

VIII. ABSTRACT

An emergency department is an organizational unit in a hospital dedicated to providing medical aid to patients in a medical emergency. A triage system is used to determine the correct order of patient admissions, with the goal of ensuring the safe flow of patients through the department in accordance with their needs. A proprietary three-stage system of medical segregation of patients with green, yellow, and red priority marking was introduced in the Emergency Department of the L. Zamenhof University Children's Clinical Hospital in Białystok in 2015 to provide optimal medical care. The study was designed to evaluate the triage system introduced. A retrospective analysis of 79791 "initial patient evaluation cards" from 2016-2018 was performed.

Individual elements were analysed in relation to groups of patients with various level of urgency of admission and different age groups (newborns, 1 month – 3 years of age, 4-8 years of age, 9-18 years of age). Triage analysis for various groups was established for every six month period. The largest group of patients belonged to the age range of 9-18 years (41.3%), while newborns were the least numerous (2.0%).

Statistically significant differences were found in the percentage of patients assigned to each priority group. Most patients were assigned to the lowest priority group – green (68.3%) and the least to the highest priority – red (1.2%). Over time, there has been an increase in the percentage of green priority patients and a decrease in red priority. In 3.8% of cases there was no prioritization, with a downward trend in successive six-month periods.

The majority of patients received care on an outpatient basis (66.7%), especially in the green priority group (76.8% of patients in the lowest triage category). The percentage of hospitalizations increased with priority – the red priority group had a high rate of hospitalizations (90.5%). Of the designated age groups, newborns were hospitalized at the highest rate (70.2%).

Analysis of waiting times for triage after patient registration showed that the largest group consisted of patients waiting for triage up to 15 minutes after registration (71.4%). Over time, in consecutive six-month periods, the waiting times for newborns to register and the maximum waiting time for triage after registration decreased in all age groups.

The majority of patients stayed at the emergency department for 3 hours or less (85.4%). The relatively shortest length of stay at the ED was recorded for red priority patients and newborns and the longest in the non-priority group.

Injuries were the most common reason for patients presenting at the ED and accounted for 30.1% of the surveyed sample. Analysis of the medical problems of patients in each priority group found that in the red priority, the largest percentage of patients (19.3%) manifested respiratory problems (shortness of breath and reduced saturation, airway obstruction).

Over three years, 0.3% of patients did not agree to continue diagnosis and treatment in the hospital and 0.4% left the ED on their own before completing the diagnostic and therapeutic process. In both cases, green priority patients were the largest group. The proportion of patients in the studied sample referred for treatment in the ICU was 0.2%, while the death rate was 0.1%. It was found that in both groups the vast majority of patients were classified as the highest priority.

Priority was assessed correctly in 78.4%, undertriage (i.e. assigning a lower priority than appropriate) occurred in 17% of cases, and overtriage – in 1% of cases. The degree of correct prioritization increased as the urgency of the priority increased. A downward trend was observed in the percentage of patients with overtriage in successive six-month periods. Undertriage, on the other hand, was recorded to the smallest extent in the first two analysed six-month periods. Priority was assigned correctly in the highest percentage among newborns (93.9%). In the case of undertriage, pain was identified as an element indicating underestimation in the largest percentage of patients (43.0%).

In 3.4% of cases, retriage (reassessment of the patient before first contact with a doctor) was carried out. As a result of retriage, the priority remained unchanged in the highest percentage of patients originally assigned green, while yellow and red were downgraded.

45.2% of patients reported pain during triage. Despite the presence of pain, 23.1% of patients were not evaluated. However, an increase in the identification and rating of pain on the pain severity scale was observed over the analysed time period. The largest percentage of patients whose pain was not evaluated was found among those who were not assigned to a priority group, which might have been why no priority was assigned. As priority increased, the severity of pain was determined to a greater degree.

The three-tier scale does not allow patients to be properly segregated to the fullest extent. Research results indicate that multi-centre studies of the observed and expected distribution of triage should be conducted.