ANALYSIS OF ANTIBIOTIC PRESCRIPTION PRACTICES IN OUTPATIENT SETTINGS: DEVELOPING AN INNOVATIVE TOOL

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Drivers of emergence and spread of AMR

Exposure to antibiotics → **Emergence of AMR**

Consumption data: aggregated antibiotic volumes
Granular data: facility/patient level data

ATC/DDD methodology at import/ production and distribution

Aims and Objectives

❑ Interventions relating to antibiotic use typically focus on the prescriber, dispenser or end user

⇒ …..but there are few protocols that can assess use at this level

❑ The task was to COLLECT AND ANALYZE data using a tool assessing several metrics to facilitate use for more than one purpose

⇒ Assessment/monitoring

⇒ Problem identification and investigation

⇒ Intervention design

❑ For outpatient settings, only "traditional" surveys methods like

⇒ **WHO Drug Indicator Survey (DIS): indicating the volume of use (% of prescriptions with one or more antibiotics)**

⇒ **Medicine Use Evaluation: assessing the (appropriate) use of a particular antibiotic**

Drug Indicator Survey

No.	Description					
	Average number of medicines/patient	3.5	2.8	3	2.6	2.3
	% of medicines prescribed by generic name	76%	98%	67%	78.4%	98%
	% of patients with one or more antibiotics	79%	86%	75%	62%	69%
	% of patients with one or more injections	12%	16%	6%	1%	40%
	% of medicines being antibiotics	44%	41%	31%	36.7%	38%
	% of prescribed medicines not in UCG/EMHSL	12%	0.2%	7%	2.3%	3%

Sample frame: the pts on antibiotics from a DIS (or another sample of OPD pts with Antibiotics)

$\Rightarrow$ 100/200 pts to make it simple

❑ Raw data: serial No, age, gender, diagnosis (all), treatment (all)

❑ Simple analysis on excel file:

$\Rightarrow$ Indication for antibiotic (bacterial infection diagnosis)? Yes or No

$\Rightarrow$ Class of antibiotics

$\Rightarrow$ Oral VS injectable

$\Rightarrow$ Correct antibiotic for diagnosis as per UCG

$\Rightarrow$ Distribution of diagnosis and of antibiotics

Diagnosis

Does Dx require Abx?

