KINGDOM OF SAUDI ARABIA
MINISTRY OF NATIONAL GUARD HEALTH AFFAIRS
In collaboration with the Gulf Cooperation Council (GCC) States
Centre for Infection Control

Healthcare Associated Infections

Surveillance Manual

Third Edition

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MESSAGE FROM THE CHIEF EXECUTIVE OFFICER

I am honored to present the third (3rd) Edition of the GCC-CIC Hospital Associated Centre for Infection Control (CIC) Surveillance Manual. After the successful release of the first and second edition, I can only be proud to allow the Ministry of National Guard Health Affairs, Saudi Arabia to continuously host the Gulf Cooperation Council (GCC) Center for Infection Control (CIC). The dedication, commitment and continued enthusiasm of the GCC-CIC team in ensuring patient safety is commendable. Patient Safety is in my heart and will be the utmost priority in our institution thus I am overwhelmed with the updates and significant highlights of this edition.

While infectious diseases may continue to emerge, it is such a relief that the Kingdom of Saudi Arabia and its neighboring countries are equipped with a comprehensive and effective surveillance control included in this manual.

I'm delighted to be working alongside each of the GCC-CIC team and its leadership to achieve these patient safety centered goals and take the GCC-CIC to the next level.

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FOREWORD

It is with great pride that I would like to introduce the third edition of the GCC-CIC Healthcare Associated Infections Surveillance Manual.

This Surveillance Manual presents detailed guidelines and unified data collection forms for Infection Preventionists to conduct meaningful surveillance on Healthcare Associated Infections (HAIs). Such data is needed to provide insight to potential problems that will need attention and intervention, with the aim of minimizing and, further, eliminating the transmission of infections in the healthcare setting. Such data needs to be standardized and comparable to international standards, and so this manual provides the reference for conducting such surveillance.

The Manual provides detailed methods on all aspects of surveillance in the healthcare setting that is associated with infections and, when integrated into healthcare facilities, can assist in improving the services provided and function as a valuable Key Performance Indicator (KPI), to benchmark with local, regional and international healthcare facilities.

The GCC Health Ministers' council is urging leaders of GCC healthcare systems to adopt and implement surveillance for HAIs as outlined in this manual and to participate in this regional benchmark in order to achieve excellence in preventing HAIs, a mandate of the larger patient safety agenda for the GCC countries as we strive to deliver superb quality patient care.

Mr. Sulaiman Al Dakheel
Director General
Executive Board of Health Ministers' Council for
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PREFACE

Healthcare Associated Infections (HAIs) contribute a significant proportion of harm to patients in the healthcare setting. Fortunately, many of these infections are preventable. Advanced healthcare has been known to save lives. However, the complexity of care provided to patients today has allowed for endless opportunities for laxity. Patients acquiring an infection will receive more medications, have extended hospital stays, and perhaps suffer further complications and/or death as an extreme consequence. All of which are reasons to focus on preventing HAIs and dedicate maximum resources to identifying potential gaps and solving them.

The development of this manual aims to provide a useful tool for Infection Preventionists in their day-to-day surveillance activity, align the methodology with international standards and set the stage to provide valid data that will serve the purpose and goals for patient safety. Hence, the manual will unify surveillance definitions and provide data collection forms for the various surveillance activities.

Finally, we were able, with the first two versions of this manual, to train and unify surveillance methodology among six tertiary healthcare facilities in three GCC countries and produce a meaningful and significant benchmark for the region on central line associated blood stream infections (CLABSI), catheter associated urinary tract infections (CAUTI) and ventilator associated pneumonias (VAP). We hope to continue to engage healthcare facilities in the surveillance process and serve as a model in the region in collaboration and research in a way that will serve the International Patient Safety Goal agenda.

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GULF COOPERATION COUNCIL CENTRE FOR INFECTION CONTROL

INTRODUCTION

The Gulf Cooperation Council (States) Centre for Infection Control (GCC-CIC) takes its direction from Ministry of National Guard Health Affairs' Infection Prevention and Control Program, King Abdulaziz Medical City- Riyadh (KAMC-R).

SCOPE OF SERVICES

The scope of services of the Infection Prevention and Control Program supports all the services provided and comprised of hospital infection, environmental health, occupational safety, field epidemiology, and public health—all structured within the Department of Infection Prevention and Control (IP&C). It functions to support a high quality of care through the prevention and control of infections and infectious diseases using epidemiologic and quality improvement methodologies, evidence-based healthcare, education, research, and collaboration.

As the GCC-CIC, so appointed at the meeting of the Ministers of Health for the GCC States, the scope of service is widened beyond the confines of KAMC-R to all healthcare facilities in the Gulf State countries. In an attempt to clarify the role and expanded the scope, and to develop a framework to guide its activities, a proposal was formulated and submitted for review and approval; thus, formalizing the GCC-CIC.

CORE VALUE

To contribute to the delivery of the highest quality health care, by promoting patient safety, environmental safety, and reducing the risk of acquiring and transmitting infections among patients, visitors, healthcare workers and supporting staff through the standardization of IP&C methods.

VISION

Excellence and safety in healthcare delivery everywhere in the Gulf States and beyond, through cooperation and the establishment of long-lasting links between our developing programs in the region.

MISSION

To subscribe to regional and international leadership in the fight against healthcare related infections and those diseases, which threaten mankind and seriously affect the concerns of health and economics of our populations. Our approach is collaborative as we bring to the region, new findings, fresh concepts, and dynamic theories that will be the building blocks to further advance our cause.

GOALS AND OBJECTIVES

Short Term:

1) Establish an Advisory Board which is representative of all GCC States with specific terms of reference to give guidance in the execution of the Centre's mandate, which is represented by all GCC member States.
2) Develop regional standards for the practice and certification of infection control.
3) Provide professional development with CME and practical experience for the training of infection control profession.
4) Provide a form for pooling of expertise and highlighting activities to address infection control issues in the region.
5) Formulate a system of communication to disseminate information (local and global news on

infection control) in a timely manner to all members.
6) Create, promote, and support networks among infection control professionals in the region and globally.
7) Coordinate and collaborate annual meetings and symposia to provide a forum for the exchange and update of scientific information among concerned individuals.

Long term:

1) Establish regional databases to support research activities and encourage benchmarking among member states institutions.
2) Initiate a society/organization for GCC States Infection Control professionals and encourage/support the development of similar groups in each member country.
3) Establish an internationally recognized journal with an editorial board for the review, selection, and publication of relevant articles.
4) Facilitate the publication of a peer reviewed and indexed scientific journal to address infection control and related issues in the region.
5) Develop an accreditation system to survey healthcare facilities to ensure that national and regional standards of care are met and assist facilities in seeking international accreditation.

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BACKGROUND

Surveillance is an essential component of an effective infection prevention and control (IPC) program. Surveillance is a systematic method of ongoing collecting, consolidating, and analyzing data concerning the distribution and determinates of a given disease or event, followed by the dissemination of that information to those who can improve the outcome.

IPC programs are now required by accrediting and regulatory agencies in a variety of healthcare settings, including hospitals, long-term care, rehabilitation, ambulatory surgery, dialysis, home care, mental health, and corrections facilities. Other factors affecting surveillance programs include shorter hospital stays, the aging of the population, increased use of invasive procedures and devices, more acutely ill patient and resident populations, healthcare worker shortages, emerging infectious diseases, and the threat of bioterrorism. As healthcare practices evolve, new diseases emerge, and antimicrobial resistance spreads, new surveillance methodologies are needed to meet the changing environment.

Surveillance can be used for the following purposes:

- To measure the incidence of healthcare associated infections (HAI) and organisms
- To establish an endemic rates of HAI
- To detect, investigate and control hospital clusters or outbreaks of HAI
- To monitor, evaluate, and implement the necessary preventive measures
- To work on reducing HAI using standard bundles
- To observe practices, such as hand hygiene and sterilizer performance monitoring, to promote compliance with recommendations and standards
- To monitor the occurrence of adverse outcomes to identify potential risk factors
- To prevent and control infections and occupational injuries in healthcare workers (HCWs)
- To monitor antimicrobial susceptibilities
- To analyze temporal trends of aggregated data
- To evaluate new products to be used to control infection throughout the hospital
- To detect and report notifiable diseases to the Ministry of Health (MOH) or other responsible authority
- TO identify organisms and diseases of epidemiological importance, such as antibiotic-resistant organisms and tuberculosis, to prevent their spread
- To ensure compliance with national and international regulations
- To ensure compliance with accrediting agency requirements, such as the Joint Commission on Accreditation of Healthcare Organizations or the Rehabilitation

Accreditation Commission

- To provide information that can be used by responsible partners within/outside the health care facilities to target performance improvement activities
- To detect a bioterrorist event or an emerging infectious disease
- To provide data to conduct a facility risk assessment for diseases, such as legionellosis or tuberculosis

MISSION STATEMENT

This manual was created to provide the necessary surveillance information to help fulfilling the following missions:

- To provide information that contribute to the delivery of the highest quality health care, by promoting safety and reducing the risk of acquiring and transmitting infections among patients, visitors, healthcare workers and supporting staff at the Participating facilities of GCC center for infection control through ongoing data collection, consolidation, and analysis, followed by the dissemination of guiding information and actions, using sound epidemiological and statistical principles
- To support the mission and objectives of the Participating facilities of GCC center for infection control, while committed to the values and standards set forth in their institutional philosophy.

OBJECTIVES

This manual was created to provide the necessary surveillance information for the following objectives

- To measure the incidence of healthcare associated infections (HAI) and organisms and establish their endemic rates through using standard definitions and methods to allow benchmarking both local, regional, and international
- To investigate and control hospital clusters or outbreaks of HAI & resistant organisms among patients and personnel
- To maintain a comprehensive data system to monitor, evaluate, and implement the necessary actions to ensure a safe and healthy environment for patients, personnel, and visitors.
- To monitor antimicrobial susceptibilities and the development of new resistant strains that may pose challenge to healthcare system
- To analyze temporal trends of aggregated data to ensure patient safety and appropriate allocation of available resources
- To evaluate new products to be used to control infection throughout the hospital
- To improve care of HCWs at the participating facilities of GCC center for infection control through prevention and control of infection and occupational injuries

- To ensure compliance with national and international regulations
- To ensure compliance with accrediting agency requirements, such as the Joint Commission on Accreditation of Healthcare Organizations or the Rehabilitation Accreditation Commission
- To provide data and statistical analysis for research and publications

TARGET AUDIANCE

This manual was created to provide the necessary surveillance information for infection control professionals (ICP), epidemiologists, biostatisticians, and any other healthcare professional whose responsibilities include infection prevention at healthcare setting!

FACILITIES AND POPULATIONS

Facilities targeted by this manual include all participating facilities of GCC center for infection control including the NGHA facilities

Participating facilities of GCC center for infection control: The Participating facilities are the medical facilities (primarily acute care hospitals) that are covered by GCC (states) Centre for Infection Control. Each facility has its own mission, vision, core values, goals and objectives and is outlined separately. These facilities will benefit from the direction and expertise of the GCC (states) Centre for Infection Control. Standardization of surveillance methodologies across the GCC states will ensure consistency of the reports produced, allow scientific comparisons, and increase the chance of publication in peer-reviewed journals.

New facilities that want to join our network are suggested to go through the following steps:

- Sign new member form
- Adopt the same definitions described in this manual
- Collect data using the GCC data collection forms
- Collect data using the same methodology described in this manual

Facilities that have already joined our network are privileged to get the following partially-free services:

- Training and auditing services to improve awareness of local infection control professionals in standardized surveillance activity and to ensure readiness to use and share standardized data
- Central consultations about data collection, analysis, and reporting
- Sending trainee (doctors and infection control professionals) to the GCC training program at Riyadh
- Share data for publication in regional benchmarking reports. The published reports

will be authored by one or two members form each participating hospital which will ensure collaborative ownership and authorship spirit which is missing in many situations across the region

HEALTHCARE-ASSOCIATED INFECTION (HAI)

Any infection reported to the GCC Centre for Infection Control must meet the GCC definition for healthcare-associated infection (HAI), and the person performing surveillance must decide that the clinical, laboratory, and other diagnostic information gathered on the patient satisfy the criteria for GCC definitions for HAI infection.

HAI is defined as a localized or systemic condition resulting from an adverse reaction to the presence of an infectious agent(s) or its toxin(s).

- There must be no evidence that the infection was present or incubating at the time of admission to the care setting.
- Clinical evidence may be derived from direct observation of the infection site or review of information in the patient chart or other clinical records.
- An infection is considered HAI if the date of event of the NHSN site-specific infection criterion occurs on or after the 3rd calendar day of admission to an inpatient location where day of admission is calendar day 1

The definitions used in this manual are identical, where possible, to those of the National Healthcare Safety Network (NHSN). Other important considerations include the following:

- <u>The following infections are not considered healthcare associated:</u>
  - Physician diagnosis cannot be accepted as evidence of an infection unless physician diagnosis is an element of the specific infection definition..
  - Infections in infants that have been acquired transplacentally (e.g., herpes simplex, toxoplasmosis, rubella, cytomegalovirus, or syphilis) and become evident ≤ 2 calendar days after birth.
  - Reactivation of a latent infections (e.g., herpes zoster [shingles], herpes simplex, syphilis, or tuberculosis).
- <u>The following conditions are not infections:</u>
  - Colonization, which means the presence of microorganisms on skin, on mucous membranes in open wounds, or in excretions or secretions but are not causing adverse clinical signs or symptoms.
  - Inflammation that results from tissue response to injury or stimulation by noninfectious agents, such as chemicals.
- <u>The following is an HAI that is not reported separately:</u>
  - Secondary BSI which is a complication of other HAI (such as UTI or SSI); is not reported as a separate infection
- <u>The following is considered HAI:</u>
  - Infections occurring in newborns with date of event on day 3 or later are HAI. This would include infections acquired transplacentally (e.g., herpes simplex, toxoplasmosis, rubella, cytomegalovirus, or syphilis) or as a result from passage through the birth canal (e.g., Group B Streptococcus).

RELARED CRITERIA OF HAI DENINTION

- **Infection Window Period for HAI:**
  - It is the 7-days during which all site-specific infection criteria must be met.
  - It includes the day the first positive diagnostic test that is an element of the site-specific infection criterion, was obtained, the 3 calendar days before and the 3 calendar days after.

- **Date of HAI event:**
  - It is the date the first element used to meet an NHSN site-specific infection criterion occurs for the first time within the seven-day infection window period

- **Present on admission (POA):**
  - An infection is considered POA if the date of event of the NHSN site-specific infection criterion occur
    - Two calendar days before day of admission
    - First day of admission (day 1)
    - Day after admission (day 2)
  - Exceptions: SSI, LabID CDI & MRSA bacteremia may occur after patient's discharge from facility and be present upon readmission

- **Transfer Rule:**
  - If all elements of an HAI were present within 2 calendar days of transfer from one inpatient location to another in the same facility (i.e., on the day of transfer or the next day), the HAI is attributed to the transferring location.
  - If all elements of an HAI were present within 2 calendar days of transfer from one inpatient facility to another, the HAI is attributed to the transferring facility
  - However, infections cannot be attributed to a location where patients are not housed overnight (like an OR or ED). In this situation, the infection should be attributed to the next inpatient location

- **Multiple Transfer:**
  - If the patient has been transferred to more than one location on the date of an infection, or the day before, attribute the infection to the first location in which the patient was housed the day before the infection's date of event.

- **Repeat Infection Timeframe (RIT):**
  - It is a 14-day timeframe during which no new infections of the same type are reported.

- The date of event is Day 1 of the 14-day RIT.
- Additional pathogens recovered during the RIT from the same type of infection are added to the event.
- The RIT applies during a patient's single admission, including the day of discharge and the day after, in keeping with the Transfer Rule
- An RIT does not carry over from one admission to another even if readmission is to the same facility
- The RIT can apply at the level of specific type of infection with the exception of BSI, UTI, and PNEU where the RIT will apply at the major type of infection.

- **Device removal and reinsertion:**
  - If central line or urinary catheter were removed and reinserted before a full calendar day without a device (central line or urinary catheter), then continue the day count
  - Therefore if the patient is without a device (central line or urinary catheter) for at least one full calendar day (NOT to be read as 24 hours), then start a new day count.

- **Secondary BSI Attribution Period:**
  - It is the period in which a positive blood culture must be collected to be considered as a secondary bloodstream infection to a primary site infection
  - This period includes the Infection Window Period combined with RIT
  - In case of DA HAI: It is 14-17 days in length depending upon the date of event
  - In case of SSI: 17-day period that includes the date of SSI event, 3 days prior and 13 days after

- **Pathogen Assignment Guidance:**
  - Additional pathogens recovered during the RIT from the same type of infection or during the secondary BSI attribution period are added to the event
  - Exception: Pathogens excluded from specific infection definitions (e.g., yeast in UTI, Enterococcus spp. in PNEU) are also excluded as pathogens for BSIs secondary to that type of infection
  - Secondary BSI pathogens may be assigned to more than one infection source at the same time

- **Microbiologic testing:**
  - Organisms identified from a specimen by a culture or non-culture based microbiologic testing method is acceptable to meet the HAI definition

- However, for the purpose of meeting the HAI definition culture or non-culture based microbiologic testing method must be performed for purposes of clinical diagnosis or treatment (e.g., not Active Surveillance Culture/Testing (ASC/AST).

- **Non-accepted organisms:**
  - Specific fungal pathogens typically causing community-associated infections cannot be used to meet any HAI definition: Blastomyces, Histoplasma, Coccidioides, Paracoccidioides, Cryptococcus & Pneumocystis.

- **Summary of HAI changes in this version:**

Element	First/second versions	Third version
Healthcare associated	• No time frame *	• >2 calendar days
Present on admission	• No time frame	• Within 2 calendar days before or after admission
Duration between symptoms	• ≤1 calendar gap	• 7-day infection window period
Device duration	• No minimum period (2011) • >48 hours (2013)	• >2 calendar days
Date of Event	• Date of last element used to meet criteria	• Date of first element used to meet criteria
Diagnosis of new events	• No time frame *	• 14 calendar days for BSI, UTI, VAP • 21 calendar days for DE
Diagnosis of 2ry BSI	• No time frame	• 14-17 calendar days for UTI, VAP • 17 calendar days for SSI
Location of attribution	• ≤48 hours	• ≤2 calendar days
Transfer role	• ≤48 hours	• ≤2 calendar days

ESSENTIAL ELEMENTS OF SURVEILLANCE

A. Assess the population and identify those at greatest risk for the outcome (e.g. blood stream infection) or process (e.g. central line insertion practices) of interest

1. Healthcare-associated infections (HAI) (outcomes)
2. Patient care practices aimed at preventing HAI (processes)

B. Select the appropriate outcome or process to be monitored by surveillance

1. Examples of outcomes: HAI, infection or colonization with a specific organism, pyrogenic reaction or vascular access infection in hemodialysis patients, sharps injuries, etc.
2. Examples of processes: Central line insertion practices (CLIPs), surgical care processes (e.g., preoperative antimicrobial prophylaxis), medication errors, influenza vaccination rates, hepatitis B immunity rates, personnel compliance with protocols, etc.
3. Examples of other events: Occurrence of reportable diseases and conditions, communicable diseases in personnel, organisms or syndromes indicative of bioterrorist events, etc.

C. Determine observation time period: It should be sufficient to collect sufficient data. It could be affected by the hospital resources, hospital size, target population, health care priorities …etc

D. Choose the surveillance methodology

E. Monitor for the outcome or process using standardized definitions for all data collected

F. Collect appropriate denominator data, if rates are to be calculated

G. Analyze surveillance data

H. Report and use surveillance information in a timely manner

Note: The above elements will be discussed in more details in the following pages.

SURVEILLANCE INDICATORS

This manual will focus on the NHSN Patient Safety Component as well as IHI Bundles. NHSN Patient Safety Component includes four modules and each module has two or more surveillance elements. IHI Bundles include four types of bundles to reduce HAI occurrence. A minimum of 6 months of at least one module of Patient Safety Component is required during each calendar year to remain an active participant of the GCC Center for Infection Control. Surveillance of different types of bundles can be done alone or together with matching HAI surveillance (for example central line bundle with CLABSI)

Patient Safety modules

1- Device-Associated Module

- Central Line-Associated Bloodstream Infection (CLABSI) Event
- Ventilator-Associated Pneumonia (VAP) Event
- Ventilator-associated Events (VAE)
- Catheter-Associated Urinary Tract Infection (CAUTI) Event
- Dialysis Event (DE)

2- Procedure-Associated Module

- Surgical Site Infection (SSI) Event

3- Medication-Associated Module

- Antimicrobial Use and Resistance (AUR); Microbiology Option
- Antimicrobial Use and Resistance (AUR) Pharmacy Option

4- Multidrug-Resistant Organisms Module

- MDRO: such as Pseudomonas aeruginosa and Klebseilla spp.
- Clostridium difficile Infection

Bundles

- Central Line Bundle
- Ventilator Bundle
- Urinary catheter bundle
- Surgical bundle
- Dialysis bundle

I- PATIENT SAFETY MODULES

1-DEVICE-ASSOCIATED MODULE

Device-associated infection: An infection in a patient with a device (e.g., ventilator or central line) that was used at or was removed within 2 calendar days before onset of infection.

- The device must be in place for >2 calendar days in order for the infection to be considered device-associated.
- The date of device-associated HAI event is the date the first element used to meet the infection criterion occurs for the first time within the seven-day infection window period.
- If the device-associated HAI develops within 2 calendar days of discharge from a location, it is associated with the discharging location.

A. Central Line-Associated Bloodstream Infection (CLABSI) Event:

- A CLABSI is a primary bloodstream infection (BSI) in a patient who had a central line or umbilical catheter
- The central line or umbilical catheter has to be in place for >2 days and in place at the date of event or the day before.
- Primary BSI is a laboratory-confirmed bloodstream infection (LCBI) that is not secondary to an infection meeting CDC/NHSN criteria at another body site.
- Central line is defined as an intravascular catheter that terminates at or close to the heart or in one of the great vessels which is used for infusion, withdrawal of blood, or hemodynamic monitoring. Umbilical catheter is defined as a central vascular device inserted through the umbilical artery or vein in a neonate.
- Central line could be temporary or permanent. Temporary catheter is a central line that is not tunneled. Permanent catheter is a central line that is tunneled, including certain dialysis catheters and implantable catheters.

B. Ventilator-Associated Pneumonia (VAP) Event:

- A VAP is a pneumonia (PNEU) identified by using a combination of radiologic, clinical and laboratory criteria that occurs in a patient who was ventilated.
- The ventilator has to be in place for >2 days and in place at the date of event or the day before.
- Ventilator is defined as a device to assist or control respiration continuously, inclusive of the weaning period, through a tracheostomy or by endotracheal intubation.
- Healthcare-associated pneumonia can be characterized by its onset: early or late. Early onset pneumonia occurs during the first four days of hospitalization

C. Ventilator-Associated Event (VAE):

- VAEs are identified by using a combination of objective criteria: deterioration in respiratory status after a period of stability or improvement on the ventilator, evidence of infection or inflammation, and laboratory evidence of respiratory infection in a patient who was ventilated. It has three types as shown below.
- Ventilator is defined as a device to assist or control respiration continuously, inclusive of the weaning period, through a tracheostomy or by endotracheal

intubation. The ventilator has to be in place for >2 days

- **Ventilator-Associated Condition (VAC):** After a period of stability or improvement on the ventilator sustained for ≥ 2 calendar days, the patient has the following indicators of worsening oxygenation; increase in daily minimum FiO2 values of ≥ 0.20 points or increase in daily minimum PEEP values of ≥ 3 cm H2O
- **Infection-related Ventilator-Associated Complication (IVAC):** After meeting the criteria of VAC, the patient meets the following 2 criteria; Temperature > 38 °C or < 36°C, OR white blood cell count ≥ 12,000 cells/ mm3 or ≤ 4,000 cells/mm3 AND a new antimicrobial agent(s) is started, and is continued for ≥ 4 calendar days
- **Possible Ventilator-Associated Pneumonia (PVAP):** After meeting the criteria of VAC or IVAC, the patient meets one of the following criteria; (1) Positive culture of respiratory specimens without requirement for purulent respiratory secretions. (2) Purulent respiratory secretions plus organism identified from defined respiratory specimens. (3) One of the following positive tests: Organism identified from pleural fluid, Lung histopathology, Legionella detection, or viral detection.

D. Catheter-Associated Urinary Tract Infection (CAUTI) Event:

- CAUTI is defined as a symptomatic urinary tract infection (SUTI) or asymptomatic bacteremic UTI (ABUTI) in a patient who had an indwelling urinary catheter
- Indwelling urinary catheter has to be in place for >2 days and in place at the date of event or the day before.
- Indwelling urinary catheter is defined as a drainage tube that is inserted into the urinary bladder through the urethra, is left in place, and is connected to a closed collection system; also called a Foley catheter; does not include straight in-and-out catheters.

E. Dialysis Event (DE):

Dialysis events could be one or more of the following types:

1. **In-unit IV antimicrobial start:** Include all IV antimicrobial starts, not just those with vancomycin or for a vascular access problem. If IV antimicrobials are stopped for less than 21 days and then restarted, this is NOT considered a new event. However, if IV antimicrobials are stopped for ≥21 days and then restarted, this is considered a new event.
2. **Positive blood culture:** Include all patients with a positive blood culture even if they did not have an associated hospitalization or in-unit IV antimicrobial start. Include blood cultures taken as an outpatient or within 1 day after a hospital admission. Consider a new event for positive blood cultures occurring 21 days or more after a previous positive blood culture. Access-associated bacteremia is a positive blood culture with source identified as the vascular access site or unknown.

3. **Pus, redness, or increased swelling at the vascular access site:** Pus is always reportable. Report redness or swelling if it is greater than expected and suspicious for infection. There must be 21 or more days between the onset of a first episode and onset of a second episode of pus, redness, or increased swelling at a vascular access site to be considered separate dialysis events

2-PROCEDURE-ASSOCIATED MODULE

Surgical Site Infection (SSI) Event:

- Infection occurs within 30 or 90 days (according to the operative procedures) after an operative procedure that involves the skin or subcutaneous tissue (superficial incisional SSI), deep soft tissue (deep incisional SSI), or any other part of the body that is opened or manipulated during the operative procedure (organ/space SSI)
- An NHSN operative procedure is a procedure that takes place during an operation defined as a single trip to the operating room (OR) where a surgeon makes at least one incision through the skin or mucous membrane, including laparoscopic approach, and primarily closes the incision before the patient leaves
- Use 90 days only for these NHSN operative procedure; BRST, CARD,CBGB, CBGC, CRAN, FUSN, FX, HER, HPRO, KPRO, PACE, PVBY, or VSHN
- The following are details of the three types of SSI
- **Superficial Incisional SSI**

  Infection occurs within 30 days after any NHSN operative procedure, and infection involves only skin and subcutaneous tissue of the incision, and **at least one of the following**:
  - Purulent drainage from the superficial incision
  - Organisms identified from an aseptically-obtained specimen from the superficial incision or subcutaneous tissue by a culture or non-culture methods
  - At least one of the following signs and symptoms of infection: pain or tenderness; localized swelling; erythema; or heat, **and** superficial incision is deliberately opened by surgeon, attending physician, or other designee and culture or non-culture based testing is not performed. Negative culture or non-culture testing does not meet this criterion
  - Surgeon, attending physician, or other designee diagnosed a superficial incisional SSI
- **Deep Incisional SSI**

  Infection occurs within 30 or 90 days after the NHSN operative procedure, and infection involves deep soft tissue (e.g. fascial and muscle layers) of the incision, and **at least one of the following**:
  - Purulent drainage from the deep incision
  - Patient has at least one of the following signs or symptoms: fever (>38°C); localized pain or tenderness, and deep incision that spontaneously dehisces, or is deliberately opened or aspirated and organism is identified by a culture or non-culture methods or culture or

non-culture testing is not performed

- Abscess or other evidence of infection involving the deep incision that is detected on gross anatomical or histopathologic exam, or imaging test

- **Organ/Space SSI**

  Infection occurs within 30 or 90 days after the NHSN operative procedure, and infection any part of the body deeper than the fascial/muscle layers, that is opened or manipulated during the operative procedure, **and at least one of the following:**

  - Purulent drainage from a drain that is placed into the organ/space (e.g., closed suction drainage system, open drain, T-tube drain, CT guided drainage)
  - Organisms are identified from an aseptically-obtained fluid or tissue in the organ/space by a culture or non-culture methods
  - Abscess or other evidence of infection involving the organ/space that is detected on gross anatomical or histopathologic exam, or imaging test AND meets at least one criterion for a specific organ/space infection site: for example IAB-Intraabdominal infection:

    (1) Organisms identified from purulent or abscess material

    (2) Abscess without (a) or with (b) positive blood culture/non-culture for intestinal organisms

    (3) Two of the following symptoms; fever, nausea, vomiting, abdominal pain, or jaundice **AND** (a) organism identified from the intraabdominal space or (b) positive blood culture/non-culture for intestinal organisms plus imaging suggestive of infection

3-MEDICATION-ASSOCIATED MODULE

A. Antimicrobial Use and Resistance (AUR): Microbiology Data

AUR-Microbiology Laboratory Data: Antimicrobial resistance prevalence rates per 100 isolates tested. The numerator is all resistant non-duplicate, clinical isolates processed by the laboratory during a given month in a certain hospital section (inpatients and/or outpatients) while the denominator is the number of all tested isolates processed by the laboratory during that month in that hospital section. Duplicate isolates are not counted in AUR rates. Duplicate isolate is an isolate of the same species of bacteria, regardless of antimicrobial susceptibility pattern, in the same patient, regardless of specimen site, during a given reporting period. The time is calendar month in non-blood samples and ≤2 weeks in blood samples. Resistant isolates are classified by the processing laboratory using minimum inhibitory concentration (MIC) or disc diffusion.

B. Antimicrobial Use and Resistance (AUR): Pharmacy Data

AUR-Pharmacy Data: Antimicrobial use data are expressed as incidence density rates of

- **Days of therapy (DOT)** per 1000 patient-days/admissions in a certain hospital section (inpatients only). DOT of an antimicrobial agent is calculated by summing up the number of days in which the antimicrobial agent was used (in any amount) in an inpatient care location during the specified period.
- **Defined daily dose (DDD)** per 1000 patient-days/admissions in a certain hospital section (inpatients only). DDD of an antimicrobial agent is calculated by dividing the total grams of the antimicrobial agent used in an inpatient care location during the specified period by the number of grams in an average daily dose of that agent given to an adult patient (as defined by CDC/NHSN)

4-Multi Drug Resistant Organism (MDRO)

A. Gram negative MDROs;

Gram negative MDROs include the followings:

A. **CephR-Klebsiella:** non-susceptible (resistant or intermediate) to at least one cephalosporin agent (ceftazidime, cefotaxime, ceftriaxone, or cefepime)
B. **Carbapenem resistant Enterobacteriaceae (CRE):** E-coli, Klebsiella, or Enterobacter resistant to at least one carbapenem agent (imipenem, meropenem, doripenem, or ertapenem) OR by production of a carbapenemase
C. **MDR Acinetobacter:** non-susceptible (resistant or intermediate) to at least one agent in at least 3 or 4 out of 6 antimicrobial classes (penicillins, aminoglycosides, cephalosporins, fluoroquinolones, carbapenems, and sulbactam)

D. MDR Klebsiella or Pseudomonas: non-susceptible (resistant or intermediate) to at least one agent in at least 3 or 4 out of 5 antimicrobial classes (penicillins, aminoglycosides, cephalosporins, fluoroquinolones, and carbapenems)

Note: Classes: Penicillins (Piperacillin, Piperacillin/Tazobactam), Aminoglycosides (Amikacin, Gentamicin, Tobramycin), Cephalosporins (Cefepime, Ceftazidime), Fluoroquinolones (Ciprofloxacin, Levofloxacin), Carbapenems (Imipenem, Meropenem, Doripenem), And Sulbactam (Ampicillin/Sulbactam)

B. Gram positive MDROs;

Gram positive MDROs include MRSA and VRE.

- MRSA: Includes S. aureus cultured from any specimen that tests oxacillin-resistant by standard susceptibility testing methods, or by a positive result from molecular testing for mecA and PBP2a; these methods may also include positive results of specimens tested by any other FDA approved PCR test for MRSA.
- VRE: Any Enterococcus spp. (regardless of whether identified to the species level), that is resistant to vancomycin.

Note: No duplicate isolates or surveillance cultures are included when filling MDRO forms.

- **Duplicate isolate** is an isolate of the same species of bacteria, regardless of antimicrobial susceptibility pattern, in the same patient, regardless of specimen site, during a given reporting period. The time is calendar month in non-blood samples and ≤2 weeks in blood samples.
- **Surveillance cultures:** Those cultures not performed for purposes of clinical diagnosis or treatment including, but not limited to stool cultures for VRE and/or nasal swabs for MRSA surveillance

C. Clostridium difficile

- **Clostridium difficile Infection (CDI)**: A positive laboratory test result for C. difficile toxin A and/or B, (includes molecular assays [PCR] and/or toxin assays) tested on an unformed stool specimen (must conform to the container) OR A toxin-producing C. difficile organism detected by culture or other laboratory means performed on an unformed stool sample (must conform to the container).
- **Duplicate C. difficile:** Any C. difficile toxin-positive laboratory result from the same patient and location, following a previous C. difficile toxin-positive laboratory result within the past 2 weeks [14 days] (even across calendar months and readmissions to the same facility).
- **Categorization of CDI Based on Date Specimen:**
  - Incident CDI Assay: Any positive test for CDI from a specimen obtained >8 weeks after the most recent positive test for CDI (or with no previous positive test for CDI documented) for that patient.

- Recurrent CDI Assay: Any positive test for CDI from a specimen obtained >2 weeks and ≤8 weeks after the most recent positive test for CDI for that patient.

- **Categorizing of CDI Based on Date of Admission**
  - Community-Onset (CO): Any positive test for CDI collected in an outpatient location or an inpatient location ≤3 days after admission to the facility
  - Community-Onset Healthcare Facility-Associated (CO-HCFA): Any positive test for CDI collected from a patient who was discharged from the facility ≤4 weeks prior to current date of stool specimen collection. Data from outpatient locations (e.g., outpatient encounters) are not included in this definition.
  - Healthcare Facility-Onset (HO): Any positive test for CDI collected >3 days after admission to the facility

II-BUNDLES

A. Central line bundle

Central line bundle is a group of evidence-based interventions for patients with intravascular central catheters that, when implemented together, result in better outcomes (reduce BSI) than when implemented individually. They include:

1- Hand hygiene
2- Maximal barrier precautions
3- Chlorhexidine skin antisepsis
4- Optimal catheter site selection, with subclavian vein as the preferred site for non-tunnelled catheters
5- Daily review of line necessity, with prompt removal of unnecessary lines

B. Ventilator bundle

Ventilator bundle is a group of evidence-based interventions for patients with ventilator that, when implemented together, result in better outcomes (reduce VAP) than when implemented individually. They include:

1. Elevation of the head of the bed to between 30 and 45 degrees
2. Daily "sedative interruption" & daily assessment of readiness to extubate
3. Peptic ulcer disease (PUD) prophylaxis
4. Deep venous thrombosis (DVT) prophylaxis (unless contraindicated)
5. Daily oral care with chlorhexidine

C. Urinary catheter bundle

Urinary catheter bundle is a group of evidence-based interventions for patients with urinary catheter that, when implemented together, result in better outcomes (reduce UTI) than when implemented individually. They include:

1- Avoid unnecessary urinary catheters
2- Insert using aseptic technique
3- Maintain catheters based on recommended guidelines (daily care)
4- Review catheter necessity daily and remove promptly

D. Surgical bundle

The surgical bundle is a group of evidence-based interventions for patients undergoing surgery that, when implemented together, result in better outcomes (reduce SSI) than when implemented individually. They include:

1- Appropriate use of prophylactic antibiotics;
- Selection
- Timely administration
- Timely discontinuation

2- Appropriate hair removal;

3- Controlled 6 AM postoperative serum glucose in cardiac surgery patients

4- Immediate postoperative normothermia (36.1-37.1 C°) for colorectal surgery patients.

E. Hemodialysis Bundle

A CDC audit tool and checklist can be used by individuals when assessing staff practices for infection prevention in hemodialysis facilities. The tool can be also used by the staff hemodialysis facilities to help guide their practices. They include:

A- Hemodialysis Bundle for Catheter; checklist for:

1- hemodialysis catheter connection

2- hemodialysis catheter disconnection

3- hemodialysis catheter exit site care

4- dialysis station routine disinfection

5- hemodialysis injectable medication preparation

6- hemodialysis injectable medication administration

B- Hemodialysis Bundle for Fistula/Graft; checklist for:

1- arteriovenous fistula/graft cannulation

2- arteriovenous fistula/graft decannulation

3- dialysis station routine disinfection

4- hemodialysis injectable medication preparation

5- hemodialysis injectable medication administration

SURVEILLANCE LOCATION AND PERIOD

Each GCC facility needs to collect data about a certain component (of the Patient Safety Monthly Reporting Plan modules) for at least one month.

