





## ORIGINAL ARTICLE

# Adapting community child and family health service models for rural and other diverse settings: A modified Delphi study to identify key elements

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## Abstract

Inequity in health outcomes is pervasive, with poorer health outcomes identified in rural, regional and remote communities. An international call to action emphasises the need for service models adapted for less well-resourced settings. The aim of this study was to identify key elements of a framework for the adaptation of specialist community-based child and family health (CFH) service models for rural and other under-resourced settings. A modified Delphi study was undertaken with a 12-person expert panel in CFH including Australian and international professionals and parents from rural and remote communities. The study was informed by the WHO Framework for Strengthening Health Service Systems building blocks, the outcomes of an integrative review of literature and a Participatory Action Research study. Experts assessed 107 potential elements for service model development and rated them for importance when adapting service models for different contexts. Round 1 of the Delphi generated considerable consensus with 80 of the 107 potential elements identified as necessary for the service model adaptation framework. A further 17 elements for CFH service models were added in round 2. While multiple varied elements are important for adapting CFH service models for diverse settings, some elements had common themes. Experts highlighted the importance of community engagement and participation; utilising both data and local knowledge to develop a robust understanding of the community context; and the need for a flexible approach to funding and modes of service delivery to address barriers to implementation and access.

## KEYWORDS

child and family health, community health, community participation, Delphi technique, health inequalities, service models

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## 1 | INTRODUCTION

The early parenting period is vital to the health outcomes of individuals, their families and communities; it is now well accepted 'that intervening early in the life course to either prevent events that increase risk or address issues early is effective in preventing or reducing later health issues' (Australian Health Minister's Advisory Council, 2015, p. 9). Specialist Child and Family Health (CFH) services play an integral role in the identification, support and response for children and families with increasingly complex physical, developmental, psychosocial and behavioural health needs (Australian Health Minister's Advisory Council, 2015). Community-based CFH services work collaboratively with parents to support optimal child development, perinatal mental health outcomes and positive parent-child relationships in which children can thrive, seeking '... to reduce the gap in health inequities within and across populations' (Fowler & Stockton, 2021, p. 151).

Internationally, there is a growing body of knowledge recognising the significant impact of the early years of a child's life on lifelong health and social outcomes (Moore et al., 2017). The World Health Organisation (WHO) supports the emerging science of early brain development starting in pregnancy and throughout the critical early years of life. This period lays the foundation for physical well-being and social and emotional development which in turn affects the quality of relationships later in life, educational attainment, economic participation and the cycle of intergenerational disadvantage (Commission on Social Determinants of Health, 2008). It is vital that risk factors associated with adverse experiences in early childhood are identified as early as possible and that services work together to reduce the 'dose of adversity for kids and enhancing the ability of caregivers to be buffers' (Burke Harris, 2018, p. 211). Prevention and early intervention are pivotal to addressing these challenges, with health services needing to look towards partnership with other sectors in order to strengthen the provision of nurturing care to improve outcomes for children (Jeong et al., 2020).

An international call to action to address the health outcomes gap for those living in disadvantaged regions, including those families living in rural areas, has been promoted in a number of documents released by the WHO (World Health Organization, 2007, 2008, 2010). In the paper 'Scaling up Health Services: Challenges and Choices' (World Health Organization, 2008), the WHO emphasises the need to scale up successful health service models to address the health needs of less well-resourced communities and countries. The WHO describes a process of innovation in which the interventions from 'well-equipped urban centres' should be adapted in order to develop contextualised service models that are '... designed in such a way that they can be rapidly rolled out to low-resourced rural settings' (World Health Organization, 2008, p. 18).

Poor health outcomes for families in rural areas impacted by geographic isolation, socio-economic disadvantage and climate change have highlighted the need for service development in rural and regional areas in Australia and internationally (Adongo et al., 2014;

### What is known about this topic

- The early years of a child's life play a critical role in life-long health and social outcomes, emphasising the need for effective prevention and early interventions.
- Poor health outcomes for families in rural areas exacerbated by geographic isolation, socio-economic disadvantage and climate change have highlighted the need for service development in rural and regional areas internationally.
- The WHO has issued an international call to action to address the health outcomes gap for those living in disadvantaged regions, by scaling up successful health service models to address the health needs of those living in less well-resourced communities.

### What this paper adds

- This study demonstrates that community engagement and participation are vital foundations for adapting service models for diverse contexts, including less well-resourced rural and remote communities.
- Realistic funding models with flexibility to enable adaptation for local contexts rather than short-term cycles with rigid requirements was seen as integral to the effective implementation of service models to improve rural health outcomes.
- A community-based approach to service model adaptation provides opportunities for both improving child and family outcomes, while building community capacity and trust between stakeholders.

International Labour Office, 2015; NSW Ministry of Health, 2014). Australian rural health data indicate poorer health behaviours and outcomes for families in rural and remote areas including lower breastfeeding rates, low birth weights of infants and high or very high rates of psychological distress (Australian Institute of Health and Welfare, 2020; NSW Ministry of Health, 2014).

The research conducted in this study was informed by a realist evaluation approach (Pawson & Tilley, 1997). The aim of this study was to identify key elements to be considered when seeking to adapt an established metropolitan CFH service model for diverse contexts. The elements identified through this modified Delphi Study will contribute to the development of a framework to support and guide health service planners and community members to explore contextual influences when undertaking service implementation, while considering the mechanisms of complex programs and why they may be successful (or not) within particular settings and circumstances (Parker et al., 2013; Taylor et al., 2010; Tolson et al., 2007).

## 2 | METHODS

### 2.1 | Study Design

A modified Delphi study of two rounds with experts including consumers and representatives in fields relevant to CFH was undertaken in 2020. This study was approved by Sydney Local Health District Human Research Ethics Committee (RPAH Zone)—Protocol No X18-0358 & HREC/18/RPAH/504; and the University of Technology Sydney Human Research Ethics Committee (Ref: ETH19-3496). All participants were provided with a Participant Information Sheet and provided informed written consent. Privacy and confidentiality were maintained through the de-identification of data including de-identification of individuals, organisations and locations. Data security was maintained through secure digital collection and storage of data using an ethics approved secure online platform (RedCap).

