

# BMJ Open Identification of models, theoretical design and formal evaluation of integrated specialist community health service provision for the first 2000 days: a protocol for a scoping review

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## ABSTRACT

**Introduction** The first 2000 days of a child's life (during pregnancy up to age 5 years) represent a critical period, in which early interventions reduce risk associated with developmental delay, disability and intergenerational disadvantage. The risk is exacerbated by barriers to specialised early intervention for children and families. This scoping review seeks to contribute to the evidence for sustaining integrated community-based specialist care in these earliest years of a child's life.

**Methods and analysis** The Joanna Briggs Institute scoping review framework will be followed. Inclusion and exclusion criteria for screening of literature is predefined, guided by the criteria of population, concept and context. The review will identify models of care delivery, and will identify quality of care outcomes that have been measured, including evidence of reliability and validity. Sources of evidence will include CINAHL, Cochrane databases, Medline, PsycINFO and Scopus.

**Ethics and dissemination** In a three-part study, evidence synthesis from the scoping review of the literature; mapping of existing specialist early years services in one community and a consumer consultation (Curtin University Human Research Ethics approval HRE2021-0546) in the same community will inform a model of integrated care that accounts for the context of the community it seeks to serve. Results will be disseminated by peer-reviewed publications and conference presentations, contributing to the evidence base for delivering sustainable community-based integrated care in the context of the first 2000 days. This protocol is specific to the scoping review.

## BACKGROUND

Timely access to healthcare in the first 2000 days is often delayed for families who face inequity through social determinants, including geographic, cultural and economic factors.<sup>1,2</sup> In recognition of this, current policy focuses on reducing inequity and supporting child development through community-based, integrated, service provision.<sup>3,4</sup> Challenges to implementing and sustaining such services

## Strengths and limitations of this study

- To the authors' knowledge, this will be the first scoping review specific to the provision of integrated care in early childhood.
- This scoping review will contribute to the evidence for supporting optimal outcomes of development through early intervention in the first 2000 days.
- The scoping review forms one part of a larger study, the overall study is informed by an ongoing process of community consultation.
- The objective of a scoping review is to synthesise evidence, study quality is not assessed.

for early child development are, however, acknowledged internationally.<sup>3,5,6</sup> In Australia, there are limited evaluation data and evidence to inform change in policy and practice.<sup>7</sup> Equitable physical access to community-based services was found to be important for families with young children, including access by public transport and walking.<sup>7</sup> Other issues pertaining to demand for supply and access to services included cost, waiting lists, integration and coordination of services.<sup>8</sup> This represents an evidence gap for data to inform interventions and policy changes, including measurement data to suggest causal links that support continuity of community-based interventions.<sup>7,8</sup> Measures to reduce this evidence gap and to address the disadvantage that young children and families experience due to inequity, have potential to improve cognitive, physical and social outcomes by up to 70%.<sup>1</sup> In response to this gap, evidence for integrated care will be mapped through a scoping review. This a priori protocol follows the Joanna Briggs Institute (JBI) framework for scoping review method; the question is guided by the inclusion criteria 'population,'

'concept' and 'context'.<sup>9 10</sup> Population is represented by the first 2000 days of life; the concept is the design/model and delivery/experience of integrated specialist care, in the context of community-based specialised services.

**Population:** The first 2000 days represent a critical period for ongoing health, behaviour and learning.<sup>11 12</sup> In this period of development during pregnancy up to age 5 years, neurobiological pathways are shaped forming a trajectory for ongoing health, behaviour and learning.<sup>12</sup> Children at risk of poor outcomes of development, including developmental disability and delay, are protected through early diagnosis and timely intervention.<sup>13</sup> Within a systems model, we understand that beyond intrinsic neurobiological pathways, children experience risk through negative environmental determinants.<sup>14</sup> These include family and community factors such as maternal depression, intergenerational trauma, neighbourhood safety and social inequity.<sup>12 14–16</sup> Environmental determinants also encompass the natural and built physical environment, including greenspace, housing and transport, healthcare infrastructure (including policies and practices) and access to health promotion programmes.<sup>7 14</sup> Inequity is defined as 'an unfair or ethically problematic difference' in developmental outcomes.<sup>17</sup> Although the risk to children's development is highest in low-income and middle-income countries, inequity carries a cost to development in any country. This risk is exacerbated by barriers to specialised intervention for children and families in the first 2000 days, such as long waitlists, high costs, inequitable access, and lack of available services.<sup>18 19</sup>