Location of Surveillance: The patient care area to which a patient is assigned while receiving care in the healthcare facility.
The location of surveillance could be inpatient, outpatient, or both

- BSI, UTI, VAP, VAE, AUR-pharmacy, and PPP are surveyed only in inpatients
- DE is surveyed only in outpatients
- SSI and MDRO may be surveyed in both inpatients and outpatients
- AUR-microbiology should be surveyed in both inpatients and outpatients
- There is no UTI surveillance for neonatal ICU
- Central line, ventilator, and urinary catheter bundles are surveyed in inpatients
- Surgical bundle is surveyed in inpatients and/or outpatients
- Dialysis bundle is surveyed only in outpatients

I- Inpatient locations: Locations serving patients whose date of admission to the healthcare facility and the date of discharge are different calendar days.

1. **ICU:** A nursing care area that provides intensive observation, diagnosis, and therapeutic procedures for adults (Adult ICU), children (Pediatric ICU, PICU), or neonates (Neonatal ICU, NICU) who are critically ill. The critical care could be surgical, medical, trauma, respiratory, neurologic…etc. An ICU excludes nursing areas that provide step-down, intermediate care or telemetry only. Specialty care areas are also excluded. The type of ICU is determined by the kind of patients cared for in that unit. That is, if 80% of patients are of a certain type (e.g., patients with trauma), than that ICU is designated as that type of unit (in this case, trauma ICU). When a unit houses roughly equal populations of medical and surgical patients, it is called a medical/ surgical unit.

2. **Specialty care area (SCA):** Hospital location which includes one of the types below: Bone marrow transplant, solid organ transplant, inpatient acute dialysis, hematology/ oncology, or chronic care units

3. **Other inpatient:** including any inpatient locations which is not ICU or SCA e.g. inpatient medical, surgical, or other wards, step down units, or operating rooms (OR). OR may include an operating room, C-Section room, interventional radiology room or a cardiac catheterization lab, or Post Anesthesia Care Unit

II- Outpatient locations: Locations serving patients whose date of admission to the healthcare facility and the date of discharge are the same calendar day. These may include any outpatient clinic, Outpatient Emergency Department, or same day surgery and its 24-hour observation area

P.S. Other locations include:

- COMMUNITY LOCATIONS: e.g. Home care
- NON-PATIENT CARE LOCATIONS: e.g. laboratory or laundry.

SURVEILLANCE METHODOLOGY

- The Patient Safety surveillance modules require active, patient-based, prospective priority-directed surveillance (as defined below) of device/medication/procedure-associated infection events and their corresponding denominator data by a trained infection control professional (ICP).
- This means that the ICP shall seek out infections during a patient's stay by screening a variety of data sources.
- Retrospective chart reviews should be used only when patients are discharged before all information can be gathered.
- Other HCW (other than ICP) may be trained to screen data sources for these infections, but the ICP must make the final determination.
- To minimize the ICP's data collection burden, others may be trained to collect the denominator data (separate forms for device/medication -associated infections).

Important concepts:

Active and passive

1. Active surveillance
    a) Trained personnel, mainly ICPs, vigorously look for HAI
    b) Information accumulated by using a variety of data sources within and beyond the nursing ward
2. Passive surveillance
    a) Persons who do not have a primary surveillance role, such as ward nurses or respiratory therapists, identify and report HAI

Patient-based and laboratory-based

1. Patient-based
    a) Count HAI, assess risk factors, and monitor patient care procedures and practices for adherence to infection control principles
    b) Requires ward rounds and discussion with caregivers
2. Laboratory-based
    a) Detection is based solely on the findings of laboratory studies of clinical specimens

Prospective and retrospective

1. Prospective surveillance
    a) Monitor patients during their hospitalization
    b) For SSIs, also monitor during the post-discharge period
2. Retrospective surveillance

a) Identify infections via chart reviews after patient discharge

Priority-directed and comprehensive

1. Priority-directed (also called targeted, focused, or Surveillance by Objective)
    a) Objectives for surveillance are defined
    b) Focus is on specific events, processes, organisms, and/or patient populations
2. Comprehensive
    a) Continuous monitoring of all patients for all events and/or processes
    b) Highly personnel resource intensive if done manually

SURVEILLANCE DATA COLLECTION

The GCC forms (using the GCC/NHSN definitions of each data field) should be used to collect all required data. The forms and instructions on how to fill them, will be discussed later. The data collected could be numerator or denominator data.

1-NUMERATOR DATA

Numerator is the upper portion of a fraction used to calculate a rate or ratio. In surveillance, it is usually the number of cases of a disease or event being studied. Personnel other than ICPs may be trained to screen data sources for HAI, or automated screening of electronic databases may be used, as long as the ICP makes the final determination of presence of HAI according to the criteria for defining HAI.

Numerator data to collect

1. Demographic – name, date of birth, gender, hospital identification number, admission date
2. Infection – onset date, site of infection, patient care location of HAI onset
3. Risk factors – devices, procedures, other factors associated with HAI
4. Laboratory – pathogens, antibiogram, serology, pathology
5. Radiology/imaging – X-ray, CT scan, MRI, etc.

Sources of numerator data

1. Admission/discharge/transfer records, microbiology laboratory records
2. Visits to patient wards for observation and discussion with caregivers
3. Patient charts (paper or computerized) for case confirmation
    a) Laboratory and radiology/imaging results
    b) Nursing and physician's notes and consults
    c) Admission diagnosis
    d) History and physical examination findings
    e) Records of diagnostic and surgical interventions
    f) Temperature chart
    g) Information on administration of antibiotics
4. For post-discharge detected SSI, sources include records from surgery clinics, physician's offices, emergency departments

How an ICP collects numerator data

1. Screens admission/discharge/transfer records for patients admitted with infection and those whose diagnoses put them at risk of acquiring HAI
2. Reviews laboratory reports looking for patients with possible infections (e.g., positive microbiology cultures, positive pathology findings) and converses with

laboratory personnel trying to identify patients that might be infected and to identify clusters of infections, especially in areas not targeted for routine HAI surveillance

3. During ward rounds, quickly screens nursing care reports, temperature charts, antibiotic administration sheets, and Kardexes; converses with nurses and physicians trying to identify patients who might be infected
4. Performs chart review of patients suspected of having HAI: reviews physician's progress notes and nurse's notes, laboratory data, radiology/imaging reports, surgery reports, etc.; if electronic charts are available, these can be reviewed from the ICP's desk, but ward rounds are still essential for surveillance, prevention, and control activities
5. Completes HAI data collection forms/screens as data sources are reviewed

2-DENOMINATOR DATA

Denominator is the lower portion of a fraction used to calculate a rate or ratio. Denominator data may be collected by someone other than the ICP as long as that person is trained. When denominator data are available from electronic databases (e.g., patient tracking systems, respiratory therapy database), these sources may be used as long as the counts are not substantially different (+/- 5%) from those collected manually.

Denominator data to collect

Counts of the cohorts of patients at risk of acquiring HAI

1. Device-associated BSI, VAP, and UTI incidence density rates: record daily the total number of patients and total number of ventilator-days, central line-days, and urinary catheter-days in the patient care area(s) under surveillance; sum these daily counts at the end of the surveillance period for use as denominators
2. DE: record the number of chronic hemodialysis patients with each access type who received hemodialysis at the center during the first two working days of the month
3. AUR-microbiology: record the number of tested isolates
4. AUR-pharmacy: record the patient-days as in device-associated HAI
5. SSI or PPP: record information on operative procedures selected for surveillance (e.g., type of procedure, date, risk factors, etc.)

Sources of denominator data

1. Device-associated BSI, VAP, and UTI incidence density rates: visits to patient care areas to obtain daily counts of the number of patients admitted and the number of patients with each of the commonly used devices associated with HAI (i.e., one or more central line, ventilator, or indwelling urinary catheter)
2. DE: visits to patient hemodialysis outpatient clinics to obtain monthly counts of

chronic hemodialysis patients served

3. AUR-microbiology: processing laboratory reports
4. AUR-pharmacy: total of patients days as shown in device-associated HAI
5. For SSI or PPP rates: detailed logs from the operating room for each operative procedure

SURVEILLANCE DATA ANALYSIS

1-KEY CONCEPTS:

Surveillance should yield risk-adjusted incidence rates to allow inter- and intra-facility rate comparisons. Here are some important definitions and concepts:

Incidence and prevalence

1. Incidence rate: a measure of the frequency with which an event occurs in a population over a defined time period. The numerator is the number of new cases occurring during the defined time period, and the denominator is the population at risk.
2. Prevalence rate: the proportion of persons in a population who have a particular disease or condition (new and previously existing) at a specified point in time or over a specified period of time.

Note: Attack rate is a type of incidence rate used to measure the frequency of new cases of a disease or condition in a specific population during a given (short) period of time; expressed as a percentage.

Risk-adjusted rates and crude rates

1. Risk-adjusted rates
    a) Rates are controlled for variations in the distribution of major risk factors associated with an event's occurrence
    b) Such rates allow inter- and intra-facility rate comparisons
2. Crude rates
    a) Rates assume equal distribution of risk factors for all events
    b) Such rates cannot be used for inter-facility comparisons

There are two types of statistics, descriptive and inferential. Descriptive statistics provides numerical information about variables (e.g. mean). Inferential statistics makes an assumption about a population based on a sample of the population (Z test).

2-CALCULATING RATES

CLABSI: The CLABSI rate per 1000 central line-days is calculated by dividing the number of CLABSI by the number of central line-days and multiplying the result by 1000. The Central Line Utilization Ratio is calculated by dividing the number of central line-days by the number of patient-days. These calculations will be performed separately for different types of ICUs, specialty care areas, and other locations in the institution. Separate rates and ratios will also be calculated for different types of catheters and birthweight categories in NICUs.

VAP: The VAP rate per 1000 ventilator-days is calculated by dividing the number of VAPs by the number of ventilator-days and multiplying the result by 1000. The Ventilator Utilization Ratio is calculated by dividing the number of ventilator-days by the number of patient-days. These calculations will be performed separately for the different types of ICUs, specialty

care areas, and other locations in the institution, as well as by each birthweight category in NICUs.

VAE: The VAE rate per 1000 ventilator-days is calculated by dividing the number of VAEs by the number of ventilator-days and multiplying the result by 1000. The VAE rate per 100 episodes of mechanical ventilation is calculated by dividing the number of VAEs by the number of episodes of mechanical ventilation and multiplying the result by 100 (episodes of mechanical ventilation). The Ventilator Utilization Ratio is calculated by dividing the number of ventilator-days by the number of patient-days. These calculations will be performed separately for the different types of ICUs, specialty care areas, and other adult locations in the institution

CAUTI: The CAUTI rate per 1000 urinary catheter-days is calculated by dividing the number of CAUTIs by the number of catheter-days and multiplying the result by 1000. The Urinary Catheter Utilization Ratio is calculated by dividing the number of urinary catheter-days by the number of patient-days. These calculations will be performed separately for the different types of ICUs, specialty care areas, and other locations in the institution.

DE: The numbers of various events (In-unit IV antimicrobial start, positive blood culture, or local infection) are tabulated, and rates of these events per 100 patient-months calculated by dividing the number of events by the number of patient-months and multiplying the result by 100. These rates are stratified by vascular access type and compared to the mean rate of all centers combined.

AUR-microbiology: Antimicrobial resistance data are expressed as prevalence resistance rates per 100 isolates tested (i.e., the number of resistant isolates divided by the number of isolates tested x 100)

AUR-pharmacy: Antimicrobial use data are expressed as incidence density rates of DOTs or DDDs per 1000 patient-days/admissions stratified by hospital area (calculated by dividing the number of DOTs or DDDs by the number of patient-days/admissions and multiplying the result by 1000. DOT of an antimicrobial agent is calculated by summing up the number of days in which the antimicrobial agent was used (in any amount) in an inpatient care location during the specified period. DDD of an antimicrobial agent is calculated by dividing the total grams of the antimicrobial agent used in a hospital area by the number of grams in an average daily dose of the agent given to an adult patient (as defined by CDC/NHSN). Antimicrobials with similar spectrum or clinical indications are grouped prior to analysis.

SSI: The SSI rates per 100 operative procedures are calculated by dividing the number of SSIs by the number of specific operative procedures and multiplying the results by 100. These calculations will be performed separately for the different types of operative procedures and stratified by risk index. Standardized infection ratios are also calculated using indirect standardization or multivariate models.

MDRO-Infection Surveillance: MDRO infection incidence rate is calculated by dividing the number of infections of a certain MDRO type by the number of patient days and multiplying the results by 1000. Rate is then stratified by time (e.g., month, quarter, etc.) and patient care location.

MDRO-Laboratory-Identified (LabID) Event: Numerator data are the Laboratory-identified MDRO Events while denominator data are the number of patient days, admissions, and encounters (for ER and outpatient locations). These data are used to calculate four distinct proxy measures including: (1) admission prevalence rate and (2) overall prevalence rate based on clinical testing (measures of exposure burden), (3) MDRO bloodstream infection incidence rate (measure of infection burden), and (4) overall MDRO infection/ colonization incidence rate (measure of healthcare acquisition). LabID Events proxy measures are categorized as healthcare facility-onset (> 3 days after admission to the facility) versus community-onset (≤ 3 days after admission to the facility).

The standardized infection ratio (SIR):

- SIR is a summary measure used to track HAIs at a national, state, or local level over time.
- SIR provides improved risk adjustment and replace risk-stratified HAI rates.
- It is calculated by dividing the number of observed over the expected events of device associated or procedure associated HAIs
- The expected can be calculated from the published benchmarking reports of NHSN or GCC.
- To allow for more precise comparisons, SIRs are calculated only if the number of expected HAIs is ≥1
- When the expected HAI <1, this indicates that the denominator (e.g. number of device days or procedures) in the facility or location is too low to calculate a precise SIR and comparative statistics.

3-DESCRIPING RATES

Common descriptive statistical measurements used in surveillance programs in the healthcare setting are measures of frequency (e.g., rates, ratios, and proportions), measures of central tendency (e.g., mean and median), measures of dispersion (e.g., standard deviation), and percentiles. Here are some important definitions and concepts:

Measures of Frequency:

Rates, ratios, and proportions are used to measure the occurrence and risk of an event in a specific population during a given period.

1. Rate: an expression of the frequency with which an event occurs in a defined population, for example, CLA-BSI incidence rate is 5.3 per 1000 patient-days
2. Ratio: the value obtained by dividing one quantity by another, for example, the ratio of females to males is 2:1
3. Proportion: a type of ratio in which the values in the numerator are included in (i.e., are a subset of) the denominator, for example, 33% of the population is in risk category 1

Measures of Central Tendency

Measures of central tendency describe the values around the middle of a set of data. Two measures of central tendency used in healthcare surveillance are the arithmetic mean and the median.

1. The mean is the mathematical average of the values in a set of data. Although the mean is commonly used, it is important to remember that its value is affected by outliers (extremely low or high values).
2. The median is the middle value in a ranked set of data. Because half of the measurements in the data set lie below the median and half of the measurements lie above it, the value of the median is not affected by outliers.

Measures of Dispersion

Measures of dispersion measure the distribution of a set of data around its mean. Commonly used measures of dispersion in hospital epidemiology are the range and standard deviation.

1. The range is the difference between the smallest value and the largest value in a set of data.
2. The standard deviation is a measure that reflects the distribution of values around the mean.

Percentiles

Percentiles are used to indicate the relative position of a measurement with respect to other measurements in a set of data. The median is the 50th percentile in a distribution of numbers because half of the values in the distribution are lower and half are higher than the median value. In addition to the median, commonly used percentiles for reporting surveillance data are the 10th, 25th, 75th, and 90th percentiles.

4-COMPARING RATES

For the purpose of comparing rates, statistical tests can be used to determine whether significant differences exist (by giving approximate p-values). Here are some common terms you will encounter:

Z-test: is a statistical test used to determine if the rate difference between 2 independent groups is large enough to be statistically significant, that is, if it is unlikely to have occurred by chance.

p-value: is the probability of obtaining a value of the test statistic at least as extreme as the one that was actually observed, given that the null hypothesis is true.

Stratification and Standardization:

Comparing rates requires that they be appropriately stratified and/or adjusted by risk to account for differences in the distribution of the important risk factors.

Stratification is the grouping together of patients at similar risk for an event (e.g., acquiring a nosocomial SSI).

Standardization: refers to the procedure done to facilitate the comparison between two groups with different weights of a certain factor (that influence the rate of interest but which is not the focus of attention) by removing the effect of such factor through creating a weighted-average (summary) rate.

Indirect standardization: is the case were the age specific infection rates from the standard are multiplied with the age structure of the index. The end result is mostly an expected number of infections for the index population which can be compared with the observed number of infections using the SIR. Age specific infection rates for the index are not required to do indirect standardization.

Standardized Infection Ratio (SIR): is basically compares the infection rate observed in the index-population with the infection rate that could be expected, if the index-population had an age specific the infection rate pattern, which is comparable with the age specific the infection rate of the standard population.

Statistical error: Type I and Type II:

Type I error, α error, or a "false positive": the error of rejecting a null hypothesis when it is actually true. Plainly speaking, it occurs when we are observing a difference when in truth there is none.
Type II error, β error, or a "false negative": the error of failing to reject a null hypothesis when the alternative hypothesis is the true state of nature. In other words, this is the error of failing to observe a difference when in truth there is one.

Note: as a general rule of thumb, do not compare procedure risk category (e.g. SSI) rates when the number of the denominator (e.g. operations) of either rate is less than 20. Also, do not use the SIR to perform comparisons when the denominator of the SIR (e.g. the

expected number of SSIs) is less than 1. If comparison is necessary when denominators are small, other statistical tests must be used (e.g., Fisher's Exact test or a Poisson test).

5-BENCHMARKING

Benchmarking is the process of "comparing oneself to others performing similar activities, so as to continuously improve." the National Healthcare Safety Network (NHSN) in US acute care hospitals is the oldest and most widely used of benchmarking. Although it is very appealing to compare one's rates externally with others, comparisons should be made only after ensuring that the following conditions are met:

- Criteria for defining a case are standardized and up to date.
- Criteria are consistently used by all participants and all data collectors.
- The population and time period for study is well defined.
- The surveillance methodology is standardized and consistently used by all participants over time.
- Rates and ratios are calculated using the same numerators (number of cases) and denominators (population at risk).
- The size of the population studied (denominator) is large enough to provide an accurate estimate of the true rate.
- A standardized risk adjustment method is used by all participants.
- All data collectors receive training on how to collect data and use a standardized form.
- The facility and population being compared is similar to the types of facilities and populations in an aggregate database used for external comparison (for example, data from a neonatal ICU is compared with data aggregated from other neonatal ICUs).
- The GCC center for infection control has a mechanism for ensuring the accuracy, sensitivity, and specificity of the data submitted to it.
- The analysis and interpretation of the data provided by the benchmarking system is accurate and in a form that is understandable to the users.
- Feedback will be disseminated to those who can affect change.
- The data provided by GCC center for infection control to an external similar bodies (e.g. NHSN) are coded for confidentiality, and the reports provided to these bodies or to the public do not contain facility identifiers

SURVEILLANCE REPORTING

A written report should be developed to provide a mechanism to interpret and disseminate surveillance data to stimulate performance improvement activities. Tables, graphs, and charts are effective tools for organizing, summarizing, and visually displaying data and should be used as applicable. The format and level of detail in each report will depend on the intended audience

A surveillance report should:

1. Define the event, population, setting, and time period studied (e.g., surgical site infections in patients undergoing coronary artery bypass graft in hospital A from January through December 2003)
2. State the criteria used for defining a case (e.g., NNIS criteria for urinary tract infection)
3. Specify the number of cases or events identified and the number in the population studied (e.g., 2 surgical site infections in 179 total hip replacement procedures performed)
4. Explain the methodology used to identify cases (e.g., case reports from personnel and review of medical records and laboratory results)
5. Identify the statistical methods and calculations used, when appropriate (e.g., fall rate in April = falls in April / # resident days in April x 1000 or 3/414 x 1000 =7.2 falls per 1000 resident-days)
6. State the purpose for conducting surveillance (e.g., to reduce the rate of occurrence of an event)
7. Interpret the findings in a manner that is understandable to those who read the report
8. Describe any actions taken and recommendations made for prevention and control measures
9. Identify the author and date of the report
10. Identify the recipients of the report

Mechanism of reporting:

After you prepare the report according to the above criteria (including easy to understand conclusions and recommendations), the following persons/bodies need to receive a copy of your final report:

1. Immediate supervisor, higher rank administration, or any other healthcare facility employee who are required (by your facility local policies) to be informed and/or are authorized to implement the suggested recommendation. Some reports may need to be reported to the ministry of health or even higher national or international bodies

(according to your country health policies e.g. certain outbreaks).

2. Healthcare workers who have immediate concern with the report contents (e.g. surgical team who performed the procedures for which you are reporting SSI rates)
3. ICPs who are directly involved in data collection as a way to keep them informed as well as promote quality improvements

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[3] The National Healthcare Safety Network (NHSN) Data Collection Forms
https://www.cdc.gov/nhsn/acute-care-hospital/index.html
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[6] Surveillance. APIC Text of Infection Control and Epidemiology. The Association for Professionals in Infection Control and Epidemiology, Inc. Third Edition

[7] Use of Statistics. APIC Text of Infection Control and Epidemiology. The Association for Professionals in Infection Control and Epidemiology, Inc. Third Edition

Instructions to Download Surveillance Forms

1. Open document in Acrobat 6.0 version
2. Go to TOOLS
3. Click ADVANCED EDITING
4. Use TOUCH OBJECT TOOL to highlight the form of interest and copy
5. Paste the copied form to a words document file
6. Insert your institutional logo

APPENDIX 1: CLABSI Form & Instructions

Add your institution

LOGO

here

GCC Centre for Infection Control
ADD YOU HOSPITAL NAME

Primary Central Line-Associated Blood Stream Infection (CLABSI)

Infection Control Surveillance Form

SECTION I: PATIENT AND HOSPITAL INFORMATION:

Patient ID: ☐☐☐☐☐☐☐☐☐ (S # # # # # # # #)

Date of birth: ☐☐☐☐☐☐☐☐ (D D M M Y Y Y Y)

Gender: ☐ Male ☐ Female

Surveillance plan date: ☐☐☐☐ (M M Y Y)

Facility ID: ☐☐☐ (S # #)

Location:
- ☐ Intensive care unit (ICU): ----------
- ☐ Neonatal intensive care unit (NICU): -------
- ☐ specialty care area (SCA):----------
- ☐ Other inpatient:----------

SECTION II: ADMISSION INFORMATION:

Hospital stay:

Admission date: ☐☐☐☐☐☐ (D D M M Y Y)

Discharge Date: ☐☐☐☐☐☐ (D D M M Y Y)

ICU/NICU stay:

Admission date: ☐☐☐☐☐☐ (D D M M Y Y)

Discharge Date: ☐☐☐☐☐☐ (D D M M Y Y)

Diagnosis:

If location is NICU:

Birth wt: ☐☐☐☐ grams

Gestational age: ☐☐ Weeks

SECTION III: CENTRAL LINE INFORMATION:

Number of central line (CL) inserted: ☐

Fill the info below for each CL (enter numbers only)

Location of CL insertion: ----------

Type-1:
1-Non-tunneled
2-Tunneled
3-Port-A-cath
4-Peripheral percutaneous (PICC)

Type-2:
1-Temporary
2-Permenant

Site:
1-Jugular
2-Subclavian
3-Femoral
4-Umbilical
5-Others

Lumen:
1-Single
2-Multiple

	Insertion date (D D M M Y Y)	Removal date (D D M M Y Y)	Type-1	Type-2	Site	Lumen
CL1						
CL2						
CL3						

SECTION IV: BSI EVENT INFORMATION:

BSI diagnosis:
- ☐ Yes, complete below
- ☐ No

BSI diagnosis: (See the back)
- ☐ Laboratory confirmed (LCBI)
  - ☐ Criterion-1 LCBI
  - ☐ Criterion-2 LCBI
  - ☐ Criterion-3 LCBI

BSI date: ☐☐☐☐☐☐ (D D M M Y Y)

Underlying conditions for MBI-LCBI
- ☐ Not applicable
- ☐ Allo-SCT with Grade ≥ 3 GI GVHD
- ☐ Allo-SCT with diarrhea
- ☐ Neutropenia

Mucosal Barrier Injury (MBI-LCBI)
- ☐ Criterion-1 MBI-LCBI
- ☐ Criterion-2 MBI-LCBI
- ☐ Criterion-3 MBI-LCBI

BSI is not related to an infection at another site and the possibility of 2ry BSI was excluded:
- ☐ Yes
- ☐ No

CL was in place on the date of event or the day before for >2 calendar days
- ☐ Yes
- ☐ No

In NICU, BSI was associated with:
- ☐ Non-umbilical central line
- ☐ Umbilical catheter

Hospitalization death:
- ☐ Yes, complete next 2 questions
- ☐ No

Death date: ☐☐☐☐☐☐ (D D M M Y Y)

BSI contributed to death
- ☐ Yes
- ☐ No

SECTION V: LABORATORY RECORD

Time of specimen collection

---------:--------- AM / PM

Organism identified
- ☐ Yes, complete the back
- ☐ No

COMMENTS:

	D D M M Y Y
Date data collected	
Collector ID	
Date data entered	
Data entry ID	

Data entry stamp

SECTION V: LABORATORY RECORD

Name of Gram Positive or Negative	Date of record DD-MM-YY	MDRO	TYPE	Antimicrobial sensitivity																																
				AMIK	AMPSUL	AMXCLV	CEFAZ	CEFEP	CEFOTX	CEFOX	CEFTAZ	CEFTRX	CEFUR	CIPRO	CLIND	COL	DORI	ERTA	ERYTH	GENT	IMI	LEVO	LNZ	MERO	METH	MINO	MOXI	OXA	PIP	PIPTAZ	TMZ	TIG	TOBRA	VANC
		☐ Yes ☐ NO																																		
		☐ Yes ☐ NO																																		
		☐ Yes ☐ NO																																		

MDRO: (1) MRSA (2) VRE (3) CephR-Klebsiella (4) Carbapenem resistant Enterobacteriaceae (CRE) (5) MDR Acinetobacter (6) MDR Klebsiella (7) MDR Pseudomonas
CephR-Klebsiella: non-susceptible (resistant or intermediate) to at least one cephalosporin agent (ceftazidime, cefotaxime, ceftriaxone, or cefepime)
Carbapenem resistant Enterobacteriaceae (CRE): E-coli, Klebsiella, or Enterobacter resistant to at least one carbapenem agent (imipenem, meropenem, doripenem, or ertapenem) OR by production of a carbapenemase
MDR Acinetobacter: non-susceptible (resistant or intermediate) to at least one agent in at least 3 out of 6 antimicrobial classes (penicillins, aminoglycosides, cephalosporins, fluoroquinolones, carbapenems, and sulbactam)
MDR Klebsiella or Pseudomonas: non-susceptible (resistant or intermediate) to at least one agent in at least 3 out of 5 antimicrobial classes (penicillins, aminoglycosides, cephalosporins, fluoroquinolones, and carbapenems)

AMK= amikacin
AMPSUL= ampicillin/sulbactam
AMXCLV= amoxicillin/clavulanic
CEFAZ= cefazolin
CEFEP = cefepime
CEFOTX = cefotaxime
CEFOX= cefoxitin
CEFTAZ= ceftazidime
CEFTRX= ceftriaxone
CEFUR= cefuroxime
CIPRO= ciprofloxacin
CLIND= clindamycin
COL= colistin
DORI= doripenem
ERTA= ertapenem
ERYTH= erythromycin
GENT = gentamicin
IMI= imipenem
LEVO= levofloxacin
LNZ= linezolid
MERO= meropenem
METH= methicillin
MINO= minocycline
MOXI= moxifloxacin
OXA= oxacillin
PIP= piperacillin
PIPTAZ= piperacillin/tazobactam
TMZ= sulfamethoxazole /trimethoprim
TIG= tigecycline
TOBRA= tobramycin
VANC= vancomycin

S = Susceptible
I = Intermediate
R = Resistant
N = Not tested

Name of other organisms	Date of record DD-MM-YY	Antimicrobial sensitivity							
		Amphotericin B	Anidulafungin	Caspofungin	Fluconazole	Flucytosine	Other drug-1 ----------	Other drug-2 ----------	Other drug-3 ----------

Primary bloodstream infections (BSI) are laboratory-confirmed bloodstream infections (LCBI) that are not secondary to an infection meeting CDC/NHSN criteria at another body site. LCBI criteria may be used for patients of all ages and must meet one of the following three criteria:

LCBI Criterion 1:

☐ Patient of any age has a recognized pathogen identified from one or more blood specimens by a culture or non-culture based microbiologic testing method

LCBI Criterion 2:

☐ Patient of any age has at least one of the following signs or symptoms: fever (>38°C), chills, or hypotension, ***and***

☐ Common commensal (e.g., diphtheroids, *Bacillus* sp., *Propionibacterium* sp., coagulase-negative staphylococci, viridans group streptococci, *Aerococcus* spp., *Micrococcus* spp.) is identified from two or more blood specimens drawn on separate occasions by a culture or non-culture based microbiologic testing method

LCBI Criterion 3:

☐ Patient ≤1 year of age has at least *one* of the following signs or symptoms: fever (>38^0 C, rectal), hypothermia (<36^0 C, rectal), apnea, or bradycardia ***and***

☐ Common commensal (e.g., diphtheroids, *Bacillus* sp., *Propionibacterium* sp., coagulase-negative staphylococci, viridans group streptococci, *Aerococcus* spp., *Micrococcus* spp.) is identified from two or more blood specimens drawn on separate occasions by a culture or non-culture based microbiologic testing method

Notes:

Recognized pathogen: does not include organisms considered common commensal. Example; S. aureus, Enterococcus spp., E. coli, Pseudomonas spp., Klebsiella spp., Candida spp., etc.

Two or more blood cultures drawn on separate occasions: means that (1) blood from at least two blood draws (e.g., different venipunctures or a combination of venipuncture and lumen withdrawal) were collected on the same or consecutive calendar days and (2) that at least one bottle from each blood draw has the same common commensal organism

Mucosal Barrier Injury (MBI-LCBI) is a LCBI caused by intestinal organisms in a patient with
□ Allogeneic SCT with Grade ≥ 3 GI GVHD (ileus with abdominal pain or diarrhea)
□ Allogeneic SCT with diarrhea (≥1 L diarrhea/day in adults or ≥20 cc/kg/day in children) with onset on or within 7 calendar days before the date the positive blood specimen was collected
□ Neutropenia (WBC or ANC < 500 cells mm3)

MBI-LCBI Criterion 1: LCBI Criterion 1 is met but the organism is only one of the followings; Bacteroides spp., Candida spp., Clostridium spp., Enterococcus spp., Fusobacterium spp., Peptostreptococcus spp., Prevotella spp., Veillonella spp., or Enterobacteriaceae
MBI-LCBI Criterion 2: LCBI Criterion 2 is met but the organism is only viridans group streptococci
MBI-LCBI Criterion 3: LCBI Criterion 3 is met but the organism is only viridans group streptococci

CLABSI Form Instructions

DISCLAIMER:

Assurance of Confidentiality: The information obtained in this surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with applicable regulations

IMPORTANT: This form is required to be filled out for all patients with one or more central lines (including umbilical) in the ICU, NICU, SCA, or other inpatient locations in case CLABSI component of the device-associated module is recorded at your facility in this particular month.

SECTION I: PATIENT AND HOSPITAL INFORMATION:

Patient ID: It is 9-digit number that will be assigned to every patient by the GCC surveillance plan participating hospitals as described below:

A. The first digit refer to the state number as follow (alphabetical order):
   1-Bahrain 2-Kuwait 3-Oman 4-Qatar 5-Saudi Arabia 6-UAE 7-Yemen
B. The next 8 digits refer to the patient's medical record number (MRN) or file number
   Example: If a Saudi patient was admitted to the MNGHA and has a medical record number of 1052647, he will be assigned this ID: **501052647**

Date of birth: Add the patient birth date in the format DD-MM-YYYY

Gender: Check male or female.

Surveillance plan date: Record the month and year for the GCC surveillance plan being recorded (which is the month of BSI diagnosis in case BSI was diagnosed or the month of central line insertion in case No BSI was diagnosed)

Facility ID: It is 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC center for infection control, with the first digit refers to the state and the last 2 digits are state-specific numbers.

Location: BSI surveillance may be done in (1) intensive care units (ICU), (2) neonatal intensive care units (NICU), (3) specialty care areas (includes hematology/oncology wards, bone marrow transplant units, solid organ transplant units, inpatient dialysis units, and chronic care units), and (4) any other inpatient locations in the institution where patients are housed overnight (e.g., surgical wards).

Note: If the BSI develops in a patient within 2 calendar days of transfer or discharge from a location, attribute to the transferring or discharging location on the infection report, not the current location of the patient.

Note: Although locations are categorized into bigger groups (e.g. other inpatients), it is always required to add the specific ward/clinic/unit in your hospital that the data have been collected from (e.g. other inpatients: ward 15, general medicine).

SECTION II: ADMISSION INFORMATION:

Hospital admission date: Record the date patient was admitted to facility

Hospital discharge date: Record the date patient was discharged from facility

ICU/NICU admission date: Record the date patient was admitted to ICU/NICU

ICU/NICU discharge date: Record the date patient was discharged from ICU/NICU

Diagnosis: Record the admission diagnosis

Birth wt: Record the birth weight (not the current weight) in grams in NICU patients only

Gestational age: Record the gestational age in weeks in NICU patients only

SECTION III: CENTRAL LINE INFORMATION:

Number of central line inserted: enter the number of central line inserted, and then fill out the detailed information for each central line in the table below

Location of central line insertion: enter the hospital location where central line was inserted

CL1, CL2, and CL3: For each central line, record the insertion and removal dates, and the number corresponding to the correct choices of central line types, the insertion sites, and number of lumens. For example, if it is temporary non-tunneled multiple-lumen catheter inserted at the jugular vein, it would take the following values 1 (type-1), 1 (type-2), 1 (site), and 2 (lumen)

Note: In counting the denominator, if a patient has more than one temporary central line on a given day, this is counted only as one central line day. If a patient has both a temporary and a permanent central line on the same day, the day is counted as one temporary central line day.

Note: Permanent catheter is a central line that is tunneled, including certain dialysis catheters and implantable catheters. Temporary catheter is a central line that is not tunneled. Umbilical catheter is a central line inserted through the umbilical artery or vein in a neonate.

SECTION IV: BSI EVENT INFORMATION:

BSI diagnosed: If BSI was diagnosed, then you will be required to answer all the section questions as applicable. If no BSI was diagnosed, then check "No" and do not answer any other question in that section (with exception of hospitalization death, death date and BSI contributed to death).

BSI diagnosis: Record how the BSI was diagnosed. Check the example below to guide you about the criteria of BSI diagnosis. Please check the appropriate boxes on the back of the form that corresponds to the patient criteria.

Primary bloodstream infections (BSI) are laboratory-confirmed bloodstream infections (LCBI) that are not secondary to an infection meeting CDC/NHSN criteria at another body site. LCBI criteria may be used for patients of all ages and must meet one of the following three criteria:

LCBI Criterion 1:

☐ Patient of any age has a recognized pathogen identified from one or more blood specimens by a culture or non-culture based microbiologic testing method

LCBI Criterion 2:

☐ Patient of any age has at least one of the following signs or symptoms: fever (>38°C), chills, or hypotension, ***and***

☐ Common commensal (e.g., diphtheroids, *Bacillus* sp., *Propionibacterium* sp., coagulase-negative staphylococci, viridans group streptococci, *Aerococcus* spp., *Micrococcus* spp.) is identified from two or more blood specimens drawn on separate occasions by a culture or non-culture based microbiologic testing method

LCBI Criterion 3:

☐ Patient ≤1 year of age has at least *one* of the following signs or symptoms: fever (>38^0 C, rectal), hypothermia (<36^0 C, rectal), apnea, or bradycardia ***and***

☐ Common commensal (e.g., diphtheroids, *Bacillus* sp., *Propionibacterium* sp., coagulase-negative staphylococci, viridans group streptococci, *Aerococcus* spp., *Micrococcus* spp.) is identified from two or more blood specimens drawn on separate occasions by a culture or non-culture based microbiologic testing method

Notes:

Recognized pathogen: does not include organisms considered common commensal. Example; S. aureus, Enterococcus spp., E. coli, Pseudomonas spp., Klebsiella spp., Candida spp., etc.

