THE PREVALENCE OF NOSOCOMIAL INFECTION IN MEDICAL INTENSIVE CARE UNITS IN TUNISIA

RESULTS OF THE ONE-DAY MULTI-CENTRE STUDY IN THE INTENSIVE CARE UNITS IN TUNISIA

ClinicalTrials.gov PRS
Protocol Registration and Results System

	Protocol ID	ClinicalTrials.gov ID	Brief Title
Open	1	NCT05547646	The Prevalence of Healthcare-associated Infection in Medical Intensive Care Units in Tunisia (NOSOREA2)

BACKGROUND

- ICU-acquired infection is common and often associated with higher costs, work burden and morbi-mortality.

- Controlling this fatal scourge should begin with greater awareness of ICU ecology and nosocomial infection frequencies.

BACKGROUND

- Conducting multi-centre Tunisian studies is necessary to guide control measurements against NI.

- In 2017: NOSOREA 1: 15 participating ICUs: 103 patients

- 5 years later, after COVID-19 pandemic, NOSOREA 2

AIMS

- Determine the prevalence of ICU-acquired infections
- Identify the predominant infecting organisms.
- Evaluate risk factors of NIs.
- Compare to NOSOREA 1 state of the art.

METHODS

- Design: A one-day point-prevalence study (September 27th, 2022).
- Setting: Medical intensive care units in Tunisia, excluding cardiologic and paediatric care units.
- Patients: All patients hospitalized in ICU were enrolled.
- Main outcome measures: Rate of medical ICU-acquired infection and resistance patterns of microbiological isolates.