**Concept:** The concept of integrated care includes many aims and strategies and is not narrowly defined.<sup>20–22</sup> Definitions include the concepts of case management, multi-disciplinary work, chains of care between organisations through partnership and collective accountability, and a whole system approach.<sup>21</sup> Systematic reviews of integrated care, however, reach consensus on two broad principles. First, that the focus of care extends beyond organisational structure, and second, that family centred care must be a central component of any definition.<sup>6 21</sup> The first principle relates to methods to organise, fund and deliver care in a co-ordinated way, informed by emerging policies and practices. The second relates to goals of patient and family centred care, shaped by context, and measured by outcomes including consumer experience.<sup>6 20 21</sup> Aims and expectations of integrated care can conflict, for example, some models of care aim to show reduced cost. This may conflict with providing time and space for consumers to partner in their own care.<sup>6 12 21</sup> Models of integrated care must be specific to the context of the population they aim to serve.<sup>22</sup> Consistent measurement of outcomes will provide a continual feedback process to inform context specific policy and practice<sup>23</sup> using a plan–do–study–act (PDSA) cycle.<sup>24</sup> PDSA will be informed by a broader methodological approach,<sup>24</sup> beginning with a map of existing services and environmental determinants in the community, consumer and stakeholder engagement, and this scoping review.

**Context:** Early childhood interventions provide universal, targeted or specialised support to promote and protect health and learning for children and families across the whole of society. Ideally, integrated care will span these levels of support to empower families and communities to provide nurturing care, including those who experience difficulty in accessing services due to a history of trauma and adversity.<sup>25</sup> A rigorous meta-analysis revealed mixed, and sometimes contradictory, findings on the effectiveness of integrated care on outcomes of interventions for chronic conditions in children aged 0–18 years in high-income countries, including asthma, diabetes and obesity.<sup>6</sup> An evidence gap is also reported for 'specialist' interventions including developmental delays and disorders, maternal depression and intergenerational trauma.<sup>26</sup> Subsequent delays in early intervention represent a missed opportunity to provide interventions when the brain is most adaptable.<sup>11</sup> For example, a reliable diagnosis of autism spectrum disorder is possible by age 24 months, however in Australia the most frequently reported age of diagnosis for children under 7 years of age was 71 months.<sup>27</sup> Time to diagnosis was influenced by sociodemographic factors, including long wait lists for specialised services.<sup>27</sup>

Wolfe *et al*<sup>6</sup> identified 'concerns about the design and evaluation of children's integrated care,' and recommended a research focus on this topic. No studies reviewed presented a logic model to inform development of the intervention or a theoretical framework to guide how interventions were selected or measured.<sup>6</sup> Authors of recent systematic reviews have consistently identified a lack of evidence around models to guide implementation of integrated care through policy and practice.<sup>6 20 21</sup> In relation to children's services, Wolfe *et al*<sup>6</sup> identified an additional gap in measurement and recommended development of a 'validated measure to assess the level of integration in healthcare' (Wolfe, p8).<sup>6</sup> In response to these identified gaps, we conducted a preliminary search for systematic or scoping reviews on 23 April 2021, and again on 14 October 2021 using free text title and abstract [tiab] terms 'early childhood' or 'early child\*' or 'maternal and child' and 'integrated' or 'specialist health care' or 'specialist healthcare' or 'specialist health-care' and 'community health' or 'community health service'. Medical Subject Headings (MeSH) terms included 'systematic review' or 'scoping review' and 'child health services' and 'delivery of health care, integrated' and 'specialist'. Search platforms included Pubmed, Cochrane, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Ovid MEDLINE Subject Headings, Epistemonikos, Evidence for Policy and Practice Information. No review was found to meet the objective to identify models of integrated care, or measures to evaluate integrated care for children and families in the first 2000 days (the search strategy is included as online supplemental file 1). This article presents a scoping review protocol to synthesise available evidence.