Two or more blood cultures drawn on separate occasions: means that (1) blood from at least two blood draws (e.g., different venipunctures or a combination of venipuncture and lumen withdrawal) were collected on the same or consecutive calendar days and (2) that at least one bottle from each blood draw has the same common commensal organism

Mucosal Barrier Injury (MBI-LCBI) is a LCBI caused by intestinal organisms in a patient with □ Allogeneic SCT with Grade ≥ 3 GI GVHD (ileus with abdominal pain or diarrhea) □ Allogeneic SCT with diarrhea (≥1 L diarrhea/day in adults or ≥20 cc/kg/day in children) with onset on or within 7 calendar days before the date the positive blood specimen was collected □ Neutropenia (WBC or ANC < 500 cells mm3)	**MBI-LCBI Criterion 1:** LCBI Criterion 1 is met but the organism is only one of the followings; Bacteroides spp., Candida spp., Clostridium spp., Enterococcus spp., Fusobacterium spp., Peptostreptococcus spp., Prevotella spp., Veillonella spp., or Enterobacteriaceae **MBI-LCBI Criterion 2:** LCBI Criterion 2 is met but the organism is only viridans group streptococci **MBI-LCBI Criterion 3:** LCBI Criterion 3 is met but the organism is only viridans group streptococci

BSI date: Record the date BSI was diagnosed

Underlying conditions for MBI-LCBI: Indicate underlying conditions for MBI-LCBI; Not applicable means non-oncology/BMT patient. Allo-SCT with Grade ≥ 3 GI GVHD or with diarrhea means allogeneic hematopoietic stem cell transplant recipient within the past year with Grade III or IV gastrointestinal graft versus host disease [GI GVHD] OR ≥1 liter diarrhea in a 24-hour period (or ≥20 mL/kg in a 24-hour period for patients <18 years of age)

Mucosal Barrier Injury (MBI-LCBI): Indicate the mucosal barrier injury criterion used in diagnosis

BSI is not related to an infection at another site and the possibility of 2ry BSI was excluded: Check "Yes" if the infection is new and not related to a different site and 2ry has been excluded

CL was in place on the date of event or the day before for >2 calendar days: The answer has to be yes to be considered CLABSI

In NICU, BSI was associated with: In case of BSI diagnosed at NICU especially with multiple catheters, indicate which type of central line was associated with BSI; umbilical or non-umbilical

Hospitalization death: Check "Yes" if patient died during the hospitalization. In this case, you will need to answer the next 2 questions (the date of death and if BSI contributed to death or not)

Death date: Record the date of hospitalization death

BSI contributed to death: Check "Yes" if the BSI either directly caused death or exacerbated an existing disease condition which then led to death during hospitalization

SECTION V: LABORATORY RECORD

Organism identified: Record "Yes" if a pathogen was identified, "No" if otherwise; if "Yes, specify the details on reverse table (Section V).

Time of specimen collection: Enter the hour and minute of the sample collection

For specified Gram-positive and Gram-negative Organisms: Up to three pathogens may be reported. If multiple pathogens are identified, record the pathogen judged to be the most important cause of infection as #1, the next most as #2, and the least as #3 (usually this order will be indicated on the laboratory report).

Antimicrobial agent and sensitivity results: For each antimicrobial agent listed, record the pathogen's susceptibility result: S - Susceptible, I - Intermediate, R - Resistant, N - Not Tested.

For Other Organisms and their antimicrobial agents and sensitivity: Same as above but additionally give you the option to add more antifungal agents

MDRO: Is the recorded organism meet any of MDRO definitions? If yes, fill the number corresponding to the below MDRO types

MDRO types: (1) MRSA (2) VRE (3) CephR-Klebsiella (4) Carbapenem resistant Enterobacteriaceae (CRE) (5) MDR Acinetobacter (6) MDR Klebsiella (7) MDR Pseudomonas

CephR-Klebsiella: non-susceptible (resistant or intermediate) to at least one cephalosporin agent (ceftazidime, cefotaxime, ceftriaxone, or cefepime)

Carbapenem resistant Enterobacteriaceae (CRE): E-coli, Klebsiella, or Enterobacter resistant to at least one carbapenem agent (imipenem, meropenem, doripenem, or ertapenem) OR by production of a carbapenemase

MDR Acinetobacter: non-susceptible (resistant or intermediate) to at least one agent in at least 3 out of 6 antimicrobial classes (penicillins, aminoglycosides, cephalosporins, fluoroquinolones, carbapenems, and sulbactam)

MDR Klebsiella or Pseudomonas: non-susceptible (resistant or intermediate) to at least one agent in at least 3 out of 5 antimicrobial classes (penicillins, aminoglycosides, cephalosporins, fluoroquinolones, and carbapenems)

Classes: Penicillins (Piperacillin, Piperacillin/Tazobactam), Aminoglycosides (Amikacin, Gentamicin, Tobramycin), Cephalosporins (Cefepime, Ceftazidime), Fluoroquinolones (Ciprofloxacin, Levofloxacin), Carbapenems (Imipenem, Meropenem, Doripenem), And Sulbactam (Ampicillin/Sulbactam)

COMMENTS: Add any necessary comments.
DATA COLLECTION: Please add the date the form was completed and the ID of the person who collected/abstracted the data
DATA ENTRY STAMP: After the form is entered on the database, please stamp the form as entered. Please add the date of data entry and the ID of the person who entered the data. See suggested stamp here
Note: For easy identification from other forms, please copy this form on **blue** sheets

APPENDIX 2: VAP Form & Instructions

Add your institution

LOGO

here

GCC Centre for Infection Control
ADD YOU HOSPITAL NAME

Ventilator-Associated Pneumonia (VAP)

Infection Control Surveillance Form

SECTION I: PATIENT AND HOSPITAL INFORMATION:

Patient ID: | | | | | | | | | | (S # # # # # # # #)

Date of birth: | | | | | | | | | (D D M M Y Y Y Y)

Gender: ☐ Male ☐ Female

Surveillance plan date: | | | | | (M M Y Y)

Facility ID: | | | | (S # #)

Location:
☐ Intensive care unit (ICU): ----------
☐ Neonatal intensive care unit (NICU): -------
☐ specialty care area (SCA):----------
☐ Other inpatient:----------

SECTION II: ADMISSION INFORMATION:

Diagnosis:

Hospital stay:
Admission date | | | | | | | (D D M M Y Y)
Discharge date | | | | | | | (D D M M Y Y)

ICU/NICU stay:
Admission date | | | | | | | (D D M M Y Y)
Discharge date | | | | | | | (D D M M Y Y)

If location is NICU:
Birth wt | | | | | grams
Gestational age | | | Weeks

SECTION III: VENTILATOR INFORMATION:

Number of times ventilator was used: | | Fill the info below for each time (enter numbers only)

Location of ventilator insertion:----------

	Insertion date (D D M M Y Y)	Removal date (D D M M Y Y)	APACHE score	ISS score	Intubation: 1-Elective 2-Emergency 3-N/A	Tracheostomy: 1-Percutaneous (ICU/ER) 2-Surgical (OR) 3-Previous 4-N/A
1st						
2nd						

SECTION IV: VAP EVENT INFORMATION:

VAP diagnosed:
☐ Yes, complete below
☐ No

VAP diagnosis: (See the back)
☐ PNU1: Clinically defined pneumonia
☐ PNU2: Pneumonia with specific laboratory findings
  ☐ PNU2-common pathogens
  ☐ PNU2-uncommon pathogens
☐ PNU3: Pneumonia in immunocompromised patients

VAP date: | | | | | | (D D M M Y Y)

Patient had ventilator in place on the date of event or the day before for >2 calendar days:
☐ Yes
☐ No

VAP diagnosed after a procedure:
☐ Yes, complete next 2 questions
☐ No

Procedure name:

Procedure date: | | | | | | (D D M M Y Y)

Development of secondary BSI:
☐ Yes
☐ No

Hospitalization death
☐ Yes, complete next 2 questions
☐ No

Death date | | | | | | (D D M M Y Y)

VAP contributed to death
☐ Yes
☐ No

SECTION V: LABORATORY RECORD

Time of specimen collection
---------:--------- AM / PM

Organism identified
☐ Yes, complete the back
☐ No

COMMENTS:

	D D M M Y Y
Date data collected	
Collector ID	
Date data entered	
Data entry ID	

Data entry stamp

SECTION V: LABORATORY RECORD

Name of Gram Positive or Negative	Date of record DD-MM-YY	MDRO	TYPE	Antimicrobial sensitivity																																
				AMIK	AMPSUL	AMXCLV	CEFAZ	CEFEP	CEFOTX	CEFOX	CEFTAZ	CEFTRX	CEFUR	CIPRO	CLIND	COL	DORI	ERTA	ERYTH	GENT	IMI	LEVO	LNZ	MERO	METH	MINO	MOXI	OXA	PIP	PIPTAZ	TMZ	TIG	TOBRA	VANC
		☐ Yes ☐ NO																																		
		☐ Yes ☐ NO																																		
		☐ Yes ☐ NO																																		

MDRO: (1) MRSA (2) VRE (3) CephR-Klebsiella (4) Carbapenem resistant Enterobacteriaceae (CRE) (5) MDR Acinetobacter (6) MDR Klebsiella (7) MDR Pseudomonas
CephR-Klebsiella: non-susceptible (resistant or intermediate) to at least one cephalosporin agent (ceftazidime, cefotaxime, ceftriaxone, or cefepime)
Carbapenem resistant Enterobacteriaceae (CRE): E-coli, Klebsiella, or Enterobacter resistant to at least one carbapenem agent (imipenem, meropenem, doripenem, or ertapenem) OR by production of a carbapenemase
MDR Acinetobacter: non-susceptible (resistant or intermediate) to at least one agent in at least 3 out of 6 antimicrobial classes (penicillins, aminoglycosides, cephalosporins, fluoroquinolones, carbapenems, and sulbactam)
MDR Klebsiella or Pseudomonas: non-susceptible (resistant or intermediate) to at least one agent in at least 3 out of 5 antimicrobial classes (penicillins, aminoglycosides, cephalosporins, fluoroquinolones, and carbapenems)

AMK= amikacin
AMPSUL= ampicillin/sulbactam
AMXCLV= amoxicillin/clavulanic
CEFAZ= cefazolin
CEFEP = cefepime
CEFOTX = cefotaxime
CEFOX= cefoxitin
CEFTAZ= ceftazidime
CEFTRX= ceftriaxone
CEFUR= cefuroxime
CIPRO= ciprofloxacin
CLIND= clindamycin
COL= colistin
DORI= doripenem
ERTA= ertapenem
ERYTH= erythromycin
GENT = gentamicin
IMI= imipenem
LEVO= levofloxacin
LNZ= linezolid
MERO= meropenem
METH= methicillin
MINO= minocycline
MOXI= moxifloxacin
OXA= oxacillin
PIP= piperacillin
PIPTAZ= piperacillin/tazobactam
TMZ= sulfamethoxazole /trimethoprim
TIG= tigecycline
TOBRA= tobramycin
VANC= vancomycin

S = Susceptible
I = Intermediate
R = Resistant
N = Not tested

Name of other organisms	Date of record DD-MM-YY	Antimicrobial sensitivity							
		Amphotericin B	Anidulafungin	Caspofungin	Fluconazole	Flucytosine	Other drug-1 ----------	Other drug-2 ----------	Other drug-3 ----------

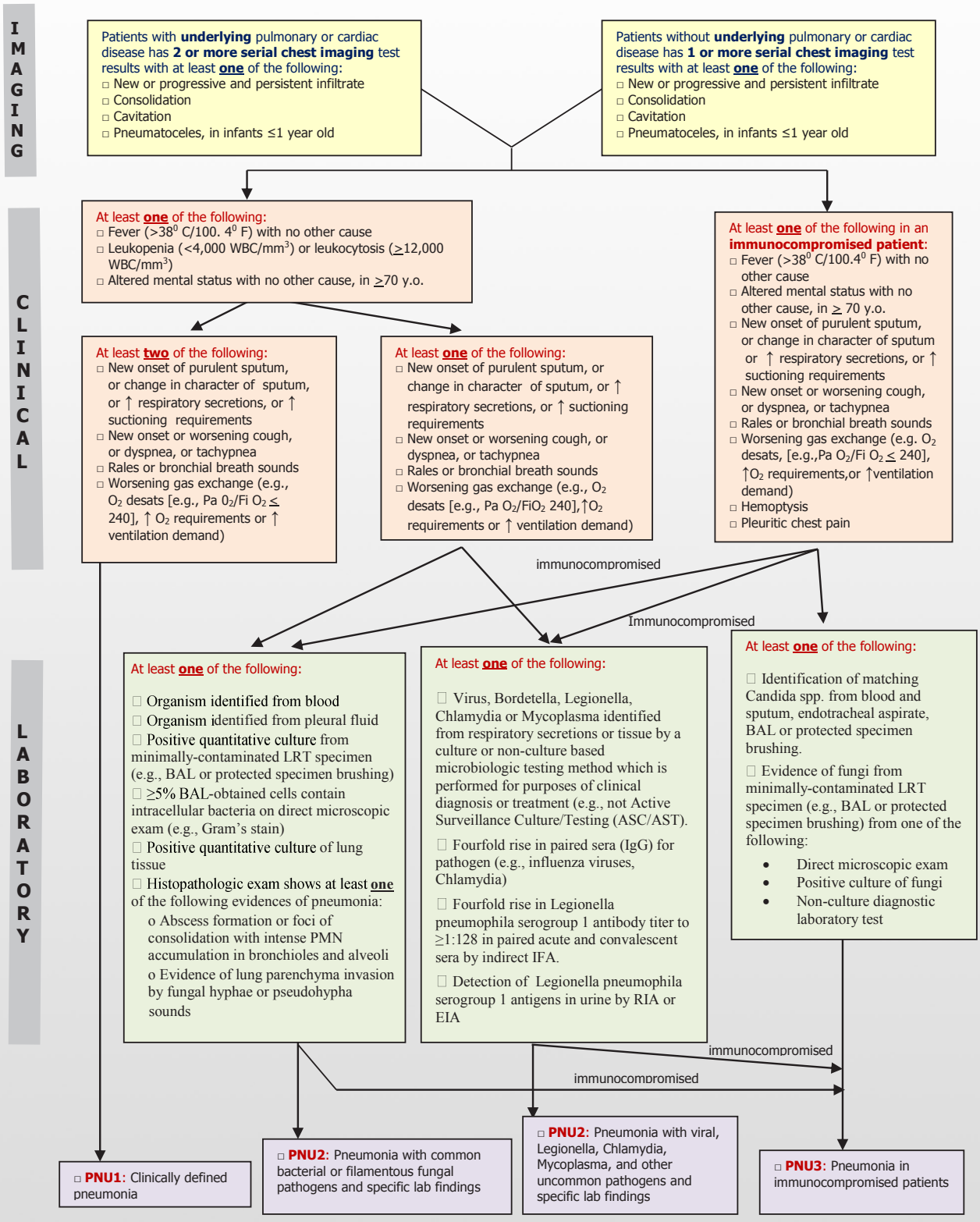
PNU1-Clinically Defined Pneumonia (for all ages) = 1 imaging +3 Signs & Symptoms (1 from the first 3 plus 2 from next 4 signs & symptoms as shown below)
PNU1-Clinically Defined Pneumonia (additionally for neonates) = 1 imaging +3 Signs & Symptoms (#7 plus 3 from the followings #2, #4, #10, #11, #12, #13, #14, or #15)
PNU1-Clinically Defined Pneumonia (additionally for children) = 1 imaging +3 Signs & Symptoms (#1, #3, #4, #5, #6, or #7)
PNU2-Pneumonia with specific lab findings (common pathogens) = 1 imaging +2 Signs & Symptoms (1 from the first 3 plus 1 from next 4) + laboratory results for bacterial or filamentous fungal pathogens (#1-6 laboratory findings as shown below)
PNU2-Pneumonia with specific lab findings (uncommon pathogens): 1 imaging +2 Signs & Symptoms (1 from the first 3 plus from next 4) + laboratory results for viral, Legionella, Chlamydia, Mycoplasma, and other uncommon pathogens (#7-11)
PNU3-Pneumonia in immunocompromised patients: 1 imaging +1 Sign or Symptom (#1, #3, #4, #5, #6, #7, #8, or #9) + laboratory results for fungi (#12 or #13)

Imaging Test Results
- ☐ New or progressive and persistent infiltrate
- ☐ Consolidation
- ☐ Cavitation
- ☐ Pneumatoceles (in ≤1 year old)

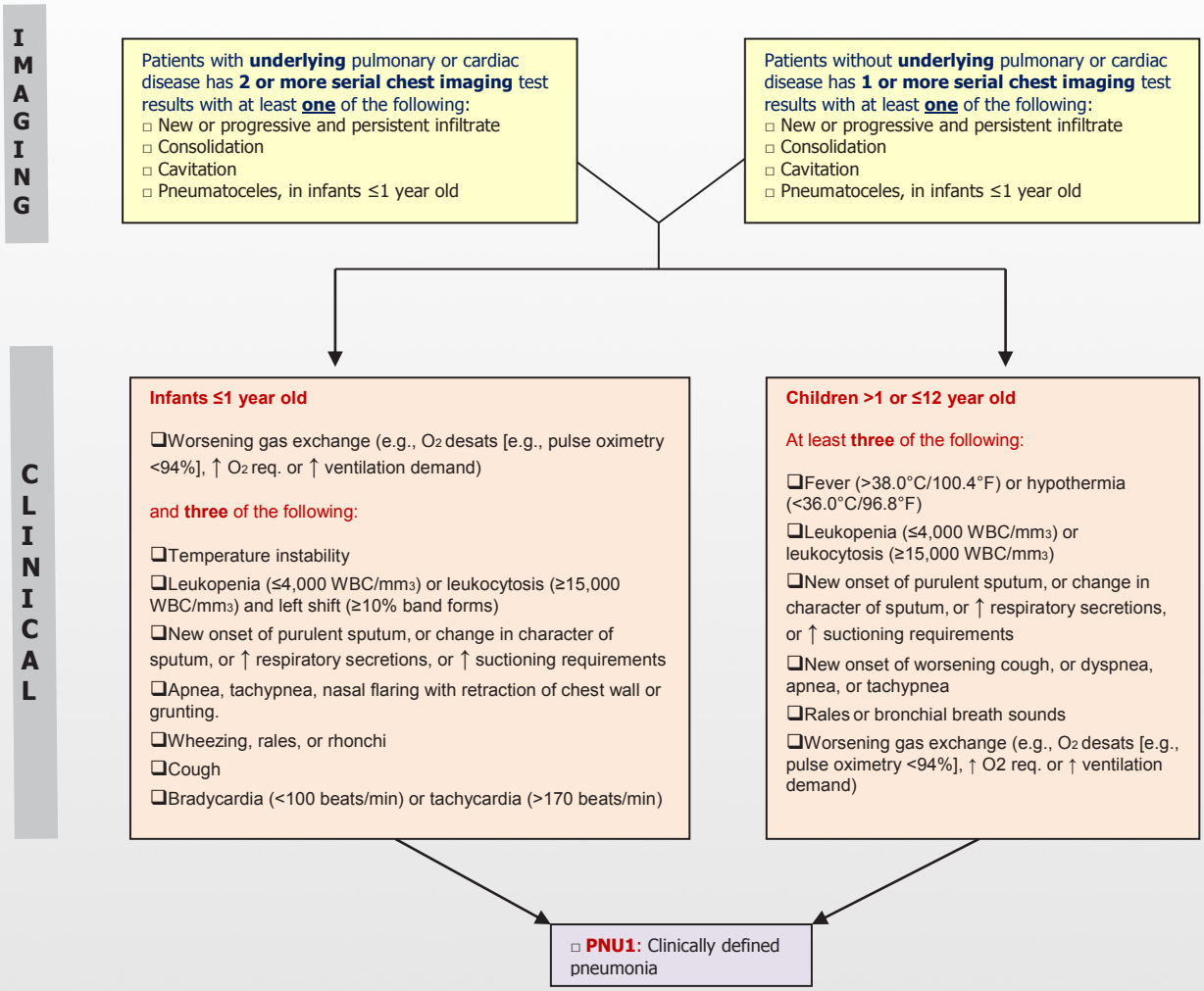
Signs & Symptoms
1. ☐ Fever
2. ☐ Leukopenia or leukocytosis
3. ☐ Altered mental status (in ≥70 years old)
4. ☐ New onset/change in sputum
5. ☐ New onset/worsening cough, dyspnea, tachypnea
6. ☐ Rales or bronchial breath sounds†
7. ☐ Worsening gas exchange
8. ☐ Hemoptysis
9. ☐ Pleuritic chest pain
10. ☐ Temperature instability
11. ☐ Apnea, tachypnea, nasal flaring with retraction of chest wall or grunting
12. ☐ Hypothermia
13. ☐ Wheezing, rales, or rhonchi†
14. ☐ Cough
15. ☐ Bradycardia or tachycardia

Laboratory
1. ☐ Organism identified from blood
2. ☐ Organism identified from pleural fluid
3. ☐ Positive quantitative culture from LRT specimen
4. ☐ ≥5% BAL cells w/ bacteria
5. ☐ Positive quantitative culture of lung tissue
6. ☐ Histopathologic exam w/ abscess formation or lung parenchyma invasion by fungal hyphae
7. ☐ Positive culture of virus, *Bordetella*, *Legionella* or *Chlamydia*
8. ☐ Positive non-culture diagnostic test of respiratory secretions or tissue for virus, *Bordetella*, *Chlamydia, Mycoplasma, Legionella*
9. ☐ 4-fold rise in paired sera for pathogen (e.g., influenza viruses, Chlamydia)
10. ☐ 4-fold rise in *Legionella pneumophila* antibody titer
11. ☐ *Legionella pneumophila* serogroup 1 antigens in urine
12. ☐ Matching positive blood & respiratory (sputum, endotracheal aspirate, LRT specimen) cultures w/ *Candida* spp.
13. ☐ Fungi from LRT specimen

Pneumonia Flow Diagram



Pneumonia Flow Diagram
Alternative Criteria for Infants and Children



VAP Form Instructions

DISCLAIMER:

Assurance of Confidentiality: The information obtained in this surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with applicable regulations

IMPORTANT: This form is required to be filled for all patients on a ventilator in the ICU, NICU, SCA, or other inpatient locations in case VAP component of the device-associated module is recorded at your facility in this particular month

SECTION I: PATIENT AND HOSPITAL INFORMATION:

Patient ID: It is 9-digit number that will be assigned to every patient by the GCC surveillance plan participating hospitals as described below:

E. The first digit refer to the state number as follow (alphabetical order):
   1-Bahrain 2-Kuwait 3-Oman 4-Qatar 5-Saudi Arabia 6-UAE 7-Yemen
F. The next 8 digits refer to the patient's medical record number (MRN) or file number
   Example: If a Saudi patient was admitted to the MNGHA and has a medical record number of 1052647, he will be assigned this ID: **501052647**

Date of birth: Add the patient birth date in the format DD-MM-YYYY
Gender: Check male or female.
Surveillance plan date: Record the month and year for the GCC surveillance plan being recorded (which is the month of VAP diagnosis in case VAP was diagnosed or the month of ventilator insertion in case No VAP was diagnosed)
Facility ID: It is 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC center for infection control, with the first digit refers to the state and the last 2 digits are state-specific numbers.
Location: VAP surveillance may be done in (1) intensive care units (ICU), (2) neonatal intensive care units (NICU), (3) specialty care areas (includes hematology/oncology wards, bone marrow transplant units, solid organ transplant units, inpatient dialysis units, chronic care units), and (4) any other inpatient locations in the institution where patients are housed overnight (e.g., surgical wards).
Note: If the VAP develops in a patient within 2 calendar days of transfer or discharge from a location, attribute to the transferring or discharging, not the current location of the patient.

Note: Although locations are categorized into bigger groups (e.g. other inpatients), it is always required to add the specific ward/clinic/unit in your hospital that the data have been collected from (e.g. other inpatients: ward 15, general medicine).

SECTION II: ADMISSION INFORMATION:

Hospital admission date: Record the date patient was admitted to facility
Hospital discharge date: Record the date patient was discharged from facility
ICU/NICU admission date: Record the date patient was admitted to ICU/NICU
ICU/NICU discharge date: Record the date patient was discharged from ICU/NICU
Diagnosis: Record the admission diagnosis
Birth wt: Record the birth weight in grams in NICU patients only
Gestational age: Record the gestational age in weeks in NICU patients only

SECTION III: VENTILATOR INFORMATION:

Number of times ventilator was used: enter the number of times ventilator was used, and then fill the detailed information for each time in the table below
Location of ventilator insertion: enter the hospital location where ventilator was inserted
1st and 2nd times: For each time ventilator was used, record the insertion and removal dates, APACHE and ISS scores, and the number corresponding to the correct intubation or tracheostomy types. N/A number for intubation need to be recorded if tracheostomy was used and N/A number for tracheostomy need to be recorded if intubation was used.

Note: Ventilator is a device to assist or control respiration continuously through a tracheostomy or by endotracheal intubation.
NOTE: Lung expansion devices such as intermittent positive pressure breathing (IPPB); nasal positive end-expiratory pressure (PEEP); continuous nasal positive airway pressure (CPAP, hypoCPAP) are not considered ventilators unless delivered via tracheostomy or endotracheal intubation (e.g., ET-CPAP). Note: APACHE (Acute Physiology And Chronic Health Evaluation) is a system for classifying patients in the intensive care unit. APACHE score ranges between 0 and 129 with 0 as the best survival and >30 has very bad survival. ISS (Injury severity Score) is an anatomical scoring system that provides an overall score for patients with multiple injuries. ISS score ranges from 0 to 75 with 75 indicating un-survivable injuries.

SECTION IV: VAP EVENT INFORMATION:

VAP diagnosed: If VAP was diagnosed, then you will be required to answer all the section questions as applicable. If no VAP was diagnosed, then check "No" and do not answer any other question in that section (with exception of death and death date).

Note: Pneumonia (PNEU) is identified by using a combination of radiologic, clinical and laboratory criteria. Ventilator-associated pneumonia (i.e., pneumonia in persons who had a device to assist or control respiration continuously through a tracheostomy or by endotracheal intubation within the 2 calendar days before the onset of infection, inclusive of the weaning period)

VAP diagnosis: Record how the VAP was diagnosed. Check the VAP flow diagram to guide you about the criteria of VAP diagnosis. Please check the appropriate (the small) boxes on the flow diagram that corresponds to the patient radiological, clinical, and laboratory features

Note: There is a hierarchy of specific categories within the major site pneumonia. Even if a patient meets criteria for more than one specific site, report only one:

- If a patient meets criteria for both PNU1 and PNU2, report PNU2
- If a patient meets criteria for both PNU2 and PNU3, report PNU3
- If a patient meets criteria for both PNU1 and PNU3, report PNU3

VAP date: Record the date VAP was diagnosed
Patient had ventilator in place on the date of event or the day before for >2 calendar days: The answer has to be yes to be considered VAP
VAP diagnosed after a procedure: Check "Yes" if VAP occurred after an NHSN defined procedure but before discharge from the facility (and you will need to record the name and the date of this procedure**)**, otherwise check "No".
Procedure name: Record the name of the above procedure
Procedure date: Record the date of the above procedure
Hospitalization death: Check "Yes" if patient died during the hospitalization. In this case, you will need to answer the next 2 questions (the date of death and if VAP contributed to death or not)
Death date: Record the date of hospitalization death
VAP contributed to death: Check "Yes" if the VAP either directly caused death or exacerbated an existing disease condition which then led to death during hospitalization

SECTION V: LABORATORY RECORD
Organism identified: Record "Yes" if a pathogen was identified, "No" if otherwise; if "Yes, specify the details on reverse table (Section V).
Time of specimen collection: Enter the hour and minute of the sample collection
For specified Gram-positive and Gram-negative Organisms: Up to three pathogens may be reported. If multiple pathogens are identified, record the pathogen judged to be the most important cause of infection as #1, the next most as #2, and the least as #3 (usually this order will be indicated on the laboratory report).
Antimicrobial agent and sensitivity results: For each antimicrobial agent listed, record the pathogen's susceptibility result: S - Susceptible, I - Intermediate, R - Resistant, N - Not Tested.
For Other Organisms and their antimicrobial agents and sensitivity: Same as above but additionally give you the option to add more antifungal agents

MDRO: Is the recorded organism meet any of MDRO definitions? If yes, fill the number corresponding to the below MDRO types
MDRO types: (1) MRSA (2) VRE (3) CephR-Klebsiella (4) Carbapenem resistant Enterobacteriaceae (CRE) (5) MDR Acinetobacter (6) MDR Klebsiella (7) MDR Pseudomonas

CephR-Klebsiella: non-susceptible (resistant or intermediate) to at least one cephalosporin agent (ceftazidime, cefotaxime, ceftriaxone, or cefepime)

Carbapenem resistant Enterobacteriaceae (CRE): E-coli, Klebsiella, or Enterobacter resistant to at least one carbapenem agent (imipenem, meropenem, doripenem, or ertapenem) OR by production of a carbapenemase

MDR Acinetobacter: non-susceptible (resistant or intermediate) to at least one agent in at least 3 out of 6 antimicrobial classes (penicillins, aminoglycosides, cephalosporins, fluoroquinolones, carbapenems, and sulbactam)

MDR Klebsiella or Pseudomonas: non-susceptible (resistant or intermediate) to at least one agent in at least 3 out of 5 antimicrobial classes (penicillins, aminoglycosides, cephalosporins, fluoroquinolones, and carbapenems)

Classes: Penicillins (Piperacillin, Piperacillin/Tazobactam), Aminoglycosides (Amikacin, Gentamicin, Tobramycin), Cephalosporins (Cefepime, Ceftazidime), Fluoroquinolones (Ciprofloxacin, Levofloxacin), Carbapenems (Imipenem, Meropenem, Doripenem), And Sulbactam (Ampicillin/Sulbactam)

COMMENTS: Add any necessary comments.
DATA COLLECTION: Please add the date the form was completed and the ID of the person who collected/abstracted the data
DATA ENTRY STAMP: After the form is entered on the database, please stamp the form as entered. Please add the date of data entry and the ID of the person who entered the data. See suggested stamp here
Note: For easy identification from other forms, please copy this form on **green** sheets

APPENDIX 3: VAE Form & Instructions

Add your institution

LOGO

here

GCC Centre for Infection Control
ADD YOU HOSPITAL NAME

Ventilator-Associated Event (VAE)

Infection Control Surveillance Form

SECTION I: PATIENT AND HOSPITAL INFORMATION:

Patient ID: | | | | | | | | | | (S # # # # # # # #)

Date of birth: | | | | | | | | (D D M M Y Y Y Y)

Gender:
☐ Male
☐ Female

Surveillance plan date: | | | | | (M M Y Y)

Facility ID: | | | | (S # #)

Location:
☐ Intensive care unit (ICU): ----------
☐ Specialty care area (SCA):----------
☐ Other inpatient:----------

SECTION II: ADMISSION INFORMATION:

Hospital stay:

Admission date | | | | | | | (D D M M Y Y)

Discharge date | | | | | | | (D D M M Y Y)

ICU stay:

Admission date | | | | | | | (D D M M Y Y)

Discharge date | | | | | | | (D D M M Y Y)

Diagnosis:

SECTION III: VENTILATOR INFORMATION:

Number of times ventilator was used: | | Fill the info below for each time (enter numbers only)

Patients on Airway Pressure Release Ventilation
☐ Yes ☐ No

Location of ventilator insertion:----------

Intubation:
1-Elective
2-Emergency
3-N/A

Tracheostomy:
1-Percutaneous (ICU/ER)
2-Surgical (OR)
3-Previous
4-N/A

	Insertion date (D D M M Y Y)	Removal date (D D M M Y Y)	APACHE score	ISS score	Intubation	Tracheostomy
1st						
2nd						

SECTION IV: VAE EVENT INFORMATION:

VAE diagnosed:
☐ Yes, complete below
☐ No

VAE diagnosis: (See the back)
☐ Ventilator-Associated Condition (VAC)
☐ Infection-related VAC (IVAC)
☐ Possible Ventilator-Associated Pneumonia (PVAP)
- ☐ Criterion 1
- ☐ Criterion 2
- ☐ Criterion 3

VAE date: | | | | | | (D D M M Y Y)

Patient had ventilator in place for >2 calendar days:
☐ Yes
☐ No

VAE diagnosed after a procedure:
☐ Yes, complete next 2 questions
☐ No

Procedure name:

Procedure date: | | | | | | (D D M M Y Y)

Development of secondary BSI after PVAP:
☐ Yes
☐ No

Hospitalization death
☐ Yes, complete next 2 questions
☐ No

Death date | | | | | | (D D M M Y Y)

VAE contributed to death
☐ Yes
☐ No

SECTION V: LABORATORY RECORD

Time of specimen collection
---------:--------- AM / PM

Organism identified
☐ Yes, complete the back
☐ No

COMMENTS:

	D D M M Y Y
Date data collected	
Collector ID	
Date data entered	
Data entry ID	

Data entry stamp

SECTION V: LABORATORY RECORD

Name of Gram Positive or Negative	Date of record DD-MM-YY	MDRO	TYPE	Antimicrobial sensitivity																														
				AMIK	AMPSUL	AMXCLV	CEFAZ	CEFEP	CEFOTX	CEFOX	CEFTAZ	CEFTRX	CEFUR	CIPRO	CLIND	COL	DORI	ERTA	ERYTH	GENT	IMI	LEVO	LNZ	MERO	METH	MINO	MOXI	OXA	PIP	PIPTAZ	TMZ	TIG	TOBRA	VANC
		☐ Yes ☐ NO																																
		☐ Yes ☐ NO																																
		☐ Yes ☐ NO																																

MDRO: (1) MRSA (2) VRE (3) CephR-Klebsiella (4) Carbapenem resistant Enterobacteriaceae (CRE) (5) MDR Acinetobacter (6) MDR Klebsiella (7) MDR Pseudomonas
CephR-Klebsiella: non-susceptible (resistant or intermediate) to at least one cephalosporin agent (ceftazidime, cefotaxime, ceftriaxone, or cefepime)
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MDR Klebsiella or Pseudomonas: non-susceptible (resistant or intermediate) to at least one agent in at least 3 out of 5 antimicrobial classes (penicillins, aminoglycosides, cephalosporins, fluoroquinolones, and carbapenems)

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CEFTAZ= ceftazidime
CEFTRX= ceftriaxone
CEFUR= cefuroxime
CIPRO= ciprofloxacin
CLIND= clindamycin
COL= colistin
DORI= doripenem
ERTA= ertapenem
ERYTH= erythromycin
GENT = gentamicin
IMI= imipenem
LEVO= levofloxacin
LNZ= linezolid
MERO= meropenem
METH= methicillin
MINO= minocycline
MOXI= moxifloxacin
OXA= oxacillin
PIP= piperacillin
PIPTAZ= piperacillin/tazobactam
TMZ= sulfamethoxazole /trimethoprim
TIG= tigecycline
TOBRA= tobramycin
VANC= vancomycin

S = Susceptible
I = Intermediate
R = Resistant
N = Not tested

Name of other organisms	Date of record DD-MM-YY	Antimicrobial sensitivity							
		Amphotericin B	Anidulafungin	Caspofungin	Fluconazole	Flucytosine	Other drug-1 ----------	Other drug-2 ----------	Other drug-3 ----------

Ventilator-Associated Condition (VAC):
The patient meets **one** of the following indicators of worsening oxygenation after > 2 calendar days of mechanical ventilation

- ☐ Increase in daily minimum FiO_2 values of ≥ 0.20 (20 points), sustained for ≥ 2 calendar days after ≥ 2 calendar days of stable or decreasing daily minimum FiO_2 values **OR**
- ☐ Increase in daily minimum PEEP values of ≥ 3 cm H_2O, sustained for ≥ 2 calendar days after ≥ 2 calendar days of stable or decreasing daily minimum PEEP values

* Daily minimum defined by lowest value of FiO_2 or PEEP during a calendar day that is maintained for at least 1 hour
* Daily minimum PEEP values of 0-5 cmH_2O are considered equivalent for the purposes of VAE surveillance

Infection-related Ventilator-Associated Complication (IVAC):
After meeting the criteria of VAC, the patient meets the following **2 criteria** after >2 calendar days of mechanical ventilation AND within 2 calendar days before or after the onset of worsening oxygenation (i.e. within VAE Window Period which is 3-5 days)

- ☐ Temperature > 38 °C or < 36°C, **OR**
- ☐ white blood cell count ≥ 12,000 cells/mm3 or ≤ 4,000 cells/mm3

AND

- ☐ A new antimicrobial agent(s) is started, and is continued for ≥ 4 calendar days

Possible Ventilator-Associated Pneumonia (PVAP): After meeting the criteria of VAC or IVAC, the patient meets **one** of the following criteria after >2 calendar days of mechanical ventilation AND within 2 calendar days before or after the onset of worsening oxygenation (i.e. within VAE Window Period which is 3-5 days)

1) Criterion 1: Positive culture of one of the following specimens:

- ☐ Endotracheal aspirate, ≥ 10^5 CFU/ml or corresponding semi-quantitative result
- ☐ Bronchoalveolar lavage, ≥ 10^4 CFU/ml or corresponding semi-quantitative result
- ☐ Lung tissue, ≥ 10^4 CFU/g or corresponding semi-quantitative result
- ☐ Protected specimen brush, ≥ 10^3 CFU/ml or corresponding semi-quantitative result

2) Criterion 2: Purulent respiratory secretions (defined as secretions from the lungs, bronchi, or trachea that contain >25 neutrophils and <10 squamous epithelial cells per low power field plus organism identified from one of the following specimens (to include qualitative culture, or quantitative/semi-quantitative culture without sufficient growth to meet criterion #1):

- ☐ Sputum
- ☐ Endotracheal aspirate
- ☐ Bronchoalveolar lavage
- ☐ Lung tissue
- ☐ Protected specimen brush

3) Criterion 3: One of the following positive tests:

- ☐ Organism identified from pleural fluid (where specimen was obtained during thoracentesis or initial placement of chest tube and NOT from an indwelling chest tube)
- ☐ Lung histopathology, defined as: 1) abscess formation or foci of consolidation with intense neutrophil accumulation in bronchioles and alveoli; 2) evidence of lung parenchyma invasion by fungi (hyphae, pseudohyphae or yeast forms); 3) evidence of infection with the viral pathogens listed below based on results of immunohistochemical assays, cytology, or microscopy performed on lung tissue
- ☐ Diagnostic test for Legionella species
- ☐ Diagnostic test on respiratory secretions for influenza virus, respiratory syncytial virus, adenovirus, parainfluenza virus, rhinovirus, human metapneumovirus, coronavirus

VAE Form Instructions

DISCLAIMER:

Assurance of Confidentiality: The information obtained in this surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with applicable regulations

IMPORTANT: This form is required to be filled out for adult patients on a ventilator in the ICU, SCA, or other inpatient locations in case VAE component of the device-associated module is recorded at your facility in this particular month.

