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# Evaluating the Impact of Ambulatory Care Clinical Pharmacy Services in the Pediatric Population

Sheila Prabhu, PharmD; Bonnie Jiron, PharmD, BCACP; Vivian Tang, PharmD, BCACP

## Background

- Pharmacists have demonstrated significant reductions in medication discrepancies and errors that lead to potential adverse drug events (ADE) in the adult population.
- A recent study found that pharmacists identified 1,389 medication discrepancies in 212 adult patients and of these discrepancies, 40.7% were determined to have resulted in a potential ADE.<sup>2</sup>
- Pharmacist intervention has also led to decreased cost with one study showing a total cost avoidance of \$307,210 (range \$76,802 – \$1,071,053) relating to ADE in the pediatric population.<sup>3</sup>
- Besides cost avoidance, there is limited data surrounding pharmacist impact on medication safety and preventable errors in the pediatric ambulatory care setting.

## Purpose

To evaluate the impact of clinical pharmacist intervention on medication safety and patient outcomes in the pediatric population.

## Objectives

- Primary outcomes**
- Quantify the number and type of interventions/recommendations made through consults by the clinical pharmacist specialist (CPS) to providers
  - Identify potential safety interventions made through consults by the CPS to providers and categorize them by type of error
- Secondary outcomes**
- Percentage of interventions accepted by providers
  - Percentage of interventions accepted by patient's family members
  - Range and average time for CPS to complete consult

## Methods

- Study Design and Setting:**
- Retrospective chart review study
  - Providence Medical Group (PMG) and Providence pediatric specialty clinics in Oregon and southwest Washington

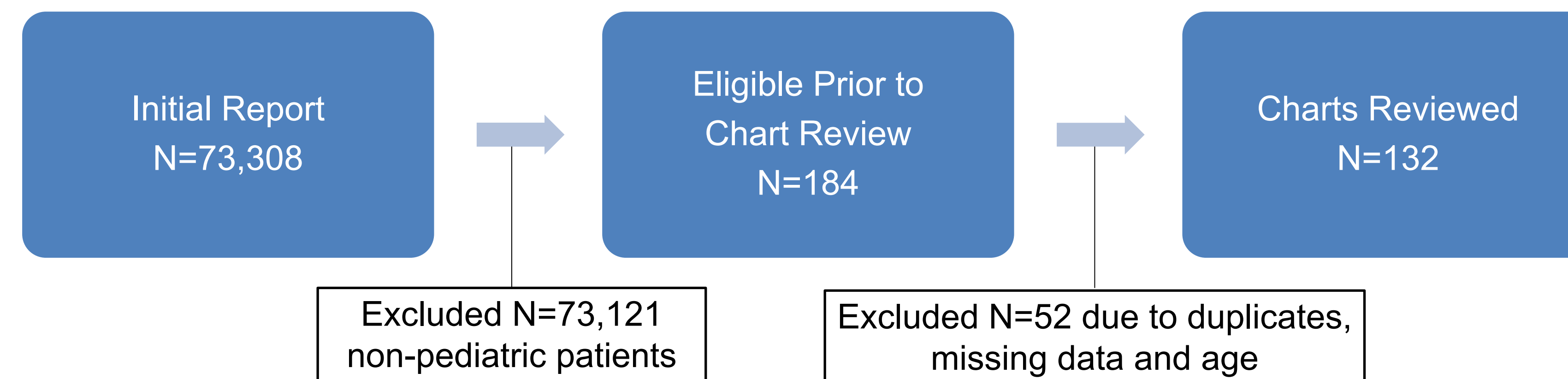
- Data Collection and Statistics**
- Data collected using pharmacist intervention reports and manual chart review through the electronic health record
  - Data analyzed using descriptive statistics

- Inclusion Criteria**
- Patients <18 years of age seen at a primary care or Providence pediatric specialty clinics
  - Consults completed by CPS between November 1<sup>st</sup>, 2020 – October 31<sup>st</sup>, 2021