**Table 1** Inclusion and exclusion criteria for screening of literature

	Inclusion criteria	Exclusion criteria
Population	The first 2000 days, during pregnancy up to age 5 years. Includes care for mothers, fathers, carers.	Population other than during pregnancy up to age 5 years.
Concept	Models of integrated healthcare by specialist providers. Integration may include education and welfare services.	Models of integrated care that do not include specialist healthcare. Studies specific to selective primary care, for example screening, immunisation and general practice. <sup>34</sup>
Context	Community-based specialist child and family services. This may include school-based services, playgroups and child-care, safe places for social gathering. The interactions, pathways and protective factors through which early child development is supported in the community. <sup>7</sup>	Inpatient services.
Evidence sources	Meta-analysis and systematic reviews, primary research studies, grey literature.	
Publication date	2010 to current.	Literature published prior to 2010.
Language	English language	Literature published in languages other than English

## REVIEW QUESTION

What models, theoretical design and methods of formal evaluation are used for integrated specialist community-based health service provision for the first 2000 days?

## PROTOCOL METHODS/DESIGN

The JBI scoping review framework will be followed<sup>9</sup> (see online supplemental file 2 for completed protocol checklist). Inclusion and exclusion criteria for screening of literature is predefined, and guided by ‘population, concept, context’ (see table 1). We are reviewing community-based integrated care, underpinned by comprehensive primary healthcare.<sup>28</sup> Comprehensive primary healthcare incorporates physical and psychosocial contexts of health and well-being, developing sustainable relationships with individuals, families and communities to promote community participation and control over their health services. The focus is on equity, access, empowerment and intersectoral partnerships.<sup>28</sup> In contrast, selective primary healthcare is based on a health practitioner model of care and does not focus on social determinants of health or equity.<sup>29</sup> Health planning associated with selective primary care aims to provide cost-effective programmes with defined outcomes, for example, immunisation and screening programmes.<sup>29</sup> Studies specific to selective primary care and general practice will be excluded.

### Approach for data search, selection, extraction and presentation of evidence

The search will include three steps: (1) Electronic database search in Medline and CINAHL, search terms identified through keyword MeSH terms and free text (tiab) terms. In free text searches the (tiab) function will restrict the search to title and abstract. MeSH and free text will be conducted separately.

In an iterative process, search terms may be revised, informed by words in titles and abstracts of identified articles. (2) The second search will use revised terms, databases will include CINAHL, Cochrane databases, Medline, PsycINFO and Scopus. Limits applied to the first and second search will include: January 2010 to current to account for policy and practice relevant to the past decade, English language, full text, human. (3) A manual reference search of original articles in the grey literature, using a snowball technique to find government documents<sup>30</sup> and policy documents.<sup>31</sup> Authors will be contacted to identify additional sources, a maximum of two attempts will be made to contact each author. A logbook will be kept, including search dates and key terms.

### Search strategy and selection of articles that meet inclusion criteria

The search process will be presented in narrative form and as a Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow chart. Full-text articles will be retrieved and screened by two reviewers to identify articles that meet the prespecified inclusion criteria. A third reviewer may be included to gain consensus on unclear concepts. The PRISMA flow chart will provide an accurate account of the search: articles screened including duplicates, excluded articles; full-text articles retrieved and assessed for eligibility, and articles sourced in the third search. A justification code will be documented for excluded articles. Search results will be managed using EndNote x9 reference management software, and stored in Open Science Framework (<https://osf.io/>).

