14 efficient, and effective for healthcare providers, funders and the population. In consultation
15
16 with our research team, it was believed that there was an opportunity to create a different
17
18 kind of facility – a modern and digitally-enabled capability. Seeking views from consumers
19
20 and providers will ensure that the way the facility provides services is deeply connected to
21
22 community needs. These include physical, health and psychosocial needs; rapid access to
23
24 care for consumers; and adequate resources and infrastructure for providers.
25
26

27
28 The goal of this project is to provide a research-based approach to develop an innovative
29
30 health facility and health service; one that delivers a high-quality care solution for the
31
32 community rather than simply establishing more hospital beds, departments, units, and wards.
33
34 Realising this vision will have far-reaching implications for the design and delivery of health
35
36 services in the future. But to develop any new model for integrating community and hospital
37
38 acute care and support services, we need to turn to the community and health care providers
39
40 to understand their expectations and the healthcare needs that may be met by innovative
41
42 models of care. While we are gaining data to inform the construction and design of a
43
44 “hospital”, we use the term “health facility” to reflect blue sky thinking and avoid being
45
46 constrained by language that implies a large conglomeration of buildings and beds.
47
48
49

50 51 **Identifying evidence-based models of care**

52
53 Before eliciting consumers’ and providers’ needs and expectations, we needed to assess the
54
55 evidence to identify candidate models of care. We therefore undertook a grey literature
56
57
58
59
60

1
2
3 review to identify potential models of care, followed by an academic review of the
4
5 international evidence supporting the efficacy of these models.
6

7
8 The grey literature review involved an advanced search using Google and included websites
9
10 such as World Health Organization and Organization for Economic Co-operation and
11
12 Development (OECD) using search terms such as “future hospital”. Two reviewers
13
14 completed a title and abstract screen and three reviewed the full-text documents. Eighty-five
15
16 documents were included, comprising 55 reports, 17 online newspaper articles, 10 articles or
17
18 bulletins from organisation websites, two online articles and an opinion piece. From this
19
20 review, six key themes were deductively determined that were used to group innovative
21
22 models of health care. Consumer focused care, where during planning, delivery, and
23
24 evaluation, consumers, carers, and families are placed at the centre of care was a common
25
26 theme that underpinned the other six models. For example, individualised self-management
27
28 support in early chronic kidney disease transition of care plan from hospital to home
29
30 involving a multidisciplinary team.[5] As such, only six models will be presented, each
31
32 incorporating consumer-focused care (see Table 1). Benefits, drawbacks, and past
33
34 implementation of the models were also identified.
35
36
37
38
39

40 The Preferred reporting Items for Systematic Reviews (PRISMA) was used to guide the
41
42 academic literature review to extract the evidence-based support for the models of care
43
44 identified in the grey literature.[14] Search strings chosen from prevalence data of the focal
45
46 community in the context of the models were applied to three academics databases
47
48 (PsychINFO, Ovid MEDLINE, and CINAHL). For example, “virtual hospital” AND “cardiac
49
50 arrest”. Sixteen reviewers (eight pairs) completed a title and abstract screen and subsequently
51
52 reviewed the full-text documents. Given the large numbers of papers resulting from the
53
54 searches (i.e., over 200,000 results), the researchers confined the searches to review papers
55
56
57
58
59
60

only. Sixty-one peer-reviewed, English language review studies with human subjects, dated 2016-2021, met the criteria for inclusion. This review will be reported separately.

Table 1: Six evidence-based innovative models of care

| Model | Description | Example |
|--|--|--|
| Ambulatory care and diagnostic hospitals | Non-admitted services, where patient care does not involve an overnight stay and usually involves diagnosis and treatment on the same day. | Same day joint arthroplasty[15] |
| Digital hospitals | Hospitals that make extensive use of new technologies to provide streamlined care, improve patient safety and care quality, and improve overall care cost effectiveness. | Machine learning algorithm for prediction of post-total hip arthroplasty complications[16] |
| Hospital in the home | Some or all of patient care and consultation which is typically delivered in the hospital settings is delivered to patients in their own home. | Early discharge hospital at home care for chronic obstructive airways disease managed by a community service[17] |

| | | | |
|--|---|--|--|
| 1 2 3 4 5 6 7 8 9 10 11 12 | Integrated care | Multidimensional needs of the patient are delivered in a coordinated manner by an interdisciplinary team or network of healthcare professionals | Orthogeriatric fracture service[18] |
| 13 14 15 16 17 18 19 | Virtual care | Patient care and consultation delivered through telephone or video communication. | Telehealth management in patients with heart failure[19] |
| 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 | Specialist hospitals and population specific care units | Specialist hospitals provide selective care services for targeted patient groups. Population-specific care units are pathways within general hospitals dedicated to treatment of specific conditions | Comprehensive cancer centres[20] |

METHODS

Study Aim

The study aims to elicit health consumers' and healthcare providers' needs drawn from the local community and expectations of a new health facility, and how these needs may be met through the delivery of innovative models of care.

Study Design

We will conduct a mixed-methods study of consumer and provider needs and expectations in relation to innovative models of care delivery for a new health facility. As illustrated in Figure 1, the design comprises collections of consumer and provider data via a short expression of interest (EOI) questionnaire comprising demographic information (as part of the recruitment process), facilitator-coordinated workshops, and supplementary interviews.

1
2
3 Data collection will occur in a sequential manner, where results from the EOI questionnaire
4 will inform workshop design. In addition, interview design and recruitment will be informed
5 by the learnings from the workshops. Together, these methods of data collection will
6 facilitate a varied and dynamic exploration of community and provider needs and
7 expectations for innovative models of healthcare (see Figure 1).
8
9

10
11
12
13
14
15 FIGURE 1 HERE
16

17 18 19 **Study Setting**

20
21 The project will be conducted online and in person. Specifically, the recruitment
22 demographic questionnaire will be hosted and completed online. The face-to-face workshops
23 will be held at public metropolitan hospitals and community centres in New South Wales
24 (NSW), Australia. Participants will be provided with options to attend workshops during, or
25 outside of working hours. For face-to-face workshops, we will follow all current COVID-19
26 guidelines that are current at the time of data collection (e.g., social distancing, wearing of
27 masks). In addition, the meeting format will be adjustable to being video-enabled to respond
28 to any face-to-face restrictions in place associated with the COVID-19 pandemic.
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Supplementary interviews with interested participants identified in the workshops will be
conducted via an online platform such as Zoom or over the telephone for participant
convenience.