The 12-member expert panel consisted of parents from rural and remote communities, professionals from health and community services, health service managers, government officials and academics. This study draws on the findings of an integrative literature review of the presence of the WHO Building Blocks for Strengthening Health Systems in rural community health settings (Stockton et al., 2021) and the outcomes of a Participatory Action Research (PAR) study undertaken in a regional community; both of which informed the suite of elements presented in the e-questionnaires to the Delphi expert panel participants. It should be noted that the PAR study which informed the elements presented to the Delphi participants was inclusive of rural community members/health service providers and parent consumers, providing an important avenue for consumer contribution to the list of elements developed from the integrative review. The draft of the first e-questionnaire was developed by one member of the research team and completed during the pilot by the other three researchers separately, to ensure the questions were unambiguous, that the questionnaire had a logical flow and the length of time to complete was within the agreed parameters approved by the human research ethics committee. The clarity of the e-questionnaire was further tested by inviting four health professionals living in rural communities to complete the questionnaire and provide feedback. Responses indicated the e-questionnaire was able to be completed within the timeframe listed in the Participant Information Sheet, and no changes were required to the format or wording of the statements which panel members were to score.

Both the PAR and Delphi approaches seek to address power differentials and foster inclusivity (Fletcher & Marchildon, 2014), with PAR participants situated as research partners and Delphi panel participants from a broad cross section of backgrounds (Rowell et al., 2015), including consumers, identified as experts on the focus of the study to review and refine findings through the iterative Delphi rounds. Through the rounds of the Delphi Study, the expert panel identified and refined the key elements to inform the

development of a Framework for the Adaptation of Child and Family Health Service Models for Diverse Settings.

The building blocks articulated in the WHO Framework for Strengthening Health Service Systems (World Health Organization, 2007) were used to inform the integrative review, PAR study and structure of the Delphi e-questionnaires. The layout of the e-questionnaires was aligned with and included descriptors of the six building blocks being: (1) service delivery; (2) health workforce; (3) information; (4) medical products, vaccines and technologies; (5) financing and (6) leadership and governance.

Delphi studies have four key features: anonymity of response, multiple iteration of the questionnaire, controlled feedback and statistical derivation of the group response (Toma & Picioreanu, 2016). The Delphi approach is a method which seeks to identify a level of consensus in regards to a series of statements or questions among a select group of experts (Hirschhorn, 2018; Hsu & Sandford, 2007; Thangaratinam & Redman, 2005).

A modified Delphi Study approach enables two rounds of Delphi questionnaires rather than the traditional three, as the items in the first questionnaire were developed from previously obtained data, e.g. through a previous study or a literature review (Bryar et al., 2013; Day & Bobeva, 2005; Stewart et al., 2017; Thangaratinam & Redman, 2005). McMillan et al. (2016) also note that Delphi studies often use two rounds given that additional rounds can increase the attrition rate of the panel members. Statements are presented to the expert panel electronically (e-Delphi) which has been shown to be both efficient and effective in the development of consensus statements (Holloway, 2012), therefore enabling the identification of key elements and strategies to be included in a draft Framework for Adaptation of CFH Service Models for Diverse Settings.

The definition of 'expert' for inclusion in expert panels for Delphi studies is broad and dependent on the knowledge and experience being sought which may include panellists from a variety of backgrounds and roles (Giannarou & Zervas, 2014; Hirschhorn, 2018) who hold knowledge and experience relevant to the study aims (Thangaratinam & Redman, 2005). The sample sizes reported in previous Delphi studies vary (McMillan et al., 2016; Thangaratinam & Redman, 2005). The expert panel of this Delphi study includes 12 members representing a range of stakeholder categories with varied insights to contribute—this being similar in size to other published studies (McMillan et al., 2016; Naughton et al., 2017).

Papers reporting Delphi and Modified Delphi study outcomes incorporate a range of approaches to the definition of consensus (Giannarou & Zervas, 2014; Stewart et al., 2017). Studies report outcomes in terms of the percentage of panel members who have responded in the top two scoring categories in a Likert scale (Day & Bobeva, 2005; Giannarou & Zervas, 2014; Hsu & Sandford, 2007), while others report using the mean as the determining factor for retaining items into the next round (Bryar et al., 2013; Day & Bobeva, 2005; Hsu & Sandford, 2007; Thangaratinam & Redman, 2005), with broad agreement among many authors

that a percentage of greater than 80% can be used to determine consensus has been reached (Hsu & Sandford, 2007; Naughton et al., 2017; Stewart et al., 2017; Toma & Picioreanu, 2016). For the purposes of this study, the level for consensus was defined as a mean  $\geq 4$  and frequency of scores 4 or 5 of  $\geq 80\%$  for each individual element.

In step 1 of this Delphi study, the expert panel participants were asked to respond to a set of statements (informed by the outcomes of an Integrative Review and PAR study) utilising a Likert scale. In step 2 of the Delphi study, the expert panel were provided with both their own response and the aggregated response of all panel participants including the median and frequency of responses (Boone & Boone, 2012; Hsu & Sandford, 2007; McMillan et al., 2016; Naughton et al., 2017; Tetzlaff et al., 2012; Toma & Picioreanu, 2016). The panel members were then asked to reflect on and revise as necessary their scores for those items which had not yet reached consensus in light of the feedback of the full group (McMillan et al., 2016; Stewart et al., 2017). After the two rounds, those items which had reached the definition for consensus were retained and utilised to inform the draft Framework which will be piloted in stage 3 (Site 2 PAR group).

## 2.2 | Study participants

Inclusion criteria for the members of the expert panel were based on those able to contribute insights and perspectives relevant to the study aims, seeking to draw on a broad range of backgrounds, experience and knowledge (Havers et al., 2019). Inclusion criteria noted the need for participants to be literate in English in order to read, comprehend and respond to the e-questionnaires. The expert panel participants were selected to represent a range of stakeholder groups with an understanding of the needs of families in rural and regional areas, expertise in health service planning, and experience in the delivery of CFH services.

Purposive sampling was used, informed by the results of a preliminary Delphi study undertaken with the research supervisory panel and senior managers of a specialist CFH organisation. The data obtained through this process enabled the identification of key participant categories for this Modified Delphi Study, target numbers of representatives for each category, and a prioritised list of potential participants or organisations to whom invitations to participate would be issued. The list of potential participants drew on the professional contacts and sector knowledge of the research team and consultation with organisational representatives. Table 1 depicts the agreed target representative categories for expert panel composition, compared with actual participants who provided written consent to participate as a panel member.

