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Sara Frey PharmD

Kristin M. Held Wheatley PharmD, BCOP

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Medication Use Evaluation of Ceftriaxone Dosing in Pediatric Patients

Sara Frey, PharmD , Kristin Held Wheatley, PharmD, BCOP
Pharmacy Department, Lehigh Valley Health Network, Allentown, Pa.

Background

- Inconsistent antimicrobial dosing can lead to suboptimal or supratherapeutic drug levels contributing to antimicrobial resistance, increased hospital costs, and adverse effects
- Despite incorporation of ceftriaxone dosing within order sets, variability in dosing persists
- The goal of this quality improvement project was to characterize ceftriaxone dosing based on indication within the pediatric units at Lehigh Valley Reilly Children's Hospital

Methods

- Retrospective review of intravenous ceftriaxone medication orders for pediatric patients was performed between January 1, 2021 and June 30, 2021
- Evaluations performed:
 - Characterize ceftriaxone dosing based on indication
 - Examine the data for any trends in ceftriaxone dosing associated with specific pediatric units and indications
 - Analyze order set utilization

REFERENCE

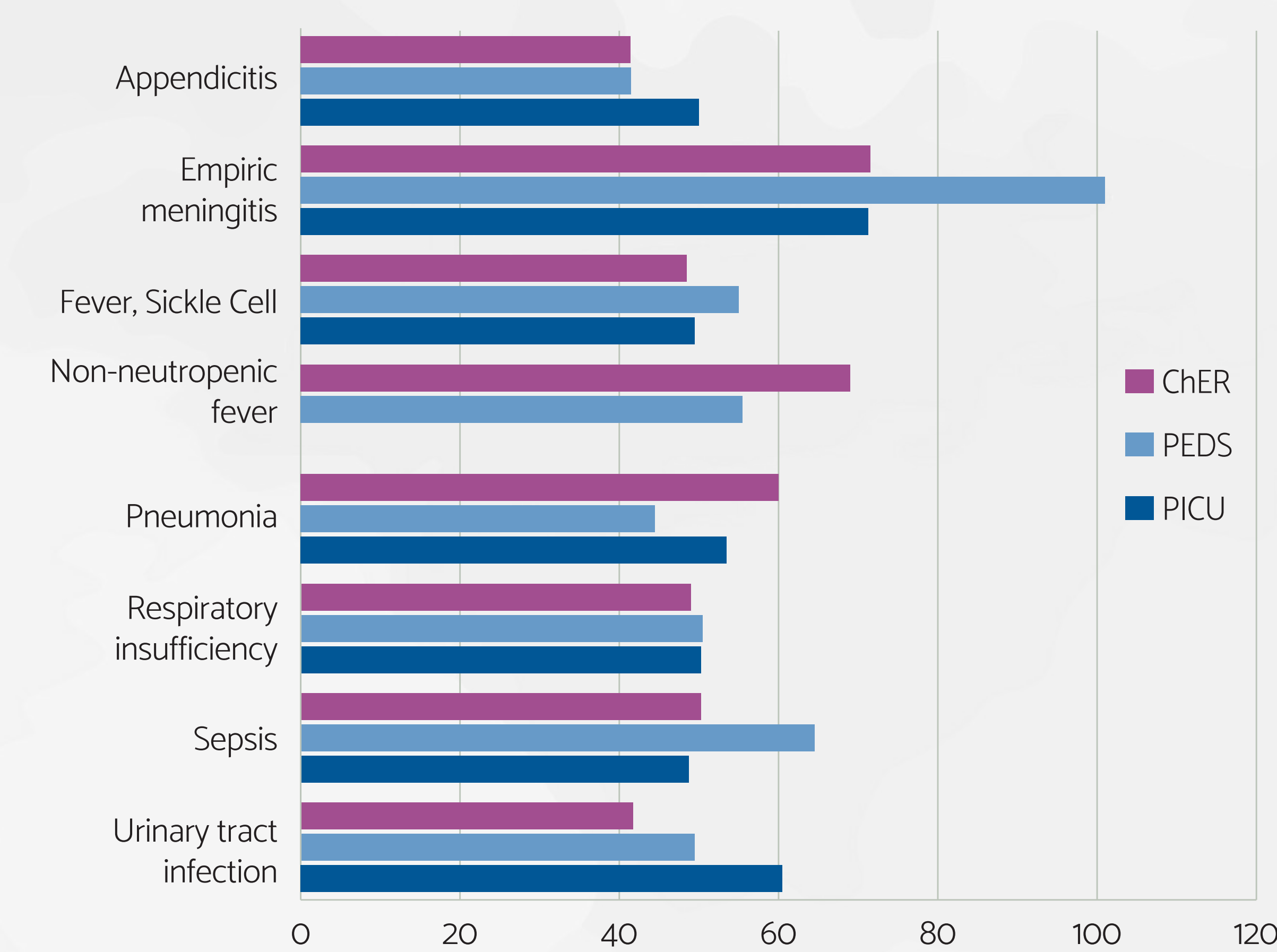
Ferguson RA, Herigon JC, Lee BR, et al. Variability in ceftriaxone dosing across 32 US acute care children's hospitals. *J Pediatric Infect Dis Soc.* 2021;10(5):677-681.

