



**C.S. MOTT
CHILDREN'S HOSPITAL**
UNIVERSITY OF MICHIGAN
HEALTH SYSTEM

Referral Patterns from Pediatric Primary Care Clinics to the Emergency Department

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Introduction

Emergency Departments (EDs) have become increasingly busy as they act as an entryway to the hospital. Referral patterns from the nine University of Michigan general pediatrics clinics to the C.S. Mott Children's Emergency Services were analyzed with the goal of identifying factors that could balance referrals to the ED and identify opportunities to expand clinic services for minor acute complaints.

Objectives

We aim to:

1. Identify the proportion of ED referrals that are generated due to a lack of availability of a provider in the outpatient clinics. We hypothesize that the majority of these referrals will occur when the clinics are closed, as opposed to open clinics with no physician availability due to full schedules.
2. Determine barriers to diagnostic and therapeutic intervention in the outpatient clinic setting that necessitates referral to the Emergency Department. We hypothesize that the clinic sites with less diagnostic and therapeutic capabilities will have an overall higher referral rate than those clinic sites that are equipped with more resources despite time of day and day of week.
3. Assess ED resource utilization in relation to nurse triage criteria and physician referral practices. We hypothesize that nurse triage will result in more ED referrals than resident physician triage and that resident physician triage will result in more ED referrals than attending physician triage.

Materials and Methods

We conducted a retrospective chart review of patients seen in the pediatric ED of a suburban, tertiary care academic medical center within 48 hours after contact with one of the nine UM general pediatric clinics during the first full week of each month in the one-year period from 9/01/2012 to 8/31/2013.

The data collected included patient characteristics, clinic characteristics, primary care clinic provider recommendations, and CES visit characteristics. Chi-square and Kruskal-Wallis tests were used to compare referrals across clinic sites and between clinic visits and phone triage encounters.

Results

- 397 patients, with 507 clinic encounters
- 80 patients had multiple interactions with clinics prior to their ED visits
- 183 recommendations made by RNs, 286 by MDs, and 38 by multiple providers or Patient Assistance Services
- RNs referred patients to the ED at a slightly higher rate than MDs (59% vs. 56%; $p=0.005$)
- Provider level did not influence the patient's probability of having a diagnostic study or therapeutic intervention in the ED
- Phone encounters resulted in more referrals to the ED than clinic encounters (60% vs. 33%; $p<0.0001$)