RESULTS

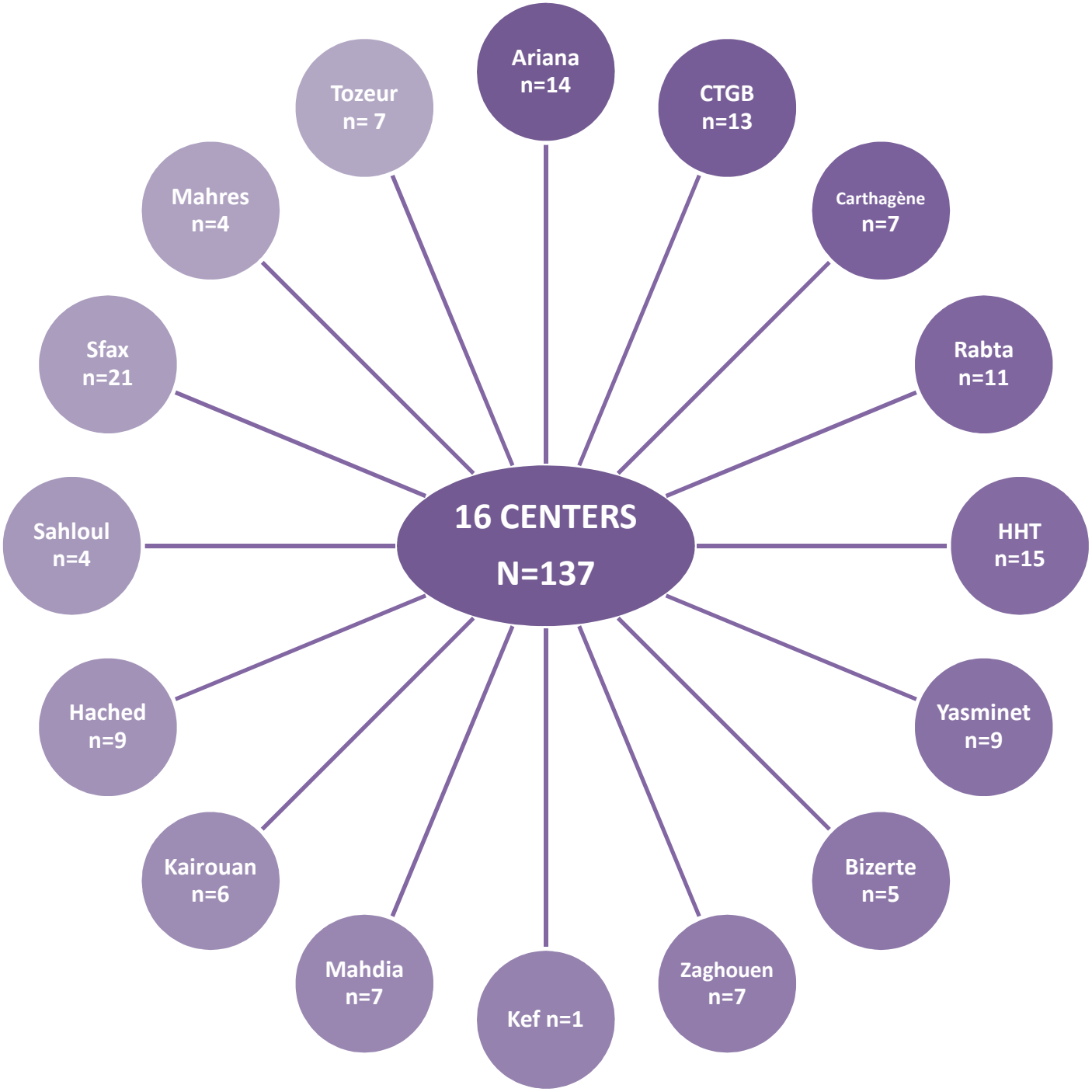

16 CENTERS
N=137
Ariana
n=14
CTGB
n=13
Carthagène
n=7
Rabta
n=11
HHT
n=15
Yasminet
n=9
Bizerte
n=5
Zaghouen
n=7
Kef n=1
Mahdia
n=7
Kairouan
n=6
Hached
n=9
Sahloul
n=4
Sfax
n=21
Mahres
n=4
Tozeur
n= 7

Table I: Patients characteristics

	values
Age, mean±SD, years	54.5 ± 20.8
Gender ratio M/F	90/47 (1.91)
SAPS II, mean±SD	34.6 ± 17.9
APACHE II, mean±SD	13.9 ± 7.3
SOFA, med[IQR]	3 [1 - 6]
Hypertension, n(%)	40 (29.2)
