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### The Evolution of the Prehospital Care of Pediatric Asthma

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**Purpose:** The prevalence of asthma in the pediatric population is approximately 9% and the incidence of acute exacerbation in this population has been increasing. The purpose of this study was to determine if there has been a change in the pre-hospital presentation and treatment of pediatric asthma.

**Methods:** This observational study was a retrospective consecutive case series comparing pediatric (#18 yrs) asthmatics treated and transported by an inner city EMS system over two years. (1987, 1992). Data collected included patient demographics, prehospital treatment, and evaluated diagnostic criteria used by paramedics to initiate treatment. Student's *t* test was performed for continuous data and contingency analysis (chi-square) for non-continuous data. A Wilks stepwise discriminant analysis was performed on 1987 and 1992 data to evaluate diagnostic factors.

**Results:** There were 407 transports in 1987 and 652 in 1992, representing a 60% increase. 237(56%) of patients received advanced life support (ALS) in 1987 and 344(53%) in 1992. Mean age of ALS patients in 1987 was 10.25 ( $\pm 5.3$ ) and was 8.03 ( $\pm 2.8$ ) in 1992 ( $p < 0.001$ ). Albuterol inhalation supplanted epinephrine (1987-205, 1992-1) and aminophylline (1987-15, 1992-1) as the treatment for asthma in our service system. The discriminant analysis revealed that in 1987, paramedics treatment decision making was influenced by age, cough, cold, and/or fever, home medications, accessory muscles, absence of wheezing, and normal respiratory rate. This changed in 1992 where only the presence or absence of wheezing and accessory muscle-use to be highly correlated with treatment decisions.

**Conclusions:** The incidence of acute asthma in children has increased. Paramedic diagnostic decision-making has changed, due to the introduction of albuterol, obviating the need for injections.

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### Circadian Variation in Paramedic-Initiated Turndowns to Basic Life Support

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**Objectives:** Paramedic-initiated turndowns-to-BLS are a high-risk area for EMS. One non-clinical factor that might affect paramedics' decision-making is a 24-hour work schedule. We attempted to determine the presence of circadian variation in the turndown rate from ALS to BLS when paramedics work 24-hour shifts.

**Methods:** Retrospective analysis of all 1994 ALS patient evaluations. Encounters were classified as: ALS transport; turndown-to-BLS; patient-initiated refusal of transport; other transport; field death. Analysis of variation in turndown rate by hour of ALS dispatch was performed using logistic regression to make paired comparisons for each hour.

**Results:** 17,877 patients were evaluated by ALS. Of these, 10,956 (61%) were ALS transports, 6,200 (35%) were not transported by ALS, and 721 (4%) were dead. Of the 6,200 alive non-ALS transports, 4,291 (69%) were turned down to BLS, 1,748 (28%) refused transport, and 161 (3%) were transported by others. One turndown-to-BLS was excluded due to missing dispatch time; for the remaining 4,290 the overall turn-down rate was 25%. The turndown rates for 15 of 24 hours did not differ significantly ( $p > 0.01$ ) from any other hour. The rates at the following hours differed significantly: hour 3 < 13; hour 5 < 8,9,10,13,16,22; hour 9 > 20,22; hour 10 > 22; hour 13 > 20,22; hour 16 > 20,22.

**Conclusions:** Circadian variation in the rate of paramedic-initiated turndowns-to-BLS appears to have no distinct pattern during a 24-hour work schedule. The 9 hours that differ significantly do not seem to correspond to activities such as bedtime or change of shift.