Evidence scan: Preventing Hospitalizations

Question

Are there evidence-based healthcare interventions for reducing inpatient hospitalizations?

Answer

There is limited consistent evidence for interventions that reduce hospital admissions in the general population. Results tended to vary by study population and across study designs. Intervention categories in the literature base include integrated care, telehealth and disease specific interventions. There is some evidence of effective interventions for CHF patients, some evidence supporting the chronic care model and some promising evidence in telehealth.

Supporting Evidence

Integrated Care

A recent umbrella review of adults with one or more chronic condition reported the results of various integrated care interventions on hospital admissions (Damery 2016). The umbrella review included 50 previously published systematic reviews addressing the following interventions: case management, chronic care model, discharge management, complex interventions, multidisciplinary teams and self-management. The umbrella review found that interventions targeting specific conditions, particularly chronic care model interventions, demonstrated a reduction in hospital admissions. There was mixed evidence across studies on case management. Inconsistent or minimal evidence was found for reduction in hospital admissions and complex interventions, multidisciplinary teams or self-management interventions. Almost all studies with a significant reduction in hospitalizations in the umbrella review were in patients with CHF.

Other interventions with systematic reviews included: intensive primary care (Peterson 2013), continuity of care, care coordination (Peikes 2009), primary-care and community-based interventions for multimorbidity (Smith 2016), community health workers (Jack 2017) and shared care (Smith 2017). Within almost all of these reviews the impact on hospital admission was inconsistent. The Cochrane review on shared care reported with moderate certainty that there is probably little to no difference in hospital admissions when comparing shared care to usual care for patients with chronic conditions. In a large study of continuity of care at Kaiser Colorado a subpopulation of seniors with multiple

medical conditions a subgroup of those are persons who utilize primary care and specialty care, continuity of care intervention was independently associated with the risk of inpatient admissions. Informational continuity of care was highlighted. (Bayliss 2015).

Telehealth Interventions

There is some evidence that telehealth interventions can reduce hospital admissions for sub populations. It is not clear due to heterogeneity in the interventions and the study populations. In a recent Cochrane review of interactive telemedicine interventions that impact hospital admission varied (Flodgren 2015). Interventions consisted of remote monitoring and/or real time video-conferencing. Interventions were typically designed for specific conditions. An additional Cochrane review looked specifically at structured telephone support and non-invasive telemonitoring for patients with heart failure. This review found that the telehealth intervention decreased the amount of heart-failure related admissions (Inglis 2015). Though not a systematic review, a UK study of persons with COPD or CHF (n = 3230) found that telemonitoring interventions contributed to a lower proportion of the population being admitted to the hospital. The intervention consisted of telemonitoring specific to conditions (pulse oximeter for COPD, glucometer for diabetes, weighing scales for CHF). Patients were asked to take readings at the same time each day for 5 days per week (Steventon 2012).

Disease Specific Interventions

Congestive Heart Failure (CHF)

The evidence is consistent in reporting that specialist clinics for heart failure patients can reduce the number of unplanned primary hospital admissions (Thomas 2013). Clinics were defined as multidisciplinary teams that delivered an education component in addition to clinic appointments and monitoring for 12 months (Purdy 2012). Examples of multidisiplinary team members included: specialist heart failure nurses, physicians or cardiologists. The level of contact with the patient varied across study. Combining results across studies showed that these specialist clinics reduced the rate of unplanned hospitalizations at 3 months of follow up and 12 months of follow up (Thomas 2013). This conclusion was further supported by a recent meta-analysis of multidisciplinary heart failure clinics (Gandhi 2017). It is important to note that in this meta analysis that patients who were enrolled into an intervention while stable did not see the same benefit as those with a recent hospitalization or ED visit (Gandhi 2017).

Case management interventions initiated within the community (and not from the hospital) show mixed results around primary admissions (Huntley 2016).

COPD

There is high evidence that disease specific integrated care for patients with COPD decreases hospital admissions. One systematic review reported that patients with COPD that received at least 2 components of the chronic care model had decreased hospital admissions (Adams et al 2007). A more recent review reported that integrated disease management programs demonstrated decreased disease-related admissions (Kruis 2013). Integrated disease management programs contain at least two or more of the following: education/self management, exercise, psychosocial support, medication, smoking cessation, dietary intervention, followup or case management, multidisciplinary team and/or financial interventions. Interventions had to last longer than 3 months. In order to qualify as an integrated disease management intervention the care team needed to consist of more than one category of provider type.

Additional Considerations

- In 2015 a protocol for a comprehensive systematic review protocol on preventing unplanned hospital admissions was published (Bobrovitz 2015). The results of this systematic review could help to inform the question with the most up-to-date evidence.
- There is a broader evidence base when it comes to hospital readmission and decreasing length of hospital stay.
- In the literature base there is a large amount of heterogeneity in measurement and reporting of outcomes. A majority of studies were excluded due to lack of clarity around the definition for hospital admission or use of an outcome composite score.

Evidence Scan Methodology

1. PICOTs defined

	Include	**Exclude**
Population	Adults - CHF - Diabetes - Mental health - Multi-morbidity - Dementia	Children People recovering from surgery/recent acute medical intervention
Intervention	Prefer system level interventions, no other specifications - Case management - Medication management	Transitional care interventions Procedure-specific interventions/ treatment guidelines Medical interventions (specific therapies)

Comparison	Usual care	
Outcomes	Hospitalization --- must be primary outcome of the study	Readmission, length of hospitalization Composite scores that include hospitalization
Time	Prioritize studies with at least 3 months followup time	
Setting/Study Design	Potentially primary care relevant Prioritize systematic reviews Prioritize US based studies	All included studies occured in a non-US country Comparative effectiveness

2. Are there existing relevant Cochrane reviews?
    a. 2 searches, 137 reviews assessed with title/abstract/word search (hospital*)
        - 20 articles pulled for full text (interventions include: shared care, CHF, med management,
3. Over 12 searches, over 588 articles reviewed, 41 articles pulled for full text review
4. Supplemental searches as needed to clarify literature base

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