Paediatric rehabilitation outreach models

Evidence check

04 October 2022

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Evidence check questions

Question 1: What are the core components, principles or elements required for successful paediatric outreach models and services? Particularly with respect to children with rehabilitation needs and/or complex disability.

Question 2: What are the core components, principles or elements required, generally, for successful outreach models and services?

Summary

- Few sources provided descriptions or evidence on paediatric disability or rehabilitation outreach models. Due to limited paediatric evidence, this evidence check was extended to include adult models of care.
- The majority of models identified were described, rather than evaluated for formal outcomes. Where outcomes were described, they were qualitative. Some models were proposed by experts on the basis of identified gaps and needs, rather than being models actually in use. Across the literature, there was consensus on best practice, however a lack of strong evidence in support of it.
- The majority of sources identified on the topic were Australian, however two Canadian case studies described successful outreach models either for children or for adults with a disability.
- A number of service delivery models can offer services to rural and regional areas, including:[1]
  - specialist outreach services
  - hub-and-spoke or outreach arrangements that integrate with local services
  - 'orbiting staff' who spend significant periods of time (12 months or more) in one or two specific communities, work elsewhere for periods, then return to the same communities where orientation is not required
  - long-term shared positions, such as month-on/month-off, where the same practitioners service the same communities

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  - short-term locum or agency staff, who move from place to place or as a one off.
- Technology also has huge potential to address issues of access to services for children and families in rural, regional and remote Australian communities, noting that:
  - Virtual care has been shown to be feasible and acceptable.[2]
  - Virtual care can also help overcome workforce challenges, reduce waiting times, reduce the time and costs associated with family travel, and enable remote consultation, training and support for local health professionals.[1]
  - However, virtual care cannot always replace face-to-face visits for physical disability assessments[3] and is also addressed comprehensively elsewhere,[4, 5] so is not the focus of this review.
- Lessons from publications specifically on **paediatric physical and/or complex disability** suggest that rural and regional outreach models of care can aim to:
  - incorporate a culture of shared aims, collaborative leadership and enthusiasm[6]
  - be based on integrated systems and strong communication principles, so that families do not get lost in the system or have to repeat their information at every health visit[7]
  - have a program manager or liaison nurse role[6]
  - upskill local clinicians over time as they identify their learning needs[1]
  - include virtual care options to support families as well as local teams in between visits.[1]
- Descriptions of rural and regional outreach models of care from **other paediatric or similar adult populations** highlight the value of:
  - Planning. Models of care should be developed:
    - in genuine partnership and consultation with key stakeholders including children, families and services based in rural and regional areas[8-17]
    - with sustainability plans in mind[12, 13, 18]
    - with advance plans for how best to evaluate outcomes (and fund these evaluations) in order to best inform ongoing refinement of the service.[8, 12, 13, 19]
  - Staff:
    - identifying key local staff to act as champions for the model[14] and be upskilled in specialist areas[15, 16]
    - having local services work in teams that mirror the organisation of the tertiary service teams they collaborate with[14]
    - having consistent outreach staff visiting to develop relationships and rapport with patients and local services over time.[11]

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- Integrated care:
  - ensuring all relevant parties are kept up to date on a child's progress and needs.[9, 15, 18] This could include a liaison nurse role[20] or regular case conferences.[9]
- Resources:
  - ensuring clinics are held in spaces that are accessible and acceptable to patients and families,[12, 21] as well as planning how visiting outreach staff will be able to use shared and local spaces and equipment (both for clinical and administrative purposes)[11]
  - having administrative support or a clinic coordinator[11, 13]
  - ensuring visiting staff have access to IT and software that will work offline without internet access if needed.[9, 12]

- The majority of outreach models described involved metropolitan specialist teams visiting or creating outreach clinics in rural and regional areas (aka 'drive in drive out' or 'fly in fly out' services). The advantages to this approach are:
  - higher staff retention (thus fewer staff and resource challenges)[9]
  - it can be more cost effective than compensating families to visit metropolitan centres[3]
  - outreach models can be just as effective in meeting key outcomes as metropolitan services.[22]
- The reported disadvantages to 'fly in fly out' services include:
  - the need for plans to be in place for support in between clinics (such as locally trained staff, virtual care support).
- Other relevant models with available evidence include:
  - Hub-and-spoke models that can build greater capacity among community providers while retaining integration in tertiary programs.[6, 23]
- Additional findings of note:
  - Embedding specialist services in local communities does not necessarily guarantee improved patient-reported outcome measures.[24] For this reason, developing services in consultation with stakeholders (including children) and local communities may be a key factor in ensuring acceptable and patient-centred services.[17]
  - Importantly, a number of studies demonstrate that outreach services can be adapted to be culturally appropriate for the Australian context.[18, 25, 26]
  - Many studies describe providing outreach to rural and regional communities around every six months.[3, 8, 10, 23, 27]

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Limitations

The volume of publications on models of care for Question 2 meant that only reviews were included (in addition to a few key non-review papers identified on Google Scholar), so relevant papers may have been missed. Many models of care are not reported or published, meaning that this evidence review can only review publicly available documents and not a complete range of actual models of care employed in Australia (or other countries with similar healthcare models and geographic challenges).