### Data extraction

Data from articles that meet the inclusion criteria will be compiled in a data extraction instrument charted to provide a summary that aligns with the research



**Table 2** Data extraction instrument

Article details	
Article title	
Reference	
Country	
No of participants	
Research objectives	
Inclusion/exclusion criteria	
Population	Age of children pre birth—5 years (including if individual studies included children, parents or carers). Presenting conditions of children, parents or carers.
Concept	Which specialist services are integrated? (eg, health, education, welfare.)
Context	What is the community context? (eg, non-government organisation, government organisation, school based service, rural or urban context.)
Outcomes	
Is integrated care defined?	Cite the definition of integrated care.
Is a logic model, or theoretical framework provided?	A logic model provides a process to evaluate complex interventions. A theoretical framework provides a paradigm for how new knowledge will be processed. <sup>35</sup>
What components support or challenge the delivery of integrated care?	
What outcomes are included, how are these measured?	Is there evidence of psychometric validation of outcome measures?

Adapted from Peters *et al.*<sup>9</sup>

objectives. An a priori data extraction instrument will be used (see [table 2](#)). Two reviewers will independently extract data then compare results. Any discrepancies will be discussed with a third reviewer. Consistent with Wolfe *et al.*<sup>6</sup> each article will be assessed for the inclusion of a logic model or theoretical framework. A logic model for health implementation research describes the implementation process, how it is delivered and what is delivered, giving an indication of the fidelity, dose, implementation and reach of the research.<sup>32</sup>

### Analysis of the evidence

Scoping reviews do not provide routine synthesis of evidence.<sup>31</sup> To meet the research objective of this review, we will identify the components that support or challenge the delivery of integrated care specific to the first 2000 days. A summary of each component will be documented, inductive analysis will be used to identify domains relevant

to models of integrated service provision for the first 2000 days. Outcome measures will be summarised, and will include evidence of the construct validity and reliability of measurement tools. Consistent with scoping review methods, the reviewed studies will not be assessed for bias or methodological quality.<sup>31</sup> Data will be managed using NVivo V.12 qualitative data analysis software.

### Presentation of results and summary of evidence

Integrated care is only successful if the model of care is 'contextually-bound ... to account for the unique needs and characteristics of the population it aims to serve'.<sup>22</sup> The purpose of a scoping review is to identify available knowledge. The results of this scoping review will be summarised and discussed in terms of practice and policy for implementing and sustaining integrated specialist care in the first 2000 days.

### Public and patient involvement

This study was commenced in response to a community consultation to inform the need for and direction of project development by the non-government organisation (NGO) Carey Community Resources, and future ethical considerations.<sup>33</sup> Community members highlighted difficulties in sourcing support for children and families due to long waitlists and distances needed to travel for specialist services. They also emphasised direct and indirect costs experienced by families when trying to access these services. The need for services to 'communicate' with each other, providing background and referrals was highlighted. Services also need capacity to work with families from diverse cultural and language backgrounds. Community members requested an information guide to show current available community services. In response to this initial conversation, the NGO mapped available services with a view to preparing an information guide. The research question for the scoping review was informed through the initial consumer feedback and by conversation with service providers during the mapping process.

### DISSEMINATION AND ETHICS

The results will be translated to initially inform practice in one community. The scoping review will comprise one part of a three phase study to match integrated specialist early years services to priorities identified by the community. In addition to the scoping review, the overall study will comprise evidence synthesis from mapping of existing health, education and welfare specialist services, and a community consultation. Ethics approval (Curtin University HRE2021-0546) has been granted for a community consultation with consumers and specialist care providers using qualitative research methods. Led by an NGO, synthesis of the three phase study will inform the development of a context-specific integrated service to support families and children during the critical developmental period

of the first 2000 days. This will provide an evidence base to reduce issues of access to services faced by communities, thereby lowering the intergenerational transmission of disadvantage. Results will be disseminated by peer-reviewed publications and conference presentations.

