Are antibiotics being over-prescribed for the treatment of urinary tract infections?

A prospective study among pregnant refugees in Beirut, Lebanon

Christine Al Kady, Krystel Moussally, Severine Caluwaerts, Wafaa Chreif, Johanna Dibiasi, Dounia Soukarieh, Anna Farra, Fabiola Gordillo G, Annick Lenglet

Conflict of Interest:
The author has declared no conflict of interest.

Introduction

- Unnecessary & inappropriate use of antibiotics is a widespread problem, one of the main drivers for antimicrobial resistance (AMR)
- In pregnant women with suspected urinary tract infection (UTI), studies have suggested antibiotic over-use in up to 96%
- UTI can present symptomatically (cystitis) or asymptomatically (asymptomatic bacteriuria)
- If left untreated or if treated inappropriately, UTIs can result in complications for mothers and babies

Introduction

- In **South Beirut**, living conditions in refugee camps are poor

- Since 2014, MSF has been providing there free primary & **sexual reproductive healthcare** (SRH) services

- Around **1300 women** are cared for **monthly**

- At each antenatal care visit:
  - → pregnant women are screened for UTI using urine dipstick
  - → empiric antibiotic treatment is given for the ones with positive dipstick

MEDECINS SANS FRONTIERES

SCIENTIFIC DAYS

Study aim

Determine if **adding urine culture** following **positive urine dipsticks** to the current protocol for the diagnosis of UTI would **reduce** the use of **unnecessary antibiotics** in pregnant Syrian refugees attending MSF Antenatal care (ANC) clinic in South Beirut Project, Lebanon

Methodology

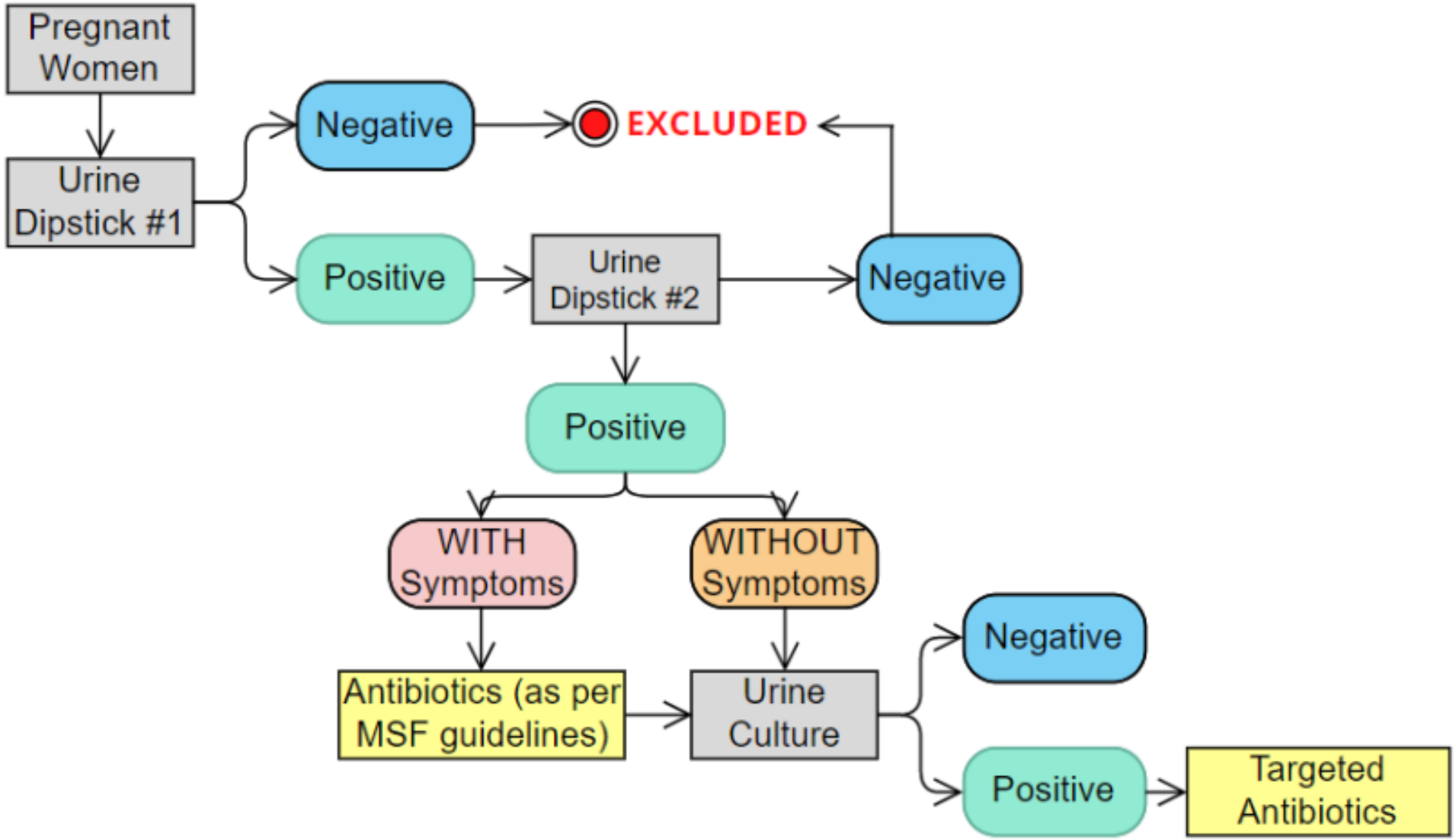
- **Design**: prospective study
- **Population**: pregnant women visiting MSF SRH clinic for their regular ANC, Apr-Jun-2022
- **Analysis**:
  - → Descriptive statistics comparing characteristics of women with positive and negative urine culture
  - → Proportion of patients who received appropriate/inappropriate AB & over-prescription

