

Correlation between days of Approval, Dispensing and Administration, of restricted antibiotic in a tertiary hospital

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Objectives

Primary:

To analyse concordance between days of antibiotic approval (DOA), days of dispensing (DOD) and days of therapy (DOT) in patients treated with piperacillin-tazobactam.

Secondary:

To gain a deeper understanding of the reasons for discrepancies in the antibiotic approval process.

Introduction

- Longstanding antimicrobial stewardship (AMS) at our facility utilizes a computerized decision support system (CDSS) (GuidanceMS® Melbourne Health) to facilitate antimicrobial restriction, and prospective audit and feedback.
- CDSS enables medical staff to gain a specified number of days of approval to prescribe restricted antibiotics by indication.
- Piperacillin-tazobactam is a frequently prescribed restricted antibiotic and not ward stock at this facility
- This antibiotic can only be dispensed by pharmacy and administered by nursing staff for the approved number of days generated by the CDSS for the indication entered.

Method

Study Overview

- 660 bed tertiary referral hospital
- April to June 2017
- 120 approvals examined

Analysis of Results

- Concordance with AMS implied if DOA was greater or equal to DOD and/or DOT
- Statistical correlation measured by Pearson coefficients between the pairs of the variables.

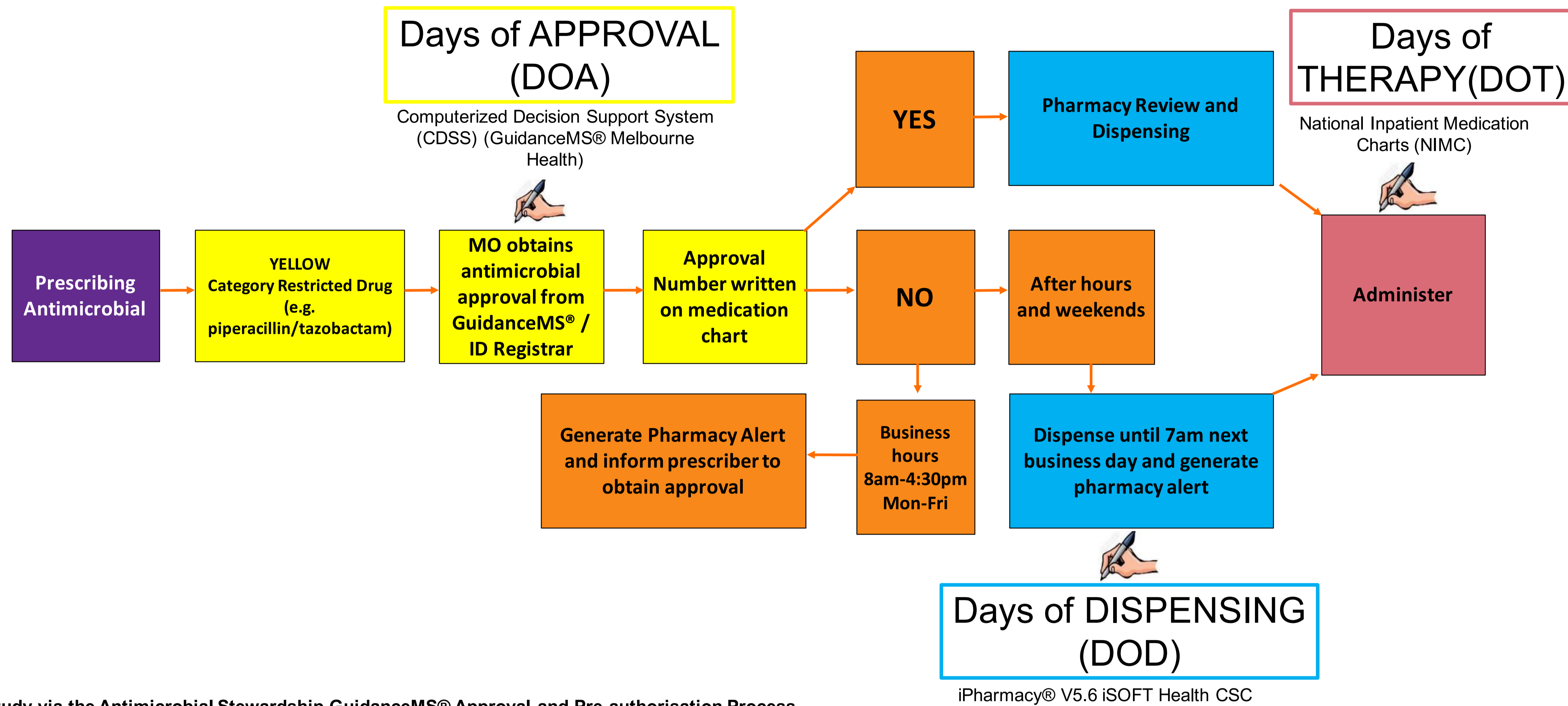


Fig.1: Process of obtaining data in the study via the Antimicrobial Stewardship GuidanceMS® Approval and Pre-authorisation Process

