



Kingdom of Saudi Arabia National Guard Health Affairs

HEALTHCARE ASSOCIATED INFECTIONS

Surveillance Manual

in collaboration with the
**GULF COOPERATION COUNCIL (GCC) STATES
CENTRE FOR INFECTION CONTROL**

© **2011 National Guard Health Affairs**

Gulf Cooperation Council – Centre for Infection Control

Riyadh 22490, Kingdom of Saudi Arabia

ISBN: 978-603-90229-3-0

1 - Infection Control 2 – Infection - Prevention

1 – Title

616.9310798dc

1432/9036

L.D. no. 1432/9036

ISBN: 978-603-9022-3-0

The National Guard Health Affairs – Infection Prevention and Control Department, as host secretariat and directorate for the Gulf Cooperation Council – Centre for Infection Control (GCC-CIC) has the sole copyright to this publication. Any part or parcel of this manual may not be copied, deleted, reproduced, or cited without prior approval and/or acknowledgment of source from the Director of the GCC-CIC.

Language editing was performed by King Abdullah International Medical Research Center (KAIMRC), National Guard Health Affairs, Riyadh, Kingdom of Saudi Arabia.

Comments, reviews, and feedbacks on this manual may be directed and brought to the attention of the Director of the GCC-CIC.

P.O. Box 22490, Mail Code 2134

Riyadh 11426, Kingdom of Saudi Arabia

Phone: 966-1-8043720

Fax: +966-1-2520437 / +966-1-8043733

E-mail: ifc1@ngha.med.sa

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

MESSAGE FROM THE CHIEF EXECUTIVE OFFICER

My deep appreciation is accorded to the continuous success of the National Guard Health Affairs - King Abdulaziz Medical City, Riyadh in serving as the stalwart host of the Gulf Cooperation Council (GCC) Centre for Infection Control (CIC). Under the leadership of the NGHA, it is our great pleasure to achieve the completion of the GCC-CIC Healthcare Associated Infection Surveillance Manual.

This state-of-the-art Surveillance Manual publication is a valuable knowledge-based resource material that most healthcare facilities can utilize to better improve their services and strive to benchmark with international and global quality standards.

It is my privilege to acknowledge this accomplishment made possible with the expertise, dedication, and collaborative efforts of the GCC-CIC leadership and support staff. Many thanks to everyone who contributed to our endeavor towards an environment of patient safety and well-being for all.

Bandar Al Knawy, MD, FRCPC
Chief Executive Officer
National Guard Health Affairs
King Abdulaziz Medical City – Riyadh
Kingdom of Saudi Arabia



FOREWORD

With genuine humility, we acknowledge Your aid, O Allah. Without your guidance, love, and cause--this humble contribution would never become a reality.

With great pride and privilege, I would like to introduce the GCC-CIC Healthcare Associated Infection Surveillance Manual.

This Surveillance Manual presents detailed guidelines on evidence-based practices for Infection Preventionists to conduct surveillance and data gathering on healthcare associated infection. Such data is needed to provide interventional measures for preventing the transmission and acquisition of infections in the healthcare settings.

The Manual provides corroborative techniques and methods on all aspects of surveillance management and if integrated into the scheme of each institution will definitely generate a safe and healthy atmosphere not only for the patients but also for the healthcare workers and visitors.

The GCC Health Ministers' council is urging everyone to keep on doing their best to achieve excellence in the prevention of healthcare associated infections and with such, we are positive that we can deliver quality patient care.

In closing, I ask the Almighty Allah to pleasingly accept this deed and make it solely for Him. Allah is the guidance to the Straight Path.



Tawfik Khoja MBBS, DPHC, FRCGP, FFPH, FRCP (UK)

Family Physician Consultant

Director General

Executive Board of Health Ministers' Council for

Gulf Cooperation Council States

PREFACE

Surveillance activities of healthcare associated infections (HAIs) are an essential function by any Infection Prevention and Control Program to maintain the well-being and safety of patients, healthcare workers and visitors.

Accrediting and regulatory agencies strictly require the institutionalization of Infection Prevention and Control Programs in various healthcare settings such as hospitals, long-term rehabilitative care facilities, home care, maternity care, mental health facilities, correctional facilities and others. Such programs must be aligned with the vision, mission and goals of the healthcare institution that should be committed to the values, standards and philosophy of quality healthcare and patient safety.

The development of this manual aims to provide a useful tool for Infection Preventionists in their day to day surveillance activity. The context of the manual will help unify surveillance definitions and provide data collection forms for various surveillance activities.

With the improvements in medical care and the complexity of services provided by the healthcare institution, it is clear that there is a need to ensure Patient Safety by providing a standardization of care. We hope and aspire through this manual by assisting with the surveillance activities and working alongside the healthcare institution to develop future trends and incorporate good practice in order to reduce HAIs.

Hanan Balkhy, MD, MMed., FAAP, CIC

Director, WHO Collaborating Centre and
GCC - Centre for Infection Control
Executive Director, Infection Prevention
& Control Department
King Abdulaziz Medical City
National Guard Health Affairs



GULF COOPERATION COUNCIL CENTRE FOR INFECTION CONTROL

INTRODUCTION

The Gulf Cooperation Council (States) Centre for Infection Control (GCC-CIC) takes its direction from 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 Infecton 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 Gulf Cooperation Council (States) Centre for Infection Control, so appointed at the 58th Meeting of the Ministers of Health for the GCC States, the scope of service is widened beyond the the confines of KAMC-R to all healthcare facilities in the Gulf State countries. In an attempt to clarify the role and expanded scope, and to develop a framework to guide its activities, a proposal was formulated and submitted for review and approval; thus, formalizing the GCC (States) Centre for Infection Control.

CORE VALUE

Do No Harm.

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 professional.
- (4) Provide a forum 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.

STRUCTURE

ADVISORY BOARD MEMBERS



Dr. Bandar Al Knawy
Chief Executive Officer, NGH
King Abdulaziz Medical City-Riyadh
Kingdom of Saudi Arabia



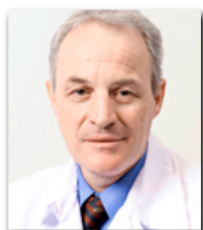
Dr. Saad Al Mohrij
Chief Medical Officer, NGH
King Abdulaziz Medical City-Riyadh
Kingdom of Saudi Arabia



Dr. Tawfik Khoja
Director General
Executive Board of Health Ministers'
Council of GCC States, Kingdom of Saudi Arabia



Dr. Hanan H. Balkhy
Director, GCC-Centre for Infection Control
Director, WHO Collaborating Centre
Executive Director, Infection Prevention & Control
King Abdulaziz Medical City-Riyadh
NGHA, Kingdom of Saudi Arabia



Prof. Didier Pittet
International Advisor for the
GCC Centre for Infection Control
Geneva, Switzerland



Dr. Abdullah M. Assiri
Director, Infection Prevention and Control
Ministry of Health, Kingdom of Saudi Arabia



Dr. Mohammed H. Al Zahrani
Consultant of Pediatric ID and Chief of Infection Control
Security Forces Hospital
Kingdom of Saudi Arabia



Dr. Hail Al Abdely
Consultant, Adult Infectious Diseases
King Faisal Spec. Hosp & Research Center
Kingdom of Saudi Arabia



Dr. Abdelrahman K. Al Hebrawi
HCQ Advisor, Head of Technical Affairs Dept.
Executive Board of Health Ministers'
Council of GCC States, Saudi Arabia



Dr. Saif S. Al Abri
Senior Consultant in Infectious Diseases
Director of Medicine, Ministry of Health
Sultanate of Oman



Dr. Haifa H. Al Mousa
Director, Infection Control Directorate
Ministry of Health - Kuwait



Dr. Jameela Al Salman
Director, Infection Control
Ministry of Health - Bahrain



Dr. Fouad M. Shamsan
National Coordinator for Infection Control
Yemen



Dr. Jamila Al Khowaiter
Consultant, Adult Infectious Diseases
Vice-Chairman, Infection Control & Prevention
Assistant Prof, WCC-Qatar HMC- Medical Dept., Qatar



Dr. Ali M. Al Barrak
Consultant for Infectious Disease
Military Hospital, Riyadh
Kingdom of Saudi Arabia



Dr. Mamoun El Sheikh
Ministry of Health – Qatar
Infection Prevention & Control Program Quality
Management Department
Hamad Medical Corporation



Dr. Aiman El-Saed Ramadan
Asst. Professor in Epidemiology & Biostatistics,
KSAU-HS
King Abdulaziz Medical City
Kingdom of Saudi Arabia

Instructions to Download Forms:

1. Please use Adobe Acrobat 6.0 version
2. Go to TOOLS
3. Click ADVANCE EDITING
4. Use TOUCH OBJECT TOOL to highlight the form and COPY
5. Paste on WORD document
6. Insert your institutional LOGO.

TABLE OF CONTENTS

BACKGROUND	15
MISSION STATEMENT	17
OBJECTIVES	17
TARGET AUDIENCE	18
FACILITIES AND POPULATIONS	19
HEALTHCARE-ASSOCIATED INFECTIONS (HAI)	20
ESSENTIAL ELEMENTS OF SURVEILLANCE	21
SURVEILLANCE INDICATORS	22
SURVEILLANCE LOCATION	30
SURVEILLANCE LOCATION AND PERIOD	31
SURVEILLANCE METHODOLOGY	32
SURVEILLANCE DATA COLLECTION	34
SURVEILLANCE DATA ANALYSIS	37
SURVEILLANCE REPORTING	43
REFERENCES	44
APPENDIX 1: CLABSI Form & Instructions	45
APPENDIX 2: VAP Form & Instructions	53
APPENDIX 3: CAUTI Form & Instructions	63
APPENDIX 4: DE Form & Instructions	71
APPENDIX 5: Denominators' Forms & Instructions	77
APPENDIX 6: AUR Form & Instructions	87
APPENDIX 7: SSI Form & Instructions	95
APPENDIX 8: Bundles' Form & Instructions	105

BACKGROUND

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

Accrediting and regulatory agencies now require IPC programs in a variety of healthcare settings, including hospitals, long-term care, rehabilitation, ambulatory surgery, dialysis, home care, mental health, and corrections facilities. Other factors that affect 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 as 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 (HAIs) and the organisms that cause such infections
- To establish endemic rates of HAIs
- To detect, investigate and control hospital clusters or outbreaks of HAIs
- To monitor, evaluate, and implement necessary preventive measures
- To work on reducing HAIs using standard bundles
- To observe practices, such as hand hygiene and monitoring sterilizer performance, that 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 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 the requirements of accrediting agencies, 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 healthcare facilities to target performance improvement activities
- To detect a bioterrorism 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 fulfill the following missions:

- To provide information that contributes to the delivery of the highest quality healthcare by promoting safety and reducing the risk of acquiring and transmitting infections among patients, visitors, healthcare workers and support staff at the participating facilities of the Gulf Cooperation Council (GCC) Center for Infection Control through ongoing data collection, consolidation, and analysis, followed by the dissemination of guidance information and actions, using sound epidemiological and statistical principles
- To support the mission and objectives of the participating facilities of the GCC Center for Infection Control and be 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 HAIs and the organisms that cause these infections and establish their endemic rates using standard definitions and methods to allow benchmarking at the local, regional, and international levels
- To investigate and control hospital clusters or outbreaks of HAIs and resistant organisms among patients and personnel
- To maintain a comprehensive data system to monitor, evaluate, and implement necessary actions to ensure a safe and healthy environment for patients, personnel, and visitors
- To monitor antimicrobial susceptibilities and the development of new resistant microbial strains that may pose as a challenge to the healthcare system
- To analyze the temporal trends of aggregated data to ensure patient safety and the appropriate allocation of available resources
- To evaluate new products used to control hospital infections
- To improve the care of HCWs at the participating facilities of the GCC Center for Infection Control through the prevention and control of infections and occupational injuries

- To ensure compliance with national and international regulations
- To ensure compliance with the requirements of accrediting agencies, 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 AUDIENCE

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

FACILITIES AND POPULATIONS

The facilities targeted in this manual include all of the participating facilities of the GCC Center for Infection Control, including the National Guard Health Affairs (NGHA) facilities.

Participating facilities of the GCC Center for Infection Control: The participating facilities are the medical facilities that are covered by the GCC (states) Centre for Infection Control. Each facility has its own mission, vision, core values, goals and objectives which are 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 the consistency of the reports produced, allow scientific comparisons, and increase the chance of publication in peer-reviewed journals.

