



January 2017– SUPPORT Summary of a systematic review

Does paediatric home care improve health outcomes in children?

Paediatric home care for ill children has been developed for different diseases and with different models as an alternative to care based in hospitals. In this summary we present evidence for home care for children with acute physical conditions, home rehabilitation for children with traumatic brain injury, and home chemotherapy.

Key messages

- Compared with hospital care, home care may lead to little or no difference in re-admissions or the time spent by families caring for children with acute physical conditions. Home care for children with acute physical conditions probably increases healthcare costs but decreases costs incurred by families in the UK.
- For children with traumatic brain injury, home rehabilitation compared with clinic-based rehabilitation may slightly improve mental functioning. The effects on adverse events, family and carers, and costs were not reported.
- For children with acute lymphoblastic leukaemia, home chemotherapy compared with hospital chemotherapy may slightly improve their quality of life and may lead to little or no difference in adverse events or family costs. The impact on family and carers is uncertain.
- None of the studies included in the review were conducted in low-income countries and none reported effects on mortality.



Who is this summary for?

People making decisions concerning organisation of home care services for children

! This summary includes:

- **Key findings** from research based on a systematic review
- **Considerations about the relevance of this research** for low-income countries

X Not included:

- Recommendations
- Additional evidence not included in the systematic review
- Detailed descriptions of interventions or their implementation

This summary is based on the following systematic review:

Parker G, Spiers G, Gridley K, et al. Systematic review of international evidence on the effectiveness and costs of paediatric home care for children and young people who are ill. *Child: Care, Health and Development* 2013; 39:1-19.

What is a systematic review?

A summary of studies addressing a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise the relevant research, and to collect and analyse data from the included studies

SUPPORT was an international project to support the use of policy relevant reviews and trials to inform decisions about maternal and child health in low- and middle-income countries, funded by the European Commission (FP6) and the Canadian Institutes of Health Research.

Glossary of terms used in this report:
www.supportsummaries.org/glossary-of-terms

Background references on this topic:
See back page

Background

This review is an update of an earlier review that found “a relatively small and weak evidence base, whether for generic or specialist (condition-specific) models of care for children with complex or long-term healthcare needs” (Parker 2006). The review authors defined ‘care closer to home’ as “any model of care that acts to prevent immediate inpatient admission and/or enable a reduced length of stay for children (up to the age of 18 years) with acute, chronic, complex or palliative care needs. The model has to involve clinical care that would otherwise be provided in an acute clinical setting and had to be exclusively for children.” Educational or training interventions without a clinical component were excluded, as were longer-term strategies to prevent or avoid hospital care – for example, interventions to reduce asthma triggers in children’s homes or services that provided care for both children and adults.

How this summary was prepared

After searching widely for systematic reviews that can help inform decisions about health systems, we have selected ones that provide information that is relevant to low-income countries. The methods used to assess the reliability of the review and to make judgements about its relevance are described here: www.supportsummaries.org/how-support-summaries-are-prepared/

Knowing what’s not known is important

A reliable review might not find any studies from low-income countries or might not find any well-designed studies. Although that is disappointing, it is important to know what is not known as well as what is known.

A lack of evidence does not mean a lack of effects. It means the effects are uncertain. When there is a lack of evidence, consideration should be given to monitoring and evaluating the effects of the intervention, if it is used.