Results

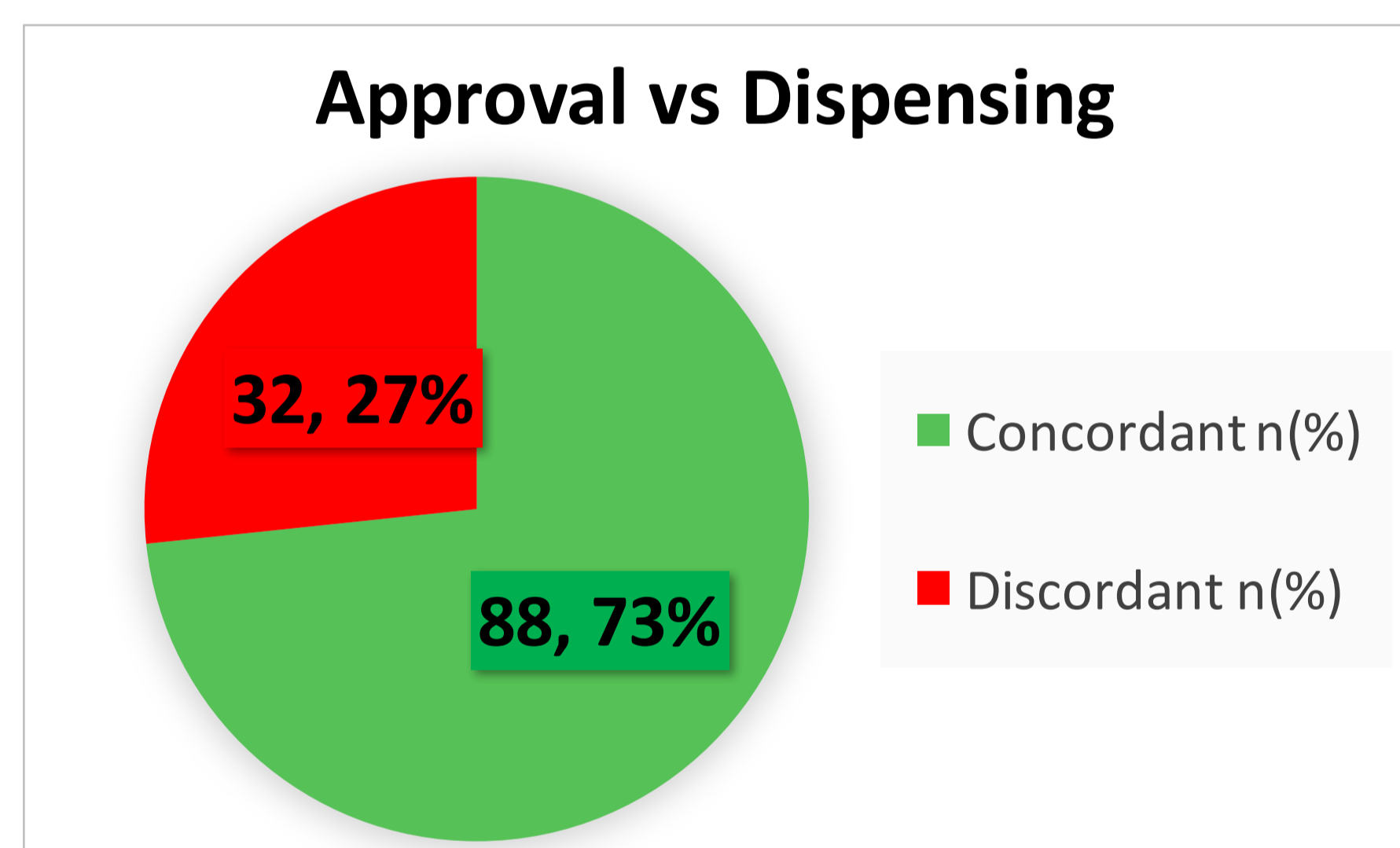


Fig.2: Pie chart representing concordance of DOD to DOA (n=120)