Background

Recommendation 50 from The Review Of Health Services For Children, Young People And Families Within The NSW Health System (Henry Review), called for better coordination of paediatric rehabilitation services across NSW, facilitated by greater interaction between local health districts and specialist children's hospitals.[28]

People with complex and developmental disability and their families, in regional and rural areas want options for specialist and rehabilitation services closer to home.[7, 29, 30] In the absence of local options, they report wanting, at least, a local contact person for support and guidance, coordinated eligibility and accountability systems, adequate financial compensation to offset additional travel expenses[31], as well as services that acknowledge the unique ways of living and challenges that are associated with living in rural areas.[32]

Methods (See Appendices)

PubMed, Google and Google Scholar were searched on 03 August 2022. Evidence included in this review mostly comprises:

- documented instances of implemented or piloted models of care
- expert opinion, consumer perspective pieces or review articles detailing important components of (proposed or hypothetical) models of care
- evidence pertaining to paediatric complex disability and chronic care needs, particular with respect to physical rehabilitation needs. However, additional evidence beyond has also been included where the principles may be relevant and generalisable.

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Extracted results

Question 1. Paediatric models and services

Table 1. Paediatric models and services: Peer reviewed sources

Source	Summary
Peer reviewed sources	
Addressing the barriers to accessing therapy services in rural and remote areas Dew, et al. 2013.[7]	**Study type**: Qualitative study with consumers in NSW **Aim** • To report on consumer perspectives • To propose a model for integrating available services **Methods/Setting** • 70 carers (of children with disabilities) and 10 adults with disabilities • Focus groups and interviews **Results** • There are not enough readily available or accessible community-based therapy services to meet the needs of rural-based people with a disability. • People with a disability and their carers regularly travel considerable distances to receive services. • Participants reported that people with high-priority needs get access to therapy services; however, those who are not high priority may have to wait years. • Participants also reported limited access to therapy beyond early childhood. **Proposed model** • The proposed approach harnesses existing supports to build on existing rural therapy service delivery options. • It is person-centred and aims to reduce travel and waiting times. • It proposes an integrated approach of local support, outreach support, online support and metropolitan support that consumers believe is worth travelling for.
It's About Time: Rapid Implementation of a Hub-and-Spoke Care Delivery Model for Tertiary-Integrated Complex Care Services	**Study type**: Model of care description **Aim** • To describe the rapid implementation of a hub-and-spoke model of care for children with medical complexity: providing care closer to home, improving care for a vulnerable population and building capacity in the community.

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in a Northern Ontario Community. Major, et al. 2018[6]	**Population** • Children with medical complexity: often survivors of extreme prematurity and experiencing neuromuscular degenerative conditions, orphan syndromes and other conditions that do not meet the criteria for disease- or organ-specific comprehensive care programs. **Model of care** • Emphasises the importance of coordination of care, links to community resources and building productive bidirectional relationships between patients and healthcare providers. • The hub-and-spoke care delivery model is designed to deliver care closer to home, build capacity among community providers and retain integration in the tertiary programs. • Through interprofessional partnerships among providers in the acute, primary, community and rehabilitation care settings and the child and family, this model aims to achieve integrated, seamless care that maximises accessibility and minimises duplication. • The model includes a nurse practitioner within the interprofessional team of the tertiary complex care programs, who acts as the family's primary point of contact to coordinate services. During local clinics, the nurse practitioner flies to the regional hospital to liaise with families and their local care teams, as well as with the specialists at the larger tertiary hospital. • Nurse practitioners have the authority to diagnose, order diagnostic testing and prescribe medications. • The nurse practitioner is also responsible for keeping a comprehensive medical care plan in collaboration with sub-specialists and community providers. • The nurse practitioner builds capacity within the community team. **Vital components** • Enthusiasm for common goals, allowing for easier implementation • A team with a shared collaborative leadership dynamic • A pre-existing culture of collaboration and caring • Relationships formed over shared goals • A 'connector' or project manager devoted to the work **Conclusion** • The project demonstrates that a robust model of care that links community and tertiary centres with a liaison nurse role can be tailored to serve regional populations. • In developing the model of care, a project manager and enthusiasm on the ground were essential.
Thinking outside the system: the integrated	**Document type:** Models of care description.

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<table>
<tr><td>care experience in Queensland, Australia
Mundy, et al. 2019.[8]</td><td>

Aim

- To describe three novel integrated care models piloted in Queensland.

Models of care

- **Child health integrated care**: a paediatric shared care innovation for children with developmental, behavioural and learning difficulties.
  - Introduced a central referral and assessment point for regional child services, to increase coordination.
  - Offers additional training for local general practitioners and nurses.
- **Integrated allied health services** in rural communities
  - To address issues around accessibility, staff retention and patient travel.
- **Children and young people in out-of-home care**: managing their health and developmental needs through integrated care.
  - Development of an integrated system for assessment and management of children with developmental needs, which maximises local general practitioner input and allows for efficient digital communication between providers.