Results

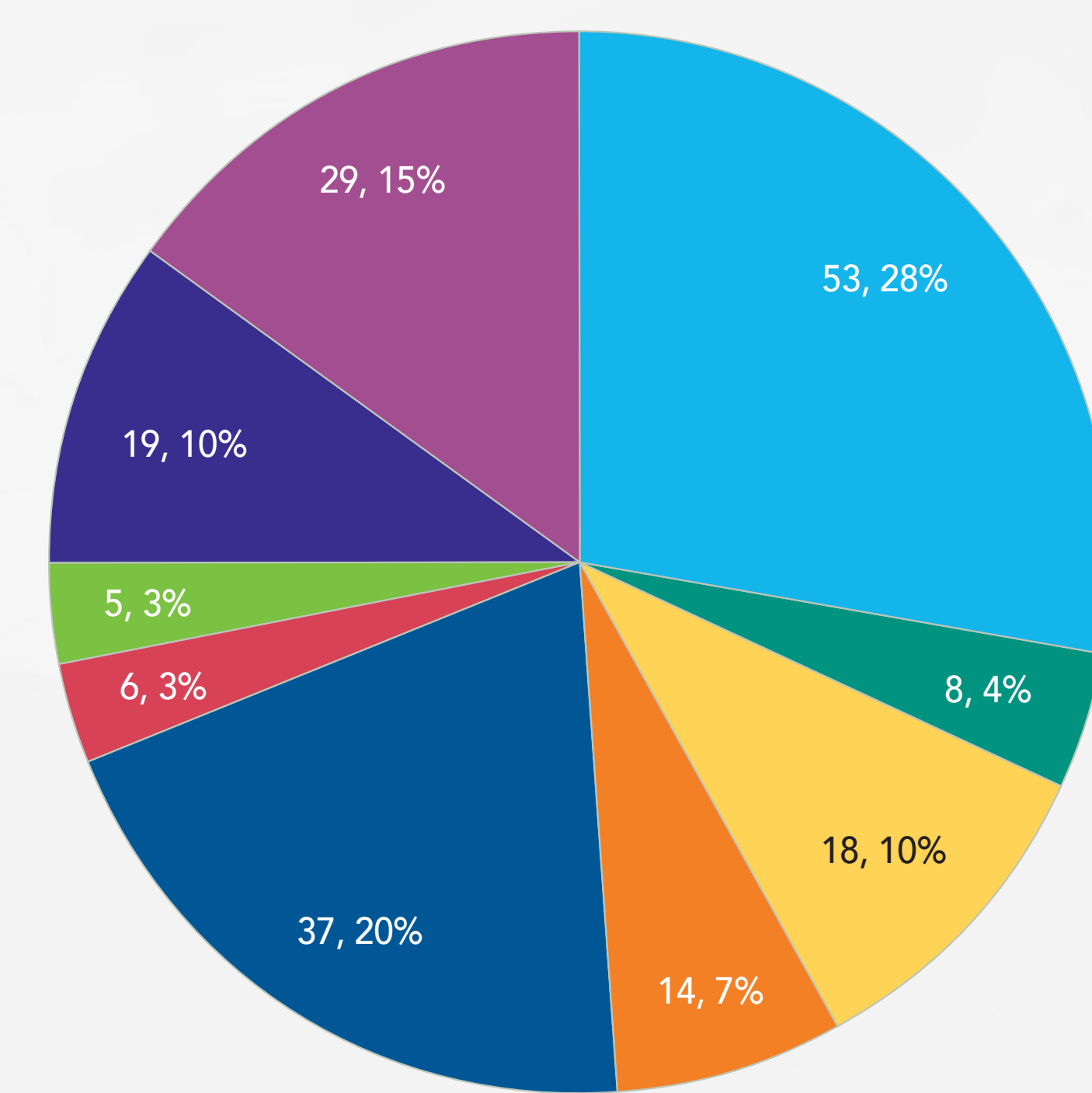
CHARACTERISTICS OF CEFTRIAXONE ORDERS

Patient age (years)	Median (IQR)
	7 (11)
Department (n=356)	n (%)
Children's Emergency Room (ChER)	189 (53.1)
General Pediatric Unit (PEDS)	127 (35.7)
Pediatric Intensive Care Unit (PICU)	34 (9.6)
Operating Room (OR)	6 (1.7)
Order set utilization (n=90)	
ChER	55 (61.1)
PEDS	31 (34.4)
PICU	0
OR	4 (4.4)