Diabetes, n(%)	34 (24.8)
COPD, n(%)	21 (15.3)
COVID-19 Vaccination, n(%)	74 (54)
Reason for admission, n(%)	
Neurologic failure	51 (37.2)
Respiratory failure	43 (31.4)
Haemodynamic failure	17 (12.4)
Others	26 (19)

- NOSOREA 2: Prevalence 41.6 % IC [33.6 – 49.6]

ARTICLE ORIGINAL

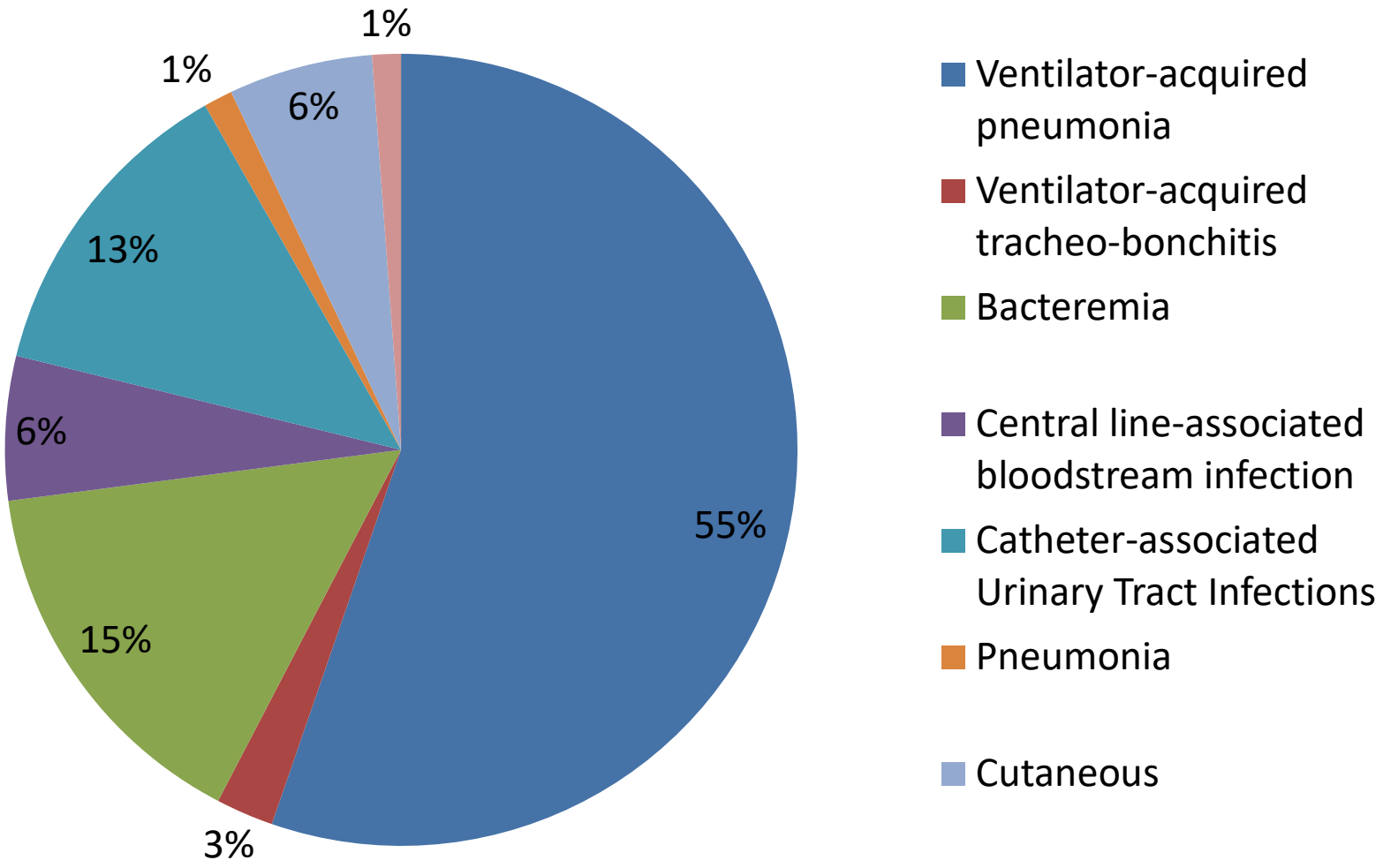
The prevalence of healthcare-associated infection in medical intensive care units in Tunisia. Results of the multi-centre NOSOREA1 study.