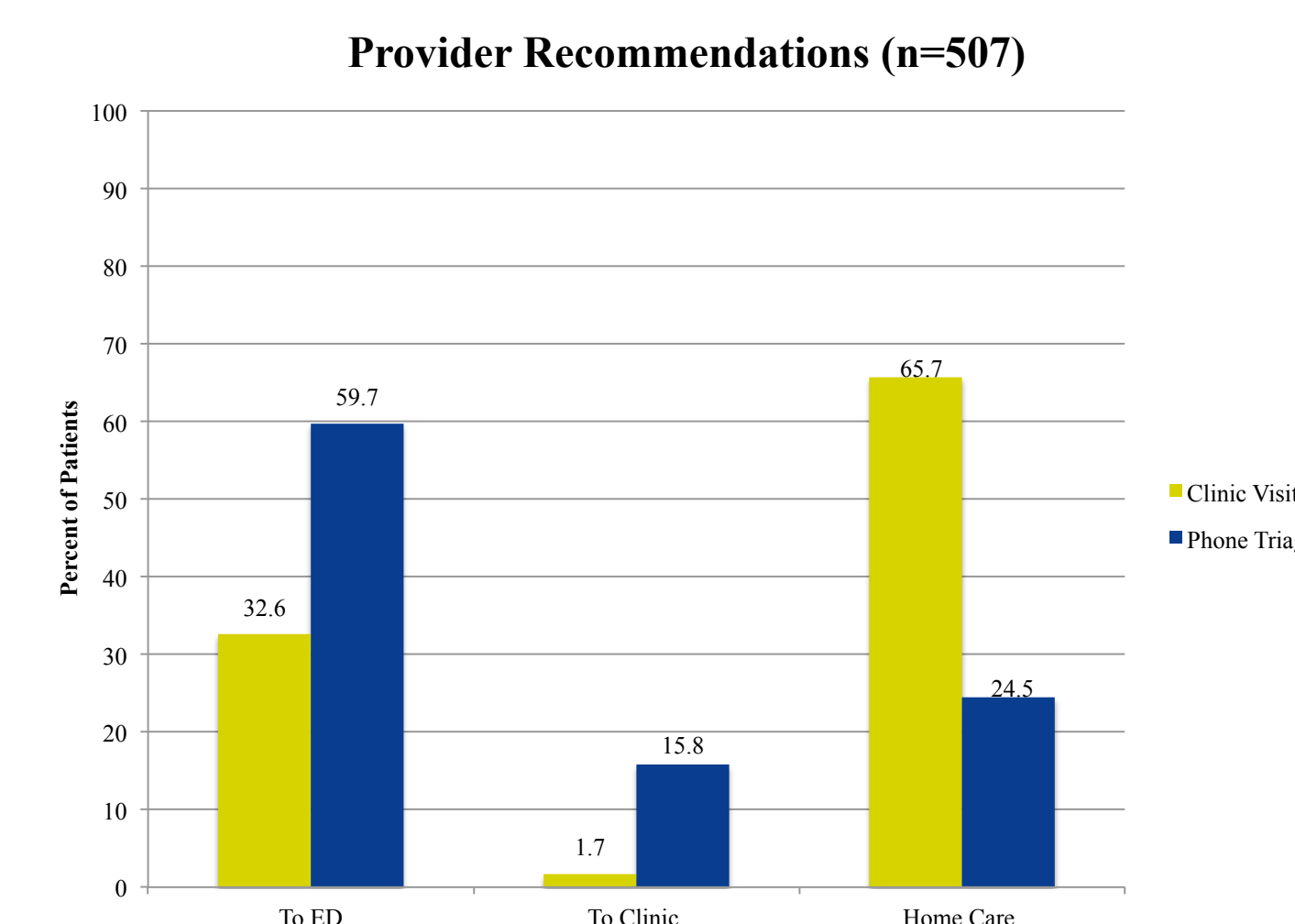


Figure 1: Provider Recommendations following Clinic Visits and Phone Triage

- Most encounters occurred when the clinics were open (76%)
- There were also differences in referrals to the ED following encounters when clinics were open (44%) and closed (57%, $p=0.005$)