Antibiotic prescribed

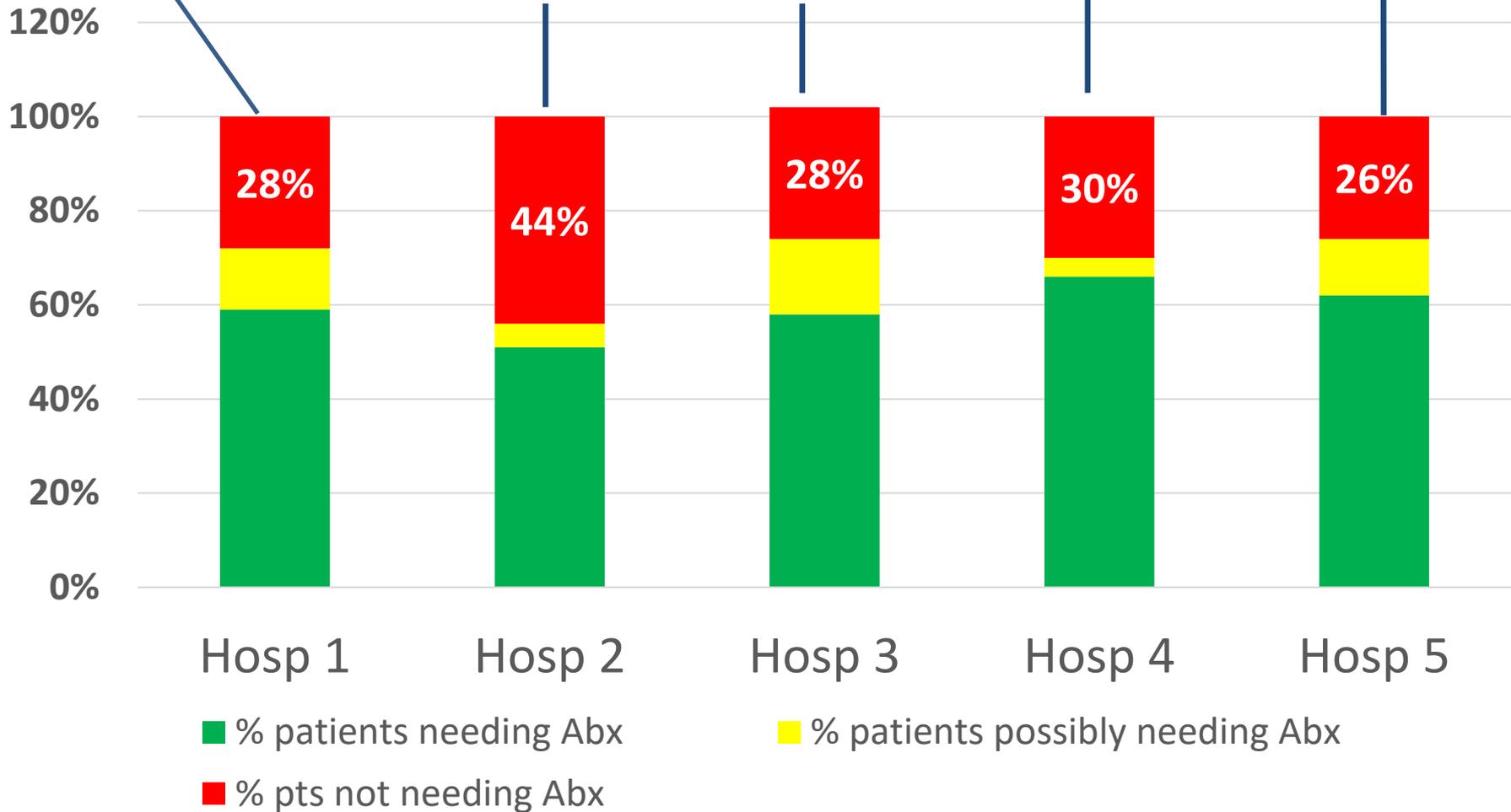**Adherence to guidelines**

Tallies of Antibiotics

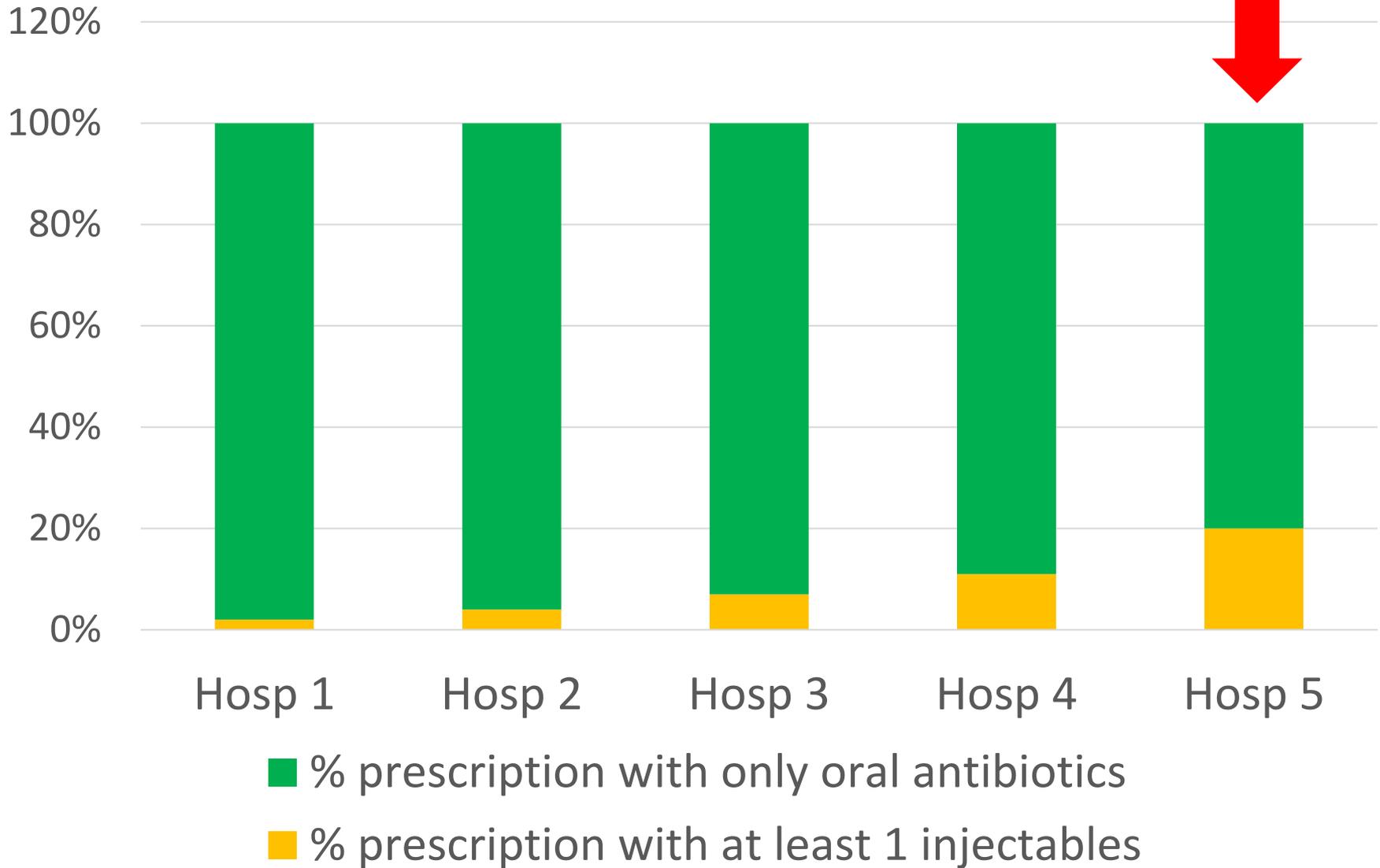| No	Client	OPD No	Month	Age	Sex		Requiring Antibiotic YES or	Antibiotics Prescribed	Adherence to UCG 2016	Number of Abx prescribed	Other Medicines	Amoxyl	Metro	Levoflox acin	Ampiclo x	Pen-v	Cotrimo xazole	Ciproflox acin	Ampicilli n	Secnidaz ole	Azithro mycin	Erythromyci n
1	AH	219	Oct	39	F	Abscess	Yes	Ampiclox		1	1 panadol	0	0	0	1	0	0	0		0	0	0
2	AJM	224		55	F	PID	Yes	Amoxyl	N		1 ibruprofen	1	0	0	0	0	0	0		0	0	0
3	AG	231		24	F	UTI	Yes	Cipro	N		1 panadol	0	0	0	0	0	0	1		0	0	0
4	AA	236		49	F	PUD/Brucellosis	Yes	Amoxyl, Gentamycin	N		2 omeprazole, panadol	1	0	0	0	0	0	0		0	0	0
5	AM	240		70	F	Mal/PUD	Not sure	Amoxyl, metro	N		2 omeprazole, panadol	1	1	0	0	0	0	0		0	0	0
6	AE	245		17	F	Malaria	No	Amoxyl	N		1 coartem, pnanadol	1	0	0	0	0	0	0		0	0	0
7	AP	250		73	F	UTI, Mal	Yes	Cipro	N		1 coartem, pnanadol	0	0	0	0	0	0	1		0	0	0
8	AR	255		41	F	UTI	Yes	Erythro	N		1 panadol	0	0	0	0	0	0	0		0	0	1
9	AN	260		40	F	PUD	Not sure	Taxime	N		1 panadol	0	0	0	0	0	0	0		0	0	0
10	AD	265		30	F	Arthritis	yes	Ampiclox	N		1 Vit B.C, Dexa, Panadol	0	0	0	1	0	0	0		0	0	0