The catchment area where a new health facility is currently being planned comprises a land
area of almost 500 square kilometres and a population estimated in 2019 to be 300,000
residents estimated in 2019. Between the 2006 and 2016 population censuses, the catchment
experienced a population growth rate of 29% and this growth rate was predicted to rise when
assessed using the 2021 census data.[21, 22] The 2016 Census reported that adults aged 35-
44 years and school aged children aged 5-9 years were the largest age groups, 37% of the

1
2
3 population was born outside Australia and 0.9% identified as Aboriginal and/or Torres Strait
4
5 Islander.[23] As such, the workshops will include participants who self-identify with these
6
7 diverse populations.
8

9 10 **Procedures**

11 12 *Recruitment:*

13
14 Consumer members will include residents and patient representatives within the new health
15
16 facility catchment (49 suburbs) as defined by the LHD's planning team on 16th July 2021.
17
18 The participants will be recruited through the LHD's network and connections via email,
19
20 postings in local newspapers and through Facebook invitations. For providers, emails will be
21
22 sent by the LHD to potential participating providers such as healthcare professionals and
23
24 support staff via their established connections. These connections include, but are not limited
25
26 to, consumer networks, LHD community newsletters, migrant resources centres, the Primary
27
28 Health Network, and the Youth Advisory Council. To reach potential consumer participants
29
30 who may not have access to email or the internet, the invitation will also be posted in local
31
32 newspapers and advertised as flyers at LHD hospitals. For providers, emails will be
33
34 distributed via the LHD's Broadcast system, the Primary Health Network, and from the Chief
35
36 Executive Officer.
37
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39
40

41
42 As 37% of the consumers are from culturally and linguistically diverse (CALD) backgrounds,
43
44 non-English speaking participants will invited to participate in the study, aided by bi-lingual
45
46 interpreters from the LHD. The research materials comprising the invitation, EOI
47
48 questionnaire, workshop and interview scripts will be translated into the five most prevalent
49
50 non-English languages in the community - Hindi, Punjabi, Mandarin, Korean and Arabic.
51
52 For those accessing the research invitation electronically (via email or Facebook
53
54 advertisements), the invitation will include a link to an online EOI questionnaire using
55
56 REDCap electronic data capture tools.[24] The questionnaire will collect demographic data
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2
3 including age, gender, location, ethnicity and contact information. The providers will be
4
5 asked to indicate their role and specialty, and the consumers will be asked for pertinent health
6
7 information such as whether they have a chronic health condition (Supplementary File 1).
8

9
10 Responses to the questionnaire will be taken as implied consent for collection of the
11
12 demographic information.
13

14
15 The provided contact information will be used to send the participant details about the
16
17 location and time of the workshops (either via phone or email – as selected by the
18
19 participant). For all participants who attend a workshop, we will ask for written informed
20
21 consent prior to commencement of the workshop. Participants will be sent the Participant
22
23 Information and Consent Form (PICF) prior to the workshop so that they can come prepared
24
25 with questions for the research team. Once participants sign the consent form, the research
26
27 staff will photocopy the PICF and provide a copy to each consenting participant. In the event
28
29 of delivering the workshops online, a link will be sent to the participants for access to the
30
31 PICF presented using REDCap tools.[24]
32
33

34
35 After each workshop, those who express interest in an optional follow-up interview will be
36
37 contacted to confirm the findings. The PICF for the workshop informs participants that they
38
39 may be contacted after the workshop to be invited to a follow-up interview. Figure 2 provides
40
41 a map of the recruitment process for consumers and providers.
42
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44

45
46 INSERT FIGURE 2 HERE
47

48 49 50 *Workshops:*

51
52 There will be a total of 12 workshops across two streams of six: one stream for health
53
54 providers and another for consumer members. Two to four additional workshops will be held
55
56 for culturally and linguistically diverse (CALD) consumers and Aboriginal and Torres Strait
57
58 Islander consumers. Each workshop has been designed to elicit responses to the seven
59
60

1
2
3 models of care. To do this, we will divide participants into smaller parallel groups that each
4
5 will examine three models of care in detail, rather than present all seven models and induce
6
7 fatigue. The models have been counterbalanced across the eight workshops, to ensure that the
8
9 presentation and order of each model is balanced. There will be up to eight facilitators and
10
11 scribes at each workshop (a facilitator and scribe per group). Where needed, some groups
12
13 within the workshops will be supported by bi-lingual interpreters. The number of participants
14
15 in each workshop group has been designed based on our collective research experience as an
16
17 appropriate number for elicitation of the data we are seeking and is consistent with the
18
19 number of participants in focus groups where people feel relatively comfortable speaking to
20
21 others.[25]
22
23
24
25

26 The workshops will start with a short explanation by a research team lead, explaining that the
27
28 purpose of the workshop is to capture the needs of the consumers or providers and their
29
30 perspectives on innovative models of care delivery. They will then allocate the researchers
31
32 and participants to the groups. Within each group, the researchers will take notes, facilitate
33
34 discussion, and ask probing questions. Audio-recording devices and researcher notes will be
35
36 used to capture the content of discussions.
37
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39

40 After a brief icebreaker activity, the researchers will then ask questions to probe the
41
42 participants' digital literacy (e.g., "How comfortable are you using a
43
44 smartphone/smartwatch/computer?"). These questions are included as two of the models of
45
46 care presented (virtual care and digital hospitals) involve engagement with technology and
47
48 understanding the level of participant digital literacy will be important for interpreting the
49
50 findings. Workshop scenarios and questions have been designed around consumer focused
51
52 care and the six innovative models of care identified in the literature review in collaboration
53
54 with a clinical subject matter expert and co-author (KM) (Table 1). The priority conditions
55
56 used in the scenarios have been identified from the demographic data provided by the LHD
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60

as the most common burdens of disease in the new health facility catchment and are listed below:

1. Cardiac arrest, chest pain, acute myocardial infarction, congestive heart failure.
2. Fractures, knee replacement, hip replacement, joint replacement, abnormal gait, bone disease, osteoporosis.
3. Abdominal pain, pelvic pain, gastrointestinal pain.
4. Pneumonia, asthma, chronic obstructive pulmonary disease.
5. Postnatal depression.
6. Dialysis (haemodialysis etc.), kidney disease, end-stage kidney disease.

Scenarios will be presented to participants for each model of care (see Table 2). Three of the six models along with the scenarios will be presented in each workshop, in counterbalanced order to minimise biases (e.g., 1 2 3, 4 5 6; 2 3 1, 5 6 4 etc.).

