



Original Article

Exploring the preventable causes of unplanned readmissions using root cause analysis: Coordination of care is the weakest link



K.S. Fluitman^{a,1}, L.S. van Galen^{a,1}, H. Merten^b, S.M. Rombach^a, M. Brabrand^c, T. Cooksley^d, C.H. Nickel^e, C.P. Subbe^f, M.H.H. Kramer^a, P.W.B. Nanayakkara^{a,*}, On behalf of the safer@home consortium²:

^a Department of Internal Medicine, Section Acute Medicine, VU University Medical Centre, Amsterdam, The Netherlands

^b Department of Public and Occupational Health, EMGO Institute for Health and Care Research, VU University Medical Centre, Amsterdam, The Netherlands

^c Department of Emergency Medicine, Hospital of South West Jutland, Esbjerg, Denmark

^d Department of Acute Medicine, University Hospital of South Manchester, Manchester, UK

^e Department of Emergency Medicine, University Hospital Basel, Basel, Switzerland

^f Ysbyty Gwynedd Hospital, Wales, UK

ARTICLE INFO

Article history:

Received 18 October 2015

Received in revised form 18 December 2015

Accepted 28 December 2015

Available online 13 January 2016

Keywords:

Patient readmission

Root cause analysis

Quality improvement

ABSTRACT

Importance: Unplanned readmissions within 30 days are a common phenomenon in everyday practice and lead to increasing costs. Although many studies aiming to analyze the probable causes leading to unplanned readmissions have been performed, an in depth-study analyzing the human (healthcare worker)-, organizational-, technical-, disease- and patient-related causes leading to readmission is still missing.

Objective: The primary objective of this study was to identify human-, organizational-, technical-, disease- and patient-related causes which contribute to acute readmission within 30 days after discharge using a Root-Cause Analysis Tool called PRISMA-medical.

The secondary objective was to evaluate how many of these readmissions were deemed potentially preventable, and to assess which factors contributed to these preventable readmissions in comparison to non-preventable readmissions.

Design: Cross-sectional retrospective record study.

Setting: An academic medical center in Amsterdam, The Netherlands.

Participants: Fifty patients aged 18 years and older discharged from an internal medicine department and acutely readmitted within 30 days after discharge.

Main outcome measures: Root causes of preventable and unpreventable readmissions.

Results: Most root causes for readmission were disease-related (46%), followed by human (healthcare worker)- (33%) and patient- (15%) related root causes. Half of the readmissions studied were considered to be potentially preventable. Preventable readmissions predominantly had human-related (coordination) failures.

Conclusion and relevance: Our study suggests that improving human-related (coordinating) factors contributing to a readmission can potentially decrease the number of preventable readmissions.

© 2015 European Federation of Internal Medicine. Published by Elsevier B.V. All rights reserved.

1. Introduction

Unexpected hospital readmissions within 30 days after an index admission are highly prevalent and costly. The proportion of patients readmitted within 30 days varies widely and is estimated to be between 7 and 24% across borders [1–4]. In some countries readmission rates are

used as a quality and safety criteria to rate and reimburse units [5,6]. In 2016 the Dutch government will introduce readmission rates as an official quality indicator in hospitals [7]. To identify the patients at high risk of readmission, attempts have been made to develop a prediction score based on clinical variables [8,9]. However, these scores have not been validated to predict readmissions in different populations worldwide and show low to moderate discriminatory power in predicting readmissions [10–12].

More importantly, little is known about the preventability of the unexpected readmissions. It would seem logical that hospitals only have to accept ramifications for preventable readmissions. Reported preventable readmission rates vary from 5% to 79% [13]. However, current literature has not been able to define clear risk factors that predict a

* Corresponding author at: Section Acute Medicine, Department of Internal Medicine, VU University Medical Center, De Boelelaan 1118, 1081 HZ Amsterdam, The Netherlands. Tel.: +31 204444444x6094.

E-mail address: p.nanayakkara@vumc.nl (P.W.B. Nanayakkara).

¹ These authors contributed equally to this work.

² Membership of the safer@home Consortium is provided in the Acknowledgments.

preventable readmission, which may be targeted to reduce the rate of unexpected readmissions and improve the quality of care [14]. In addition, preventability has not yet been defined uniformly [15].

The problem is that readmissions appear to be multi-causal. They are potentially related to multimorbidity and recent studies have found a progressive increase in readmission risk as the degree of functional impairment increases [3,16,17]. Some research groups have investigated factors contributing to preventable readmissions in more detail and have classified causes according to not only patient but also system and social causes [6,18,19]. These causes, however, are often non-modifiable and beyond the reach of implementing process improvements in hospitals. Currently, no studies have been published on other potentially relevant factors such as the healthcare worker-, organizational-, technical- and patient-related causes that could contribute to acute readmissions within 30 days.

A useful tool to analyze these types of root causes is the PRISMA-tool (Prevention and Recovery Information System for Monitoring and Analysis). The main goal of the PRISMA method is to build a quantitative database of incidents and process deviations, from which conclusions may be drawn to suggest optimal countermeasures. This method has been accepted by the World Alliance for Patient Safety of the World Health Organization [20–22].