NGHA Facilities: NGHA-Riyadh is serving as the GCC (states) Centre for Infection Control and functions to give direction and leadership to the IPC programs in the GCC States. The IPC program at NGHA-Riyadh is a corporate program that includes three regions:

- (1) Central Region: King Abdulaziz Medical City-Riyadh
- (2) Western Region: King Abdulaziz Medical City-Jeddah
- (3) Eastern Region: Imam Abdulrahman Bin Faisal Bin Turki Hospital-Damman and King Abdulaziz Hospital-Al Ahsa

The corporate direction aims to standardize the methodologies when possible for all program activities to ensure consistency across regions. In addition, the IPC program has a biostatistics sub-section for data management, reporting and research. Its functions include:

- (1) Design/modify appropriate instrument for data collection (both hardcopies and electronic)
- (2) Manage and analyze data from the infection control, public health, and environmental health sections of the ICP department
- (3) Interpret the data analysis results, with appropriate recommendations to improve safety in NGHA communities and hospitals
- (4) Standardize the data collection, analysis and reporting across NGHA regions as well as the participating facilities of the GCC Center for Infection Control
- (5) Provide statistical and methodological consultation for peer-reviewed scientific publications

HEALTHCARE-ASSOCIATED INFECTIONS (HAI)

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

An 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 healthcare setting.
- Clinical evidence may be derived from directly observing the infection site or reviewing information in the patient's chart or other clinical records.
- The physician's diagnosis alone is acceptable for some infections such as surgical site infection (SSI), unless there is compelling evidence to the contrary.

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

- The following are not considered HAIs:
 - Infections associated with complications or extensions of infections already present upon admission unless a change in pathogen or symptoms strongly suggests the acquisition of a new infection
 - Infections in infants that were acquired transplacentally (e.g., herpes simplex, toxoplasmosis, rubella, cytomegalovirus, or syphilis) and became evident ≤ 48 hours after birth
 - Reactivation of latent infections (e.g., herpes zoster [shingles], herpes simplex, syphilis, or tuberculosis)
- The following conditions are not infections:
 - Colonization, which means the presence of microorganisms on the skin, on mucous membranes in open wounds, or in excretions or secretions that do not cause adverse clinical signs or symptoms
 - Inflammation that results from tissue response to injury or stimulation by noninfectious agents, such as chemicals
- The following is an HAI that is not separately reported:
 - A secondary BSI, which is a complication of another HAI (such as SSI)
- The following is considered an HAI:
 - Infections that occur in infants that result from passing through the birth canal

ESSENTIAL ELEMENTS OF SURVEILLANCE

- A. Assess the population and identify those individuals at greatest risk for the outcome (e.g., bloodstream infection) or process (e.g., central line insertion practices) of interest
 - 1. Healthcare-associated infections (HAIs) (outcomes)
 - 2. Patient care practices aimed to prevent HAIs (processes)
- B. Select the appropriate outcome or process to be monitored by surveillance
 - 1. Examples of outcomes: HAI, infection or colonization by a specific organism, pyrogenic reaction or vascular access infection in hemodialysis patients, and sharps injuries
 - 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, and personnel compliance with protocols
 - 3. Examples of other events: Occurrence of reportable diseases and conditions, communicable diseases in personnel, and organisms or syndromes indicative of bioterrorist events
- C. Determine the observation time period: This time period should be appropriate for collecting sufficient data and may be affected by factors like hospital resources, hospital size, target population, and healthcare priorities.
- 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 the IHI Bundles. The 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 the Patient Safety Component is required during each calendar year to remain an active participant in the GCC Center for Infection Control. Surveillance of different types of bundles can be completed alone or together with matching HAI surveillance (for example, the central line bundle with CLABSI).

I. Patient Safety Modules

1. Device-Associated Module

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

2. Medication-Associated Module

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

3. Procedure-Associated Module

- Surgical Site Infection (SSI) Event
- Post-Procedure Pneumonia (PPP) Event

4. Multidrug-Resistant Organisms Module

- Pseudomonas aeruginosa
- Klebsiella spp.
- Acinetobacter spp.
- Methicillin-resistant Staphylococcus Aureus (MRSA)
- Vancomycin-resistant Enterococcus (VRE)

II. Bundles

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

I. PATIENT SAFETY MODULES

1. DEVICE-ASSOCIATED MODULE

Device-associated infection: An infection in a patient with a device (e.g., a ventilator or central line) that was used at the onset of infection or was removed within the 48-hour period before onset of infection

- There is no minimum period of time that the device must be in place for the infection to be considered device-associated.
- The date of the device-associated HAI event is either the date on which the first clinical evidence appeared or the date on which the specimen used to meet the HAI criteria was collected, whichever came first.
- If the device-associated HAI develops within 48 hours of discharge from a location, then the HAI 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 in place at the time of or within 48 hours before onset of the BSI.
- Primary BSI is a laboratory-confirmed bloodstream infection (LCBI) that is not secondary to an infection that meets the CDC/NHSN criteria at another body site.
- The central line is defined as an intravascular catheter that terminates at or close to the heart or in one of the great vessels and is used for infusion, withdrawal of blood, or hemodynamic monitoring. An umbilical catheter is defined as a central vascular device inserted through the umbilical artery or vein in a neonate.
- The central line could be temporary or permanent. A temporary catheter is a central line that is not tunneled. A permanent catheter, which includes certain dialysis catheters and implantable catheters, is a central line that is tunneled.

B. Ventilator-Associated Pneumonia (VAP) Event:

- A VAP is pneumonia (PNEU) that is identified using a combination of radiologic, clinical and laboratory criteria and occurs in a patient who was intubated and ventilated at the time of or within 48 hours before the onset of pneumonia.
- A ventilator is defined as a device that continuously assists or controls respiration, 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. 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 at the time of or within 48 hours before onset of the event.
- An indwelling 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; this catheter is also called a Foley catheter and does not encompass straight in-and-out catheters.

D. Dialysis Event (DE):

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

- 1. Hospitalization:** This event includes all hospitalizations that involved an overnight stay in a hospital and is not limited to infections or situations in which the patient was directly admitted from the dialysis unit. Each time a patient is hospitalized (no matter how soon after the last hospitalization), the hospitalization is entered as a new event.
- 2. In-unit IV antimicrobial starts:** This event includes all IV antimicrobial starts and is not limited to those with vancomycin or for a vascular access problem. If IV antimicrobials are stopped for less than 21 days and then restarted, this restart is NOT considered a new event. However, if IV antimicrobials are stopped for ≥ 21 days and then restarted, this is considered a new event.
- 3. Positive blood culture:** This event includes all patients with a positive blood culture even if they did not have an associated hospitalization or in-unit IV antimicrobial start and blood cultures taken as an outpatient or within 1 day after a hospital admission. Positive blood cultures that occur 21 or more days after a previous positive blood culture are considered a new event. Access-associated bacteremia is a positive blood culture with its source identified as the vascular access site or an unknown site.

2. MEDICATION-ASSOCIATED MODULE

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

AUR-Microbiology Laboratory Data: Antimicrobial resistance prevalence rate is calculated per 100 isolates tested. The numerator includes all resistant, non-duplicate clinical isolates processed by the laboratory during a given month in a certain hospital section (inpatient and/or outpatient), 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 the AUR rates. The duplicate isolate is an isolate of the same species of bacteria, regardless of antimicrobial susceptibility pattern, from the same patient, regardless of specimen site, during a given reporting period. 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 the incidence density rates of defined daily dose (DDD) per 1,000 patient-days in a certain hospital section (inpatients only). The 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 (defined by CDC/NHSN).

3. PROCEDURE-ASSOCIATED MODULE

A. Surgical Site Infection (SSI) Event:

- The SSI is an infection that occurs within 30 days (or within one year for an implant in the case of organ/space SSI) 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 occurs during an operation, which is 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 a laparoscopic approach, and closes the incision before the patient leaves.
- An implant is a nonhuman-derived object, material, or tissue that is permanently placed in a patient during an operative procedure and is not routinely manipulated for diagnostic or therapeutic purposes. Examples include: porcine or synthetic heart valves, mechanical heart, metal rods, mesh, sternal wires, screws, and cement.

B. Post-Procedure Pneumonia (PPP) Event:

- The PPE is a pneumonia that is identified using a combination of radiological, clinical and laboratory criteria (such as VAP) and occurs after an inpatient operation but prior to discharge.

4. Multi Drug Resistant Organisms (MDRO)

A. Gram-negative MDROs:

Gram-negative MDROs include *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, and *Acinetobacter baumannii*. To be considered for MDRO criteria, the above three organisms were required to be tested for at least one agent in 4 antimicrobials classes: b-lactams (penicillins and cephalosporins), aminoglycosides, fluoroquinolones, and carbapenems.

For MDR *Pseudomonas aeruginosa* and *Klebsiella*. They should be resistant to all agents tested in at least 3 or 4 antimicrobial classes, including penicillins, cephalosporins, aminoglycosides, fluoroquinolones, and carbapenems.

For MDR *Acinetobacter baumannii*. These organisms should be resistant to all agents tested in at least 3 or 4 antimicrobial classes, including penicillins, cephalosporins, aminoglycosides, fluoroquinolones, carbapenems, and sulbactam.

B. Gram-positive MDROs:

Gram-positive MDROs include MRSA and VRE.

- MRSA: Includes *S. aureus* cultured from any specimen that is oxacillin-resistant based on standard susceptibility testing methods or 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 it has been identified to the species level) that is resistant to vancomycin.

II. BUNDLES

A. Central line bundle

The central line bundle is a group of evidence-based interventions for patients with intravascular central catheters. When these interventions are implemented together, outcomes (reduce BSI) are better than when implemented individually. These interventions include:

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

B. Ventilator bundle

The ventilator bundle is a group of evidence-based interventions for patients with ventilators. When implemented together, these interventions result in better outcomes (reduce VAP) than when implemented individually. These interventions include:

1. Elevation of the head of the bed to between 30 and 45 degrees
2. Daily “sedative interruption” and 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

The urinary catheter bundle is a group of evidence-based interventions for patients with urinary catheters. When implemented together, these interventions result in better outcomes (reduce UTI) than when implemented individually. These interventions include:

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

D. Surgical bundle

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

SURVEILLANCE LOCATION

Location of Surveillance: The patient care area to which a patient is assigned while receiving care in the healthcare facility.

The location of surveillance may be inpatient, outpatient, or both.

- BSI, UTI, VAP, 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 the neonatal ICU.
- Central line, ventilator, and urinary catheter bundles are surveyed in inpatients.
- The surgical bundle is surveyed in inpatients and/or 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: This unit is a nursing care area that provides intense 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, neurological, 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 type of patients cared for in that unit. That is, if 80% of patients are of a certain type (e.g., patients with trauma), then that particular ICU is designated as that type of unit (in this case, a 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): This area is a hospital location that includes one of the following types of specialty care areas: bone marrow transplant, solid organ transplant, inpatient acute dialysis, hematology/oncology, or long term acute care.

3. Other inpatient: This section includes any inpatient locations that do not have an ICU or SCA, e.g., inpatient medical, surgical, or other wards, step-down units, or operating rooms (ORs). The OR may include an operating room, c-section room, interventional radiology room, a cardiac catheterization lab, or a post-anesthesia care unit.

II. Outpatient locations: These locations serve 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, the 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 LOCATION AND PERIOD

Each GCC facility must collect data about a certain component (of the Patient Safety Monthly Reporting Plan modules) for at least one month. A minimum of 6 months of at least one component is required during each calendar year to remain an active participant of the GCC Centre for Infection Control.

Location/period of different surveillance events:

- **CLABSI:** Surveillance for CLABSI in at least **one location** (ICU, NICU, SCA, others) in the healthcare institution for at least **one calendar month**
- **VAP:** Surveillance for VAP in at least **one location** (ICU, NICU, SCA, others) in the healthcare institution for at least **one calendar month**
- **CAUTI:** Surveillance for CAUTI performed in at least **one location** (ICU, SCA, others) in the healthcare institution for at least **one calendar month**
- **DE:** Surveillance for DE for at least **6 months** among chronic hemodialysis patients **at an outpatient hemodialysis facility**
- **AUR-microbiology:** Surveillance for all **AUR-microbiology or MDRO-positive** data submitted from **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 **for a minimum of 6 months per calendar year**
- **AUR-pharmacy:** Performed as described for AUR-microbiology, excluding outpatients
- **SSI:** Surveillance for at least one NHSN operative procedure performed in surgical patients **in any inpatient/outpatient** setting for at least **one month**
- **PPP:** Surveillance for at least one NHSN operative procedure performed **only in a surgical inpatient** setting for at least **one month**
- **MDRO Infection Surveillance:** Surveillance for all types of NHSN-defined HAIs caused by MDROs that are selected for monitoring in at least one inpatient location in the healthcare facility for at least 3 months in a calendar year
- **MDRO Laboratory-Identified (LabID) Event:** MDRO surveillance can occur in any location (inpatient or outpatient, excluding outpatient dialysis centers) for 3 consecutive months. Locations may be: (1) facility-wide by location, (2) selected one or more locations within the facility, or (3) overall facility-wide (for all inpatients or for all outpatients).
- **Central line, ventilator, and urinary catheter bundles** are surveyed in selected inpatient locations for all/sample of days for at least one month.
- **Surgical bundle** is surveyed for all/a sample of operations performed in either inpatient or outpatient locations for at least one month.