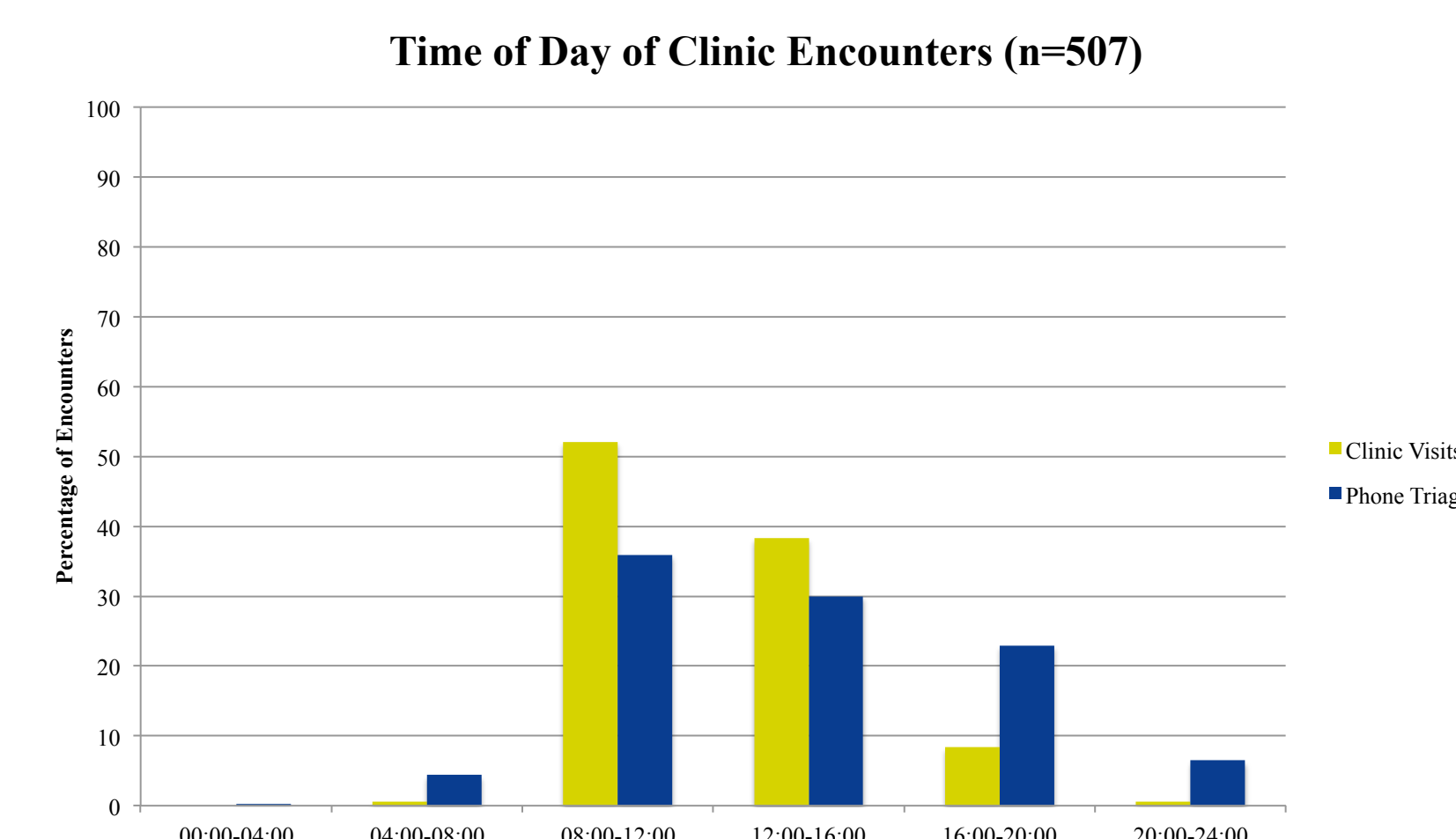


Figure 2: Time of Day for Clinic Visits and Phone Triage

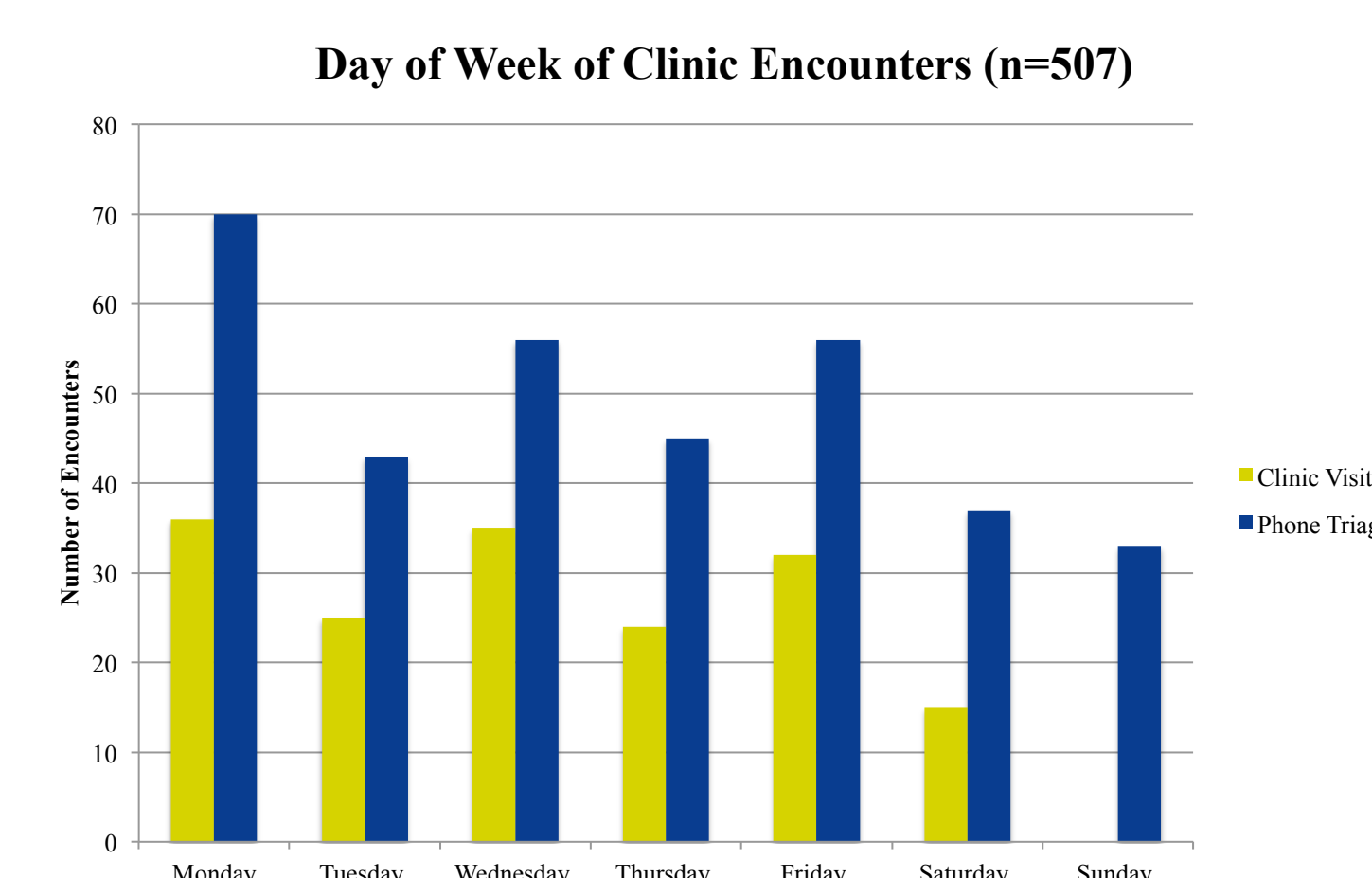


Figure 3: Day of Week for Clinic Visits and Phone Triage

Results (continued)

- The most common chief complaint was fever (20%)
- 62% of patients received at least one diagnostic study in the ED
- The probability of a patient receiving an x-ray did not change whether his or her home clinic had x-ray capabilities
- 73% of patients received at least one therapeutic intervention
- There was a difference in the probability of a patient receiving a therapeutic intervention based on whether or not his or her clinic was capable of performing that intervention