Patient Bio data

Number of Antibiotics per Prescription
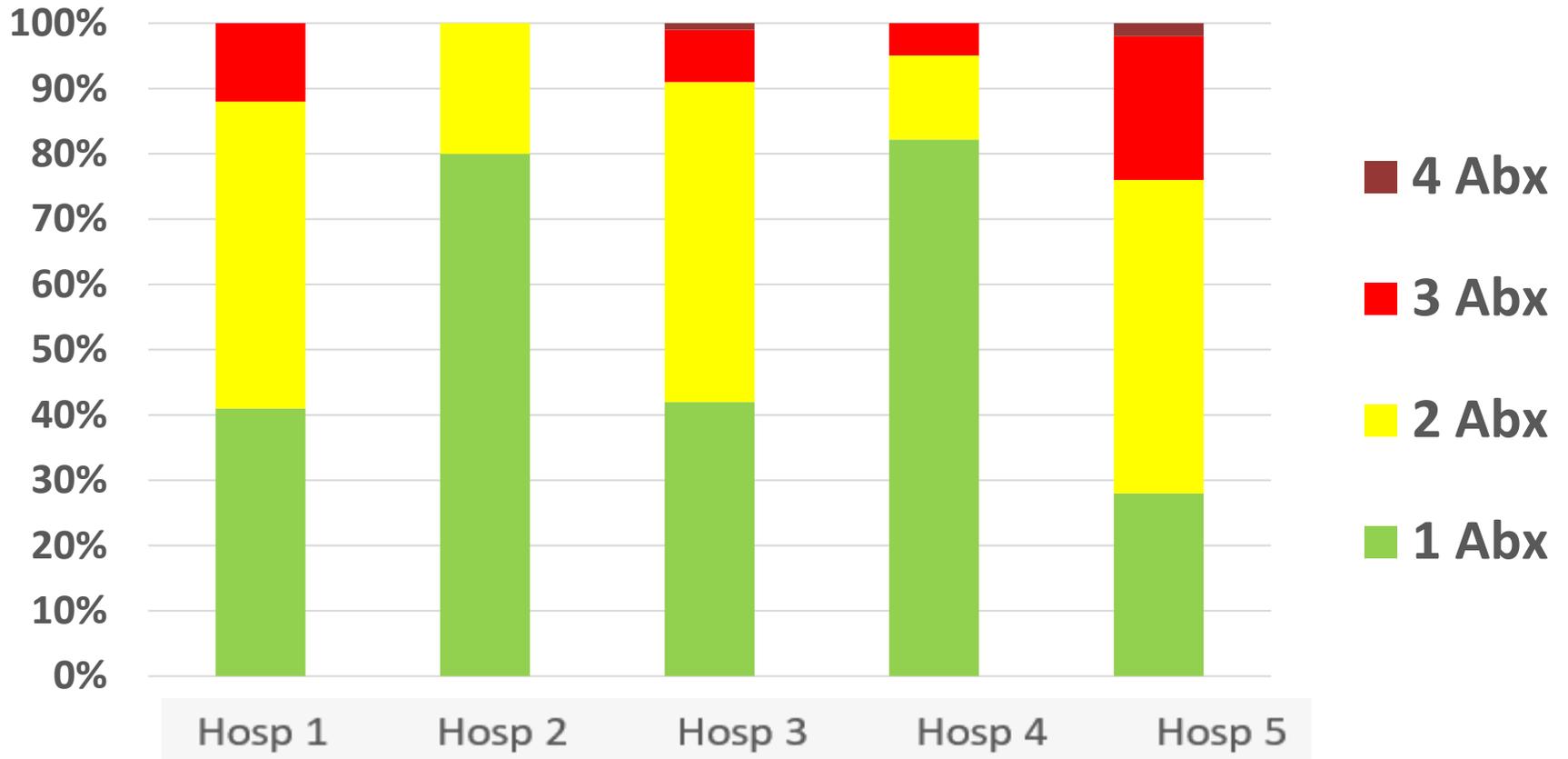
To be interpreted according to common diagnosis

