



September 2009 – SUPPORT Summary of a systematic review

## Does paediatric home care improve children health outcomes?

Two forms of paediatric home care have been described: *community-based services* that support children with a range of long term conditions and *hospital-based services* that provide specialist input to children with specific conditions at their homes.

### Key messages

- Paediatric home care may reduce the length of stay in adolescents with mental health problems. It is not known if it reduces the use of health services for very low birth weight and fragile babies and for children with diabetes or asthma.
- It is not known whether home care for very low birth weight and fragile babies produces differences in mortality compared with routine discharge procedures. Mortality was not assessed for patients with asthma, diabetes and mental disorders
- Paediatric home care may improve metabolic control in diabetic patients.
- Paediatric home care may not lead to any difference in patients' outcomes in very low birth weight and fragile babies and adolescents with mental health problems
- There are no studies assessing paediatric home care in low- or middle-income settings



### Who is this summary for?

People making decisions concerning the use of paediatric health care for different diseases.

#### ! This summary includes:

- Key findings from research based on a systematic review
- Considerations about the relevance of this research for low- and middle-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, Bhakta P, Lovett CA, Olsen R, Palsley S, Turner D et al. Paediatric home care: a systematic review of randomized trials on costs and effectiveness. *J Health Serv Res Policy*, 11 (2) : 110-119 ; 2006

### 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** – an international collaboration funded by the EU 6th Framework Programme to support the use of policy relevant reviews and trials to inform decisions about maternal and child health in low- and middle-income countries.  
[www.support-collaboration.org](http://www.support-collaboration.org)

**Glossary of terms used in this report:**  
[www.support-collaboration.org/summaries/explanations.htm](http://www.support-collaboration.org/summaries/explanations.htm)

**Background references on this topic:**  
See back page.

# Background

Technological developments in care, the negative impact of hospital admission on children and their families and the costs of health care have all encouraged the development of paediatric home care. Two types of paediatric home care have been described: community-based services that support children with a range of long term conditions, and predominantly hospital-based services that provide specialist input to children with specific conditions.

Children who may potentially benefit from paediatric home care are those with complex problems who need a coordinated, multidisciplinary approach, those whose conditions have not been stabilized in hospital, and those who are at risk in a hospital environment (i.e. immunocompromised).

The main functions of paediatric home care can be summarized as:

- direct services such as drug administration, general nursing care and counseling;
- education of the family and the patient;
- coordination of services between the hospital, primary care and the community;

patient advocacy.

## 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- and middle-income countries. The methods used to assess the quality of the review and to make judgements about its relevance are described here:

[www.support-collaboration.org/summaries/methods.htm](http://www.support-collaboration.org/summaries/methods.htm)

## Knowing what's not known is important

A good quality review might not find any studies from low- and middle-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.

## About the systematic review underlying this summary

**Review objective:** To establish the range and types of home-based models of paediatric care for children with acute or chronic illness; to evaluate the effectiveness and costs of different models for the health care system and for children, their families and carers and to explore how cost-effectiveness differed between children with different needs and between children with similar needs but from different populations.

	What the review authors searched for	What the review authors found
<b>Interventions</b>	Randomized or pseudo-randomized trials and studies with a health economic element of paediatric home care as an alternative to acute hospital care, published since 1985.	24 papers from 10 RCTs covering 4 types of paediatric home care: home care for very low birth weight, home-based care for asthma or diabetes, outreach services in mental health and paediatric home care.
<b>Participants</b>	Children under 18 years of age with serious acute or chronic illness	Diverse populations of children included, depending upon the health condition studied
<b>Settings</b>	Any home and hospital setting	Home and hospital settings. Studies were from the US (5), Canada (3), UK (1) and New Zealand (1)
<b>Outcomes</b>	Any measure of effectiveness, cost or cost-effectiveness	Mortality; service use; clinical, physical and psychological outcomes; costs; impact on family, social life and education; knowledge of the condition

**Date of most recent search:** July 2001

**Limitations:** This is a systematic review with important limitations: publication bias was not assessed. Heterogeneity was not assessed when appropriate.

Parker G, Bhakta P, Lovett CA, Olsen R, Palsley S, Turner D et al. A systematic review of the costs and effectiveness of different models of paediatric home care. *Health Technology Assessment* 2002; Vol. 6: No. 35

(A summary of this review was published by the same authors on: *J Health Serv Res Policy*, 11 (2) : 110-119 ; 2006)

This summary is based only in chapter 3 of the HTA report and did not include information about economic evaluation

# Summary of findings

The review found 10 randomised trials evaluating 4 types of paediatric home care: home care for very low birth weight or medically “fragile” babies; home-based care for asthma and diabetes; outreach services in mental health; and “paediatric home care”, described as a complex intervention conducted by an interdisciplinary team for chronically ill children and their families. Studies were done in US (5), Canada (3) UK (1) and New Zealand (1). The authors considered that studies included in the review were heterogeneous in their focus, outcome reporting and quality, although they did not assess it formally.