Table 2: Models of care and scenarios

| Model | Scenario |
|--|--|
| Ambulatory care and diagnostic hospitals | “Maria is a 45 year old woman who is able to walk unaided and travels to a centre for treatment 2-3 times per week (e.g., renal dialysis in a shopping centre, or chemotherapy).” |
| Digital Hospital | “John is a 70-year-old man who has a heart condition that causes dizziness (e.g., irregular heartbeat). As this places him at a high risk of falls, he has been admitted to hospital for monitoring. Beside his bed is a digital matt that detects and alerts the staff if he has had a fall.” |

| | |
|--|--|
| Hospital in the Home | <p>“Jenny is a 35-year-old, single mother of three who developed a breast infection with an abscess following the birth of her baby. She was treated with intravenous antibiotics (on a drip) and a tube was placed into her breast to drain the infected fluid. After 24 hours, she returned home to her children and is provided wound care and support in her home from a visiting nurse.”</p> |
| Integrated Care | <p>“Steve is a 50-year-old man with Type II diabetes who is obese and smokes a packet of cigarettes a day. He is having trouble walking so visits his local Emergency Department where he sees a General Practitioner (GP), who has a practice in an office next to the Emergency Department. The GP diagnoses a foot ulcer and identifies that Steve requires a full review of his care. Steve will be looked after in hospital by a multidisciplinary team of healthcare professionals (e.g., endocrinologist, ulcer team, nutritionist) using an electronic medical record system for communication.”</p> |
| Virtual Care | <p>“Ivy is a 40-year-old woman who developed chest pain along with an irregular heartbeat following a dental procedure. She visited the local Emergency Department where no abnormality was found and was discharged. As she was still concerned about a sudden heart attack, she was fitted with a digital heart monitor with chest leads that talked to an application on her smart watch. Ivy was shown how to indicate an unusual heart event using her watch. Anytime Ivy tagged an event, the information was sent to a health care professional at the moment it happened.”</p> |
| Specialist hospitals and population specific care units: | <p>“Harrold is an 82-year-old man with mild dementia, who develops a urinary tract infection. He has been referred to a specialist dementia unit in a geriatric care</p> |

| | |
|--|---|
| | ward at the local hospital. Harrold and his family are reassured that he will receive the highest level of evidence-based care for dementia from a specialised team of health professionals.” |
|--|---|

Following the presentation of each scenario, we will ask general questions about the model’s strengths and weaknesses, usability and safety for themselves and people in their care. To understand patient needs, questions will be asked about how each model would work, with participants thinking about their own care, as well as the safety and risks, For providers, we will ask them about barriers and enablers from their own and their patients’ perspectives, for each model of care, and their anticipated needs when providing care in the new hospital. At the end of each workshop, the participants will be asked to indicate their preferred model of care via a poll. Example facilitator scripts for the consumer and provider groups are provided in Supplementary File 2.

Each workshop will be planned for a two-hour duration with a five-minute break after the first hour. Each participant will be invited to participate in one workshop but will be offered a series of dates to choose from. Participants will not be paid for their participation but those who attend in person will be provided with refreshments.

Participants:

The consumer workshops will include residents of the new health facility catchment area. Provider workshops will comprise health providers that provide care or are likely to provide care and stakeholders who make decisions about the provision of care such as LHD executives and administrators, for the catchment population. In the first wave of data collection, we will recruit 15-30 participants for each of the workshops (this estimation takes into consideration participant loss to follow-up). Six workshops will result in approximately 120 health providers and 120 consumer member participants (240 participants in total).

1
2
3 However, the number of participants invited to each workshop may be influenced by
4
5 government-mandated COVID-19 restrictions at the time of data collection. In a second
6
7 wave, up to 40, non-English speaking, CALD participants will be recruited with the support
8
9 of the LHD's Multicultural Health Team.

10
11
12 In parallel, there will be a third, but separate but aligned, a wave of data collection, to include
13
14 consultation with Aboriginal and Torres Strait Islander Elders. Consultation with these
15
16 community members will involve a formal process of consultation with Aboriginal Liaison
17
18 Officers in the LHD to develop an Aboriginal Health Impact Statement and associated ethics
19
20 proposal. This consultation will be conducted in person to ensure this is delivered in a
21
22 culturally respectful manner as directed by the Aboriginal Liaison Officers in the LHD.
23
24

25
26 *Inclusion criteria:*

27
28 All participants will be 18 or older and will either have English language competence
29
30 (written and spoken) or interpreter-assisted non-English language (written and spoken),
31
32 sufficient to provide verbal informed consent. The study is open to all community members,
33
34 but we will also specifically seek to recruit participants representative of the six specific
35
36 health conditions/services by targeting the recruitment of condition networks associated with
37
38 these health conditions.
39
40

41
42 Those who currently provide care to those residing in the catchment for the new health
43
44 facility, or who make decisions about the provision of care for those residing in the
45
46 catchment, are eligible to participate. This will include general practitioners and other health
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48 providers such as community nurses and services, allied healthcare professionals, aged care
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50 facilities, community care organisations, the primary health network, community care
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52 providers, the ambulance service, and other identified stakeholders. The inclusion criteria are
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54 broad enough to capture any health provider in the LHD or new health facility catchment, but
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3 we will also target participants whose work relates to patients in the six specific listed
4 conditions or services.
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8 *Interviews:*
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10 Supplementary to the workshop, we will invite those participants who are key stakeholders
11 but were unable to participate in the workshop, or those who indicate interest during the
12 workshops to participate in semi-structured interviews. The purpose of these interviews is to
13 expand on areas of interest and verify the findings from the workshop data. The focus of the
14 interviews will be driven by those who volunteer. For example, if a consumer has experience
15 with a model (e.g., hospital in the home for renal dialysis) one-on-one interviews will allow
16 us to probe further into the specific barriers and enablers of the model while maintaining
17 participant privacy. Interviews will be audio-recorded and are expected to last approximately
18 45 minutes. The interview script commences with “For Model X, can you please elaborate on
19 what you think is meant by the strengths/barriers/enablers/safety issues...”, and is
20 deliberately open-ended to allow the participant to freely express their views. The interview
21 script is provided in Supplementary File 3.
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38 *Data collection:*
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40 Participants’ demographic information (e.g., age, gender) and health-relevant data will be
41 collected through the EOI questionnaire. Consumers will be asked about their experiences
42 using acute, chronic and outpatient services, their ethnicity, language spoken at home, and
43 residential postcode. Consumers will be allocated a workshop group based on their
44 experiences with healthcare services. Where possible, consumers with common experiences
45 (e.g., chronic conditions) will be allocated to the same group. Additionally, CALD
46 participants will be allocated to a group and presented with models which are perceived to be
47 of increased relevance for this population (e.g. virtual care, digital hospital). Aboriginal and
48 Torres Strait Islander peoples will be presented with all six models. Providers will be asked to
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3 indicate their role, clinical specialty, whether they are employed by the LHD, and work
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5 postcode. Where possible, providers with similar roles (e.g., nurses, general practitioners)
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7 will be allocated to the same group. In the case of workshops being delivered online,
8
9 participants will be sent their information and consent forms to sign before attending.