The expert panel of participants consisted of representatives of rural and remote parents, health service managers/clinicians, non-government referral agencies, government departments and professional bodies as well as academics and researchers. Each participant was invited to reflect on multiple perspectives when responding to

TABLE 1 Target expert panel representation categories compared with actual participants

Representative categories	Target number	Actual
Consumers: Parents of children aged <3 years living in rural or remote settings	2	2
First Nations (Indigenous) representative	1	1
Community-based referral agency representatives	2	2
Specialist CFH organisation manager	1	1
Professional body representatives	2	2
Researcher/Academic representatives	2	2
Government Health Department representative	1	1
International representative	1	1
Total	12	12

the e-Delphi questionnaires, i.e. health professionals living in rural and regional areas were able to draw upon their professional experiences and those of being a health consumer living in a rural or regional community. Table 2 depicts demographic characteristics of the expert panel members. The multiple perspectives panel members were able to contribute is reflected in the demographics, noting 50% of the panel members were either currently or had previously lived in a rural community; with 41.6% being responsible for rural and regional services or policy; 41.6% being responsible for specialist CFH services. All participants resided in Australia except one academic from the USA who provided an international perspective.

## 2.3 | Data Collection

The two rounds of e-questionnaires were developed and distributed through a secure online platform (RedCap). An email was sent to each participant providing an overview of the WHO building blocks to provide context for the structure of the e-questionnaire. The e-questionnaire for round 1 included demographic details and a question exploring the participants' pre-existing beliefs as to whether it was feasible to adapt metropolitan service models for rural contexts. This was followed by listing the potential elements for adaptation of CFH service models which participants scored on a 5-point Likert scale.

In the second round, an individualised link was sent to each participant to access the second e-questionnaire which provided the listing of the elements presented in the first round which had not yet reached consensus among the expert panel participants. The e-questionnaires were piloted to review clarity and approximate completion time, with each taking approximately 20–30min to complete. The participants were provided with an email with an individualised report of the outcomes for each of these elements including the participant's previous score, the group median and the frequency of responses across the panel members for each element.

**TABLE 2** Demographics of expert panel member participants ( $n = 12$ )

Panel member demographics	%
Female	83.3
Male	16.7
Identify as First Nations (Indigenous) person	8.3
Currently/previously resided in Rural Community	50
Responsibility for Rural and Regional Services or Policy	41.6
Responsibility for CFH service delivery	41.6
Researcher with focus on Rural Health/CFH	41.6

The participants were asked to reflect on their score and those of the rest of the panel, and an opportunity was provided to review their scores.

The participants were asked to complete the e-questionnaires within 2 weeks of receipt of the email link. Up to two auto-reminders were autogenerated by the RedCap system and sent to those participants who were yet to complete the e-questionnaires at 5-day intervals.

## 2.4 | Analysis

The data analysis from round one informed the composition of the round two e-questionnaire. Microsoft Excel software was used to calculate the descriptive statistics required for this study. This included the following calculations for each item included in the e-questionnaire: mean, standard deviation and percentage of respondents scoring 4 or 5. The median for each item was also calculated to provide to participants, in addition to their previous response, when reviewing items in round 2. Prioritisation order was calculated based on mean scores (Hoekstra et al., 2017) and cross-checked against frequency of votes. Thematic analysis of responses, guided by the framework of Clarke and Braun (Clarke & Braun, 2013; Macquire & Delahunt, 2017), was conducted to identify patterns of emerging themes from the prioritisation given the high level of consensus achieved in round one. This information was collected to inform the structure of the Framework for Adaptation of CFH Service Models for Diverse Settings document and to enable the inclusion of a section to guide users of the framework when prioritising available time when undertaking service model planning and adaptation.

Further analysis of the elements identified for inclusion in a framework for adaptation of CFH service models was undertaken utilising the lens of realist evaluation (Pawson & Tilley, 1997), using the Context-Mechanism-Outcome (CMO) frame which has been identified as relevant and beneficial in rural health practice research (Mitchell et al., 2013). The CMO frame aligned well with the intention to inform a framework which would be used across a range of diverse contexts, providing a strong platform for taking the time to clearly understand the unique context of the community in which the framework could be used given the clear consensus of the Delphi panel of experts in relation to a number of items relating

to exploring and gaining a thorough understanding of community needs, strengths, culture, power structures and priorities (May et al., 2016) through the modified Delphi study.

The natural progression of the CMO model supported an exploration of 'mechanism' and 'outcome', the relationship and interactions between these (de Souza, 2013), relevant to the context and service models being considered for that context, with the aims of the development of the Framework for Adaptation of CFH Service Models. This approach supports the development of a shared understanding between community stakeholders of the appropriateness of a service model for a particular context, alignment with the expected outcomes required to meet the needs and priorities of particular communities, while informing the development of a plan to evaluate service model adaptation, implementation and impact (Movsisyan et al., 2019; Vanderpool et al., 2011).

## 3 | FINDINGS

The response rate to both e-Delphi rounds across the expert panel was 100%. When asked to reflect on their belief in the feasibility of adapting a metropolitan service model for implementation in rural communities on a scale of 1–100, the mean score across the 12 participants was 76.6 (range 50–99). The highest mean scores for belief in the feasibility of metropolitan service model adaptation was among academics (82.25) closely followed by health service and community service managers (81.6). The mean score for those representing professional bodies and government departments was 75; and the lowest level of self-reported belief in the feasibility of adapting a metro service model for a rural context was reported by consumer (parent) representatives (mean = 60).

Despite the differences in pre-existing beliefs reflected in the above results, a high rate of consensus was obtained in the first round e-questionnaire, with the scores for all elements being within <1 standard deviation of the mean. Of the 107 potential elements presented to the expert panel, 80 were identified through consensus as necessary for inclusion in the framework (see Table 3). This included 32 of the 33 elements in the Service Delivery Building Block section. In view of the high number of elements which reached consensus for retention in round 1, participants were asked to rate the priority of groups of elements following thematic analysis (see Table 4).

Two element themes from each of the WHO building blocks were clearly identified by cross-checking the order by mean, order by frequency of vote and order of sum of scores. Only one building block (workforce) had more than one clear theme for each priority, with the two themes of recruitment and retention, and interprofessional teams being prioritised as equal second—these themes were therefore combined to be "recruitment and retention of appropriately skilled clinicians/interprofessional teams".