Percentage OPD pts with injectable Abx
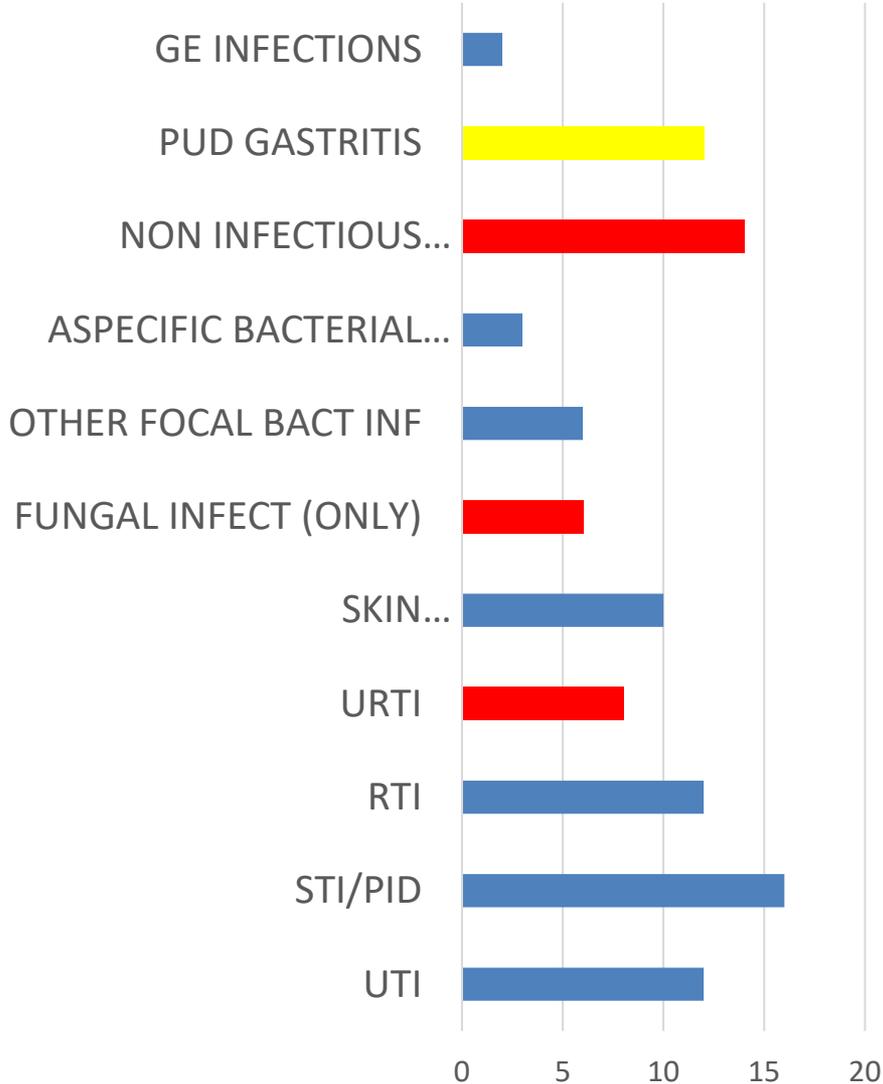

Bar chart showing percentage of OPD patients with injectable antibiotics across five hospitals. Each bar reaches 100%, divided between oral antibiotics (green) and at least 1 injectable (yellow/orange).

