Available online at
ScienceDirect
www.sciencedirect.com
Elsevier Masson France
EM|consulte
www.em-consulte.com
Annals of Physical and Rehabilitation Medicine 57 (2014) 193–199
ANNALS OF PHYSICAL AND REHABILITATION MEDICINE

Original article / Article original

Patient transfer from a rehabilitation hospital to an emergency department : A retrospective study of an American trauma center

Transfert de patients d'un centre hospitalier de réadaptation vers un service des urgences : étude rétrospective sur un centre de traumatologie américain

L.V.A. Downey [a,*], Leslie S. Zun [b], T. Burke [c]

[a] *Roosevelt university, school of policy studies, health services/public administration, 430, Michigan avenue, Chicago, IL 60605, United States*
[b] *Department of emergency medicine, Finch university, Chicago medical school, 15th and California, Mount Sinai hospital, Chicago, IL 60063, United States*
[c] *Department of emergency medicine, 15th and California, Mount Sinai hospital, Chicago, IL 60063, United States*

Received 21 June 2013; accepted 30 January 2014

Abstract

Objective. – To analyze medical indications and conditions for patients transferred from a rehabilitation hospital to an emergency department (ED). Are there differences in terms of which patients go to the ED during their stay and which do not? Specifically, what type of patient is most likely to be transferred?
Methodology. – A retrospective study was conducted at an American adult and pediatric urban trauma center that serves 40,000 patients per year. This study compared randomly selected samples of 534 patients having been transferred to the ED from a rehabilitation hospital and 500 patients who were directly admitted to the ED from the community. Variables examined were: demographics, ED diagnosis and level of care, length of hospital stay, costs, discharge condition and return within 60 days to the ED.
Results. – The patients transferred from the rehabilitation hospital were older ($P < 0.01$), differed with regard to ethnicity (83% African American; $P < 0.01$), the reason for hospitalization ($P < 0.01$; the majority presented with cardiovascular disease, respiratory disease or altered mental status), had longer and more expensive stays (average: 4–8 days, $P < 0.01$), required a higher level of care ($P < 0.01$), were more often admitted to surgery or telemetry, and, lastly, were more likely to be discharged in a frail or poor condition ($P < 0.01$).
Conclusions. – The patients transferred from a rehabilitation hospital had complex, intense medical (and often psychological) issues. These patients' medical needs required a high level of resources in the ED. They frequently left the hospital in sub-optimal conditions, making it likely that they would return to the hospital via the ED prior to completing their treatment within the rehabilitation hospital.

Keywords: Emergency department; Transfer patients; Rehabilitation patients; Comorbidity

Résumé

Objectifs. – L'objectif de cette étude est l'analyse des indications médicales et de l'état de santé des patients transférés d'un centre hospitalier de réadaptation vers un service des urgences (SU). Existe-t-il des différences chez les patients qui vont aux urgences au cours d'un séjour en réadaptation ? Et concrètement, quel type de patient sera plus fréquemment transféré ?
Méthodes. – Une étude rétrospective fut réalisée à un centre hospitalier de traumatologie pour adultes et enfants situé dans une grande ville américaine et qui accueille 40 000 patients chaque année. Cette étude a comparé deux groupes de patients choisis de façon aléatoire : un groupe de 534 patients ayant été transférés au SU depuis un centre hospitalier de réadaptation et un groupe de 500 patients admis aux urgences directement de la communauté. Les variables évaluées sont : les paramètres démographiques, le diagnostic du SU et le niveau de soins, la durée d'hospitalisation, le coût du séjour, l'état de santé à la sortie de l'hôpital et un éventuel retour aux urgences dans les 60 jours.
Résultats. – Les patients transférés depuis un centre de réadaptation étaient plus âgés ($p < 0{,}01$), ils différaient de par leur origine ethnique (83 % afro-américains ; $p < 0{,}01$), la raison de l'hospitalisation ($p < 0{,}01$; en majorité pour des maladies cardiovasculaires, respiratoires ou une

* Corresponding author.
E-mail address: Ldowney@roosevelt.edu (L.V.A. Downey), zunl@sinai.org (L.S. Zun), Burke@sinai.org (T. Burke).

1877-0657/$ – see front matter
http://dx.doi.org/10.1016/j.rehab.2014.01.004

altération de l'état mental), leur hospitalisation est plus longue et plus coûteuse (durée moyenne : 4 à 8 jours, $p < 0{,}01$), et leur niveau de soins plus élevé ($p < 0{,}01$). Ces patients étaient plus souvent admis en chirurgie ou en réanimation sous monitorage et, enfin, leur état de santé à la sortie de l'hôpital était souvent fragile ou médiocre ($p < 0{,}01$).

