FACTORS AND OUTCOMES ASSOCIATED WITH HOSPITALIZATION AND EMERGENCY DEPARTMENT DISCHARGE FOR CHILDREN WITH FEVER OF UNKNOWN ORIGIN

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Background: Fever of unknown origin (FUO) cases are often challenging to differentiate benign, self-limited from more serious, life-threatening etiologies and are associated with prolonged hospital stays and high costs. There is limited literature in this population, and outcomes from the emergency department (ED) setting has not yet been studied. Given the wide array of potential diagnoses for FUO, we hypothesized that there could be variability in disposition decisions and the opportunity to promote high value care reduce resource utilization. We aimed to describe the factors associated with hospitalization in children with FUO and compare the outcomes between those hospitalized and discharged from the ED.

Materials/Methods: We conducted a single center retrospective, cross-sectional study of previously healthy children aged 6 months to 18 years, who presented to a quaternary care free-standing children's hospital ED from 1/2017 to 12/2019. Patients were included if they had an initial ICD-10 encounter diagnosis code of FUO or prolonged fever, and reported fever for >=7 days without localizing signs or symptoms of infection at presentation. Outcome measures included association factors defined a priori and adverse outcomes. Descriptive statistics and backward-step approach using binary logistic regression modeling were used to describe outcomes.

Results: Of the 351 children with FUO included, 113 (32%) were hospitalized at initial presentation. Factors associated with hospitalization included a prior outpatient evaluation by a primary care physician (aOR 1.59; 95% CI, 1.25 – 2.03) or subspecialist (aOR 3.79; 95% CI, 1.63 – 8.81) and abnormal c-reactive protein level (aOR 6.64; 95% CI, 2.62 – 16.79). Two (1.8%) children hospitalized required escalation of care without ventilator or vasopressor support, median length of stay was 2 days, and majority remained undiagnosed at discharge (Table 1). Of those discharged from the ED, 18 (8%) returned to the ED for FUO within 30 days, of which 13 (72%) were hospitalized at return. Majority of children discharged from ED remained undiagnosed after the initial encounter (Table 1).

Conclusions: Factors associated with hospitalization reflected either prior attempt at outpatient evaluation or lab value reflecting systemic inflammation. Most children remained undiagnosed, adverse outcomes were rare in both groups and hospitalizations were short with high costs. Future studies can evaluate the individual provider factors that influence disposition decisions.

Images / Graph / Table

Table 1: Outcomes in children with FUO

	N (%) or Median (IQR)
Hospitalized (N = 113)	
Adverse Outcomes	
ICU level of care	2 (1.8)
Shock	0 (0)
Vasopressor or ventilatory support	0 (0)
Deaths	0 (0)
LOS (days)	2 (1, 4)
Hospitalization Charges	$20,458.00 ($13,904.00, $33,610.50)
30-Day Same Cause Return	5 (4.4)
Discharge Etiology Category	
Unknown/Undiagnosed	56 (49.6)
Infectious	42 (37.2)
Rheumatologic	8 (7.1)
Miscellaneous	5 (4.4)
Unknown Combination*	2 (1.7)
ED Discharged (N = 238)	
ED Charges	$6538.00 ($5368.00, $7886.50)
30-Day Same Cause Return	18 (7.6)
Same Cause Return Disposition (N=18)	
Hospitalized	13 (72.2)
ED Discharge	5 (27.8)
Adverse Outcomes	
ICU level of care	0 (0)
Shock	0 (0)
Vasopressor or ventilatory support	0 (0)
Deaths	0 (0)
Final Etiology Category	
Unknown/Undiagnosed	129 (54.2)
Infectious	99 (41.6)
Rheumatologic	6 (2.5)
Miscellaneous	4 (1.7)

*Unknown combination = combined categories of unknown and infectious disease or unknown and miscellaneous etiologies