- Hosp 1: ~2% injectable
- Hosp 2: ~4% injectable
- Hosp 3: ~7% injectable
- Hosp 4: ~11% injectable
- Hosp 5: ~20% injectable (indicated with red arrow)

Legend:
- ■ % prescription with only oral antibiotics
- ■ % prescription with at least 1 injectables

Adherence to Clinical Guidelines
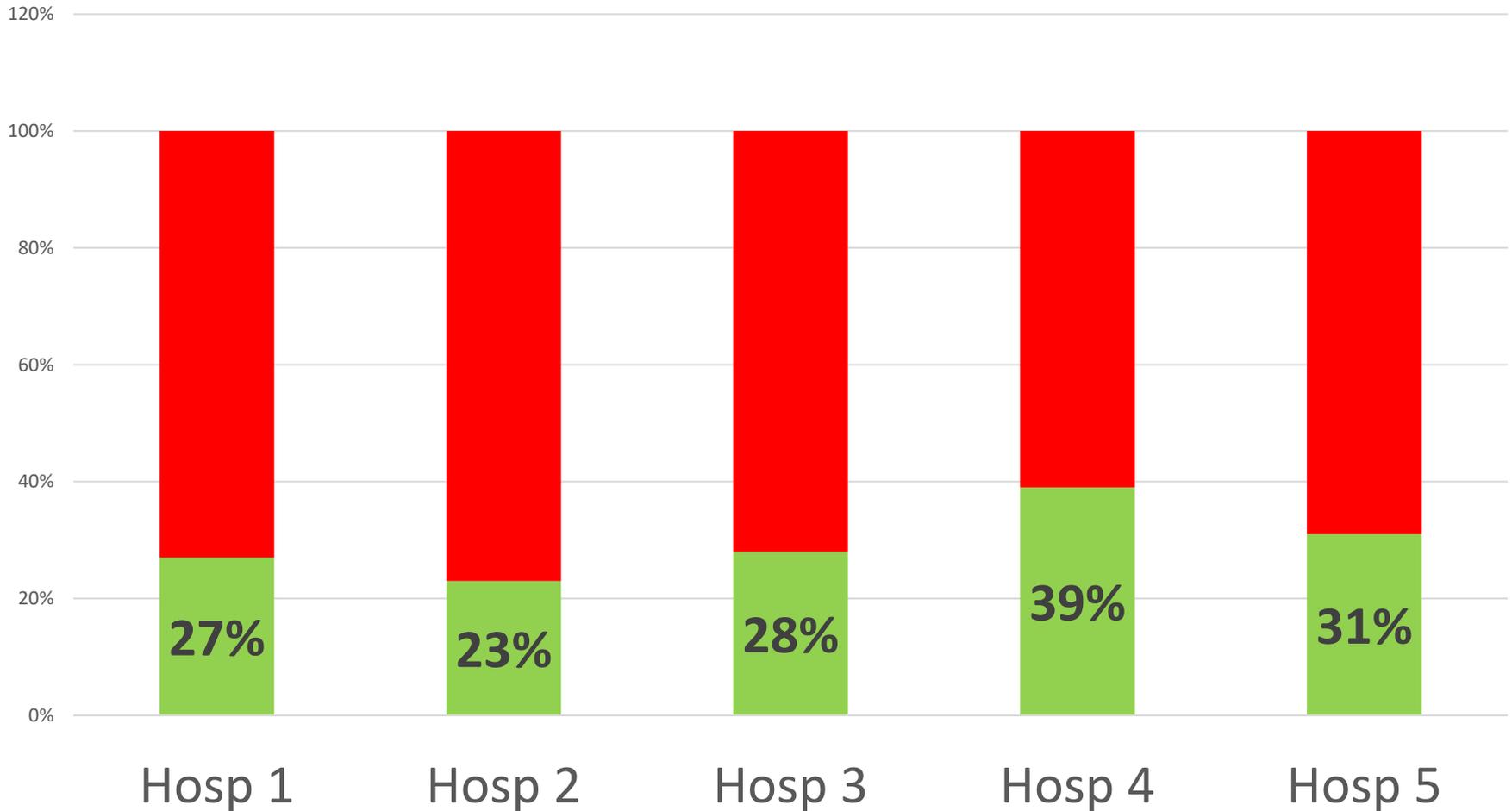
Most Common Diagnoses at OPD

Hospital 1

Diagnosis	Value
GE INFECTIONS	2
PUD GASTRITIS	12
NON INFECTIOUS...	14
ASPECIFIC BACTERIAL...	3
OTHER FOCAL BACT INF	6
FUNGAL INFECT (ONLY)	6
SKIN...	10
URTI	8
RTI	12
STI/PID	16
UTI	12