Prévalence des infections associées aux soins en réanimation médicale en Tunisie. Résultats de l'étude multicentrique NOSOREA1

Results: One hundred and three patients were collected from 15 Tunisian medical ICUs. HAI prevalence was 25.2% CI 95% [15-35].The most frequent HAIs were hospital acquired pneumonia in 19 cases (59%) and catheter related infection in 5 cases (15%). Independent factors associated with HAI occurrence were SAPSII score ≥ 33 with OR 1.047; CI 95% [1.015-1.077], p=0.003 and recent hospitalization with OR 4.14 CI 95% [1.235-13.889], p=0.021. Non-fermenting pathogens were the most frequent microorganisms reported in ICUs ecology, prior colonization and HAIs of the screened patients

LA TUNISIE MEDICALE - 2018 ; Vol 96 (10/11)

85 nosocomial infections among 57 patients



85 nosocomial infections: documented (n=53) and suspected (n=32)

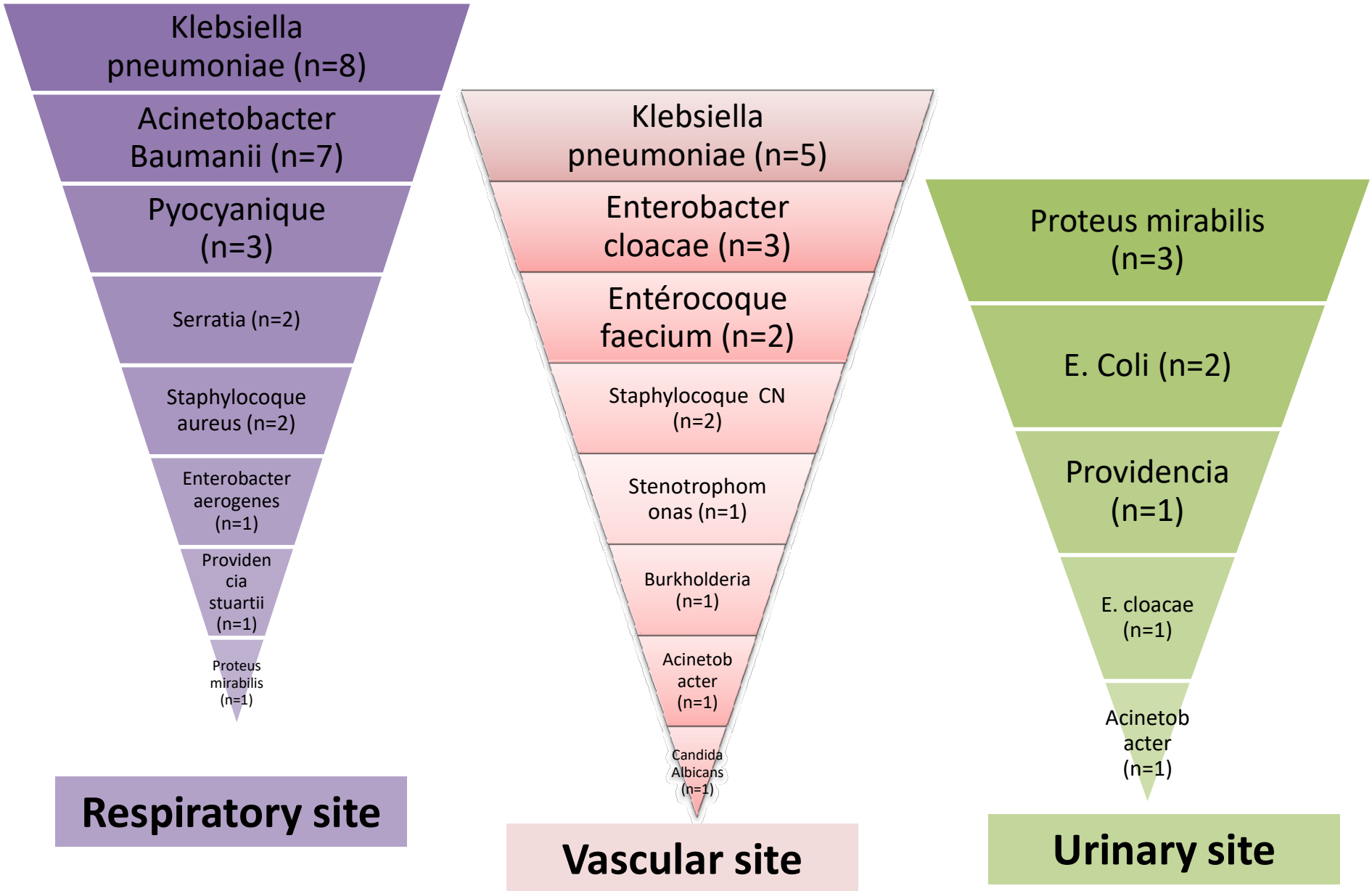


Table II: Univariate analysis

	HAI group N=57	Non-HAI group N=80	p
Age, mean ± SD (years)	50±19	57±22	0.051
Male gender, n (%)	39 (68)	51 (64)	0.570
SAPSII	37 ± 17	33 ± 18	0.216
APACHEII	14 ± 7	14 ± 8	0.995
Hypertension, n (%)	26 (46)	14 (18)	0.314
Diabetes, n (%)	20 (35)	14 (18)	0.953
COPD, n (%)	15 (26.3)	6 (8)	0.188
Immunosuppression, n (%)	6 (11)	6 (8)	0.555
SOFA (on study day)	5 ± 4	4 ± 3	0.056
Invasive ventilation (on study day)	31 (54)	28 (35)	0.018
Vasopressors (on study day)	22 (39)	22 (28)	0.186

Table 3 : Univariate analysis comparing HAI group versus non-HAI group among 103 patients within 15 Tunisian medical ICUs on the study day (*September 26th, 2017*)

	HAI group N=26	Non-HAI group N=77	p
Age, mean ± SD (years)	49±20	45±20	0.363
Male gender, n (%)	15 (57)	47 (61)	0.763
SAPSII	46±15	28±19	**$<10^{-3}$**
APACHEII	18±5	12±8	**0.001**
SOFA (on study day)	7±4	4±4	**0.017**
Hypertension, n (%)	10 (38)	13 (17)	**0.022**
Diabetes, n (%)	6 (23)	11 (14)	0.296
COPD, n (%)	2 (7)	6 (8)	0.987
Immunosuppression, n (%)	1 (4)	8 (10)	0.307
Recent hospitalization, n (%)	12 (46)	13 (17)	**0.003**
Isolation, n (%)	11 (42)	9 (11)	**0.001**

SD: standard deviation; SAPS II: Simplified Acute Physiology Score; APACHE II: Acute Physiologic and Chronic Health Evaluation II; SOFA: Sequential Organ Failure Assessment; COPD: Chronic Obstructive Pulmonary Disease.

What happens in our ICUs ?

