

## ***Supplementary Appendix***

### **Data Collection Form**

**Title:** Risk Factors Associated with Multidrug-Resistant *Klebsiella pneumoniae* Infections:  
A Multicenter Observational Study in Lebanese Hospitals

**Running title:** Multidrug-Resistant *Klebsiella pneumoniae* in Lebanese Hospitals

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#### **Section 1: Sociodemographic Data**

**Medical Record number:**

**Patient Initials:**

**Year of admission:**

- ☐ 2021
- ☐ 2022
- ☐ 2023

**Admission date:**

**Admission month:**

**Season of infection acquisition:**

- ☐ Winter
- ☐ Spring
- ☐ Summer
- ☐ Fall

**Total duration of hospitalization:**

**Age (in years):**

**Gender:** ☐ Male ☐ Female

**Site of infection acquisition:**

- ☐ Community-acquired
- ☐ Hospital-acquired

**Hospital Department of Infection Acquisition:**

- ☐ Intensive care unit
- ☐ Cardiac care unit
- ☐ Internal medicine
- ☐ Surgery
- ☐ Oncology
- ☐ Obstetrics/gynecology

**Was the patient transferred to ICU:**

- ☐ No
- ☐ Yes
- ☐ Already acquired from ICU

Was the patient hemodynamically unstable upon admission ☐ Yes ☐ No

**Section 2: Potential Risk Factors****Comorbid conditions/Past medical history (PMH):**

- ☐ Previously Healthy
- ☐ Alzheimer's
- ☐ Aortic stenosis
- ☐ Autoimmune disease (Crohn's disease, rheumatoid arthritis, lupus)
- ☐ Atrial fibrillation
- ☐ Benign prostatic hyperplasia
- ☐ Chronic kidney disease
- ☐ Chronic obstructive pulmonary disease
- ☐ Chronic liver disease
- ☐ Coronary artery disease
- ☐ Congestive heart failure
- ☐ Dyslipidemia
- ☐ Dementia
- ☐ Epilepsy
- ☐ Gout
- ☐ Glaucoma
- ☐ Hypertension
- ☐ History of cerebrovascular accident
- ☐ History of trauma
- ☐ Hypothyroidism
- ☐ Hyperthyroidism
- ☐ Leukemia
- ☐ Parkinson's disease
- ☐ Peptic ulcer disease

- ☐ Peripheral vascular disease
- ☐ Type II diabetes mellitus
- ☐ Solid tumor
- ☐ Schizophrenia
- ☐ :Others\_\_\_\_\_

**Charlson Comorbidity Index:**

**Previous hospitalizations in the previous 3 months:** ☐ Yes ☐ No

**Bedridden:** ☐ Yes ☐ No

**Previous Antibiotics Use within the past 3 months:** ☐ No ☐ Yes

**Previous use of cortocosteriods** (received glucocorticoids therapy at dosage  $\geq 10$  mg of prednisolone daily for  $> 5$  days within 4 weeks prior to the onset of infection or an equivalent glucocorticoid and dosage): ☐ Yes ☐ No

**Use of cancer chemotherapy within the last three months:** ☐ Yes ☐ No

**Previous open wound:** ☐ Yes ☐ No

**Has the patient undergone any invasive procedures prior to infection acquisition?**

☐ Yes ☐ No (branched question)

**If yes, select from the following:**

- ☐ Biliary drainage
- ☐ Biopsy
- ☐ Central venous line
- ☐ Endoscopic retrograde cholangiopancreatography (ERCP)
- ☐ Mechanical ventilation
- ☐ Indwelling urethral catheterization
- ☐ Laryngoscope
- ☐ Prolonged total parenteral nutrition
- ☐ Percutaneous endoscopic gastrostomy
- ☐ Percutaneous drainage
- ☐ Peripherally-inserted central catheter line
- ☐ Renal replacement therapy (dialysis)
- ☐ Surgery during  $\leq 30$  days before hospitalization
- ☐ Suprapubic catheter
- ☐ Tracheostomy
- ☐ Other procedures: \_\_\_\_\_