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 of the information could be gathered.
- Other HCWs (other than ICPs) 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 surveillance

1. Active surveillance
 - a) Trained personnel, mainly ICPs, are vigorously look for HAIs
 - b) Information is accumulated 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 HAIs

Patient-based and laboratory-based surveillance

1. Patient-based surveillance
 - a) Count HAIs, 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 surveillance
 - a) Detection is based solely on the findings of laboratory studies of clinical specimens.

Prospective and retrospective surveillance

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 surveillance

1. Priority-directed surveillance (also called targeted or focused surveillance)
 - a) Objectives for surveillance are defined
 - b) The focus is on specific events, processes, organisms, and/or patient populations
2. Comprehensive surveillance
 - 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 complete them will be discussed later. The data collected may be numerator or denominator data.

1. NUMERATOR DATA

The numerator is the upper portion of a fraction that is 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 HAIs, or automated screening of electronic databases may be used as long as the ICP makes the final determination of the presence of HAI according to the criteria for defining HAIs.

Numerator data to collect

1. Demographics – 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, and other factors associated with HAI
4. Laboratory – pathogens, antibiogram, serology, and pathology
5. Radiology/imaging – X-ray, CT scan, MRI, etc.

Sources of numerator data

1. Admission/discharge/transfer records and 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, physicians' offices, and emergency departments.

How an ICP collects numerator data

1. Screens admission/discharge/transfer records for patients who were admitted with infection and those whose diagnoses put them at risk of acquiring an HAI
2. Reviews laboratory reports to look for patients with possible infections (e.g., positive microbiology cultures, positive pathology findings) and discusses with laboratory personnel to identify both patients who may be infected and 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 to identify patients who may be infected
4. Performs chart review of patients who are suspected of having HAI: reviews physicians' progress notes and nurses' notes, laboratory data, radiology/imaging reports, surgery reports, etc.; if electronic charts are available, these charts 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

The 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 for acquiring an HAI

1. Device-associated BSI, VAP, and UTI incidence density rates: record on a daily basis 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 for in device-associated HAIs
5. SSI or PPP: record information on operative procedures selected for surveillance (e.g., type of procedure, date, risk factors)

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 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: process laboratory reports
4. AUR-pharmacy: total patient-days as shown in device-associated HAIs
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:** This rate is 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 that occur during the defined time period, and the denominator is the population at risk.
2. **Prevalence rate:** This rate is 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 and is expressed as a percentage.

Risk-adjusted rates and crude rates

1. **Risk-adjusted rates**
 - a) Rates are controlled for variations in the distribution of the major risk factors associated with an event's occurrence.
 - b) Such rates allow for inter- and intra-facility rate comparisons.
2. **Crude rates**
 - a) Rates assume an 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 provide numerical information about variables (e.g., mean). Inferential statistics make an assumption about a population based on a sample of the population (Z-test).

2. CALCULATING RATES

CLABSI: The CLABSI rate per 1,000 central line-days is calculated by dividing the number of CLABSI by the number of central line-days and multiplying the result by 1,000. 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 birth weight categories in NICUs.

VAP: The VAP rate per 1,000 ventilator-days is calculated by dividing the number of VAPs by the number of ventilator-days and multiplying the result by 1,000. 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 birth weight category in NICUs.

CAUTI: The CAUTI rate per 1,000 urinary catheter-days is calculated by dividing the number of CAUTIs by the number of catheter-days and multiplying the result by 1,000. 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 (hospitalization, in-unit IV antimicrobial start, or positive blood culture) are tabulated, and the rates of these events per 100 patient-months are 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 with the mean rate of all of the centers combined.

AUR-microbiology: Antimicrobial resistance data are expressed as the 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: The antimicrobial use data are expressed as the incidence density rates of DDD per 1,000 patient-days stratified by hospital area (calculated by dividing the number of DDDs by the number of patient-days and multiplying the result by 1,000). The 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 (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 different types of operative procedures and stratified by risk index. Standardized infection ratios can also be calculated using indirect standardization or multivariate models.

PPP: The PPP rates per 100 operative procedures are calculated by dividing the number of PPPs 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.

MDRO Infection Surveillance: The 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 1,000. The rate is then stratified by time (e.g., month, quarter) and patient care location.

MDRO Laboratory-Identified (LabID) Event: The numerator data are the Laboratory-identified MDRO Events, while the 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, (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). The LabID Event proxy measures are categorized as healthcare facility-onset (> 3 days after admission to the facility) versus community-onset (\leq 3 days after admission to the facility).

3. DESCRIBING THE 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, the CLABSI incidence rate is 5.3 per 1,000 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, the 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 the approximate p-values). Here are some common terms that may be encountered:

Z-test: It 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: It 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 performed to facilitate the comparison between two groups with different weights of a certain factor that may influence the rate of interest but is not the focus of attention by removing the effect of this factor through creating a weighted-average (summary) rate.

Indirect standardization: The age-specific infection rates from the standard population are multiplied by the age structure of the index population. 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): 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 infection rate pattern, which is comparable with the age-specific infection rate of the standard population.

Statistical error:

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 in 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 the 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 who are performing similar activities, so as to continuously improve. The National Healthcare Safety Network (NHSN) in the US is the oldest and most widely used network for benchmarking. Although it is very appealing to compare one's rates externally with others' rates, the 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 the study are well defined.
- The surveillance methodology is standardized and consistently used by all of the 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 of the participants.
- All data collectors receive training on how to collect data and use a standardized form.
- The facility and population that is 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).
- There is a mechanism for ensuring the accuracy, sensitivity, and specificity of the collected data.
- 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 the GCC Center for Infection Control to 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 occurred during 179 total hip replacement procedures)
4. Explain the methodology used to identify the 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 1,000 or $3/414 \times 1,000 = 7.2$ falls per 1,000 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 conclusions and recommendations that are easy to understand), the following persons/bodies need to receive a copy of your final report:

1. Immediate supervisor, higher ranking administration, or any other healthcare facility employee who is required (by your facility's local policies) to be informed and/or are authorized to implement the suggested recommendation.
2. Ministry of Health or even higher national or international bodies (according to your country's health policies regarding certain outbreaks).

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

REFERENCES

- [1] The National Healthcare Safety Network (NHSN) Manual (January 2011). Patient Safety Component Protocol. Division of Healthcare Quality Promotion National Center for Infectious Diseases Atlanta, Georgia
http://www.cdc.gov/nhsn/TOC_PSCManual.html
(Last accessed March 2011)
- [2] Centers for Disease Control and Prevention. Outline For Healthcare-Associated Infections Surveillance (May 2006)
<http://www.cdc.gov/ncidod/dhqp/pdf/surveillance/OutlineForHAISurveillance.pdf>
(Last accessed March 2011)
- [3] The National Healthcare Safety Network (NHSN) Data Collection Forms
<http://www.cdc.gov/nhsn/dataCollectForms.html>
(Last accessed March 2011)
- [4] Horan TC, Andrus M, Dudeck MA. CDC/NHSN surveillance definition of health care–associated infection and criteria for specific types of infections in the acute care setting. *Am J Infect Control*. 2008 Jun;36(5):309-32.
- [5] Surveillance. APIC Text of Infection Control and Epidemiology. The Association for Professionals in Infection Control and Epidemiology, Inc. Third Edition
- [6] Use of Statistics. APIC Text of Infection Control and Epidemiology. The Association for Professionals in Infection Control and Epidemiology, Inc. Third Edition.

APPENDIX 1: CLABSI Form & Instructions

Add your
institution

Logo
here

-----Add Your Hospital Name Here-----
-----Add Your Hospital Name Here-----
Infection Prevention & Control Program

**Primary Central Line-Associated Blood Stream Infection (CLABSI)
Infection Control Surveillance Form**



SECTION I: PATIENT AND HOSPITAL INFORMATION

Patient ID:

Date of birth:

Gender:
☐ Male
☐ Female

Surveillance plan date:

Facility ID:

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

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:

If location is NICU:
Birth wt: Grams
Gestational age: Weeks

SECTION III: CENTRAL LINE INFORMATION

Number of central lines (CL) inserted:

Fill in 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-Permanent
Site:
1-Jugular
2-Subclavian
3-Femoral
4-Umbilical
5-Others
Lumen:
1-Single
2-Multiple

Insertion date **Removal date**
D D M M Y Y D D M M Y Y
CL1
CL2
CL3

SECTION IV: BSI EVENT INFORMATION

BSI diagnosed:
☐ 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

Patient had a CL at the time of or within 48 hours before BSI diagnosis:
☐ Yes
☐ No

Note: The answer has to be yes to be considered CLABSI

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

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

Procedure name:

Procedure date:
D D M M Y Y

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:

Date data collected	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Collector ID	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Date data entered	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Data entry ID	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Data entry stamp

BSI FORM INSTRUCTIONS

DISCLAIMER:

Assurance of Confidentiality: The information obtained in this surveillance system that would permit the 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 must be completed for all patients with one or more central lines (including umbilical) in the ICU, NICU, SCA, or other inpatient locations in case the CLABSI component of the device-associated module is recorded at your facility in this particular month.

SECTION I: PATIENT AND HOSPITAL INFORMATION

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

- A. The first digit refers to the state numbers 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 NGHHA and had the medical record number 1052647, he would be assigned this ID: **501052647**

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

Gender: Check male or female.

Surveillance plan date: Record the month and year that the GCC surveillance plan was recorded (in the case that the BSI was diagnosed: the month of BSI diagnosis; in the case of No BSI: the month of central line insertion).

Facility ID: This item is a 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC Center for Infection Control; the first digit refers to the state, and the last 2 digits are state-specific numbers.

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

Note: If the BSI develops in a patient within 48 hours of discharge from a location, indicate the discharging location, not the current location of the patient, on the infection report.

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 at which the data were collected (e.g., other inpatients: ward 15, general medicine).

SECTION II: ADMISSION INFORMATION

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

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

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

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

Diagnosis: Record the admission diagnosis.

Birth weight: Record the birth weight in grams for NICU patients only.

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

SECTION III: CENTRAL LINE INFORMATION

Number of central line inserted: Enter the number of central lines inserted and then complete the detailed information for each central line in the table below.

Location of central line insertion: Enter the hospital location where the 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, number of lumens, and the insertion sites. For example, if a temporary non-tunneled multiple-lumen catheter was inserted at the jugular vein, the following values should be entered: 1 (type 1), 1 (type 2), 2 (lumen), and 1 (site).

Note: If a patient has more than one temporary central line on a given day, this situation 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. If an infant has both an umbilical catheter and a non-umbilical central line, the day is counted as an umbilical catheter day only.

Note: A permanent catheter is a central line that is tunneled; these include certain dialysis catheters and implantable catheters. A temporary catheter is a central line that is not tunneled. An 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 answer all of this section's questions as applicable. If no BSI was diagnosed, then check "No," and do not answer any other question in this section (with the exception of death and death date).

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

BSI date: Record the date that the BSI was diagnosed.

Patient had a CL at the time of or the CL was removed within 48 hours before BSI diagnosis: The answer has to be yes to be considered CLABSI.

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

BSI diagnosed after a procedure: Check "Yes" if BSI occurred after an NHSN-defined procedure but before discharge from the facility (and 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, answer the next 2 questions (the date of death and if BSI contributed to death).

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 that then led to death during hospitalization.

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

Criterion 1:

- A patient of any age has a recognized pathogen cultured from one or more blood cultures *and*
- The organism cultured from blood is *not* related to an infection at another site.

Criterion 2:

- A patient of any age has at least one of the following signs or symptoms: fever ($>38^{\circ}\text{C}$), chills, or hypotension *and*
- Signs and symptoms and positive laboratory results are *not* related to an infection at another site *and*
- The common skin contaminant (e.g., diphtheroids, *Bacillus* sp., *Propionibacterium* sp., coagulase-negative staphylococci, viridans group streptococci, *Aerococcus* spp., *Micrococcus* spp.) is cultured from two or more blood cultures drawn on *separate* occasions.

Criterion 3:

- A patient <1 year of age has at least *one* of the following signs or symptoms: fever ($>38^{\circ}\text{C}$, rectal), hypothermia ($<37^{\circ}\text{C}$, rectal), apnea, or bradycardia *and*
- Signs and symptoms and positive laboratory results are *not* related to an infection at another site *and*
- A common skin contaminant (e.g., diphtheroids, *Bacillus* sp., *Propionibacterium* sp., coagulase-negative staphylococci, viridans group streptococci, *Aerococcus* spp., *Micrococcus* spp.) is cultured from *two* or more blood cultures drawn on *separate* occasions.

Notes:

Blood specimens for culture should be obtained from two or more blood draws from separate venipuncture sites simultaneously or over a short period of time (i.e., within a few hours).

One or more blood cultures should have grown organisms, as reported by the laboratory.