10
11
12 The workshops and supplementary interviews will be run by a team of experienced health
13
14 services researchers and will explore the experiences and views of participants concerning
15
16 innovative models of care. Responses will be audio recorded. Key themes and different
17
18 points of view will be identified and recorded for qualitative analysis. Each group within a
19
20 workshop will provide their written notes and observations to the workshop facilitator who
21
22 will collate the data. The data will then be aggregated across all the workshops for analysis,
23
24 separately for consumers and providers.
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26

27
28 *Planned data analyses:*
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30
31 The quantitative data that includes demographic and health-related data from the EOI
32
33 questionnaire will be analysed using SPSS V.22.0[26] and weighted against the Australian
34
35 Bureau of Statistics data for the catchment, to assess the representativeness of the sample.
36

37
38 Consumer and provider workshop and interview data for each model will be merged into two
39
40 aggregated, narrative summaries, one for consumers and one for providers. All participants
41
42 will be de-identified, and any identifiable features of the experiences or personal details
43
44 shared in the group will be changed (e.g., if a unique service or practitioner is mentioned; or
45
46 features of the disease that identifies the patient). Data collected in the workshops and
47
48 interviews will only be used for this research project. Aggregated data sets will be analysed
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50 separately for consumers and providers.
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53
54 Qualitative data (i.e., facilitator notes and key elements of the workshop recordings) will be
55
56 thematically analysed independently using an open coding process by two members of the
57
58 research team, who will work together to resolve discrepancies. Themes will be extracted that
59
60

1
2
3 characterise the expectations and needs of the consumers and health providers in terms of the
4 new health facility catchment. Any variation in response, or conflicting views, will be
5 reported. Data collection and analysis will occur iteratively; questions used for workshops
6 and guides for observations will be refined and expanded as new findings emerge.
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10 11 12 *Synthesising and integrating results:*

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14 Data will be synthesised using a triangulated approach, whereby literature review findings,
15 community characteristics, and findings from the focus groups and interviews will be
16 integrated to arrive at a set of evidence-based, community-and-provider-supported strategies
17 for delivering care to those in the healthcare catchment. Figure 3 illustrates the data
18 collection, analysis and synthesis strategy for the project. Triangulated findings will be used
19 to inform planning options and the feasibility of implementation of the options for the
20 development of the new health facility.
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33 INSERT FIGURE 3 HERE
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36 37 *Patient and Public Involvement*

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39 No patient was involved. No patient data is reported in this paper.
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44 **Discussion**

45
46 This study seeks to examine consumer and provider needs and expectations for the
47 development of an innovative care model for a health facility, specifically about six evidence-
48 based models of care, and the consumer-focused care that underpins them, and the health
49 conditions that form major burdens of disease found in a diverse catchment area in
50 metropolitan NSW, Australia. The study investigates community perspectives on each model
51 of care in detail, each presented within a purpose-designed, contextualised health scenario.
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60 Healthcare delivery is changing due to the introduction of new and enhanced technologies,

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3 the increasing social and economic burdens of ageing populations, and the prevalence of
4 chronic disease, amongst other factors. Therefore, it is important that we use these findings to
5 guide the development of new healthcare facilities to ensure that both consumer and provider
6 needs are met. These findings may be used to inform policies on how to design new
7 healthcare facilities in consideration of consumer and provider needs.
8
9

10
11 The limitations of this study may include the following factors: due to the scope of the
12 project, we cannot include an exhaustive list of health conditions. We have used a data-driven
13 approach to stratify the main diseases reported in the new catchment as defined by the LHD.
14 In addition, this study is limited to the local health district under investigation and the specific
15 needs of the consumer and providers in that district and the catchment area could change as
16 the LHD redefines its boundaries. Finally, low rates of participant enrolment is a potential
17 limitation. To address this, we have ensured that our recruitment strategy is designed so that
18 the study is advertised widely across several different mediums, and locations to increase the
19 likelihood of snowballing. In the case of low recruitment numbers, we will readvertise the
20 study.
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37 **Expected outcomes**

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39 Adopting an evidence-based approach, we will elicit opinions from consumers and providers
40 within the catchment of a new healthcare facility about the barriers and enablers associated
41 with consumer-focused care and six innovative care models. Findings will be available to
42 provide guidance in designing care models for future health facility development, in Australia
43 and globally. Ultimately, the outcomes will help to ease the burdens that many health
44 facilities face such as the increasing social and economic burdens of ageing populations, and
45 the prevalence of chronic disease.
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3 **Ethics and Dissemination:** There are no known health or safety risks associated with
4 participation in any aspect of the described study. Ethics approval for conducting the study
5 was obtained from the Local Health District Human Research Ethics Committee
6 (2021/PID01000). The results will be actively disseminated through peer-reviewed journals,
7 conference presentations and reports to stakeholders.
8
9

10 **Contributors:** GL, JB, RCW and PH conceptualised the study. AC, NR, CP, ZM, RCW, PH,
11 KM, RM, YZ, JL, FR, GA and JB contributed to the design of the study. AC drafted the
12 initial manuscript, assisted by NR, CP, ZM, RCW, PH and JB. All authors contributed to the
13 refinement of the paper and approved the final manuscript.
14

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18 District's Multicultural Unit for assisting with the planning for CALD recruitment and
19 interpretation services.
20
21

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23

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25 independent consultancy to support a larger project developing and implementing a new
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27 the design, conduct or reporting of this study.
28
29

30 **Competing interests:** Nil to declare
31

32 **Disclaimer:** The views expressed herein are the personal views of the authors and not
33 necessarily those of Western Sydney Local Health District, Health Infrastructure, or the NSW
34 Ministry of Health, and are not to be understood or quoted as being made on behalf of or
35 reflecting the positions of those organisations.
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3 **Patient consent for publication:** Participants will provide written consent in accordance
4 with the HREC-approved Patient Information and Consent Form, which detailed how the
5 findings would be disseminated. No patient data is reported in this paper.
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10 **Provenance and peer review:** Not previously submitted or under consideration elsewhere.
11

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56 Figure 1: Data collection points over time for consumer and provider groups.
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58 Figure 2: Recruitment process map
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Figure 3: Recruitment process and data plan for the project