Of the 27 elements which had not reached consensus in round 1, a further 17 reached consensus for inclusion in the framework for adaptation of CFH service models in round 2; with 10 elements

TABLE 3 Round 1 e-survey results: Potential elements grouped by WHO Building Blocks.

Element items	Mean (out of 5)	SD	% scored 4 or 5	Retained or Round 2 review <sup>a</sup>
<b>1. Service delivery</b>				
1. Flexibility in the service model to address different community contexts and needs	4.83	0.39	100	Retained
2. Flexible modes of delivery	4.50	0.52	100	Retained
3. Flexible pathways into the service	4.42	0.51	100	Retained
4. Maintaining a balance between flexibility and productivity	4.00	0.43	91.6	Retained
5. Identify service model elements that must remain stable and those with flexibility for the community context	4.42	0.67	91.6	Retained
6. Adapting the service model for the local context	4.83	0.39	100	Retained
7. Remove barriers to access to increase the availability of help and support for families	4.75	0.45	100	Retained
8. No wrong door access to the service	4.50	0.52	100	Retained
9. Normalising 'help-seeking' to gain access to the service	4.50	0.52	100	Retained
10. Care navigation support for families	4.17	0.58	91.6	Retained
11. Child and family health models that are proactive, rather than waiting for a family to be in crisis	4.42	0.51	100	Retained
12. Asking parents to assist in the formulation of language/communication strategy that is meaningful to them	4.33	0.49	100	Retained
13. A communication strategy to enhance interagency stakeholder understanding of the service model	4.00	0.67	83.3	Retained
14. A service model that reflects real life	4.08	0.51	91.6	Retained
15. A focus on interventions able to be tailored to the needs of the child, parent and family	4.50	0.67	91.6	Retained
16. A well-integrated service system network	4.25	0.62	91.6	Retained
17. Clarity in relation to service and clinician roles	4.08	0.51	91.6	Retained
18. Taking the time to understand the local health priorities and contextual factors	4.33	0.65	91.6	Retained
19. Sufficient time to identify a suitable model and consult locally to inform adaptation, implement and evaluate	4.50	0.67	91.6	Retained
20. A systematic approach to planning, implementation, adaptation and evaluation	4.42	0.51	100	Retained
21. Best practice evidence-based service models	4.42	0.51	100	Retained
22. Service models which embrace diversity and community inclusion	4.50	0.67	91.6	Retained
23. Asking parents what they want/need and when	4.50	0.52	100	Retained
24. Consumer engagement in service design and implementation planning	4.25	0.62	91.6	Retained
25. Community-based participation to customise models and adapt to local community needs	4.00	0.67	83.3	Retained
26. Community stakeholder participation to identify innovative solutions to implementation challenges	4.42	0.51	100	Retained
27. Community stakeholder participation to ensure culturally sensitive care	4.67	0.49	100	Retained
28. Community stakeholder engagement to promote trust, shared vision and build social capital	4.42	0.67	91.6	Retained
29. Place-based systems of care	4.08	0.72	83.3	Retained

TABLE 3 (Continued)

Element items	Mean (out of 5)	SD	% scored 4 or 5	Retained or Round 2 review <sup>a</sup>
30. Collaborative cross sector integrated service models based on trust, respect and mutual expertise	4.25	0.75	83.3	Retained
31. Integrated service delivery including sharing of information regarding the needs and care of the family	4.08	0.67	83.3	Retained
32. Increase access to comprehensive care through collaborative service delivery	4.08	0.67	83.3	Retained
33. Innovative models of service delivery	3.67	0.65	66.6	Round 2 review
<b>2. Health workforce</b>				
34. Recruitment and retention strategies to ensure appropriately skilled clinicians	4.58	0.51	100	Retained
35. Recruitment and retention strategies to secure multi-skilled clinicians to work across a broad scope of practice	4.42	0.67	91.6	Retained
36. Interprofessional team approach to address the diverse needs of communities	4.33	0.65	91.6	Retained
37. Interprofessional team approach to maximise workforce resources	3.92	0.67	75	Round 2 review
38. Interprofessional teams to build workforce capacity through sharing of knowledge and expertise	4.00	0.85	83.3	Retained
39. Flexible access to professional development including telehealth	4.33	0.89	75	Round 2 review
40. Clinician exchange programs (e.g. between metropolitan and rural services)	3.58	0.90	50	Round 2 review
41. Education of clinicians to support comprehensive understanding of the local health context	4.25	0.75	83.3	Retained
42. Mentorship of clinicians across communities	4.00	0.85	83.3	Retained
43. Training and mentorship by experts to overcome implementation challenges when establishing new services or programs	4.25	0.45	100	Retained
44. Train-the-trainer to build capacity to implement evidence-based service models and programs	3.83	0.72	66.6	Round 2 review
45. Collaborative workforce models across organisational boundaries	4.17	0.72	83.3	Retained
46. Key workers identified as care coordinators	4.08	0.90	66.6	Round 2 review
47. Key workers with a thorough understanding of local needs identified as advocates for their communities	4.33	0.65	91.6	Retained
48. Harness the knowledge of local healthcare workers to inform service improvements and policy decisions	4.25	0.75	83.3	Retained
49. Support and professional development, particularly for those working in extended scope of practice	4.00	0.74	75	Round 2 review
50. Workforce development to build capacity for culturally safe healthcare service delivery	4.42	0.79	83.3	Retained
51. Local capacity building opportunities for health professionals and the community	4.08	0.79	83.3	Retained
<b>3. Information</b>				
52. Ensure the evaluation strategy, including data required and measures, is incorporated into planning early	4.33	0.65	91.6	Retained
53. Access to all relevant data to inform planning and priority setting	4.25	0.62	91.6	Retained

(Continues)

TABLE 3 (Continued)