About the systematic review underlying this summary

Review objective: To identify recent evidence on effectiveness and costs of care closer to home (CCTH) for children with long-term conditions, including evidence on CCTH for children with short-term health needs and those with palliative or end-of-life care needs

| Types of | What the review authors searched for | What the review authors found |
|--|---|--|
| Study designs & Interventions | Randomised trials and other comparative studies with health economic data that assess any model of care that brings CCTH by preventing immediate inpatient admission and/or reducing length of stay of children, published since 1990 | 11 randomised trials and 15 health economic studies were included. The studies include 7 types of CCTH: for very low birthweight babies, for long term conditions, for mental health problems, for acute medical conditions, home chemotherapy, home-based alternative to clinic-based care and telemedicine support |
| Participants | Children with acute, chronic, complex or palliative care needs | Diverse populations of children included, depending upon the health condition studied |
| Settings | Any home and hospital setting | Studies were from US (3), UK (3) and one each from Canada, Finland, Germany, Australia and Brazil |
| Outcomes | Any measure of effectiveness, cost or cost-effectiveness | Depending on the intervention: mortality, morbidity outcomes, costs |

Date of most recent search: April 2007

Limitations: This is a well-conducted review with minor limitations. However, the last search was in 2007.

Parker G, Spiers G, Gridley K, et al. Systematic review of international evidence on the effectiveness and costs of paediatric home care for children and young people who are ill. *Child: Care, Health and Development* 2013; 39:1-19.

Summary of findings

This review found 11 new studies that assessed effects of care closer to home and 15 studies including health economic data for the following types of interventions: home care for very low birth weight or medically “fragile” babies (1 study); for chronic or long term conditions (1), for mental health problems (2), for acute physical conditions (3), home chemotherapy (1), home-based alternatives to clinic-based care (2), and telemedicine support (1). The studies were from the USA (3), the UK (3), and one each from Australia, Canada, Finland, Germany, and Brazil.

Only information for home care for acute physical conditions, home-based alternatives to clinic-based care, and home chemotherapy is summarised here.

1) Home care for acute physical conditions compared with hospital care

Three studies assessed home care for three different acute conditions: children with fractures of the distal radius, children with breathing difficulties, diarrhoea with or without vomiting, and children with acute bronchiolitis. In the first condition, the intervention was home removal of backslab (a temporary cast) compared with hospital removal. In the other two, it was hospital at home with early discharge from hospital compared with in-hospital management.

- For children with fracture of the radius, home care may lead to little or no difference in clinical outcomes or daily activities compared with hospital care. The certainty of this evidence is low.
- Compared with hospital care, home care may lead to little or no difference in re-admissions or the time spent by families caring for children with acute physical conditions. The certainty of this evidence is low.
- Home care for children with acute physical conditions probably increases healthcare costs but decreases costs incurred by families in the UK. The certainty of this evidence is moderate.
- The effects of home care compared with hospital care for children with acute physical conditions was not reported.

About the certainty of the evidence (GRADE) *

⊕⊕⊕⊕

High: This research provides a very good indication of the likely effect. The likelihood that the effect will be substantially different† is low.

⊕⊕⊕○

Moderate: This research provides a good indication of the likely effect. The likelihood that the effect will be substantially different† is moderate.

⊕⊕○○

Low: This research provides some indication of the likely effect. However, the likelihood that it will be substantially different† is high.

⊕○○○

Very low: This research does not provide a reliable indication of the likely effect. The likelihood that the effect will be substantially different† is very high.

* This is sometimes referred to as ‘quality of evidence’ or ‘confidence in the estimate’.

† Substantially different = a large enough difference that it might affect a decision

See last page for more information.

| Home care for acute physical conditions compared with hospital care | | |
|--|---|--|
| People | Children with fracture of radius, acute bronchiolitis, or diarrhoea | |
| Settings | UK and USA | |
| Intervention | Home care (different models) | |
| Comparison | Hospital care | |
| Outcomes | Impact | Certainty of the evidence (GRADE) |
| Clinical outcomes | Home care for fracture of the radius may lead to little or no difference in clinical outcomes or daily activities compared with hospital care. | ⊕⊕○○ Low |
| Adverse events and re-admissions | Home care may lead to little or no difference in hospital re-admissions for children with acute physical conditions compared with hospital care. | ⊕⊕○○ Low |
| Impact on family and carers | Home care may lead to little or no difference in time spent by families caring for children with acute physical conditions compared with hospital care. | ⊕⊕○○ Low |
| Mortality | Not reported | - |
| Costs | Home care probably increases healthcare costs compared with hospital care, but decreases costs incurred by families (in the UK). | ⊕⊕⊕○ Moderate |
| GRADE: GRADE Working Group grades of evidence (see above and last page) | | |