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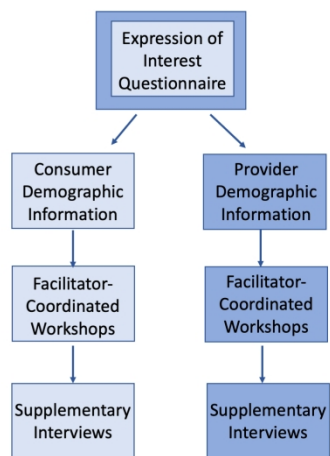
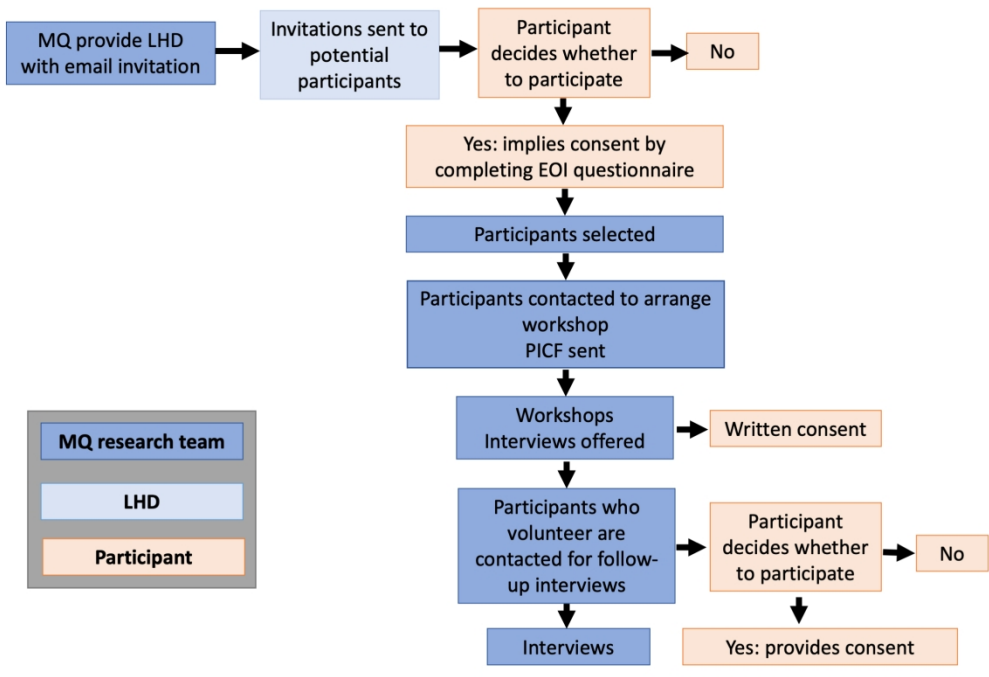


Figure 1: Data collection points over time for consumer and provider groups.

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Recruitment process map
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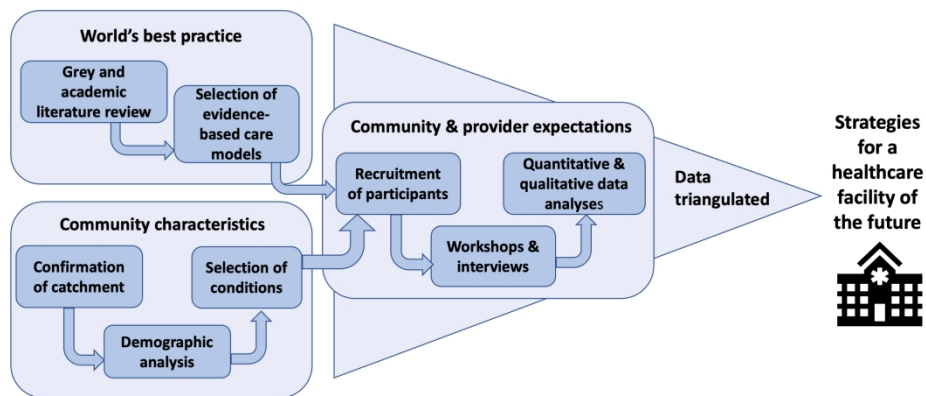


Figure 3: Recruitment process and data plan for the project

338x190mm (225 x 225 DPI)

Thank you for your interest in participating in our study. We want to hear from you and discuss ways that healthcare services could be delivered in and around the new Rouse Hill Hospital. The district includes **Annangrove, Acacia Gardens, Angus, Baulkham Hills, Beaumont Hills, Bella Vista, Box Hill, Carlingford, Castle Hill, Cattai, Colebee, Dural, Gables, Glenhaven, Glenorie, Glenwood, Grantham Farm, Kellyville, Kellyville Ridge, Kenthurst, Leets Vale, Lower Portland, Maraylya, Maroota, Marsden Park, Melonba, Middle Dural, Nelson, Nirimba Fields, North Kellyville, North Rocks, Norwest, Parklea, Quakers Hill, Richards, Riverstone, Rouse Hill, Sackville North, Schofields, Shanes Park, South Maroota, Stanhope Gardens, Tallawong, The Ponds, West Pennant Hills, Winston Hills, Wisemans Ferry, and Vineyard**. We will be holding a series of two-hour workshops in the local community with patients, consumers, community members and health care providers. To express interest in attending a workshop, please complete this short questionnaire about yourself. If you are unsure whether you would like to participate, you may wish to attend one of our information sessions first before you decide.

The research team will contact you to provide information about the workshop location and time. We will include a representative sample of the community and health care providers (e.g., we want people of different ages, background, professions, and healthcare needs), but we may not be able to include all of the people that apply. You will be informed either way if you have been invited to participate in the workshop or the other ways you can be involved in this important study.

Questionnaire:

Please tick the boxes for all of the answers that apply to you within each question.

1. Are you interested in talking to us about how services will be delivered in and around the new Rouse Hill Hospital
 - Yes
 - Unsure, I would like more information. Please send me the details of the information sessions.
 - No I am not interested

2. Are you one of the following?:
 - I am a patient/ health consumer/ community member in the Western Sydney community
 - I am a carer/consumer representative in the Western Sydney community
 - I am a health provider in the Western Sydney community

[If selected "I am a health provider" to Q2]

What is your role? (Please tick all that apply)

- Administration/ Clerical
- Allied health professional/Allied health assistant
- Nursing (Registered nurse/Enrolled nurse/Assistant in nursing)
- Midwifery
- Medical (Consultant, Career Medical Officer, Registrar/JMO)
- General practitioner
- Community Pharmacist

Expression of interest questionnaire

- 1 Property services/ Maintenance
 2 Ancillary services: Catering, cleaning
 3 Porter
 4 Management
 5 Team leader
 6 Nursing Unit Manager
 7 Head of Department
 8 Director
 9 Executive staff
 10
 11 Other (please specify)
 12
 13
 14
 15

16
 17 Postcode where you work:
 18
 19

20
 21 Are you employed by Western Sydney Local Health District (WSLHD)?
 22

- 23 Yes
 24 No
 25 I would rather not say
 26
 27
 28

29 Do you work in any specific clinical areas delivering services for people with the following
 30 conditions (please tick all that apply):
 31

- 32 Heart conditions
 33 Bone injuries and conditions
 34 Abdominal conditions
 35 Lung conditions
 36 Dialysis or kidney disease
 37 Postnatal depression
 38 Other illnesses
 39
 40
 41
 42

43 [if selected "I am a health consumer" to Q2]
 44

- 45
 46 3. As community members, your views on healthcare are valuable. We are interested in
 47 your views on the way healthcare is delivered, whether you are affected by a specific
 48 medical condition, or not. We have included a list of some conditions that may affect
 49 you, however, we are interested in your perspectives even if none of the conditions
 50 apply to you. Do any of these conditions or access to services outlined below personally
 51 affect you (please tick all that apply):
 52
 53

- 54 Emergency Care: An injury or illness that required you to visit the Emergency
 55 Department at hospital (e.g., heart attack or bone fracture)
 56
 57

58 Please select all that apply:

- 59 Heart conditions (e.g. cardiac arrest, chest pain, heart attack)
 60 Bone injuries and conditions (e.g. fractures, knee and hip replacement)

Expression of interest questionnaire

- Abdominal conditions (e.g. pelvic pain, abdominal pain, gastrointestinal pain)
- Lung conditions (e.g. pneumonia)
- Postnatal depression
- Other illnesses or experiences where you went to Emergency Care

- Chronic Care (non-emergency care): where you have a condition that lasts one year or more and requires ongoing medical attention or limits activities of daily living or both (e.g., renal disease or asthma).