SECTION I: PATIENT AND HOSPITAL INFORMATION:

Patient ID: It is 9-digit number that will be assigned to every patient by the GCC surveillance plan participating hospitals as described below:

A. The first digit refer to the state number as follow (alphabetical order):
   1-Bahrain 2-Kuwait 3-Oman 4-Qatar 5-Saudi Arabia 6-UAE 7-Yemen
B. The next 8 digits refer to the patient's medical record number (MRN) or file number
   Example: If a Saudi patient was admitted to the MNGHA and has a medical record number of 1052647, he will be assigned this ID: **501052647**

Date of birth: Add the patient birth date in the format DD-MM-YYYY

Gender: Check male or female.

Surveillance plan date: Record the month and year for the GCC surveillance plan being recorded (which is the month of VAE diagnosis in case VAE was diagnosed or the month of ventilator insertion in case No VAE was diagnosed)

Facility ID: It is 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC center for infection control, with the first digit refers to the state and the last 2 digits are state-specific numbers.

Location: VAE surveillance may be done in (1) intensive care units (ICU), (2) specialty care areas (includes hematology/oncology wards, bone marrow transplant units, solid organ transplant units, inpatient dialysis units, and chronic care units), and (3) any other inpatient locations in the institution where patients are housed overnight (e.g., surgical wards).

Note: If the VAE develops in a patient within 2 calendar days of transfer or discharge from a location, attribute to the transferring or discharging, not the current location of the patient.

Note: Although locations are categorized into bigger groups (e.g. other inpatients), it is always required to add the specific ward/clinic/unit in your hospital that data have been collected from (e.g. other inpatients: ward 15, general medicine).

SECTION II: ADMISSION INFORMATION:

Hospital admission date: Record the date patient was admitted to facility

Hospital discharge date: Record the date patient was discharged from facility

ICU admission date: Record the date patient was admitted to ICU/NICU

ICU discharge date: Record the date patient was discharged from ICU/NICU

Diagnosis: Record the admission diagnosis

SECTION III: VENTILATOR INFORMATION:

Number of times ventilator was used: enter the number of times ventilator was used, and then fill the detailed information for each time. NOTE: Episode of mechanical ventilation: Defined as a period of days during which the patient was mechanically ventilated for some portion of each consecutive day.

Patients on Airway Pressure Release Ventilation: Check "Yes" only for patients on APRV or a related mode of mechanical ventilation (e.g., BiLevel, Bi Vent, BiPhasic, PCV+, DuoPAP) at the time of VAE onset; otherwise, check No. If you check yes, the period of worsening oxygenation can be determined by changes in FiO2 only

Location of ventilator insertion: enter the hospital location where ventilator was inserted

1st and 2nd times: For each time ventilator was used, record the insertion and removal dates, APACHE and ISS scores, and the number corresponding to the correct intubation or tracheostomy types. N/A number for intubation need to be recorded if tracheostomy was used and N/A number for tracheostomy need to be recorded if intubation was used.

Note: Ventilator is a device to assist or control respiration continuously through a tracheostomy or by endotracheal intubation.

Note: APACHE (Acute Physiology And Chronic Health Evaluation) is a system for classifying patients in the intensive care unit. APACHE score ranges between 0 and 129 with 0 as the best survival and >30 has very bad survival. ISS (Injury severity Score) is an anatomical scoring system that provides an overall score for patients with multiple injuries. ISS score ranges from 0 to 75 with 75 indicating un-survivable injuries.

SECTION IV: VAE EVENT INFORMATION:

VAE diagnosed: If VAE was diagnosed, then you will be required to answer all the section questions as applicable. If no VAE was diagnosed, then check "No" and do not answer any other question in that section (with exception of death and death date).

VAE diagnosis: Record the type of VAE diagnosis; VAC, IVAC or PVAP. If the patient meets criteria for VAC and IVAC, report as IVAC. If the patient meets criteria for VAC, IVAC and PVAP, report PVAP

VAE date: Record the date VAE was diagnosed, which is the date of onset of worsening oxygenation. The earliest day on which VAE criteria can be fulfilled is day 4 of mechanical ventilation and the earliest date of event for VAE is day 3 of mechanical ventilation.
Patient had ventilator in place on the date of event or the day before for >2 calendar days: The answer has to be yes to be considered VAE

<table>
<tr>
<td><u>Ventilator-Associated Condition (VAC):</u>
The patient meets one of the following indicators of worsening oxygenation after > 2 calendar days of mechanical ventilation
□ Increase in daily minimum FiO_2 values of ≥ 0.20 (20 points), sustained for ≥ 2 calendar days after ≥ 2 calendar days of stable or decreasing daily minimum FiO_2 values OR
□ Increase in daily minimum PEEP values of ≥ 3 cm H_2O, sustained for ≥ 2 calendar days after ≥ 2 calendar days of stable or decreasing daily minimum PEEP values
* Daily minimum defined by lowest value of FiO_2 or PEEP during a calendar day that is maintained for at least 1 hour
* Daily minimum PEEP values of 0-5 cmH_2O are considered equivalent for the purposes of VAE surveillance</td>
<td rowspan="2">Possible Ventilator-Associated Pneumonia (PVAP): After meeting the criteria of VAC or IVAC, the patient meets one of the following criteria after >2 calendar days of mechanical ventilation AND within 2 calendar days before or after the onset of worsening oxygenation (i.e. within VAE Window Period which is 3-5 days)
1) Criterion 1: Positive culture of one of the following specimens:
· Endotracheal aspirate, ≥ 10^5 CFU/ml or corresponding semi-quantitative result
· Bronchoalveolar lavage, ≥ 10^4 CFU/ml or corresponding semi-quantitative result
· Lung tissue, ≥ 10^4 CFU/g or corresponding semi-quantitative result
· Protected specimen brush, ≥ 10^3 CFU/ml or corresponding semi-quantitative result
2) Criterion 2: Purulent respiratory secretions (defined as secretions from the lungs, bronchi, or trachea that contain >25 neutrophils and <10 squamous epithelial cells per low power field plus organism identified from one of the following specimens (to include qualitative culture, or quantitative/semi-quantitative culture without sufficient growth to meet criterion #1):
· Sputum
· Endotracheal aspirate
· Bronchoalveolar lavage
· Lung tissue
· Protected specimen brush
3) Criterion 3: One of the following positive tests:
· Organism identified from pleural fluid (where specimen was obtained during thoracentesis or initial placement of chest tube and NOT from an indwelling chest tube)
· Lung histopathology, defined as: 1) abscess formation or foci of consolidation with intense neutrophil accumulation in bronchioles and alveoli; 2) evidence of lung parenchyma invasion by fungi (hyphae, pseudohyphae or yeast forms); 3) evidence of infection with the viral pathogens listed below based on results of immunohistochemical assays, cytology, or microscopy performed on lung tissue
· Diagnostic test for Legionella species
· Diagnostic test on respiratory secretions for influenza virus, respiratory syncytial virus, adenovirus, parainfluenza virus, rhinovirus, human metapneumovirus, coronavirus</td>
</tr>
<tr>
<td><u>Infection-related Ventilator-Associated Complication (IVAC):</u> After meeting the criteria of VAC, the patient meets the following 2 criteria after >2 calendar days of mechanical ventilation AND within 2 calendar days before or after the onset of worsening oxygenation (i.e. within VAE Window Period which is 3-5 days)
□ Temperature > 38 °C or < 36°C, OR
□ white blood cell count ≥ 12,000 cells/mm3 or ≤ 4,000 cells/mm3
AND
□ A new antimicrobial agent(s) is started, and is continued for ≥ 4 calendar days</td>
</tr>
</table>

VAE diagnosed after a procedure: Check "Yes" if VAE occurred after an NHSN defined procedure but before discharge from the facility (and you will need to record the name and the date of this procedure**)**, otherwise check "No".
Procedure name: Record the name of the above procedure
Procedure date: Record the date of the above procedure
Development of secondary BSI after PVAP: Secondary BSIs may be reported for PVAP events (not VAC or IVAC), provided that at least one organism identified from the blood matches an organism isolated from an appropriate respiratory tract specimen (including respiratory secretions, pleural fluid and lung tissue).
Hospitalization death: Check "Yes" if patient died during the hospitalization. In this case, you will need to answer the next 2 questions (the date of death and if VAE contributed to death or not)
Death date: Record the date of hospitalization death
VAE contributed to death: Check "Yes" if the VAE either directly caused death or exacerbated an existing disease condition which then led to death during hospitalization

SECTION V: LABORATORY RECORD

Organism identified: Record "Yes" if a pathogen was identified, "No" if otherwise; if "Yes, specify the details on reverse table (Section V).
Time of specimen collection: Enter the hour and minute of the sample collection
For specified Gram-positive and Gram-negative Organisms: Up to three pathogens may be reported. If multiple pathogens are identified, record the pathogen judged to be the most important cause of infection as #1, the next most as #2, and the least as #3 (usually this order will be indicated on the laboratory report).
Antimicrobial agent and sensitivity results: For each antimicrobial agent listed, record the pathogen's susceptibility result: S - Susceptible, I - Intermediate, R - Resistant, N - Not Tested.
For Other Organisms and their antimicrobial agents and sensitivity: Same as above but additionally give you the option to add more antifungal agents

MDRO: Is the recorded organism meet any of MDRO definitions? If yes, fill the number corresponding to the below MDRO types
MDRO types: (1) MRSA (2) VRE (3) CephR-Klebsiella (4) Carbapenem resistant Enterobacteriaceae (CRE) (5) MDR Acinetobacter (6) MDR Klebsiella (7) MDR Pseudomonas

CephR-Klebsiella: non-susceptible (resistant or intermediate) to at least one cephalosporin agent (ceftazidime, cefotaxime, ceftriaxone, or cefepime)

Carbapenem resistant Enterobacteriaceae (CRE): E-coli, Klebsiella, or Enterobacter resistant to at least one carbapenem agent (imipenem, meropenem, doripenem, or ertapenem) OR by production of a carbapenemase

MDR Acinetobacter: non-susceptible (resistant or intermediate) to at least one agent in at least 3 out of 6 antimicrobial classes (penicillins, aminoglycosides, cephalosporins, fluoroquinolones, carbapenems, and sulbactam)

MDR Klebsiella or Pseudomonas: non-susceptible (resistant or intermediate) to at least one agent in at least 3 out of 5 antimicrobial classes (penicillins, aminoglycosides, cephalosporins, fluoroquinolones, and carbapenems)

Classes: Penicillins (Piperacillin, Piperacillin/Tazobactam), Aminoglycosides (Amikacin, Gentamicin, Tobramycin), Cephalosporins (Cefepime, Ceftazidime), Fluoroquinolones (Ciprofloxacin, Levofloxacin), Carbapenems (Imipenem, Meropenem, Doripenem), And Sulbactam (Ampicillin/Sulbactam)

COMMENTS: Add any necessary comments.
DATA COLLECTION: Please add the date the form was completed and the ID of the person who collected/abstracted the data
DATA ENTRY STAMP: After the form is entered on the database, please stamp the form as entered. Please add the date of data entry and the ID of the person who entered the data. See suggested stamp here
Note: For easy identification from other forms, please copy this form on **green** sheets

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Ventilator-Associated Event (VAE) Monitoring Form

Infection Control Surveillance Form

Patient ID	
Admission date	
MV Date	

Location:
☐ Intensive care unit (ICU): ----------
☐ Specialty care area (SCA):----------
☐ Other inpatient:----------

Comments:

Date	MV Day	$PEEP_{min}$	$FiO2_{min}$	$Temp_{min}$	$Temp_{max}$	WBC_{min}	WBC_{max}	Abx use	Abx name	Spec	Neutro	Squam	CFU/ml	Organism	VAE	Comments

MV=mechanical ventilation. **$PEEP_{min}$**=Daily minimum PEEP. **$FiO2_{min}$**=Daily minimum FiO2. **$Temp_{min}$**=Daily minimum temperature. **$Temp_{max}$**=Daily maximum temperature. **WBC_{min}**=Daily minimum white blood cell count. **WBC_{max}**=Daily maximum white blood cell count. **Abx**=antimicrobial agents. **Spec**=Respiratory specimen (Sputum, ETA, BAL, lung, PSB). **Neutro**=# neutrophils per low power field Gram stain of respiratory specimen. **Squam=**# squamous epithelial cells per low power field Gram stain of respiratory specimen. **CFU/ml**=quantitative or semi-quantitative thresholds in colony forming units per milliliter. **VAE**= VAE diagnosis

Example of filling:

Date	MV Day	$PEEP_{min}$	$FiO2_{min}$	$Temp_{min}$	$Temp_{max}$	WBC_{min}	WBC_{max}	Abx use	Abx name	Spec	Neutro	Squam	CFU/ml	Organism	VAE	Comments
12/12/16	5	8	0.50	36.3	36.9	8.4	8.4	Yes	Cefepime	ETA	≥25	≤10	$\geq 10^5$	S. aureus	VAC	

Ventilator-Associated Event (VAE) Case Definition

<table>
<tr>
<td><u>Ventilator-Associated Condition (VAC):</u>
The patient meets one of the following indicators of worsening oxygenation after > 2 calendar days of mechanical ventilation
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· Diagnostic test for Legionella species
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□ Temperature > 38 °C or < 36°C, OR
□ white blood cell count ≥ 12,000 cells/mm3 or ≤ 4,000 cells/mm3
AND
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</tr>
</table>

APPENDIX 4: CAUTI Form & Instructions

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Catheter-Associated Urinary Tract Infection (CAUTI)

Infection Control Surveillance Form

SECTION I: PATIENT AND HOSPITAL INFORMATION:

Patient ID: | | | | | | | | | | (S # # # # # # # #)

Date of birth: | | | | | | | | | (D D M M Y Y Y Y)

Gender:
☐ Male
☐ Female

Surveillance plan date: | | | | | (M M Y Y)

Facility ID: | | | | (S # #)

Location:
☐ Intensive care unit (ICU): ----------
☐ Neonatal intensive care unit (NICU): -------
☐ specialty care area (SCA):----------
☐ Other inpatient:----------

SECTION II: ADMISSION INFORMATION:

Diagnosis:

Hospital stay:

Admission date: | | | | | | | (D D M M Y Y)

Discharge Date: | | | | | | | (D D M M Y Y)

ICU/NICU stay:

Admission date: | | | | | | | (D D M M Y Y)

Discharge Date: | | | | | | | (D D M M Y Y)

If location is NICU:

Birth wt: | | | | | grams

Gestational age: | | | Weeks

SECTION III: URINARY CATHETER INFORMATION:

Location of urinary catheter insertion: ----------

	Insertion date (D D M M Y Y)	Removal date (D D M M Y Y)
1st		
2nd		

SECTION IV:UTI EVENT INFORMATION:

UTI diagnosed:
☐ Yes, complete below
☐ No

UTI diagnosis: (See the back)
☐ Symptomatic UTI (SUTI)
☐ Criterion-1A
☐ Criterion-2
☐ Asymptomatic bacteremic UTI (ABUTI)

UTI date: | | | | | | | (D D M M Y Y)

Patient had indwelling urinary catheter in place at the date of event or the day before for >2 calendar days :
☐ Yes
☐ In place at the date of the event
☐ Removed at the date of the event or the day before
☐ No

UTI diagnosed after a procedure:
☐ Yes, complete next 2 questions
☐ No

Procedure name:

Procedure date: | | | | | | | (D D M M Y Y)

Development of secondary BSI:
☐ Yes
☐ No
Note: The answer has to be yes in all ABUTI

Hospitalization death
☐ Yes, complete next 2 questions
☐ No

Death date | | | | | | | (D D M M Y Y)

UTI contributed to death
☐ Yes
☐ No

SECTION V: LABORATORY RECORD

Time of specimen collection
---------:--------- AM / PM

Organism identified
☐ Yes, complete the back
☐ No

COMMENTS:

	D D M M Y Y
Date data collected	
Collector ID	
Date data entered	
Data entry ID	

Data entry stamp

SECTION V: LABORATORY RECORD

Name of Gram Positive or Negative	Date of record DD-MM-YY	MDRO	TYPE	Antimicrobial sensitivity																														
				AMIK	AMPSUL	AMXCLV	CEFAZ	CEFEP	CEFOTX	CEFOX	CEFTAZ	CEFTRX	CEFUR	CIPRO	CLIND	COL	DORI	ERTA	ERYTH	GENT	IMI	LEVO	LNZ	MERO	METH	MINO	MOXI	OXA	PIP	PIPTAZ	TMZ	TIG	TOBRA	VANC
		☐ Yes ☐ NO																																
		☐ Yes ☐ NO																																
		☐ Yes ☐ NO																																

MDRO: (1) MRSA (2) VRE (3) CephR-Klebsiella (4) Carbapenem resistant Enterobacteriaceae (CRE) (5) MDR Acinetobacter (6) MDR Klebsiella (7) MDR Pseudomonas
CephR-Klebsiella: non-susceptible (resistant or intermediate) to at least one cephalosporin agent (ceftazidime, cefotaxime, ceftriaxone, or cefepime)
Carbapenem resistant Enterobacteriaceae (CRE): E-coli, Klebsiella, or Enterobacter resistant to at least one carbapenem agent (imipenem, meropenem, doripenem, or ertapenem) OR by production of a carbapenemase
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MDR Klebsiella or Pseudomonas: non-susceptible (resistant or intermediate) to at least one agent in at least 3 out of 5 antimicrobial classes (penicillins, aminoglycosides, cephalosporins, fluoroquinolones, and carbapenems)

AMK= amikacin
AMPSUL= ampicillin/sulbactam
AMXCLV= amoxicillin/clavulanic
CEFAZ= cefazolin
CEFEP = cefepime
CEFOTX = cefotaxime
CEFOX= cefoxitin
CEFTAZ= ceftazidime
CEFTRX= ceftriaxone
CEFUR= cefuroxime
CIPRO= ciprofloxacin
CLIND= clindamycin
COL= colistin
DORI= doripenem
ERTA= ertapenem
ERYTH= erythromycin
GENT = gentamicin
IMI= imipenem
LEVO= levofloxacin
LNZ= linezolid
MERO= meropenem
METH= methicillin
MINO= minocycline
MOXI= moxifloxacin
OXA= oxacillin
PIP= piperacillin
PIPTAZ= piperacillin/tazobactam
TMZ= sulfamethoxazole /trimethoprim
TIG= tigecycline
TOBRA= tobramycin
VANC= vancomycin

S = Susceptible	
I = Intermediate	
R = Resistant	
N = Not tested	

Name of other organisms	Date of record DD-MM-YY	Antimicrobial sensitivity							
		Amphotericin B	Anidulafungin	Caspofungin	Fluconazole	Flucytosine	Other drug-1 ----------	Other drug-2 ----------	Other drug-3 ----------

Catheter-associated UTI (CAUTI): UTI in a patient with an indwelling urinary catheter provided that all of the following hold on
☐ The catheter has been for >2 calendar days and was in place at the date of event or the day before
☐ Urine culture with no more than two species of organisms identified, at least one of which is a bacterium of $\geq 10^5$ CFU
☐ Signs & Symptoms:

Criterion 1A:
Patient has at least **one** of the following signs or symptoms:

☐ fever (>38.0°C)
☐ suprapubic tenderness*
☐ costovertebral angle pain or tenderness*
☐ urinary urgency ≠
☐ urinary frequency ≠
☐ dysuria ≠
* With no other recognized cause
≠These symptoms cannot be used when catheter is in place

Criterion 2:
Patient **≤1** year of age and has at least **one** of the following signs or symptoms:

☐ fever (>38.0°C)
☐ hypothermia (<36.0°C)
☐ apnea*
☐ bradycardia*
☐ lethargy*
☐ vomiting*
☐ suprapubic tenderness*
* With no other recognized cause

Asymptomatic Bacteremic UTI (ABUTI):
Patient has **no signs or symptoms** of SUTI 1A or 2 according to age:

☐ Patient has an organism* identified from blood specimen (using culture or non-culture methods) with at least one matching bacterium to the bacterium identified in the urine specimen.

* Bacterium only including commensals but cannot be candida or fungi alone

CAUTI Form Instructions

DISCLAIMER:

Assurance of Confidentiality: The information obtained in this surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with applicable regulations

IMPORTANT: This form is required to be filled for all patients with indwelling urinary catheter in the ICU, NICU, SCA, or other inpatient locations in case CAUTI component of the device-associated module is recorded at your facility in this particular month

SECTION I: PATIENT AND HOSPITAL INFORMATION:

Patient ID: It is 9-digit number that will be assigned to every patient by the GCC surveillance plan participating hospitals as described below:

A. The first digit refer to the state number as follow (alphabetical order):
   1-Bahrain 2-Kuwait 3-Oman 4-Qatar 5-Saudi Arabia 6-UAE 7-Yemen
B. The next 8 digits refer to the patient's medical record number (MRN) or file number
   Example: If a Saudi patient was admitted to the MNGHA and has a medical record number of 1052647, he will be assigned this ID: **501052647**

Date of birth: Add the patient birth date in the format DD-MM-YYYY

Gender: Check male or female.

Surveillance plan date: Record the month and year for the GCC surveillance plan being recorded (which is the month of UTI diagnosis in case UTI was diagnosed or the month of indwelling urinary catheter insertion in case No UTI was diagnosed)

Facility ID: It is 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC center for infection control, with the first digit refers to the state and the last 2 digits are state-specific numbers.

Location: UTI surveillance may be done in (1) intensive care units (ICU), (2) neonatal intensive care unit (NICU), (3) specialty care areas (includes hematology/oncology wards, bone marrow transplant units, solid organ transplant units, inpatient dialysis units, and chronic care units), and (4) any other inpatient locations in the institution where patients are housed overnight (e.g., surgical wards).

Note: If the UTI develops in a patient within 2 calendar days of transfer or discharge from a location, attribute to the transferring or discharging, not the current location of the patient.

Note: Although locations are categorized into bigger groups (e.g. other inpatients), it is always required to add the specific ward/clinic/unit in your hospital that data have been collected from (e.g. other inpatients: ward 15, general medicine).

SECTION II: ADMISSION AND CATHETER INFORMATION:

Hospital admission date: Record the date patient was admitted to facility

Hospital discharge date: Record the date patient was discharged from facility

ICU/NICU admission date: Record the date patient was admitted to ICU

ICU/NICU discharge date: Record the date patient was discharged from ICU

Diagnosis: Record the admission diagnosis

Birth wt: Record the birth weight in grams in NICU patients only

Gestational age: Record the gestational age in weeks in NICU patients only

SECTION III: URINARY CATHETER INFORMATION:

Location of catheter insertion: enter the hospital location where urinary catheter was inserted

Urinary catheter insertion date: Record the date the urinary catheter was inserted

Urinary catheter removal date: Record the date the urinary catheter was removed.

1st and 2nd catheters: If the urinary catheter is removed and reinserted, with the patient having no urinary catheter for at least 1 full calendar day, then the urinary catheter day count will start anew. If instead, a new urinary catheter is reinserted before a full calendar day has passed, the urinary catheter day count will continue

SECTION IV:UTI EVENT INFORMATION:

UTI diagnosed: If UTI was diagnosed, then you will be required to answer all the section questions as applicable. If no UTI was diagnosed, then check "No" and do not answer any other question in that section (with exception of death and death date).

UTI diagnosis: Record how the UTI was diagnosed. Check the back of the form to guide you about the type and criteria of UTI diagnosis. Please check the appropriate type and criterion on the form that corresponds to the patient criteria.

UTI date: Record the date UTI was diagnosed

Patient had indwelling urinary catheter at the date of event or the day before for >2 calendar days: The answer has to be yes to be considered CAUTI

UTI diagnosed after a procedure: Check "Yes" if UTI occurred after an NHSN defined procedure but before discharge from the facility (and you will need to record the name and the date of this procedure**)**, otherwise check "No".

Procedure name: Record the name of the above procedure

Procedure date: Record the date of the above procedure

Catheter-associated UTI (CAUTI): UTI in a patient with an indwelling urinary catheter provided that all of the following hold on

☐ The catheter has been for >2 calendar days and was in place at the date of event or the day before
☐ Urine culture with no more than two species of organisms identified, at least one of which is a bacterium of $\geq 10^5$ CFU
☐ Signs & Symptoms:

Criterion 1A:
Patient has at least **one** of the following signs or symptoms:

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☐ urinary urgency ≠
☐ urinary frequency ≠
☐ dysuria ≠
* With no other recognized cause
≠These symptoms cannot be used when catheter is in place

Criterion 2:
Patient **≤1** year of age and has at least **one** of the following signs or symptoms:

☐ fever (>38.0°C)
☐ hypothermia (<36.0°C)
☐ apnea*
☐ bradycardia*
☐ lethargy*
☐ vomiting*
☐ suprapubic tenderness*

* With no other recognized cause

Asymptomatic Bacteremic UTI (ABUTI):
Patient has **no signs or symptoms** of SUTI 1A or 2 according to age:

☐ Patient has an organism* identified from blood specimen (using culture or non-culture methods) with at least one matching bacterium to the bacterium identified in the urine specimen.

* Bacterium only including commensals but cannot be candida or fungi alone

Hospitalization death: Check "Yes" if patient died during the hospitalization. In this case, you will need to answer the next 2 questions (the date of death and if UTI contributed to death or not)
Death date: Record the date of hospitalization death
UTI contributed to death: Check "Yes" if the UTI either directly caused death or exacerbated an existing disease condition which then led to death during hospitalization

SECTION IV: LABORATORY RECORD

Organism identified: Record "Yes" if a pathogen was identified, "No" if otherwise; if "Yes, specify the details on reverse table (Section V).
Time of specimen collection: Enter the hour and minute of the sample collection
For specified Gram-positive and Gram-negative Organisms: Up to three pathogens may be reported. If multiple pathogens are identified, record the pathogen judged to be the most important cause of infection as #1, the next most as #2, and the least as #3 (usually this order will be indicated on the laboratory report).
Antimicrobial agent and sensitivity results: For each antimicrobial agent listed, record the pathogen's susceptibility result: S - Susceptible, I - Intermediate, R - Resistant, N - Not Tested.
For Other Organisms and their antimicrobial agents and sensitivity: Same as above but additionally give you the option to add more antifungal agents. Although fungi cannot be used alone to diagnose CAUTI it can be recorded with bacteria

MDRO: Is the recorded organism meet any of MDRO definitions? If yes, fill the number corresponding to the below MDRO types
MDRO types: (1) MRSA (2) VRE (3) CephR-Klebsiella (4) Carbapenem resistant Enterobacteriaceae (CRE) (5) MDR Acinetobacter (6) MDR Klebsiella (7) MDR Pseudomonas

CephR-Klebsiella: non-susceptible (resistant or intermediate) to at least one cephalosporin agent (ceftazidime, cefotaxime, ceftriaxone, or cefepime)

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MDR Klebsiella or Pseudomonas: non-susceptible (resistant or intermediate) to at least one agent in at least 3 out of 5 antimicrobial classes (penicillins, aminoglycosides, cephalosporins, fluoroquinolones, and carbapenems)

Classes: Penicillins (Piperacillin, Piperacillin/Tazobactam), Aminoglycosides (Amikacin, Gentamicin, Tobramycin), Cephalosporins (Cefepime, Ceftazidime), Fluoroquinolones (Ciprofloxacin, Levofloxacin), Carbapenems (Imipenem, Meropenem, Doripenem), And Sulbactam (Ampicillin/Sulbactam)

COMMENTS: Add any necessary comments.
DATA COLLECTION: Please add the date the form was completed and the ID of the person who collected/abstracted the data
DATA ENTRY STAMP: After the form is entered on the database, please stamp the form as entered. Please add the date of data entry and the ID of the person who entered the data. See suggested stamp here
Note: For easy identification from other forms, please copy this form on **violet** sheets

APPENDIX 5: DE Form and Instructions

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Dialysis Event (DE)

Infection Control Surveillance Form

SECTION I: PATIENT AND HOSPITAL INFORMATION

Patient ID: ☐☐☐☐☐☐☐☐☐ (S # # # # # # # #)

Date of birth: ☐☐☐☐☐☐☐☐ (D D M M Y Y Y Y)

Gender: ☐ Male ☐ Female

Surveillance plan date: ☐☐☐☐ (M M Y Y)

Facility ID: ☐☐☐ (S # #)

Location: ☐☐☐☐☐☐☐☐☐☐

Transient Patient ☐ Yes ☐ No

SECTION II: VASCULAR ACCESS INFORMATION

Specify vascular access: (check all that apply)

☐ Arteriovenous fistulas ☐ Arteriovenous graft ☐ Permanent central line ☐ Temporary central line ☐ Port access device

SECTION III: EVENT INFORMATION

Specify DE Incident (may be more than one incident)

Note: When reporting multiple dialysis events together, the "date of event" is always the date that the first event occurred

DE date: ☐☐☐☐☐☐ (D D M M Y Y)

1- In-unit IV antimicrobial start ☐ Yes ☐ No

If yes, was it a continuation of an inpatient course? ☐ Yes ☐ No

If yes, was IV vancomycin started? ☐ Yes ☐ No

2-Positive blood culture ☐ Yes ☐ No ☐ Unknown ☐ Not done

If yes, suspected source of positive blood culture (check one): ☐ Vascular access ☐ Contamination ☐ A source other than the vascular access ☐ Uncertain

If yes, where it was collected ☐ Dialysis clinic ☐ Hospital or E.D. ☐ Other location

3-Pus, redness, or swelling at vascular access site ☐ Yes ☐ No

If applicable, circle the access with pus, redness, or increased swelling:

☐ AV fistula ☐ AV graft ☐ Permanent central line ☐ Temporary central line ☐ Port access device

SECTION IV: PROBLEMS

Specify problems (check one or more)

- ☐ Fever (≥37.8°C/100°F oral)
- ☐ Chills or rigors
- ☐ Drop in blood pressure
- ☐ Vascular access problem without infection (clotting, bleeding, etc.)
- ☐ Wound (NOT related to vascular access) with pus or increased redness
- ☐ Cellulitis (skin redness, heat, or pain without open wound)
- ☐ Urinary tract infection
- ☐ Pneumonia or respiratory infection
- ☐ Other, specify

Specify Outcomes:(check one or more)

Loss of vascular access	☐ Yes	☐ No	☐ Unknown
Hospitalization	☐ Yes	☐ No	☐ Unknown
Death	☐ Yes	☐ No	☐ Unknown

SECTION V: LABORATORY RECORD

Time of specimen collection: ---------:--------- AM / PM **Organism identified:** ☐ Yes, complete the back ☐ No

COMMENTS:

Date data collected (D D M M Y Y) ☐☐☐☐☐☐	Data entry stamp	**Date data entered** (D D M M Y Y) ☐☐☐☐☐☐
Collector ID ☐☐☐☐☐☐		**Data entry ID** ☐☐☐☐☐☐

SECTION V: LABORATORY RECORD

Name of Gram Positive or Negative	Date of record DD-MM-YY	MDRO	TYPE	Antimicrobial sensitivity																																		
				AMIK	AMPSUL	AMXCLV	CEFAZ	CEFEP	CEFOTX	CEFOX	CEFTAZ	CEFTRX	CEFUR	CIPRO	CLIND	COL	DORI	ERTA	ERYTH	GENT	IMI	LEVO	LNZ	MERO	METH	MINO	MOXI	OXA	PIP	PIPTAZ	TMZ	TIG	TOBRA	VANC
		☐ Yes ☐ NO																																				
		☐ Yes ☐ NO																																				
		☐ Yes ☐ NO																																				

MDRO: (1) MRSA (2) VRE (3) CephR-Klebsiella (4) Carbapenem resistant Enterobacteriaceae (CRE) (5) MDR Acinetobacter (6) MDR Klebsiella (7) MDR Pseudomonas
CephR-Klebsiella: non-susceptible (resistant or intermediate) to at least one cephalosporin agent (ceftazidime, cefotaxime, ceftriaxone, or cefepime)
Carbapenem resistant Enterobacteriaceae (CRE): E-coli, Klebsiella, or Enterobacter resistant to at least one carbapenem agent (imipenem, meropenem, doripenem, or ertapenem) OR by production of a carbapenemase
MDR Acinetobacter: non-susceptible (resistant or intermediate) to at least one agent in at least 3 out of 6 antimicrobial classes (penicillins, aminoglycosides, cephalosporins, fluoroquinolones, carbapenems, and sulbactam)
MDR Klebsiella or Pseudomonas: non-susceptible (resistant or intermediate) to at least one agent in at least 3 out of 5 antimicrobial classes (penicillins, aminoglycosides, cephalosporins, fluoroquinolones, and carbapenems)

AMK= amikacin
AMPSUL= ampicillin/sulbactam
AMXCLV= amoxicillin/clavulanic
CEFAZ= cefazolin
CEFEP = cefepime
CEFOTX = cefotaxime
CEFOX= cefoxitin
CEFTAZ= ceftazidime
CEFTRX= ceftriaxone
CEFUR= cefuroxime
CIPRO= ciprofloxacin
CLIND= clindamycin
COL= colistin
DORI= doripenem
ERTA= ertapenem
ERYTH= erythromycin
GENT = gentamicin
IMI= imipenem
LEVO= levofloxacin
LNZ= linezolid
MERO= meropenem
METH= methicillin
MINO= minocycline
MOXI= moxifloxacin
OXA= oxacillin
PIP= piperacillin
PIPTAZ= piperacillin/tazobactam
TMZ= sulfamethoxazole /trimethoprim
TIG= tigecycline
TOBRA= tobramycin
VANC= vancomycin

S = Susceptible
I = Intermediate
R = Resistant
N = Not tested

Name of other organisms	Date of record DD-MM-YY	Antimicrobial sensitivity							
		Amphotericin B	Anidulafungin	Caspofungin	Fluconazole	Flucytosine	Other drug-1 ----------	Other drug-2 ----------	Other drug-3 ----------

Vascular access

1-Arteriovenous fistulas: implanted access created from the patient's own blood vessels **2-Arteriovenous graft**: implanted access constructed from synthetic materials
3-Permanent central line: tunneled cuffed catheters **4-Temporary central line:** non-tunneled non-cuffed catheter **5-Port access device:** a fully implantable access device (e.g., Lifesite)

DE Incident

1. **In-unit IV antimicrobial start:** Report all starts of intravenous (IV) antibiotics or antifungals administered in an outpatient setting, regardless of the reason for administration (i.e., include IV antimicrobial starts unrelated to vascular access problems) and regardless of the duration of treatment. A start is defined as a single outpatient dose or first outpatient dose of a course. Report all IV antibiotic starts, not just vancomycin. Do not report IV antiviral starts. Report outpatient starts that are continuations of inpatient antimicrobial treatment. There must be 21 or more days from the end of one IV antimicrobial course to the beginning of a second IV antimicrobial start for two starts to be reported as separate dialysis events, even if different antimicrobials are used.
2. **Positive blood culture:** Report all positive blood cultures collected as an outpatient or collected within 1 calendar day after a hospital admission, regardless of whether or not a true infection is suspected, infection is thought to be related to hemodialysis, or treatment is received. There must be 21 or more days between positive blood cultures for each positive blood culture to be considered a separate dialysis event, even if organisms are different. However, if different organisms grow from these subsequent positive blood cultures, add the new organisms to the reported event. Suspected source could be:
   - **Vascular access:** only if there is some objective evidence of vascular access infection (see below).
   - **A source other than the vascular access:** if either (a) or (b) is true: (a) a culture from another site (e.g., leg wound, urine) shows the same organism that was found in the blood; (b) there is clinical evidence of infection at another site, but a culture was not taken from it.
   - **Contamination:** if the organism is thought by the physician, infection control practitioner, or head nurse to be a contaminant (e.g., coagulase negative staphylococci, diphtheroids, *Propionibacterium*, or *Bacillus* spp.). Contamination is more likely if a common skin contaminant is isolated from only one of several blood cultures .
   - **Uncertain:** only if there is insufficient evidence to decide among the three previous categories.
3. **Pus, redness, or increased swelling at the vascular access site**: Pus is always reportable. Report redness or swelling if it is greater than expected and suspicious for infection. There must be 21 or more days between the onset of a first episode and onset of a second episode of pus, redness, or increased swelling at a vascular access site to be considered separate dialysis events

Other definitions

A vascular access infection is defined as a patient with either:
- **Local access infection:** the presence of pus, redness, or swelling of the vascular access site without an access-associated blood stream infection or
- **Access-associated bacteremia:** the presence of a microorganism identified in a blood culture where the source of infection is the vascular access site or unknown.