Element items	Mean (out of 5)	SD	% scored 4 or 5	Retained or Round 2 review <sup>a</sup>
54. Access to specific data to measure the impact of interventions	4.33	0.49	100	Retained
55. Contextually specific data in relation to disadvantaged populations	4.33	0.49	91.6	Retained
56. Health economics data to measure return on investment	3.83	0.72	83.3	Round 2 review
57. Formative evaluation approaches to enable progressive real-time changes	4.08	0.67	83.3	Retained
58. Community-based action research to understand and effectively address the needs of local communities	4.17	0.72	83.3	Retained
59. Ensure children's outcomes are central	4.42	0.51	100	Retained
60. Consider outcomes in terms of various stakeholders, e.g. children, parents, service, community	4.33	0.65	100	Retained
61. Draw on information captured through service delivery, e.g. data in electronic medical records systems	4.00	0.74	75	Round 2 review
62. Explore data available from multiple sources, including government, interagency, and local	4.17	0.58	91.6	Retained
63. Consider collecting baseline data prior to service model implementation	4.33	0.65	91.6	Retained
64. Seek out exemplars and learnings from other like communities	4.17	0.72	83.3	Retained
65. Learning from one another through collaborative community-based action research	4.08	0.79	75	Round 2 review
<b>4. Technologies</b>				
66. Telehealth to improve access, overcome barriers and improve health outcomes	4.42	0.79	83.3	Retained
67. Telehealth as an optional mode of delivery, not a last resort	3.92	0.67	75	Round 2 review
68. Telehealth as an adjunct, providing additional access to specialist services between face-to-face consultations	4.17	0.72	83.3	Retained
69. Clinical practice guidelines or protocols to support the use of telehealth as a mode of service delivery	4.17	0.58	91.6	Retained
70. Reliable internet, equipment and technological connectivity	4.58	0.67	91.6	Retained
71. Technology to facilitate information sharing between healthcare providers	4.08	0.51	91.6	Retained
72. Technology to facilitate interagency information sharing	3.92	0.51	83.3	Retained
73. Technology to support interprofessional and interagency meetings	3.67	0.65	75	Round 2 review
74. Technological support for clinicians	4.08	0.51	91.6	Retained
75. Flexible and creative solutions to overcome technological barriers	4.00	0.74	75	Round 2 review
76. Reporting parameters that recognise telehealth and other less traditional modes of service activity	4.00	0.74	75	Round 2 review
77. Funding and billing streams to support the use of telehealth and other technologically-based service delivery	4.33	0.78	83.3	Retained



TABLE 3 (Continued)

Element items	Mean (out of 5)	SD	% scored 4 or 5	Retained or Round 2 review <sup>a</sup>
78. Telehealth to increase access to clinical support and consultation for clinicians	4.17	0.72	83.3	Retained
79. Telehealth to increase clinician access to professional development and capacity building	3.92	0.79	66.6	Round 2 review
80. Harnessing technology for innovative solutions to local challenges	4.08	0.51	91.6	Retained
<b>5. Finance</b>				
81. External grants to enable piloting of service models	3.67	0.49	66.6	Round 2 review
82. External grants to enable evaluation studies to assess service model efficacy in various contexts	3.75	0.62	66.6	Round 2 review
83. Committed longer-term funding to support sustainable change rather than short-term funding cycles	4.67	0.65	91.6	Retained
84. Funding models with flexibility and breadth to address the realities of healthcare provision across different settings and contexts	4.58	0.51	100	Retained
85. Funding models that include the time and resources required to build trust, local coalitions and community engagement to effectively adapt service models for local context	4.67	0.49	100	Retained
86. Sufficient funding to enable time to consult locally to inform service model adaptation, implementation and evaluation	4.58	0.67	91.6	Retained
87. Incentive schemes for recruitment and retention in difficult to staff settings	4.25	0.75	83.3	Retained
88. Financial support for community participation in service planning and governance	4.00	0.85	66.6	Round 2 review
89. Bulk billing to address financial barriers to healthcare access	4.33	0.78	91.6	Retained
90. Medicare (Government) rebates to enable coordinated care in vulnerable communities	4.25	0.97	66.6	Round 2 review
91. Funding for the Gold Standard of service delivery	3.75	0.87	75	Round 2 review
92. Interagency pooling of both financial risk and funding	3.58	0.79	58.3	Round 2 review
93. Interagency commitment including the sharing of resources to optimise capacity	3.67	0.89	58.3	Round 2 review
<b>6. Leadership and Governance</b>				
94. Local stakeholder representation in healthcare systems leadership and governance	4.17	0.72	91.6	Retained
95. Local stakeholder representation in planning and decision making	4.42	0.51	100	Retained
96. Decision making inclusive of local culture and population groups, particularly minorities and those with the greatest need	4.33	0.65	91.6	Retained
97. Funding bodies (e.g. government) specify interagency collaboration as an essential requirement for funding	3.83	0.83	58.3	Round 2 review
98. Community-based governance to empower local providers to address local community needs	4.08	0.79	75	Round 2 review
99. Cross jurisdictional and sector collation building	3.75	0.75	58.3	Round 2 review
100. Organisational culture which embraces advocacy and champions who understand the needs of local communities	4.08	0.67	83.3	Retained

(Continues)

TABLE 3 (Continued)

Element items	Mean (out of 5)	SD	% scored 4 or 5	Retained or Round 2 review <sup>a</sup>
101. Organisational culture focused on the improving outcomes for children and their families above all else	4.50	0.67	100	Retained
102. Organisational culture which exemplifies building relationships and trust within and across organisational boundaries	4.33	0.49	100	Retained
103. Organisational culture which mirrors a strengths-based approach from senior leadership to direct services for families	4.17	0.58	91.6	Retained
104. Collaborative governance across all levels, including macro (policy makers) and micro (local) level	4.00	0.60	83.3	Retained
105. Review of policy implications to avoid misalignment with service delivery realities in different contexts	4.25	0.62	91.6	Retained
106. Flexible approach to registration/professional requirements to enable new models of care	3.58	0.67	50	Round 2 review
107. Organisational culture that embraces negotiation with parents, community and other stakeholders	4.42	0.51	100	Retained

<sup>a</sup>Elements were retained on the basis of consensus being defined as mean  $\geq 4$  and  $\geq 80\%$  of scores 4 or 5.