Insight into these characteristics and potential preventability of acute readmissions may be of help to ultimately reduce the number of readmissions and the costs attached. Understanding factors contributing to (preventable) readmissions would help physicians increase the safety surrounding discharge for patients and their caregivers.

In this retrospective record review study, the main aim was to identify the organizational-, technical-, healthcare worker- and patient-related causes that contribute to readmissions using “PRISMA-medical” analysis. The secondary aim was to evaluate how many of these readmissions were deemed potentially preventable, and to assess what factors contributed to these preventable readmissions in comparison to non-preventable readmissions.

2. Subjects and methods

2.1. Study design

This retrospective, cross-sectional record review study included readmissions at the VU University Medical Center in Amsterdam, The Netherlands. The VUmc is an academic medical center with approximately 3400 admissions per annum to its Acute Medical Unit (AMU) and a hospital wide readmission rate of around 10%. Previous studies have shown that 50 PRISMA-analyses are valid and sufficient basis for a reliable causal-profile [23]. In the current study, we therefore decided that 50 records would be included for a review to explore the causes and potential preventability of unplanned readmissions. All readmission records of the year 2013 meeting the inclusion criteria were selected. To get the most recent results, the reviewers started with the last record from December 2013 and included each consecutive record backwards until the number of 50 records was reached, with the last record coming from June 2013.

The following criteria were used for inclusion into the study sample: patients aged 18 years and older; initial discharge from the internal medicine ward (which included the following specialties: general internal medicine, nephrology, oncology, geriatrics, hematology, pulmonary medicine); admission and readmission through the emergency department in 2013 and readmission to any department/ward, regardless of the medical specialty within 30 days after initial discharge. All records not meeting the abovementioned inclusion criteria were excluded from the study.

If a patient was readmitted more than once during the study period only the first readmission was analyzed. The local Medical Ethics Committee approved this study.

2.2. Assessment

Doctor's charts, nurse's charts and electronic patient files including all test results were available for analysis. For each individual readmission information on patient characteristics (such as age, co-morbidity [24], living situation) and circumstances under which initial discharge and readmission took place (such as length of stay and specialty for admission) was collected according to a standardized chart abstraction form (Appendix 1). Two medically and PRISMA-trained investigators (LG, KF) reviewed each case separately and filled out these chart abstraction forms. Subsequently consensus was reached.

2.3. PRISMA analysis

In order to perform PRISMA-analysis on all readmissions, the abovementioned data collection forms were used. These consisted of a free text description of the circumstances contributing to the readmission and identification of direct, indirect and root causes. This information was used to construct a causal tree. At the top of each tree the readmission was placed as an unforeseen adverse event. The direct causes of the readmissions were noted hereunder. Under each of the direct causes the indirect causes were stated. By constantly asking ‘why’ an event and each subsequent event had taken place relevant indirect causes were revealed. This continued until no more objective information was available to reveal an underlying cause. The last noted indirect cause was labeled as root cause and was located at the bottom of the causal tree (Fig. 1).

Root causes were classified as technical-, organizational-, human- (healthcare worker) and patient-related factors according to the Eindhoven Classification Model, see Table 1 [20,21]. Disease-related causes were added as fifth category to this model. We anticipated that progression of disease would be identified as root cause in many readmissions without any technical-, organizational-, healthcare worker- or patient-related factors contributing to the readmission. Table 1 shows the sub-categories of PRISMA-root causes with case examples from our study. Finally, both reviewers studied the cases independently and extensively. They concluded whether the readmission related to its index admission and if it was potentially preventable or not. The readmission was judged to be related to the index admission if both admissions were based on the same medical issue or if cause of the readmission originated during index admission. A readmission was judged as potentially preventable if it could have been reasonably foreseen by a discharging physician and could reasonably have been prevented by any action undertaken by hospital staff or the patient. If consensus could not be reached satisfactorily, a third independent party was consulted. These cases were then re-analyzed and discussed with a senior physician (PN) and a psychologist with a special interest in PRISMA-analysis (HM). The mean time to assess a case by a single reviewer was 72 min (range 25–180, SD = 71), reaching consensus thereafter took up approximately 30 min per case.

2.4. Statistical analysis

Descriptive characteristics and frequencies were calculated in SPSS version 22.0. Categorical outcome measures are presented as frequencies and percentages. Continuous variables are summarized by median and interquartile ranges since none of them were normally distributed. To illustrate the comparison in patient characteristics between preventable and non-preventable readmissions we used the Mann–Whitney U test for continuous and ordinal variables. Pearson's chi-square test and Fisher's exact were used for dichotomous and categorical data. P-values below 0.05 were considered significant.

Download English Version:

<https://daneshyari.com/en/article/3465898>

Download Persian Version:

<https://daneshyari.com/article/3465898>

[Daneshyari.com](https://daneshyari.com)