Recognized pathogen does not include organisms considered common skin contaminants (e.g., *S. aureus*, *Enterococcus* spp., *E. coli*, *Pseudomonas* spp., *Klebsiella* spp., *Candida* spp.).

Two or more blood cultures drawn on separate occasions means that (1) blood from at least two blood draws were collected within two days of each other and (2) that at least one tube from each blood draw is reported by the laboratory as having grown the same common skin contaminant organism.

SECTION V: LABORATORY RECORD

Organism identified: Record "Yes" if a pathogen was identified, and "No" if otherwise; if "Yes," specify the details on the 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 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. Additional antimicrobial agents and sensitivity results may be reported for up to a total of 20 agents.

For other organisms and their antimicrobial agents and sensitivity: Same as above, but record the name of the antimicrobial agent(s).

MDRO (3) and (4): *P. aeruginosa*, *K. pneumoniae*, and *A. baumannii* are required to be tested for at least one agent in 4 antimicrobials classes: b-lactams (penicillins and cephalosporins), aminoglycosides, fluoroquinolones, and carbapenems. For MDR *P. aeruginosa* and *K. pneumoniae*, these organisms must be resistant to all agents tested in at least 3 or 4 antimicrobial classes, including penicillins, cephalosporins, aminoglycosides, fluoroquinolones, and carbapenems. For MDR *A. baumannii*, these organisms must be resistant to all agents tested in at least 3 or 4 antimicrobial classes, including penicillins, cephalosporins, aminoglycosides, fluoroquinolones, carbapenems, and sulbactam.


COMMENTS: Add any necessary comments.

DATA COLLECTION: Please add the date that the form was completed and the ID of the person who collected/abstracted the data.

DATA ENTRY STAMP: After the form is entered into 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 <div style="font-size: 2em; font-weight: bold;">Logo</div> here	-----Add Your Hospital Name Here----- -----Add Your Hospital Name Here----- Infection Prevention & Control Program Ventilator-Associated Pneumonia (VAP) Infection Control Surveillance Form	
--	---	---

SECTION I: PATIENT AND HOSPITAL INFORMATION:

Patient ID: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	Date of birth: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	Gender: <input type="checkbox"/> Male <input type="checkbox"/> Female	
Surveillance plan date: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	Facility ID: <input type="text"/> <input type="text"/> <input type="text"/>	Location: <input type="checkbox"/> Intensive care unit (ICU): ----- <input type="checkbox"/> Neonatal intensive care unit (NICU): ----- <input type="checkbox"/> specialty care area (SCA): ----- <input type="checkbox"/> Others: -----	

SECTION II: ADMISSION INFORMATION:

Hospital stay: Admission date: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	ICU stay: Admission date: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	Diagnosis: <div style="border: 1px solid black; height: 40px; margin-top: 5px;"></div>
Discharge date: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	Discharge date: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	If location is NICU: Birth wt: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> grams Gestational age: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 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	Removal date	APACHE score	ISS score	
	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
1st	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
2nd	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>

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:

Patient had ventilator at the time of or removed within the 48-hours before VAP diagnosis:
☐ Yes
☐ No
Note: The answer has to be yes to be considered VAP

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

Procedure name:

Procedure date:

Development of secondary BSI:
☐ Yes
☐ No

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

Death date:

VAP contributed to death:
☐ Yes
☐ No

SECTION V: LABORATORY RECORD

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

Organism identified
☐ Yes, complete the back
☐ No

COMMENTS:

Date data collected	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Collector ID	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Date data entered	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Data entry ID	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>

Data entry stamp

SECTION V: LABORATORY RECORD

Name of Gram Positive or Negative	Date of record DD-MM-YY	M D R O (3)	M D R O (4)	Antimicrobial sensitivity																													
				A	A	A	C	C	C	C	C	C	C	C	C	E	E	G	I	L	L	M	M	M	N	O	P	P	R	S	T	V	OTHERS

For **MDR P. aeruginosa** and **K. pneumoniae**: Resistant to all agents tested in at least 3 or 4 antimicrobial classes which are penicillins, cephalosporins, aminoglycosides, fluoroquinolones, and carbapenems.

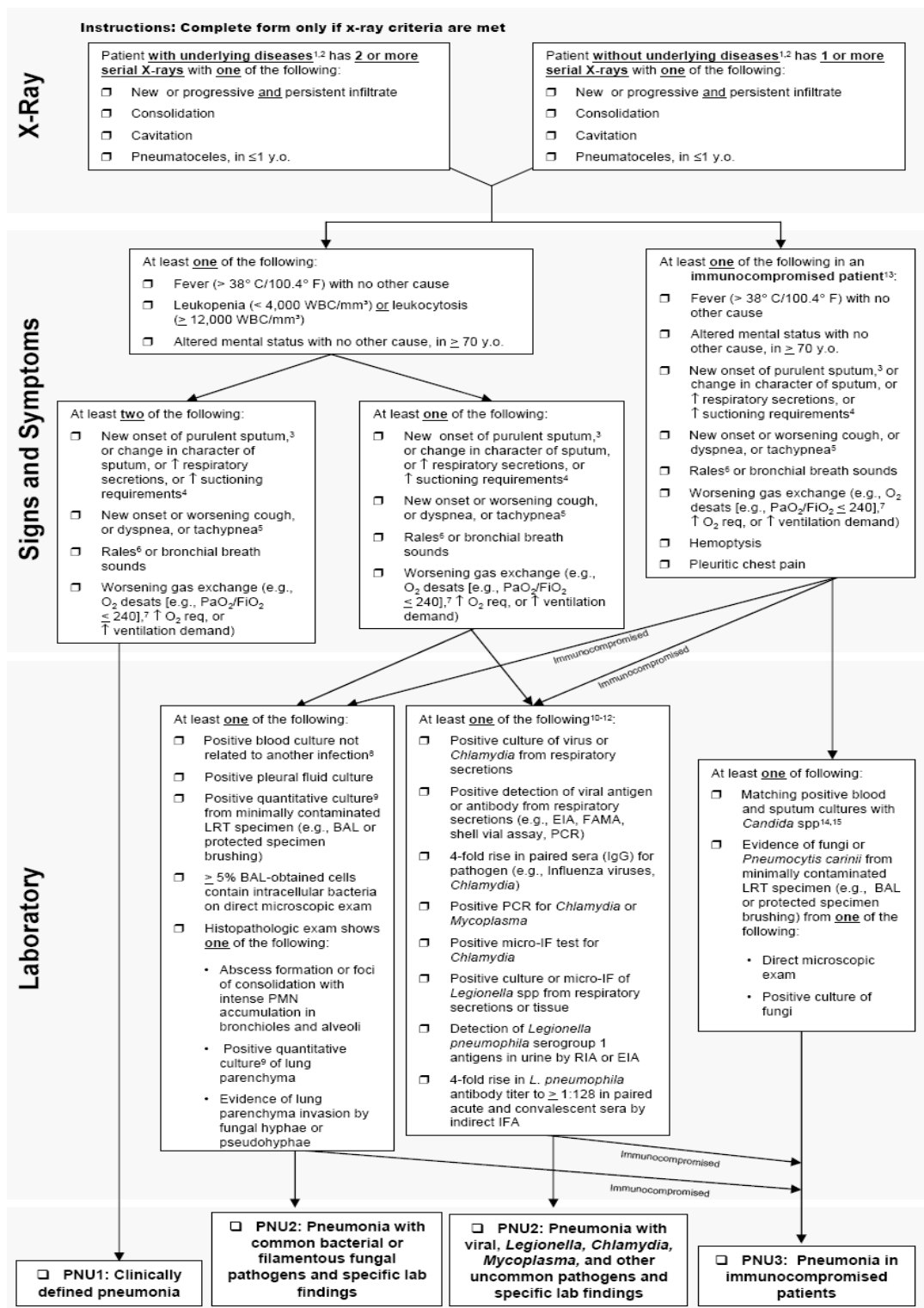
For **MDR A. baumannii**: Resistant to all agents tested in at least 3 or 4 antimicrobial classes which are penicillins, cephalosporins, aminoglycosides, fluoroquinolones, carbapenems, and sulbactam

For **all the three organisms**: it is required to be tested for at least one agent in 4 antimicrobials classes: b-lactams (penicillins and cephalosporins), aminoglycosides, fluoroquinolones, and carbapenems.

Name of other organisms	Date of record DD-MM-YY	Antimicrobial sensitivity (type antimicrobial names)					
		1-	2-	3-	4-	5-	6-

Result Codes: S = Susceptible I = Intermediate R = Resistant N = Not tested
AMIK = amikacin **AMP** = ampicillin **AZTREON** = aztreonam **CEFAZ** = cefazolin **CEFE** = cefepime **CEFTAZ** = ceftazidime **CEFTOX** = cefotaxime
CEFTRI = ceftriaxone **CEFUR** = cefuroxime **CLINDA** = clindamycin **ERYTH** = erythromycin **GEN/TOB** = gentamicin/tobramycin **IMI** = imipenem
LEVO = levofloxacin **MERO** = meropenem **MET** = metronidazole **MUP** = mupirocin **NIT** = Nitrofurantoin **OXA** = oxacillin
PEN = penicillin **RIF** = rifampicin **SXT/TMZ** = sulfamethoxazole /trimethoprim **TAZ** = piperacillin-tazobactam (tazocin) **VANC** = vancomycin

PNEUMONIA FLOW DIAGRAM



PNEUMONIA FLOW DIAGRAM ALTERNATE CRITERIA FOR INFANTS AND CHILDREN

Instructions: Complete form only if x-ray criteria are met

X-Ray

Patient with underlying diseases^{1,2} has **2 or more serial X-rays** with one of the following:

- ☐ New or progressive and persistent infiltrate
- ☐ Consolidation
- ☐ Cavitation
- ☐ Pneumatoceles, in ≤ 1 y.o.

Patient without underlying diseases^{1,2} has **1 or more serial X-rays** with one of the following:

- ☐ New or progressive and persistent infiltrate
- ☐ Consolidation
- ☐ Cavitation
- ☐ Pneumatoceles, in ≤ 1 y.o.

Signs and Symptoms

Infants ≤ 1 y.o.

- ☐ Worsening gas exchange (e.g., O_2 desats [e.g., pulse oximetry $< 94\%$], $\uparrow O_2$ req, or \uparrow ventilation demand)
- and **three** of the following:
- ☐ Temperature instability with no other recognized cause
 - ☐ Leukopenia ($< 4,000$ WBC/mm³) or leukocytosis ($\geq 15,000$ WBC/mm³) and left shift ($\geq 10\%$ band forms)
 - ☐ New onset of purulent sputum,³ or change in character of sputum⁴, or \uparrow respiratory secretions, or \uparrow suctioning requirements
 - ☐ Apnea, tachypnea⁵, nasal flaring with retraction of chest wall or grunting
 - ☐ Wheezing, rales⁶, or rhonchi
 - ☐ Cough
 - ☐ Bradycardia (< 100 beats/min.) or tachycardia (> 170 beats/min.)

Children > 1 or ≤ 12 y.o.

At least **three** of the following:

- ☐ Fever ($> 38.4^\circ C / 101.1^\circ F$) or hypothermia ($< 36.5^\circ C / 97.7^\circ F$) with no other recognized cause
- ☐ Leukopenia ($< 4,000$ WBC/mm³) or leukocytosis ($\geq 15,000$ WBC/mm³)
- ☐ New onset of purulent sputum,³ or change in character of sputum⁴, or \uparrow respiratory secretions, or \uparrow suctioning requirements
- ☐ New onset or worsening cough, or dyspnea, apnea, or tachypnea⁵
- ☐ Rales⁶ or bronchial breath sounds
- ☐ Worsening gas exchange (e.g., O_2 desats [e.g., pulse oximetry $< 94\%$], $\uparrow O_2$ req, or \uparrow ventilation demand)

☐ **PNU1:**

Clinically defined pneumonia

N.B. Underlying pulmonary or cardiac disease (e.g., respiratory distress syndrome, bronchopulmonary dysplasia, pulmonary edema, or chronic obstructive pulmonary disease).

VAP FORM INSTRUCTIONS

DISCLAIMER:

Assurance of Confidentiality: The information obtained in this surveillance system that would permit the 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 must be completed for all patients on a ventilator in the ICU, NICU, SCA, or other inpatient locations in the event that the VAP component of the device-associated module is recorded at your facility in this particular month.

SECTION I: PATIENT AND HOSPITAL INFORMATION

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

- C. The first digit refers to the state numbers 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 NGH and had the medical record number 1052647, he would 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 that the GCC surveillance plan was recorded (which is the month of VAP diagnosis in the case that VAP was diagnosed or the month of ventilator insertion in the case that no VAP was diagnosed).

Facility ID: This value is a 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC Center for Infection Control, with the first digit referring to the state and the last 2 digits are state-specific numbers.

