March 2017 – SUPPORT Summary of a systematic review

Are interventions to reduce rehospitalisation within thirty days of discharge effective?

Rehospitalisation following discharge is a frequent event that affects patients' quality of life and can be associated with poor health outcomes. Avoiding rehospitalization is a goal that may both improve quality of care and reduce healthcare costs.

Key messages

➔ **It is uncertain whether pre-discharge interventions reduce rehospitalisation.**

➔ **Post-discharge interventions may lead to little if any difference in rehospitalisation.**

➔ **It is uncertain whether patient-centred discharge instructions reduce rehospitalisation.**

➔ **Inpatient–outpatient provider continuity may slightly reduce rehospitalisation.**

➔ **It is uncertain whether interactions between patients and nurses before and after discharge to support patient self-care reduce rehospitalisation.**

➔ **No studies conducted in low-income countries were identified.**

Who is this summary for?

People considering ways of reducing rehospitalisation

! 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:

Hansen LO, Young RS, Hinami K et al. Interventions to reduce 30-day rehospitalization: a systematic review. Ann Intern Med 2011; 155:520-8.

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

Rehospitalization creates considerable burdens for both patients and health systems. Interventions to reduce avoidable hospitalization can be classified into three groups, based on the timing of the intervention:

- *Pre-discharge interventions*: for example, patient education, discharge planning, medication reconciliation, and appointments scheduled before discharge
- *Post-discharge interventions*: for example, timely patient follow-up, timely primary care provider communication, patient hotlines, and home visits
- *Interventions bridging the transition between care settings*: for example, transition coaches, patient-centered discharge instructions, and provider continuity. Bridging interventions engage the patient and their family in the discharge process and transform the process into an activity done with a patient rather than to a patient.

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 estimate the effectiveness of interventions to reduce 30-day rehospitalisation

Types of	What the review authors searched for	What the review authors found
Study designs & Interventions	Randomised trials, cohort studies, or uncontrolled before–after studies assessing interventions delivered around the time of discharge and applicable to general medical adult populations (rather than disease-specific approaches)	43 included studies: 16 randomised trials, 14 non-randomised trials, and 13 uncontrolled before-after studies. Most studies (56%) tested a single-component intervention.
Participants	General medical adult acute inpatient populations. Studies of paediatric, obstetric, and psychiatric populations were excluded.	Most studies focused on people admitted to general medicine wards or people with heart failure or chronic obstructive pulmonary disease.
Settings	Hospital, ambulatory care and patients' homes	USA (28), UK (2), Canada (2), Hong Kong (2), and 1 study in each of the following countries: Australia, Belgium, Denmark, Ireland, Israel, Netherlands, New Zealand, Portugal, and Taiwan
Outcomes	30-day rehospitalisation	30-day rehospitalisation
Date of most recent search: January 2011		
Limitations: This is well-conducted systematic review with only minor limitations.		

Hansen LO, Young RS, Hinami K et al. Interventions to reduce 30-day rehospitalization: a systematic review. Ann Intern Med 2011; 155:520-8.

Summary of findings

The review included 43 studies. The effects of interventions are presented in three categories: pre-discharge interventions, post-discharge interventions and interventions that aim to bridge the transition between care settings. Several of the common discharge interventions were only assessed as part of multicomponent "discharge bundles".

1) Pre-discharge Interventions

Pre-discharge patient education and discharge planning were the most commonly evaluated interventions (22 of 43 studies), but were evaluated mostly as 'bundled' interventions and so do not provide evidence on the effects of pre-discharge interventions alone. Three studies assessed pre-discharge interventions alone. One study that assessed a patient education intervention found a small decrease in rehospitalisation. The two studies assessing discharge planning had mixed results.

➔ **It is uncertain whether pre-discharge interventions reduce rehospitalisation. The certainty of this evidence is very low.**

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.

Predischarge interventions		
People	People admitted to hospital in Canada and the USA (2 studies)	
Settings	Hospitals	
Intervention	Patient education or discharge planning	
Comparison	No intervention	
Outcomes	**Impact**	Certainty of the evidence (GRADE)
Rehospitalisation	The studies had mixed results: one study found an 11% reduction in rehospitalisation, one study found a 7.1% reduction, and one study found a 7.8% increase.	⊕◯◯◯ Very low
GRADE: GRADE Working Group grades of evidence (see above and last page)		

2) Post-discharge Interventions

Post-discharge interventions included follow-up telephone calls (17 studies), patient-activated "hotlines" (5), home visits (9), timely outpatient follow-up (5), and timely communication of patient information to an outpatient provider (5). Only three studies examined post-discharge interventions alone: one assessed home visits and two assessed follow-up telephone calls. The other studies assessed post-discharge interventions together with other interventions or did not use randomised designs and so do not provide evidence on the effects of post-discharge interventions alone.