## 1) Home care for children with mental health problems

Two trials were included in this section. Both compared home-based treatment for mental health emergencies with “routine” care, whether hospital or community based. Interventions and comparators were heterogeneous, in one study the intervention group received a “family-based, intensive and multifaceted” intervention delivered in their own homes, while the control group received care in an inpatient unit. In the other study, the intervention was a “brief home-based family intervention conducted by child psychiatric social workers” in addition to routine care that received both control and intervened groups. Children included in these studies were adolescents with diagnosis of deliberate self-poisoning or severe emotional disturbances.

- Paediatric home care probably decreases length of hospital stay in children with mental health problems compared with “routine” care
- Paediatric home care may not lead to any difference in clinical outcomes assessed in these studies compared with standard care
- It is not known if paediatric home care is more cost-effective than standard care

### About the quality of evidence (GRADE)

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**High:** Further research is very unlikely to change our confidence in the estimate of effect.

⊕⊕⊕○

**Moderate:** Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.

⊕⊕○○

**Low:** Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.

⊕○○○

**Very low:** We are very uncertain about the estimate.

For more information, see last page

## Outreach services for children with mental health

**Patients or population:** Adolescents with diagnosis of deliberate self-poisoning or severe emotional disturbances

**Settings:** Adolescents' homes

**Intervention:** Different home-based interventions

**Comparison:** Routine care

Outcomes	Impact	Number of participants (studies)	Quality of the evidence (GRADE)
<b>Length of hospital stay and readmission</b>	<p>One study reported no statistical significance between intervention and comparison groups.</p> <p>The second study reported lower rates of hospital use for intervention children: mean length of stay (days): 2.39 vs. 8.82 (p=0.001)</p>	275 patients (2 studies)	⊕⊕⊕○ moderate
<b>Suicidal ideation, major depression and episodes of self harm</b>	There was not a statistical significant improvement for the intervened group for any of these outcomes.	162 patients (1 study)	⊕⊕○○ low
<b>Global Severity Index, Child behavior checklist: internalizing and externalizing symptoms</b>	The intervention group improved compared with the control group, for externalizing symptoms. There were no statistically significant differences between groups for the other outcomes.	113 patients (1 study)	⊕⊕○○ low
p: p-value GRADE: GRADE Working Group grades of evidence (see above and last page)			

## **2) Home medical care for very low birth weight or medically fragile babies**

Four trials were included in this section. Three included low birth weight babies and one trial included medically fragile infants, defined as those with moderate to severe bronchopulmonary dysplasia or those with moderate to severe neurological dysfunction. Models of intervention were diverse including early discharge but different strategies of home follow-up such as home visiting or educational and counselling interventions. Comparators were routine discharge procedures. Most relevant outcomes were mortality, use of health services, clinical outcomes (neurological status, physical and mental functions of babies) and costs of care.

- **It is not known whether home care for very low birth weight and fragile babies produce differences in mortality compared with routine discharge procedures. Death was an infrequent event observed in the studies, probably because careful selection of babies included and also because small size of studies.**
- **It is not known if home care interventions produce more re-admission and emergency care use after discharge. Studies report contradictory results.**
- **Home care interventions may not lead to any difference in clinical outcomes assessed in studies included in this review: neurological status, physical and mental functions.**
- **It is not known if paediatric home care reduces or increases health costs. Two trials report cost comparison between intervention and control groups, reporting an average reduction of around a 25% in the intervention group. However, this result should be interpreted with caution because no study reported all relevant cost data, i.e. costs of all elements of the intervention or costs of re-admission or emergency care.**

## **3) Home medical care for children with diabetes and asthma**

Three trials that assessed paediatric home care for asthma or diabetes were found. Home care models assessed were heterogeneous but all offered some element of care (e.g., drug compliance checking) with or without education and training, one study was done in patients with diabetes and two in patients with asthma.

Outcomes assessed were length of hospital stay and readmission, clinical outcomes and impact on education, between six to 12 months.

- **It is not known whether paediatric home care for patients with diabetes or asthma compared with standard care decreases the length of hospital stay or readmissions.**
- **One clinical trial showed that paediatric home care compared with standard care may improve metabolic control of patients with diabetes.**
- **It is not known whether paediatric home care compared with standard care may improve control of patients with asthma.**
- **It is not known whether paediatric home care has any impact on education measured as days of absence to school.**

# Relevance of the review for low- and middle-income countries

## → Findings

## ▷ Interpretation\*

### APPLICABILITY

- All studies were done in high-income countries and most probably in urban settings
- Evidence about effectiveness of different types of paediatric home care on different group of paediatric patients is limited
- Paediatric home care assessed in this review differ in intensity of home care provided, professionals involved, type of services provided, etc
- “Standard care” used as comparator in the studies included in this review was very heterogeneous

- ▷ Relevance of this review’s findings to LMICS could have important limitations provided differences with HICs. Moreover, there are additional concerns about lumping the middle with low-income countries for discussing this issue.
- ▷ Family support and home conditions is probably not the same in high-income countries compared with low- and middle-income countries. Basic home support available in most houses in high-income countries could not necessary be available in many houses of low- and middle-income countries.
- ▷ “Standard care” provided in high-income countries-setting could be very different compared with low- and middle-income countries reality for any of the comparisons assessed.