Conclusion

- Novel solutions to integrate care and outreach to rural communities are possible to design but require input from all relevant stakeholders, in addition to well-planned outcome measures and evaluation processes.

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<tr><td>Cape York Paediatric Outreach Clinic Improving access to primary care in the Cape York Peninsula region
Agostino, et al. 2012.[9]</td><td>

Document type: Case study from remote Queensland.

Model

- The clinic provides medical services for children with respiratory disease, developmental delay, failure to thrive or hearing loss, without the need for families to travel long distances.
- The clinic also provides assessment and therapy from a paediatric occupational therapist and other allied health clinicians.
- The clinic arranges regular case conferences with local staff, the outreach team and educators to update one another on the progress of high-needs children and to coordinate services.
- Using fly-in-fly-out staff has meant better staff retention over the years, rather than relying on locally based staff who might only be in the area on rotation or for short periods and whose training is then lost. (Although the article acknowledges that locally trained staff would be better for other reasons.)

Vital components

- Community support and buy-in. When the program began, time was invested in engaging community leaders, local councils and men’s and women’s groups to outline the aims of the program and to encourage a whole of community approach to child health.
- Software that can run offline and save locally in the case of internet outage.

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	• Reliable equipment and laptops that are flown in with the team during clinic visits. • Easy-to-access information for staff in case of no internet, e.g. reference books are downloaded locally onto iPads. • Feasibility – prescribing the least demanding medication regimen for a given illness to increase the likelihood of compliance. Medications that require assistance are prescribed by the fly-in-fly-out team, then supervised by local clinicians.
The Pediatric Acquired Brain Injury Community Outreach Program (PABICOP) - an innovative comprehensive model of care for children and youth with an acquired brain injury Gillett. 2004.[10]	**Document type**: Description of a model of care for brain injury. **Model of care** • This program focuses more on neuropsychological and cognitive rehabilitation, however, a few principles are generalisable. • Integration in the community is the goal and it is achieved through collaboration, empowerment, knowledge and advocacy. • Clinic outreach locations range across a large area so that most families can be seen closer to their home every six months, or at least travel to a closer clinic than the tertiary referral hospital. **Vital components** • An integrated approach where the visiting team sees the whole family together with local stakeholders such as the teacher, classroom aide or community healthcare worker. Families are invited to bring anyone to appointments who they feel is important in their child's rehabilitation journey. • An education and advocacy program links with local organisations, such as schools, recreational and religious centres, local paediatric community and mental health services, to teach about brain injury and rehabilitation. • The program was developed with local stakeholder consultation. • The allied health staff members of the outreach team try to conduct their assessments in the child's community and/or in functional settings. They conduct peer-to-peer consultation sessions with the local allied health staff based in the community, to provide advice and upskilling to any local staff unfamiliar with brain injury.

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Table 2. Paediatric models and services: Grey literature

Source	Summary
Grey literature	
Evidence check: Paediatric services capacity The Sax Institute. 2015.[33]	**Document type**: Report outlining a number of different paediatric models of care in Australia, including a few outreach services. It focused on hospital-based services and was not specific to disability. **Conclusions** • Outreach (including outreach clinics and telehealth models) provided a high level of efficiency and increased access to specialist paediatric services for patients and for health professionals from rural and remote regions. • These models saved costs, waiting times, presentations and admissions to tertiary hospitals in metropolitan areas, while providing appropriate and effective healthcare to patients. • Outreach models also supported upskilling of health professionals practicing outside of tertiary centres in metropolitan cities. **Vital components** • Outreach models need efficient videoconferencing facilities to support the service.
Victorian Paediatric Rehabilitation Service model of care Victorian Department of Human Services. 2021.[23]	**Document type:** Description of model of care implemented in Victoria. **Model of care** • This model usually provides outreach clinics on demand, with a particular view to upskilling local clinicians. • Ambulatory rehabilitation may take place in person or via videoconference, and in various locations, such as a community health centre, hospital, a child's school or kindergarten, their home or local area. • The service offers a number of specialised medical and allied health interventions including: botulinum toxin-A and phenol injections, intrathecal baclofen, deep brain stimulation, functional electrical stimulation, splinting and casting. • The service has a technology program for children who benefit from support with everyday technology to improve function. • The tertiary team: o liaises with local service providers when clients are discharged o provides clinical support advice mentoring or training of local healthcare staff o develops education workshops for local clinicians and other providers, such as schools, as necessary.

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<tr><td colspan="2">Grey literature</td></tr>
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The local team:

requests support from the tertiary team, where required
communicates its own learning requirements to the tertiary team.

The report discusses the challenges of upskilling clinicians in rural and regional areas, which include:

Gaining and maintaining skills in specialist areas requires the ability to see sufficient patients with the condition.
In rural and regional areas, alternatives include:

regular refresher training
mentoring programs
specific on-demand training accessed before seeing a particular patient.