This study was approved by the MSF Ethics Review Board, and by the ethics committee of the Lebanese American University

MEDECINS SANS FRONTIERES

SCIENTIFIC DAYS

Study flowchart

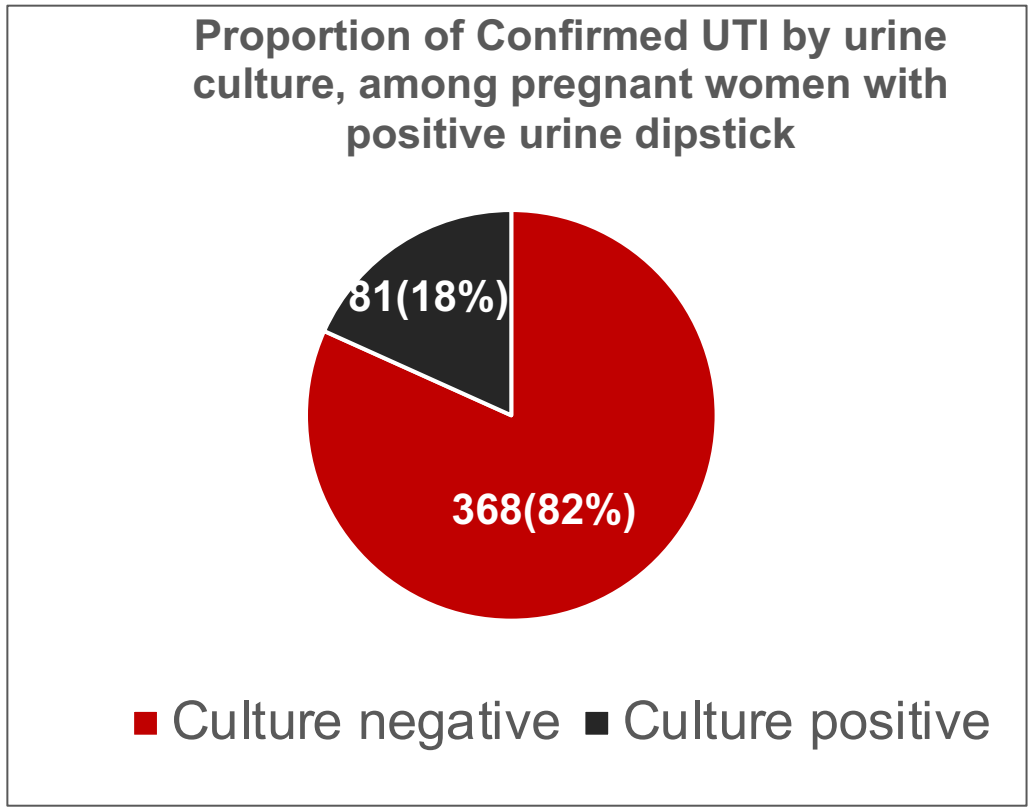


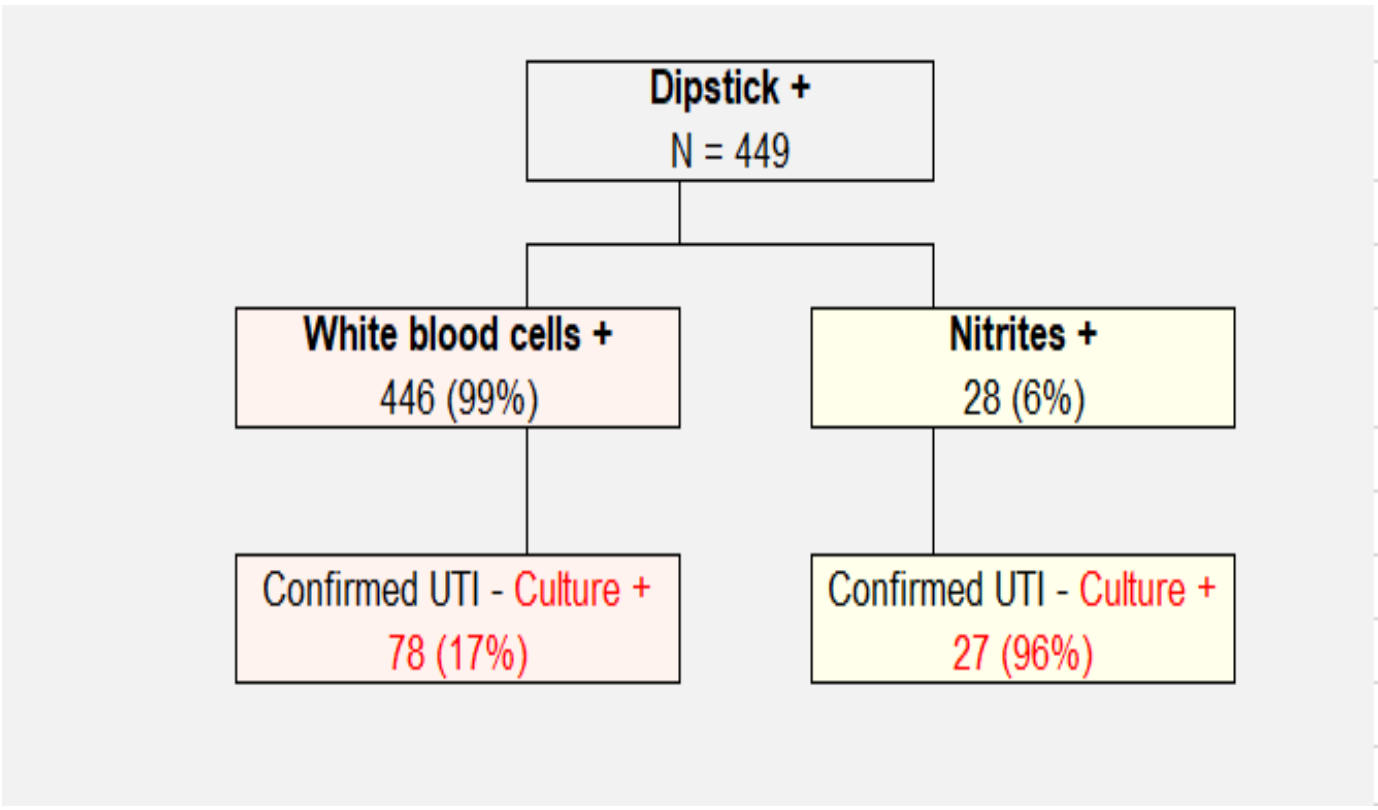
MEDECINS SANS FRONTIERES

SCIENTIFIC DAYS

Results - UTI

A total of **449 women were included** in the study

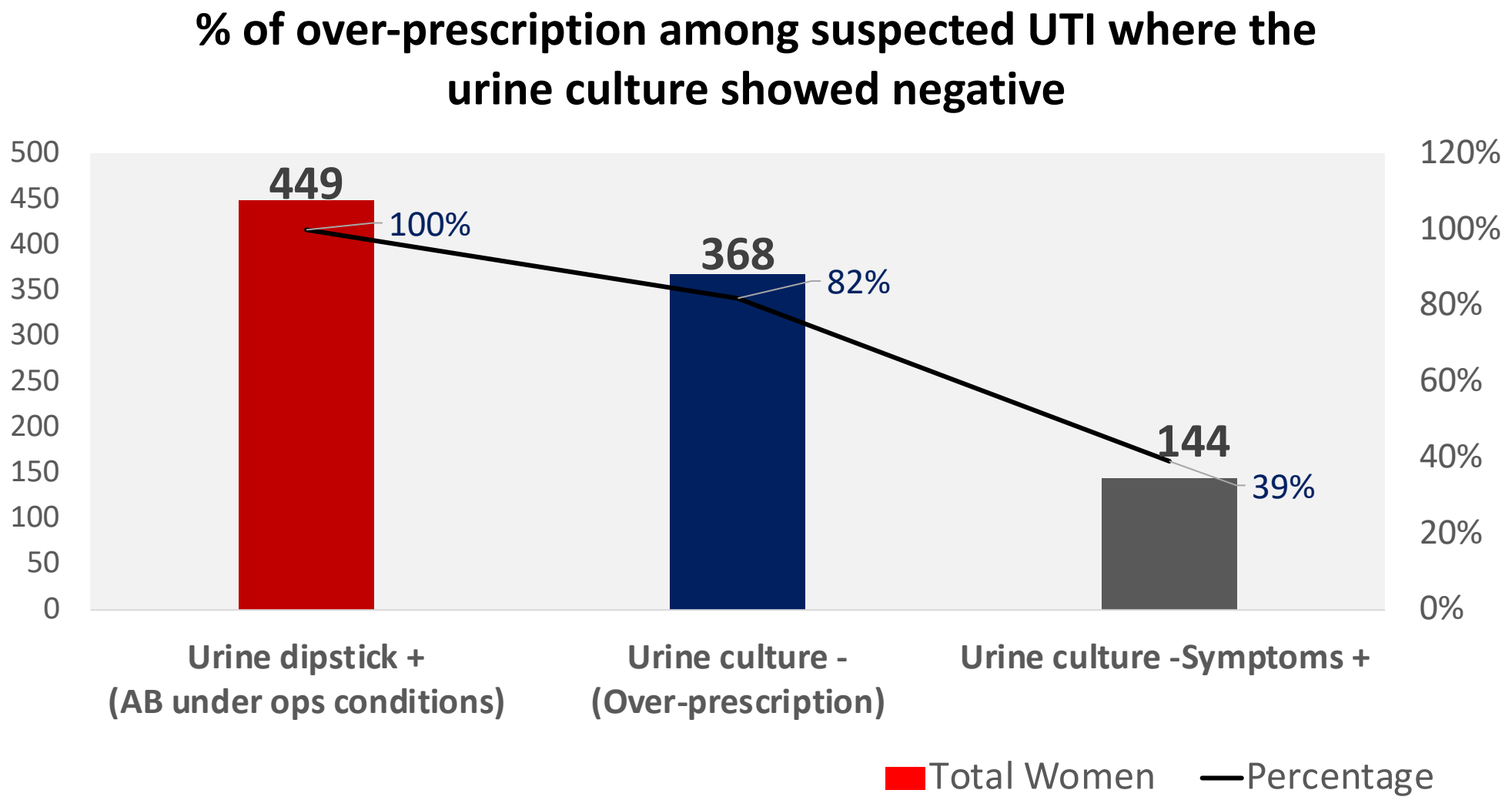




MEDECINS SANS FRONTIERES

SCIENTIFIC DAYS

Results



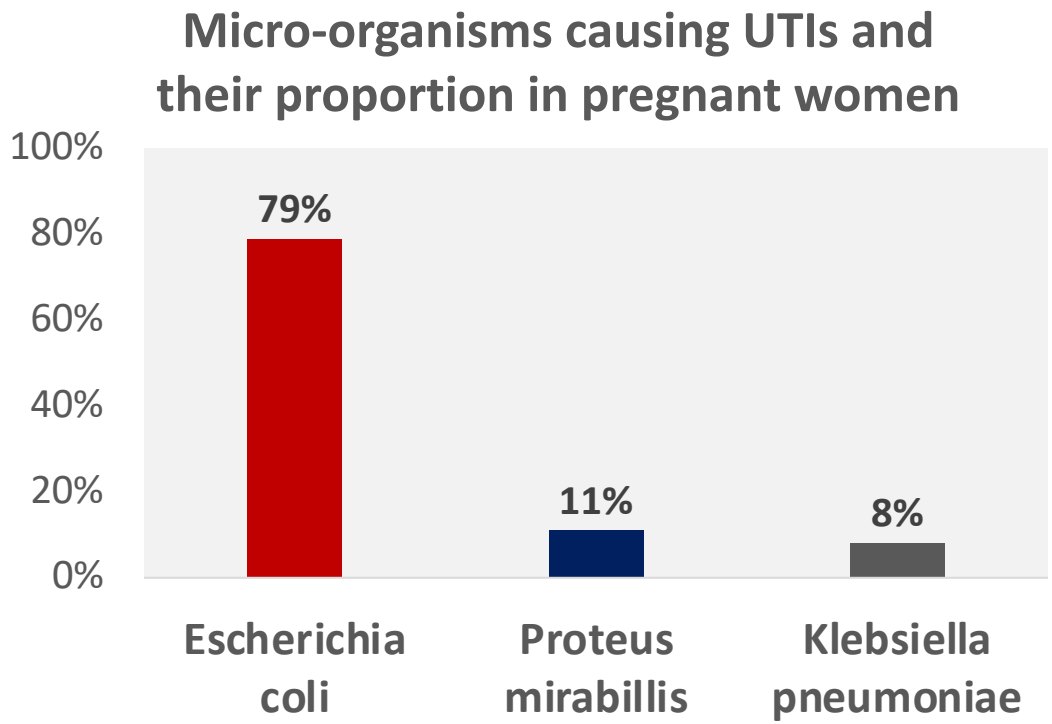
MEDECINS SANS FRONTIERES

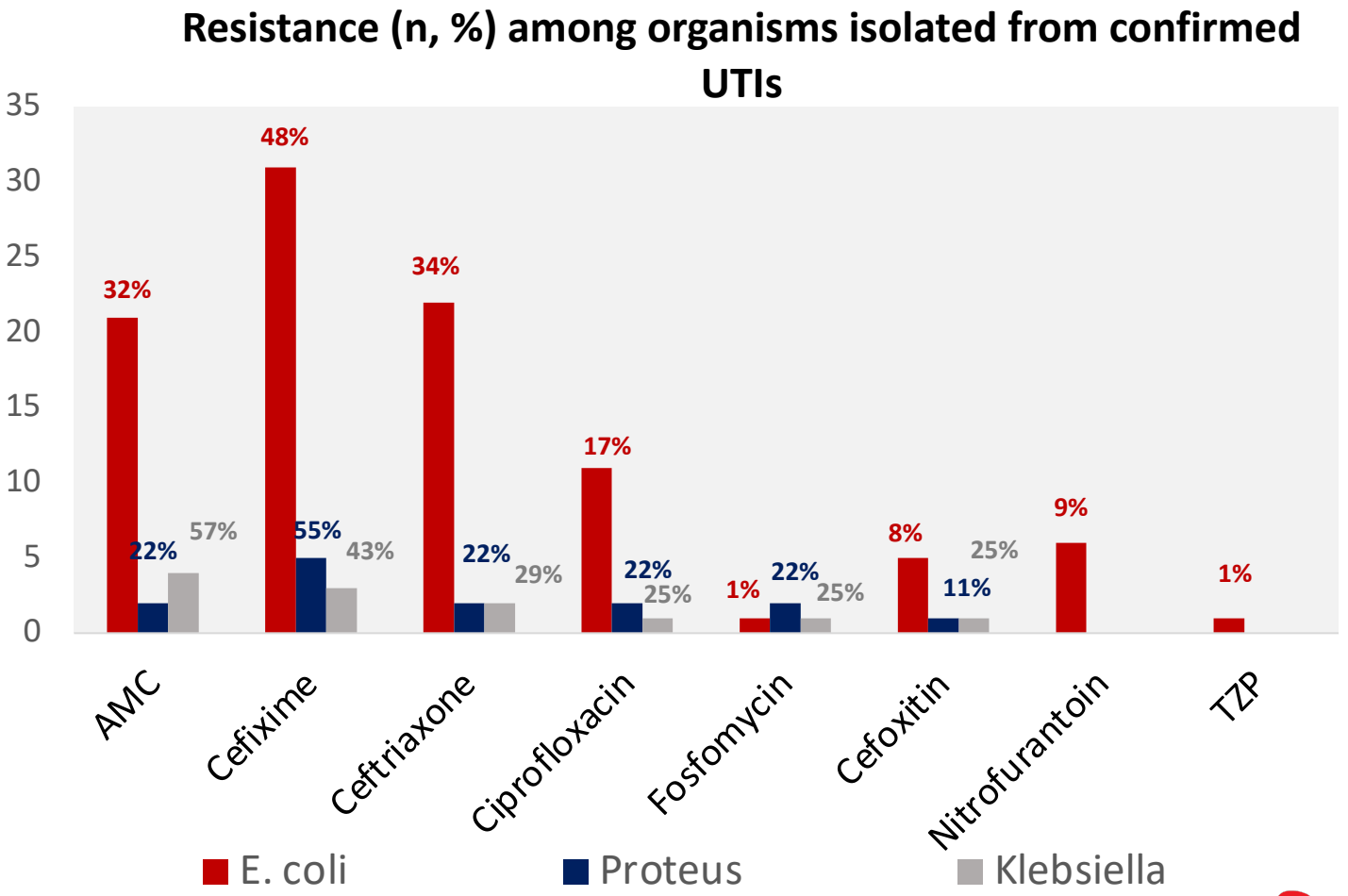
SCIENTIFIC DAYS

Results – characteristics