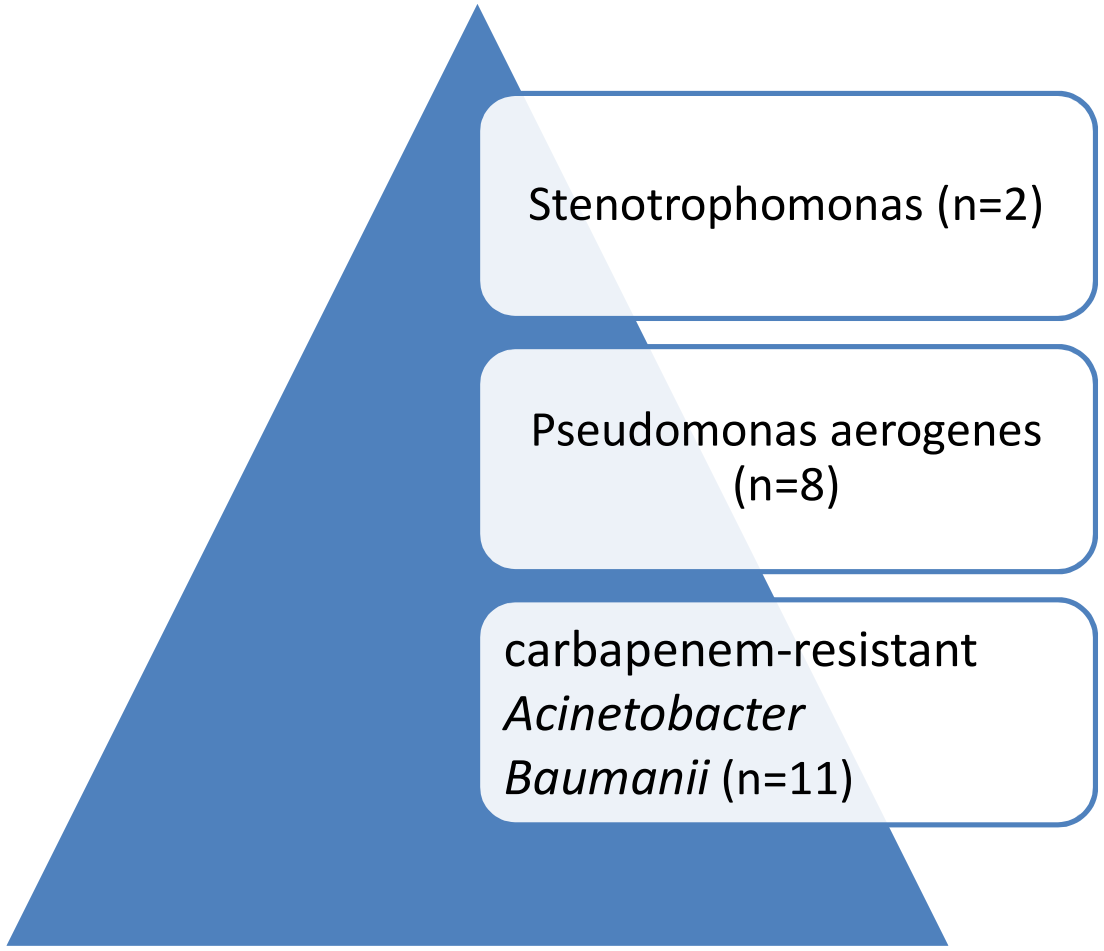
ICUs ECOLOGY

1- Germes non fermentants (15/16)