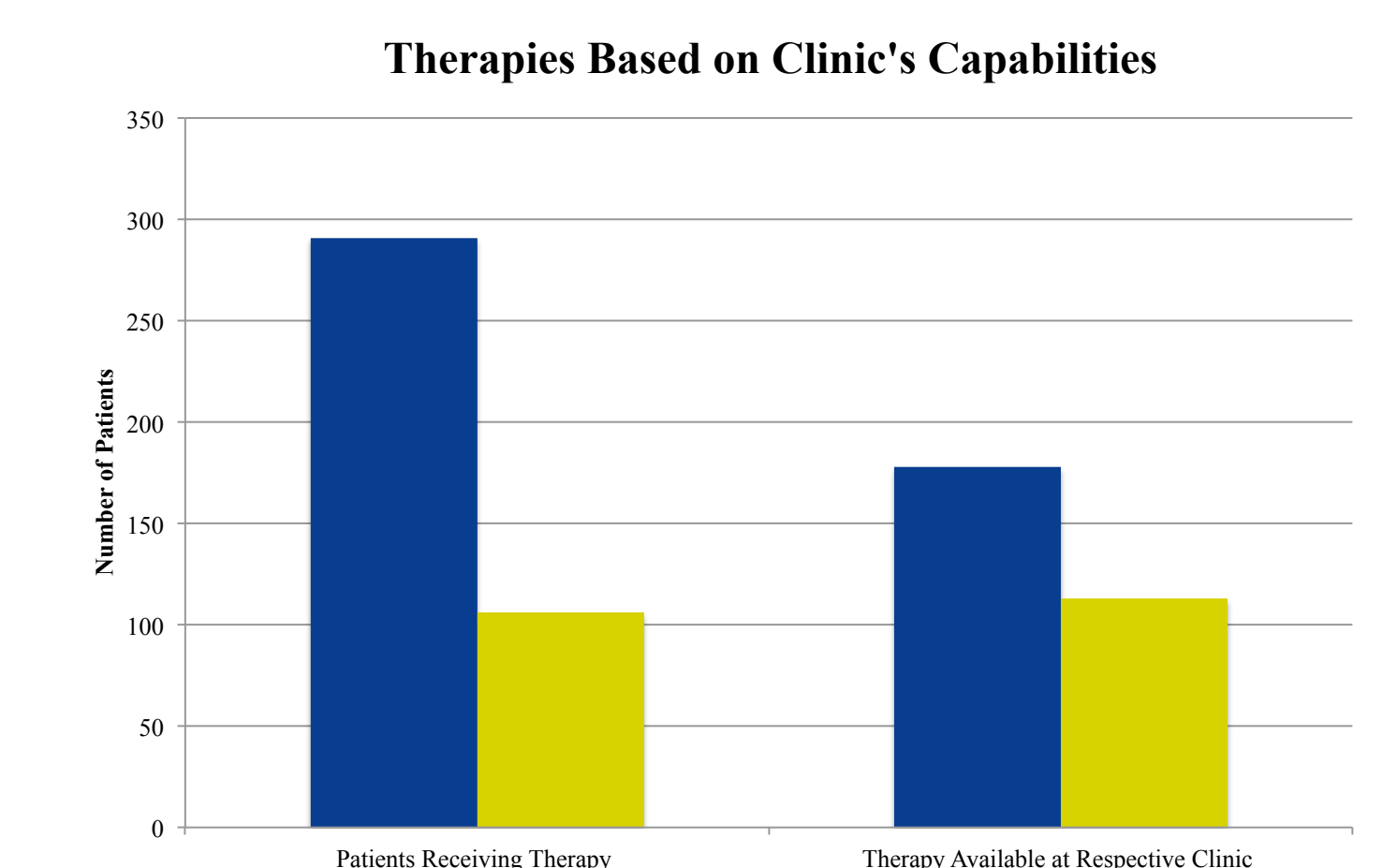


Figure 4: Therapies received in the ED and their availabilities at patients' home clinic

Conclusions

- More efficient phone triage protocols, particularly with a chief complaint of fever, can help balance the illnesses that can be handled in primary care settings.
- Between nurses and physicians, changing the level of the provider making the recommendation may not have a large influence on decreasing referral rates.
- Increased referrals to alternative primary care options such as urgent care and parental education of after-hours options could help lessen the overutilization of the emergency department and decrease wait times.

Acknowledgements

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