TABLE 4 Prioritisation of Themes from Round 1 elements which reached consensus, grouped by WHO Building Blocks

Building Block	Element Themes	Prioritisation
1. Service Delivery	Community Engagement	1
	Accessibility	2
2. Health Workforce	Local workers' knowledge	1
	Recruitment and retention of appropriately skilled clinicians/interprofessional teams.	2
3. Information	Access to data for planning	1
	Meaningful outcomes	2
4. Medical Products	Connectivity & technical support	1
	Telehealth (clinical and prof development)	2
5. Finance	Realistic funding	1
	Flexible funding models	2
6. Leadership & Governance	Organisational culture valuing building trust	1
	Consumer representation	2

removed from inclusion (see Table 5). Analysis of the final list of elements for inclusion in the framework was conducted utilising the CMO realist evaluation frame to ascertain alignment and inform the structure of the framework for CFH service model adaptation (see Table 6). The categorisation of the elements against the CMO frame was undertaken by DS and independently reviewed by co-authors J.T., C.F. and D.D. to ensure consistency and accuracy of approach.

Of the final 97 elements identified for inclusion, 30 items were related to developing a thorough understanding of context (C). There were 43 items identified as describing mechanism (M), i.e. the manner in which implementation was undertaken that would be expected to influence the outcomes for the target group within the contextual setting. Based on the feedback of the Participatory Action Research which informed this Modified Delphi Study, the analysis of the 24 retained outcomes (O) related elements were further analysed in terms of expected outcomes ( $n = 12$ ) from the implementation of a

specialist service model for CFH; and evaluation approaches ( $n = 12$ ) to be considered when measuring the outcomes.

## 4 | DISCUSSION

Focusing analysis through the lens of Context-Mechanism-Outcomes provided a useful analytical frame to configure the elements in a manner which will lend itself to being articulated within the draft Framework for Adaptation of CFH Service Models for Diverse Settings, a primary aim of this modified Delphi study. The retained elements were also cross-checked and identified as being aligned with the prioritisations of the themes identified by the expert panel members in round 2, reinforcing the capturing of key messages and elements which the panel agreed were important to consider when adapting a service model for a different context.

TABLE 5 Round 2 e-survey results—Elements that did not meet Round 1 consensus

Element items	Mean	SD	% scored 4 or 5	Retained or discarded <sup>a</sup>
<b>1. Service Delivery</b>				
Item 33: Innovative models of service delivery	3.67	0.65	58.3	Discarded
<b>2. Health Workforce</b>				
Item 37: Interprofessional team approach to maximise workforce resources	4.25	0.45	100	Retained
Item 39: Flexible access to professional development including telehealth	4.25	0.45	100	Retained
Item 40: Clinician exchange programs (e.g. between metropolitan and rural services)	3.58	0.51	58.3	Discarded
Item 44: Train-the-trainer to build capacity to implement evidence-based service models and programs	3.83	0.58	75	Discarded
Item 46: Key workers identified as care coordinators	4.33	0.89	91.6	Retained
Item 49: Support and professional development, particularly for those working in extended scope of practice	4.33	0.49	100	Retained
<b>3. Information</b>				
Item 56: Health economics data to measure return on investment	4.08	0.51	91.6	Retained
Item 61: Draw on information captured through service delivery, e.g. data in electronic medical records systems	4.00	0.43	91.6	Retained
Item 65: Learning from one another through collaborative community-based action research	4.17	0.58	91.6	Retained
<b>4. Technologies</b>				
Item 67: Telehealth as an optional mode of delivery, not a last resort	4.08	0.51	91.6	Retained
Item 72: Technology to facilitate interagency information sharing	3.92	0.29	91.6	Discarded
Item 73: Technology to support interprofessional and interagency meetings	3.83	0.39	83.3	Discarded
Item 75: Flexible and creative solutions to overcome technological barriers	4.17	0.39	100	Retained
Item 76: Reporting parameters that recognise telehealth and other less traditional modes of service activity	4.17	0.72	83.3	Retained
Item 79: Telehealth to increase clinician access to professional development and capacity building	4.17	0.58	91.6	Retained
<b>5. Finance</b>				
Item 81: External grants to enable piloting of service models	4.08	0.29	100	Retained
Item 82: External grants to enable evaluation studies to assess service model efficacy in various contexts	4.25	0.45	100	Retained
Item 88: Financial support for community participation in service planning and governance	4.33	0.78	83.3	Retained
Item 90: Medicare (Government) rebates to enable coordinated care in vulnerable communities	4.42	0.67	91.6	Retained
Item 91: Funding for the Gold Standard of service delivery	3.83	0.58	75	Discarded
Item 92: Interagency pooling of both financial risk and funding	3.75	0.62	66.6	Discarded
Item 93: Interagency commitment including the sharing of resources to optimise capacity	4.00	0.60	83.3	Retained
<b>6. Leadership and Governance</b>				
Item 97: Funding bodies (e.g. government) specify interagency collaboration as an essential requirement for funding	3.83	0.83	75	Discarded

(Continues)

TABLE 5 (Continued)

Element items	Mean	SD	% scored 4 or 5	Retained or discarded <sup>a</sup>
Item 98: Community-based governance to empower local providers to address local community needs	4.42	0.51	100	Retained
Item 99: Cross jurisdictional and sector collation building	3.83	0.72	66.6	Discarded
Item 106: Flexible approach to registration/professional requirements to enable new models of care	3.67	0.49	66.6	Discarded

<sup>a</sup>Elements were retained on the basis of consensus being defined as mean  $\geq 4$  and  $\geq 80\%$  of scores 4 or 5.

Existing literature has emphasised that when seeking to implement services and initiatives it is a comprehensive understanding of context and contextual dynamics that matters most (May et al., 2016; Parker et al., 2013; Wakerman, 2009). Consistent with this, the Delphi panel recommended the retention of a large number of elements focusing on extensive exploration of local context. The retained 'Context' elements included: the need for sufficient time to conduct a thorough exploration of the context; the need for a systematic approach and learning from other exemplar communities; and the importance of organisational culture focused on collaboration, building trust and mirroring a strengths-based approach at all levels. A key theme was the essential nature of community stakeholder inclusion and drawing upon the local knowledge of both consumers and local clinicians in order to develop a comprehensive understanding of the multifaceted factors which contribute to local context, including strengths such as community cohesiveness, interagency connection and opportunities to collaborate to develop innovative solutions to challenges (Wakerman, 2008).

A key theme within the 'Mechanism' related elements were references to the need for flexibility in the delivery of services. This finding aligns with rural health literature highlighting the need for flexibility to adjust to the community context (Pidgeon, 2015; Semansky et al., 2012; Smith et al., 2016), including the modes of delivery and pathways in and out of services. Factoring in strategies and resources to support parents to navigate service system networks was identified as a key component for consideration when adapting a model for a local context. While the importance of service models being evidence-based was identified (Vanderpool et al., 2011), there were clear messages that service models must reflect real life, including embracing diversity and community inclusion, i.e. through place-based systems of care.