DE Form Instructions

DISCLAIMER:

Assurance of Confidentiality: The information obtained in this surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with applicable regulations

IMPORTANT: This form is required to be filled for patients who developed dialysis event (Outpatient IV antimicrobial start, positive blood culture, or local infection) while treated in outpatient hemodialysis centers in case DE component of the device-associated module is recorded at your facility in this particular month. All hemodialysis outpatients, including transient patients are included while non-hemodialysis (peritoneal dialysis) patients and inpatients are excluded

SECTION I: PATIENT AND HOSPITAL INFORMATION:

Patient ID: It is 9-digit number that will be assigned to every patient by the GCC surveillance plan participating hospitals as described below:

I. The first digit refer to the state number as follow (alphabetical order):
   1-Bahrain 2-Kuwait 3-Oman 4-Qatar 5-Saudi Arabia 6-UAE 7-Yemen
J. The next 8 digits refer to the patient's medical record number (MRN) or file number
   Example: If a Saudi patient was admitted to the MNGHA and has a medical record number of 1052647, he will be assigned this ID: **501052647**

Date of birth: Add the patient birth date in the format DD-MM-YYYY
Gender: Check male or female.
Surveillance plan date: Record the month and year for the GCC surveillance plan being recorded (which is the month of the DE diagnosis)
Facility ID: It is 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC center for infection control, with the first digit refers to the state and the last 2 digits are state-specific numbers.
Location: Enter the location code/name of the outpatient dialysis unit where the patient was at the time of the DE. These may be attached to or affiliated with a hospital, but should serve mostly hemodialysis outpatients.
Transient Patient: Check "Yes" if this patient was transferred from another facility and received in-center hemodialysis at our location on the first two working days of the month. If the reverse happen, our patient was transferred to another facility we do not count him/herin our denominator unless he/she received in-center hemodialysis at our location on the first two working days of the month.

SECTION II: VASCULAR ACCESS INFORMATION

Check each access that the patient has, as the patient could have more than one type of vascular access. These include:
Arterio-venous fistulas: implanted access created from the patient's own blood vessels
Arterio-venous graft: implanted access constructed from synthetic materials
Permanent central line: tunneled cuffed catheters
Temporary central line: non-tunneled non-cuffed catheter
Port access device: a fully implantable access device e.g., Lifesite

SECTION III: EVENT INFORMATION

Specify DE: Check on the same form **one or more** of the DE types which include:
Date of DE: Depending on the type of event reported, enter either the date of hospitalization, or date of in-unit IV antimicrobial start, or for a patient whose event is a positive blood culture, enter the date the blood specimen was collected. When reporting multiple dialysis events together, the "date of event" is always the date that the first event occurred.

DE Incident

4. **In-unit IV antimicrobial start:** Report all starts of intravenous (IV) antibiotics or antifungals administered in an outpatient setting, regardless of the reason for administration (i.e., include IV antimicrobial starts unrelated to vascular access problems) and regardless of the duration of treatment. A start is defined as a single outpatient dose or first outpatient dose of a course. Report all IV antibiotic starts, not just vancomycin. Do not report IV antiviral starts. Report outpatient starts that are continuations of inpatient antimicrobial treatment. There must be 21 or more days from the end of one IV antimicrobial course to the beginning of a second IV antimicrobial start for two starts to be reported as separate dialysis events, even if different antimicrobials are used.
5. **Positive blood culture:** Report all positive blood cultures collected as an outpatient or collected within 1 calendar day after a hospital admission, regardless of whether or not a true infection is suspected, infection is thought to be related to hemodialysis, or treatment is received. There must be 21 or more days between positive blood cultures for each positive blood culture to be considered a separate dialysis event, even if organisms are different. However, if different organisms grow from these subsequent positive blood cultures, add the new organisms to the reported event. Suspected source could be:
   - **Vascular access:** only if there is some objective evidence of vascular access infection (see below).
   - **A source other than the vascular access:** if either (a) or (b) is true: (a) a culture from another site (e.g., leg wound, urine) shows the same organism that was found in the blood; (b) there is clinical evidence of infection at another site, but a culture was not taken from it.
   - **Contamination:** if the organism is thought by the physician, infection control practitioner, or head nurse to be a contaminant (e.g., coagulase negative staphylococci, diphtheroids, *Propionibacterium*, or *Bacillus* spp.). Contamination is more likely if a common skin contaminant is isolated from only one of several blood cultures .
   - **Uncertain:** only if there is insufficient evidence to decide among the three previous categories.

6. **Pus, redness, or increased swelling at the vascular access site**: Pus is always reportable. Report redness or swelling if it is greater than expected and suspicious for infection. There must be 21 or more days between the onset of a first episode and onset of a second episode of pus, redness, or increased swelling at a vascular access site to be considered separate dialysis events

Other definitions

A vascular access infection is defined as a patient with either:

- **Local access infection:** the presence of pus, redness, or swelling of the vascular access site without an access-associated blood stream infection or
- **Access-associated bacteremia:** the presence of a microorganism identified in a blood culture where the source of infection is the vascular access site or unknown.

SECTION IV: PROBLEMS

Specify Problems: For each problem listed (e.g. wound or cellulitis), check if present and do not check if absent. If the patient is thought to have the problem but does not meet the criteria, check "Other" and specify.
Specify Outcomes: Check all outcomes that apply, more than one may be checked

SECTION V: LABORATORY RECORD

Organism identified: Record "Yes" if a pathogen was identified, "No" if otherwise; if "Yes, specify the details on reverse table (Section V).
Time of specimen collection: Enter the hour and minute of the sample collection
For specified Gram-positive and Gram-negative Organisms: Up to three pathogens may be reported. If multiple pathogens are identified, record the pathogen judged to be the most important cause of infection as #1, the next most as #2, and the least as #3 (usually this order will be indicated on the laboratory report).
Antimicrobial agent and sensitivity results: For each antimicrobial agent listed, record the pathogen's susceptibility result: S - Susceptible, I - Intermediate, R - Resistant, N - Not Tested.
For Other Organisms and their antimicrobial agents and sensitivity: Same as above but additionally give you the option to add more antifungal agents

MDRO: Is the recorded organism meet any of MDRO definitions? If yes, fill the number corresponding to the below MDRO types
MDRO types: (1) MRSA (2) VRE (3) CephR-Klebsiella (4) Carbapenem resistant Enterobacteriaceae (CRE) (5) MDR Acinetobacter (6) MDR Klebsiella (7) MDR Pseudomonas

CephR-Klebsiella: non-susceptible (resistant or intermediate) to at least one cephalosporin agent (ceftazidime, cefotaxime, ceftriaxone, or cefepime)

Carbapenem resistant Enterobacteriaceae (CRE): E-coli, Klebsiella, or Enterobacter resistant to at least one carbapenem agent (imipenem, meropenem, doripenem, or ertapenem) OR by production of a carbapenemase

MDR Acinetobacter: non-susceptible (resistant or intermediate) to at least one agent in at least 3 out of 6 antimicrobial classes (penicillins, aminoglycosides, cephalosporins, fluoroquinolones, carbapenems, and sulbactam)

MDR Klebsiella or Pseudomonas: non-susceptible (resistant or intermediate) to at least one agent in at least 3 out of 5 antimicrobial classes (penicillins, aminoglycosides, cephalosporins, fluoroquinolones, and carbapenems)

Classes: Penicillins (Piperacillin, Piperacillin/Tazobactam), Aminoglycosides (Amikacin, Gentamicin, Tobramycin), Cephalosporins (Cefepime, Ceftazidime), Fluoroquinolones (Ciprofloxacin, Levofloxacin), Carbapenems (Imipenem, Meropenem, Doripenem), And Sulbactam (Ampicillin/Sulbactam)

COMMENTS: Add any necessary comments.
DATA COLLECTION: Please add the date the form was completed and the ID of the person who collected/abstracted the data
DATA ENTRY STAMP: After the form is entered on the database, please stamp the form as entered. Please add the date of data entry and the ID of the person who entered the data. See suggested stamp here
Note: For easy identification from other forms, please copy this form on **grey** sheets

APPENDIX 6: Denominators' Forms and Instructions

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GCC Centre for Infection Control
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Denominators for Intensive Care Unit (ICU) & other locations*
Infection Control Surveillance Form

Surveillance plan date M M Y Y

Facility ID S # #

Location: ICUs & Other locations*

Location name:

Date	**Number of patients**	Number of patients with 1 or more **central lines**	Number of patients with a **urinary catheter**	Number of patients on a **ventilator**		Number of **Episodes** of Mechanical Ventilation
				Total Patients	Number on **APRV**	
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
Total						
	Patient-days	Central-line days	Urinary catheter-days	Ventilator-days		Episodes of MV

*This form is good for ICU and other locations in the institution where patients are housed overnight (e.g., surgical wards). Not for neonatal intensive care units (NICU) or specialty care areas (SCA) (includes hematology/oncology wards, bone marrow transplant units, solid organ transplant units, inpatient dialysis units, and chronic care units.

Assurance of Confidentiality: The information obtained in this surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with applicable regulations

ICU Denominator Form Instructions

IMPORTANT: This form is required to be filled in a given month when one or more components of the device-associated module (CLABSI, CAUTI, or VAP/VAE) is recorded in the ICU at your facility in this particular month

IMPORTANT: After filling the data for a given month (data are filled on a daily basis), this form is required to be turned in to Infection Control Practitioner/Department by the end of the first week of the next month

Surveillance plan date: Record the month and year for the GCC surveillance plan being recorded (which is the month the data were collected from the ICU)
Facility ID: It is 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC center for infection control, with the first digit refers to the state and the last 2 digits are state-specific numbers.
Location: This form is used only in intensive care units (ICU) or other locations in the institution where patients are housed overnight (e.g., surgical wards).
Location name: Record the name of the location e.g. cardiac ICU, or surgical ward #5
Number of patients: For each day of the month selected, record the number of patients on the unit. Record this number at the same time each day.
Number of patients with 1 or more central lines: For each day of the month, at the same time each day, record the number of patients on the selected unit who have 1 or more central line(s) in place. Only record 1 central line day for a patient that has more than 1 central line in place.
Number of patients with a urinary catheter: For each day of the month, at the same time each day, record the number of patients on the selected unit who have an indwelling urinary catheter.
Number of patients on a Ventilator-Total patients: For each day of the month, at the same time each day, record the number of patients on the selected unit who are on a ventilator. Note: The total patients on ventilator include also those who are on APRV (see below)

Additional ventilator-related denominators only in VAE surveillance

Number of patients on Airway Pressure Release Ventilation (APRV): For each day of the month, at the same time each day, record the number of patients on the selected unit who are on Airway Pressure Release Ventilation (APRV) or a related mode of mechanical ventilation (e.g., BiLevel, Bi Vent, BiPhasic, PCV+, DuoPAP).

Number of Episodes of Mechanical Ventilation (EMV): The EMV denominator represents the sum of the number of episodes of mechanical ventilation that occurred in that location during the month. A single episode of mechanical ventilation for each patient is to be counted only once per month. It is possible for a patient to have more than one episode of ventilation occur during a month (e.g., discontinuation of mechanical ventilation for greater than 1 calendar day followed by re-initiation of mechanical ventilation). The EMV denominator is determined by counting all patients in the location who are on mechanical ventilation on the first day of the month. Then, on each subsequent day of the month, count each additional patient that is started on mechanical ventilation. This would include those that are admitted to the location already on mechanical ventilation, those that are newly ventilated and any previously ventilated patients who have new episodes of mechanical ventilation occurring during the same month.

Denominator sampling: To reduce staff time spent collecting surveillance data, once weekly sampling of denominator data may be used as an alternative to daily collection in non-oncology ICUs and wards. The number of patient-days, central line days, or urinary catheter days are collected on a designated day each week (e.g., every Tuesday but avoid Sunday), at the same time during the month. To ensure the accuracy of estimated denominator data obtained by sampling, only ICU and ward location types with an average of 75 or more central line days and urinary catheter days per month are eligible to use this method. You can confirm this by checking last year denominator data. This method is not suitable for NICU, SCA including oncology, nor for ventilator data due much breakdown of data.

Total: Totals for each column should be calculated. At the end of the month, sum up the daily counts and record the sums. This is the number that will be used as denominators for CLABSI, CAUTI, and VAP/VAE rates, respectively.

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GCC Centre for Infection Control
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Denominators for Neonatal Intensive Care Unit (NICU)

Infection Control Surveillance Form

Surveillance plan date					**Facility ID**			**Location:**	Neonatal intensive care unit (NICU)
	M	M	Y	Y	S	#	#		

Birth Weight Categories

Date	**≤750 gm**				**751-1000 gm**				**1001-1500 gm**				**1501-2500 gm**				**>2500 gm**			
	Pts	CL	VNT	UrC	Pts	CL	VNT	UrC	Pts	CL	VNT	UrC	Pts	CL	VNT	UrC	Pts	CL	VNT	UrC
1																				
2																				
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24																				
25																				
26																				
27																				
28																				
29																				
30																				
31																				
Total																				

Pts=number of infants
CL=number of infants with 1 or more central lines, including umbilical catheter
VNT=number of infants on a ventilator
UrC=number of infants with a urinary catheter (Only if NICU CAUTI is allowed)

Assurance of Confidentiality: The information obtained in this surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with applicable regulations

NICU Denominator Form Instructions

IMPORTANT: This form is required to be filled for a given month when one or more components of the device-associated module (CLABSI or VAP) is recorded in the NICU at your facility in this particular month

IMPORTANT: After filling the data for a given month (data are filled on a daily basis), this form is required to be turned in to Infection Control Practitioner/Department by the end of the first week of the next month

Surveillance plan date: Record the month and year for the GCC surveillance plan being recorded (which is the month the data were collected from the NICU)
Facility ID: It is 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC center for infection control, with the first digit refers to the state and the last 2 digits are state-specific numbers.
Location: This form is used only in neonatal intensive care units (NICU)
Number of patients (Pts): For each day of the month selected, record the number of infants in each birth weight category in the unit. Record this number at the same time each day.
number of patients with 1 or more central lines (CL): For each day of the month, at the same time each day, record the number of infants in each birth weight category with 1 or more central lines including umbilical catheter. The differentiation between umbilical catheter and a non-umbilical central line is no longer needed. Only record 1 central line day for a patient that has more than 1 central line in place.
Number of patients on a Ventilator (VNT): For each day of the month, at the same time each day, record the number of infants in each birth weight category who are on a ventilator.
Number of patients with a urinary catheter (UrC): For each day of the month, at the same time each day, record the number of infants in each birth weight category with an indwelling urinary catheter. This data denominator is collected only when NICU CAUTI is allowed

Total: Totals for each column should be calculated. At the end of the month, sum up the daily counts and record the sums by birthweight category. This is the number that will be used as denominators for CLABSI, VAP, and CAUTI rates, respectively.

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GCC Centre for Infection Control
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Denominators for Specialty Care Area (SCA)

Infection Control Surveillance Form

Surveillance plan date M M Y Y

Facility ID S # #

Location: Specialty Care Area

Location name:

Date	**Number of patients**	Number of patients with 1 or more **central lines**		Number of patients with a **urinary catheter**	Number of patients on a **ventilator**		Number of **Episodes** of Mechanical Ventilation
		Temporary	**Permanent**		Total Patients	Number on **APRV**	
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
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25							
26							
27							
28							
29							
30							
31							
Total							
	Patient-days	Central-line days		Urinary catheter-days	Ventilator-days		Episodes of MV

Assurance of Confidentiality: The information obtained in this surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with applicable regulations

SCA Denominator Form Instructions

IMPORTANT: This form is required to be filled for a given month when one or more components of the device-associated module (CLABSI, CAUTI, or VAP/VAE) is recorded in the SCA at your facility in this particular month

IMPORTANT: After filling the data for a given month (data are filled on a daily basis), this form is required to be turned in to Infection Control Practitioner/Department by the end of the first week of the next month

Surveillance plan date: Record the month and year for the GCC surveillance plan being recorded (which is the month the data were collected from the SCA)
Facility ID: It is 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC center for infection control, with the first digit refers to the state and the last 2 digits are state-specific numbers.
Location: This form is used only in specialty care areas(SCA) (includes hematology/oncology wards, bone marrow transplant units, solid organ transplant units, inpatient dialysis units, and chronic care units)
Location name: Record the name of the location e.g. hematology wards
Number of patients: For each day of the month, record the number of patients on the unit. Record this number at the same time each day.
Number of patients with 1 or more central lines: For each day of the month, at the same time each day, record the number of patients on the selected unit who have 1 or more central line(s) in place. If a patient has both a temporary and a permanent line in place, count only once as temporary line. Only record 1 central line day for a patient that has more than 1 central line in place. If the patient has only permanent line, begin recording days on the date the central line was inserted or the first day the line was accessed if the patient was admitted to the facility with the line in place and continue until the line is physically removed or the patient is discharged. "Access" is defined as line placement, infusion or withdrawal through the line.
Number of patients with a urinary catheter: For each day of the month, at the same time each day, record the number of patients on the selected unit who have an indwelling urinary catheter.
Number of patients on a Ventilator-Total patients: For each day of the month, at the same time each day, record the number of patients on the selected unit who are on a ventilator. Note: The total patients on ventilator include also those who are on APRV (see below)

Additional ventilator-related denominators only in VAE surveillance

> **Number of patients on Airway Pressure Release Ventilation (APRV):** For each day of the month, at the same time each day, record the number of patients on the selected unit who are on Airway Pressure Release Ventilation (APRV) or a related mode of mechanical ventilation (e.g., BiLevel, Bi Vent, BiPhasic, PCV+, DuoPAP).
>
> **Number of Episodes of Mechanical Ventilation (EMV):** The EMV denominator represents the sum of the number of episodes of mechanical ventilation that occurred in that location during the month. A single episode of mechanical ventilation for each patient is to be counted only once per month. It is possible for a patient to have more than one episode of ventilation occur during a month (e.g., discontinuation of mechanical ventilation for greater than 1 calendar day followed by re-initiation of mechanical ventilation). The EMV denominator is determined by counting all patients in the location who are on mechanical ventilation on the first day of the month. Then, on each subsequent day of the month, count each additional patient that is started on mechanical ventilation. This would include those that are admitted to the location already on mechanical ventilation, those that are newly ventilated and any previously ventilated patients who have new episodes of mechanical ventilation occurring during the same month.

Total: Totals for each column should be calculated. At the end of the month, sum up the daily counts and record the sums. This is the number that will be used as denominators for CLABSI, CAUTI, and VAP/VAE rates, respectively.

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GCC Centre for Infection Control
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Denominators for Outpatient Dialysis

Infection Control Surveillance Form

Surveillance plan date					**Facility ID**				**Location:**	Outpatient Dialysis
	M	M	Y	Y		S	#	#	**Location name:**	

Vascular Access Type (in increasing risk)	***Number of Chronic Hemodialysis Patients**		
	Day-1	**Day-2**	**Total**
Arterio-venous fistulas: created from the patient's own blood vessels			
Arterio-venous graft: constructed from synthetic materials			
Permanent central line: tunneled cuffed catheters			
Temporary central line: non-tunneled non-cuffed catheter			
Port access device: a fully implantable access device e.g., Lifesite			
Total patients: sum of all patients listed above			

*Record the number of chronic hemodialysis patients with each of the above 5 access types (individually and total) who received hemodialysis at your center **on the first two working days of the month**. Count each patient only once. Only chronic hemodialysis outpatients are included. If a patient has both an implanted access (graft or fistula) and a catheter, count this patient as having the catheter. These data are used to estimate the number of patient-months. Accurate data is strictly required in order to produce reliable rates

Assurance of Confidentiality: The information obtained in this surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with applicable regulations

Outpatient Dialysis Denominator Form Instructions

IMPORTANT: This form is required to be filled in a given month when dialysis incident (DI) event component of the device-associated module is recorded at your Outpatient Dialysis facility in this particular month

IMPORTANT: After filling the data for a given month (data are filled once a month, on the first two working days of the month), this form is required to be turned in to Infection Control Practitioner/Department by the end of the first week of that month

Surveillance plan date: Record the month and year for the GCC surveillance plan being recorded (which is the month and year during which the data were collected for this outpatient dialysis location)

Facility ID: It is 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC center for infection control, with the first digit refers to the state and the last 2 digits are state-specific numbers.

Location: This form is good only for Outpatient Dialysis Units

Location name: Record the name of the location

Number of Chronic Hemodialysis Patients: Record the number of chronic hemodialysis patients with each of the above 5 access types (individually and total) who received hemodialysis at your center **on the first two working days of the month**. Count each patient only once. Only chronic hemodialysis outpatients are included, including transient patients. A patient must be physically present for in-center hemodialysis on one of these two days to be counted on this form (exclude patients who are hospitalized). Exclude also non-hemodialysis patients and exclude inpatients. If the patient has multiple vascular accesses (even if not all used), record that patient once, reporting only their vascular access with the highest risk of infection. Therefore if a patient has both an implanted access (graft or fistula) and a catheter, count this patient as having the catheter. If there are no patients in a given vascular access category, enter 0. These data are used to estimate the number of patient-months. Accurate data is strictly required in order to produce reliable rates.

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GCC Centre for Infection Control
ADD YOU HOSPITAL NAME

Denominators for MDRO/CDI and Antimicrobial Use
Infection Control Surveillance Form

Year | | | | | **Facility ID** | S | # | # |

Monthly collection	Total number of patient-days				Total number of admissions				Outpatient visits
	All ICUs	Inpatient wards Total	Inpatient wards SCA*	Inpatient wards Others*	All ICUs	Inpatient wards Total	Inpatient wards SCA*	Inpatient wards Others*	
January									
February									
March									
April									
May									
June									
July									
August									
September									
October									
November									
December									
Total									

Monthly collection	Total number of patient-days				Total number of admissions				Outpatient visits
	All ICUs	Inpatient wards Total	Inpatient wards SCA*	Inpatient wards Others*	All ICUs	Inpatient wards Total	Inpatient wards SCA*	Inpatient wards Others*	
Quarter-1									
Quarter-2									
Quarter-3									
Quarter-4									
Total									
	Total number of patient-days				Total number of admissions				Outpatient visits

Assurance of Confidentiality: The information obtained in this surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with applicable regulations

Patient-days/admissions Denominator Form Instructions

IMPORTANT: This form is good for the denominators of MDRO/CDI and antimicrobial surveillance across different hospital locations. You can fill the form on a monthly or quarterly basis, as per analysis instruction, but submit of a quarterly basis

Surveillance Year: Record the year for the GCC surveillance plan being recorded
Facility ID: It is 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC center for infection control, with the first digit refers to the state and the last 2 digits are state-specific numbers.
All ICUs: Combined the patient-days or admissions from all ICUs including adult, pediatric, and neonatal locations
Inpatient wards: Combined the patient-days or admissions from all wards (total). You can **optionally** (*) stratify the patient-days or admissions from inpatients wards by SCA status (e.g. oncology ward and all other wards together separately, as per analysis instruction)
Outpatient visits: The total number of patient visits/encounters to outpatient clinics, emergency department, observation units, and other affiliated outpatient locations.

APPENDIX 7: SSI form and Instructions

Add your institution

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GCC Centre for Infection Control
ADD YOU HOSPITAL NAME

Surgical Site Infection (SSI)

Infection Control Surveillance Form

SECTION I: PATIENT AND HOSPITAL INFORMATION

Patient ID: S # # # # # # # # #

Date of birth: D D M M Y Y Y Y

Gender: ☐ Male ☐ Female

Surveillance plan date: M M Y Y

Facility ID: S # #

Ward/ Unit:

Procedure location: ☐ Outpatient ☐ Inpatient ☐ Both

SECTION II: OPERATIVE PROCEDURE INFORMATION

NHSN procedure name & code:

Pre-procedure diagnosis:

Multiple procedures:
☐ Yes , specify:
☐ No
☐ N/A

Emergency:
☐ Yes
☐ No

Trauma:
☐ Yes
☐ No

General anesthesia:
☐ Yes
☐ No

Diabetes:
☐ Yes
☐ No

Ht (cm): ----------

Wt (kg): ----------

Infection present at the time of surgery (PATOS):
☐ Yes
☐ No

Laparoscope/endoscope/scope:
☐ Yes
☐ No

Wound class:
☐ I-Clean
☐ II-Clean-Contaminated
☐ III-Contaminated
☐ IV-Dirty or infected

ASA score:

Actual procedure duration (min):

Proc duration cut-point (min):

Admission date

Discharge date

Date of procedure D D M M Y Y

Operative surgeon ID

Hospitalization death:
☐ Yes, complete below
☐ No

Death date: D D M M Y Y

SSI contributed to death:
☐ Yes
☐ No

SECTION III: PATIENT RISK INDEX CATEGORY

ASA score	Add 1 if ASA score was 3, 4, 5, otherwise 0
Wound class	Add 1 if the wound class was III or IV, otherwise 0
Procedure duration	Add 1 if the procedure duration exceeds the operation specific cut point, otherwise 0
Total	Risk index category of 0, 1, 2 or 3

SECTION IV: SSI EVENT INFORMATION

SSI diagnosed:
☐ Yes, complete below
☐ No

SSI Category: (See the back)
☐ Superficial incisional primary (SIP)
☐ Superficial incisional secondary (SIS)
☐ Deep incisional primary (DIP)
☐ Deep incisional secondary (DIS)
☐ Organ / Space, specify:

SSI detected:
☐ Before discharge
☐ After discharge
☐ On readmission

SSI date: D D M M Y Y

Post-procedure BSI:
☐ Yes
☐ No

Procedure-specific additional questions:

CSEC:
Labor duration: ---------- hours

FUSN
Spinal Level:
□ Atlas-axis □ Atlas-axis/Cervical
□ Cervical □ Cervical/Dorsal/Dorsolumbar
□ Dorsal/Dorsolumbar □ Lumbar/Lumbosacral
Approach/Technique:
□ Anterior □ Posterior
□ Anterior and Posterior □ Transoral

HPRO/KPRO
Type-1: □ Total □ Partial □ Resurfacing
Type-1: □ Primary □ Revision

SECTION V: LABORATORY RECORD

Time of specimen collection
---------:--------- AM / PM

Organism identified:
☐ Yes, complete the back
☐ No

COMMENTS:

	D D M M Y Y
Date data collected	
Collector ID	
Date data entered	
Data entry ID	

Data entry stamp

SECTION V: LABORATORY RECORD

Name of Gram Positive or Negative	Date of record DD-MM-YY	MDRO	TYPE	Antimicrobial sensitivity																														
				AMIK	AMPSUL	AMXCLV	CEFAZ	CEFEP	CEFOTX	CEFOX	CEFTAZ	CEFTRX	CEFUR	CIPRO	CLIND	COL	DORI	ERTA	ERYTH	GENT	IMI	LEVO	LNZ	MERO	METH	MINO	MOXI	OXA	PIP	PIPTAZ	TMZ	TIG	TOBRA	VANC
		☐ Yes ☐ NO																																
		☐ Yes ☐ NO																																
		☐ Yes ☐ NO																																

MDRO: (1) MRSA (2) VRE (3) CephR-Klebsiella (4) Carbapenem resistant Enterobacteriaceae (CRE) (5) MDR Acinetobacter (6) MDR Klebsiella (7) MDR Pseudomonas
CephR-Klebsiella: non-susceptible (resistant or intermediate) to at least one cephalosporin agent (ceftazidime, cefotaxime, ceftriaxone, or cefepime)
Carbapenem resistant Enterobacteriaceae (CRE): E-coli, Klebsiella, or Enterobacter resistant to at least one carbapenem agent (imipenem, meropenem, doripenem, or ertapenem) OR by production of a carbapenemase
MDR Acinetobacter: non-susceptible (resistant or intermediate) to at least one agent in at least 3 out of 6 antimicrobial classes (penicillins, aminoglycosides, cephalosporins, fluoroquinolones, carbapenems, and sulbactam)
MDR Klebsiella or Pseudomonas: non-susceptible (resistant or intermediate) to at least one agent in at least 3 out of 5 antimicrobial classes (penicillins, aminoglycosides, cephalosporins, fluoroquinolones, and carbapenems)

AMK= amikacin
AMPSUL= ampicillin/sulbactam
AMXCLV= amoxicillin/clavulanic
CEFAZ= cefazolin
CEFEP = cefepime
CEFOTX = cefotaxime
CEFOX= cefoxitin
CEFTAZ= ceftazidime
CEFTRX= ceftriaxone
CEFUR= cefuroxime
CIPRO= ciprofloxacin
CLIND= clindamycin
COL= colistin
DORI= doripenem
ERTA= ertapenem
ERYTH= erythromycin
GENT = gentamicin
IMI= imipenem
LEVO= levofloxacin
LNZ= linezolid
MERO= meropenem
METH= methicillin
MINO= minocycline
MOXI= moxifloxacin
OXA= oxacillin
PIP= piperacillin
PIPTAZ= piperacillin/tazobactam
TMZ= sulfamethoxazole /trimethoprim
TIG= tigecycline
TOBRA= tobramycin
VANC= vancomycin

S = Susceptible
I = Intermediate
R = Resistant
N = Not tested

Name of other organisms	Date of record DD-MM-YY	Antimicrobial sensitivity							
		Amphotericin B	**Anidulafungin**	**Caspofungin**	**Fluconazole**	**Flucytosine**	Other drug-1 ----------	Other drug-2 ----------	Other drug-3 ----------

Superficial Incisional SSI
Infection occurs within 30 days after any NHSN operative procedure, ***and*** infection involves only skin and subcutaneous tissue of the incision, ***and*** **at least one of the following**:
☐ Purulent drainage from the superficial incision
☐ Organisms identified from an aseptically-obtained specimen from the superficial incision or subcutaneous tissue by a culture or non-culture methods
☐ At least one of the following signs and symptoms of infection: pain or tenderness; localized swelling; erythema; or heat, **and** superficial incision is deliberately opened by surgeon, attending physician, or other designee and culture or non-culture based testing is not performed. Negative culture or non-culture testing does not meet this criterion
☐ Surgeon, attending physician, or other designee diagnosed a superficial incisional SSI

Deep Incisional SSI
Infection occurs within 30 or 90* days after the NHSN operative procedure, ***and*** infection involves deep soft tissue (e.g. fascial and muscle layers) of the incision, ***and*** **at least one of the following**:
☐ Purulent drainage from the deep incision
☐ Patient has at least one of the following signs or symptoms: fever (>38°C); localized pain or tenderness, **and** deep incision that spontaneously dehisces, or is deliberately opened or aspirated and organism is identified by a culture or non-culture methods or culture or non-culture testing is not performed
☐ Abscess or other evidence of infection involving the deep incision that is detected on gross anatomical or histopathologic exam, or imaging test

Organ/Space SSI
Infection occurs within 30 or 90* days after the NHSN operative procedure, ***and*** infection any part of the body deeper than the fascial/muscle layers, that is opened or manipulated during the operative procedure, **and at least one of the following:**
☐ Purulent drainage from a drain that is placed into the organ/space (e.g., closed suction drainage system, open drain, T-tube drain, CT guided drainage)
☐ Organisms are identified from an aseptically-obtained fluid or tissue in the organ/space by a culture or non-culture methods
☐ Abscess or other evidence of infection involving the organ/space that is detected on gross anatomical or histopathologic exam, or imaging test
AND meets at least one criterion for a specific organ/space ** infection site: for example **IAB-Intraabdominal infection**:
(1) Organisms identified from purulent or abscess material
(2) Abscess without (a) or with (b) positive blood culture/non-culture for intestinal organisms
(3) Two of the following symptoms; fever, nausea, vomiting, abdominal pain, or jaundice **AND** (a) organism identified from the intraabdominal space or (b) positive blood culture/non-culture for intestinal organisms plus imaging suggestive of infection

***Use 90 only for these NHSN operative procedure;** BRST, CARD,CBGB, CBGC, CRAN, FUSN, FX, HER, HPRO, KPRO, PACE, PVBY, or VSHN

**** Specific Sites of an Organ/Space SSI include;** BONE, LUNG, BRST, MED, CARD, MEN, DISC, ORAL, EAR, OREP, EMET, PJI, ENDO, SA, EYE, SINU, GIT, UR, HEP, USI, IAB, VASC, IC, VCUF, or JNT

Two specific types of superficial and deep surgical incisional SSIs:
1. Primary- a superficial or deep incisional SSI that is identified in a primary incision in a patient that has had an operation with one or more incisions (e.g., C-section incision or chest incision for CBGB)
2. Secondary- a superficial or deep incisional SSI that is identified in the secondary incision in a patient that has had an operation with more than one incision (e.g., donor site [leg] incision for CBGB)

SSI Form Instructions

DISCLAIMER:

Assurance of Confidentiality: The information obtained in this surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with applicable regulations

IMPORTANT: This form is required to be filled for all surgical patients in any inpatient/outpatient setting where (at least one) selected NHSN Operative Procedure is performed in case SSI component of the procedure-associated module for that selected procedure is recorded at your facility in this particular month

SECTION I: PATIENT AND HOSPITAL INFORMATION:

Patient ID: It is 9-digit number that will be assigned to every patient by the GCC surveillance plan participating hospitals as described below:

K. The first digit refer to the state number as follow (alphabetical order):
1-Bahrain 2-Kuwait 3-Oman 4-Qatar 5-Saudi Arabia 6-UAE 7-Yemen

L. The next 8 digits refer to the patient's medical record number (MRN) or file number
Example: If a Saudi patient was admitted to the MNGHA and has a medical record number of 1052647, he will be assigned this ID: **501052647**

Date of birth: Add the patient birth date in the format DD-MM-YYYY

Gender: Check male or female.

Surveillance plan date: Record the month and year for the GCC surveillance plan being recorded (which is the month the procedure was done)

Facility ID: It is 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC center for infection control, with the first digit refers to the state and the last 2 digits are state-specific numbers.

Ward/unit: When applicable, record the ward/clinic/unit name/number where the procedure was done

Procedure Location: Check the ward/unit type.

SECTION II: OPERATIVE PROCEDURE INFORMATION:

Name of procedure: Record the name of the surgical procedure done e.g. cholecystectomy

NHSN procedure code (optional): It is 3-4 letters assigned by the American National Healthcare Safety Network (NHSN), e.g. cholecystectomy is given the code CHOL

Multiple procedures: If more than one category of NHSN operative procedure was performed through the same incision during the same trip to the operating room, check "Yes" and add the name of the other procedure(s). Note: Same procedure via separate incisions during same trip to operating room (i.e. right and left HPRO), separate forms are completed.

Emergency: Check "Yes" if this operative procedure was a non-elective, unscheduled operative procedure, otherwise check "No"

Trauma: Check "Yes" if operative procedure was performed because of blunt or penetrating traumatic injury to the patient, otherwise check "No"

General anesthesia: Check "Yes" if general anesthesia was used for the operative procedure, otherwise check "No"

Diabetes: Check "Yes" only if patient has diabetes, otherwise check "No"

Height: Record patient's height in cm

Weight: Record patient's weight in kg

Infection present at the time of surgery (PATOS): Check "Yes" if patient has an evidence of a pre-existing infection or abscess at the start of or during the time of surgical procedure, otherwise check "No"

Laparoscope/endoscope/scope used: Scope is an instrument used to visualize the interior of a body cavity or organ. check "Yes" if the entire operative procedure was performed using an endoscope/laparoscope/scope, otherwise check "No". NOTE: If a scope site has to be extended for hand assist or removal of specimen this will still meet scope "Yes". If the procedure is converted to an open procedure it will be scope "No".

Closure Technique: If the technique was primary check "Primary", otherwise check "Other than primary". Primary Closure is defined as closure of the skin level of all or part of the incision during the original surgery, regardless of the presence of wires, wicks, drains, or other devices or objects extruding through the incision

Wound class: An assessment of the likelihood and degree of contamination of a surgical wound at the time of the operation. The wound class system used in NHSN is an adaptation of the American college of Surgeons wound classification schema. Wounds are divided into four classes:

- **I- Clean**: An uninfected operative wound in which no inflammation is encountered and the respiratory, alimentary, genital, or uninfected urinary tracts are not entered. In addition, clean wounds are primarily closed and, if necessary, drained with closed drainage. Operative incisional wounds that follow nonpenetrating (blunt) trauma should be included in this category if they meet the criteria.
- **II- Clean-Contaminated**: Operative wounds in which the respiratory, alimentary, genital, or urinary tracts are entered under controlled conditions and without unusual contamination. Specifically, operations involving the biliary tract, appendix, vagina, and oropharynx are included in this category, provided no evidence of infection or major break in technique is encountered.
- **III- Contaminated**: Open, fresh, accidental wounds. In addition, operations with major breaks in sterile technique (e.g., open cardiac massage) or gross spillage from the gastrointestinal tract, and incisions in which acute, nonpurulent inflammation is encountered are included in this category.
- **IV- Dirty or Infected**: Includes old traumatic wounds with retained devitalized tissue and those that involve existing clinical infection or perforated viscera. This definition suggests that the organisms causing postoperative infection were present in the operative field before the operation.

ASA score: it is the American Society of Anesthesiology (ASA) score as rated by an anesthesiologist prior to operation and is range from 1-5.