Location: VAP surveillance may be conducted in (1) intensive care units (ICUs), (2) neonatal intensive care units (NICUs), (3) specialty care areas (including hematology/oncology wards, bone marrow transplant units, solid organ transplant units, inpatient dialysis units, long-term acute care areas), and (4) any other location in the institution where patients are housed overnight (e.g., surgical wards).

Note: If the VAP develops in a patient within 48 hours of discharge from a location, indicate the discharging location, not the current location of the patient, on the infection report.

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 from which data have been collected (e.g., other inpatients: ward 15, general medicine).

SECTION II: ADMISSION INFORMATION

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

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

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

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

Diagnosis: Record the admission diagnosis.

Birth weight: Record the birth weight in grams for NICU patients only.

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

SECTION III: VENTILATOR INFORMATION

Number of times ventilator was used: Enter the number of times the ventilator was used and then complete the detailed information for each time in the table below.

Location of ventilator insertion: Enter the hospital location where the ventilator was inserted.

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

Note: A ventilator is a device that continuously assists or controls respiration through a tracheostomy or endotracheal intubation.

NOTE: Lung expansion devices such as intermittent positive pressure breathing (IPPB), nasal positive end-expiratory pressure (PEEP), and continuous nasal positive airway pressure (CPAP, hypoCPAP) are not considered ventilators unless they are 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. The APACHE score ranges between 0 and 129, with 0 having the best survival and >30 having very bad survival. The ISS (Injury Severity Score) is an anatomical scoring system that provides an overall score for patients with multiple injuries. The ISS score ranges from 0 to 75, with 75 indicating unsurvivable injuries.

SECTION IV: VAP EVENT INFORMATION

VAP diagnosed: If VAP was diagnosed, then answer all of the questions in this section, as applicable. If no VAP was diagnosed, then check “No” and do not answer any other question in that section (with the exception of death and death date).

Note: Pneumonia (PNEU) is identified using a combination of radiological, clinical and laboratory criteria. Ventilator-associated pneumonia is defined as pneumonia in persons who had a device to assist or control respiration continuously through a tracheostomy or endotracheal intubation within the 48-hour period 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 regarding the criteria of VAP diagnosis. Please check the appropriate (small) boxes on the flow diagram that correspond to the patient’s radiological, clinical, and laboratory features.

Note: There is a hierarchy of specific categories within the major sites of pneumonia. Even if a patient meets the 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 a ventilator at the time or ventilator was removed within 48 hours before VAP diagnosis: 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 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 the patient died during the hospitalization. In this case, answer the next 2 questions (the date of death and if VAP contributed to the death).

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 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. Additional antimicrobial agents and sensitivity results may be reported for up to a total of 20 agents.

For other organisms and their antimicrobial agents and sensitivity: Same as above, but record the name of the antimicrobial agent(s).

MDRO (3) and (4): *P. aeruginosa*, *K. pneumoniae*, and *A. baumannii* are required to be tested for at least one agent in 4 antimicrobials classes: b-lactams (penicillins and cephalosporins), aminoglycosides, fluoroquinolones, and carbapenems. For MDR *P. aeruginosa* and *K. pneumoniae*, the organisms must be resistant to all agents tested in at least 3 or 4 antimicrobial classes, including penicillins, cephalosporins, aminoglycosides, fluoroquinolones, and carbapenems. For MDR *A. baumannii*, the organisms must be resistant to all agents tested in at least 3 or 4 antimicrobial classes, including penicillins, cephalosporins, aminoglycosides, fluoroquinolones, carbapenems, and 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 into 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: CAUTI Form & Instructions

<p>Add your institution</p> <div style="text-align: center; font-size: 2em; font-weight: bold; margin: 10px 0;">Logo</div> <p style="text-align: center;">here</p>	<p>-----Add Your Hospital Name Here----- -----Add Your Hospital Name Here----- Infection Prevention & Control Program</p> <p>Catheter-Associated Urinary Tract Infection (CAUTI) Infection Control Surveillance Form</p>																																								
<p>SECTION I: PATIENT AND HOSPITAL INFORMATION</p> <table style="width: 100%;"> <tr> <td style="width: 25%;"> Patient ID: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> </td> <td style="width: 25%;"> Date of birth: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> </td> <td style="width: 25%;"> Gender: <input type="checkbox"/> Male <input type="checkbox"/> Female </td> <td style="width: 25%;"></td> </tr> <tr> <td> Surveillance plan date: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> </td> <td> Facility ID: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> </td> <td colspan="2"> Location: <input type="checkbox"/> Intensive care unit (ICU): ----- <input type="checkbox"/> Specialty care area (SCA) : ----- <input type="checkbox"/> Other: ----- </td> </tr> </table>			Patient ID: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	Date of birth: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	Gender: <input type="checkbox"/> Male <input type="checkbox"/> Female		Surveillance plan date: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	Facility ID: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	Location: <input type="checkbox"/> Intensive care unit (ICU): ----- <input type="checkbox"/> Specialty care area (SCA) : ----- <input type="checkbox"/> Other: -----																																
Patient ID: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	Date of birth: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	Gender: <input type="checkbox"/> Male <input type="checkbox"/> Female																																							
Surveillance plan date: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	Facility ID: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	Location: <input type="checkbox"/> Intensive care unit (ICU): ----- <input type="checkbox"/> Specialty care area (SCA) : ----- <input type="checkbox"/> Other: -----																																							
<p>SECTION II: ADMISSION AND CATHETER INFORMATION</p> <table style="width: 100%;"> <tr> <td style="width: 25%;"> Hospital stay: Admission date <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> </td> <td style="width: 25%;"> ICU stay: Admission date <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> </td> <td colspan="2" style="width: 50%;"> Diagnosis: <div style="border: 1px solid black; height: 40px; width: 100%;"></div> </td> </tr> <tr> <td> Discharge date <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> </td> <td> Discharge date <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> </td> <td colspan="2"> Location of urinary catheter insertion: ----- Insertion date <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> </td> </tr> <tr> <td></td> <td></td> <td colspan="2"> Removal date <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> </td> </tr> </table>			Hospital stay: Admission date <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	ICU stay: Admission date <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	Diagnosis: <div style="border: 1px solid black; height: 40px; width: 100%;"></div>		Discharge date <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	Discharge date <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	Location of urinary catheter insertion: ----- Insertion date <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>				Removal date <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>																												
Hospital stay: Admission date <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	ICU stay: Admission date <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	Diagnosis: <div style="border: 1px solid black; height: 40px; width: 100%;"></div>																																							
Discharge date <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	Discharge date <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	Location of urinary catheter insertion: ----- Insertion date <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>																																							
		Removal date <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>																																							
<p>SECTION III: UTI EVENT INFORMATION</p> <table style="width: 100%;"> <tr> <td style="width: 50%;"> UTI diagnosed: <input type="checkbox"/> Yes, complete below <input type="checkbox"/> No UTI diagnosis: (See the back) <input type="checkbox"/> Symptomatic UTI (SUTI) <input type="checkbox"/> Criterion-1A <input type="checkbox"/> Criterion-2A <input type="checkbox"/> Criterion-3 <input type="checkbox"/> Criterion-4 <input type="checkbox"/> Asymptomatic bacteremic UTI (ABUTI) </td> <td style="width: 50%;"> UTI diagnosed after a procedure: <input type="checkbox"/> Yes, complete next 2 questions <input type="checkbox"/> No Procedure name: ----- Procedure date: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> </td> </tr> <tr> <td> Note: These are not CAUTI <input type="checkbox"/> SUTI Criterion-1B <input type="checkbox"/> SUTI Criterion-2B <input type="checkbox"/> Other UTI (OUTI) </td> <td> Development of secondary BSI: <input type="checkbox"/> Yes <input type="checkbox"/> No Note: The answer has to be yes in all ABUTI </td> </tr> <tr> <td> UTI date: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> </td> <td> Hospitalization death: <input type="checkbox"/> Yes, complete next 2 questions <input type="checkbox"/> No Death date: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> </td> </tr> </table>			UTI diagnosed: <input type="checkbox"/> Yes, complete below <input type="checkbox"/> No UTI diagnosis: (See the back) <input type="checkbox"/> Symptomatic UTI (SUTI) <input type="checkbox"/> Criterion-1A <input type="checkbox"/> Criterion-2A <input type="checkbox"/> Criterion-3 <input type="checkbox"/> Criterion-4 <input type="checkbox"/> Asymptomatic bacteremic UTI (ABUTI)	UTI diagnosed after a procedure: <input type="checkbox"/> Yes, complete next 2 questions <input type="checkbox"/> No Procedure name: ----- Procedure date: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	Note: These are not CAUTI <input type="checkbox"/> SUTI Criterion-1B <input type="checkbox"/> SUTI Criterion-2B <input type="checkbox"/> Other UTI (OUTI)	Development of secondary BSI: <input type="checkbox"/> Yes <input type="checkbox"/> No Note: The answer has to be yes in all ABUTI	UTI date: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	Hospitalization death: <input type="checkbox"/> Yes, complete next 2 questions <input type="checkbox"/> No Death date: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<p>SECTION IV: LABORATORY RECORD</p> <p>Time of specimen collection: -----:----- AM / PM</p> <p>Organism identified: <input type="checkbox"/> Yes, complete the back <input type="checkbox"/> No </p> <p>COMMENTS:</p> <div style="border: 1px solid black; height: 100px; width: 100%;"></div> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 20%;">Date data collected</td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> </tr> <tr> <td>Collector ID</td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> </tr> <tr> <td>Date data entered</td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> </tr> <tr> <td>Data entry ID</td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> </tr> </table> <div style="border: 1px solid black; height: 50px; width: 100%; margin-top: 10px; text-align: center;">Data entry stamp</div>	Date data collected	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Collector ID	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Date data entered	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Data entry ID	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
UTI diagnosed: <input type="checkbox"/> Yes, complete below <input type="checkbox"/> No UTI diagnosis: (See the back) <input type="checkbox"/> Symptomatic UTI (SUTI) <input type="checkbox"/> Criterion-1A <input type="checkbox"/> Criterion-2A <input type="checkbox"/> Criterion-3 <input type="checkbox"/> Criterion-4 <input type="checkbox"/> Asymptomatic bacteremic UTI (ABUTI)	UTI diagnosed after a procedure: <input type="checkbox"/> Yes, complete next 2 questions <input type="checkbox"/> No Procedure name: ----- Procedure date: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>																																								
Note: These are not CAUTI <input type="checkbox"/> SUTI Criterion-1B <input type="checkbox"/> SUTI Criterion-2B <input type="checkbox"/> Other UTI (OUTI)	Development of secondary BSI: <input type="checkbox"/> Yes <input type="checkbox"/> No Note: The answer has to be yes in all ABUTI																																								
UTI date: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	Hospitalization death: <input type="checkbox"/> Yes, complete next 2 questions <input type="checkbox"/> No Death date: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>																																								
Date data collected	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>																																		
Collector ID	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>																																		
Date data entered	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>																																		
Data entry ID	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>																																		
<p>Patient had indwelling urinary catheter at the time of or catheter was removed within the 48 hours before UTI diagnosis: <input type="checkbox"/> Yes <input type="checkbox"/> In place <input type="checkbox"/> Removed within 48 hours <input type="checkbox"/> No Note: The answer has to be yes to be considered CAUTI </p>			<p>UTI contributed to death: <input type="checkbox"/> Yes <input type="checkbox"/> No </p>																																						

[illegible]

For **MDR P. aeruginosa** and **K. pneumoniae**: Resistant to all agents tested in at least 3 or 4 antimicrobial classes, including penicillins, cephalosporins, aminoglycosides, fluoroquinolones, and carbapenems.

For **MDR A. baumannii**: Resistant to all agents tested in at least 3 or 4 antimicrobial classes, including penicillins, cephalosporins, aminoglycosides, fluoroquinolones, carbapenems, and sulbactam.