Hospital 4

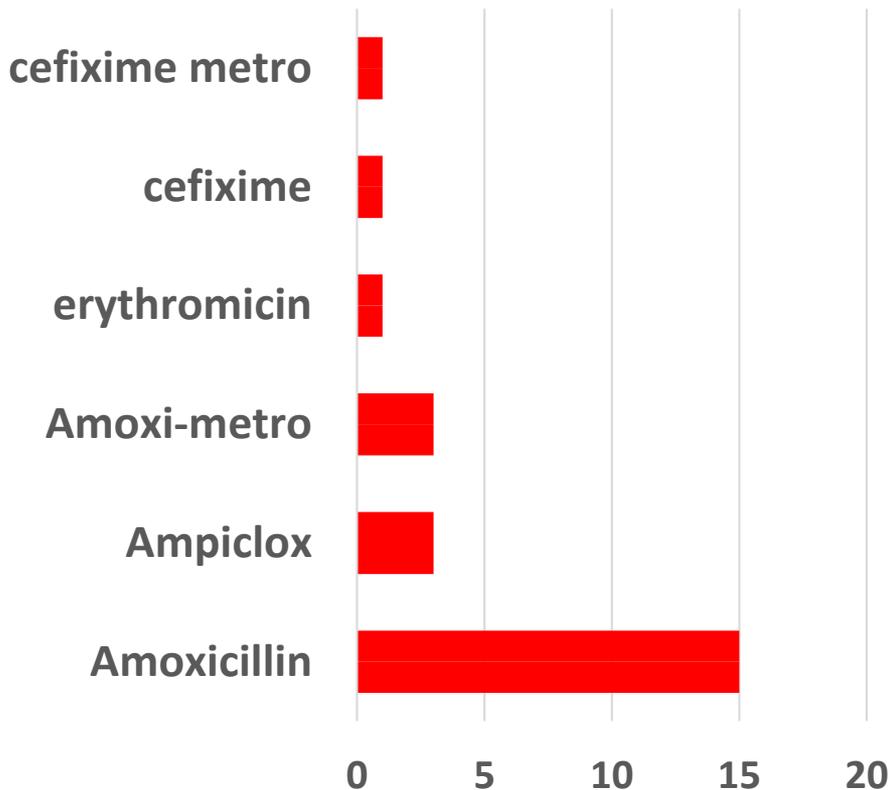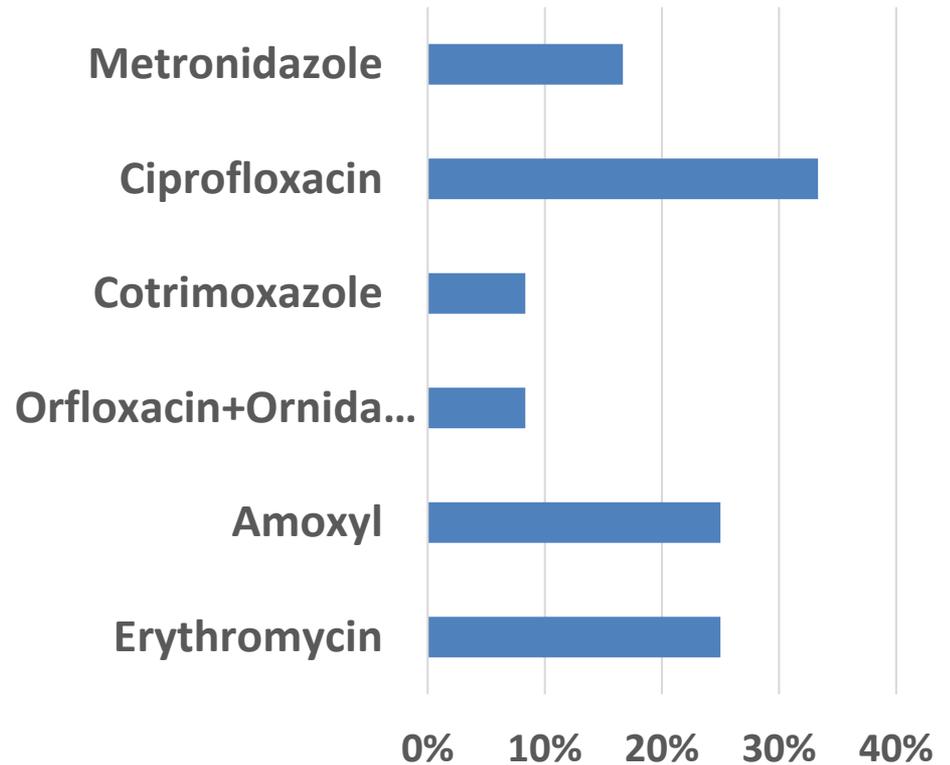| Diagnosis	Value
Diarrhea	5
Back pain	1
Malaria	4
Fungal skin diseases	1
Allergies (varies)	1
VCC (vaginal...	1
PUD GERD gastritis	4
Other bacterial...	6
PID (pelvic...	3
Soft tissue infection	17
UTI (urinary tract...	5
RTI	21
URTI	4