Actual procedure duration (min): It is the actual time in minutes the procedure lasted. For example, in a cholecystectomy that lasted 1.5 hours, record "090" minutes
Procedure duration cut-point (min): It is the procedure duration cut-point assigned by NHSN. For example, 56 min is the cut point for C-section procedure
Admission date: Record the date patient was admitted to facility
Discharge date: Record the date patient was discharged from facility
Date of procedure: Record the date the procedure done
Operative surgeon ID: record the hospital specific 5-digit or 6-digit ID for the operating surgeon (who performed the principal operative procedure)

Note: If the procedure is CS, then collect data on height (cm), weight (kg), labour duration (h) and estimated blood loss (ml). If the procedure is spinal fusion/refusion or hip/knee prostheses, additional info is required (see NHSN manual)

SECTION III: PATIENT RISK INDEX CATEGORY

ASA score: If American Society of Anesthesiology (ASA) score as rated by an anesthesiologist prior to operation was 3, 4, 5, record a score of 1, otherwise 0
Wound class: If it was contaminated or dirty procedure (Surgical site wound classification Class III or IV), record a score of 1, otherwise 0
Procedure duration: If the procedure duration was > procedure-specific cut point (75th percentile), record score of 1, otherwise 0. For example, 2 hours is the cut point for cholecystectomy procedure, more than 2 hours will get a score of 1
Total: Add up the above 3 items to calculate the risk index category of 0, 1, 2 and 3

SECTION IV: SSI EVENT INFORMATION:

SSI diagnosed: If SSI was diagnosed, then you will be required to answer all the section questions as applicable. If no SSI was diagnosed, then check "No" and do not answer any other question in that section
SSI Category: Record the SSI category per the NHSN definitions on the back of the SSI form. Please check the appropriate boxes on the back of the form that corresponds to the patient category.
SSI detected: Check "Before discharge" if SSI was identified during the current admission. Check "After discharge if SSI was identified during post-discharge surveillance including those SSI identified by another facility (i.e., patient with SSI was admitted to a facility other than the one in which the procedure was performed). Check "On readmission" if SSI was identified due to patient readmission to the facility where the operation was done.
SSI date: Record the date SSI was diagnosed

Superficial Incisional SSI
Infection occurs within 30 days after any NHSN operative procedure, ***and*** infection involves only skin and subcutaneous tissue of the incision, ***and*** **at least one of the following**:
- ☐ Purulent drainage from the superficial incision
- ☐ Organisms identified from an aseptically-obtained specimen from the superficial incision or subcutaneous tissue by a culture or non-culture methods
- ☐ At least one of the following signs and symptoms of infection: pain or tenderness; localized swelling; erythema; or heat, **and** superficial incision is deliberately opened by surgeon, attending physician, or other designee and culture or non-culture based testing is not performed. Negative culture or non-culture testing does not meet this criterion
- ☐ Surgeon, attending physician, or other designee diagnosed a superficial incisional SSI

Deep Incisional SSI
Infection occurs within 30 or 90* days after the NHSN operative procedure, ***and*** infection involves deep soft tissue (e.g. fascial and muscle layers) of the incision, ***and*** **at least one of the following**:
- ☐ Purulent drainage from the deep incision
- ☐ Patient has at least one of the following signs or symptoms: fever (>38°C); localized pain or tenderness, **and** deep incision that spontaneously dehisces, or is deliberately opened or aspirated and organism is identified by a culture or non-culture methods or culture or non-culture testing is not performed
- ☐ Abscess or other evidence of infection involving the deep incision that is detected on gross anatomical or histopathologic exam, or imaging test

Organ/Space SSI
Infection occurs within 30 or 90* days after the NHSN operative procedure, ***and*** infection any part of the body deeper than the fascial/muscle layers, that is opened or manipulated during the operative procedure, **and at least one of the following:**
- ☐ Purulent drainage from a drain that is placed into the organ/space (e.g., closed suction drainage system, open drain, T-tube drain, CT guided drainage)
- ☐ Organisms are identified from an aseptically-obtained fluid or tissue in the organ/space by a culture or non-culture methods
- ☐ Abscess or other evidence of infection involving the organ/space that is detected on gross anatomical or histopathologic exam, or imaging test

AND meets at least one criterion for a specific organ/space ** infection site: for example **IAB-Intraabdominal infection**:
(1) Organisms identified from purulent or abscess material
(2) Abscess without (a) or with (b) positive blood culture/non-culture for intestinal organisms
(3) Two of the following symptoms; fever, nausea, vomiting, abdominal pain, or jaundice **AND** (a) organism identified from the intraabdominal space or (b) positive blood culture/non-culture for intestinal organisms plus imaging suggestive of infection

***Use 90 only for these NHSN operative procedure;** BRST, CARD,CBGB, CBGC, CRAN, FUSN, FX, HER, HPRO, KPRO, PACE, PVBY, or VSHN

**** Specific Sites of an Organ/Space SSI include;** BONE, LUNG, BRST, MED, CARD, MEN, DISC, ORAL, EAR, OREP, EMET, PJI, ENDO, SA, EYE, SINU, GIT, UR, HEP, USI, IAB, VASC, IC, VCUF, or JNT

Two specific types of superficial and deep surgical incisional SSIs:
3. Primary- a superficial or deep incisional SSI that is identified in a primary incision in a patient that has had an operation with one or more incisions (e.g., C-section incision or chest incision for CBGB)
4. Secondary- a superficial or deep incisional SSI that is identified in the secondary incision in a patient that has had an operation with more than one incision (e.g., donor site [leg] incision for CBGB)

Post-procedure BSI: Check "Yes" if there is a culture-confirmed bloodstream infection (BSI) and a related nosocomial infection at the surgical site, otherwise check "No"
Hospitalization death: Check "Yes" if patient died during the hospitalization. In this case, you will need to answer the next 2 questions (the date of death and if SSI contributed to death or not)
Death date: Record the date of hospitalization death

SSI contributed to death: Check "Yes" if the SSI either directly caused death or exacerbated an existing disease condition which then led to death during hospitalization
Procedure-specific additional questions: If procedure was CSEC record the duration of labor in hours, if the procedure was FUSN check the appropriate spinal level and the approach/technique used, if the procedure was HPRO/KPRO check the appropriate type

SECTION V: LABORATORY RECORD
Organism identified: Record "Yes" if a pathogen was identified, "No" if otherwise; if "Yes, specify the details on reverse table (Section V).
Time of specimen collection: Enter the hour and minute of the sample collection
For specified Gram-positive and Gram-negative Organisms: Up to three pathogens may be reported. If multiple pathogens are identified, record the pathogen judged to be the most important cause of infection as #1, the next most as #2, and the least as #3 (usually this order will be indicated on the laboratory report).
Antimicrobial agent and sensitivity results: For each antimicrobial agent listed, record the pathogen's susceptibility result: S - Susceptible, I - Intermediate, R - Resistant, N - Not Tested.
For Other Organisms and their antimicrobial agents and sensitivity: Same as above but additionally give you the option to add more antifungal agents

MDRO: Is the recorded organism meet any of MDRO definitions? If yes, fill the number corresponding to the below MDRO types
MDRO types: (1) MRSA (2) VRE (3) CephR-Klebsiella (4) Carbapenem resistant Enterobacteriaceae (CRE) (5) MDR Acinetobacter (6) MDR Klebsiella (7) MDR Pseudomonas

CephR-Klebsiella: non-susceptible (resistant or intermediate) to at least one cephalosporin agent (ceftazidime, cefotaxime, ceftriaxone, or cefepime)

Carbapenem resistant Enterobacteriaceae (CRE): E-coli, Klebsiella, or Enterobacter resistant to at least one carbapenem agent (imipenem, meropenem, doripenem, or ertapenem) OR by production of a carbapenemase

MDR Acinetobacter: non-susceptible (resistant or intermediate) to at least one agent in at least 3 out of 6 antimicrobial classes (penicillins, aminoglycosides, cephalosporins, fluoroquinolones, carbapenems, and sulbactam)

MDR Klebsiella or Pseudomonas: non-susceptible (resistant or intermediate) to at least one agent in at least 3 out of 5 antimicrobial classes (penicillins, aminoglycosides, cephalosporins, fluoroquinolones, and carbapenems)

Classes: Penicillins (Piperacillin, Piperacillin/Tazobactam), Aminoglycosides (Amikacin, Gentamicin, Tobramycin), Cephalosporins (Cefepime, Ceftazidime), Fluoroquinolones (Ciprofloxacin, Levofloxacin), Carbapenems (Imipenem, Meropenem, Doripenem), And Sulbactam (Ampicillin/Sulbactam)

COMMENTS: Add any necessary comments.
DATA COLLECTION: Please add the date the form was completed and the ID of the person who collected/abstracted the data
DATA ENTRY STAMP: After the form is entered on the database, please stamp the form as entered. Please add the date of data entry and the ID of the person who entered the data.
Note: For easy identification from other forms, please copy this form on **PINK** sheets

APPENDIX 8: AUR forms and Instructions

Add your institution

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here

GCC Centre for Infection Control
ADD YOU HOSPITAL NAME
Antimicrobial Use and Resistance (AUR)

Microbiology Data Monthly Form

Infection Control Surveillance Form

Surveillance plan date [ ][ ][ ][ ] (M M Y Y) **Facility ID** [ ][ ][ ] (S # #)

Acinetobacter spp.	ICU/SCA				Other inpatient				Outpatient			
	S	I	R	T	S	I	R	T	S	I	R	T
Amikacin												
Ampicillin+Sulbactam												
Aztreonam												
Cefepime												
Ceftazidime												
Ciprofloxacin/Levofloxacin												
Colistin/Polymyxin B												
Gentamycin												
Imipenam												
Meropenam/Doripenem												
Piperacillin+Tazobactam												
Tetracycline/Doxycycline/Minocycline												
Trimethoprim-Sulfamethoxazole												
Tobramycin												
Others, Specify:												

Pseudomonas aeruginosa	ICU/SCA				Other inpatient				Outpatient			
	S	I	R	T	S	I	R	T	S	I	R	T
Amikacin												
Aztreonam												
Cefepime												
Ceftazidime												
Ciprofloxacin/Levofloxacin												
Colistin/Polymyxin B												
Gentamycin												
Imipenam												
Meropenam/Doripenem												
Piperacillin+Tazobactam												
Tobramycin												
Others, Specify:												

Klebsiella pneumonia/oxytoca	ICU/SCA				Other inpatient				Outpatient			
	S	I	R	T	S	I	R	T	S	I	R	T
Amikacin												
Ampicillin												
Ampicillin+Sulbactam												
Amoxicillin+Clavulante												
Aztreonam												
Cefazolin												
Cefepime												
Cefotaxime/Ceftriaxone												
Ceftazidime												
Cefuroxime												
Cefoxitin/Cefotetan												
Ciprofloxacin/Levofloxacin/ Moxifloxacin												
Colistin/Polymyxin B												
Ertapenem												
Gentamycin												
Imipenam												
Meropenam/Doripenem												
Piperacillin+Tazobactam												

Enterobacter	ICU/SCA				Other inpatient				Outpatient			
	S	I	R	T	S	I	R	T	S	I	R	T
Amikacin												
Ampicillin												
Ampicillin+Sulbactam												
Amoxicillin+Clavulante												
Aztreonam												
Cefazolin												
Cefepime												
Cefotaxime/Ceftriaxone												
Ceftazidime												
Cefuroxime												
Cefoxitin/Cefotetan												
Ciprofloxacin/Levofloxacin/ Moxifloxacin												
Colistin/Polymyxin B												
Ertapenem												
Gentamycin												
Imipenam												
Meropenam/Doripenem												
Piperacillin+Tazobactam												

Tetracycline/Doxycycline/ Minocycline												
Tigecycline												
Trimethoprim+Sulfamethoxazole												
Tobramycin												
Others, Specify:												

Escherichia coli	**ICU/SCA**				**Other inpatient**				**Outpatient**			
	S	**I**	**R**	**T**	**S**	**I**	**R**	**T**	**S**	**I**	**R**	**T**
Amikacin												
Ampicillin												
Ampicillin+Sulbactam												
Amoxicillin+Clavulanate												
Aztreonam												
Cefazolin												
Cefepime												
Cefotaxime/Ceftriaxone												
Ceftazidime												
Cefuroxime												
Cefoxitin/Cefotetan												
Ciprofloxacin/Levofloxacin/ Moxifloxacin												
Colistin/Polymyxin B												
Ertapenem												
Gentamycin												
Imipenam												
Meropenam/Doripenem												
Piperacillin+Tazobactam												
Tetracycline/Doxycycline/Minocycline												
Tigecycline												
Trimethoprim+Sulfamethoxazole												
Tobramycin												
Others, Specify:												

Candida	**ICU/SCA**				**Other inpatient**				**Outpatient**			
	S	**I**	**R**	**T**	**S**	**I**	**R**	**T**	**S**	**I**	**R**	**T**
Anidulafungin												
Caspofungin												
Fluconazole												
Flucytosine												
Itraconazole												
Micafungin												
Voriconazole												
Others, specify:												

Tetracycline/Doxycycline/ Minocycline												
Tigecycline												
Trimethoprim+Sulfamethoxazole												
Tobramycin												
Others, Specify:												

***Enterococcus* spp.**	**ICU/SCA**				**Other inpatient**				**Outpatient**			
	S	**I**	**R**	**T**	**S**	**I**	**R**	**T**	**S**	**I**	**R**	**T**
Daptomycin												
Gentamycin- high level test												
Linezolid												
Vancomycin												
Others, specify:												

Coagulase-negative Staphylococcus	**ICU/SCA**				**Other inpatient**				**Outpatient**			
	S	**I**	**R**	**T**	**S**	**I**	**R**	**T**	**S**	**I**	**R**	**T**
Vancomycin												
Others, specify:												

Staphylococcus aureus	**ICU/SCA**				**Other inpatient**				**Outpatient**			
	S	**I**	**R**	**T**	**S**	**I**	**R**	**T**	**S**	**I**	**R**	**T**
Ciprofloxacin/Levofloxacin/ Moxifloxacin												
Clindamycin												
Daptomycin												
Doxycycline/Minocycline												
Erythromycin												
Gentamycin												
Linezolid												
Oxacillin/Cefoxitin/Methicillin												
Rifampin												
Tetracycline												
Tigecycline												
Trimethoprim+Sulfamethoxazole												
Vancomycin												
Others, Specify:												

Microbiology Laboratory Monthly Form Instructions

DISCLAIMER:
Assurance of Confidentiality: The information obtained in this surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with applicable regulations

IMPORTANT: If Antimicrobial Use and Resistance (AUR) option is chosen in your hospital, this form is required to be filled (once at the end of a given month) for all microbiological laboratory data submitted for all three of the following hospital areas: 1) at least one ICU/SCA, 2) all non-ICU/SCA inpatient areas combined, and 3) all outpatient areas combined.

Surveillance plan date: Record the month and year for the GCC surveillance plan being recorded (which is the month isolates were tested)

Facility ID: It is 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC center for infection control, with the first digit refers to the state and the last 2 digits are state-specific numbers.

Location: Microbiological surveillance may be done in (1) At least one of the intensive care units and/or specialty care areas (includes hematology/oncology wards, bone marrow transplant units, solid organ transplant units, inpatient dialysis units, and chronic care units, and (2) All non-ICU/SCA inpatient locations (combined) in the institution where patients are housed overnight (e.g., surgical wards), and (3) All Outpatient locations (combined) where patients are ordinarily admitted and discharged on the same day (e.g. same day surgery or cardiac catheterization). Please fill a form section for each of the 3 locations and make sure to specify the name of your hospital location

Susceptibility: Susceptible (S) Intermediate (I) Resistant (R): Record the number of bacterial isolates that are classified as susceptible (S), intermediate (I), and resistant (R) (as defined by CLSI) by minimum inhibitory concentration (MIC) or disc diffusion tested to the antimicrobial agents shown on the form. If testing is not performed on any of the agents listed, enter a zero in each field (S, I, R).

Total Tested (T): It is the total number of each bacterial species that were tested for susceptibility to each of the corresponding antimicrobial agents during a given month. It is equal to the sum of S, I, and R

Note: No duplicate isolates or surveillance cultures are included when filling MDRO forms.
Non-duplicate non-blood isolate: Check "Yes" only if specimen is isolated from a non-duplicate non-blood isolate, otherwise check "No".
Duplicate MDRO non-blood isolate: MDRO isolate from the same patient and location after an initial isolation of the specific MDRO during a calendar month, regardless of specimen source.
Active Surveillance Cultures: Check "Yes" only if specimen is isolated from an active surveillance culture, otherwise check "No". Surveillance cultures: Those cultures not performed for purposes of clinical diagnosis or treatment including, but not limited to stool cultures for VRE and/or nasal swabs for MRSA surveillance.

Add your institution

LOGO

here

GCC Centre for Infection Control
ADD YOU HOSPITAL NAME
Antimicrobial Use and Resistance (AUR)

Pharmacy Data Monthly Form

Infection Control Surveillance Form

Surveillance plan date ☐☐☐☐ (M M Y Y)

Facility ID ☐☐☐ (S # #)

Location:
☐ ICU or Neonatal ICU, specify: ----------
☐ Specialty care area (SCA), specify: ----------
☐ Other inpatient (Non-ICU/NICU/SCA), specify: ----------

Parenteral Antimicrobials			Oral Antimicrobials		
Antimicrobial	**Days used***	**Quantity Used***	**Antimicrobial**	**Days used***	**Quantity Used***
Amikacin		g			
Gentamicin		g			
Tobramycin		g			
Imipenem		g			
Meropenem		g			
Cefepime		g			
Ceftazidim		g			
Cefotaxime		g			
Ceftriaxone		g			
Ciprofloxacin		g	Ciprofloxacin		g
Levofloxacin		g	Levofloxacin		g
Moxifloxacin		g	Moxifloxacin		g
Piperacillin		g			
Piperacillin**/tazobactam		g			
Ampicillin**/sulbactam		g			
Amoxicillin**/Clavulanate		g	Amoxicillin**/Clavulanate		g
Colistin		g			
Tigecycline		g			
Linezolid		g	Linezolid		g
Oxacillin		g			
Vancomycin		g	Vancomycin		g
Caspofungin		g			
Anidulafungin		g			
Trimethoprim**/sulfamethoxazole		g	Trimethoprim**/sulfamethoxazole		g

* Enter zero if drug not on formulary or not used; an entry is required in every field.
** For combination drugs, record grams for the drug marked with the asterisk.

Pharmacy Data Monthly Form Instructions

DISCLAIMER:
Assurance of Confidentiality: The information obtained in this surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with applicable regulations

IMPORTANT: If Antimicrobial Use and Resistance (AUR) option is chosen in your hospital, this form is required to be filled (once at the end of a given month) for all pharmacy data submitted for all these hospital areas: 1) at least one ICU/SCA AND 2) all non-ICU/SCA inpatient areas combined.

Surveillance plan date: Record the month and year for the GCC surveillance plan being recorded (which is the month antimicrobials were used)

Facility ID: It is 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC center for infection control, with the first digit refers to the state and the last 2 digits are state-specific numbers.

Location: Pharmacy surveillance may be done in (1) At least one of the intensive care units and/or specialty care areas (includes hematology/oncology wards, bone marrow transplant units, solid organ transplant units, inpatient dialysis units, and chronic care units, AND (2) All non-ICU/SCA inpatient locations (combined) in the institution where patients are housed overnight (e.g., surgical wards). No pharmacy data are collected on outpatient areas.

Quantity Used: Record the total number of **grams** of each parenteral/oral antimicrobial agent used by the inpatient care location during the specified month. If the antimicrobial agent is not on your formulary or none was used, enter a zero. An entry is required in every field. For combination drugs, enter grams for the drug marked with an asterisk (**).

Days Used: Record the total number of **days** of each parenteral/oral antimicrobial agent used (in any amount) by the inpatient care location during the specified month. If the antimicrobial agent is not on your formulary or none was used, enter a zero. An entry is required in every field.

APPENDIX 9: Antimicrobial Stewardship Program Forms and Instructions

MRN:	
Hospital:	□ Riyadh □ Jeddah □ Dammam □ Hassa □ Madina
Unit:	
Diagnosis	

ADD YOU HOSPITAL NAME

Antimicrobial Monitoring Form

Antimicrobial Stewardship Program

Date of hospital admission:	/ /
Date of hospital discharge:	/ /
Date of ICU admission:	/ /
Date of ICU discharge:	/ /

Antimicrobial used (1)	□ Mp □ Ip □ Tz □ Co □ Li □ Tg □ Cp □ Af □ Vn □ Cef □ Cip □ ----------
Start date	/ /
End date	/ /
Restricted	□ Yes □ No
Type	□ Empiric □ Therapeutic □ Prophylactic
Appropriate	□ Yes □ No
Choice	□ Yes □ No
Dose	□ Yes □ No
Duration	□ Yes □ No
Route	□ Yes □ No
ASP consult	□ Yes □ No
Time	□ Pre-AM start □ Post-AM start □ NA
Approval	□ Yes □ No □ NA
Outcome	□ Staff accept □ Staff decline □ NA
IV to oral	□ Requested □ Not requested □ NA
IV to oral	□ Followed □ Not followed □ NA

Antimicrobial used (2)	□ Mp □ Ip □ Tz □ Co □ Li □ Tg □ Cp □ Af □ Vn □ Cef □ Cip □ ----------
Start date	/ /
End date	/ /
Restricted	□ Yes □ No
Type	□ Empiric □ Therapeutic □ Prophylactic
Appropriate	□ Yes □ No
Choice	□ Yes □ No
Dose	□ Yes □ No
Duration	□ Yes □ No
Route	□ Yes □ No
ASP consult	□ Yes □ No
Time	□ Pre-AM start □ Post-AM start □ NA
Approval	□ Yes □ No □ NA
Outcome	□ Staff accept □ Staff decline □ NA
IV to oral	□ Requested □ Not requested □ NA
IV to oral	□ Followed □ Not followed □ NA

Antimicrobial used (3)	□ Mp □ Ip □ Tz □ Co □ Li □ Tg □ Cp □ Af □ Vn □ Cef □ Cip □ ----------
Start date	/ /
End date	/ /
Restricted	□ Yes □ No
Type	□ Empiric □ Therapeutic □ Prophylactic
Appropriate	□ Yes □ No
Choice	□ Yes □ No
Dose	□ Yes □ No
Duration	□ Yes □ No
Route	□ Yes □ No
ASP consult	□ Yes □ No
Time	□ Pre-AM start □ Post-AM start □ NA
Approval	□ Yes □ No □ NA
Outcome	□ Staff accept □ Staff decline □ NA
IV to oral	□ Requested □ Not requested □ NA
IV to oral	□ Followed □ Not followed □ NA

Culture done	□ Yes, accession # □ Negative □ No	Time	□ Pre-AM start □ Post-AM start □ NA	Specimen	□ Blood □ Resp □ Urine □ Wound □ NP □ Stool □ Rectal □ Other

Organism (1)	
Resistant	□ Yes □ No
MDR	□ Yes □ No
MDR type	□ ESBL □ CRE □ CR-PA □ CR-AB □ MRSA □ VRE □ CDI
HAI	□ Yes □ No
HAI type	□ BSI □ VAP □ UTI □ Other --------□ NA

Organism (2)	
Resistant	□ Yes □ No
MDR	□ Yes □ No
MDR type	□ ESBL □ CRE □ CR-PA □ CR-AB □ MRSA □ VRE □ CDI
HAI	□ Yes □ No
HAI type	□ BSI □ VAP □ UTI □ Other --------□ NA

Organism (3)	
Resistant	□ Yes □ No
MDR	□ Yes □ No
MDR type	□ ESBL □ CRE □ CR-PA □ CR-AB □ MRSA □ VRE □ CDI
HAI	□ Yes □ No
HAI type	□ □ BSI □ VAP □ UTI □ Other ------□ NA

* Meropenem (**Mp**), Imipenem (**Ip**), Tazocin (**Tz**), Colistin (**Co**), Linezolid (**Li**), Tigecycline (**Tg**), Caspofungin (**Cp**), Anidulafungin (**Af**), Vancomycin (**Vn**), Ceftriaxone (**Cef**), Ciprofloxacin (**Cip**). **ASP**, Antimicrobial Stewardship Program; **Pre-AM**, before antimicrobial; **Post-AM**, after antimicrobial; **ESBL**, Extended Spectrum Beta Lactamase Producers; **CRE**, carbapenem-resistant Enterobacteriaceae; **CR-AP**, Carbapenem-Resistant Pseudomonas aeruginosa; **CR-AB**, Carbapenem-Resistant Acinetobacter baumannii; **CDI**, Clostridium difficile infection

Badge # of ID/ASP member:	Date initiated: / /	**Comments:**
Badge # of data collector (if different):	Date initiated: / /	
Badge # of data entry:	Date entered: / /	

Instructions for Antimicrobial Monitoring Form

Who is collecting the form?

Members of the antimicrobial stewardship (ASP)

When the form should be initiated?

When one or more of the monitored antimicrobials are being started in a patient in the ASP-specified unit. Each form represent an episode of antimicrobial start for a confirmed/suspected/predicted infection in a single patient. The same patient can have more than one form a month if he/she has more than one episode in the same month. The date of the form is the date of initiation not completion.

What are the monitored antimicrobials?

Meropenem (Mp), Imipenem (Ip), Tazocin (Tz), Colistin (Co), Linezolid (Li), Tigecycline (Tg), Caspofungin (Cp), Anidulafungin (Af), Vancomycin (Vn), Ceftriaxone (Cef), and Ciprofloxacin (Cip)

Do I have to monitor ALL patients on monitored antimicrobials in the ASP-specified unit?

Ideally yes. However, if the manpower does not allow that you need to create a list of patients on antimicrobials and randomly choose form them. Choosing based on any variable (such as high risk patients or patients with ID consult requested) will introduce bias the data collected

Can the form be collected retrospectively?

No, start prospectively (ideally during in-unit auditing) and any missing information (e.g. culture results or discharge date) can be filled later

Can I fill more than one antimicrobial for the same patient in the same form?

Yes, up to three but each box should only include information for a single antimicrobial. Similarly the information of up to three organisms can be added

When should the form considered ready for data entry?

Submit forms for data entry once a month after filling all relevant questions. The form should be considered open as long as there is still missing information and/or the patient is still not discharged

Antimicrobial used	Choose only one monitored antimicrobial. If the patient is one 2 or 3 antimicrobials, you need to use other boxes. If more than 3 you can attach another form with the same MRN	Outcome	What was the treating team response to the ASP recommendations?
Start date	Date of starting the antimicrobial (format DD/MM/YYYY)	IV to oral	Was IV to oral conversion requested by the ASP team?
End date	Date of stopping the antimicrobial (format DD/MM/YYYY)	IV to oral	If IV to oral conversion was requested by the ASP team, was the recommendation followed? If no IV to oral request, marked NA
Restricted	Is the antimicrobial restricted one?	**Culture done**	Was culture related to the current antimicrobial start done? You can add more than one accession #. Mark negative if no organisms
Type	What was the type of antimicrobial start?	Time	When was the culture related to the current antimicrobial start done?
Appropriate	Was the antimicrobial start appropriate? Including the choice, dose, duration, and route combined. This is a decision of an ID physician or qualified ASP member	Specimen	What was the type of specimen used? You can choose more than one specimen
Choice	Was antimicrobial choice appropriate?	**Organisms**	Type the name of the organism obtained from one or more positive cultures here. The information of up to three organisms can be added, but each in a separate box
Dose	Was antimicrobial dose appropriate?	Resistant	Was the organism resistant to the initiated antimicrobial?
Duration	Was antimicrobial duration appropriate?	MDR	Was the organism fit with any of the MDR definitions below?
Route	Was antimicrobial route appropriate?	MDR type	Choose the type of MDR
ASP consult	Was ASP consultation requested? If no consult, all related questions should be marked NA	HAI	Did the patient have healthcare-associated infection?
Time	When was the ASP consultation requested?	HAI type	What was the type of healthcare-associated infection?
Approval	If it was restricted antimicrobial, was ASP approval obtained?	**Badge:**	Add relevant badge number(s) and date the form was initiated/entered

Date:	/ /
Hospital:	□ Riyadh □ Jeddah □ Dammam □ Hassa □ Madina
Unit:	

ADD YOU HOSPITAL NAME

Antimicrobial Monitoring Form

Short version

Antimicrobial Stewardship Program

Badge # of ID/ASP member:	
Badge # of data collector:	
Badge # of data entry:	

	MRN	Treated Diagnosis	Antimicrobial used	Restricted	Type of therapy	Start date	App indication	App dose	Culture done	Culture timing	Specimen type	Organism	Changes requested	Changes followed
1			□ Mp □ Ip □ Co □ Li □ Tg □ Cp □ Af □ Vn □ Tz □ Cef □ Cip □ ---	□ Yes □ No □ NA	□ Emp □ Therap □ Proph	/	□ Yes □ No	□ Yes □ No	□ Yes □ No	□ Pre □ Post □ NA	□ Bl □ Resp □ Ur □ Wd □	□ ..... □ ..... □ –ve culture	□ Yes □ No	□ Yes □ No □ NA
2			□ Mp □ Ip □ Co □ Li □ Tg □ Cp □ Af □ Vn □ Tz □ Cef □ Cip □ ---	□ Yes □ No □ NA	□ Emp □ Therap □ Proph	/	□ Yes □ No	□ Yes □ No	□ Yes □ No	□ Pre □ Post □ NA	□ Bl □ Resp □ Ur □ Wd □	□ ..... □ ..... □ –ve culture	□ Yes □ No	□ Yes □ No □ NA
3			□ Mp □ Ip □ Co □ Li □ Tg □ Cp □ Af □ Vn □ Tz □ Cef □ Cip □ ---	□ Yes □ No □ NA	□ Emp □ Therap □ Proph	/	□ Yes □ No	□ Yes □ No	□ Yes □ No	□ Pre □ Post □ NA	□ Bl □ Resp □ Ur □ Wd □	□ ..... □ ..... □ –ve culture	□ Yes □ No	□ Yes □ No □ NA
4			□ Mp □ Ip □ Co □ Li □ Tg □ Cp □ Af □ Vn □ Tz □ Cef □ Cip □ ---	□ Yes □ No □ NA	□ Emp □ Therap □ Proph	/	□ Yes □ No	□ Yes □ No	□ Yes □ No	□ Pre □ Post □ NA	□ Bl □ Resp □ Ur □ Wd □	□ ..... □ ..... □ –ve culture	□ Yes □ No	□ Yes □ No □ NA
5			□ Mp □ Ip □ Co □ Li □ Tg □ Cp □ Af □ Vn □ Tz □ Cef □ Cip □ ---	□ Yes □ No □ NA	□ Emp □ Therap □ Proph	/	□ Yes □ No	□ Yes □ No	□ Yes □ No	□ Pre □ Post □ NA	□ Bl □ Resp □ Ur □ Wd □	□ ..... □ ..... □ –ve culture	□ Yes □ No	□ Yes □ No □ NA
6			□ Mp □ Ip □ Co □ Li □ Tg □ Cp □ Af □ Vn □ Tz □ Cef □ Cip □ ---	□ Yes □ No □ NA	□ Emp □ Therap □ Proph	/	□ Yes □ No	□ Yes □ No	□ Yes □ No	□ Pre □ Post □ NA	□ Bl □ Resp □ Ur □ Wd □	□ ..... □ ..... □ –ve culture	□ Yes □ No	□ Yes □ No □ NA
7			□ Mp □ Ip □ Co □ Li □ Tg □ Cp □ Af □ Vn □ Tz □ Cef □ Cip □ ---	□ Yes □ No □ NA	□ Emp □ Therap □ Proph	/	□ Yes □ No	□ Yes □ No	□ Yes □ No	□ Pre □ Post □ NA	□ Bl □ Resp □ Ur □ Wd □	□ ..... □ ..... □ –ve culture	□ Yes □ No	□ Yes □ No □ NA
8			□ Mp □ Ip □ Co □ Li □ Tg □ Cp □ Af □ Vn □ Tz □ Cef □ Cip □ ---	□ Yes □ No □ NA	□ Emp □ Therap □ Proph	/	□ Yes □ No	□ Yes □ No	□ Yes □ No	□ Pre □ Post □ NA	□ Bl □ Resp □ Ur □ Wd □	□ ..... □ ..... □ –ve culture	□ Yes □ No	□ Yes □ No □ NA
9			□ Mp □ Ip □ Co □ Li □ Tg □ Cp □ Af □ Vn □ Tz □ Cef □ Cip □ ---	□ Yes □ No □ NA	□ Emp □ Therap □ Proph	/	□ Yes □ No	□ Yes □ No	□ Yes □ No	□ Pre □ Post □ NA	□ Bl □ Resp □ Ur □ Wd □	□ ..... □ ..... □ –ve culture	□ Yes □ No	□ Yes □ No □ NA
10			□ Mp □ Ip □ Co □ Li □ Tg □ Cp □ Af □ Vn □ Tz □ Cef □ Cip □ ---	□ Yes □ No □ NA	□ Emp □ Therap □ Proph	/	□ Yes □ No	□ Yes □ No	□ Yes □ No	□ Pre □ Post □ NA	□ Bl □ Resp □ Ur □ Wd □	□ ..... □ ..... □ –ve culture	□ Yes □ No	□ Yes □ No □ NA

* **Antimicrobials used** include Meropenem (**Mp**), Imipenem (**Ip**), Colistin (**Co**), Linezolid (**Li**), Tigecycline (**Tg**), Caspofungin (**Cp**), Anidulafungin (**Af**), Vancomycin (**Vn**), Ceftriaxone (**Cef**), Tazocin (**Tz**), Ciprofloxacin (**Cip**). **Restricted antimicrobials** include all except Tz, Cef, and Cip or as otherwise specified later. **Type of antimicrobial start** includes empiric, therapeutic, and prophylactic. **App,** appropriate. **Culture timing** includes pre, before antimicrobial start; post, after antimicrobial start. **Specimen type:** Bl, blood; Resp, respiratory; Ur, urine; Wd, wound

Instructions for Antimicrobial Monitoring Form (Short version)

Who is collecting the form?

Members of the antimicrobial stewardship (ASP).

When the form should be initiated?

This form is created to fit the regular monitoring activity for the ASP team. The form should cover a specified unit during a given day/auditing visit. The previous long version of the Antimicrobial Monitoring Form should be reserved for defined period/location of antimicrobial monitoring ideally before and after intervention to collect information for multiple KPIs

What are the monitored antimicrobials?

Meropenem (Mp), Imipenem (Ip), Colistin (Co), Linezolid (Li), Tigecycline (Tg), Caspofungin (Cp), Anidulafungin (Af), Vancomycin (Vn), Tazocin (Tz), Ceftriaxone (Cef), and Ciprofloxacin (Cip)

Do I have to monitor ALL patients on monitored antimicrobials in a specified unit?

Yes, the form should be filled for all patients reviewed by the ASP team

Can the form be collected retrospectively?

No, start prospectively (ideally during auditing visit) and any missing information (e.g. culture results) can be filled later

Can I fill the monitoring information of more than one patient in the same form?

Yes, the form should cover a specified unit during a given day/auditing visit with each row represents a patient-day of antimicrobial use

Can I fill more than one antimicrobial for the same patient in the same form?

Yes, as each row represents a patient-day of antimicrobial use, so if the patient is using 2 antimicrobials in the same day fill 2 rows

Can I fill the monitoring information of more than one day for the same patient in the same form?

No, you should start a new form every day/auditing visit. However, if the information in one every day/auditing visit exceeds 10 rows attach a new page of the form

When should the form considered ready for data entry?

Submit forms for data entry once a month after filling all relevant questions. The form should be considered open as long as there is still missing information

MRN	Type the MRN of the patient monitored
Treated Diagnosis	Type the diagnosis for which the chosen antimicrobial was initially prescribed
Antimicrobial used	Choose only one monitored antimicrobial. If the patient is one 2 or 3 antimicrobials, you need to fill each in a separate row
Restricted	Currently all included antimicrobials (above) are restricted except tazocin, ceftriaxone, and ciprofloxacin. However, this will depend on the unit. For example, currently no restriction in the ICU and therefore you should choose not applicable (NA)
Type of therapy	Choose the type of the initial start of the chosen antimicrobial: Was it empiric, therapeutic, or prophylactic?
Start date	Type the date of start of the chosen antimicrobial (format DD/MM)
Appropriate indication	Given the diagnosis, culture if available, and other relevant patient conditions, was the start of the chosen antimicrobial appropriate? This should be the decision of a qualified ASP member or ID physician.
Appropriate dose	Given the diagnosis, culture if available, and other relevant patient conditions, was the dose of the chosen antimicrobial appropriate? This should be the decision of a qualified ASP member or ID physician.
Culture done	Was a culture related to the current antimicrobial done?
Culture timing	When was the culture related to the current antimicrobial done? before or after antimicrobial start? or NA which means no culture was done
Specimen type	What was the type of specimen of the related culture? You can choose more than one specimen. Blood, respiratory, urine, and wound were added. If you have another specimen just type it down
Organism	Type the name of the organism(s) obtained from positive culture(s) related to the current antimicrobial, otherwise choose negative culture
Changes requested	Did the ASP team request changes concerning the type, dose, duration, route of the chosen antimicrobial?
Changes followed	Were the changes requested by the ASP team followed by the unit staff? NA means no changes requested

APPENDIX 10: MDRO & C. Difficile Forms and Instructions

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GCC Centre for Infection Control
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Multi Drug Resistant Organism (MDRO)

Infection Control Surveillance Form

SECTION I: PATIENT AND HOSPITAL INFORMATION

Patient ID (S # # # # # # # #)

Date of birth (D D M M Y Y Y Y)

Gender
☐ Male
☐ Female

Surveillance plan date (M M Y Y)

Facility ID (S # #)

Location:
☐ ICU or Neonatal ICU, specify: ----------
☐ Specialty care area (SCA), specify: ----------
☐ Other inpatient (Non-ICU/NICU/SCA), specify: ----------
☐ Outpatients, specify: ----------

SECTION II: MDRO types: (one organism per form):

Gram-positive:
☐ MRSA
☐ VRE

Non-fermenters:
☐ Acinetobacter spp.
☐ Pseudomonas spp.