Please select all that apply:

- Heart conditions (e.g. congestive heart failure)
- Dialysis or kidney disease (e.g. haemodialysis)
- Bone conditions (e.g. osteoporosis, abnormal gait etc.)
- Lung conditions (e.g. chronic obstructive pulmonary disease, asthma)
- Other illnesses or experiences (e.g., chronic post-natal depression)
- I am not affected by any chronic conditions

- Outpatient Clinics

Please select all that apply:

- Fracture
- Cardiac
- Diabetes
- Renal
- Other

[if selected "I am a carer" to Q2]

Are you a carer for someone who is affected by any of these conditions or access to services outlined below (please tick all that apply)?

- Emergency Care: An injury or illness that required the person you care for to visit the Emergency Department at hospital (e.g., heart attack or bone fracture)

Please select all that apply:

- Heart conditions (e.g. cardiac arrest, chest pain, heart attack)
- Bone injuries and conditions (e.g. fractures, knee and hip replacement)
- Abdominal conditions (e.g. pelvic pain, abdominal pain, gastrointestinal pain)
- Lung conditions (e.g. pneumonia)
- Postnatal depression
- Other illnesses or experiences where you went to Emergency Care

Expression of interest questionnaire

- Chronic Care (non-emergency care): where the person you care for has a condition that lasts one year or more and requires ongoing medical attention or limits activities of daily living or both (e.g., renal disease or asthma).

Please select all that apply:

- Heart conditions (e.g. congestive heart failure)
 Dialysis or kidney disease (e.g. haemodialysis)
 Bone conditions (e.g. osteoporosis, abnormal gait etc.)
 Lung conditions (e.g. chronic obstructive pulmonary disease, asthma)
 Other illnesses or experiences
 The person I care for is not affected by any chronic conditions

4. What is your age?

- Under 30y
 31-45y
 46-60y
 61y+
 Prefer not to answer

5. Gender: How do you identify?

- Male
 Female
 Other
 Prefer not to answer

6. Postcode of where you live: (_____)

7. How would you rate your English language skills?

- Excellent
 Good
 Average
 Not good

8. Do you speak a language other than English at home?

- Yes: Please select which one
- Punjabi
 - Hindi
 - Mandarin
 - Korean
 - Arabic
 - Cantonese
 - Dari
 - Greek
 - Italian
 - Maltese
 - Persian

Expression of interest questionnaire

- 1 Tamil
2 Tongan
3 Urdu
4 Other – please specify (_____)
5
6 No
7

8 9. With which ethnic group do you identify? (answer all that apply)

- 9 Australian
10 Aboriginal or Torres Strait Islander
11 New Zealander
12 Asian
13 Indian
14 Middle Eastern
15 European
16 North American
17 South American
18 African
19 Other, please specify: (_____)

20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60

10. Are you happy to be contacted to attend a group discussion/workshop?

- Yes
 No

[If no to Q10, then end survey]

11. What is your preferred contact method?

- Phone call
 Email

12. The five main non-English languages spoken in the Rouse Hill district are Punjabi, Hindi, Mandarin, Korean and Arabic so we will offer workshops in these languages. If you would prefer to engage with a person who speaks your language to provide written and spoken information at a group discussion/workshop, please indicate below:

- Yes: I would like a bilingual interpreter available at a group discussion/workshop.

Please select which language:

- Punjabi
 Hindi
 Mandarin
 Korean
 Arabic

- No: I am happy to communicate in English (written and spoken).

13. Please leave your name and telephone number and/or email address so we can contact you.

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First name:

Surname:

Mobile:

Email Address.....

[Only display Q12 to participants who answered “No” to Q1]

14. If you are interested in the online information sessions, please leave your email address and we will send this information to you.

First name:

Surname:

Email Address.....

END OF SURVEY

Consumer: General Welcome

“Thank you for coming along today and participating in our study. My name is XXX.

Acknowledgement of Country

Bathrooms, fire exits.

The purpose of this workshop is to capture the needs of the Rouse Hill community and their perspectives on new ways of delivering acute care. What we talk about today will inform the development of the new hospital in Rouse Hill. We really appreciate your time and thank you very much for being here today.

Consumer stream: As consumers of healthcare, your experiences as patients are very valuable. However, please note that there is no obligation to disclose details of personal healthcare issues.

Throughout the workshop a researcher/facilitator will be with each table group to take notes, facilitate discussion and ask you questions. The workshop will go for 2 hours with a 10-minute break with refreshments after the first hour.”

Audio-recording devices, flipcharts, and notes will be used to capture discussions. You will remain unidentifiable in the analysis and write-up of any findings relating to this research.

If you have any questions throughout the day, please ask one of the Macquarie University staff members (**introduce all staff members**).

Before we begin, we ask that you read and sign the PICF on your tables. If you have any questions before signing, now is the time to ask (**pause for questions**). Once you’ve signed, we will photocopy the documents and provide you with your own version.”

Group Introduction

“Good afternoon (morning/evening etc.) and welcome to the workshop. Thanks for taking the time to talk with us about what you would like to see in the new Rouse Hill Hospital. My name is (**insert name here**), and I am from the Australian Institute of Health Innovation at Macquarie University. We are working in partnership with Health Infrastructure and the Western Sydney Local Health District. My role as moderator will be to guide the discussion today.

Please note that there are no right or wrong answers but rather differing points of view. Please feel free to share your point of view even if it differs from what others have said. You don't need to agree with others' opinions, but we ask that you listen respectfully as others share their views.

You've probably noticed the microphone. We are taping the session because we don't want to miss any of your comments. People often say very helpful things in these discussions, and we can't write fast enough to get them all down. However, to make the recording as clear as possible, we ask that only one person speak at a time. And to remind you, no-one is identifiable on the recording.

Let's get started! Before we begin, if you wouldn't mind writing your name on the (name card/sticker in front of you. We will be on a first name basis today, but we won't use any names in our reports."

Icebreaker Activity

"To get everyone thinking, we have planned a brief icebreaker activity. The purpose of this activity is to encourage thinking outside of the box.