2) Home based alternatives to clinic-based care

Two trials assessed home care as an alternative to clinic-based care, however one of them did not report results comparing both groups under study, but only comparisons before and after for each group. The only study included in the Summary of Findings table was conducted in Brazil in children with traumatic brain injury. It compared home rehabilitation by parents with clinic rehabilitation by health professionals.

- Home care rehabilitation may slightly improve mental functioning compared with clinical-based rehabilitation. The certainty of this evidence is low.
- Effects of home care on adverse events, family and carers, mortality, and costs were not reported.

| Home-based compared to clinic-based rehabilitation | | |
|---|---|-----------------------------------|
| People | Children with traumatic brain injury in rehabilitation | |
| Settings | Brazil | |
| Intervention | Home care rehabilitation | |
| Comparison | Clinic-based rehabilitation | |
| Outcomes | Impact | Certainty of the evidence (GRADE) |
| Psychological and mental functioning | Mean intellectual quotient (IQ) in home cared children was 91.4 compared with 85.3 points in children rehabilitated in clinics. | ⊕⊕○○ Low |
| Adverse events and re-admissions | Not reported | |
| Impact on family and carers | Not reported | |
| Mortality | Not reported | |
| Direct Costs | Not reported | |
| GRADE: GRADE Working Group grades of evidence (see above and last page) | | |

3) Home versus hospital chemotherapy

One trial conducted in Canada compared initial chemotherapy in hospital and the remainder at home with hospital chemotherapy for children 2 to 16 years with high-risk acute lymphoblastic leukaemia.

- Home chemotherapy may slightly improve the quality of life of children with acute lymphoblastic leukaemia compared with hospital chemotherapy. The certainty of this evidence is low.
- Home chemotherapy may lead to little or no difference in adverse events compared with hospital chemotherapy. The certainty of this evidence is low.
- The impact of home chemotherapy on family and carers compared with hospital chemotherapy is uncertain. The certainty of this evidence is very low.
- Home chemotherapy may lead to little or no difference in family costs compared with hospital chemotherapy. The certainty of this evidence is low.
- The effect of home chemotherapy compared with hospital chemotherapy on mortality was not reported.

| Home care for very low birth weight and/or medically fragile babies | | |
|---|--|-----------------------------------|
| People | Children with high-risk acute lymphoblastic leukaemia | |
| Settings | Canada | |
| Intervention | Home chemotherapy | |
| Comparison | Hospital chemotherapy | |
| Outcomes | Impact | Certainty of the evidence (GRADE) |
| Quality of Life of children | Home chemotherapy may slightly improve the quality of life of children with acute lymphoblastic leukaemia compared with hospital chemotherapy. | ⊕⊕○○ Low |
| Adverse events and re-admissions | Home chemotherapy may lead to little or no difference in adverse events compared with hospital chemotherapy. | ⊕⊕○○ Low |
| Impact on family and carers | It is uncertain what the impact of home therapy is on family and carers compared with hospital chemotherapy. | ⊕○○○ Very low |
| Mortality | Not reported | - |
| Family Costs | Home chemotherapy may lead to little or no difference in family costs compared with hospital chemotherapy. | ⊕⊕○○ Low |
| GRADE: GRADE Working Group grades of evidence (see above and last page) | | |