Most commonly prescribed Abx
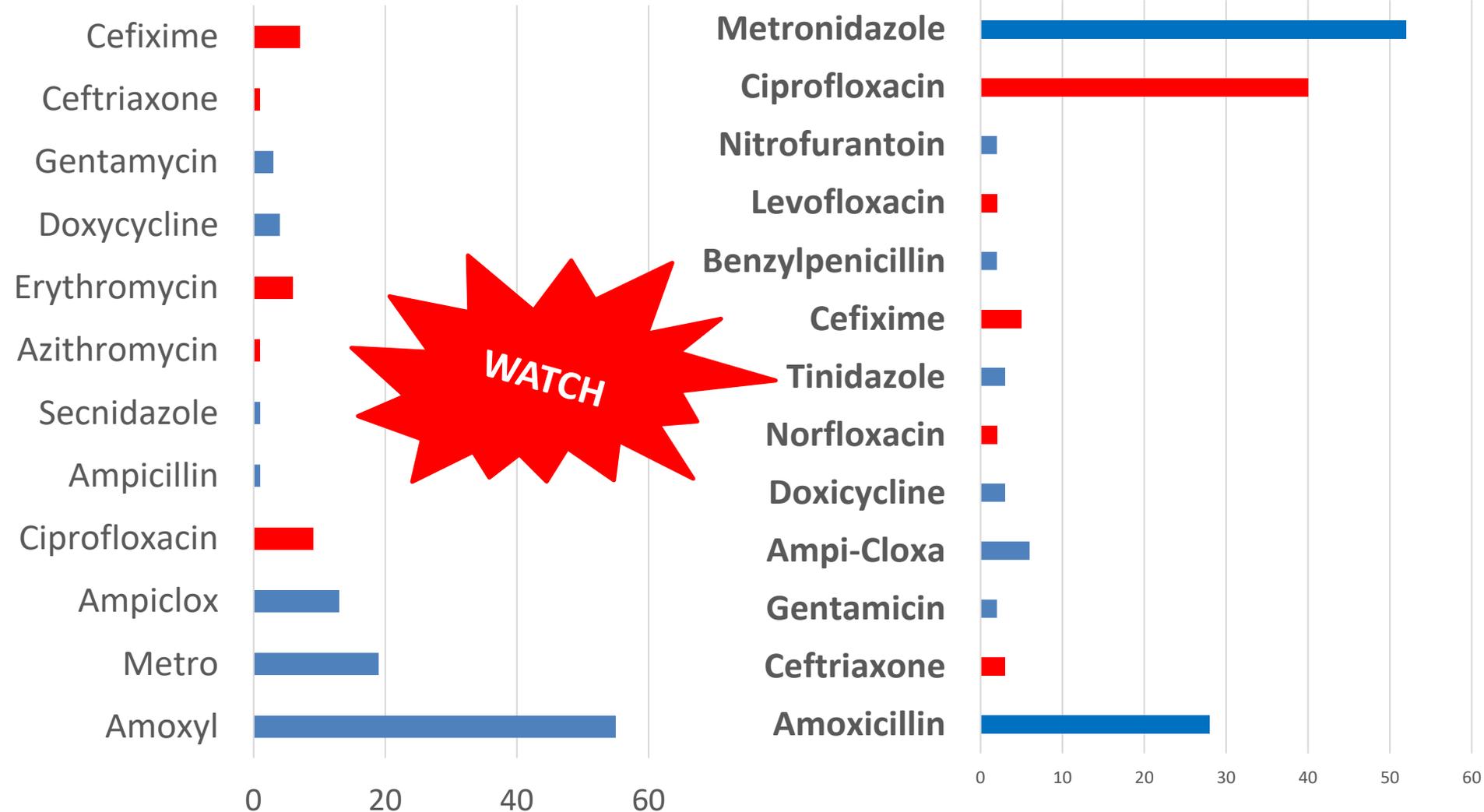
Prescription Audits

❑ What Antibiotics are prescribed for a particular diagnosis?