### Section 3: Site of infection and Clinical Severity Classification

#### Primary Site of infection:

- ☐ Respiratory tract
- ☐ Soft tissue/infected wounds
- ☐ Surgical site
- ☐ Intra-abdominal
- ☐ Urinary tract
- ☐ Bloodstream infection
- ☐ CNS
- ☐ Gastro-intestinal
- ☐ Cardiovascular
- ☐ Other: \_\_\_\_\_

#### Assessment of severity of infection: (branched question)

- ☐ Localized infection without SIRS
- ☐ Bacteremia
- ☐ Sepsis
- ☐ Septic Shock

#### If Sepsis or Septic shock:

QSOFA score: \_\_\_\_\_

SOFA score: \_\_\_\_\_

### Section 4: Microbiological characteristics of the isolates

#### Date of specimen retrieval in relevance to hospital admission: (dropdown menu) (continuous) [ONSET of Infection]

- ☐ Prior to admission
- ☐ Day 1
- ☐ Day 2
- ☐ Day 3
- ☐ Day 4
- ☐ Day 5
- ☐ Day 6
- ☐ Day 7
- ☐ Day 8
- ☐ Day 9
- ☐ Day 10
- ☐ Day 11
- ☐ Etc. Till day 100

**The original specimen that grew the bacteria was:**

- ☐ Bile liquid
- ☐ Blood
- ☐ Bronchial aspirates
- ☐ CSF
- ☐ Deep tracheal aspirate
- ☐ Fecal swab
- ☐ Foley tip
- ☐ Ear swab
- ☐ Groin swab
- ☐ IV catheter tip
- ☐ Nasal swab
- ☐ Other body fluids (pericardial, synovial, peritoneal)
- ☐ Pleural fluid
- ☐ Rectal swab
- ☐ Sputum
- ☐ Skin (wound/ soft tissue)
- ☐ Urine
- ☐ Others:

**Positive blood Culture post infection acquisition:**

- ☐ No
- ☐ Yes
- ☐ Already it is the main site of infection

## Section 5: Antibigram and Classification of antimicrobial resistance

| Antibiotics                 | Resistant             | Sensitive             | Intermediate          | Not Tested            |
|-----------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Amikacin                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Ampicillin                  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Amoxicillin/clavulanic acid | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Aztreonam                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Cefazolin                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Cefepime                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Cefixime                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Cefotaxime                  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Cefoxitin                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Ceftaroline                 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Ceftazidime                 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Ceftriaxone                 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Cefuroxime                  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Cephalexin                  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

| Antibiotics                   | Resistant | Sensitive | Intermediate | Not Tested |
|-------------------------------|-----------|-----------|--------------|------------|
| Ciprofloxacin                 | o         | o         | o            | o          |
| Colistin                      | o         | o         | o            | o          |
| Ertapenem                     | o         | o         | o            | o          |
| Fosfomycin                    | o         | o         | o            | o          |
| Gentamicin                    | o         | o         | o            | o          |
| Imipenem                      | o         | o         | o            | o          |
| Meropenem                     | o         | o         | o            | o          |
| Norfloxacin                   | o         | o         | o            | o          |
| Nitrofurantoin                | o         | o         | o            | o          |
| Piperacillin                  | o         | o         | o            | o          |
| Piperacillin/tazobactam       | o         | o         | o            | o          |
| Prulifloxacin                 | o         | o         | o            | o          |
| Tetracycline                  | o         | o         | o            | o          |
| Tigecycline                   | o         | o         | o            | o          |
| Tobramycin                    | o         | o         | o            | o          |
| Trimethoprim/sulfamethoxazole | o         | o         | o            | o          |

**Type of resistance:**

- Non-MDR
- TGCR-KP (third-generation cephalosporin-resistant *klebsiella pneumonia*)
- AmpC  $\beta$ -lactamase
- ESBL(extended-spectrum beta lactamase)
- CRKP (carbapenem resistant *klebsiella pneumonia*)

**Type of Antimicrobial resistance (AMR):**

○Non-AMR

○AMR

- **MDR** (acquired non-susceptibility to at least one agent in three or more antimicrobial categories)
- **XDR** (non-susceptibility to at least one agent in all but two or fewer antimicrobial categories ie; bacterial categories remain susceptible to only one or two categories)
- **PDR** (non-susceptibility to all antimicrobial categories)