For **all the three organisms**: The requirement is to test for at least one agent in 4 antimicrobials classes: β -lactams (penicillins and cephalosporins), aminoglycosides, fluoroquinolones, and carbapenems

Name of other organisms	Date of record DD-MM-YY	Antimicrobial sensitivity (type antimicrobial names)					
		1-	2-	3-	4-	5-	6-

Result Codes:	S = Susceptible	I = Intermediate	R = Resistant	N = Not tested	Drug Codes:
AMIK = amikacin	AMP = ampicillin	AZTREON = aztreonam	CEFAZ = cefazolin	CEFE = cefepime	CEFTAZ = ceftazidime
CEFTRI = ceftriaxone	CEFU = cefuroxime	CIP = ciprofloxacin	CLINDA = clindamycin	ERYTH = erythromycin	GEN/TOB = gentamicin/tobramycin
LEVO = levofloxacin	LNZ = linezolid	MERO = meropenem	MET = metronidazole	MUP = mupirocin	NIT = nitrofurantoin
PEN = penicillin	PIP = piperacillin	RIF = rifampicin	SXT/TMZ = sulfamethoxazole/trimethoprim	TAZ = piperacillin-tazobactam (tazocin)	VAN = vancomycin
					OXA = oxacillin
					CEFTOX = cefotaxime
					IMI = imipenem

Symptomatic urinary tract infection (SUTI): at least one of the following criteria:

Criterion 1A: Patient had an indwelling urinary catheter **in place** at the time of specimen collection **and at least 1 of the following signs or symptoms** with no other recognized cause: fever ($>38^{\circ}\text{C}$), suprapubic tenderness, or costovertebral angle pain or tenderness **and a positive urine culture of $\geq 10^5$ colony-forming units (CFU)/ml with no more than 2 species of microorganisms.**

of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness and a positive urine culture of $\geq 10^5$ CFU/ml with no more than 2 species of microorganisms.

patient and a well-involving urinary catheter in **place** at the time of specimen collection and **at least 1 of the following signs or symptoms** with no other recognized cause: fever ($>38^{\circ}\text{C}$), suprapubic tenderness, costovertebral angle pain or tenderness and **a positive urinalysis** demonstrated by at least **1** of the following findings: a positive dipstick for leukocyte esterase and/or nitrite, b. pyuria (urine specimen with ≥ 10 white blood cells [WBC]/mm³ or ≥ 3 WBC/high power field of unspun urine) or c. microorganisms seen on Gram stain of unspun urine and **a positive urine culture of $\geq 10^3$ and $<10^5$ CFU/ml** with no more than 2 species of microorganisms. --OR

Patients had indwelling urinary catheter removed within the 48 hours prior to specimen collection and at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness; and a positive urinalysis, as demonstrated by at least 1 of the following findings: a positive dipstick for leukocyte esterase and/or nitrite, b. pyuria (urine specimen with ≥ 10 white blood cells [WBC]/mm³ or ≥ 3 WBC/high power field of unspun urine), or c. microorganisms seen on Gram stain of unspun urine and a positive urine culture of $\geq 10^4$ and $<10^5$ CFU/ml (with no more than 2 species of microorganisms).

Criterion 3: Patient ≤ 1 year of age with indwelling urinary catheter in place within the last 48 hours and at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$ core), hypothermia ($<36^{\circ}\text{C}$ core), apnea, bradycardia, dysnea, lethargy, or vomiting and a positive urine culture of $\geq 10^5$ CFU/ml with no more than 2 species of microorganisms.

Criterion 4: Patient ≥ 51 year of age with indwelling urinary catheter in place within the last 48 hours and at least **1 of the following signs or symptoms** with no other recognized cause: fever ($>38^{\circ}\text{C}$ core), hypothermia ($<36^{\circ}\text{C}$ core), apnea, bradycardia, dysuria, lethargy, or vomiting and **a positive urinalysis** demonstrated by at least one of the following findings: a. positive dipstick for leukocyte esterase and/or nitrite, b. pyuria (urine specimen with ≥ 10 WBC/mm 3 or ≥ 3 WBC/high power field of unspun urine), or c. microorganisms seen on Gram's stain of unspun urine and **a positive urine culture of $\geq 10^5$ and $<10^6$ CFU/ml** with no more than two species of microorganisms.

Asymptomatic Bacteremic Urinary Tract Infection (ABUTI):

Patient with indwelling urinary catheter in place within the last 48 hours and **no signs or symptoms** (i.e., no fever >38°C) for patients <65 years of age; for any age patient, no urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness; **OR** for a patient <1 year of age, no fever (>38°C core), hypothermia (<36°C core), apnea, bradycardia, dysuria, lethargy, or vomiting) **and a positive urine culture of >10⁵ CFU/ml** with no more than 2 species of uropathogenic microorganisms* **and a positive blood culture** with at least 1 matching uropathogenic microorganism in the urine culture.

***Uropathogenic microorganisms are:** Gram-negative bacilli, *Staphylococcus* spp., yeasts, beta-hemolytic *Streptococcus* spp., *Enterococcus* spp., *G. vaginalis*, *Aerococcus* urinae, and *Corynebacterium* (urease positive). **Note:** The criteria of SUTI 1b and 2b and other UTI (OUTI) do not include the presence of an indwelling urinary catheter and therefore cannot be considered CAUTI.

UTI FORM INSTRUCTIONS

DISCLAIMER:

Assurance of Confidentiality: The information obtained in this surveillance system that would permit the 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 must be completed for all patients with an indwelling urinary catheter in the ICU, SCA, or other inpatient locations in the event that the UTI component of the device-associated module is recorded at your facility in this particular month.

SECTION I: PATIENT AND HOSPITAL INFORMATION

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

E. The first digit refers to the state numbers 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 NGHHA and had the medical record number 1052647, he would 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 that is being recorded (which is the month of UTI diagnosis if UTI was diagnosed or the month of indwelling urinary catheter insertion if no UTI was diagnosed).

Facility ID: This item is a 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC Center for Infection Control, with the first digit referring to the state and the last 2 digits referring to state-specific numbers.

Location: UTI surveillance may be conducted in (1) intensive care units (ICUs), (2) specialty care areas (including hematology/oncology wards, bone marrow transplant units, solid organ transplant units, inpatient dialysis units, long-term acute care areas), and (3) any other location in the institution where patients are housed overnight (e.g., surgical wards).

Note: If the UTI develops in a patient within 48 hours of discharge from a location, indicate the discharging location, not the current location of the patient, on the infection report.

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 from which data have been collected (e.g., other inpatients: ward 15, general medicine).

SECTION II: ADMISSION AND CATHETER INFORMATION

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

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

ICU admission date: Record the date the patient was admitted to the ICU.

ICU discharge date: Record the date the patient was discharged from the ICU.

Diagnosis: Record the admission diagnosis.

Location of catheter insertion: Enter the hospital location where the catheter was inserted.

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

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

SECTION III: UTI EVENT INFORMATION

UTI diagnosed: If UTI was diagnosed, then answer all of the questions in this section, as applicable. If no UTI was diagnosed, then check "No" and do not answer any other question in that section (with the 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. Any UTI diagnosed without the presence of the catheter (at or with 48 hours) is not considered CAUTI (for example, SUTI Criterion-1B).

UTI date: Record the date that the UTI was diagnosed.

Patient had an indwelling urinary catheter at the time of or removed within the 48 hours before UTI diagnosis: 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 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, answer the next 2 questions (the date of death and if UTI contributed to the death).

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.

Symptomatic urinary tract infection (SUTI): At least one of the following criteria:

Criterion 1A:

Patient had an indwelling urinary catheter **in place** at the time of specimen collection **and at least 1 of the following signs or symptoms** with no other recognized cause: fever ($>38^{\circ}\text{C}$), suprapubic tenderness, or costovertebral angle pain or tenderness **and a positive urine culture of $\geq 10^5$ colony-forming units (CFU)/ml** with no more than 2 species of microorganisms. -----

OR

Patient had an indwelling urinary catheter **removed within the 48 hours** prior to specimen collection **and at least 1 of the following signs or symptoms** with no other recognized cause: fever ($>38^{\circ}\text{C}$), urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness **and a positive urine culture of $\geq 10^5$ CFU/ml** with no more than 2 species of microorganisms.

Criterion 2A:

Patient had an indwelling urinary catheter **in place** at the time of specimen collection **and at least 1 of the following signs or symptoms** with no other recognized cause: fever ($>38^{\circ}\text{C}$), suprapubic tenderness, or costovertebral angle pain or tenderness **and a positive urinalysis** demonstrated by at least 1 of the following findings: a. positive dipstick for leukocyte esterase and/or nitrite, b. pyuria (urine specimen with ≥ 10 white blood cells [WBC]/mm³ or ≥ 3 WBC/high power field of unspun urine), or c. microorganisms seen on Gram stain of unspun urine **and a positive urine culture of $\geq 10^3$ and $<10^5$ CFU/ml** with no more than 2 species of microorganisms. -----

OR

Patient had an indwelling urinary catheter **removed within the 48 hours** prior to specimen collection **and at least 1 of the following signs or symptoms** with no other recognized cause: fever ($>38^{\circ}\text{C}$), urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness **and a positive urinalysis** demonstrated by at least 1 of the following findings: a. positive dipstick for leukocyte esterase and/or nitrite, b. pyuria (urine specimen with ≥ 10 white blood cells [WBC]/mm³ or ≥ 3 WBC/high power field of unspun urine), or c. microorganisms seen on Gram stain of unspun urine **and a positive urine culture of $\geq 10^3$ and $<10^5$ CFU/ml** with no more than 2 species of microorganisms.

Criterion 3:

Patient ≤ 1 year of age with an indwelling urinary catheter in place within the last 48 hours **and at least 1 of the following signs or symptoms** with no other recognized cause: fever ($>38^{\circ}\text{C}$ core), hypothermia ($<36^{\circ}\text{C}$ core), apnea, bradycardia, dysuria, lethargy, or vomiting **and a positive urine culture of $\geq 10^5$ CFU/ml** with no more than 2 species of microorganisms.

Criterion 4:

Patient ≤ 1 year of age with an indwelling urinary catheter in place within the last 48 hours **and at least 1 of the following signs or symptoms** with no other recognized cause: fever ($>38^{\circ}\text{C}$ core), hypothermia ($<36^{\circ}\text{C}$ core), apnea, bradycardia, dysuria, lethargy, or vomiting **and a positive urinalysis** demonstrated by at least one of the following findings: a. positive dipstick for leukocyte esterase and/or nitrite, b. pyuria (urine specimen with ≥ 10 WBC/mm³ or ≥ 3 WBC/high power field of unspun urine), or c. microorganisms seen on Gram's stain of unspun urine **and a positive urine culture of $\geq 10^3$ and $<10^5$ CFU/ml** with no more than two species of microorganisms.

Asymptomatic Bacteremic Urinary Tract Infection (ABUTI):

Patient with an indwelling urinary catheter in place within the last 48 hours **and no signs or symptoms** (i.e., no fever ($>38^{\circ}\text{C}$) for patients ≤ 65 years of age; for any age patient, no urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness, **OR** for a patient ≤ 1 year of age, no fever ($>38^{\circ}\text{C}$ core), hypothermia ($<36^{\circ}\text{C}$ core), apnea, bradycardia, dysuria, lethargy, or vomiting) **and a positive urine culture of $>10^5$ CFU/ml** with no more than 2 species of uropathogenic microorganisms* **and a positive blood culture** with at least 1 matching uropathogenic microorganism to the urine culture.

***Uropathogenic microorganisms are:** Gram-negative bacilli, Staphylococcus spp., yeasts, beta-hemolytic Streptococcus spp., Enterococcus spp., G. vaginalis, Aerococcus urinae, and Corynebacterium (urease positive).

Note: The criteria of SUTI 1b and 2b and other UTI (OUTI) does not require the presence of indwelling urinary catheter and therefore cannot be considered CAUTI.

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 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. Additional antimicrobial agents and sensitivity results may be reported for up to a total of 20 agents.

For other organisms and their antimicrobial agents and sensitivity: Same as above, but record the name of the antimicrobial agent(s).

MDRO (3) and (4): *P. aeruginosa*, *K. pneumoniae*, and *A. baumannii* must be tested for at least one agent in 4 antimicrobials classes: b-lactams (penicillins and cephalosporins), aminoglycosides, fluoroquinolones, and carbapenems. For MDR *P. aeruginosa* and *K. pneumoniae*, the organisms must be resistant to all agents tested in at least 3 or 4 antimicrobial classes, including penicillins, cephalosporins, aminoglycosides, fluoroquinolones, and carbapenems. For MDR *A. baumannii*, the organisms must be resistant to all agents tested in at least 3 or 4 antimicrobial classes, including penicillins, cephalosporins, aminoglycosides, fluoroquinolones, carbapenems, and 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 into 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 4: DE Form & Instructions