Characteristics		Total population N=449	Culture Positive N=81	Culture Negative N=368	P-value
Socio-demographics	**Age (N=449) (mean(sd))**	25.49 (5.92)	25.88 (5.89)	25.4 (5.93)	0.5055
	Nationality (N=449)				0.701
	Syrian	420 (93.5%)	75 (92.6%)	345 (93.8%)	
Clinical Characterstics	**Presence of UTI symptoms (N=449)**				**0.000***
	Yes	197 (43.9%)	53 (65.4%)	144 (39.1%)	
	Dysuria	162 (36.1%)	44 (54.3%)	118 (32.1%)	**0.000***
	Pelvic pain	63 (14%)	17 (21%)	46 (12.5%)	**0.046***
	Urinary Frequency	112 (25%)	28 (34.6%)	84 (22.8%)	**0.0027***
	Gravida				**0.028***
	G1 (first pregnancy)	107 (23.8%)	27 (33.3%)	80 (21.7%)	
	G2 (2-5 pregnancy)	274 (61.1%)	39 (48.1%)	235 (63.9%)	
	G3 (>5 pregnancy)	68 (15.1%)	15 (18.6%)	53 (14.4%)	
	Gestational Age (weeks)				**0.029***
	<14 weeks	116 (25.8%)	30 (37%)	86 (23.4%)	
	14 to 27 weeks	171 (38.1%)	29 (35.8%)	142 (38.6%)	
	≥ 28 weeks	162 (36.1%)	22 (27.2%)	140 (38%)	

Results – microbiology





MEDECINS SANS FRONTIERES

SCIENTIFIC DAYS

Results – costs

Following costs accounted for:

→ urine dipstick (test) and culture (test + urine cups)

→ antibiotic susceptibility testing

→ antibiotics used (under current operational conditions

	With Culture	Without culture
Total (Euros)	1550	1309
Per woman (Euros)	**3.5**	**2.9**

MEDECINS SANS FRONTIERES

SCIENTIFIC DAYS

Main limitations

- UTI prevalence identified might be an under-estimation of the true prevalence in our community - since negative dipsticks were not cultured
- Specificity and sensitivity of urine dipstick was not assessed
- Results of this study might not be generalized to other populations

Conclusion

- Urine dipstick alone as a diagnostic method for UTI → **82% over-prescription of antibiotics**
- UTIs symptoms + urine dipstick → **39% over-prescription**
- **Concerning Cefixime resistance** → one of the first line UTI treatment in MSF
- Adding urine culture as a diagnostic tool lead to minimal costs difference

In MSF settings and where feasible, urine culture as a main diagnostic tool for UTI should be adopted to target treatment based on AB sensitivity results, avoid over-prescription of AB and prevent AMR

Acknowledgements

This study was made possible through the SORTI-IT course on AMR co-organized by MSF LuxOR and the Middle-East Medical Unit at the MSF Lebanon branch office

I would like to thank the organizing teams, the study team, the South Beirut OPD team, the St. Marc laboratory team, and above all MSF patients

MEDECINS SANS FRONTIERES

SCIENTIFIC DAYS

Thank you

MEDECINS SANS FRONTIERES

SCIENTIFIC DAYS