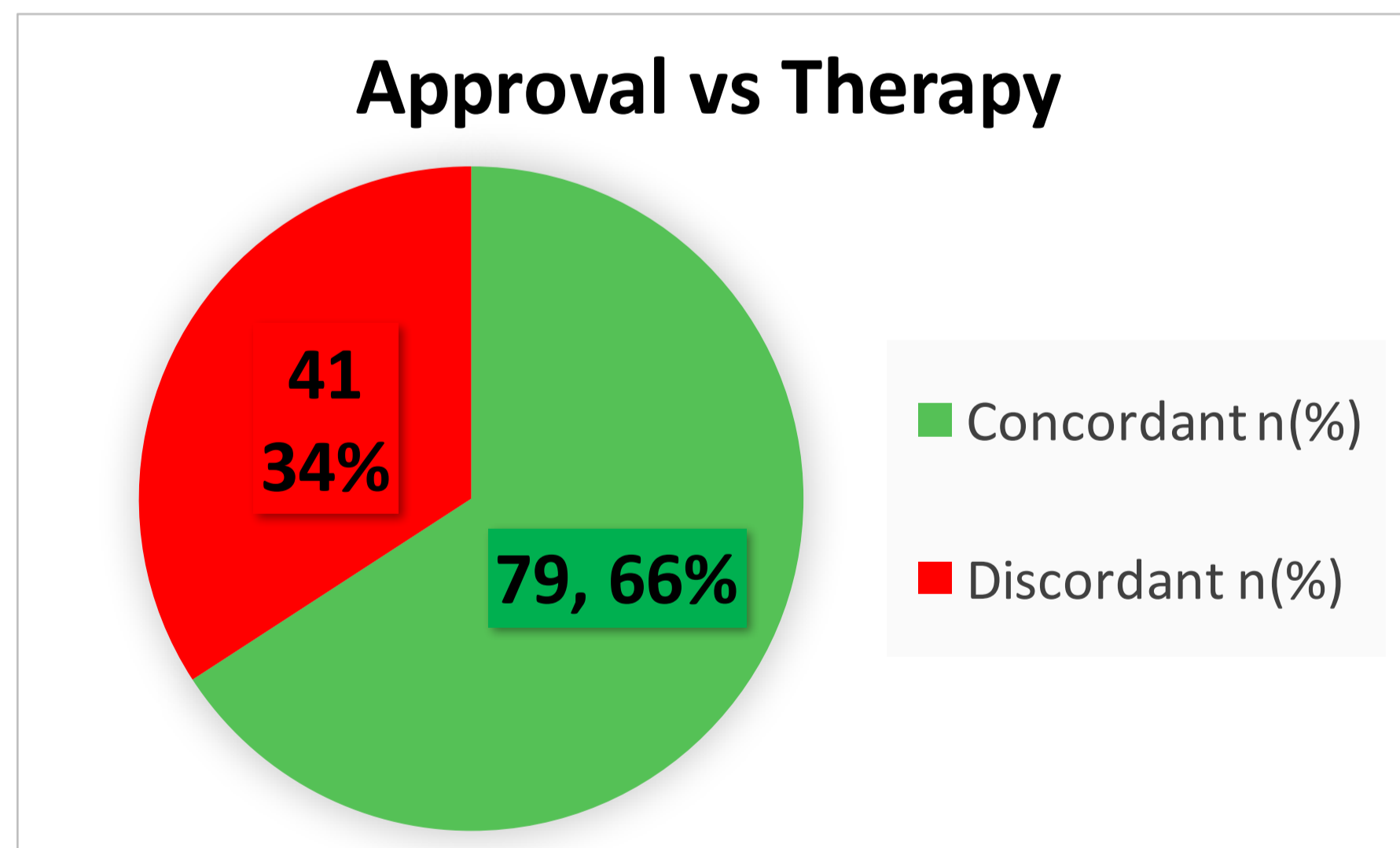


Fig.3: Pie chart representing concordance of DOT to DOA (n=120)