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<tr><td>Redesigning paediatric neurological rehabilitation pathways in the West Midlands: A system wide approach to improving outcomes for children and young people

Birmingham Women and Children’s NHS Foundation Trust. 2019[14]</td><td>
Document type: Description of model of care implemented in regional United Kingdom
Model of care

Increased communication channels between services, which were previously working in silos and requiring families to repeat information constantly.
Changes were made to the way that local occupational health and speech therapy services:

prioritised patients being discharged from inpatient rehabilitation
worked as a multidisciplinary team, rather than in isolation, to mirror the care offered by the tertiary hospital services.

Community physiotherapists identified four therapists as champions to receive extra training in community rehabilitation to upskill their local team.
A service directory was produced, with information on services that may be able to support families at different points in their journey.
Changes to services and information were patient-led and creative, given no budget was available.

Vital components

Investing significant time and commitment to really understand what the problem was. This made identifying solutions and measuring change easier.
Planning with a wide range of stakeholders, including patients and families.

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Source	Summary
Grey literature	
	• Using goal setting and outcome measurements to inform rehabilitation.
Queensland Paediatric Rehabilitation Service: Fact Sheet Children's Health Queensland Hospital and Health Service. 2016[27]	**Document type:** Brief description of the Queensland paediatric rehabilitation outreach service. **The model** • Outreach clinics occur twice a year in Bundaberg, Cairns, Gold Coast, Hervey Bay, Mackay, Rockhampton, Toowoomba and Townsville. • Minimal detail is available on publicly accessible platforms.
Reaching Out to Mums, Bubs and Children in 'Top End' Communities The Royal Australasian College of Physicians. nd.[18]	**Document type**: Case Study from remote Northern Territory **Model of care** • A paediatric outreach service for mothers and babies, operates in rural northern Northern Territory. • The service aims to be responsive to the needs of the community, especially with respect to language and culture. • The clinic team plans, with community health services, to develop an annual visiting schedule, and to ensure mothers, fathers, infants and children are able to attend appointments. • While on visits, the team works closely with the local team members such as community rural health service staff and Aboriginal health practitioners to help ensure a culturally safe service. • Entertainers from the Starlight Children's Foundation often attend outreach clinics to provide children in waiting rooms with entertainment, and encourage their ongoing attendance at outreach clinics. **Vital components** • Staffing: the outreach clinic is built into specialist and registrar job descriptions and schedules, so staff know their visiting schedule and become familiar with the communities. • Culturally safe – the program incorporates Aboriginal leadership and is person-centred and family-oriented. • Sustainability – the underlying organisational culture, funding avenues and administrative support ensure sustainability. • Integration – Good communication with the local community health teams is essential. Electronic record keeping is used where possible to ensure records are accessible by multiple parties. • Longstanding relationships are established with the families.

<table>
<tr><th>Source</th><th>Summary</th></tr>
<tr><td colspan="2">Grey literature</td></tr>
<tr><td>Providing a contemporary child development service to children and families living in rural and remote communities across North Queensland: The evidence for a new model of care

Child Development Service Townsville. 2016[11]</td><td>Document type: Case study of outreach services for children with chronic and complex developmental concerns living in outer regional, rural and remote localities.

The model
• Care provided in a family-centred, transdisciplinary way.
• Involved outreach visits every four weeks with a visiting allied health team.
• Increased consultation, collaboration and integration with local services.
• Analysis of a three-month pilot indicated positive outcomes with respect to activity, engagement and satisfaction.
• A business case is described for an improved version of the model following the three-month pilot.

Vital components
• The model was based on feedback regarding community needs.
• Consistent outreach team staffing resulted in enhanced relationships and rapport with local clinicians and families, as well as improving outreach clinic consistency.

Ongoing challenges at the end of the pilot
• Limited physical clinic space
• Sharing clinical areas with local teams can be logistically challenging
• Limited access to computers
• Reduced discipline resources and assessments (there were local resources, but these had to be shared with the local clinicians)
• The clinicians felt that administrative support and a clinic coordinator would be vital additions.</td></tr>
<tr><td>Supporting childhood development in regional, rural and remote Australia

Royal Far West. 2017[1]</td><td>Document type: Position paper and recommendations from a non-government organisation providing rural and regional services.

Aim
• To evaluate service needs for children with complex developmental, behavioural and mental health conditions, including those with physical disabilities, in regional, rural and remote Australia.

Recommendations were centred around:
• increasing service access in rural communities
• building capacity and support.</td></tr>
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Source	Summary
Grey literature	
	Needs identified: • Develop a clear strategy on the delivery of virtual care services in regional, rural and remote areas, including for allied health. • Direct funding to support delivery of virtual care allied health for children in regional, rural and remote areas. • Invest in innovative approaches to increasing allied health access to support childhood development. • Improve early identification and referral pathways for developmental support in rural primary care settings. • Engage local communities as a meaningful partner in identifying goals and strategies for local services.

