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Original Research Article

Unscheduled return visits to a pediatric emergency department

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ABSTRACT

Background and objective: Return visits (RVs) to a pediatric emergency department (ED) within a short period after discharge have an influence on overcrowding of the ED and reveal some weaknesses of the health care system. The aim of this study was to determine the rate of RVs and factors related to RVs to the pediatric ED in Lithuania.

Materials and methods: A retrospective study in an urban, tertiary-level teaching hospital was carried out. Electronic medical records of all patients ($n = 44\,097$) visiting the ED of this hospital between 1 January and 31 December 2013 were analyzed. Demographic and clinical characteristics of patients who return to the ED within 72 h and those who had not visited the ED were compared. Factors associated with RVs were determined by multivariable logistic regression.

Results: Of the overall ED population, 33 889 patients were discharged home after the initial assessment. A total of 1015 patients returned to the ED within 72 h, giving a RV rate of 3.0%. Being a 0–7-year old, visiting the ED during weekdays, having a GP referral, receiving of laboratory tests and ultrasound on the initial visit were associated with greater likelihoods of returning to the ED. Patients who arrived to the ED from 8:01 a.m. to 4:00 p.m. and underwent radiological test were less likely to return to the ED within 72 h. Diseases such as gastrointestinal disorders or respiratory tract/ear–nose–throat (ENT) diseases and symptoms such as fever or pain were significantly associated with returning to the ED. The initial diagnosis corresponded to the diagnosis made on the second visit for only 44.1% of the patients, and the highest rate of the congruity in diagnosis was for injuries/poisoning, surgical pathologies (77.2%) and respiratory tract diseases (76.9%).

Conclusions: RVs accounted for only a small proportion of visits to the ED. RVs were more prevalent among younger patients and patients with a GP referral as well as performed more often after discharging from the ED in the evening and at night.

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1. Introduction

Return visits (RVs) to a pediatric emergency department (ED) within a short period after discharge, i.e., within 72 h are important for several reasons. First, RVs influence the overcrowding in the ED. Though return rates may be relatively low, they can lead to a considerably increased number of additional patients. For example, in the United States, RVs make up to 2.2%–3.5% of all ED visits [1] and are the cause of 25 000–75 000 additional patients annually [2]. RV rates have a tendency to increase each year, and Cho et al. reported that in the United States, the rate of RVs increased to 38% during the period of 2001 to 2007 [3]. It is worth noting that there is a difference in return rates between adults (0.2%–3.5%) [4–6] and children (1.1%–15.8%) [2,7–10], and this indicates that this issue is much more essential in the pediatric ED. RV to the ED is usually used as a quality indicator for EDs [11]. RVs leave less time for the physician to evaluate each patient and make specialists to pay much more attention to the returning patients, because there is a possibility of a previous error in the diagnosis of an illness or the progression of an illness. This could explain why returning patients are hospitalized more often or triaged to a more acute category, and why a complete blood count (CBC) is obtained from them more frequently than from patients during an initial visit [2,3,12]. On the other hand, there is an opinion that RVs themselves are caused by overcrowding in the ED. However, it has been proved that attempts to reduce overcrowding did not decrease RV rates [13,14].

Second, the existence of RVs reflects insufficient access to primary healthcare services in the case of acute diseases in children. Several studies have shown that it is more convenient for patients to come straight to the ED instead of visiting their general physician (GP) [15]. Data showed that only half of patients called their GP before returning to the ED and that one-third of them could not get an appointment [1].

Third, returning patients are at greater risk of adverse effects and mortality [13,16]. Some studies have shown, however, that up to 87%–97% of the return admissions are due to progression of the illness [1,17,18].

Several studies were done in North America, Western and Southern Europe, and Taiwan [2–4,7,13,15,18] in which the rates of RVs and variables that can influence RVs differ according to different studies and are dependent on the country, demographic situation, and health system. The aim of our study was to analyze the factors associated with RVs in an Eastern European country, predict the rates of RVs at a particular time, and optimize the function of the pediatric ED in Lithuania and other demographically similar regions.

2. Material and methods

A retrospective study was carried out in an urban, tertiary-care pediatric teaching hospital. This study was approved by Vilnius Regional Ethics Committee for Biomedical Research. In 2013, a total of 44 097 patients visited the ED, 33 889 of them for outpatient medical care. Electronic medical records of all patients who visited the ED between 1 January and 31 December 2013 were analyzed. The patients who were

hospitalized during their initial visit to the ED were excluded from further analysis. A visit to the ED was categorized as urgent if the condition of the attending patient was acute, critical, or potentially life-threatening. An RV was defined as any visit made by a patient younger than 18 years that occurred within 72 h after the previous visit to the ED. Demographic and clinical characteristics of the patients who returned to the ED within 72 h (72-h RVs) were compared with those of the patients who had not visited the ED within the previous 72 h (non-RVs). Additional comparison was made between the first and second visits of RV patients. Demographic variables included patient's age (0–2, 3–7, 8–12, and 13–17 years) and sex. Clinical variables included those related to both presentation and treatment. Presentation-related variables included the season, day of the week (weekday and weekend including bank holidays), time of the day (0.01–8.00 a.m., 8.01 a.m.–4.00 p.m., 4.01 p.m.–midnight), mode (arrival to the ED with or without a GP referral), and urgency (urgent or non-urgent). Variables related to treatment decisions included use of any radiologic or ultrasound imaging, laboratory tests (blood and/or urine), and nature of services provided (short stay, consultation provided by one specialist or more). Single-specialist consultation was defined as a consultation given by an ED physician. Multispecialist consultation was defined as a consultation by an ED physician and one or more specialist physicians. Short stay service was defined as observation in the ED that lasted 4–24 h.

To further understand the clinical characteristics of RV patients, we classified them based on the diagnoses they received. Diagnoses at discharge were grouped into 7 categories: respiratory tract and ENT pathologies; gastrointestinal tract pathologies; neurological pathologies; signs and symptoms (fever, abdominal pain, headache); injuries, poisoning and surgical pathologies; lesions of the skin and mucus membranes; and other issues (all other diagnoses).

All statistical analyses were performed by using SPSS statistical software (IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp.). We compared RVs with non-RVs with respect to demographic and clinical variables using the χ^2 test. Variables nominally associated ($P < 0.2$ in bivariate analysis) were entered in a multivariable logistic regression model with a visit type (RV vs. non-RV) as a dependent variable. All statistical tests were 2-tailed, and $P < 0.05$ was considered statistically significant.

3. Results

A total of 44 097 patients visited the ED in 2013. Less than a quarter (23%, $n = 10 208$) was hospitalized during the initial visit and were not included in our study. The remaining part (76.9%, $n = 33 889$) of the patients were discharged, and their medical records were analyzed further. Of the cohort analyzed, 1015 patients (3.0%) returned to the ED within 72 h and were considered to be RV patients. Nearly a quarter (24%, $n = 248$) of the returning patients were hospitalized, and the rest were discharged home for the second time. Patients who returned to the ED for the second time within 72 h accounted for 3.1%

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