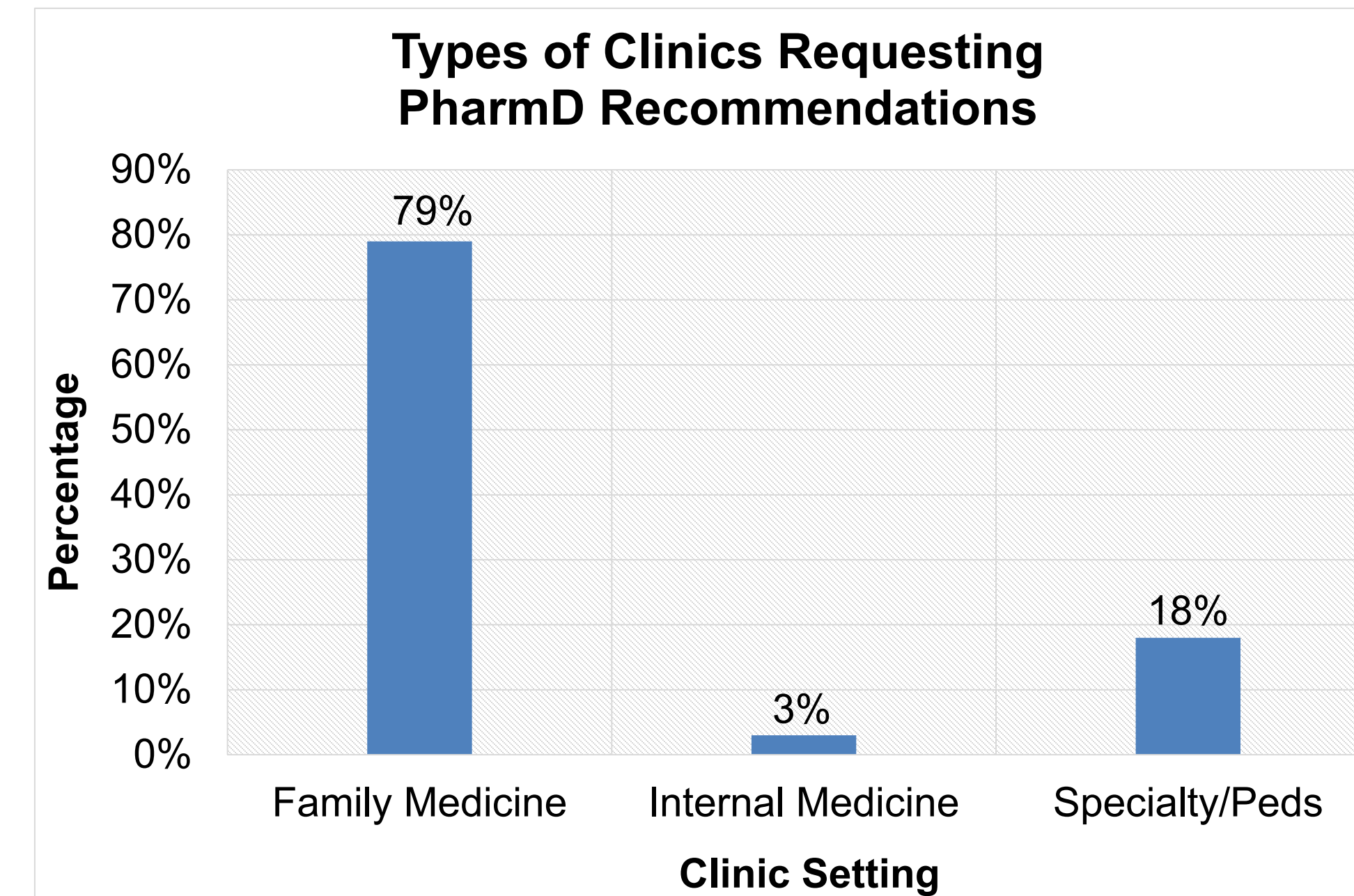
- Exclusion Criteria**
- Nonviable neonates
  - Neonates of uncertain viability
  - Duplicate consults
  - Missing data