Question 2: Adult and general outreach models and services

Table 3. Adult and general models and services: peer reviewed sources

Source	Summary
Peer reviewed sources	
Outreach physiatry clinics in remote Manitoba communities: an economic cost analysis Reid, et al. 2021[3]	**Study type**: A cost-analysis study **Aim** • To compare costs associated with outreach physiatry clinics versus transporting patients to a metropolitan clinic. **Methods/setting** • Participants were adult and paediatric patients with spinal cord injury, traumatic brain injury, cerebral palsy, amputation, musculoskeletal conditions or chronic pain, and those requiring neuromuscular and electrodiagnostic services. **Model** • Physiatry services visited remote clinics every six months for a full day of outreach clinics • One attending physician and one resident physician attended, taking with them a portable electromyography-stimulator unit and portable ultrasonography unit. • The costs involved with both clinic models are detailed in the study and involved salary, travel, equipment, accommodation and food allowances.

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<tr><th>Source</th><th>Summary</th></tr>
<tr><td colspan="2">Peer reviewed sources</td></tr>
<tr><td></td><td>Results
• The $33,136 total cost of providing outreach clinics was 21% of the estimated $158,344 cost of standard care where patients were compensated for travelling to a metropolitan clinic.
• When only direct costs were included, outreach clinics cost an estimated 24% of conventional care costs.
• Outreach physiatry care in this model provides substantial cost savings for the public health care system.</td></tr>
<tr><td>A systematic review of disability, rehabilitation and lifestyle services in rural and remote Australia through the lens of the people-centred health care
Bohanna, et al. 2021[16]</td><td>Study type: Systematic review
Methods
• Studies on rehabilitation, disability, outreach, ambulatory, aged care and allied health, which described or evaluated a community service delivery model, intervention or program in regional, rural or remote Australia.
• Conditions included: acquired brain injury, neurological conditions, spinal cord injury, dementia, work related-musculoskeletal disability, speech disorders, older people with cognitive decline and multimorbid chronic disease.
• Studies published between 2000 and June 2021
Models that scored higher in the review
• focused on empowering people and families to have greater choice and decision-making power in their care
• were developed in partnership with local communities including stakeholder consultation
• developed specific strategies to provide care for disengaged or marginalised groups, such as those with transport, language or cultural barriers to access
• built capacity in local community services and staff
• aimed to enhance the participation of individuals in community life and provide holistic care
• used a variety of collaborative and integrated strategies to ensure health services were met
• used novel strategies to enable the services, such as using students or volunteers to address workforce shortages.</td></tr>
<tr><td>Community-based interventions for chronic musculoskeletal health conditions in rural and</td><td>Study type: Systematic review
Methods
• Included studies to 2020 on adults with musculoskeletal conditions in developed or developing countries.</td></tr>
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Source	Summary
Peer reviewed sources	
remote populations: A systematic review Rajan, et al. 2021[21]	**Vital components** • engaging local staff in the intervention delivery • using acceptable and accessible community locations • incorporating adaptions for cultural differences.
Models of Care Delivery from Rehabilitation to Community for Spinal Cord Injury: A Scoping Review Ho, et al. 2021[20]	**Study type**: Literature review **Aim** • To describe models of care in adult spinal cord injury rehabilitation. **Methods/Setting** • International peer reviewed and grey literature published between January 1995 and January 2020. **Vital components** • specialised services provided by qualified staff • multidisciplinary care • liaison nurse roles to coordinate tertiary, outreach and local community services • coordination with local primary care services.
Models of care for musculoskeletal health: a cross-sectional qualitative study of Australian stakeholders' perspectives on relevance and standardised evaluation Briggs, et al. 2015[19]	**Study type**: Qualitative stakeholder study **Aim** • To establish stakeholder perspectives on models of care for musculoskeletal services **Methods/setting** • Interviews with experts from health, consumer, and policy and administration backgrounds) in three Australian states **Main findings** • Models of care were important in facilitating the provision of accessible multidisciplinary services that are ideally located in the community, including outreach and virtual care services. • Despite a range of challenges identified to achieving meaningful and valid evaluation outcomes, stakeholders agreed that an evaluation framework for musculoskeletal models of care that included a strong focus on 'readiness' was important to ensure their successful and sustainable implementation. **Vital components** • Structured implementation targets, ensuring that a new model of care is designed from the start to ensure good implementation and ensure that the evaluation methods chosen will capture relevant information that can show the value of the model and/or provide useful feedback

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Source	Summary
Peer reviewed sources	
	• Readiness of critical components across the broader health system prior to implementation of a model of care

Table 4. Adult and general outreach models and services: grey literature

Source	Summary
Grey literature	
Access to Care for Rural People with Disabilities Toolkit Rural Health Information Hub. 2016[12]	**Document type**: This 'toolkit' outlines the important aspects to consider when establishing rural models of care in disability, from a US perspective. **Vital components** • Sustainability planning to ensure the continuation of services. • Partnership with stakeholders to ensure acceptance of a program or model of care. • Technologies that work for that team (may include software that works without internet access) • Using the right outcome measures to effectively capture successes and provide key feedback.
Models of Allied Health Care in Rural and Remote Australia Services for Rural and Remote Allied Health. 2016[15]	**Document type**: A description of models of care used in allied health rural and remote work in Australia. **Vital components** • Consumer-focused care • best practice evidence-based service delivery • high professional standards and development • integrated multidisciplinary care • effective management and health planning • inter-sectoral collaboration • timely and strategic reporting. **Vital components specific to outreach allied health** • Specialist services are well integrated with local health care teams. • They take advice from local health professionals and service providers about the best way to deliver their services for the local context. • The specialist AHPs also provide training and support to local health workers in their areas of expertise.