Relevance of the review for low-income countries

| → Findings | ▷ Interpretation* |
|---|--|
| APPLICABILITY | |
| <ul style="list-style-type: none">→ All studies (except one conducted in an upper-middle income country) were conducted in high-income countries and most were probably in urban settings.→ Evidence about effectiveness of different types of paediatric home care on different groups of paediatric patients is limited.→ Paediatric home care assessed in this review differed in intensity, the healthcare professionals involved, and the types of service provided.→ “Standard care” used as the comparator in the included studies was heterogeneous. | <ul style="list-style-type: none">▷ Family support and home conditions could be very different in low-income countries. Basic home support available in most homes in high-income countries might not be widely available in low-income countries.▷ Standard care could be very different in high-income countries compared with low-income countries. |
| EQUITY | |
| <ul style="list-style-type: none">→ The included studies provided little data regarding differential effects of the interventions for disadvantaged populations. | <ul style="list-style-type: none">▷ Poor populations might not have the home conditions necessary to provide home care for seriously ill children.▷ The educational level of mothers was not assessed and this might be an important consideration.▷ Home care, if effective, might benefit wealthier families with better home conditions more than poorer families. |
| ECONOMIC CONSIDERATIONS | |
| <ul style="list-style-type: none">→ Evidence about cost-effectiveness of paediatric home care compared with “standard care” comes from studies conducted in high income countries. | <ul style="list-style-type: none">▷ Healthcare professionals and resources to assist home care (home visits or remote assistance) might not be available in health systems in low-income countries.▷ There is a trade-off between demand for additional human resources allocated to home care and potential reductions in demand for hospitalisation.▷ Financial and delivery arrangement constraints of health systems of low-income countries could make it difficult to implement home care.▷ Special attention should be given to the burden and financial impacts on families or other informal care givers if paediatric home care is implemented.▷ Costs and cost-effectiveness reports should be considered cautiously until studies in low-income countries are available. |
| MONITORING & EVALUATION | |
| <ul style="list-style-type: none">→ Evidence of the effects of different types of paediatric home care is limited and no evidence from low-income countries was found. | <ul style="list-style-type: none">▷ Because there is important uncertainty about the potential benefits, harms and costs of paediatric home care compared to hospital care, pragmatic randomised trials in low-income countries are needed. |

*Judgements made by the authors of this summary, not necessarily those of the review authors, based on the findings of the review and consultation with researchers and policymakers in low-income countries. For additional details about how these judgements were made see: www.supportsummaries.org/methods

Additional information

Related literature

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Conflict of interest

None declared. For details, see: www.supportsummaries.org/coi

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About certainty of the evidence (GRADE)

The “certainty of the evidence” is an assessment of how good an indication the research provides of the likely effect; i.e. the likelihood that the effect will be substantially different from what the research found. By “substantially different” we mean a large enough difference that it might affect a decision. These judgements are made using the GRADE system, and are provided for each outcome. The judgements are based on the study design (randomised trials versus observational studies), factors that reduce the certainty (risk of bias, inconsistency, indirectness, imprecision, and publication bias) and factors that increase the certainty (a large effect, a dose response relationship, and plausible confounding). For each outcome, the certainty of the evidence is rated as high, moderate, low or very low using the definitions on page 3.

For more information about GRADE:
www.supportsummaries.org/grade

SUPPORT collaborators:

The Cochrane Effective Practice and Organisation of Care Group (EPOC) is part of the [Cochrane Collaboration](#). The Norwegian EPOC satellite supports the production of Cochrane reviews relevant to health systems in low- and middle-income countries. www.epocoslo.cochrane.org

The Evidence-Informed Policy Network (EVIPONet) is an initiative to promote the use of health research in policymaking in low- and middle-income countries. www.evipnet.org

The Alliance for Health Policy and Systems Research (HPSR) is an international collaboration that promotes the generation and use of health policy and systems research in low- and middle-income countries. www.who.int/alliance-hpsr

Norad, the Norwegian Agency for Development Cooperation, supports the Norwegian EPOC satellite and the production of SUPPORT Summaries. www.norad.no

The Effective Health Care Research Consortium is an international partnership that prepares Cochrane reviews relevant to low-income countries. www.evidence4health.org

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