## Results

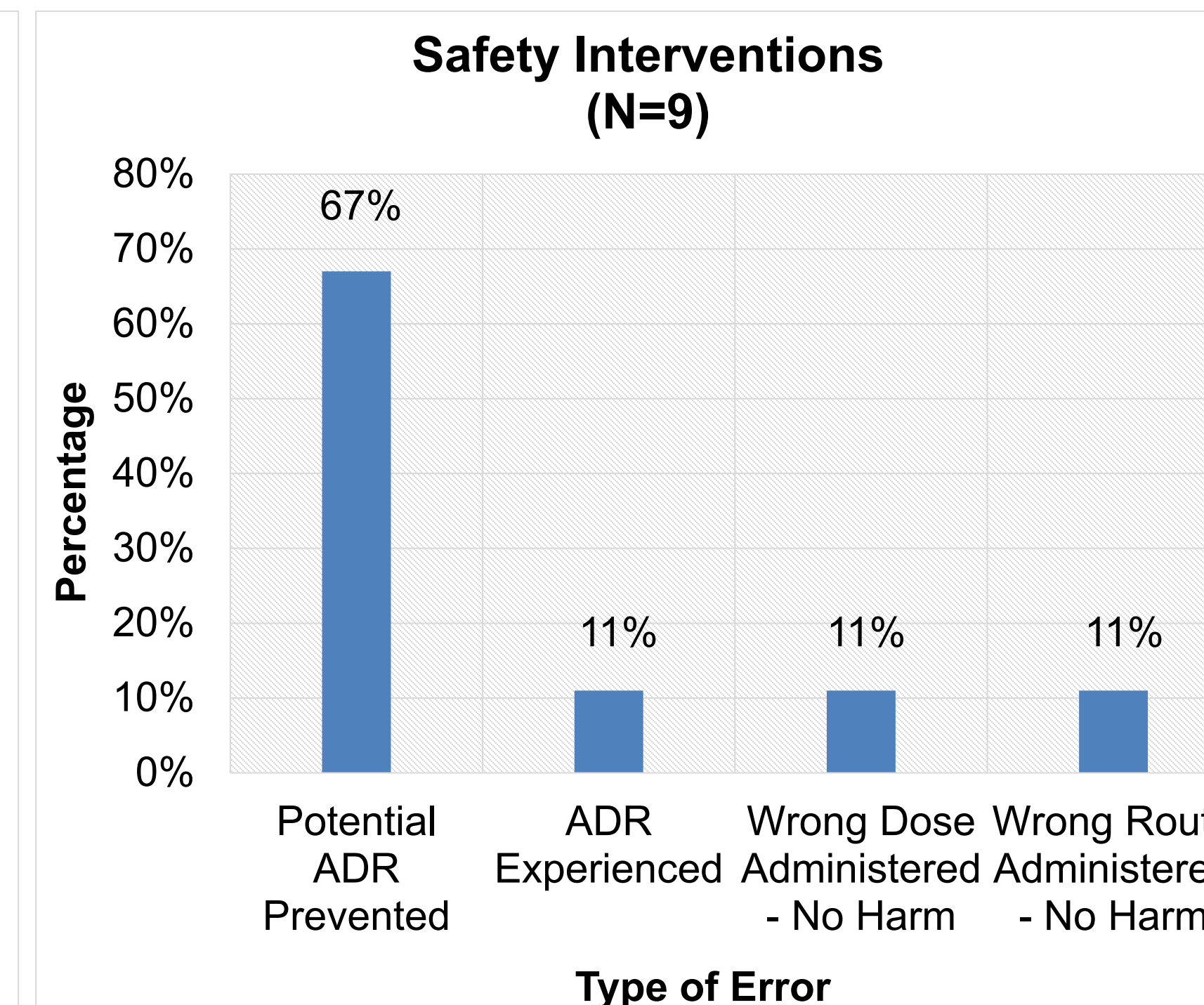
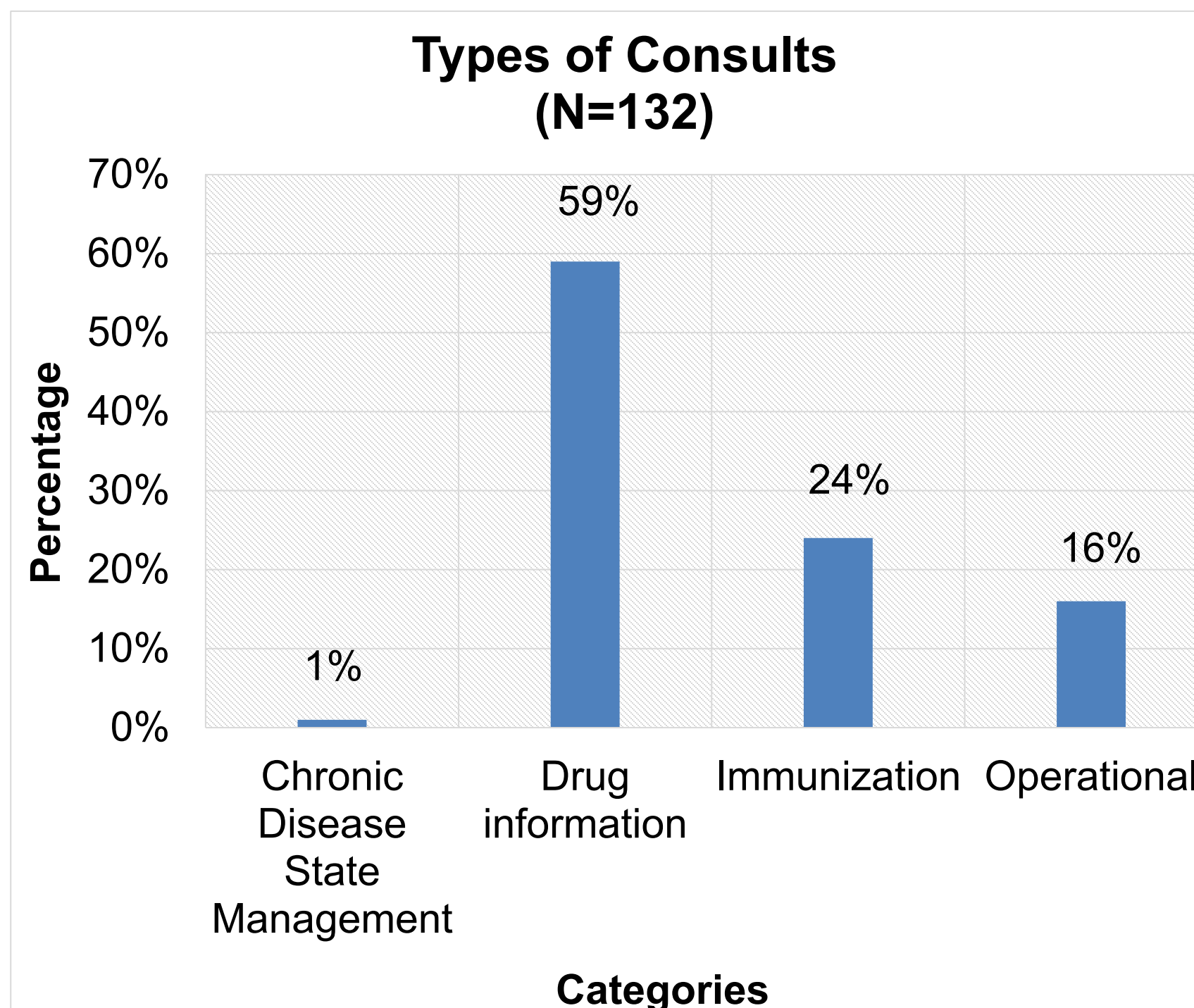
### Study Population and Baseline Characteristics