Models of Specialist Outreach Services for rural, regional and remote Australia National Rural Health Alliance. 2004[13]	**Document type**: This overview suggests aims for secondary (not tertiary) specialists and models of care. **Vital components** • 'Top-down' approaches to implementing models of health services are not appropriate. Local communities should be assisted to devise local solutions for their health care needs. • Early, meaningful consultation with local communities and local service providers is an essential step in effective planning for specialist outreach services. • Effective administrative and clinical support structures and processes need to be in place, including ensuring that local services are adequately resourced and outreach visits are appropriately planned and coordinated.

Appendices

Question 1

PubMed search terms

(((("models, organizational"[MeSH Terms] OR "organizational innovation"[MeSH Terms] OR "Health Services Needs and Demand"[MeSH Major Topic] OR "Home Care Services"[MeSH Major Topic] OR "Health Services Accessibility"[MeSH Terms] OR "patient centered care/organization and administration"[MeSH Terms] OR "delivery of health care, integrated"[MeSH Terms] OR "model of care"[Title/Abstract] OR "models of care"[Title/Abstract] OR "care model*"[Title/Abstract] OR "care delivery model*"[Title/Abstract] OR "organisation of"[Title/Abstract] OR "organisational model*"[Title/Abstract] OR "organisation model*"[Title/Abstract] OR "organization of"[Title/Abstract] OR "organizational model*"[Title/Abstract] OR "organization model*"[Title/Abstract] OR "healthcare delivery model*"[Title/Abstract] OR "integrated care"[Title/Abstract] OR "integrated model*"[Title/Abstract] OR "model"[Title]) AND ("outreach"[Title/Abstract] OR "rural"[Title/Abstract] OR "regional"[Title/Abstract]) AND ("child*"[Title/Abstract] OR "infant*"[Title/Abstract] OR "juvenil*"[Title/Abstract] OR "paediatric*"[Title/Abstract] OR "pediatric*"[Title/Abstract] OR "young"[Title/Abstract] OR "youth*"[Title/Abstract] OR "adolescent"[Title/Abstract] OR "kids"[Title/Abstract]) AND ("disabilit*"[Title/Abstract] OR "complex"[Title/Abstract] OR "rehabilitation"[Title/Abstract] OR "chronic"[Title/Abstract])) NOT "antenatal"[Title/Abstract]) NOT "pregnancy"[Title/Abstract]) AND ((y_10[Filter]) AND (humans[Filter]) AND (english[Filter]))

222 hits on 2 August 2022

Google search terms

'paediatric/children rehabilitation outreach models of care/service delivery', 'paediatric/children complex disability outreach models of care/ service delivery' 'paediatric/children outreach models of care/ service delivery rural regional remote'

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Question 2

PubMed search terms

((("outreach"[Title] OR "rural"[Title] OR "regional"[Title]) AND ("disabilit*"[Title/Abstract] OR "complex"[Title/Abstract] OR "rehabilitation"[Title/Abstract] OR "chronic"[Title/Abstract]) AND (systematicreview[Filter])) OR ("outreach"[Title/Abstract] AND "disabilit*"[Title])) AND "humans"[MeSH Terms] AND "english"[Language] AND 2012/01/01:2022/12/31[Date - Publication] AND ((humans[Filter]) AND (english[Filter]))

147 hits on 2 August 2022

Google search terms

'outreach models of care', 'disability/rehabilitation outreach models of care rural regional remote', 'disability/rehabilitation models of care rural regional remote'

Inclusion	Exclusion

• Published in English
• Published since 2012 (last 10 years)
• **P**opulation:
  ○ Question One: Children and young people aged under 18 (and their families) living outside metropolitan centres
  ○ Question Two: Patients and families living outside metropolitan centres
• **I**ntervention: Outreach models for chronic care and complex condition rehabilitation, in which care is provided close to home, in select high-income countries who are members of OECD and with similar health systems or rural population density*
• **C**omparison: no comparison, usual care or metropolitan-based models of care
• **O**utcomes: time and/or cost for families, patient reported measures, skill levels of local clinicians
• **S**tudy types:
  ○ Question One: All published studies
  ○ Question Two: Systematic reviews
  ○ Both: Grey literature such as case reports, commentaries, editorials, study protocols, conference abstracts.
	• Not in English
	• Published prior to 2012**
	• Studies that do not meet **PICOS** criteria

*Australia, Belgium, Canada, New Zealand, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, Netherlands, New Zealand, Norway, Sweden, Switzerland, United Kingdom, United States.