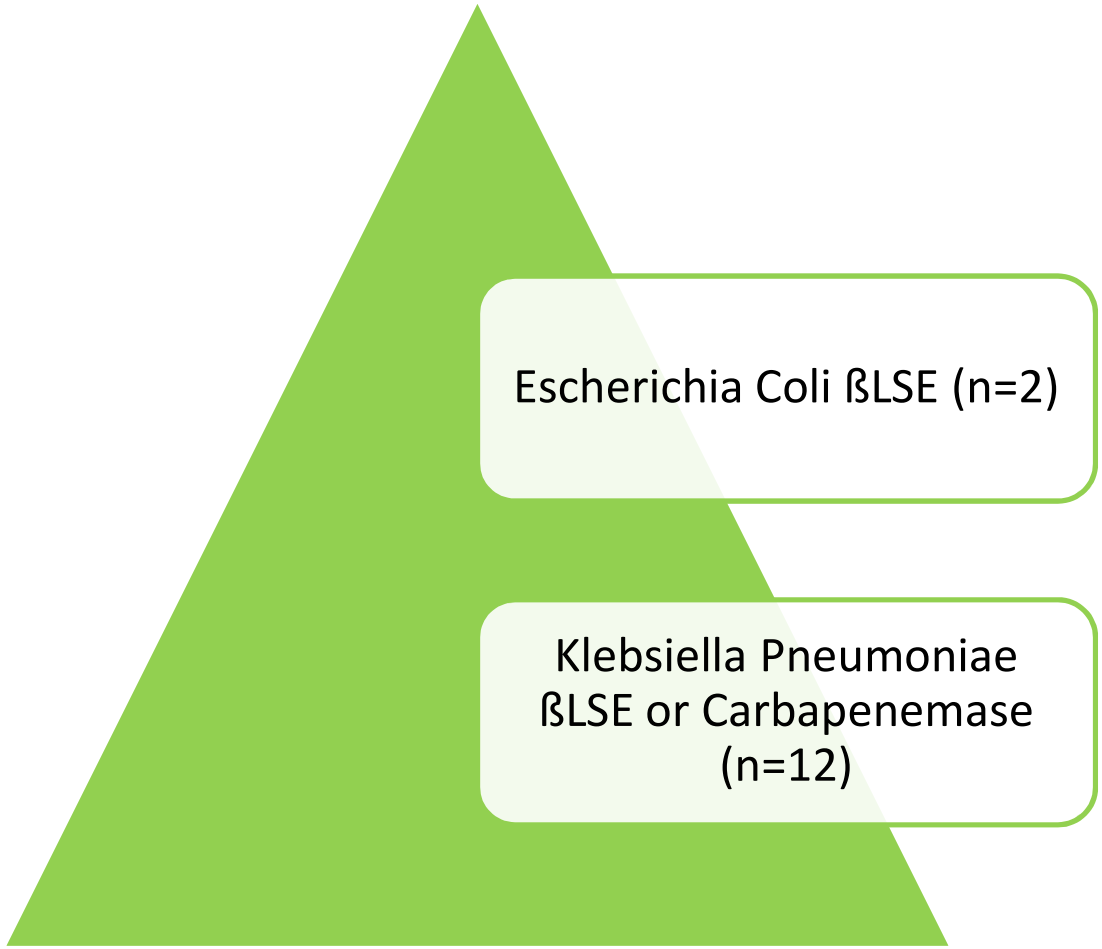
2- Entérobactéries (12/16)

3- CGP (2/16)

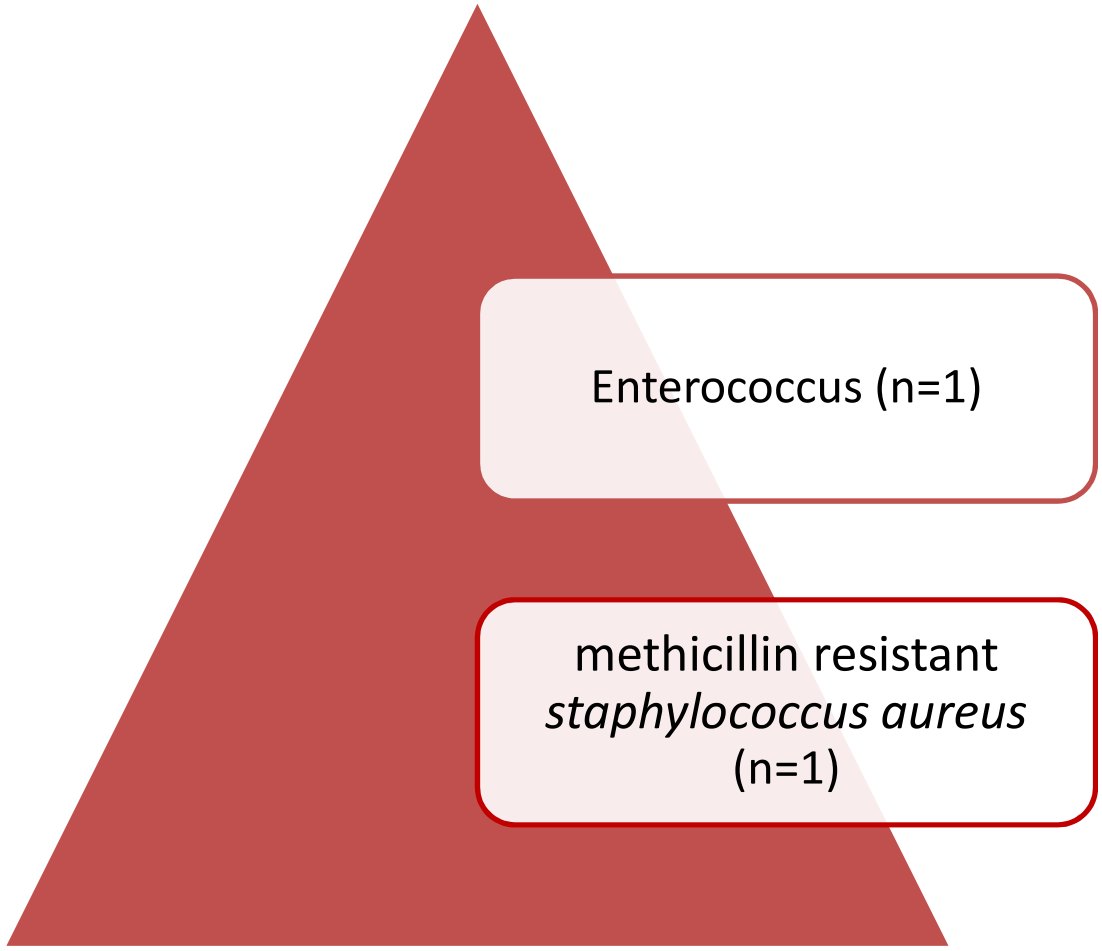
Non-fermenting pathogens (15/16)