Patient Characteristics	Study Group (N=132)
Age, years, mean (range)	10 (3 weeks – 17 years)
<b>Sex, No. (%)</b>	
Female	81 (61%)
Males	49 (37%)
Non-binary and females who identify as males	2 (2%)

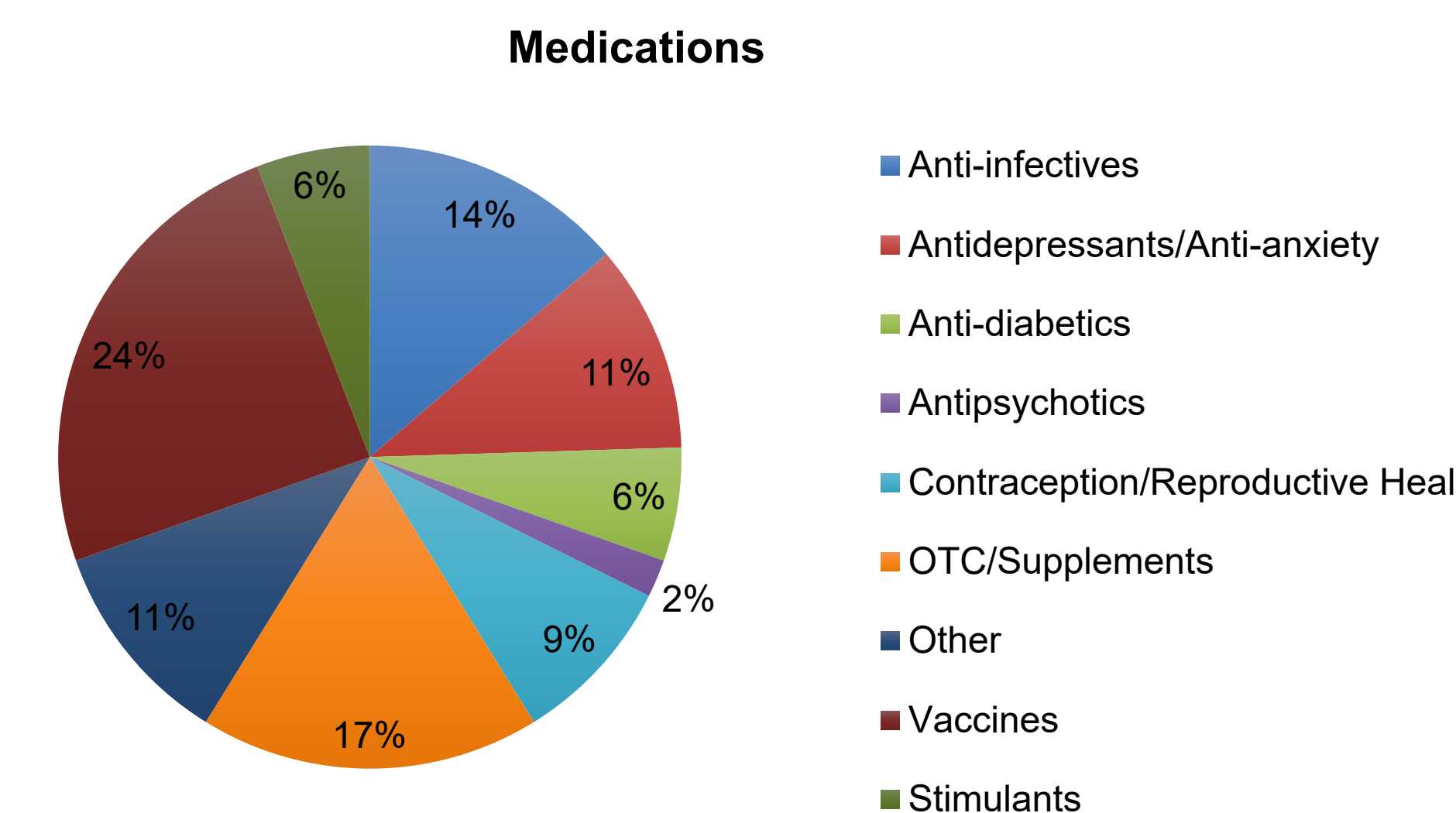


## Primary Objectives



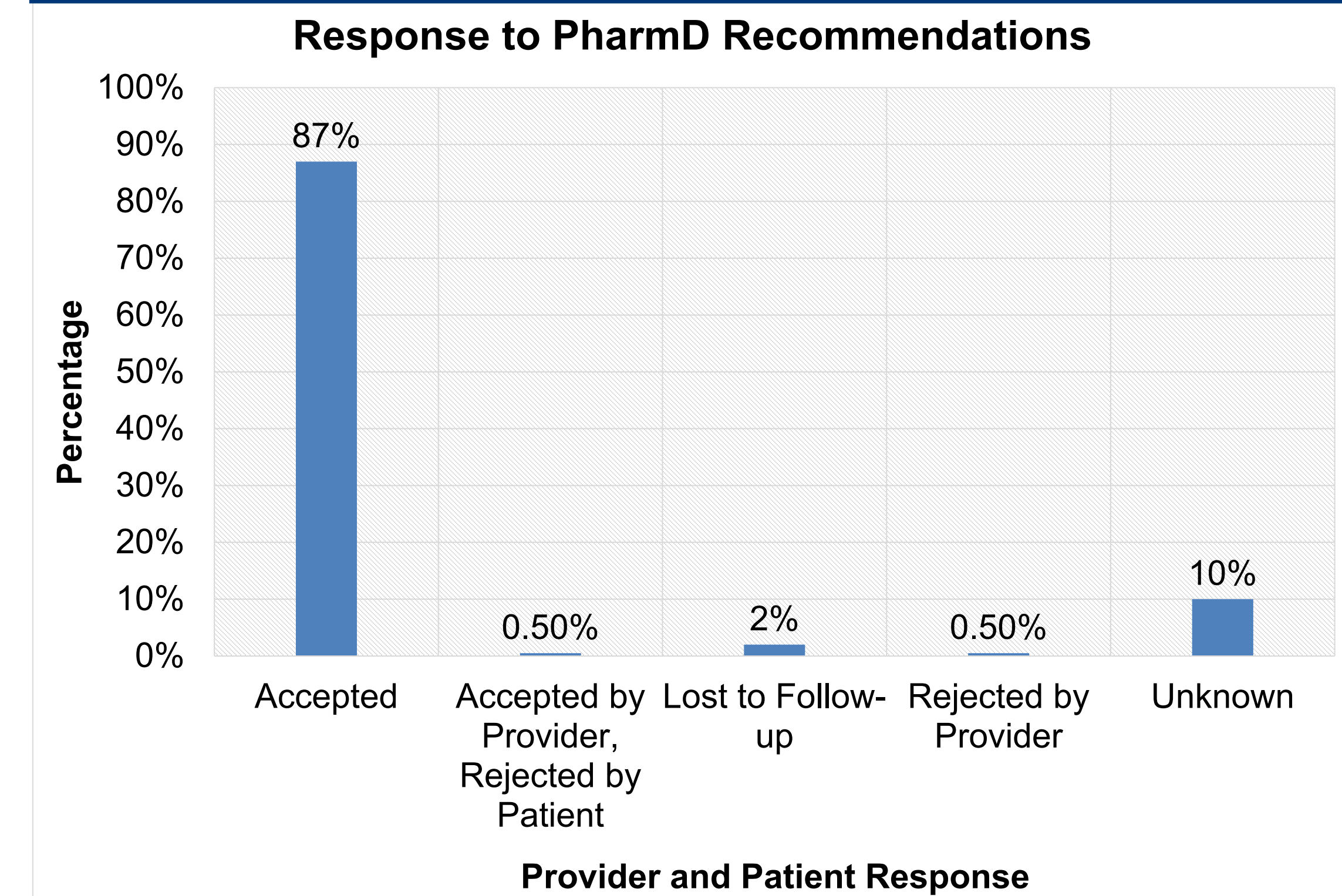
The most common consults requested by providers were drug information questions. Consults included, but not limited to:

- Antimicrobial stewardship
- Drug drug interactions and managing side effects
- Appropriate dosing
- Cross-tapering medications
- Evidenced-based therapies for various disease states



## Results (Contd.)

### Secondary Objectives



Time Spent to Complete a Consult	
Minutes, mean (range)	37 (2 – 180)

## Conclusion

- In this 12-month, retrospective chart review study, pharmacists were most consulted on drug information and immunization questions and had the greatest impact on preventing potential ADEs for pediatric patients mainly in PMG family medicine clinics.
- There were multiple medications for various disease states that pharmacists were consulted on with a high acceptance rate from providers.

### Future Considerations

- There were limited number of safety interventions identified which could possibly be due to pharmacists' initial involvement with consults, but further studies would need to be conducted to evaluate for a causal relationship.
- These findings can be used to inform the need for and support the creation of a pediatric ambulatory care pharmacist position.

## Limitations

- Retrospective study design requires reliance on chart review rather than direct patient intervention.
- The inability to capture "curbside" consults (questions asked real-time or via Microsoft Teams) may have led to an underestimation of the number of consults included in this study.
- Only 1-2 providers regularly used the E-consult function in the electronic health record which may also underestimate the number of consults pharmacists may receive.

## Disclosures

The 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: Nothing to disclose.

## References

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 2. Neuviller JJ, Marandi B, Weeks DL, Burrows E, Galan BJ. Correlating CP Medication Discrepancies and Potential Adverse Drug Events and Associated Costs during Transition from Hospital to Home. *The Senior Care Pharmacist*. 2017;34(6):384-392. doi:10.4187/jcp.2019.384.  
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