Conclusion. – Les patients transférés d'un centre hospitalier de réadaptation souffraient de problèmes médicaux (et souvent psychologiques) complexes et graves. Les besoins médicaux de ces patients nécessitaient la mobilisation d'un niveau élevé de ressources au sein du SU. Leur état de santé à la sortie de l'hôpital était souvent non optimal, ce qui suggère une probabilité de retour à l'hôpital par le biais des urgences avant la fin de leur traitement au centre de réadaptation.

Mots clés : Service des urgences ; Patients en transfert ; Patients en réadaptation ; Comorbidité

1. English version

1.1. Introduction

The practice of transferring patients to the emergency department (ED) from rehabilitation institutions has increased over the years. Patients often end up coming and going between the rehabilitation institutions, the ED and inpatient hospital stays. This can create a ''revolving door'' effect back and forth from the rehabilitation hospital to the general hospital through the ED. Research into the putative factors related to this practice has found numerous indicators that predispose rehabilitation patients. Firstly, patients coming into rehabilitation or sub-acute rehabilitation facilities tend to have complex conditions [9,4]. These patients present with a range of medical and functional problems requiring medical management to which rehabilitation treatment is often secondary [11]. Older patients with weaker baseline functions are more likely to end up being transferred to the ED [4,11].

Secondly, the types of injuries or illnesses that rehabilitation patients present with can impact the level of their medical and surgical needs. Patients with spinal cord injury (SCI) have higher survival rates, and hence are being transferred to rehabilitation hospitals with more acute illnesses than in the past [8]. However, patients with methicillin-resistant *Staphylococcus aureus* (MRSA) from acute inpatient rehabilitation units were most likely to arrive from other institutions prior to their rehabilitation stay, as opposed to being admitted from the community [11,8]. They are admitted to the rehab facility with a range of serious illnesses. Previous studies have shown that according to the Uniform Data System for Medical Rehabilitation (UDSMR), patients were transferred directly from hospitals for a variety of reasons, chiefly: acute stroke, acute brain injuries of various types, SCI, and multiple traumas. A range of functional decline is seen in patients during their rehabilitation stay with sub-acute illness or injury. According to Wilber et al., functional decline is a common contributing factor for patient transfer to the ED [11].

A third set of factors (related to socio-economic parameters) has also been identified. According to the UDSMR's sub-acute and comprehensive medical rehabilitation reports, the typical patient seen is female, white and over 75 years of age [4]. The majority were living with another person prior to entering a rehabilitation facility. Their case histories are varied, with most having a medically complex condition such as joint replacements, lower limb fractures, strokes and pulmonary conditions. Medicare fee for service was their primary form of payer. The mean length of stay was 14 days (10 days for those with joint replacements and 18 days for those with strokes or limb fractures, on average). It is well known that access to rehabilitation is the key to recovery, both in terms of function and the time it takes to complete the recovery process [12,7,1,10]. Access to these types of services is much less likely for uninsured patients.

More recent studies have found that a combination of factors related to the patient's age and medical, physical and cognitive status influence whether or not a patient is transferred to the ED from a rehabilitation facility. Studies by Carney et al., Ullrich et al., and Esselman et al. found that there were a specific combination of reasons for transfers, such as age (> 64 years), SCI, amputations, infection and pulmonary complications [3]. These patients were much more likely to have related medical or surgical complications that could not be fully addressed within the rehabilitation faculty [3]. In contrast, research by Faulk et al. identified a correlation between rehabilitation patients being sent to the ED with subsequent hospital stays being impacted by a more complex set of outcomes than those related to medical and surgical complications [5]. They found a significant relationship between the patient's admission motor and cognitions skill [3]. Bradshaw et al. also found that:

- older patients seen in the ED and then admitted to the hospital were more likely to have mental health problems and;
- mental health status influenced the patients' length of hospital stay and discharge conditions [2].

This result was confirmed by Goldberg et al., who also found that the mental health status of patients presenting at the ED influenced their needs within the ED and the hospital stay [6].

The above-mentioned studies identified a range of indicators, many of which overlap. In the present study, we examined whether or not these types of patients are also transferred to the ED during their rehabilitation stay. Is there a difference in terms of which patients go to the ED during their stay? Specifically, what type of patient is most likely to be transferred?

1.2. Methods

The setting was an American inner city level I pediatric and adult trauma center that serves 40,000 patients per year. A