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**Contributors** HJN conceived of the study in conjunction with AM, SO, LW and SB, developed the research question and study methods, contributed meaningfully to the drafting and editing, and approved the final manuscript. AM, SO, LW, SB aided in developing the research question and study methods, contributed meaningfully to the drafting and editing and approved the final manuscript.

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## Additional File 1 Logbook / Search Strategy for Pilot Searches for Existing Reviews

*Protocol for a scoping review to identify models, theoretical design, and formal evaluation of integrated specialist community health service provision for the first 2000 days*

### DESCRIPTION OF PRELIMINARY SEARCH TO IDENTIFY NEED FOR SCOPING REVIEW

**Background searching** began Dec 2020 to identify Mesh Terms (Cochrane):

Mesh Terms identified in initial search:

- “Specialization”
- “Delivery of Health Care, Integrated”
- “Community Health Services”
- “Child Health Services” “Maternal-Child Health Services”
- “Child, Preschool” and “Infant”

Title and abstract (tiab) terms were identified in January 2021 (see Table 1).

Table 1. Tiab terms identified (PubMed)

Grouping	Free text terms PubMed	Results
#1 (Population)	“Early childhood”[tiab] OR “Early child*”[tiab] OR “Maternal and child”[tiab]	
#2 (Concept)	“Integrated”[tiab] AND “Specialist health care”[tiab] OR “Specialist healthcare”[tiab] OR “Specialist health- care”[tiab]	
#3 (Context)	“Community health”[tiab] OR “Community health service”[tiab]	
#4	#1 AND #2 AND #3	

Reflective notes following initial searches: No date restrictions were applied to most searches with the exception of OVID Medline (1991-current). Thoughts after a quick review of articles – how to approach? It might need to be about the model (see Wolfe et al. 2020).

#### 27<sup>th</sup> Jan 2021 Definitions of integrated care:

Goodwin (2016, p.1) [1] includes two broad principles to 1) bring care delivery systems together, and 2) deliver optimal care that is centred around people’s needs.

Wolfe et al. (2017) [2] present models based on an ecological systems perspective, and *cooperation between professionals to deliver person-centred care*. Cooperation between sectors can include between vertical care (primary care and secondary health care), horizontal care (health care and education), intersectorial care (health, education and social services), or longitudinal (health and non-health over time).

Hughes et al. (2020) [3] - an emerging set of clinical and policy practices shaped by context – 2 parts, the *methods* to organise, fund and deliver care, and the *goals* of outcomes and consumer experience.

N.B. – see Naik and Catic (2021, p.1) [4] “The concept of patient-centred care evolved into a model attuned to the patient experience of care, defined by the interactions between patients and providers and the care environment.”

## FULL SEARCH 23<sup>RD</sup> APRIL 2021, REPEATED 14<sup>TH</sup> OCTOBER 2021

Results are presented for search dated 14<sup>th</sup> October 2021 unless otherwise stated.

**PubMed:** (((("Delivery of Health Care, Integrated"[Mesh]) AND "Child Health Services"[Mesh]) AND "Child, Preschool"[Mesh]) AND "Infant"[Mesh])

Retrieved 149 results, 5 articles were considered following review of title and no scoping review, systematic review or meta-analysis aligned with the objectives of our study.

14<sup>th</sup> October 2021: 149 results (1995-2021).