### EQUITY

- The included studies provided little data regarding differential effects of the interventions for disadvantaged populations.

- ▷ Poorest population could not accomplish basic home conditions to support home care of any member of the family
- ▷ Educational level of mothers of children was not assessed, although could be an important issue in childs’ health outcomes in home care.
- ▷ If the intervention is effective, selection of potential beneficiaries might be inclined to wealthier families with better home conditions.

### ECONOMIC CONSIDERATIONS

- Paediatric home care could affect health services utilization: it probably decreases length of hospital stay in children with mental health problems compared with “routine” care.
- Evidence about cost-effectiveness of paediatric home care compared with “standard care” is very limited

- ▷ There is a trade-off between immediate demand for additional human resources allocated to home care and potential reduction of demand for hospitalisation. In critical shortage of health professionals like in some low-income countries (specially nurses) home care could be impossible to implement.
- ▷ Financial and delivery arrangements constrains of health systems of LMICs could increase difficulties to implement home care.
- ▷ Special attention should be given to additional time of family or other informal care givers to implement paediatric home care.
- ▷ Any costs or cost-effectiveness report should be considered cautiously until studies in low- and middle-income country setting are available.

### MONITORING & EVALUATION

- Different types of paediatric home care are not clearly effective in improving relevant outcomes in different groups of patients assessed

- ▷ Because of the uncertainty about potential benefits of the intervention, pragmatic randomised trials in low- and middle-income country settings evaluating relevant outcomes are required.

\*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- and middle-income countries. For additional details about how these judgements were made see:

<http://www.support-collaboration.org/summaries/methods.htm>

# Additional information

## Related literature

Stein RE, Jessop DJ. Does paediatric home care make a difference for children with chronic illness? Finding from the paediatric ambulatory care treatment study. *Paediatrics* 1984; 73: 845-53

Shin JY, Nhan NV, Lee SB, Crittenden KS, Flory M, Hong HT, The effects of a home-based intervention for young children with intellectual disabilities in Vietnam. *J Intellect Disabil Res.* 2009 Apr;53(4):339-52.

Clar C, Waugh N, Thomas S. Routine hospital admission versus out-patient or home care in children at diagnosis of type 1 diabetes mellitus. *Cochrane Database of Systematic Reviews* 2007, Issue 2.

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## Conflict of interest

None. For details, see: [www.support-collaboration.org/summaries/coi.htm](http://www.support-collaboration.org/summaries/coi.htm)

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## Keywords

*All Summaries:* evidence-informed health policy, evidence-based, systematic review, health systems research, health care, low- and middle-income countries, developing countries, primary health care.

## About quality of evidence (GRADE)

The quality of the evidence is a judgement about the extent to which we can be confident that the estimates of effect are correct. These judgements are made using the GRADE system, and are provided for each outcome. The judgements are based on the type of study design (randomised trials versus observational studies), the risk of bias, the consistency of the results across studies, and the precision of the overall estimate across studies. For each outcome, the quality of the evidence is rated as high, moderate, low or very low using the definitions on page 3.

### For more information about GRADE:

[www.support-collaboration.org/summaries/grade.htm](http://www.support-collaboration.org/summaries/grade.htm)

## SUPPORT collaborators:

**The Alliance for Health Policy and Systems Research (HPSR)** is an international collaboration aiming to promote the generation and use of health policy and systems research as a means to improve the health systems of developing countries. [www.who.int/alliance-hpsr](http://www.who.int/alliance-hpsr)

**The Cochrane Effective Practice and Organisation of Care Group (EPOC)** is a Collaborative Review Group of the Cochrane Collaboration: an international organisation that aims to help people make well informed decisions about health care by preparing, maintaining and ensuring the accessibility of systematic reviews of the effects of health care interventions.

[www.epocoslo.cochrane.org](http://www.epocoslo.cochrane.org)

**The Evidence-Informed Policy Network (EVIPNet)** is an initiative to promote the use of health research in policymaking. Focusing on low- and middle-income countries, EVIP-Net promotes partnerships at the country level between policy-makers, researchers and civil society in order to facilitate both policy development and policy implementation through the use of the best scientific evidence available. [www.evipnet.org](http://www.evipnet.org)

### For more information:

[www.support-collaboration.org](http://www.support-collaboration.org)

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