➔ **Post-discharge interventions may lead to little or no difference in rehospitalisation. The certainty of this evidence is low.**

Post-discharge interventions		
People	Outpatients in Israel, the United Kingdom, and the USA	
Settings	Home	
Intervention	Follow-up telephone calls or home visits	
Comparison	No intervention	
Outcomes	**Impact**	Certainty of the evidence (GRADE)
Rehospitalisation	The studies had mixed results: one study found a 2% reduction in rehospitalisation, one study found a 0.5% increase, and one study found a 10% increase.	⨁⨁◯◯ Low
GRADE: GRADE Working Group grades of evidence (see above and last page)		

3) Interventions bridging the transition from hospital to home

Twelve studies described strategies involving "bridging" interventions, with several studies assessing more than one intervention in 'bundles':

- Patient-centred discharge instructions were assessed in eight studies. These instructions are intended to facilitate patient engagement in the transition of care, particularly in the use and transmission of healthcare information. None of these studies examined the effects of this intervention alone.
- Improvements in inpatient–outpatient provider continuity were assessed in two studies. In these studies, the hospital doctor continued to manage the patient following discharge.
- Interactions between patients and nurses before and after discharge to support patient self-care ('transition coaches') were assessed in six studies. None of these studies examined the effects of this intervention alone.

➔ **It is uncertain whether patient-centred discharge instructions reduce rehospitalisation. The certainty of this evidence is very low.**

➔ **Inpatient–outpatient provider continuity may slightly reduce rehospitalisation. The certainty of this evidence is low.**

➔ **It is uncertain whether interactions between patients and nurses before and after discharge to support patient self-care reduce rehospitalisation. The certainty of this evidence is very low.**

Interventions bridging the transition from hospital to home

People	Inpatients and outpatients in Australia (1), Canada (1), the Netherlands (1), the United Kingdom (1), and the USA (8)
Settings	Hospital and home
Intervention	Patient-centred discharge instructions, as part of a bundle of interventions; inpatient–outpatient provider continuity; interactions between patients and nurses, as part of a bundle of interventions
Comparison	No intervention

Outcomes	**Impact**	Certainty of the evidence (GRADE)	Comments
Rehospitalisation	Eight studies assessed patient-centred discharge instructions. The results ranged from a 10% reduction in rehospitalisation to a 2% increase.	⊕◯◯◯ Very low	The certainty of the evidence was assessed as very low due to risk of bias and inconsistency of the results, which include both benefit and harm
	Improvements in inpatient-outpatient provider continuity may slightly reduce rehospitalisation. The two studies found reductions of 0.7% and 4.4%.	⊕⊕◯◯ Low	
	Six studies assessed interactions between patients and nurses before and after discharge to support patient self-care. The reductions in rehospitalisation ranged from 2-12%.	⊕◯◯◯ Very low	The certainty of the evidence was assessed as very low due to risk of bias and inconsistency of the results

GRADE: GRADE Working Group grades of evidence (see above and last page)

Relevance of the review for low-income countries

➔ Findings	▷ Interpretation*
APPLICABILITY	
➔ **The certainty of the evidence is low or very low.** ➔ **All studies were conducted in high-income countries, mainly in the USA.**	▷ *In addition to the evidence from high-income countries being uncertain, the applicability of that evidence to low-income countries is uncertain because the effects of interventions might depend on the capacity and type of health professionals available to deliver interventions before and after hospital discharge; the availability of community-based care and support, to ensure continuity of care; other health systems resources needed to implement the interventions; and the resources available in the household to support patient care.* ▷ *Some of the interventions rely on a high level of communication between the hospital and providers of services outside of the hospital. This is not always available or possible in low-income settings.*
EQUITY	
➔ **There was no information in the review regarding the differential effects of the interventions for disadvantaged populations.**	▷ *The impacts of these interventions on inequities is uncertain. Some of the interventions involve shifts in care from secondary to primary level and to the home. The effects of these interventions may depend on the potential of health systems to address the limited availability of community care, and the capacity of health professionals to provide care for disadvantaged populations.* ▷ *Where interventions depend on access to specific technologies such as hotlines, or require high literacy levels, they may disadvantage individuals or communities with few resources or low literacy levels.*
ECONOMIC CONSIDERATIONS	
➔ **The systematic review did not address the costs or cost-effectiveness of these interventions.**	▷ *Both costing studies and cost-effectiveness studies (for effective interventions) are needed. Detailed information on the resources needed to implement these interventions would be helpful in assessing their applicability to other settings.*
MONITORING & EVALUATION	
➔ **The available evidence on interventions to reduce rehospitalisation is of low or very low certainty, and no eligible studies from low-income countries were identified.**	▷ *Rigorous studies of the effects and cost-effectiveness of these interventions are needed in low-income countries before scaling up their use.* ▷ *Studies should provide details of the intervention components and describe the contexts in which they were delivered.*

*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

Scott IA. Preventing the rebound: improving care transition in hospital discharge processes. Aust Health Rev 2010; 34:445–51.

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Long T, Genao I, Horwitz LI. Reasons for readmission in an underserved high-risk population: a qualitative analysis of a series of inpatient interviews. BMJ Open 2013; 3(9):e003212.

Gonçalves-Bradley DC, Lannin NA, Clemson LM, et al. Discharge planning from hospital. Cochrane Database of Systematic Reviews 2016, Issue 1. Art. No.: CD000313.

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Conflict of interest

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

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This summary has been peer reviewed by Richard Walker. We did not receive any comments from the review authors.

This review should be cited as

Hansen LO, Young RS, Hinami K et al. Interventions to reduce 30-day rehospitalization: a systematic review. Ann Intern Med 2011; 155:520–8.

The summary should be cited as

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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 (EVIPNet) 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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