Collaborative and integrated interagency service models with communication based on mutual trust and respect were highlighted as being integral to success. Another key theme was the recruitment of skilled clinicians, ideally to form interprofessional teams to build workforce capacity (Parker et al., 2013). The provision of training and mentorship was noted as essential for retention of rural workforce.

Telehealth was identified as a key feature of consideration for service models in rural settings. As identified in published literature, telehealth can play an important role as both a clinical service delivery modality to improve access and equity to services, and for clinicians to access professional development and clinical support (Dooley et al., 2009; Pidgeon, 2015). Funding streams that support

telehealth and technology are needed for the sustainability of such models, as is technical support and connectivity to enable this mode of clinical service and support. The study results emphasised the needs identified by authors in the field of rural health literature, for longer-term, realistic funding models. Funding models need to allow for flexibility to enable adaptation for local contexts rather than short-term cycles with rigid requirements for effective implementation of service models to improve rural health outcomes (Fitzpatrick et al., 2017; Semansky et al., 2012).

The retained elements relating to 'Outcomes' were identified as those relating to the nature of the outcomes *expected* (i.e. the "what are we hoping to change") when implementing an effective service model to meet the needs of children and their families; and elements which described considerations when planning an *evaluation* strategy (i.e. "how will we go about measuring change"). When considering desired or expected outcomes, a key theme was the need to consider outcomes in terms of various stakeholders. Given the focus on the adaptation of CFH service models, keeping the child central to all outcomes was identified as vital. From there expected outcomes may branch out in terms of positive change for parents, the broader community, health professionals and other workers, specific organisations, and/or the service sector as a whole. Expected outcomes also related to the need for an effective, well-integrated service system network, built on a platform of trust and shared vision, which facilitates access not only to help in times of crisis but proactively reaches out to normalise parental help-seeking and builds social capital.

When considering how to go about measuring and evaluating outcomes, identification of and access to relevant data sets in the early stages of planning was identified as a key component for planning and implementation of a new service model. Data may be accessed from various sources and include context-specific data, local community-based data, population health data, descriptors of data relating to the social determinants of health and/or health economics data to provide a baseline from which to measure change. Evaluation approaches and methodologies for consideration highlighted the opportunity to learn from and with one another through community-based action research (Farmer & Nimegeer, 2014; Sullivan et al., 2013) through formative and iterative approaches to evaluation, enabling action cycles to evaluate strategies and implement further improvements.

The need for sufficient funding to support service implementation or consideration of sourcing external grants to enable

TABLE 6 C-M-O analysis of retained framework elements

Context	Mechanism	Outcomes (Expected)	Outcomes (Evaluating)
Adapting the service model for the local context	Flexibility in the service model to address different community contexts and needs	Ensure children's outcomes are central	Ensure the evaluation strategy, including data required and measures, is incorporated into planning early
Asking parents to assist in the formulation of language/communication strategy that is meaningful to them	Flexible modes of delivery	Consider outcomes in terms of various stakeholders, e.g. children, parents, service, community	Access to specific data to measure the impact of interventions
Taking the time to understand the local health priorities and contextual factors	Flexible pathways into the service	CFH models that are proactive, rather than waiting for a family to be in crisis	Health economics data to measure return on investment
Sufficient time to identify a suitable model and consult locally to inform adaptation, implement and evaluate	Maintaining a balance between flexibility and productivity	A well-integrated service system network	Formative evaluation approaches to enable progressive real-time changes
A systematic approach to planning, implementation, adaptation and evaluation	Identify service model elements that must remain stable and those with flexibility for the community context	Clarity in relation to service and clinician roles	Community-based action research to understand and effectively address the needs of local communities
Consumer engagement in service design and implementation planning	No wrong door access to the service	Asking parents what they want/need and when	Draw on information captured through service delivery, e.g. data in electronic medical records systems
Community-based participation to customise models and adapt to local community needs	Care navigation support for families	Community stakeholder engagement to promote trust, shared vision and build social capital	Explore data available from multiple sources, including government, interagency and local
Community stakeholder participation to identify innovative solutions to implementation challenges	A communication strategy to enhance interagency stakeholder understanding of the service model	Increase access to comprehensive care through collaborative service delivery	Consider collecting baseline data prior to service model implementation
Community stakeholder participation to ensure culturally sensitive care	A service model that reflects real life	Local capacity building opportunities for health professionals and the community	Learning from one another through collaborative community-based action research
Education of clinicians to support comprehensive understanding of the local health context	A focus on interventions able to be tailored to the needs of the child, parent and family	Remove barriers to access to increase the availability of help and support for families	Reporting parameters that recognise telehealth and other less traditional modes of service activity
Key workers with a thorough understanding of local needs identified as advocates for their communities	Best practice evidence-based service models	Normalising 'help-seeking' to gain access to the service	External grants to enable evaluation studies to assess service model efficacy in various contexts
Harness the knowledge of local healthcare workers to inform service improvements and policy decisions	Service models which embrace diversity and community inclusion	Flexible and creative solutions to overcome technological barriers	Sufficient funding to enable time to consult locally to inform service model adaptation, implementation and <u>evaluation</u>
Access to all relevant data to inform planning and priority setting	Place-based systems of care		
Contextually specific data in relation to disadvantaged populations	Collaborative cross sector integrated service models based on trust, respect and mutual expertise		
Seek out exemplars and learnings from other like communities	Integrated service delivery including sharing of information regarding the needs and care of the family		

TABLE 6 (Continued)