- As a group, let's try to come up with 15 different ways that you can use a paperclip. The more inventive, the better. Who would like to start? We have 3 minutes!

(Separate sheet of paper)

As some of the models of care involve understanding technological devices

Please rate on the scale below the following:

1. How comfortable are you using:

A smart phone?

Extremely Uncomfortable, Somewhat Uncomfortable, Neutral, Somewhat Comfortable, Extremely Comfortable

A smart watch?

Extremely Uncomfortable, Somewhat Uncomfortable, Neutral, Somewhat Comfortable, Extremely Comfortable

Computers?

Extremely Uncomfortable, Somewhat Uncomfortable, Neutral, Somewhat Comfortable, Extremely Comfortable

"Now that we have gotten to know each other a little better we would like you to reflect on a patient or patients who may or may not benefit from different "models of care". Today, we will talk about three different models of care in our workshop today. These are not the only models of care we are exploring, but we only have two hours, so will be talking about different models with

1
2
3 different groups. We are interested in your ideas and would like you to reflect broadly as well as on
4 your experience as a person who may or may not benefit from these three different “models of
5 care”.

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7
8
9 **Model 1: Ambulatory Care and diagnostic hospitals:** Non-admitted services, where patient care does
10 not involve an overnight stay and usually involves diagnosis and treatment on the same day.

11
12 SHOW images: Home vs. Hospital (Images 1/2)
13 Maria (Image 3)

14
15 Your name is Maria and you are a 45 year old patient who is able to walk unaided and travels to a
16 centre for treatment 2-3 times per week (e.g., renal dialysis in a shopping centre, chemotherapy)

17
18
19
20 **We would like to ask questions from Maria’s as well as your own perspective. Let’s start with**
21 **Maria:**

22
23 **From Maria’s perspective:**

- 24
25
26 **1. What is good about this model for Maria?**
27
28 **2. What about this model might make it difficult for Maria?**

29
30
31 *Additional prompts*

32 Can you think of anything about it that might be impractical?

33 Can you think of anything about it that might be unachievable?

- 34
35
36
37 **3. What needs to be in place for this to work for Maria?**

38
39
40 **For example, systems, processes, people, skills and equipment?**

41 **Now from your perspective:**

- 42
43
44 **4. What about this model might be good for you and your family?**
45
46 **5. What about this model might make it difficult for you and your family?**

47
48
49 *Additional prompts*

50 Can you think of anything about it that might be impractical?

51 Can you think of anything about it that might be unachievable?

- 52
53
54
55
56 **6. How easy is this to use for you?**
57
58
59 **7. What would stop you using it?**
60

1
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4 **8. Can you think of other people who would have difficulty using this model?**

5
6
7 **9. We have already asked for Maria but what other things needs to be in place for this to**
8 **work for you?**

9
10 **For example systems, processes, people, skills and equipment**

11
12
13
14
15 **General questions:**

16
17 **10. Is there anything about the model that concerns you?**

18
19 **11. Can you see any safety issues for yourself?**

- 20
21 ○ Why is that?
- 22
23 ○ *Can you suggest a better way?*

24
25
26 *(Additional prompts)*

27 *Are there any potential risks that you can identify?*

28
29 **12. What other illness and injuries might this model work for?**

30
31
32
33 **Model 2: Digital Hospitals/Consumer Focused Care**

34
35 Hospitals that make extensive use of new technologies to provide streamlined care, improve patient
36 safety and care quality, and improve overall care cost effectiveness.

37
38
39 **SHOW images: Home vs. Hospital (Images 1/2)**

40 **John (Image 4)**

41
42 John is an 70-year-old man who has a heart condition that causes dizziness (e.g., irregular
43 heartbeat). As this places him at a high risk of falls, he has been admitted to hospital for monitoring.

44
45 Beside his bed is a digital matt that detects and alerts the staff if he has had a fall.

46
47
48
49 **Repeat questions**

50
51
52 **Model 3: Hospital in the Home**

53
54 Patient care and consultation which is typically delivered in the hospital settings is delivered to
55 patients in their own home (e.g., intravenous therapy (antibiotics), anticoagulation, wound care, and
56 chemotherapy).

57
58
59 **SHOW images: Home vs. Hospital (Images 1/2)**

Jenny (Image 5)

Jenny is a 35-year-old, single mother of three who developed a breast infection with an abscess following the birth of her baby. She was treated with intravenous antibiotics (on a drip) and a tube was placed into her breast to drain the infected fluid. After 24 hours, she returned home to her children and is provided wound care and support in her home from a visiting nurse.

Repeat questions

At end of focus group

Concluding remarks: Now that we have come to the end of the workshop, we'd like to ask you:

How important is it for you to be able to choose a model of care?

Prompt: What if you have no option to choose? (only use if needed)

From your perspective, please rate your preference for each model: (Note: Models X, Y, and Z will be replaced with the relevant models discussed at each workshop).

| | | | |
|---------|---------|------------------|---------|
| Model X | No pref | Neither suitable | Model Y |
| Model Y | No pref | Neither suitable | Model Z |
| Model Z | No pref | Neither suitable | Model X |

Is there anything else you would like to communicate to us about the new hospital?

Concluding remarks:

We will be looking at your data to find commonalties between consumers.

We are conducting exploratory research to gather information only, and all models may not be implemented. Thank you for your time.

Note: All images were publicly available and downloaded from Google.

Provider: General Welcome

“Thank you for coming along today and participating in our study. My name is XXX.

Acknowledgement of Country

Bathrooms, fire exits.

The purpose of this workshop is to capture the needs of the Rouse Hill community and their perspectives on new ways of delivering acute care. What we talk about today will inform the development of the new hospital in Rouse Hill. We really appreciate your time and thank you very much for being here today.

As providers of healthcare, your experiences as patients are very valuable. However, please note that there is no obligation to disclose details of personal healthcare issues.

Throughout the workshop a researcher/facilitator will be with each table group to take notes, facilitate discussion and ask you questions. The workshop will go for 2 hours with a 10-minute break with refreshments after the first hour.

Audio-recording devices, flipcharts, and notes will be used to capture discussions. You will remain unidentifiable in the analysis and write-up of any findings relating to this research.

If you have any questions throughout the day, please ask one of the Macquarie University staff members (**introduce all staff members**).

Before we begin, we ask that you read and sign the PICF on your tables. If you have any questions before signing, now is the time to ask (**pause for questions**). Once you’ve signed, we will photocopy the documents and provide you with your own version.”

Individual Group Introduction

“Good afternoon (morning/evening etc.) and welcome to the workshop. Thanks for taking the time to talk with us about what you would like to see in the new Rouse Hill Hospital. My name is (**insert name here**), and I am from the Australian Institute of Health Innovation at Macquarie University. We are working in partnership with Health Infrastructure and the Western Sydney Local Health District. My role as moderator will be to guide the discussion today.