Enterobacteriaceae:
☐ Klebseilla pneum/spp.
☐ Enterobacter spp.
☐ Escherichia coli

Answer these questions

Enterobacteriaceae:
Carbapenem-resistant (CRE) ☐ Yes ☐ No
ESBL ☐ Yes ☐ No

Klebseilla:
CephR-Klebsiella ☐ Yes ☐ No
MDR Klebsiella ☐ Yes ☐ No

SECTION III: SPECIMEN SITES (check all what apply)

☐ Blood ☐ Urine ☐ Rectal ☐ Stool ☐ Nares ☐ Axilla ☐ Groin ☐ Umbilical ☐ Sputum/Tracheal aspirate ☐ Wound, ---------- ☐ Others, ----------

Unique blood source:
☐ Yes
☐ No

Non-duplicate non-blood isolate:
☐ Yes
☐ No

Active surveillance cultures
☐ Yes
☐ No

SECTION IV: MDRO CLASSIFICATIONS

MDRO Presentation:
☐ Colonization
☐ Clinical Infection, types: ☐ BSI ☐ VAP ☐ VAE ☐ UTI ☐ SSI ☐ Others;.....

MDRO source:
☐ Healthcare-Onset (collected ≥ 4 days after admission)
☐ Community-Onset (collected ≤3 days after admission)

SECTION V: ADMISSION & DISCHARGE INFORMATION:

Date of current positive culture: (D D M M Y Y)

Date of current admission: (D D M M Y Y)

Date of current discharge: (D D M M Y Y)

Current admission type:
☐ Emergency
☐ Non-emergency

Current admission diagnosis:

Transferred from another hospital:
☐ Yes, specify ----------
☐ No

Previous positive culture with the same MDRO:
☐ Yes, date: (D D M M Y Y)
☐ No

Decolonization therapy received:
☐ Yes
☐ No

Positive at current discharge:
☐ Yes
☐ No

Hospitalization death:
☐ Yes, complete next 2 questions
☐ No

Death date: (D D M M Y Y)

MDRO contributed to death:
☐ Yes
☐ No

SECTION VI: RISK FACTORS (check all what apply)

☐ Receiving antimicrobial therapy within the last 90 days
☐ Previous hospitalization within the last 90 days
☐ Transferred from a unit with a high colonization/infection rate
☐ Having a prolonged hospital stay (≥5 days)
☐ Previous colonization/infection of MDRO
☐ ICU patients
☐ Patients with immunosuppressive disease or therapy
☐ Indwelling devices (urinary catheter, central line, ventilator, dialysis)
☐ Recent surgery or trauma
☐ Others, specify ----------

	D D M M Y Y	Data entry stamp	D D M M Y Y
Date data collected			**Date data entered**
Collector ID			**Data entry ID**

SECTION VII: LABORATORY RECORD

Name of Gram Positive or Negative	Date of record DD-MM-YY	MDRO TYPE	Antimicrobial sensitivity																													
			AMIK	AMPSUL	AMXCLV	CEFAZ	CEFEP	CEFOTX	CEFOX	CEFTAZ	CEFTRX	CEFUR	CIPRO	CLIND	COL	DORI	ERTA	ERYTH	GENT	IMI	LEVO	LNZ	MERO	METH	MINO	MOXI	OXA	PIP	PIPTAZ	TMZ	TIG	TOBRA	VANC

MDRO: (1) MRSA (2) VRE (3) CephR-Klebsiella (4) Carbapenem resistant Enterobacteriaceae (CRE) (5) MDR Acinetobacter (6) MDR Klebsiella (7) MDR Pseudomonas

CephR-Klebsiella: non-susceptible (resistant or intermediate) to at least one cephalosporin agent (ceftazidime, cefotaxime, ceftriaxone, or cefepime)

Carbapenem resistant Enterobacteriaceae (CRE): E-coli, Klebsiella, or Enterobacter resistant to at least one carbapenem agent (imipenem, meropenem, doripenem, or ertapenem) OR by production of a carbapenemase

MDR Acinetobacter: non-susceptible (resistant or intermediate) to at least one agent in at least 3 out of 6 antimicrobial classes (penicillins, aminoglycosides, cephalosporins, fluoroquinolones, carbapenems, and sulbactam)

MDR Klebsiella or Pseudomonas: non-susceptible (resistant or intermediate) to at least one agent in at least 3 out of 5 antimicrobial classes (penicillins, aminoglycosides, cephalosporins, fluoroquinolones, and carbapenems)

Classes: Penicillins (Piperacillin, Piperacillin/Tazobactam), Aminoglycosides (Amikacin, Gentamicin, Tobramycin), Cephalosporins (Cefepime, Ceftazidime), Fluoroquinolones (Ciprofloxacin, Levofloxacin), Carbapenems (Imipenem, Meropenem, Doripenem), And Sulbactam (Ampicillin/Sulbactam)

AMK= amikacin
AMPSUL= ampicillin/sulbactam
AMXCLV= amoxicillin/clavulanic
CEFAZ= cefazolin
CEFEP = cefepime
CEFOTX = cefotaxime
CEFOX= cefoxitin
CEFTAZ= ceftazidime
CEFTRX= ceftriaxone
CEFUR= cefuroxime
CIPRO= ciprofloxacin
CLIND= clindamycin
COL= colistin
DORI= doripenem
ERTA= ertapenem
ERYTH= erythromycin
GENT = gentamicin
IMI= imipenem
LEVO= levofloxacin
LNZ= linezolid
MERO= meropenem
METH= methicillin
MINO= minocycline
MOXI= moxifloxacin
OXA= oxacillin
PIP= piperacillin
PIPTAZ= piperacillin/tazobactam
TMZ= sulfamethoxazole /trimethoprim
TIG= tigecycline
TOBRA= tobramycin
VANC= vancomycin

S = Susceptible
I = Intermediate
R = Resistant
N = Not tested

Duplicate MDRO non-blood isolate: MDRO isolate from the same patient and location after an initial isolation of the specific MDRO during a calendar month, regardless of specimen source

Unique Blood Source: A MDRO isolate from blood in a patient with no prior positive blood culture for the same MDRO and location in ≤2 weeks, even across calendar months and different facility admissions

Active surveillance cultures: cultures not performed for purposes of clinical diagnosis or treatment including, but not limited to stool cultures for VRE and/or nasal swabs for MRSA surveillance

MDRO Form Instructions

DISCLAIMER:

Assurance of Confidentiality: The information obtained in this surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with applicable regulations

IMPORTANT: This form is required to be filled for all MDRO positive microbiological laboratory data submitted for all three of the following hospital areas: 1) at least one ICU/SCA, 2) all non-ICU/SCA inpatient areas combined, and 3) all outpatient areas combined

SECTION I: PATIENT AND HOSPITAL INFORMATION:

Patient ID: It is 9-digit number that will be assigned to every patient by the GCC surveillance plan participating hospitals as described below:

A. The first digit refer to the state number as follow (alphabetical order):
   1-Bahrain 2-Kuwait 3-Oman 4-Qatar 5-Saudi Arabia 6-UAE 7-Yemen
B. The next 8 digits refer to the patient's medical record number (MRN) or file number
   Example: If a Saudi patient was admitted to the MNGHA and has a medical record number of 1052647, he will be assigned this ID: **501052647**

Date of birth: Add the patient birth date in the format DD-MM-YYYY

Gender: Check male or female.

Surveillance plan date: Record the month and year for the GCC surveillance plan being recorded (which is the month isolates were tested)

Facility ID: It is 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC center for infection control, with the first digit refers to the state and the last 2 digits are state-specific numbers.

Location: MDRO surveillance may be done in (1) intensive care units or neonatal intensive care units (NICU), (2) specialty care areas (includes hematology/oncology wards, bone marrow transplant units, solid organ transplant units, inpatient dialysis units, and chronic care units), and (3) any other inpatients location in the institution where patients are housed overnight (e.g., surgical wards), and (4) outpatients where patients are ordinarily admitted and discharged on the same day (e.g. same day surgery or cardiac catheterization).

SECTION II: MDRO TYPES:

MDRO types: (1) MRSA (2) VRE (3) CephR-Klebsiella (4) Carbapenem resistant Enterobacteriaceae (CRE) (5) MDR Acinetobacter (6) MDR Klebsiella (7) MDR Pseudomonas

CephR-Klebsiella: non-susceptible (resistant or intermediate) to at least one cephalosporin agent (ceftazidime, cefotaxime, ceftriaxone, or cefepime)

Carbapenem resistant Enterobacteriaceae (CRE): E-coli, Klebsiella, or Enterobacter resistant to at least one carbapenem agent (imipenem, meropenem, doripenem, or ertapenem) OR by production of a carbapenemase

MDR Acinetobacter: non-susceptible (resistant or intermediate) to at least one agent in at least 3 out of 6 antimicrobial classes (penicillins, aminoglycosides, cephalosporins, fluoroquinolones, carbapenems, and sulbactam)

MDR Klebsiella or Pseudomonas: non-susceptible (resistant or intermediate) to at least one agent in at least 3 out of 5 antimicrobial classes (penicillins, aminoglycosides, cephalosporins, fluoroquinolones, and carbapenems)

Classes: Penicillins (Piperacillin, Piperacillin/Tazobactam), Aminoglycosides (Amikacin, Gentamicin, Tobramycin), Cephalosporins (Cefepime, Ceftazidime), Fluoroquinolones (Ciprofloxacin, Levofloxacin), Carbapenems (Imipenem, Meropenem, Doripenem), And Sulbactam (Ampicillin/Sulbactam)

SECTION III: SPECIMEN SITES

Record the specimen sites: e.g. blood. Note: you may check more than one specimen type.

Note: No duplicate isolates or surveillance cultures are included when filling MDRO forms.

Unique blood source: Check "Yes" only if specimen is isolated from a unique blood source, otherwise check "No". Unique Blood Source: A MDRO isolate from blood in a patient with no prior positive blood culture for the same MDRO and location in ≤2 weeks, even across calendar months and different facility admissions.

Non-duplicate non-blood isolate: Check "Yes" only if specimen is isolated from a non-duplicate non-blood isolate, otherwise check "No". Duplicate MDRO non-blood isolate: MDRO isolate from the same patient and location after an initial isolation of the specific MDRO during a calendar month, regardless of specimen source.

Active Surveillance Cultures: Check "Yes" only if specimen is isolated from an active surveillance culture, otherwise check "No". Surveillance cultures: Those cultures not performed for purposes of clinical diagnosis or treatment including, but not limited to stool cultures for VRE and/or nasal swabs for MRSA surveillance.

SECTION IV: MDRO CLASSIFICATIONS

Check if the MDRO is colonization or a clinical Infection: Colonization is the presence, growth, and multiplication of the organism without observable clinical symptoms. Infection refers to the invasion of bacteria into tissue with replication of the organism. Infection is characterized by isolation of the organism accompanied by clinical signs of illness such as fever, elevated white blood count, and inflammation. If Clinical Infection is chosen, check event caused by the infection (BSI, VAP, VAE, UTI, SSI or Others).

MDRO Source: Check if the MDRO is healthcare-onset or community-onset. MDRO diagnosed (date of specimen collection) ≥4 days after admission is considered "healthcare-onset" while MDRO diagnosed ≤3 days after admission is considered "community-onset".

SECTION V: ADMISSION & DISCHARGE INFORMATION:

Date of current positive culture: Record the date the patient was currently diagnosed as MDRO (date of specimen collection)
Date of current admission: Record the date the patient was currently admitted to facility
Date of current discharge: Record the date the patient was currently discharged from facility
Admission type: check "emergency" if the patient was admitted from emergency room, otherwise check "non-emergency"
Admission diagnosis: Record the current admission diagnosis
Transferred from another hospital: check "Yes" if the patient was transferred from another hospital (& specify the name of the hospital), otherwise check "No"
Previous positive culture with the same MDRO: check "Yes" if the patient was admitted to facility within the last 3 months (record the date of last discharge in the next question), otherwise check "No"
Previous positive culture with the same organism: check "Yes" if the patient had a previous positive culture with the same MDRO organism, otherwise check "No". If "Yes" is checked record the date of the previous positive culture.
Decolonization therapy received: check "Yes" if the patient received decolonization therapy (in case of MRSA only), otherwise check "No"
Positive at current discharge: Check "Yes" if patient had positive culture at time of current discharge, otherwise check "No"
Hospitalization death: Check "Yes" if patient died during the hospitalization. In this case, you will need to answer the next 2 questions (the date of death and if MDRO contributed to death or not)
Death date: Record the date of hospitalization death
MDRO contributed to death: Check "Yes" if the MDRO either directly caused death or exacerbated an existing disease condition which then led to death during hospitalization

SECTION VI: RISK FACTORS:

Check the appropriate risk factors. Note: you may check more than one risk factor.
Data Collection: Please add the date the data was collected and the ID of the person who collected/abstracted the data
Data entry stamp: After the form is entered on the database, please stamp the form as entered. Please add the date of data entry and the ID of the person who entered the data.

SECTION VII: MICROBIOLOGY LABORATORY RECORD

Organism: Record the name of the tested organism (using the numbers as shown in the lower part of the form)
Antimicrobial agent and sensitivity results: For each antimicrobial agent listed, record the pathogen's susceptibility result: S - Susceptible, I - Intermediate, R - Resistant, N - Not Tested.

Note: For easy identification from other forms, please copy this form on **white** sheets

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GCC Centre for Infection Control
ADD YOU HOSPITAL NAME

Clostridium Difficile Infection (CDI)

Infection Control Surveillance Form

SECTION I: PATIENT AND HOSPITAL INFORMATION

Patient ID (S # # # # # # # # #)

Date of birth (D D M M Y Y Y Y)

Gender
☐ Male
☐ Female

Surveillance plan date (M M Y Y)

Facility ID (S # #)

Location:
☐ ICU (No NICU), specify: ----------
☐ Specialty care area (SCA), specify: ----------
☐ Other inpatient (Non-ICU /Non-SCA), specify: ----------
☐ Outpatients (No outpatient dialysis), specify: ----------

SECTION II: ADMISSION INFORMATION:

Hospital stay:
Admission date: (D D M M Y Y)
Discharge date: (D D M M Y Y)

ICU stay:
Admission date: (D D M M Y Y)
Discharge date: (D D M M Y Y)

Admission diagnosis: ----------
Admission type:
☐ Emergency ☐ Non-emergency

Transferred from another hospital:
☐ Yes, specify ----------
☐ No

SECTION III: CD SAMPLE DETAILS

Stool* positive for C. difficile? ☐ Yes, fill type & date

*Unformed stool specimen (must conform to the container)

☐ No, jump to section VI

☐ Positive toxin assay
☐ Positive PCR
☐ Detection of toxin-producing C. Difficile organism

(D D M M Y Y)

SECTION IV: CD INFECTION DETAILS (positive CDI only)

Type of CDI

☐ **Incident CDI**, report	☐ **Recurrent CDI**, report	☐ **Duplicate CDI**, do not report
>8 weeks from most recent (previous) positive stool sample or first time	>2 weeks but ≤8 weeks from most recent (previous) positive stool sample	≤2 weeks from most recent (previous) positive stool sample

Source of infection

☐ **Community-onset**	☐ **Healthcare -onset**	☐ **Community-onset healthcare-associated**
Specimen collection (event) date is in the first 3 days of admission	Specimen collection (event) date is after the first 3 days of admission	Specimen collection (event) date is in the first 3 days of admission BUT within 4 weeks from last discharge

SECTION V: CDI SYMPTOMS (positive CDI only, check all what apply)

Was the patient symptomatic?
☐ Diarrhea, bowel movements /day -----
☐ Dehydration

☐ **No**
☐ Fever
☐ Weakness

☐ **Yes, fill below**
☐ Abdominal pain
☐ Myalgia

☐ Nausea or vomiting
☐ Others,----------

SECTION VI: CDI RISK FACTORS (check all what apply)

☐ Prolonged (>10 days) antimicrobial therapy within the last 90 days
☐ Multiple (>3) antimicrobial therapy within the last 90 days
☐ Older age (≥65 years)
☐ Previous C. diff infection
☐ Recent (~4 w) hospitalization or prolonged (>3 w) hospitalization
☐ ICU stay
☐ Acid-reducing drugs (proton-pump inhibitors or H2 blockers)
☐ Surgery of the gastrointestinal (GI) tract
☐ Colon disease e.g. inflammatory bowel disease or colorectal cancer
☐ Tube feeding
☐ Immunocompromised status (oncology, HIV, chemotherapy, corticosteroids, organ transplantation, & others)
☐ Significant comorbidity (specially diabetes, renal disease & dialysis)
☐ Others, specify ----------

SECTION VII: COMPLICATIONS (positive CDI only, check all what apply)

☐ Perforated colon and peritonitis
☐ Refractory colitis
☐ Toxic megacolon
☐ Dehydration causing acute kidney failure

SECTION VIII: OUTCOME (check all what apply)

☐ Survived & discharged home
☐ Survived & transferred to another ward
☐ Survived & admitted/readmitted to ICU (within 30 days)
☐ Colon surgery (e.g., colectomy) for complications
☐ Death

Death date (D D M M Y Y)

SECTION IX: MICROBIOLOGY

Name of organism	Date of record DD-MM-YY	Antimicrobial sensitivity (type additional antimicrobial names)					
		Metronidazole	Vancomycin	Fidaxomicin	Rifaximin	**5-**.....	**6-**.....
Clostridium difficile							

Result Codes: **S** = Susceptible **I** = Intermediate **R** = Resistant **N** = Not tested

SECTION X: COMMENTS

Date data collected							**Data entry stamp**	**Date data entered**						
Collector ID								**Data entry ID**						

Clostridium difficile Infection (CDI)-positive laboratory assay:
A positive laboratory test result for C. difficile toxin A and/or B, (includes molecular assays [PCR] and/or toxin assays) tested on an unformed stool specimen (must conform to the container) **OR** A toxin-producing C. difficile organism detected by culture or other laboratory means performed on an unformed stool sample (must conform to the container).

Duplicate C. difficile: Any C. difficile toxin-positive laboratory result from the same patient and location, following a previous C. difficile toxin-positive laboratory result within the past 2 weeks [14 days] (even across calendar months and readmissions to the same facility).

Categorization of CDI Based on Date Specimen:
- **Incident CDI Assay:** Any positive test for CDI from a specimen obtained >8 weeks after the most recent positive test for CDI (or with no previous positive test for CDI documented) for that patient.
- **Recurrent CDI Assay:** Any positive test for CDI from a specimen obtained >2 weeks and ≤8 weeks after the most recent positive test for CDI for that patient.

Categorizing of CDI Based on Date of Admission
- **Community-Onset (CO):** Any positive test for CDI collected in an outpatient location or an inpatient location ≤3 days after admission to the facility
- **Community-Onset Healthcare Facility-Associated (CO-HCFA):** Any positive test for CDI collected from a patient who was discharged from the facility ≤4 weeks prior to current date of stool specimen collection. Data from outpatient locations (e.g., outpatient encounters) are not included in this definition.
- **Healthcare Facility-Onset (HO):** Any positive test for CDI collected >3 days after admission to the facility

CDI Form Instructions

DISCLAIMER:
Assurance of Confidentiality: The information obtained in this surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with applicable regulations

IMPORTANT: This form is required to be filled for all CDI positive microbiological laboratory data submitted for all four of the following hospital areas: 1) Intensive care unit (ICU), 2) Specialty care area (SCA), 3) all non-ICU/SCA inpatient areas combined, and 4) all outpatient areas combined

SECTION I: PATIENT AND HOSPITAL INFORMATION:
Patient ID: It is 9-digit number that will be assigned to every patient by the GCC surveillance plan participating hospitals as described below:

O. The first digit refer to the state number as follow (alphabetical order):
1-Bahrain 2-Kuwait 3-Oman 4-Qatar 5-Saudi Arabia 6-UAE 7-Yemen

P. The next 8 digits refer to the patient's medical record number (MRN) or file number
Example: If a Saudi patient was admitted to the MNGHA and has a medical record number of 1052647, he will be assigned this ID: **501052647**

Date of birth: Add the patient birth date in the format DD-MM-YYYY
Gender: Check male or female.
Surveillance plan date: Record the month and year for the GCC surveillance plan being recorded (which is the month isolates were tested)
Facility ID: It is 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC center for infection control, with the first digit refers to the state and the last 2 digits are state-specific numbers.
Location: MDRO surveillance may be done in (1) intensive care units or neonatal intensive care units (NICU), (2) specialty care areas (includes hematology/oncology wards, bone marrow transplant units, solid organ transplant units, inpatient dialysis units, and chronic care units), and (3) any other inpatients location in the institution where patients are housed overnight (e.g., surgical wards), and (4) outpatients where patients are ordinarily admitted and discharged on the same day (e.g. same day surgery or cardiac catheterization).

SECTION II: ADMISSION INFORMATION:
Hospital admission date: Record the date patient was admitted to facility
Hospital discharge date: Record the date patient was discharged from facility
ICU admission date: Record the date patient was admitted to ICU/NICU
ICU discharge date: Record the date patient was discharged from ICU/NICU
Diagnosis: Record the admission diagnosis
Admission type: Check "Emergency" if patient was admitted in the emergency room, otherwise check "Non-emergency"
Transferred from another hospital: Check "Yes" only if patient was transferred from a different hospital, (& specify the name of the hospital), otherwise check "No"

SECTION III: CD SAMPLE DETAILS
Stool positive for C. Difficile: If "Yes" answer the following 2 questions, if "No" go to the next section. Note: Stool has to be unformed stool specimen (must conform to the container)
Type: Check which test type the sample was positive for; toxin assay, PCR, or detection of toxin-producing C. Difficile organism
Date: Record the date the sample is positive

SECTION IV: CD INFECTION DETAILS
Type of CDI: Based on definitions provided check which type of CDI; incident, recurrent, or duplicate. If the specimen is duplicate (≤2 weeks from most recent or previous positive stool sample), no form can be submitted.

- **Incident CDI Assay:** Any positive test for CDI from a specimen obtained >8 weeks after the most recent positive test for CDI (or with no previous positive test for CDI documented) for that patient.
- **Recurrent CDI Assay:** Any positive test for CDI from a specimen obtained >2 weeks and ≤8 weeks after the most recent positive test for CDI for that patient.

Source of Infection: Based on definitions provided check whether CDI is "community-onset", "healthcare-onset", or "Community-onset Healthcare associated"

- **Community-Onset (CO):** Any positive test for CDI collected in an outpatient location or an inpatient location ≤3 days after admission to the facility
- **Community-Onset Healthcare Facility-Associated (CO-HCFA):** Any positive test for CDI collected from a patient who was discharged from the facility ≤4 weeks prior to current date of stool specimen collection. Data from outpatient locations (e.g., outpatient encounters) are not included in this definition.
- **Healthcare Facility-Onset (HO):** Any positive test for CDI collected >3 days after admission to the facility

SECTION V: CDI SYMPTOMS:
Was the patient symptomatic? If yes, specify which symptoms (you can check one or more symptoms). If No go to next section

SECTION VI: CDI RISK FACTORS:
Check the appropriate risk factors (you can check one or more risk factors)

SECTION VII: COMPLICATIONS:
Check the appropriate complications (you can check one or more complications)

SECTION VIII: OUTCOMES:
Check the appropriate outcome (you can check one or more outcomes). If you check "Death" record the death date

SECTION IX: MICROBIOLOGY
Organism: Record the date of positive sample
Antimicrobial agent and sensitivity results: For each antimicrobial agent listed, record the pathogen's susceptibility result: S - Susceptible, I - Intermediate, R - Resistant, N - Not Tested.

SECTION X: COMMENTS
Date data collected: Please add the date the data was collected and the ID of the person who collected/abstracted the data
Date data entered: Please add the date of data entry and the ID of the person who entered the data.
Data entry stamp: After the form is entered on the database, please stamp the form as entered.

APPENDIX 11: Bundles' Forms and Instructions

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GCC Centre for Infection Control
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Central Line Bundle

Prospective Form

SECTION I: PATIENT AND HOSPITAL INFORMATION:

Patient ID ☐☐☐☐☐☐☐☐☐ (S # # # # # # # #)

Date of birth ☐☐☐☐☐☐☐☐ (D D M M Y Y Y Y)

Gender
☐ Male
☐ Female

Surveillance plan date ☐☐☐☐ (M M Y Y)

Facility ID ☐☐☐ (S # #)

Insertion location:
☐ ICU:-------------------------
☐ NICU:-----------------------
☐ SCA:-------------------------
☐ Other inpatient:-------------

Central line type: ______________________

Insertion site:
☐ R Jugular ☐ L Jugular
☐ R Subclavian ☐ L Subclavian
☐ R Femoral ☐ L Femoral
☐ Umbilical ☐ Others

Follow up location:
☐ ICU:-------------------------
☐ NICU:-----------------------
☐ SCA:-------------------------
☐ Other inpatient:-------------

Operator ID: ☐☐☐☐☐

SECTION II: BUNDLE VARIABLES

1. Hand hygiene	☐ Yes	☐ No	☐ Not documented
2. Maximal barrier precautions	☐ Yes	☐ No	☐ Not documented
For provider: Cap	☐ Yes	☐ No	☐ Not documented
Mask	☐ Yes	☐ No	☐ Not documented
Sterile gloves	☐ Yes	☐ No	☐ Not documented
Sterile gown	☐ Yes	☐ No	☐ Not documented
For patient: Large sterile drape	☐ Yes	☐ No	☐ Not documented
3. Chlorhexidine skin antisepsis: 2% chlorhexidine in alcohol for adults, pediatrics & neonates >2 wk or >1500 gms; 2% aqueous chlorhexidine for neonates <2 wk or <1500 gms	☐ Yes	☐ No	☐ Not documented
4. Optimal catheter site selection: Subclavian vein for adults, femoral for pediatrics, and umbilical or PICC site for neonates	☐ Yes	☐ No	☐ Not documented
Insertion compliance: compliant for the above 4 (insertion) components	☐ Yes	☐ No	

5. Daily review of central line necessity:
With prompt removal of unnecessary lines (record data below by date)

D D M M Y Y				D D M M Y Y			
	☐ Yes	☐ No	☐ ND		☐ Yes	☐ No	☐ ND
	☐ Yes	☐ No	☐ ND		☐ Yes	☐ No	☐ ND
	☐ Yes	☐ No	☐ ND		☐ Yes	☐ No	☐ ND
	☐ Yes	☐ No	☐ ND		☐ Yes	☐ No	☐ ND
	☐ Yes	☐ No	☐ ND		☐ Yes	☐ No	☐ ND
	☐ Yes	☐ No	☐ ND		☐ Yes	☐ No	☐ ND
	☐ Yes	☐ No	☐ ND		☐ Yes	☐ No	☐ ND

Number of ***compliant days*** out of days examined for "daily review" ☐

Number of ***total days*** examined for "daily review" ☐

COMMENTS:

Date data collected	☐☐☐☐☐☐ (D D M M Y Y)	Data entry stamp	**Date data entered** ☐☐☐☐☐☐ (D D M M Y Y)
Collector ID	☐☐☐☐☐☐		**Data entry ID** ☐☐☐☐☐☐

Central Line Bundle Form (Prospective Form) Instructions

DISCLAIMER:
Assurance of Confidentiality: The information obtained in this surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with applicable regulations

IMPORTANT: This form is required to be filled out for the majority of patients with one or more central lines in the ICU, NICU, SCA, or other inpatient locations in case "Central Line Bundle" is recorded at your facility in this particular month. One form is required for each central line. The prospective form was designed to fit one patient over time

SECTION I: PATIENT AND HOSPITAL INFORMATION:
Patient ID: It is 9-digit number that will be assigned to every patient by the GCC surveillance plan participating hospitals as described below:

A. The first digit refer to the state number as follow (alphabetical order):
   1-Bahrain 2-Kuwait 3-Oman 4-Qatar 5-Saudi Arabia 6-UAE 7-Yemen
B. The next 8 digits refer to the patient's medical record number (MRN) or file number
   Example: If a Saudi patient was admitted to the MNGHA and has a medical record number of 1052647, he will be assigned this ID: **501052647**

Date of birth: Add the patient birth date in the format DD-MM-YYYY. Note: all dates in this form are recorded in the format DD-MM-YY except birth date "DD-MM-YYYY".
Gender: Check male or female.
Surveillance plan date: Record the month and year for the GCC surveillance plan being recorded (which is the month the central line was inserted and/or bundles data are collected)
Facility ID: It is 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC center for infection control, with the first digit refers to the state and the last 2 digits are state-specific numbers.
Location: central line bundle surveillance may be done in (1) intensive care units (ICU), (2) neonatal/pediatric intensive care units (NICU/PICU), (3) specialty care areas (includes hematology/oncology wards, bone marrow transplant units, solid organ transplant units, inpatient dialysis units, and chronic care units), and (4) any other inpatient locations in the institution where patients are housed overnight (e.g., surgical wards). Note: Although locations are categorized into bigger groups (e.g. other inpatients), it is required to add the specific ward/clinic/unit in your hospital that data have been collected from (e.g. other inpatients: ward 15, general medicine). ***However, the CL bundle was designed to apply in ICUs only. The use in SCA may be problematic because of the large number of permanent CL***
Central line type: Record the type of the central line being surveyed
Insertion site: Check the central line insertion site
Operator ID: Enter the ID (badge number) of the person who inserted the central line

SECTION II: BUNDLE VARIABLES: Preventing BSI by implementing well-documented 5 components of care:
1. Hand hygiene:
Washing hands or using an alcohol-based waterless hand cleaner before and after catheter insertion/access/manipulation
2. Maximal barrier precautions:
Applying maximal barrier precautions in preparation for line insertion:
For provider; wearing cap, mask, sterile gloves, and sterile gown
For patient; covering head and body with large sterile drape
3. Chlorhexidine skin antisepsis:
2% chlorhexidine in alcohol for adults, pediatrics & neonates >2 wk or >1500 gms
2% aqueous chlorhexidine for neonates <2 wk or <1500 gms
4. Optimal catheter site selection:
Unless contraindicated subclavian vein is the preferred site for non-tunneled catheters in adults, femoral in pediatrics, and umbilical or PICC site in neonates. Compliance is considered OK if the site selected is not the preferred site but clinically justified
Insertion compliance: Compliance for the above 4 (insertion) components
5. Daily review of central line necessity with prompt removal of unnecessary lines:
The risk of infection increases over time as the line remains in place and the risk of infection decreases if the line is removed. This component will be recorded by the ICP (not necessarily every consecutive day) based on chart data (collected by the nurse). Then, enter the total number of **compliant days** and **total days** examined for "daily review". Attach additional form(s), if more than 14 days of "daily review" data are available.

Note: If a bundle element is contraindicated for a particular patient and this is documented appropriately, the bundle is considered compliant with regard to that element
Note: filling out this form is straightforward (e.g. was Chlorhexidine used during the central line insertion? Answer yes if it was used and no if it was not used or another unacceptable antisepsis used). Not documented means that the data are missing (e.g. there is no mention in the nurse note of antisepsis type).

COMMENTS: Add any necessary comments.
DATA COLLECTION: Please add the date the form was completed and the ID of the person who collected/abstracted the data
DATA ENTRY STAMP: After the form is entered on the database, please stamp the form as entered. Please add the date of data entry and the ID of the person who entered the data. See suggested stamp here
Note: For easy identification from other forms, please copy this form on **blue** sheets

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GCC Centre for Infection Control
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Central Line Bundle

Line Listing Form

IHI Central Line Bundle Components:

1. Hand hygiene:
Washing hands or using an alcohol-based waterless hand cleaner before and after catheter insertion/access/manipulation

2. Maximal barrier precautions:
Applying maximal barrier precautions in preparation for line insertion: For provider; wearing cap, mask, sterile gloves, and sterile gown
For patient; covering head and body with large sterile drape

3. Chlorhexidine skin antisepsis:
2% chlorhexidine in alcohol for adults, pediatrics & neonates >2 wk or >1500 gms
2% aqueous chlorhexidine for neonates <2 wk or <1500 gms

4. Optimal catheter site selection:
Unless contraindicated subclavian vein is the preferred site for non-tunneled catheters in adults, femoral in pediatrics, and umbilical or PICC site in neonates. Compliance is considered OK if the site selected is not the preferred site but clinically justified

Insertion compliance:
Compliance for the above 4 (insertion) components

5. Daily review of central line necessity with prompt removal of unnecessary lines:
The risk of infection increases over time as the line remains in place and the risk of infection decreases if the line is removed

Surveillance plan date: ☐☐☐☐ (M M Y Y)

Facility ID: ☐☐☐ (S # #)

Follow up location:
☐ ICU:----------
☐ NICU:----------
☐ SCA:----------
☐ Others inpatients:----------

	Patient ID	CL insertion location	1- Hand hygiene	2- Max barrier	3- Chlorhex antisepsis	4- Optimal site	5- Daily review	Overall (5 items)	Comments
1			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
2			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
3			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
4			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
5			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
6			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
7			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
8			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
9			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
10			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
11			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
12			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
13			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
14			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
15			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	

	D D M M Y Y	Data entry stamp		D D M M Y Y
Date data collected			**Date data entered**	
Collector ID			**Data entry ID**	

Central Line Bundle Form (Line listing) Instructions

DISCLAIMER:
Assurance of Confidentiality: The information obtained in this surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with applicable regulations

IMPORTANT: This form is required to be filled out for the majority of patients with one or more central lines in the ICU, NICU, SCA, or other inpatient locations in case "Central Line Bundle" is recorded at your facility in this particular month. One form is required for each central line. The Line listing was designed to fit multiple patients on a single day

Surveillance plan date: Record the month and year for the GCC surveillance plan being recorded (which is the month the central line was inserted and/or bundles data are collected)
Facility ID: It is 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC center for infection control, with the first digit refers to the state and the last 2 digits are state-specific numbers.
Location: This is the follow up location. The central line bundle surveillance may be done in (1) intensive care units (ICU), (2) neonatal/pediatric intensive care units (NICU/PICU), (3) specialty care areas (includes hematology/oncology wards, bone marrow transplant units, solid organ transplant units, inpatient dialysis units, and chronic care units), and (4) any other inpatient locations in the institution where patients are housed overnight (e.g., surgical wards). Note: Although locations are categorized into bigger groups (e.g. other inpatients), it is required to add the specific ward/clinic/unit in your hospital that data have been collected from (e.g. other inpatients: ward 15, general medicine). ***However, the CL bundle was designed to apply in ICUs only. The use in SCA may be problematic because of the large number of permanent CL.***
Patient ID: It is 9-digit number that will be assigned to every patient by the GCC surveillance plan participating hospitals as described below:

A. The first digit refer to the state number as follow (alphabetical order):
   1-Bahrain 2-Kuwait 3-Oman 4-Qatar 5-Saudi Arabia 6-UAE 7-Yemen
B. The next 8 digits refer to the patient's medical record number (MRN) or file number
   Example: If a Saudi patient was admitted to the MNGHA and has a medical record number of 1052647, he will be assigned this ID: **501052647**

CL insertion Location: The form allow you to record the insertion location when it is different from the follow up location where you do the bundle surveillance

SECTION II: BUNDLE VARIABLES: Preventing BSI by implementing well-documented 5 components of care:

1. Hand hygiene:
Washing hands or using an alcohol-based waterless hand cleaner before and after catheter insertion/access/manipulation

2. Maximal barrier precautions:
Applying maximal barrier precautions in preparation for line insertion:
For provider; wearing cap, mask, sterile gloves, and sterile gown
For patient; covering head and body with large sterile drape

3. Chlorhexidine skin antisepsis:
2% chlorhexidine in alcohol for adults, pediatrics & neonates >2 wk or >1500 gms
2% aqueous chlorhexidine for neonates <2 wk or <1500 gms

4. Optimal catheter site selection:
Unless contraindicated subclavian vein is the preferred site for non-tunneled catheters in adults, femoral in pediatrics, and umbilical or PICC site in neonates. Compliance is considered OK if the site selected is not the preferred site but clinically justified
Insertion compliance: Compliance for the above 4 (insertion) components

5. Daily review of central line necessity with prompt removal of unnecessary lines:
The risk of infection increases over time as the line remains in place and the risk of infection decreases if the line is removed. This component will be recorded by the ICP (not necessarily every consecutive day) based on chart data (collected by the nurse). Then, enter the total number of **compliant days** and **total days** examined for "daily review". Attach additional form(s), if more than 14 days of "daily review" data are available.

Note: If a bundle element is contraindicated or not applicable for a particular patient and this is documented appropriately, the bundle is considered compliant with regard to that element
Note: filling out this form is straightforward (e.g. was Chlorhexidine used during the central line insertion? Answer yes if it was used and no if it was not used or another unacceptable antisepsis used). Not documented which means that the data are missing (e.g. there is no mention in the nurse note of antisepsis type) should be considered as not done and "No" is checked.