**Select papers earlier than 2012 that appeared highly relevant from the Google Scholar search were also included.

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References

1. Royal Far West. Supporting childhood development in regional, rural and remote Australia [Internet]. Australia: Royal Far West; 2017 [cited 2022 Aug 15]. Available from: https://www.royalfarwest.org.au/wp-content/uploads/2018/09/RFW-Policy-Paper-Supporting-childhood-development-in-regional-and-rural-Australia-July-2017.pdf
2. Edirippulige S, Reyno J, Armfield NR, et al. Availability, spatial accessibility, utilisation and the role of telehealth for multi-disciplinary paediatric cerebral palsy services in Queensland. J Telemed Telecare. 2016 Oct;22(7):391-6. DOI: 10.1177/1357633x15610720
3. Reid JN, Ethans KD, Chan BC. Outreach physiatry clinics in remote Manitoba communities: an economic cost analysis. CMAJ Open. 2021 Jul-Sep;9(3):E818-e25. DOI: 10.9778/cmajo.20200234
4. Bradford NK, Caffery LJ, Smith AC. Telehealth services in rural and remote Australia: a systematic review of models of care and factors influencing success and sustainability. Rural Remote Health. 2016 Oct-Dec;16(4):4268.
5. Bureau of Health Information. Patients' experiences of virtual care from NSW public hospitals [Internet]. Australia: NSW Health; 2022 [cited 2022 Aug 15]. Available from: https://www.bhi.nsw.gov.au/__data/assets/pdf_file/0008/669041/BHI_Virtual_Care_2020_REPORT.pdf
6. Major N, Rouleau M, Krantz C, et al. It's About Time: Rapid Implementation of a Hub-and-Spoke Care Delivery Model for Tertiary-Integrated Complex Care Services in a Northern Ontario Community. Healthc Q. 2018 Jul;21(2):35-40. DOI: 10.12927/hcq.2018.25624
7. Dew A, Bulkeley K, Veitch C, et al. Addressing the barriers to accessing therapy services in rural and remote areas. Disabil Rehabil. 2013 Aug;35(18):1564-70. DOI: 10.3109/09638288.2012.720346
8. Mundy L, Hewson K. Thinking outside the system: the integrated care experience in Queensland, Australia. Aust J Prim Health. 2019 Oct;25(4):303-9. DOI: 10.1071/py18161
9. Agostino J, Heazlewood R, Ruben A. Cape York Paediatric Outreach Clinic. Aust Fam Physician. 2012;41:623-5.
10. Gillett J. The Pediatric Acquired Brain Injury Community Outreach Program (PABICOP) - an innovative comprehensive model of care for children and youth with an acquired brain injury. NeuroRehabilitation. 2004;19(3):207-18.
11. Child Development Service Townsville. Providing a contemporary child development service to children and families living in rural and remote communities across North Queensland: The evidence for a new model of care [Internet]. Australia: Queensland Health; 2016 [cited 2022 Aug 15]. Available from: https://www.childrens.health.qld.gov.au/wp-content/uploads/PDF/qcycn/cds-to-nth-qld.pdf
12. University of Minnesota Rural Health Research Center and NORC Walsh Center for Rural Health Analysis. Access to Care for Rural People with Disabilities Toolkit [Internet]. United States: Rural Health Information Hub; 2016 [cited 2022 Aug 16]. Available from: https://www.ruralhealthinfo.org/toolkits/disabilities.pdf
13. National Rural Health Alliance. Models of Specialist Outreach Services for rural, regional and remote Australia [Internet]. Australia: National Rural Health Alliance; 2004 [cited 2022 Aug 16]. Available from: https://www.ruralhealth.org.au/document/models-specialist-outreach-services-rural-regional-and-remote-australia-submission-paper
14. Birmingham Women's and Children's NHS Foundation Trust. Redesigning paediatric neurological rehabilitation pathways in the West Midlands: A system wide approach to improving outcomes for children and young people [Internet]. United Kingdom: National Institute for Health and Care Excellence; 2019 [cited 2022 Aug 15]. Available from: https://www.nice.org.uk/sharedlearning/redesigning-paediatric-neurological-rehabilitation-

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pathways-in-the-west-midlands-a-system-wide-approach-to-improving-outcomes-for-children-and-young-people