Please note that there are no right or wrong answers but rather differing points of view. Please feel free to share your point of view even if it differs from what others have said. You don't need to agree with others' opinions, but we ask that you listen respectfully as others share their views.

You've probably noticed the microphone. We are taping the session because we don't want to miss any of your comments. People often say very helpful things in these discussions, and we can't write fast enough to get them all down. However, to make the recording as clear as possible, we ask that only one person speak at a time. And to remind you, no-one is identifiable on the recording.

Let's get started! Before we begin, if you wouldn't mind writing your name on the (name card/sticker in front of you. We will be on a first name basis today, but we won't use any names in our reports."

(Separate sheet of paper)

As some of the models of care involve understanding technological devices

Please rate on the scale below the following:

2. How comfortable are you using:

A smart phone?

Extremely Uncomfortable, Somewhat Uncomfortable, Neutral, Somewhat Comfortable, Extremely Comfortable

A smart watch?

Extremely Uncomfortable, Somewhat Uncomfortable, Neutral, Somewhat Comfortable, Extremely Comfortable

Computers?

Extremely Uncomfortable, Somewhat Uncomfortable, Neutral, Somewhat Comfortable, Extremely Comfortable

3. What proportion of your patients would be comfortable using:

A smart phone?

Extremely Uncomfortable, Somewhat Uncomfortable, Neutral, Somewhat Comfortable, Extremely Comfortable

A smart watch?

Extremely Uncomfortable, Somewhat Uncomfortable, Neutral, Somewhat Comfortable, Extremely Comfortable

Computers?

Extremely Uncomfortable, Somewhat Uncomfortable, Neutral, Somewhat Comfortable, Extremely Comfortable

4. **So that we can understand you a bit better, what is your discipline?**
5. **Are you mostly:**
Office based, facility based, a combination of both?
6. **What main problems do you currently encounter around delivering high quality care?**
7. **Can you suggest ways to overcome? (5 minutes)**
8. **What are you looking for in a new hospital?**
For example: IT/Scheduling/Accessibility

“Now that we have gotten to know each other a little better we would like you to reflect on a patient or patients who may or may not benefit from different “models of care”. Today, we will talk about three different models of care in our workshop today. These are not the only models of care we are exploring, but we only have two hours, so will be talking about different models with different groups. We are interested in your thoughts about each of these models of care from your perspective and your patients’ perspective. Some of these scenarios describe models you may have already encountered or engaged with. We would like you to think broadly.”

Model 1: Ambulatory Care and diagnostic hospitals/ **Consumer Focused Care**

Non-admitted services, where patient care does not involve an overnight stay and usually involves diagnosis and treatment on the same day.

Maria is a 65 year old patient who is ambulant and travels to a facility for routine care 2-3 times per week (e.g., renal dialysis, chemotherapy)

Please answer the following questions:

1. **In an ideal world, how would her care be delivered?**

Additional prompt: how could you best model this?

From your perspective:

2. **How would this model help to solve the big problems for you?**
(What are the pros/strengths for you?)
3. **What barriers limit this model for you?**
4. **What enablers would need to be in place for this to work?**

1
2
3
4 **From your patients' perspective:**
5

6 **5. How would this model help to solve the big problems for your patients?**
7

8 **6. What might be the pros/strengths?**
9

10 **7. What barriers might limit this model for your patients?**
11

12 **8. What enablers would need to be in place for this to work?**
13
14
15

16
17 **General questions:**
18

19 **9. What proportion of your patients would this model work for?**
20

21 Low – Mid – High
22

23 **10. Can you think of anything about it that might be impractical?**
24

25 **11. Can you think of anything about it that might be unachievable?**
26

27 **12. To what extent could this model be applicable to other health conditions? What**
28 **conditions?**
29

30 **13. Can you think of any clinicians or patients who might find this model of care difficult to**
31 **access?**
32

33 **14. Is there anything about the model that concerns you?**
34

35 **15. What might be the safety issues for your patients?**
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38 **16. Do you see any risks to you as the healthcare provider?**
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52 *(Additional prompts)*

53 *Are there any potential risks that you can identify?*

- 54 *"Why is that?"*
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56 *Can you suggest a better way?*
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Model 2: Digital Hospitals/Consumer Focused Care

Hospitals that make extensive use of new technologies to provide streamlined care, improve patient safety and care quality, and improve overall care cost effectiveness.

You are in a place you usually work at, and the facility has digital technology in place such as intravenous fluid charts, bed sensors to alert staff that a patient needs moving in bed, floor mats that alert staff when patients are out of bed, and interactive monitors for patients and staff about daily schedules.

Repeat questions

Model 3: Hospital in the Home

Patient care and consultation which is typically delivered in the hospital settings is delivered to patients in their own home (e.g., intravenous therapy (antibiotics), anticoagulation, wound care, and chemotherapy).

Your patient has undergone a procedure or surgery and after treatment in the hospital is discharged home for follow-up care. For example: Jenny is a 35-year-old, single mother of three who developed complicated mastitis with an abscess following the birth of her baby. She was treated with intravenous antibiotics and a drain was placed into the abscess. After 24 hours, she returned home to her children and is provided wound care and support from a nurse.

Repeat questions

At end of focus group

Thinking broadly, from your perspective, please rate your preference for each model: (Note: Models X, Y, and Z will be replaced with the relevant models discussed at each workshop).

| | | | |
|---------|---------|------------------|---------|
| Model X | No pref | Neither suitable | Model Y |
| Model Y | No pref | Neither suitable | Model Z |
| Model Z | No pref | Neither suitable | Model X |

1
2
3 **Thinking broadly, from your patients' perspective, please rate your preference for each model:**

4
5 (Note: Models X, Y, and Z will be replaced with the relevant models discussed at each workshop).

6
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| | | | |
|------------|------------|---------------------|------------|
| 8 Model X | 9 No pref | 10 Neither suitable | 11 Model Y |
| 12 Model Y | 13 No pref | 14 Neither suitable | 15 Model Z |
| 16 Model Z | 17 No pref | 18 Neither suitable | 19 Model X |

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Concluding remarks:

We will be looking at your data to find commonalties between providers.

We are conducting exploratory research to gather information only, and all models may not be implemented. Thank you for your time.

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For peer review only

1
2 Thank you for agreeing to allow us to contact you for a follow up call to talk about the
3 findings of the discussions. The purpose of this phone call is to expand on areas of interest
4 and verify the findings from the workshop data. What we talk about today will continue to
5 inform the development of the new hospital in Rouse Hill. The discussion will be recorded so
6 we can capture everything that is said.
7
8

9 You are free to withdraw at any time without consequence.
10

11 Do you have any questions before we start? (pause for questions).
12

13 For Model X, Y, Z , can you please elaborate on what you think is meant by....
14

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16 For Model X, Y, Z, can you please elaborate on what you think is meant by....
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