COMMENTS: Add any necessary comments.
DATA COLLECTION: Please add the date the form was completed and the ID of the person who collected/abstracted the data
DATA ENTRY STAMP: After the form is entered on the database, please stamp the form as entered. Please add the date of data entry and the ID of the person who entered the data. See suggested stamp here
Note: For easy identification from other forms, please copy this form on **blue** sheets

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Central Line Maintenance Bundle

1. **Hand hygiene before catheter access/manipulation**
2. **Daily review/assessment of catheter necessity with prompt removal of unnecessary lines**
3. **Proper dressing choice:**
   A. Use transparent semipermeable dressing
   B. Use gauze only if the site is bleeding or oozing
4. **Proper frequency of dressing change:**
   A. Replace transparent dressing every 7 days
   B. Replace gauze dressing every 48 hours
   C. Replace immediately any dressing that is soiled, dampened, or loosened
5. **Proper replacement of administrative sets:**
   A. Unless used for blood, blood products or fat emulsions, replace administration sets no more frequently than at 72-hour intervals, but at least every 7 days
   B. If used for blood/blood products. replace administration sets every 4 hours
   C. If used for TPN/intralipids, replace administration sets every 24 hours
   D. If used for chemotherapy, replace administration sets after each use
   E. Caps are changed no more often than 72 hours or whenever the administration set is changed
6. **Aseptic technique for accessing and changing needleless connector, catheter hubs and injection ports using chlorhexidine 2%** (30-second scrub and 30-second air-dry)
7. **Use a prepackaged dressing-change kit or supply area**

Surveillance plan date: ☐☐☐☐ (M M Y Y)

Facility ID: ☐☐☐ (S # #)

Follow up location:
☐ ICU:----------
☐ NICU:----------
☐ SCA:----------
☐ Others inpatients:----------

	Patient MRN	1- Hand hygiene	2- Daily review	3- Dressing choice	4- Dressing change	5- Replace admin Sets	6- Aseptic technique	7-Central line kit	Comments
1		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
2		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
3		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
4		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
5		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
6		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
7		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
8		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
9		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
10		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
11		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
12		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	

	D D M M Y Y
Date data collected	
Collector ID	

Data entry stamp

	D D M M Y Y
Date data entered	
Data entry ID	

Central Line Maintenance Bundle Instructions

DISCLAIMER:
Assurance of Confidentiality: The information obtained in this surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with applicable regulations

IMPORTANT: This form is required to be filled out for the majority of patients with one or more central lines in the ICU, NICU, SCA, or other inpatient locations in case "Central Line Maintenance Bundle" is recorded at your facility in this particular month. One form is required for each central line. The Line listing was designed to fit multiple patients on a single day

Surveillance plan date: Record the month and year for the GCC surveillance plan being recorded (which is the month the central line was inserted and/or bundles data are collected)
Facility ID: It is 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC center for infection control, with the first digit refers to the state and the last 2 digits are state-specific numbers.
Location: This is the follow up location. The central line bundle surveillance may be done in (1) intensive care units (ICU), (2) neonatal/pediatric intensive care units (NICU/PICU), (3) specialty care areas (includes hematology/oncology wards, bone marrow transplant units, solid organ transplant units, inpatient dialysis units, and chronic care units), and (4) any other inpatient locations in the institution where patients are housed overnight (e.g., surgical wards). Note: Although locations are categorized into bigger groups (e.g. other inpatients), it is required to add the specific ward/clinic/unit in your hospital that data have been collected from (e.g. other inpatients: ward 15, general medicine). ***However, the CL bundle was designed to apply in locations where CLs are placed for hours to weeks or longer and are manipulated by a multitude of staff members. The use in SCA may be perfect because of the large number of permanent CL.***
Patient ID: It is 9-digit number that will be assigned to every patient by the GCC surveillance plan participating hospitals as described below:

C. The first digit refer to the state number as follow (alphabetical order):
   1-Bahrain 2-Kuwait 3-Oman 4-Qatar 5-Saudi Arabia 6-UAE 7-Yemen
D. The next 8 digits refer to the patient's medical record number (MRN) or file number
   Example: If a Saudi patient was admitted to the MNGHA and has a medical record number of 1052647, he will be assigned this ID: **501052647**

SECTION II: BUNDLE VARIABLES:

1. **Hand hygiene before catheter access/manipulation**
2. **Daily review/assessment of catheter necessity with prompt removal of unnecessary lines**
3. **Proper dressing choice:**
   C. Use transparent semipermeable dressing
   D. Use gauze only if the site is bleeding or oozing
4. **Proper frequency of dressing change:**
   D. Replace transparent dressing every 7 days
   E. Replace gauze dressing every 48 hours
   F. Replace immediately any dressing that is soiled, dampened, or loosened
5. **Proper replacement of administrative sets:**
   F. Unless used for blood, blood products or fat emulsions, replace administration sets no more frequently than at 72-hour intervals, but at least every 7 days
   G. If used for blood/blood products. replace administration sets every 4 hours
   H. If used for TPN/intralipids, replace administration sets every 24 hours
   I. If used for chemotherapy, replace administration sets after each use
   J. Caps are changed no more often than 72 hours or whenever the administration set is changed
6. **Aseptic technique for accessing and changing needleless connector, catheter hubs and injection ports using chlorhexidine 2%** (30-second scrub and 30-second air-dry)
7. **Use a prepackaged dressing-change kit or supply area**

Note: If a bundle element is contraindicated or not applicable for a particular patient and this is documented appropriately, the bundle is considered compliant with regard to that element
Note: filling out this form is straightforward (e.g. was the proper dressing choice used? Answer yes if it was used and no if it was not used). Not documented which means that the data are missing (e.g. there is no mention in the nurse note of antisepsis type) should be added in the "No" choice.

COMMENTS: Add any necessary comments.
DATA COLLECTION: Please add the date the form was completed and the ID of the person who collected/abstracted the data
DATA ENTRY STAMP: After the form is entered on the database, please stamp the form as entered. Please add the date of data entry and the ID of the person who entered the data. See suggested stamp here
Note: For easy identification from other forms, please copy this form on **blue** sheets

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Adult Ventilator Bundle

Prospective Form

SECTION I: PATIENT AND HOSPITAL INFORMATION:

Patient ID: ☐☐☐☐☐☐☐☐☐ (S # # # # # # # #)

Date of birth: ☐☐☐☐☐☐☐☐ (D D M M Y Y Y Y)

Gender: ☐ Male ☐ Female

Surveillance plan date: ☐☐☐☐ (M M Y Y)

Facility ID: ☐☐☐ (S # #)

Location:
☐ Intensive care unit (ICU): ----------
☐ specialty care area (SCA) : ----------
☐ Others: ----------

SECTION II: BUNDLE VARIABLES

	DD/MM	DD/MM	DD/MM	DD/MM	DD/MM	DD/MM	DD/MM	DD/MM	DD/MM	DD/MM
1. Elevation of the head of the bed to between 30 and 45 degrees	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A
2. Daily "sedation interruption" and daily assessment of readiness to extubate	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A
3. Peptic ulcer disease (PUD) prophylaxis	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A
4. Deep venous thrombosis (DVT) prophylaxis (unless contraindicated)	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A
5. Daily oral care: 0.12% oral chlorhexidine for use as mouth rinse	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A	☐ Yes ☐ No ☐ N/D ☐ N/A
Overall compliance: (compliant for all the above 5 components)	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No

COMMENTS:

	D D M M Y Y	Data entry stamp		D D M M Y Y
Date data collected			**Date data entered**	
Collector ID			**Data entry ID**	

Adult Ventilator Bundle (Prospective Form) Instructions

DISCLAIMER:
Assurance of Confidentiality: The information obtained in this surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with applicable regulations

IMPORTANT: This form is required to be filled in a given month for the majority of adult patients on a ventilator in the ICU, SCA, or other inpatient locations in case ventilator bundle is recorded at your facility in this particular month. The prospective form was designed to fit one patient over time

SECTION I: PATIENT AND HOSPITAL INFORMATION:
Patient ID: It is 9-digit number that will be assigned to every patient by the GCC surveillance plan participating hospitals as described below:

A. The first digit refer to the state number as follow (alphabetical order):
   1-Bahrain 2-Kuwait 3-Oman 4-Qatar 5-Saudi Arabia 6-UAE 7-Yemen
B. The next 8 digits refer to the patient's medical record number (MRN) or file number
   Example: If a Saudi patient was admitted to the MNGHA and has a medical record number of 1052647, he will be assigned this ID: **501052647**

Date of birth: Add the patient birth date in the format DD-MM-YYYY
Gender: Check male or female.
Surveillance plan date: Record the month and year for the GCC surveillance plan being recorded (which is the month the ventilator is inserted and/or ventilator bundle data are collected)
Facility ID: It is 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC center for infection control, with the first digit refers to the state and the last 2 digits are state-specific numbers.
Location: Ventilator bundle surveillance may be done in (1) intensive care units (ICU), (2) specialty care areas (includes hematology/oncology wards, bone marrow transplant units, solid organ transplant units, inpatient dialysis units, and chronic care units), and (3) any other location in the institution where patients are housed overnight (e.g., surgical wards). Note: Although locations are categorized into bigger groups (e.g. other inpatients), it is always required to add the specific ward/clinic/unit in your hospital that data have been collected from (e.g. other inpatients: ward 15, general medicine).

Bundle goal: Preventing VAP by implementing well-documented 5 components of care:
1. Elevation of the head of the bed to between 30 and 45 degrees (unless contraindicated)
2. Daily "sedation interruption" and daily assessment of readiness to extubate (unless contraindicated)
3. Peptic ulcer disease (PUD) prophylaxis (unless contraindicated)
4. Deep venous thrombosis (DVT) prophylaxis (unless contraindicated)
5. Daily oral care: 0.12% oral chlorhexidine for use as mouth rinse. Most studies in adults used the frequency of 3-4 times/day.

Note: filling of this form is straightforward (e.g. was PUD prophylaxis given? Answer yes if H2 antagonist, sucralfate, or proton pump inhibitors were given and no if no PUD prophylaxis was given without appropriate contraindication). N/D (not documented) means that the data are missing (e.g. no mention in the patient record of PUD prophylaxis), N/A means that the data are not applicable in this particular situation (which means compliance). Attach additional form(s), if more than 10-days ventilator data are available. Bed head elevation need to be verified by the ICP at the time of bundle data collection. In the last question, check yes if all the 4 components were compliant for in a given day

Note: If a bundle element is contraindicated for a particular patient and this is documented appropriately, the bundle is considered compliant with regard to that element.

COMMENTS: Add any necessary comments.
DATA COLLECTION: Please add the date the form was completed and the ID of the person who collected/abstracted the data
DATA ENTRY STAMP: After the form is entered on the database, please stamp the form as entered. Please add the date of data entry and the ID of the person who entered the data. See suggested stamp here
Note: For easy identification from other forms, please copy this form on **green** sheets

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Adult Ventilator Bundle

Line Listing Form

IHI Adult Ventilator Bundle Components:

1. Elevation of the head of the bed to between 30 and 45 degrees (unless contraindicated)
2. Daily "sedation interruption" and daily assessment of readiness to extubate (unless contraindicated)
3. Peptic ulcer disease (PUD) prophylaxis (unless contraindicated)
4. Deep venous thrombosis (DVT) prophylaxis (unless contraindicated)
5. Daily oral care: 0.12% oral chlorhexidine for use as mouth rinse. Most studies in adults used the frequency of 3-4 times/day.

Surveillance plan date: ☐☐☐☐ (M M Y Y)

Facility ID: ☐☐☐ (S # #)

Follow up location:
☐ ICU:----------
☐ SCA:----------
☐ Others inpatients:----------

	Patient ID	VNT insertion location	1- Elevate bed head	2- Sedation interruption	3- Peptic ulcer	4- DVT	5- Oral care	Overall (5 items)	Comments
1			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
2			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
3			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
4			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
5			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
6			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
7			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
8			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
9			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
10			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
11			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
12			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
13			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
14			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
15			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
16			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
17			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
18			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
19			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
20			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	

	D D M M Y Y	Data entry stamp	D D M M Y Y
Date data collected			**Date data entered**
Collector ID			**Data entry ID**

Adult Ventilator Bundle (Line Listing Form) Instructions

DISCLAIMER:
Assurance of Confidentiality: The information obtained in this surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with applicable regulations

IMPORTANT: This form is required to be filled in a given month for the majority of adult patients on a ventilator in the ICU, SCA, or other inpatient locations in case ventilator bundle is recorded at your facility in this particular month. The Line listing was designed to fit multiple patients on a single day

Surveillance plan date: Record the month and year for the GCC surveillance plan being recorded (which is the month the ventilator is inserted and/or ventilator bundle data are collected)

Facility ID: It is 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC center for infection control, with the first digit refers to the state and the last 2 digits are state-specific numbers.

Location: This is the follow up location. Ventilator bundle surveillance may be done in (1) intensive care units (ICU), (2) specialty care areas (includes hematology/oncology wards, bone marrow transplant units, solid organ transplant units, inpatient dialysis units, and chronic care units), and (3) any other location in the institution where patients are housed overnight (e.g., surgical wards). Note: Although locations are categorized into bigger groups (e.g. other inpatients), it is always required to add the specific ward/clinic/unit in your hospital that data have been collected from (e.g. other inpatients: ward 15, general medicine).

Patient ID: It is 9-digit number that will be assigned to every patient by the GCC surveillance plan participating hospitals as described below:

A. The first digit refer to the state number as follow (alphabetical order):
   1-Bahrain 2-Kuwait 3-Oman 4-Qatar 5-Saudi Arabia 6-UAE 7-Yemen
B. The next 8 digits refer to the patient's medical record number (MRN) or file number
   Example: If a Saudi patient was admitted to the MNGHA and has a medical record number of 1052647, he will be assigned this ID: **501052647**

Ventilator insertion Location: The form allow you to record the insertion location when it is different from the follow up location where you do the bundle surveillance

Bundle goal: Preventing VAP by implementing well-documented 5 components of care:
1. Elevation of the head of the bed to between 30 and 45 degrees (unless contraindicated)
2. Daily "sedation interruption" and daily assessment of readiness to extubate (unless contraindicated)
3. Peptic ulcer disease (PUD) prophylaxis (unless contraindicated)
4. Deep venous thrombosis (DVT) prophylaxis (unless contraindicated)
5. Daily oral care: 0.12% oral chlorhexidine for use as mouth rinse. Most studies in adults used the frequency of 3-4 times/day.

> **Note:** filling of this form is straightforward (e.g. was PUD prophylaxis given? Answer yes if H2 antagonist, sucralfate, or proton pump inhibitors were given and no if no PUD prophylaxis was given without appropriate contraindication). Not documented which means that the data are missing (e.g. no mention in the patient record of PUD prophylaxis) should be considered as not done and "No" is checked. In the last question, check yes if all the 4 components were compliant for that day
>
> **Note:** If a bundle element is contraindicated or not applicable for a particular patient and this is documented appropriately, the bundle is considered compliant with regard to that element.

COMMENTS: Add any necessary comments.
DATA COLLECTION: Please add the date the form was completed and the ID of the person who collected/abstracted the data
DATA ENTRY STAMP: After the form is entered on the database, please stamp the form as entered. Please add the date of data entry and the ID of the person who entered the data. See suggested stamp here
Note: For easy identification from other forms, please copy this form on **green** sheets

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Urinary Catheter Bundle

Line Listing Form

IHI Urinary Catheter Bundle Components:

1- Avoid unnecessary urinary catheters:

- As a substitute for nursing care of the patient with incontinence
- As a means of obtaining urine for culture or other diagnostic tests when the patient can voluntarily void
- For prolonged postoperative duration without appropriate indications

2- Insert using aseptic technique:

- Perform hand hygiene immediately before and after insertion
- Aseptic technique of catheter insertion
- Using as small a catheter as possible that is consistent with proper drainage, to minimize urethral trauma.

3- Appropriate maintenance:

- Maintain a sterile, continuously closed drainage system.
- Keep catheter properly secured to prevent movement and urethral traction.
- Keep collection bag below the level of the bladder at all times.
- Maintain unobstructed urine flow.
- Empty collection bag regularly, using a separate collecting container for each patient, and avoid allowing the draining spigot to touch the collecting container.
- Maintain meatal care with routine hygiene (bathing).
- Use aseptic technique when the collection system must be replaced (in case of obstruction or infection)

4- Daily review of catheter necessity and prompt removal when unnecessary:

- Daily review of catheter necessity should be conducted using the same criteria for appropriate insertion shown above

Surveillance plan date: ☐☐☐☐ (M M Y Y)

Facility ID: ☐☐☐ (S # #)

Follow up location:

☐ ICU:----------
☐ NICU:----------
☐ SCA:----------
☐ Others inpatients:----------

	Patient ID	Catheter insertion location	1- Avoid unnecessary	2- Aseptic technique	3-Appropriate maintenance	4- Daily review	Overall (4 items)	Comments
1			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
2			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
3			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
4			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
5			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
6			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
7			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
8			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
9			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
10			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
11			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
12			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
13			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
14			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
15			☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	

	D D M M Y Y	Data entry stamp		D D M M Y Y
Date data collected	☐☐☐☐☐☐		**Date data entered**	☐☐☐☐☐☐
Collector ID	☐☐☐☐☐☐		**Data entry ID**	☐☐☐☐☐☐

Urinary Catheter Bundle Form Instructions

DISCLAIMER:

Assurance of Confidentiality: The information obtained in this surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with applicable regulations

IMPORTANT: This form is required to be filled on sample days (e.g. 2-3 days a week) in a given month for all/majority of patients with indwelling urinary catheter in the ICU, NICU, SCA, or other inpatient locations in case urinary catheter bundle is recorded at your facility in this particular month. The Line listing was designed to fit multiple patients on a single day

Surveillance plan date: Record the month and year for the GCC surveillance plan being recorded (which is the month the urinary catheter is inserted and/or urinary catheter bundle data are collected)

Facility ID: It is 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC center for infection control, with the first digit refers to the state and the last 2 digits are state-specific numbers.

Location: This is the follow up location. Urinary catheter bundle surveillance may be done in (1) intensive care units (ICU), (2) neonatal intensive care unit (NICU), (3) specialty care areas (includes hematology/oncology wards, bone marrow transplant units, solid organ transplant units, inpatient dialysis units, and chronic care units), and (4) any other location in the institution where patients are housed overnight (e.g., surgical wards).

Patient ID: It is 9-digit number that will be assigned to every patient by the GCC surveillance plan participating hospitals as described below:

G. The first digit refer to the state number as follow (alphabetical order):

1-Bahrain 2-Kuwait 3-Oman 4-Qatar 5-Saudi Arabia 6-UAE 7-Yemen

H. The next 8 digits refer to the patient's medical record number (MRN) or file number

Example: If a Saudi patient was admitted to the MNGHA and has a medical record number of 1052647, he will be assigned this ID: **501052647**

Catheter insertion Location: The form allow you to record the insertion location when it is different from the follow up location where you do the bundle surveillance

Bundle goal: Preventing UTI by implementing well-documented 4 components of care:

1- Avoid unnecessary urinary catheters:

Appropriate indications:

- Perioperative use for selected surgical procedures:
  - Patients undergoing urologic surgery or other surgery on contiguous structures of the genitourinary tract
  - Anticipated prolonged duration of surgery (catheters inserted for this reason should be removed in post-anesthesia care unit)
  - Patients anticipated to receive large-volume infusions or diuretics during surgery
  - Need for intraoperative monitoring of urinary output
- Urine output monitoring in critically ill patients;
- Management of acute urinary retention and urinary obstruction;
- Assistance in healing of open sacral or perineal wounds in incontinent patients;
- Patient requires prolonged immobilization (e.g., potentially unstable thoracic or lumbar spine, multiple traumatic injuries such as pelvic fractures)
- As an exception, at patient request to improve comfort (SHEA-IDSA) or for comfort during end-of-life care (CDC)

Inappropriate indications:

- As a substitute for nursing care of the patient with incontinence
- As a means of obtaining urine for culture or other diagnostic tests when the patient can voluntarily void
- For prolonged postoperative duration without appropriate indications

2- Insert using aseptic technique:

- Perform hand hygiene immediately before and after insertion
- Aseptic technique of catheter insertion by using:
  - Gloves, a drape, and sponges;
  - Sterile or antiseptic solution for cleaning the urethral meatus; and
  - Single-use packet of sterile lubricant jelly for insertion.
- Using as small a catheter as possible that is consistent with proper drainage, to minimize urethral trauma.

3- Appropriate maintenance:

- Maintain a sterile, continuously closed drainage system.
- Keep catheter properly secured to prevent movement and urethral traction.
- Keep collection bag below the level of the bladder at all times.
- Maintain unobstructed urine flow.

- Empty collection bag regularly, using a separate collecting container for each patient, and avoid allowing the draining spigot to touch the collecting container.
- Maintain meatal care with routine hygiene (bathing).
- Use aseptic technique when the collection system must be replaced (in case of obstruction or infection)

Practices to avoid:

- Irrigating catheters, except in cases of catheter obstruction
- Disconnecting the catheter from the drainage tubing
- Replacing catheters routinely (in the absence of obstruction or infection); if the collection system must replaced, use aseptic technique

4- Daily review of catheter necessity and prompt removal when unnecessary:

- Daily review of catheter necessity should be conducted using the same criteria for appropriate insertion shown above

Note: If a bundle element is contraindicated or not applicable for a particular patient and this is documented appropriately, the bundle is considered compliant with regard to that element. Not documented which means that the data are missing (e.g. there is no mention in the nurse note of using aseptic technique during insertion) should be considered as not done and "No" is checked.

COMMENTS: Add any necessary comments.

DATA COLLECTION: Please add the date the form was completed and the ID of the person who collected/abstracted the data

DATA ENTRY STAMP: After the form is entered on the database, please stamp the form as entered. Please add the date of data entry and the ID of the person who entered the data. See suggested stamp here

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Hemodialysis Bundle for Catheter

Line Listing Form

CDC Hemodialysis Bundle Components for Catheter:

1-Hemodialysis Catheter Connection
- Perform hand hygiene
- Don proper PPE (mask with face shield or mask with goggles, plus gown & gloves)
- Provide mask for the patient
- Soak dialysis catheter with Betadine 3-5 minutes
- Scrub catheter hub with antiseptic and allow to dry
- Connect catheter to blood lines aseptically
- Attach new caps aseptically / weekly (Saturday or Sunday)

2-Hemodialysis Catheter Disconnection
- Perform hand hygiene
- Don proper PPE (mask with face shield or mask with goggles, plus gown & gloves)
- Provide mask for the patient
- Soak dialysis catheter with Betadine 3-5 minutes
- Disconnect catheter from blood lines aseptically
- Discard tubing in a leak-proof container
- Scrub catheter hub with antiseptic and allow to dry

3-Hemodialysis Catheter Exit Site Care
- Perform hand hygiene
- Apply skin antiseptic
- Allow skin antiseptic to dry
- Apply dressing aseptically

4-Dialysis Station Routine Disinfection
- Don Proper PPE (as per indication but at least use gloves)
- Ensure that the patient has left the dialysis station before cleaning
- Discard all single-use supplies, Clean and disinfect reusable equipment
- Nursing: Clean and disinfect dialysis station (dialysis machine and bedside table)
- Keep used or potentially contaminated items away from the disinfected surfaces
- Housekeeping: Clean and disinfect dialysis chair or bed (rails, armrests & mattresses)

5-Hemodialysis injectable medication preparation
- Perform hand hygiene
- Prepare medications in clean designated areas
- Inspect all vials
- Prepare medications using aseptic techniques
- Use new needle and new syringe to enter all vials
- Discard all single dose vial(s)
- Discard or properly store all multi dose vial(s)

6- Hemodialysis injectable medication administration
- Perform hand hygiene (before and after)
- Use proper PPE (gloves)
- Properly transport medication to patient station
- Disinfect injection port with appropriate antiseptic
- Administer medications using aseptic techniques
- Discard syringe at point of use

Surveillance plan date: ☐☐☐☐ (M M Y Y)

Facility ID: ☐☐☐ (S # #)

Location:----------

	Patient ID	1- Catheter connection	2- Catheter disconnection	3- Exit Site Care	4- Dialysis Station	5-Med preparation	6-Med administration	Comments
1		☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	
2		☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	
3		☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	
4		☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	
5		☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	
6		☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	
7		☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	
8		☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	
9		☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	
10		☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	
11		☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	
12		☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	

	D D M M Y Y	Data entry stamp	D D M M Y Y
Date data collected			**Date data entered**
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Hemodialysis Bundle for Fistula/Graft

Line Listing Form

CDC Hemodialysis Bundle Components for Fistula/Graft:

1-Arteriovenous Fistula/Graft Cannulation

- Perform hand hygiene
- Don proper PPE (mask with face shield or mask with goggles, plus gown & gloves)
- Clean site with 2% CHG wipes or Soap and water
- Apply skin antiseptic (Chlorhexidine 2% or 10 % Povidone Iodine) & allow it to dry
- Do not contact site (after antisepsis)
- Insert needles & Connect to blood lines aseptically

2-Arteriovenous Fistula/Graft Decannulation

- Perform hand hygiene
- Don proper PPE (mask with face shield or mask with goggles, plus gown & gloves)
- Disconnect from blood lines aseptically
- Discard tubing in a leak-proof container
- Wear clean gloves (patient and/or staff) to compress site
- Remove needles aseptically
- Apply clean gauze/bandage to site

3-Dialysis Station Routine Disinfection

- Don Proper PPE (as per indication but at least use gloves)
- Ensure that the patient has left the dialysis station before cleaning
- Discard all single-use supplies, Clean and disinfect reusable equipment
- Nursing: Clean and disinfect dialysis station (dialysis machine and bedside table)
- Keep used or potentially contaminated items away from the disinfected surfaces
- Housekeeping: Clean and disinfect dialysis chair or bed (rails, armrests & mattresses)

4-Hemodialysis injectable medication preparation

- Perform hand hygiene
- Prepare medications in clean designated areas
- Inspect all vials
- Prepare medications using aseptic techniques
- Use new needle and new syringe to enter all vials
- Discard all single dose vial(s)
- Discard or properly store all multi dose vial(s)

5- Hemodialysis injectable medication administration

- Perform hand hygiene (before and after)
- Use proper PPE (gloves)
- Properly transport medication to patient station
- Disinfect injection port with appropriate antiseptic
- Administer medications using aseptic techniques
- Discard syringe at point of use

Surveillance plan date: ☐☐☐☐ (M M Y Y) **Facility ID:** ☐☐☐ (S # #) **Location:**----------

	Patient ID	1- AV cannulation	2- AV decannulation	3- Dialysis Station	4-Med preparation	5-Med administration	Comments
1		☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	
2		☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	
3		☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	
4		☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	
5		☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	
6		☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	
7		☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	
8		☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	
9		☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	
10		☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	
11		☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	
12		☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	☐ Y ☐ N ☐ NA	

	D D M M Y Y	Data entry stamp	D D M M Y Y
Date data collected			**Date data entered**
Collector ID			**Data entry ID**

Hemodialysis Bundle Form Instructions

DISCLAIMER:

Assurance of Confidentiality: The information obtained in this surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with applicable regulations

IMPORTANT: This CDC audit tool and checklist can be used by individuals when assessing staff practices for infection prevention in hemodialysis facilities in case Hemodialysis Bundle component is recorded at your facility in this particular month The tool can be also used by the staff hemodialysis facilities to help guide their practices.

Surveillance plan date: Record the month and year for the GCC surveillance plan being recorded (which is the month the hemodialysis catheter bundle data are collected)
Facility ID: It is 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC center for infection control, with the first digit refers to the state and the last 2 digits are state-specific numbers.
Location: Enter the location code/name of the outpatient dialysis unit where the patient was at the time of the DE. These may be attached to or affiliated with a hospital, but should serve mostly hemodialysis outpatients.

Bundle goal: Preventing Hemodialysis catheter infections by implementing well-documented 6 components of care:

1- Hemodialysis Catheter Connection:

- Perform hand hygiene
- Don proper PPE (mask with face shield or mask with goggles, plus gown & gloves)
- Provide mask for the patient
- Soak dialysis catheter with Betadine 3-5 minutes
- Scrub catheter hub with antiseptic and allow to dry
- Connect catheter to blood lines aseptically
- Attach new caps aseptically / weekly (Saturday or Sunday)

2- Hemodialysis Catheter Disconnection:

- Perform hand hygiene
- Don proper PPE (mask with face shield or mask with goggles, plus gown & gloves)
- Provide mask for the patient
- Soak dialysis catheter with Betadine 3-5 minutes
- Disconnect catheter from blood lines aseptically
- Discard tubing in a leak-proof container
- Scrub catheter hub with antiseptic and allow to dry

3- Hemodialysis Catheter Exit Site Care:

- Perform hand hygiene
- Apply skin antiseptic
- Allow skin antiseptic to dry

4- Dialysis Station Routine Disinfection:

- Don Proper PPE (as per indication but at least use gloves)
- Ensure that the patient has left the dialysis station before cleaning
- Discard all single-use supplies, Clean and disinfect reusable equipment
- Nursing: Clean and disinfect dialysis station (dialysis machine and bedside table)
- Keep used or potentially contaminated items away from the disinfected surfaces
- Housekeeping: Clean and disinfect dialysis chair or bed (rails, armrests & mattresses)

5- Hemodialysis injectable medication preparation:

- Perform hand hygiene
- Prepare medications in clean designated areas
- Inspect all vials
- Prepare medications using aseptic techniques
- Use new needle and new syringe to enter all vials
- Discard all single dose vial(s)
- Discard or properly store all multi dose vial(s)

6- Hemodialysis injectable medication administration:

- Perform hand hygiene (before and after)
- Use proper PPE (gloves)
- Properly transport medication to patient station
- Disinfect injection port with appropriate antiseptic
- Administer medications using aseptic techniques
- Discard syringe at point of use

Bundle goal: Preventing Hemodialysis Fistula/Graft infection by implementing well-documented 5 components of care:

1- Arteriovenous Fistula/Graft Cannulation:

- Perform hand hygiene

- Don proper PPE (mask with face shield or mask with goggles, plus gown & gloves)
- Clean site with 2% CHG wipes or Soap and water
- Apply skin antiseptic (Chlorhexidine 2% or 10 % Povidone Iodine) & allow it to dry
- Do not contact site (after antisepsis)
- Insert needles & Connect to blood lines aseptically

2- Arteriovenous Fistula/Graft Decannulation:

- Perform hand hygiene
- Don proper PPE (mask with face shield or mask with goggles, plus gown & gloves)
- Disconnect from blood lines aseptically
- Discard tubing in a leak-proof container
- Wear clean gloves (patient and/or staff) to compress site
- Remove needles aseptically
- Apply clean gauze/bandage to site

3- Dialysis Station Routine Disinfection:

- Don Proper PPE (as per indication but at least use gloves)
- Ensure that the patient has left the dialysis station before cleaning
- Discard all single-use supplies, Clean and disinfect reusable equipment
- Nursing: Clean and disinfect dialysis station (dialysis machine and bedside table)
- Keep used or potentially contaminated items away from the disinfected surfaces
- Housekeeping: Clean and disinfect dialysis chair or bed (rails, armrests & mattresses)

4- Hemodialysis injectable medication preparation:

- Perform hand hygiene
- Prepare medications in clean designated areas
- Inspect all vials
- Prepare medications using aseptic techniques
- Use new needle and new syringe to enter all vials
- Discard all single dose vial(s)
- Discard or properly store all multi dose vial(s)

5- Hemodialysis injectable medication administration:

- Perform hand hygiene (before and after)
- Use proper PPE (gloves)
- Properly transport medication to patient station
- Disinfect injection port with appropriate antiseptic
- Administer medications using aseptic techniques
- Discard syringe at point of use

Note: If a bundle element is contraindicated for a particular patient and this is documented appropriately, the bundle is considered compliant with regard to that element. Not documented which means that the data are missing should be considered as not done and "No" is checked.

COMMENTS: Add any necessary comments.
DATA COLLECTION: Please add the date the form was completed and the ID of the person who collected/abstracted the data
DATA ENTRY STAMP: After the form is entered on the database, please stamp the form as entered. Please add the date of data entry and the ID of the person who entered the data. See suggested stamp here

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Surgical Site Infection Bundle (SSI)

Infection Control Surveillance Form

SECTION I: PATIENT AND HOSPITAL INFORMATION:

Patient ID (S # # # # # # # #) **Date of birth** (D D M M Y Y Y Y) **Gender** ☐ Male ☐ Female

Surveillance plan date (M M Y Y) **Facility ID** (S # #) **Ward/ unit** **Location** ☐ Outpatient ☐ Inpatient ☐ Both

Name of procedure:

SECTION II: BUNDLE VARIABLES

Appropriate use of antibiotics:

1- Antibiotic(s) was(were) given within one (1) hour before surgical incision* ☐ Yes ☐ No ☐ Not documented ☐ N/A

2- Prophylactic antibiotic(s) is(are) consistent with the recently updated GCC guidelines for surgical prophylaxis ☐ Yes ☐ No ☐ Not documented ☐ N/A

3- Discontinuation of prophylactic antibiotic(s) within 24 hours after surgery** ☐ Yes ☐ No ☐ Not documented ☐ N/A

Antibiotic (1) Name:

Dose: ____ mg/day

Route: ☐ Parentral (IV or IM) ☐ Oral ☐ Others, specify:

Antibiotic (2) Name:

Dose: ____ mg/day

Route: ☐ Parentral (IV or IM) ☐ Oral ☐ Others, specify:

Appropriate hair removal:

4- If hair at the incisional site was clipped ☐ Yes ☐ No ☐ Not documented ☐ N/A

Maintenance of postoperative glucose control: (for diabetics and cardiac surgery patients only)

5- Serum glucose levels below 11.11 mmol/L (200 mg/dL), collected at least once on each of the first two (2) post-operative days

Serum glucose day (1) ___.___ mmol/L ☐ Yes ☐ No ☐ Not documented ☐ N/A

Serum glucose day (2) ___.___ mmol/L ☐ Yes ☐ No ☐ Not documented ☐ N/A

Cardiac Surgery ☐ Yes ☐ No

Diabetes ☐ Yes ☐ No

Maintenance of postoperative normothermia: (for all patients)

6- Postoperative core temperature is normal (36.1-37.1 C°) ☐ Yes ☐ No ☐ Not documented

Core temperature ____ C°

Colorectal Surgery ☐ Yes ☐ No

Overall compliance: (compliant for all the above 6 components) ☐ Yes ☐ No

*Due to the longer infusion time required for vancomycin, it is acceptable to start this antibiotic within 2 hours prior to incision

** In cardiovascular surgery, it is recommended that discontinuation of prophylactic antibiotic(s) within 48 hours after surgery

COMMENTS:

	D D M M Y Y	Data entry stamp	D D M M Y Y
Date data collected			**Date data entered**
Collector ID			**Data entry ID**

SSI Bundle Form Instructions

DISCLAIMER:
Assurance of Confidentiality: The information obtained in this surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with applicable regulations

IMPORTANT: This form is required to be filled for sample/all surgical patients in any inpatient/outpatient setting where (at least one) selected NHSN Operative Procedure is performed in case SSI bundle for that selected procedure is recorded at your facility in this particular month

*Sample suggested is about 20% of the NHSN Operative Procedure performed (but not less than 28 or more than 111)

SECTION I: PATIENT AND HOSPITAL INFORMATION:
Patient ID: It is 9-digit number that will be assigned to every patient by the GCC surveillance plan participating hospitals as described below:

M. The first digit refer to the state number as follow (alphabetical order):
1-Bahrain 2-Kuwait 3-Oman 4-Qatar 5-Saudi Arabia 6-UAE 7-Yemen
N. The next 8 digits refer to the patient's medical record number (MRN) or file number
Example: If a Saudi patient was admitted to the MNGHA and has a medical record number of 1052647, he will be assigned this ID: **501052647**

Date of birth: Add the patient birth date in the format DD-MM-YYYY
Gender: Check male or female.
Surveillance plan date: Record the month and year for the GCC surveillance plan being recorded (which is the month the procedure is done)
Facility ID: It is 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC center for infection control, with the first digit refers to the state and the last 2 digits are state-specific numbers.
Ward/unit: Record the ward/clinic/unit name/number where the procedure was done
Location: Check the ward/unit type
Name of the procedure: record the name of the NHSN procedure for which SSI bundle data are collected

SECTION II: BUNDLE VARIABLES
Bundle goal- Preventing SSI by implementing four well-documented components of care:

1. Appropriate Use of Prophylactic Antibiotics

1. Antibiotics within 1 hour before surgical incision*
2. Prophylactic antibiotic(s) is(are) consistent with the recently updated GCC guidelines for surgical prophylaxis
3. Discontinuation of prophylactic antibiotics within 24 hours after surgery**

* Due to the longer infusion time required for vancomycin, it is acceptable to start this antibiotic (e.g., when indicated because of beta-lactam allergy or high prevalence of MRSA) within 2 hours prior to incision.
** In cardiovascular surgery, it is recommended that discontinuation of prophylactic antibiotic(s) within 48 hours after surgery

2. Appropriate Hair Removal
The use of razors prior to surgery increases the incidence of wound infection (not acceptable) when compared to clipping, depilatory use, or no hair removal at all (acceptable). It is generally recommended that any preoperative hair removal not occur in the operating room itself, as loose hairs are difficult to control

3. Maintenance of Postoperative Glucose Control (for diabetics and cardiac surgery patients only)
The degree of hyperglycemia in the postoperative period is correlated with the rate of SSI in patients undergoing major cardiac surgery. Also stringent glucose control in surgical intensive care unit patients reduces mortality. Indicate if the patient is diabetic or has cardiac surgery

4. Maintenance of Postoperative Normothermia (for all patients)
Preventing hypothermia is beneficial in reducing SSI in patients undergoing colorectal surgery and may be other patients as well. Indicate if the patient has colorectal Surgery

Note: filling of this form is straightforward (e.g. was hair removed appropriately? Answer yes if it was clipped, depilated, or not removed at all, and no if it was shaved). Not documented means that the data are missing (e.g. there is no mention in the surgical records of hair removal) while N/A means that the question is not applicable (e.g. when the patient is a lady with no hair at the surgical site)

COMMENTS: Add any necessary comments.
DATA COLLECTION: Please add the date the form was completed and the ID of the person who collected/abstracted the data
DATA ENTRY STAMP: After the form is entered on the database, please stamp the form as entered. Please add the date of data entry and the ID of the person who entered the data. See suggested stamp here
Note: For easy identification from other forms, please copy this form on **PINK** sheets


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