URTI prescription audit
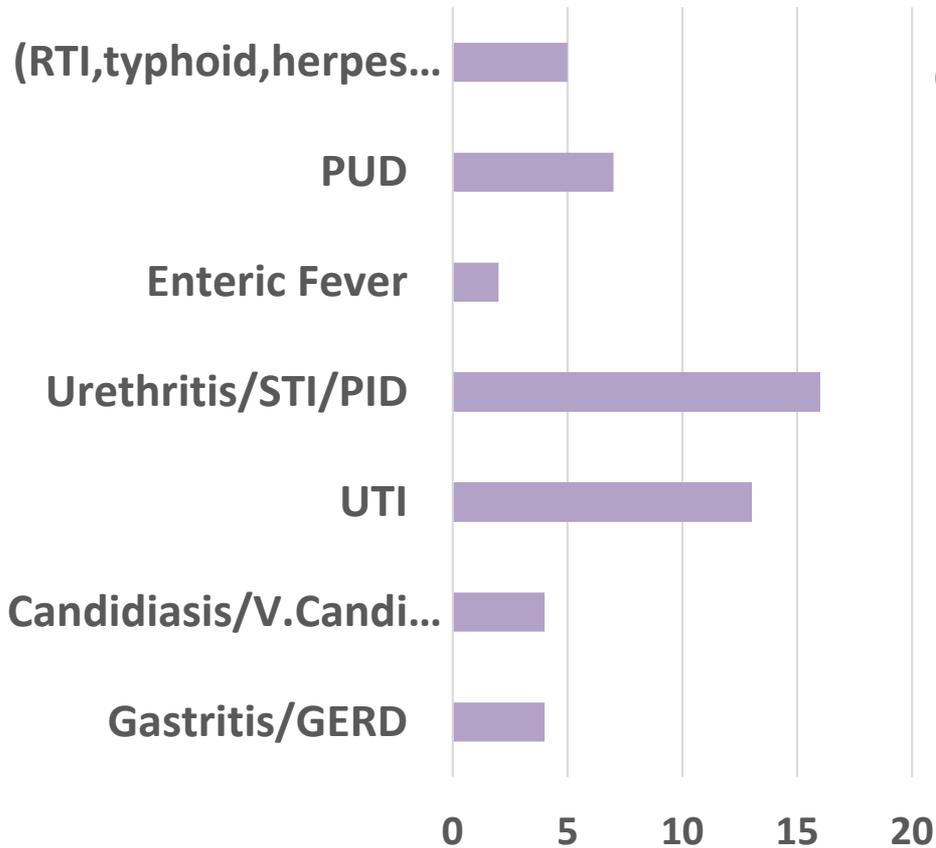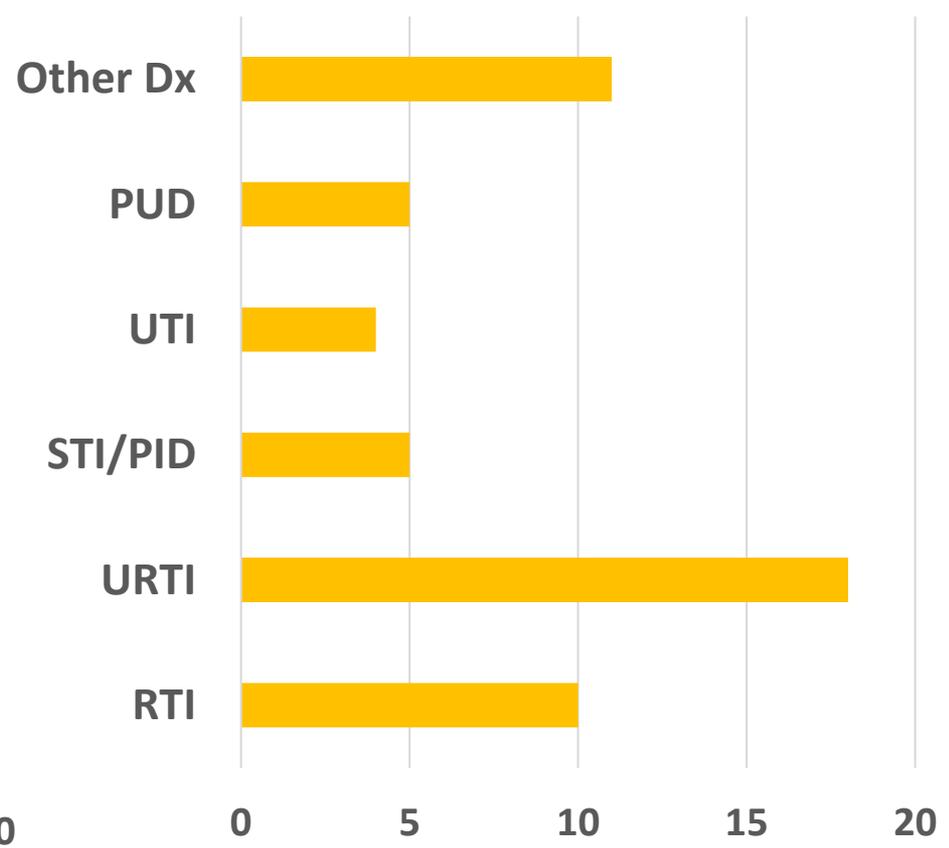

LRTI/RTI Prescription Audit

Medicine Use Evaluation

❑ For what diagnosis is a particular Antibiotic prescribed

METRONIDAZOLE MUE

AMOXICILLIN MUE

Benefits

❑ Allows for rapid assessment of multiple quality indicators (**volume and use**) at one time and on one sample.

❑ Allows for analysis of prescribing practices and giving feedback to policy makers, managers and prescribers

❑ Provides evidence of prescribing issues and thus guiding interventions

❑ Allows for monitoring and assessment of the impact of corrective interventions

❑ Antibiotics of importance can be identified and collated with resistance data

❑ A simple tool requiring basic skills in excel

Limitations

- ❑ The survey relies on retrospective data…
- ❑ The data source, OPD Registers, are bulky. Extracting the data may limit its use to cross sectional surveys rather than routine surveillance
- ❑ The tool does not take into account differences in supply chain; prescriptions may be limited to what is available as opposed to what is appropriate
- ❑ Does not produce DDD metrics
- ❑ Analysis not yet standardized

Lessons and recommendations

❑ Recognized that the data sources are available at facility level:

⇒ Stock cards for volume metrics

⇒ OPD Patient Registers for both volume and prescribing patterns (use)

❑ Need to provide practical and simple tools for data collection, analysis and interpretation

⇒ Further work to standardize tool

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⇒ Survey developed and implemented in the framework of a revitalization intervention of MTCs