Enterobacteries (12/16)

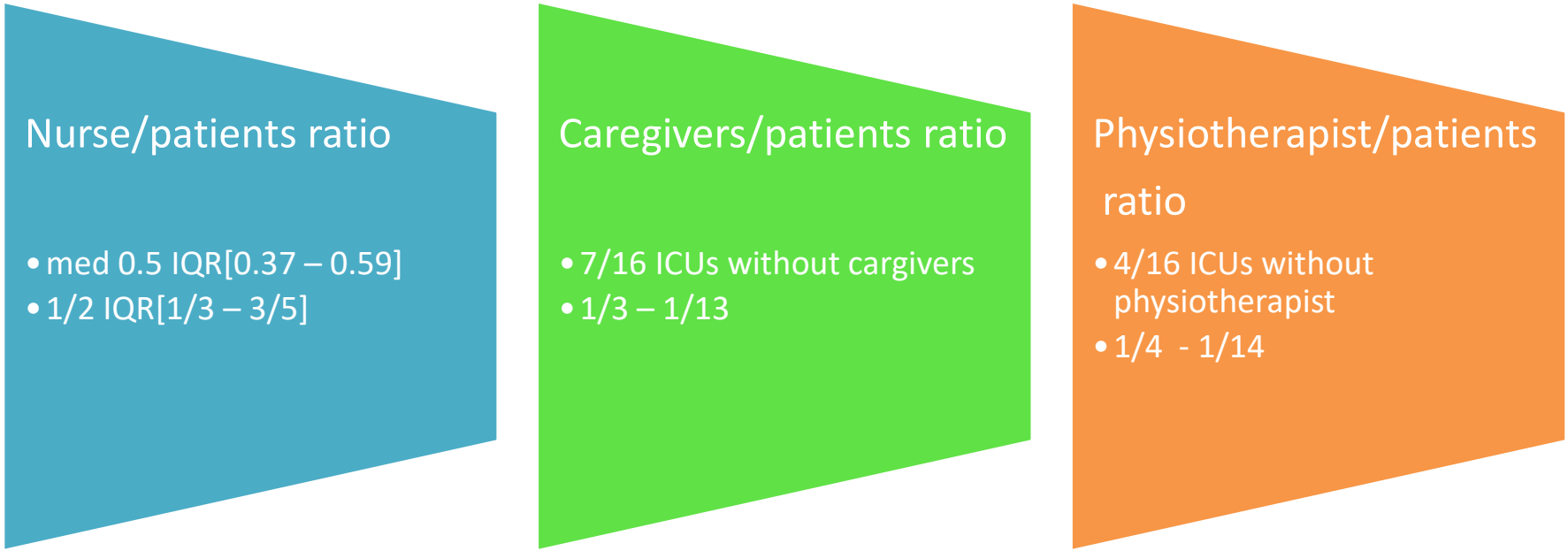


Gram + Cocci (2/16)



WORKING BURDEN

- 16 participating ICUs: **137 patients**
  - mean occupation: 70 %



Devices requirement

- 107 (78 %) urinary catheter
- 86 (63 %) central venous catheter
- 64 (47 %) arterial catheter

Respiratory support

- 64 (47 %) invasive mechanical ventilation
- 32 (23 %) non invasive oxygenation support (NIV/HFCO)

- Systematic disinfection (12/16)
- HAI prevention bundle (10/16)

Any explanation ?