**Pubmed:** (((("Early childhood"[tiab] OR "Early child\*" [tiab] OR "Maternal and child"[tiab]) AND ("Integrated"[tiab] AND "Specialist health care"[tiab] OR "Specialist healthcare"[tiab] OR "Specialist health-care"[tiab])) AND ("Community health"[tiab] OR "Community health service"[tiab])) AND (#1 AND #2 AND #3)

14<sup>th</sup> October 2021: Retrieved no results

**Cohrane:** "Systematic review" OR "Scoping Review" AND "Child health service\*" AND "Delivery of Health care, Integrated" (Title Abstract Keyword, publication date from Jan 1991 to Oct 2021, word variations were searched)

14<sup>th</sup> October 2021: 1843 Cochrane reviews, 133 Cochrane protocols.

Topic "Child Health" = 16 Protocols (none relevant),

= 541 Reviews

- Topic "Child Health – Public Health" = 19 reviews – none relevant
- Topic Child health – Developmental, psychosocial and learning problems = 34 reviews - none relevant
- Topic Child health – effective practice/health systems = 11 reviews - none relevant

MeSH Search – "Delivery of health care, integrated" and "Child health" and "Effective practice/health systems" = 9 reviews and 5 protocols.

Reviewed abstract of one Protocol - Care co-ordination interventions to improve outcomes during pregnancy and early childhood (up to 5 years), 2017, DOI: 0.1002/14651858.CD012761. This relates to care co-ordination between separately funded services. This is a different perspective to our proposed scoping review.

**CINAHL:** "Health Care Delivery, Integrated" AND "Child Health Services" (MH Exact Subject Heading) 1991-2020, Academic journals, "all infant" and "child, preschool: 2-5"

14<sup>th</sup> Oct 2021: 79 results but no systematic or scoping review.

**Ovid MEDLINE:** (("Systematic review" or "Scoping Review") and "Child Health Service\*" and "Delivery of Health care, Integrated").sh. (Mesh subject heading) limit 1 to english language and humans and year="1991-current" and "all child (0 to 18 years)"

14<sup>th</sup> Oct 2021: 14 results. Reviewed abstract of three articles:

1. Wolfe I, Satherley RM, Scotney E, Newham J, Lingam R. Integrated Care Models and Child Health: A Meta-analysis. *Pediatrics*. 145(1), 2020 01. This does not focus on early childhood and is specific to primary care and Integrated management of childhood illness.
2. Burkhart K, Asogwa K, Muzaffar N, Gabriel M. Pediatric Integrated Care Models: A Systematic Review. *Clinical Pediatrics*. 59(2):148-153, 2020 02. This is about psychiatric care.
3. Pandey A, Gireesh A, Viner R. Feasibility, acceptability, and effectiveness of young people-specific, integrated out-of-hospital services: a protocol for a systematic review. *Systematic Reviews*. 8(1):77, 2019 03 28. 10-24 years of age.



**Epistemonikos:** (title:(Systematic review OR Scoping Review) OR abstract:(Systematic review OR Scoping Review)) AND (title:(Child Health Services) OR abstract:(Child Health Services)) AND (title:(Integrated) OR abstract:(Integrated))

14<sup>th</sup> Oct 2021: 22 results, none relevant

**EPPI Centre:** 24 April 2021: Integrated care and education, one result was not relevant (2004).

<https://eppi.ioe.ac.uk/cms/Default.aspx?tabid=152>

#### REFERENCE LIST

1. Goodwin N. Understanding integrated care. *International Journal of Integrated Care*. 2016;16:6.
2. Wolfe I, Mandeville K, Harrison K, Lingam R. Child survival in England: Strengthening governance for health. *Health Policy*. 2017;121:1131–8.
3. Hughes G, Shaw SE, Greenhalgh T. Rethinking Integrated Care: A Systematic Hermeneutic Review of the Literature on Integrated Care Strategies and Concepts. *The Milbank Quarterly*. 2020;98:446–92.
4. Naik AD, Catic A. Achieving patient priorities: an alternative to patient-reported outcome measures (PROMs) for promoting patient-centred care. *BMJ Qual Saf*. 2021;30:92–5.