<p>Add your institution</p> <h1 style="margin: 0;">Logo</h1> <p>here</p>	<p>-----Add Your Hospital Name Here----- -----Add Your Hospital Name Here----- Infection Prevention & Control Program</p> <p>Dialysis Event (DE) Infection Control Surveillance Form</p>																										
<p>SECTION I: PATIENT AND HOSPITAL INFORMATION</p> <p>Patient ID: <table border="1" style="display: inline-table; width: 100px; height: 20px;"><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> Date of birth: <table border="1" style="display: inline-table; width: 100px; height: 20px;"><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> Gender: <input type="checkbox"/> Male <input type="checkbox"/> Female</p> <p>Surveillance plan date: <table border="1" style="display: inline-table; width: 60px; height: 20px;"><tr><td></td><td></td><td></td><td></td></tr></table> Facility ID: <table border="1" style="display: inline-table; width: 40px; height: 20px;"><tr><td></td><td></td><td></td></tr></table> Location: <table border="1" style="display: inline-table; width: 200px; height: 20px;"></table></p> <p style="text-align: center; font-size: small;">S # # # # # # # # D D M M Y Y Y Y M M Y Y S # #</p>																											
<p>SECTION II: VASCULAR ACCESS INFORMATION</p> <p>Specify vascular access: (check all that apply) <input type="checkbox"/> Arteriovenous fistulas <input type="checkbox"/> Arteriovenous graft <input type="checkbox"/> Permanent central line <input type="checkbox"/> Temporary central line <input type="checkbox"/> Port access device</p>																											
<p>SECTION III: EVENT INFORMATION</p> <p>Specify DE Incident (may be more than one incident)</p> <p>1- Hospitalization <input type="checkbox"/> Yes <input type="checkbox"/> No DE date: <table border="1" style="display: inline-table; width: 60px; height: 20px;"><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr></table></p> <p>2- In-unit IV antimicrobial start <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, was IV vancomycin started? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>3-Positive blood culture (blood stream infection, BSI) <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> Not done If yes, suspected source of positive blood culture (check one): <input type="checkbox"/> Vascular access <input type="checkbox"/> A source other than the vascular access <input type="checkbox"/> Contamination <input type="checkbox"/> Uncertain</p>																											
<p>SECTION IV: PROBLEMS</p> <p>Specify problems (check one or more) <input type="checkbox"/> Local access infection (pus, redness, or increased swelling at vascular access site without access-associated BSI) If applicable, circle the access with pus, redness, or increased swelling: <input type="checkbox"/> AV fistula <input type="checkbox"/> AV graft <input type="checkbox"/> Permanent central line <input type="checkbox"/> Temporary central line <input type="checkbox"/> Port access device</p> <p><input type="checkbox"/> Vascular access problem without infection (clotting, bleeding, etc.) <input type="checkbox"/> Fever ($\geq 37.8^{\circ}\text{C}/100^{\circ}\text{F}$ oral or $\geq 38.3^{\circ}\text{C}/101^{\circ}\text{F}$ rectal) <input type="checkbox"/> Wound (NOT related to vascular access) with pus or increased redness <input type="checkbox"/> Cellulitis (skin redness, heat, or pain without open wound) <input type="checkbox"/> Other, specify _____</p>																											
<p>SECTION V: LABORATORY RECORD</p> <p>Time of specimen collection: -----:----- AM / PM Organism identified: <input type="checkbox"/> Yes, complete the back <input type="checkbox"/> No</p>																											
<p>COMMENTS:</p>																											
<p>Date data collected: <table border="1" style="display: inline-table; width: 60px; height: 20px;"><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr></table></p> <p>Collector ID: <table border="1" style="display: inline-table; width: 60px; height: 20px;"><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr></table></p>														<p>Date data entered: <table border="1" style="display: inline-table; width: 60px; height: 20px;"><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr></table></p> <p>Data entry ID: <table border="1" style="display: inline-table; width: 60px; height: 20px;"><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr></table></p>													

Antimicrobial sensitivity

For **MDR P. aeruginosa** and **K. pneumoniae**: Resistant to all agents tested in at least 3 or 4 antimicrobial classes, including penicillins, cephalosporins, aminoglycosides, fluoroquinolones, and carbapenems. For **MDR A. baumannii**: Resistant to all agents tested in at least 3 or 4 antimicrobial classes, including penicillins, cephalosporins, aminoglycosides, fluoroquinolones, carbapenems, and sulbactam. For **all three organisms**: The requirement is to test for at least one agent in 4 antimicrobials classes: β -lactams (penicillins and cephalosporins), aminoglycosides, fluoroquinolones, and carbapenems.

For **MDR P. aeruginosa** and **K. pneumoniae**: Resistant to all agents tested in at least 3 or 4 antimicrobial classes, including penicillins, cephalosporins, aminoglycosides, fluoroquinolones, and carbapenems. For **MDR A. baumannii**: Resistant to all agents tested in at least 3 or 4 antimicrobial classes, including penicillins, cephalosporins, aminoglycosides, carbapenems, and sulbactam.

For all the three organisms: The requirement is to test for at least one agent in 4 antimicrobials classes: b-lactams (penicillins and cephalosporins), aminoglycosides, fluoroquinolones, and carbapenems

Result Codes:	S = Susceptible	I = Intermediate	R = Resistant	N = Not tested	Drug Codes:
AMIK	= amikacin	AMP	= ampicillin	CEFAZ	= cefazolin
CEFTRI	= ceftriaxone	CEFUR	= cefuroxime	CLINDA	= clindamycin
LEVO	= levofloxacin	LNZ	= linezolid	MET	= metronidazole
PEN	= penicillin	PIP	= piperacillin	RIF	= rifampicin
				ASTREON	= aztreonam
				CIP	= ciprofloxacin
				MERO	= meropenem
				ERYTH	= erythromycin
				MUP	= mupirocin
				SXT/TMZ	= sulfamethoxazole/trimethoprim
				CEFTAZ	= ceftazidime
				GEN/TOB	= gentamicin/tobramycin
				NIT	= nitrofurantoin
				TAZ	= piperacillin-tazobactam (tazocin)
				CEFTOX	= cefotaxime
				IMI	= imipenem
				OXa	= oxacillin
				VANC	= vancomycin

CEFTOX = cefotaxime
IMI = imipenem
OXA = oxacillin
VANC = vancomycin

2.Arteriovenous graft: implanted access constructed from synthetic materials

patient's own blood vessels

4-Temporary central line: non-tunneled non-cuffed catheter

5-Port access device: a fully implantable access device (e.g., Lifesite)

Hospitalization: This event is for the patient who stayed overnight in a hospital, not just those patients who had infections or those patients who were directly admitted from the dialysis unit. Each time a patient is hospitalized, complete the form as a new event irrespective of the time between the current and previous hospitalization. If a patient is hospitalized and returns to the dialysis unit on IV antimicrobials, both events will be included in the same event form, so do not complete a second event form.

antitumourals, both events will be included in the same event form, so do not complete a second event form.

2. **III-unit IV antimicrobial start:** This event is for the patient who is given IV antimicrobial agents in the dialysis unit for any reason, not just vancomycin 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 or more days and then restarted, this is considered a new event.

3. **Positive blood culture:** If the patient blood culture is positive, even if the patient 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. If the patient had an associated hospitalization or in-unit IV antimicrobial start, either/both will be included on the same event form (together with culture), and do not complete a second event form; if the patient had neither, complete a new event for positive blood culture occurring 21 or more days after a previous positive blood culture. Suspected source of positive blood culture could be:

- **Vascular access:** only if there is some objective evidence of vascular access infection (see below).

- **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. Contamination is more likely if a common skin contaminant (e.g., coagulase negative staphylococci, diphtheroids, *Propionibacterium*, or *Bacillus* spp.) is isolated from only one blood culture.

- **Uncertain:** only if there is insufficient evidence to decide among the three previous categories.

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

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

- **Local access infection:** the presence of pus, redness, or swelling of the vascular access site without an access-associated blood stream infection
- **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 the 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 must be completed for patients who developed a dialysis event (a hospitalization, outpatient IV antimicrobial start, or positive blood culture) while treated in outpatient hemodialysis centers in the event that the DE component of the device-associated module is recorded at your facility in this particular month.

SECTION I: PATIENT AND HOSPITAL INFORMATION

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

- G. The first digit refers to the state numbers 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 NGHHA and had the medical record number 1052647, he would 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 that the GCC surveillance plan was recorded (which is the month of the DE diagnosis).

Facility ID: This item is a 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC Center for Infection Control, with the first digit referring to the state and the last 2 digits referring to 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.

SECTION II: VASCULAR ACCESS INFORMATION

Check each access that the patient has because the patient could have more than one type of vascular access. These include:

Arteriovenous fistulas: an implanted access created from the patient's own blood vessels

Arteriovenous graft: an 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

Date of DE: Depending on the type of event reported, enter either the date of hospitalization or date of in-unit IV antimicrobial start; for a patient whose event is a positive blood culture, enter the date the blood specimen was collected.

DE types

1. **Hospitalization:** This event is for the patient who stayed overnight in a hospital, not just those patients who had infections or those patients who were directly admitted from the dialysis unit. Each time a patient is hospitalized, complete the form as a new event irrespective of the time between the current and previous hospitalization. If a patient is hospitalized and returns to the dialysis unit on IV antimicrobials, both events will be included in the same event form, so do not complete a second event form.
2. **In-unit IV antimicrobial start:** This event is for the patient who is given IV antimicrobial agents in the dialysis unit for any reason, not just vancomycin 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 or more days and then restarted, this is considered a new event.
3. **Positive blood culture:** If the patient blood culture is positive, even if the patient 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. If the patient had an associated hospitalization or/and in-unit IV antimicrobial start, either/both will be included on the same event form (together with culture), and do not complete a second event form; if the patient had neither, complete a new event for positive blood culture occurring 21 or more days after a previous positive blood culture. Suspected source of positive blood culture 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. Contamination is more likely if a common skin contaminant (e.g., coagulase negative staphylococci, diphtheroids, *Propionibacterium*, or *Bacillus* spp.) is isolated from only one blood culture.
 - **Uncertain:** only if there is insufficient evidence to decide among the three previous categories.

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

For each problem listed (e.g., local access infection), check if symptoms are present (e.g., pus, redness, or increased swelling at vascular access site without access-associated BSI). Do not check if symptoms are absent or if the patient is thought to have the problem (e.g., local access infection) but does not have the specified signs. Instead, check "Other" and specify (e.g., "Possible access infection").

There is a similar rule for other responses: If the patient is thought to have the problem but does not meet the criteria, check "Other" and specify.

SECTION V: LABORATORY RECORD

Organism identified: Record "Yes" if a pathogen was identified, "No" if otherwise; if "Yes," specify the details on the 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 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. Additional antimicrobial agents and sensitivity results may be reported for up to a total of 20 agents.

For other organisms and their antimicrobial agents and sensitivity: Same as above, but record the name of the antimicrobial agent(s).

MDRO (3) and (4): *P. aeruginosa*, *K. pneumoniae*, and *A. baumannii* are required to be tested for at least one agent in 4 antimicrobials classes: b-lactams (penicillins and cephalosporins), aminoglycosides, fluoroquinolones, and carbapenems. For MDR *P. aeruginosa* and *K. pneumoniae*, the organisms must be resistant to all agents tested in at least 3 or 4 antimicrobial classes, including penicillins, cephalosporins, aminoglycosides, fluoroquinolones, and carbapenems. For MDR *A. baumannii*, the organisms must be resistant to all agents tested in at least 3 or 4 antimicrobial classes, including penicillins, cephalosporins, aminoglycosides, fluoroquinolones, carbapenems, and 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 into 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 5: Denominators' Forms & Instructions

Add your institution

Logo
here

-----Add Your Hospital Name Here-----
-----Add Your Hospital Name Here-----
Infection Prevention & Control Program

**Denominators for Intensive Care Units (ICUs) & other locations*
Infection Control Surveillance Form**



Surveillance plan date	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Facility ID	<input type="text"/>	<input type="text"/>	<input type="text"/>	Location:	Intensive Care Unit (ICU) & other locations*
	M	M	Y	Y		S	#	#	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						
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						

*This form is good for ICUs and other locations in the institution where patients are housed overnight (e.g., surgical wards). It is not intended for neonatal intensive care units (NICUs) or specialty care areas (SCAs) (includes hematology/oncology wards, bone marrow transplant units, solid organ transplant units, inpatient dialysis units, long-term acute care areas).

Assurance of Confidentiality: The information obtained in this surveillance system that would permit the 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 must be completed in a given month when one or more components of the device-associated module (CLABSI, CAUTI, or VAP) is recorded in the ICU at your facility in this particular month.

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

Surveillance plan date: Record the month and year that the GCC surveillance plan was recorded (which is the month the data were collected from the ICU).

Facility ID: This item is a 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC Center for Infection Control, with the first digit referring to the state and the last 2 digits referring to state-specific numbers.

Location: This form is used only in intensive care units (ICUs) 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 in 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 in the selected unit who have 1 or more central line(s) 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 in the selected unit who have an indwelling urinary catheter.

Number of patients on a Ventilator: For each day of the month, at the same time each day, record the number of patients in the selected unit who are on a ventilator.

Total: Totals for each column should be calculated. This is the number that will be entered into the NHSN application (for the calculation of CLABSI, CAUTI, and VAP rates).

Add your institution

Logo
here

-----Add Your Hospital Name Here-----
-----Add Your Hospital Name Here-----
Infection Prevention & Control Program

**Denominators for Neonatal Intensive Care Units (NICUs)
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 g				751-1,000 g				1,001-1,500 g				1,501-2,500 g				>2,500 g								
	Pts	U/C	CL	VNT	Pts	U/C	CL	VNT	Pts	U/C	CL	VNT	Pts	U/C	CL	VNT	Pts	U/C	CL	VNT					
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																									

Pts=number of infants **U/C**=number of infants with **umbilical catheter** **CL**=number of infants with 1 or more **central lines**
VNT=number of infants on a **ventilator** *If infant has both a U/C and CL, count as U/C infant only for the day

Assurance of Confidentiality: The information obtained in this surveillance system that would permit the 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 must be completed 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 completing the data for a given month (data are completed on a daily basis), this form must be turned in to the Infection Control Practitioner/Department by the end of the first week of the next month.