1. Steroids ?
2. Antimicrobials ?
3. Parental alimentation ?
4. Compassion fatigue ?
5. Lack of everything

HOPITAL ABDERRAHMANE MAMI DE PNEUMOPHTISIOLOGIE DE L'ARIANA

LABORATOIRE DE MICROBIOLOGIE

Chef de service : Pr. L. SLIM-SAIDI Pr: E. MEHIRI-ZGHAL - Pr: A.GHARIANI

Nom et prénom : [redacted]

Date de naissance :

REANIMATION

N°de Laboratoire : REA/3126/22

Date de demande : 08/11/2022

Date de saisie : 10/11/2022

Prélèvement : RESPIRATOIRE

ASPIRATION TRACHEALE

Aspect: Purulent

EXAMEN DIRECT

LEUCOCYTES : >25 elts /champ

CELLULES EPITHELIALES : <10elts/champ

HEMATIES :

GERMES : Bacille à Gram négatif

Pseudomonas aeruginosa

Dénombrement : $>10^7$ UFC/ml

ANTIBIOGRAMME

Antibiotique	Résultat interprété
TICARCILLINE	SENSIBLE
AZTREONAM	Intermédiaire
CEFTAZIDIME	SENSIBLE
PIPERACILLINE + TAZOBACTAM	SENSIBLE
AMIKACINE	SENSIBLE
NETILMICINE	SENSIBLE
CIPROFLOXACINE	SENSIBLE

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EXAMEN DIRECT

LEUCOCYTES : > 25 elts/champ
CELLULES EPITHELIALES : < 10 elts/champ
HEMATIES :
GERMES : Présence de Bacilles à Gram négatif

Acinetobacter baumannii

Dénombrement : $> 10^7$ UFC/ml

ANTIBIOGRAMME

Antibiotique	Résultat interprété
TICARCILLINE	Résistant
CEFEPIME	Résistant
AMIKACINE	Résistant
CIPROFLOXACINE	Résistant
TRIMETHOPRIME + SULFAMIDES	Résistant
TIGECYCLINE	Résistant

N° Laboratoire : REA/2682/22
Date de demande : 05/10/2022
Prélèvement : HEMOCULTURE

Date de saisie : 09/10/2022

VEINE PERIPHERIQUE

LEUCOCYTES :
CELLULES EPITHELIALES :
GERMES :

EXAMEN DIRECT

HEMATIES :

Klebsiella pneumoniae

Dénombrement : UFC/ml

ANTIBIOGRAMME

Antibiotique	Résultat interprété
AMOXICILLINE	Résistant
TICARCILLINE	Résistant
PIPERACILLINE	Résistant
CEFALEXINE	Résistant
AZTREONAM	Résistant
AMOXICILLINE + AC.CLAVULANIQUE	Résistant
PIPERACILLINE + TAZOBACTAM	Résistant
CEFOXITINE	Résistant
CEFOTAXIME	Résistant
CEFTAZIDIME	Résistant
CEFEPIME	Résistant
ERTAPENEME	Résistant
IMIPENEME	Résistant
GENTAMICINE	Résistant
AMIKACINE	Résistant
NETILMICINE	Résistant
ACIDE NALIDIXIQUE	Résistant
OFLOXACINE	Résistant
LEVOFLOXACINE	Résistant
CHLORAMPHENICOL	SENSIBLE
FOSFOMYCINE	Résistant

Imperméabilité aux béta-lactamines.
Béta-lactamines: Céphalosporinase hyperproduite
(chromosomique ou plasmidique).
ATTENTION Souche BMR !!

CMI Col: = R.

PLOS ONE

RESEARCH ARTICLE

Compassion fatigue among frontline healthcare workers during the covid-19 pandemic in Tunisia

Nihel Omri[1,2*], Olfa Ezzi[1,2], Asma Ammar[1,2], Wafa Benzarti[2,3☯], Dorra Loghmari[2,4☯], Emna Toulgui[2,5☯], Asma Ben Abdelkarim[2,6☯], Asma Boukadida[2,7☯], Mansour Njah[1,2‡], Mohamed Mahjoub[1,2‡]

Burnout
Depersonnalisation
Secondary post traumatic syndrom

Take home messages

- High prevalence of HAI
- KP and non-fermenting pathogens
- Caregivers
- Antimicrobial stewardship