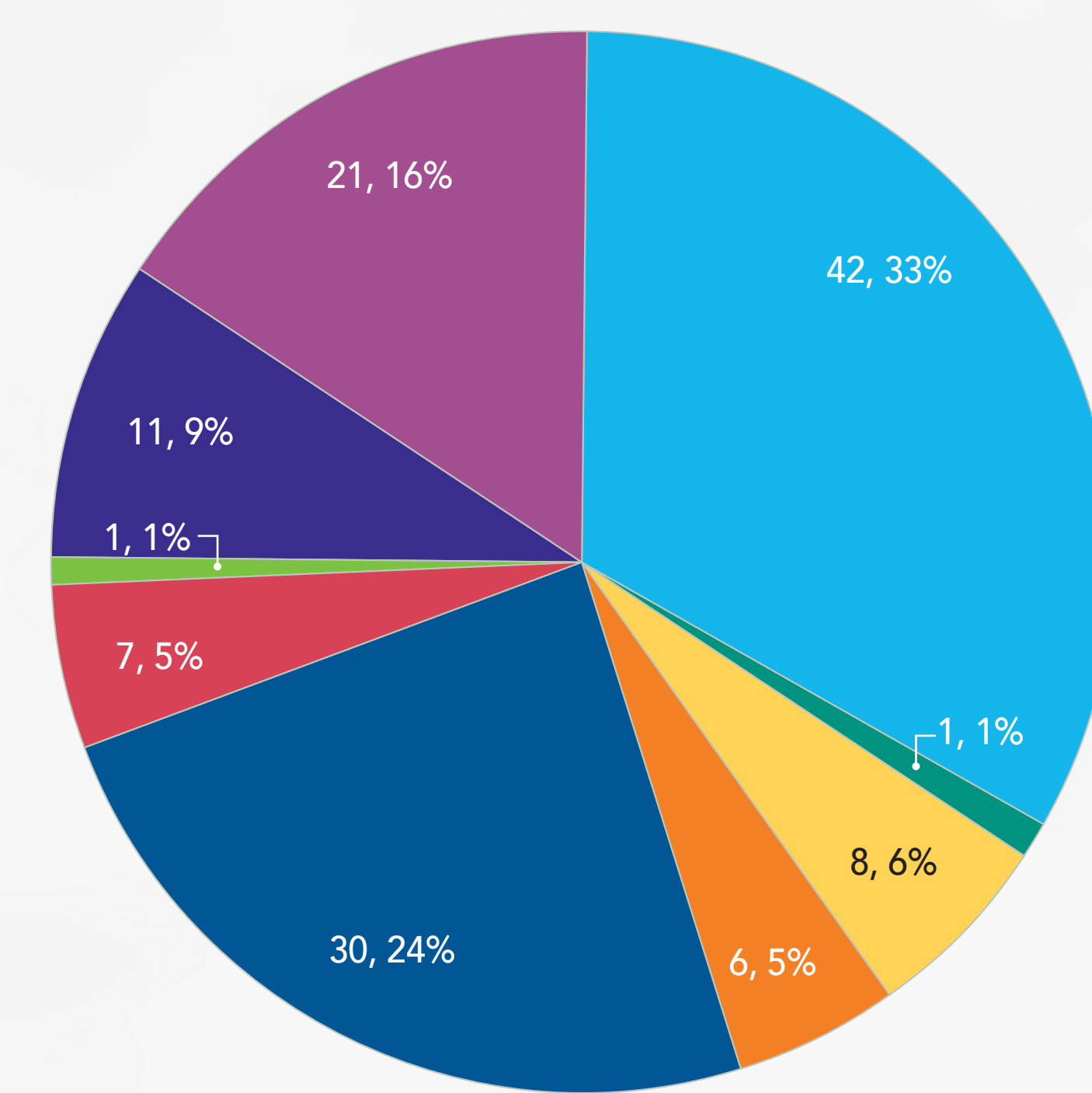
MEAN CEFTRIAXONE DOSING (MG/KG/DAY) BY INDICATION AND DEPARTMENT



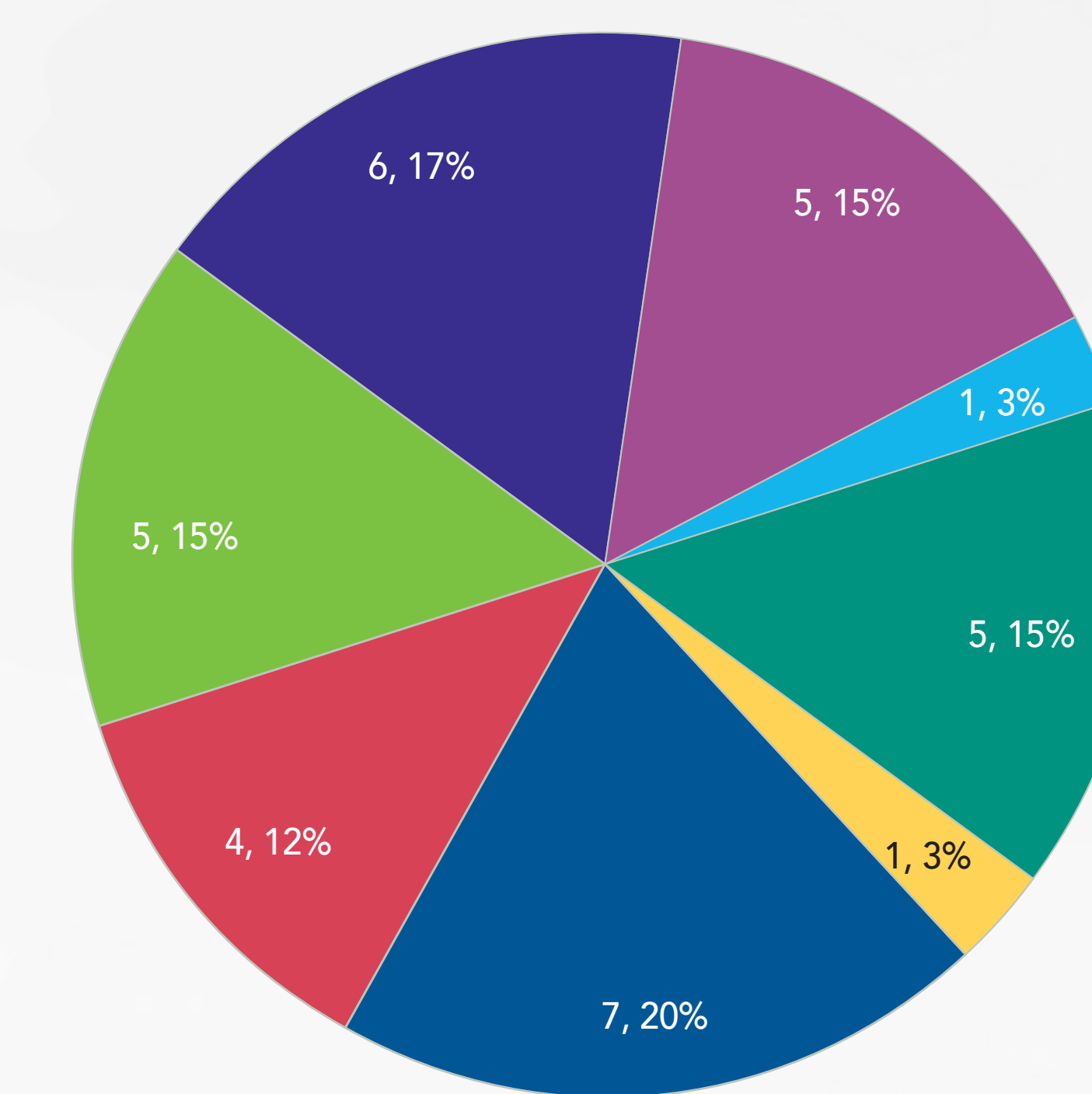
CEFTRIAXONE INDICATIONS FOR ORDERS PLACED IN ChER N = 189



CEFTRIAXONE INDICATIONS FOR ORDERS PLACED IN PEDS N = 127



CEFTRIAXONE INDICATIONS FOR ORDERS PLACED IN PICU N = 34



■ Appendicitis ■ Empiric meningitis ■ Fever, Sickle Cell ■ Non-neutropenic fever ■ Other ■ Pneumonia ■ Respiratory insufficiency ■ Sepsis ■ Urinary tract infection

Conclusions

- Empiric use of ceftriaxone in the management of pneumonia and urinary tract infection did not follow current clinical pathway recommendations
- Non-standard doses of ceftriaxone accounted for 14% of total doses administered
- Flat doses or doses equal to 75 mg/kg were most commonly prescribed
- Prescribed more commonly in the ChER (58%) and for the following indications: appendicitis (n=8), empiric meningitis (n=4), skin and soft tissue infection (n=5), fever in patients with sickle cell disease (n=3), pneumonia (n=1), respiratory insufficiency (n=1), sepsis (n=7), and urinary tract infection (n=11)
- Only 2 (2.2%) ceftriaxone doses prescribed using an order set were non-standard, indicating that increased order set utilization facilitates consistent ceftriaxone dosing
- Future application of this data may include educating providers on availability of clinical pathways and related order sets and monitoring utilization

DISCLOSURE STATEMENTS

Authors of this presentation have the following to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation:

Sara Frey: nothing to disclose

Kristin Held Wheatley:

- Accord Healthcare, Inc. – Consultant
- Servier Pharmaceuticals – Consultant