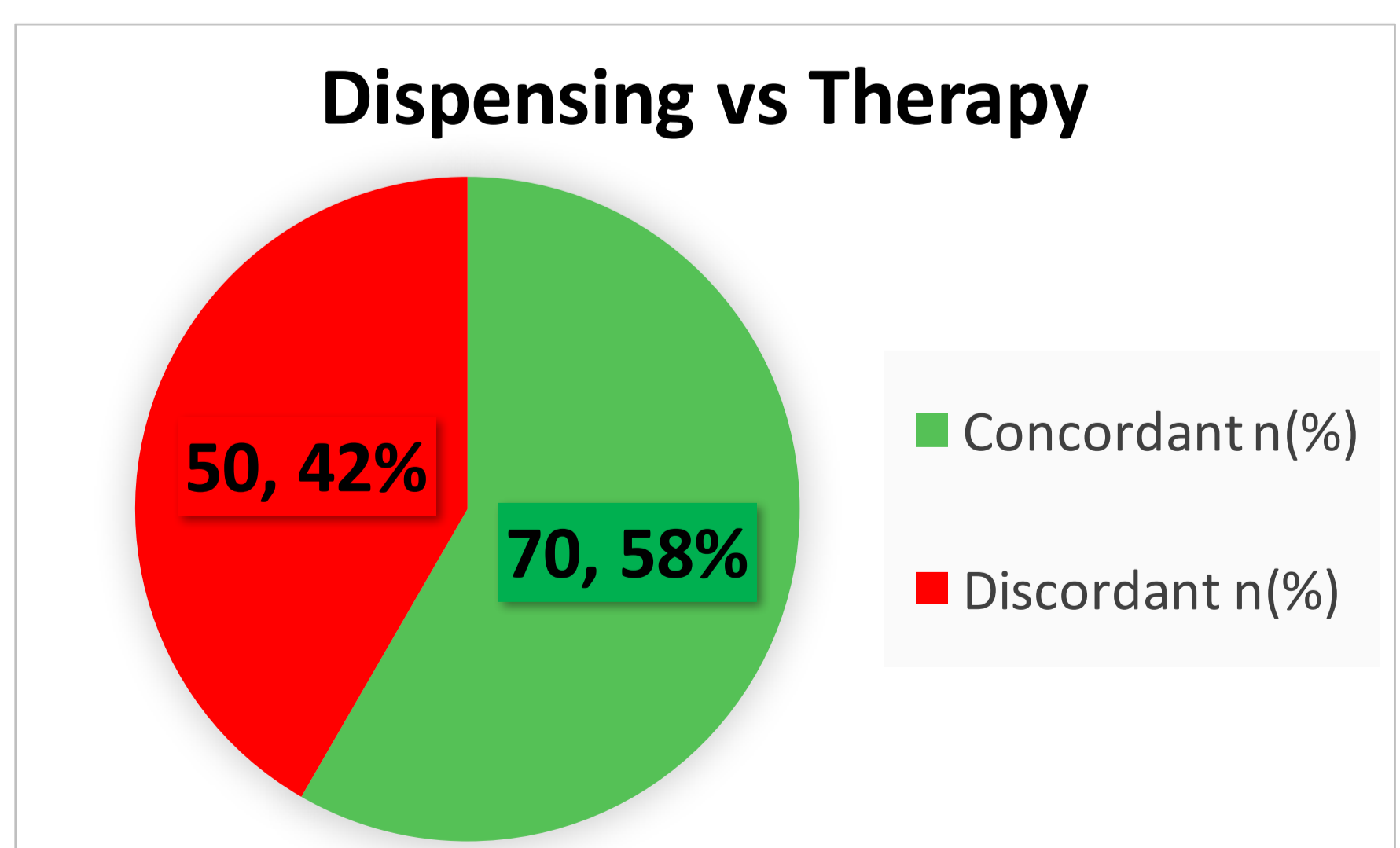


Fig.4: Pie chart representing concordance of DOT to DOD (n=120)

	DOD concordance to DOA	DOT concordance to DOA	DOT concordance to DOD
Concordant n(%)	88 (73.3%)	79 (65.8%)	70 (58.3%)
Discordant n(%)	32 (26.7%)	41 (34.3%)	50 (41.7%)
Correlation	0.829 (p<0.01)	0.80 (p<0.01)	0.850 (p<0.01)

Table 1: Frequencies and correlation coefficients (n=120)

NAPS ¹ Approved Indication	n (%)
Sepsis (Gram negative, empirical therapy)	40 (33.3%)
Respiratory Tract (Pneumonia Aspiration, Gram negative, Hospital acquired/high risk)	28 (23.3%)
Intra-abdominal (Cholangitis/cholecystitis, pancreatitis, diverticulitis)	15 (12.5%)
Approval obtained for a non-standard indication	8 (6.7%)
Skin and Soft Tissue (Diabetic foot infection)	7 (5.8%)
Wound (Surgical site, Post trauma)	7 (5.8%)
Unknown origin (Febrile neutropenia)	5 (4.2%)
Other	3 (2.5%)
No Approval Obtained	7 (5.8%)
Total	120 (100%)

Table 2: Indications for therapy
¹ National Antimicrobial Prescribing Survey

CONCORDANCE

- Established AMS protocol
- Frequent review by AMS pharmacist and team
- Timely approval
- Nursing staff ensuring sufficient supply

DISCORDANCE

- Approval number system does not always reflect date of expiry
- Dispensing without consideration of previous supply level
- Unused supply kept on wards
- Use of other patient's supply
- Delay in gaining approval
- Availability of after-hours supply, emergency drug room and sepsis kit

Fig.5: Contributors to concordance and discordance with AMS protocol

Conclusions

- Significant level of discordance is evident in all areas
- There is a need for better alignment of CDDS, AMS and clinical workflow
- Electronic prescribing and integrated approval and dispensing system may improve these processes

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