15. Services for Australian Rural and Remote Allied Health. Models of Allied Health Care in Rural and Remote Australia [Internet]. Australia: SARRAH; 2016 [cited 2022 Aug 16]. Available from: https://sarrah.org.au/images/models_of_care_may_2016_final.pdf
16. Bohanna I, Harriss L, McDonald M, et al. A systematic review of disability, rehabilitation and lifestyle services in rural and remote Australia through the lens of the people-centred health care. Disabil Rehabil. 2021:1-12. DOI: 10.1080/09638288.2021.1962992
17. Hart R. Children’s participation: From tokenism to citizenship [Internet]. Italy: UNICEF International Child Development Centre; 1992 [cited 2022 Oct 04]. Available from: https://www.unicef-irc.org/publications/100-childrens-participation-from-tokenism-to-citizenship.html
18. The Royal Australasian College of Physicians. Reaching out to Mums, Bubs and Children in ‘Top End’ Communities [Internet]. Australia: The Royal Australasian College of Physicians; 2018 [cited 2022 Aug 15]. Available from: https://www.racp.edu.au/advocacy/policy-and-advocacy-priorities/medical-specialist-access-framework/case-studies/reaching-out-to-mums-bubs-and-children-in-top-end-communities
19. Briggs AM, Jordan JE, Speerin R, et al. Models of care for musculoskeletal health: a cross-sectional qualitative study of Australian stakeholders’ perspectives on relevance and standardised evaluation. BMC Health Services Research. 2015;15(1):509. DOI: 10.1186/s12913-015-1173-9
20. Ho C, Atchison K, Noonan VK, et al. Models of Care Delivery from Rehabilitation to Community for Spinal Cord Injury: A Scoping Review. J Neurotrauma. 2021 Mar 15;38(6):677-97. DOI: 10.1089/neu.2020.7396
21. Rajan P, Hiller C, Lin J, et al. Community-based interventions for chronic musculoskeletal health conditions in rural and remote populations: A systematic review. Health Soc Care Community. 2021 Nov;29(6):1621-31. DOI: 10.1111/hsc.13263
22. Weber HC, Robinson PF, Saxby N, et al. Do children with cystic fibrosis receiving outreach care have poorer clinical outcomes than those treated at a specialist cystic fibrosis centre? Australian Journal of Rural Health. 2017;25(1):34-41. DOI: https://doi.org/10.1111/ajr.12334
23. Victorian Paediatric Rehabilitation Service. Victorian Paediatric Rehabilitation Service model of care [Internet]. Australia: Victorian Paediatric Rehabilitation Service; 2021 [cited 2022 Aug 15]. Available from: https://www.vprs.org.au/about-vprs/
24. Nagaraj S, Kargard M, Hemmelgarn B, et al. Effectiveness of an Outreach Model of Care for Rheumatology Specialty Clinics to an On-Reserve First Nations Community. Int J Indig Health. 2018;13(1). DOI: 10.32799/ijih.v13i1.30315
25. Collaro AJ, Chang AB, Marchant JM, et al. Culturally Appropriate Outreach Specialist Respiratory Medical Care Improves the Lung Function of Children in Regional and Remote Queensland. Lung. 2020 Apr;198(2):361-9. DOI: 10.1007/s00408-020-00332-7
26. Askew DA, Togni SJ, Schluter PJ, et al. Investigating the feasibility, acceptability and appropriateness of outreach case management in an urban Aboriginal and Torres Strait Islander primary health care service: a mixed methods exploratory study. BMC Health Services Research. 2016 2016/05/13;16(1):178. DOI: 10.1186/s12913-016-1428-0
27. Children’s Health Queensland Hospital and Health Service. Queensland Paediatric Rehabilitation Service [Internet]. Australia: Queensland Health; 2016 [cited 2022 Aug 15]. Available from: https://www.childrens.health.qld.gov.au/wp-content/uploads/PDF/factsheets/qprs-fs.pdf
28. Henry R. Review of health services for children, young people and families within the NSW Health system [Internet]. Australia: NSW Health; 2019 [cited 2022 Aug 17]. Available from: https://www.health.nsw.gov.au/kidsfamilies/paediatric/Pages/henry-review.aspx

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29. Hussain R, Tait K. Parental perceptions of information needs and service provision for children with developmental disabilities in rural Australia. Disabil Rehabil. 2015;37(18):1609-16. DOI: 10.3109/09638288.2014.972586
30. Brundisini F, Giacomini M, DeJean D, et al. Chronic disease patients' experiences with accessing health care in rural and remote areas: a systematic review and qualitative meta-synthesis. Ont Health Technol Assess Ser. 2013;13(15):1-33.
31. Dew A, Bulkeley K, Veitch C, et al. Carer and service providers' experiences of individual funding models for children with a disability in rural and remote areas. Health Soc Care Community. 2013 Jul;21(4):432-41. DOI: 10.1111/hsc.12032
32. Golembiewski EH, Gravholt DL, Torres Roldan VD, et al. Rural Patient Experiences of Accessing Care for Chronic Conditions: A Systematic Review and Thematic Synthesis of Qualitative Studies. Ann Fam Med. 2022 May-Jun;20(3):266-72. DOI: 10.1370/afm.2798
33. The Sax Institute. Evidence Check: Paediatric services capacity [Internet]. Australia: NSW Kids and Families; 2015 [cited 2022 Aug 15]. Available from: https://www.saxinstitute.org.au/wp-content/uploads/Paediatric-services-capacity.pdf

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