Context	Mechanism	Outcomes (Expected)	Outcomes (Evaluating)
Funding models with flexibility and breadth to address the realities of healthcare provision across different settings and contexts	Recruitment and retention strategies to ensure appropriately skilled clinicians		
Funding models that include the time and resources required to build trust, local coalitions and community engagement to effectively adapt service models for local context	Recruitment and retention strategies to secure multi-skilled clinicians to work across a broad scope of practice		
Financial support for community participation in service planning and governance	Interprofessional team approach to address the diverse needs of communities		
Interagency commitment including the sharing of resources to optimise capacity	Interprofessional team approach to maximise workforce resources		
Local stakeholder representation in healthcare systems leadership and governance	Interprofessional teams to build workforce capacity through sharing of knowledge and expertise		
Local stakeholder representation in planning and decision making	Flexible access to professional development including telehealth		
Decision making inclusive of local culture and population groups, particularly minorities and those with the greatest need	Mentorship of clinicians across communities		
Community-based governance to empower local providers to address local community needs	Training and mentorship by experts to overcome implementation challenges when establishing new services or programs		
Organisational culture embraces advocacy and champions who understand the needs of local communities	Collaborative workforce models across organisational boundaries		
Organisational culture focused on improving outcomes for children and their families above all else	Key workers identified as care coordinators		
Organisational culture exemplifies building relationships and trust within and across organisational boundaries	Support and professional development, particularly for those working in extended scope of practice		
Organisational culture mirrors a strengths-based approach from senior leadership to direct services for families	Workforce development to build capacity for culturally safe healthcare service delivery		
Collaborative governance across all levels, including macro (policy makers) and micro (local) level	Telehealth to improve access, overcome barriers and improve health outcomes		
Review of policy implications to avoid misalignment with service delivery realities in different contexts	Telehealth as an optional mode of delivery, not a last resort		

Context	Mechanism	Outcomes (Expected)	Outcomes (Evaluating)
Organisational culture that embraces negotiation with parents, community and other stakeholders	Telehealth as an adjunct, providing additional access to specialist services between face-to-face consultations		
	Clinical practice guidelines or protocols to support the use of telehealth as a mode of service delivery		
	Reliable internet, equipment and technological connectivity		
	Technology to facilitate information sharing between healthcare providers		
	Technological support for clinicians		
	Funding and billing streams to support the use of telehealth and other technologically-based service delivery		
	Telehealth to increase access to clinical support and consultation for clinicians		
	Telehealth to increase clinician access to professional development and capacity building		
	Harnessing technology for innovative solutions to local challenges		
	External grants to enable piloting of service models		
	Committed longer-term funding to support sustainable change rather than short-term funding cycles		
	Incentive schemes for recruitment and retention in difficult to staff settings		
	Bulk billing to address financial barriers to healthcare access		
Medicare (Government) rebates to enable coordinated care in vulnerable communities			

comprehensive evaluation was highlighted in order to take the time required for thorough local consultation and to assess the efficacy of a service model within a different context. The retained items related to funding which emphasised the need for flexible funding, with long-term funding being optimal for effective service implementation and evaluation. While a retained item referred to the sharing of interagency resources to optimise collective capacity, a discarded item described 'pooling of financial resources'. This may be reflective of agency governance requirements (including financial acquittals) creating a barrier to the sharing of funds, however, participants confirmed that opportunities exist for collaboration through contributions such as 'in-kind'.

A limitation of this study was the lack of opportunity to explore the reasons for certain elements being excluded from the framework. Items excluded after the two modified Delphi rounds

were noted to have common elements relating to interagency sharing of information and resources. The exclusion of these elements may reflect that while being supported philosophically, the sharing of resources between organisations may not always be practical. Further research is needed to explore and gain a greater understanding of this outcome given that other studies and literature have highlighted the opportunities for increased service capacity and responses when resources and information are shared (Semansky et al., 2012).

Further limitations of this study relate to the targeted number of participants and need for those participating to have access to computers/email and level of literacy to enable completion of the e-questionnaires. While the number of expert panel members explicitly representing consumers (rural parents) was limited, 50% of the expert panel participants were either currently living in or had

previously resided in a rural community setting. In addition, the PAR studies (one which preceded and one which followed this Delphi study) provided opportunity for those with a lower level of literacy and from “less resourced” communities to participate, contributing to the final set of elements included in the framework developed for the adaptation of specialist community-based CFH service models for rural and other under-resourced settings.

## 5 | CONCLUSIONS

This study highlighted that community engagement and participation are vital foundations for adapting service models for diverse contexts, including less well-resourced rural and remote communities. Funding models that enable taking time for engagement and the sourcing and utilisation of data, while drawing on the local knowledge of consumers, community members and clinicians to gain a comprehensive understanding of the community context, provide a robust platform upon which to review the appropriateness of a service model to address identified community needs. This then informs the identification of service model components that must remain stable and assess whether these are appropriate to the context; and those that lend themselves to being flexibly adapted to the unique needs of a community to achieve agreed expected outcomes.

A community-based approach to such service model adaptation provides opportunities for both improving child and family outcomes, while building community capacity and trust between stakeholders. This study has also demonstrated that an expert panel combining the diverse experiences and backgrounds of consumers and those working in the health, non-government and academic sectors, can reflect upon their respective experiences and knowledge to reach consensus, providing collective insights upon which to identify elements essential to CFH service planning when adapting interventions for diverse contexts.

### AUTHOR CONTRIBUTIONS

DS designed the study, undertook the project management of the study including participant recruitment, collected and curated the data, undertook data analysis and prepared the manuscript. JT, CF and DD were involved in study design, review and refinement of data collection tools, provided advice on recruitment, assisted with ethical approval, the validation of data analysis and contributed to the manuscript preparation. All authors read and approved the final manuscript.

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### CONFLICT OF INTEREST

The authors declare that they have no competing interests.

### DATA AVAILABILITY STATEMENT

The authors confirm that the data supporting the findings of this study are available within the article and its supplementary materials.

### ETHICAL APPROVAL

This study was approved by Sydney Local Health District Human Research Ethics Committee (RPAH Zone) – Protocol No X18-0358 & HREC/18/RPAH/504; and the University of Technology Sydney Human Research Ethics Committee (Ref: ETH19-3496). All participants were provided with a Participant Information Sheet and provided informed written consent.

### CONSENT FOR PUBLICATION

The data in this study has been de-identified. All participants in this study were provided with a Participant Information Sheet including reference to the publication of study results, and signed a consent form. All authors have read and approved the final version of the manuscript. Deborah Stockton had full access to all of the data in this study and takes complete responsibility for the integrity of the data and the accuracy of the data analysis. Deborah Stockton affirms that the manuscript is an honest, accurate and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned have been explained.

### TRANSPARENCY STATEMENT

Deborah Stockton affirms that the manuscript is an honest, accurate and transparent account of the integrative review being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned have been explained.

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