Surveillance plan date: Record the month and year that the GCC surveillance plan was recorded (which is the month the data were collected from the NICU).

Facility ID: This item is a 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC Center for Infection Control, with the first digit referring to the state and the last 2 digits referring to state-specific numbers.

Location: This form is used only in neonatal intensive care units (NICUs).

Number of patients (Pts): For each day of the month selected, record the number of patients in each birth weight category in the unit. Record this number at the same time each day.

Number of patients with umbilical catheter (U/C): For each day of the month, at the same time each day, record the number of patients in the selected unit who have an umbilical catheter in place.

Number of patients with non-umbilical central line (CL): For each day of the month, at the same time each day, record the number of patients in the selected unit who have 1 or more non-umbilical central line(s) in place.

NOTE: If an infant has both an umbilical catheter and a non-umbilical central line, count the infant as an umbilical catheter day only.

Number of patients on a ventilator (VNT): For each day of the month, at the same time each day, record the number of patients in the selected unit who are on a ventilator.

Total: Totals for each column should be calculated. This is the number that will be entered into the NHSN application (for the calculation of CLABSI and VAP rates).

Add your institution

Logo
here

-----Add Your Hospital Name Here-----
-----Add Your Hospital Name Here-----
Infection Prevention & Control Program

**Denominators for Specialty Care Areas (SCAs)
Infection Control Surveillance Form**



Surveillance plan date		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Facility ID		<input type="text"/>	<input type="text"/>	<input type="text"/>	Location:	Specialty Care Area (SCA)
		M	M	Y	Y			S	#	#	Location name:	
Date	Number of patients	Number of patients with 1 or more central lines (CL) (if patient has both, count as Temporary)		Number of patients with a urinary catheter	Number of patients on a ventilator							
		Temporary	Permanent									
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	Temporary CL-days	Permanent CL-days	Urinary catheter-days	Ventilator-days							

Assurance of Confidentiality: The information obtained in this surveillance system that would permit the 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 must be completed for a given month when one or more components of the device-associated module (CLABSI, CAUTI, or VAP) is recorded in the SCA at your facility in this particular month.

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

Surveillance plan date: Record the month and year that the GCC surveillance plan was recorded (which is the month the data were collected from the SCA).

Facility ID: This item is a 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC Center for Infection Control, with the first digit referring to the state and the last 2 digits referring to state-specific numbers.

Location: This form is used only in specialty care areas (SCAs) (including hematology/ oncology wards, bone marrow transplant units, solid organ transplant units, inpatient dialysis units, and long-term acute care areas).

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 in the unit. Record this number at the same time each day.

Number of patients with 1 or more central lines, Temporary: For each day of the month, at the same time each day, record the number of patients in the selected unit who have 1 or more non-tunneled central lines.

Number of patients with 1 or more central lines, Permanent: For each day of the month, at the same time each day, record the number of patients in the selected unit who have 1 or more tunneled or implanted central lines beginning on the first day when the permanent line was accessed and continuing through the entire stay.

NOTE: If a patient has both a temporary and a permanent line in place, count only the temporary 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 in the selected unit who have an indwelling urinary catheter.

Number of patients on a ventilator: For each day of the month, at the same time each day, record the number of patients in the selected unit who are on a ventilator.

Total: Totals for each column should be calculated. This is the number that will be entered into the NHSN application (for the calculation of CLABSI, CAUTI, and VAP rates).

Add your institution

Logo
here

-----Add Your Hospital Name Here-----
-----Add Your Hospital Name Here-----
Infection Prevention & Control Program
Denominators for Outpatient Dialysis
Infection Control Surveillance Form



Surveillance plan date	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Facility ID	<input type="text"/>	<input type="text"/>	<input type="text"/>	Location: Outpatient Dialysis Location name:
	M	M	Y	Y		S	#	#	

Vascular Access Type	*Number of Chronic Hemodialysis Patients		
	Day 1	Day 2	Total
Arteriovenous fistulas: created from the patient's own blood vessels			
Arteriovenous 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 should be included. If a patient has both an implanted access (graft or fistula) and a catheter, count this patient as only having the catheter. These data are used to estimate the number of patient-months. Accurate data are strictly required to produce reliable rates.

Assurance of Confidentiality: The information obtained in this surveillance system that would permit the 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 must be completed in a given month when a dialysis event (DE) event component of the device-associated module is recorded at your outpatient dialysis facility in this particular month.

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

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

Facility ID: This item is a 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC Center for Infection Control, with the first digit referring to the state and the last 2 digits referring to 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 should be included. If a patient has both an implanted access (graft or fistula) and a catheter, count this patient as only having the catheter. These data are used to estimate the number of patient months. Accurate data are strictly required to produce reliable rates.

APPENDIX 6: AUR Forms & Instructions

Add your institution

Logo
here

-----Add Your Hospital Name Here-----

-----Add Your Hospital Name Here-----

**Infection Prevention & Control Program
Antimicrobial Use and Resistance (AUR)
Microbiology Laboratory Monthly Form
Infection Control Surveillance Form**



**Surveillance
plan date**

--	--	--	--

**Facility
ID**

--	--	--

GRAM-NEGATIVE ORGANISMS	ICU/SCA Specify:				Other inpatient Specify:				Outpatients Specify:			
	S	I	R	Total	S	I	R	Total	S	I	R	Total
<i>Acinetobacter spp.</i>												
Amikacin												
Ampicillin + Sulbactam												
Cefepime												
Cefotaxime												
Ceftriaxone												
Ceftazidime												
Ciprofloxacin												
Piperacillin + Tazobactam (Tazocin)												
Gentamycin												
Tobramycin												
Imipenem												
Meropenem												
Colistin												
Others, specify:												
<i>Klebsiella pneumoniae/spp.</i>												
Amikacin												
Ampicillin												
Cefazolin												
Cefepime												
Cefotaxime												
Ceftriaxone												
Ceftazidime												
Ciprofloxacin												
Gentamycin												
Tobramycin												
Piperacillin + Tazobactam (Tazocin)												
Trimethoprim-sulfamethoxazole												
Imipenem												
Meropenem												
Colistin												
Others, specify:												
<i>Pseudomonas aeruginosa</i>												
Amikacin												
Gentamycin												
Tobramycin												
Cefepime												
Ceftazidime												
Ciprofloxacin												
Piperacillin + Tazobactam (Tazocin)												
Imipenem												
Meropenem												
Colistin												
Others, specify:												

GRAM-POSITIVE ORGANISMS	ICU/SCA Specify:				Other inpatient Specify:				Outpatients Specify:			
	S	I	R	Total	S	I	R	Total	S	I	R	Total
Enterococcus spp.												
Vancomycin												
Gentamycin												
Streptomycin												
Synergy												
Others, specify:												
MRSA												
Ciprofloxacin												
Clindamycin												
Erythromycin												
Tetracycline												
Vancomycin												
Gentamycin												
Others, specify:												
Others, specify:												
Others, specify:												
Others, specify:												
Staphylococcus aureus												
Oxacillin												
Vancomycin												
Others, specify:												

MICROBIOLOGY LABORATORY MONTHLY FORM INSTRUCTIONS

DISCLAIMER:

Assurance of Confidentiality: The information obtained in this surveillance system that would permit the 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 the Antimicrobial Use and Resistance (AUR) option is chosen in your hospital, this form must be completed (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 for a minimum of 6 months per calendar year (See the definition of the locations below).

IMPORTANT: After completing the data for a given month, this form must be turned in to the Infection Control Practitioner/Department by the end of the first week of the next month.

Surveillance plan date: Record the month and year that the GCC surveillance plan was recorded (which is the month the isolates were tested).

Facility ID: This item is a 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC Center for Infection Control, with the first digit referring to the state and the last 2 digits referring to state-specific numbers.

Location: Microbiological surveillance may be conducted in (1) at least one of the intensive care units and/or specialty care areas (including hematology/oncology wards, bone marrow transplant units, solid organ transplant units, inpatient dialysis units, and long-term acute care areas); (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 complete a section of the form for each of the 3 locations, and make sure to specify the name of your hospital location.

Susceptibility: 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: This value 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 reporting monthly counts of organisms and their susceptibilities. Duplicate isolate: An isolate of the same species of bacteria, regardless of antimicrobial susceptibility pattern, from the same patient, regardless of specimen site, during a given one month. Surveillance cultures: Those cultures performed as part of infection control surveillance, such as stool cultures for vancomycin-resistant enterococci (VRE).

Add your institution

Logo
here

-----Add Your Hospital Name Here-----
-----Add Your Hospital Name Here-----
Infection Prevention & Control Program
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 Antibiotics			
Antibiotic	Quantity Used*	Antibiotic	Quantity Used*
amikacin	g	gentamicin	g
ampicillin	g	imipenem	g
ampicillin**/sulbactam	g	levofloxacin	g
azithromycin	g	linezolid	g
aztreonam	g	meropenem	g
cefamandole	g	metronidazole	g
cefepime	g	nafcillin	g
cefmetazole	g	ofloxacin	g
cefotaxime	g	oxacillin	g
cefotetan	g	penicillin G	mill. I.U.
cefoxitin	g	pen. G benzathine	mill. I.U.
ceftazidime	g	procaine pen. G	mill. I.U.
ceftizoxime	g	piperacillin	g
ceftriaxone	g	piperacillin**/tazobactam	g
cefuroxime	g	quinupristin**/dalbapristin	g
cephalothin	g	ticarcillin	g
ciprofloxacin	g	ticarcillin**/clavulanic acid	g
daptomycin	g	tobramycin	g
ertapenem	g	trimethoprim**/sulfamethoxa	g
erythromycin	g	vancomycin	g
Oral Antibiotics			
Antibiotic	Quantity Used*	Antibiotic	Quantity Used*
amoxicillin	g	gatifloxacin	g
amoxicillin**/clavulanic acid	g	levofloxacin	g
ampicillin	g	linezolid	g
azithromycin	g	lomefloxacin	g
cefaclor	g	metronidazole	g
cefadroxil	g	moxifloxacin	g
cefixime	g	norfloxacin	g
cefprozil	g	ofloxacin	g
cephalexin	g	penicillin V	g
ciprofloxacin	g	sparfloxacin	g
clarithromycin	g	telithromycin	g
clindamycin	g	tetracycline	g
dicloxacillin	g	trimethoprim**/sulfamethoxa	g
doxycycline	g	vancomycin	g

* Enter zero if a drug is not used; an entry is required in every field. Drugs that are not on the formulary are not included in this analysis.

** For combination drugs, record grams for the drug marked with the asterisks.

PHARMACY DATA MONTHLY FORM INSTRUCTIONS

DISCLAIMER:

Assurance of Confidentiality: The information obtained in this surveillance system that would permit the 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 the Antimicrobial Use and Resistance (AUR) option is chosen in your hospital, this form must be completed (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 for a minimum of 6 months per calendar year (See the definition of the locations below).

IMPORTANT: After completing the data for a given month, this form must be turned in to the Infection Control Practitioner/Department by the end of the first week of the next month.

Surveillance plan date: Record the month and year that the GCC surveillance plan was recorded (which is the month the antibiotics were dispatched).


Facility ID: This item is a 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC Center for Infection Control, with the first digit referring to the state and the last 2 digits referring to state-specific numbers.

Location: Pharmacy surveillance may be conducted in (1) at least one of the intensive care units and/or specialty care areas (including hematology/oncology wards, bone marrow transplant units, solid organ transplant units, inpatient dialysis units, and long-term acute care areas) 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. Please complete a separate form for each of the 2 locations and make sure to specify the name of your hospital location.

Parenteral Antibiotics, Quantity Used: Record the total number of grams or millions of units (mill. I.U.) of each parenteral antimicrobial agent delivered to the inpatient care location shown at the top of the form. 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 asterisks (**).

Oral Antibiotics, Quantity Used: Record the total number of grams (g) of each oral antimicrobial agent delivered to the inpatient care location shown at the top of the form for the 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 asterisks (**).

APPENDIX 7: SSI Form & Instructions

Add your institution <div style="font-size: 2em; font-weight: bold;">Logo</div> here	-----Add Your Hospital Name Here----- -----Add Your Hospital Name Here----- Infection Prevention & Control Program Surgical Site Infection (SSI) Infection Control Surveillance Form	
--	---	---

SECTION I: PATIENT AND HOSPITAL INFORMATION

Patient ID:	<div style="border: 1px solid black; width: 100px; height: 20px; margin: 0 auto;"></div> <div style="display: flex; justify-content: space-around; font-size: 0.8em;"> S######### </div>	Date of birth:	<div style="border: 1px solid black; width: 100px; height: 20px; margin: 0 auto;"></div> <div style="display: flex; justify-content: space-around; font-size: 0.8em;"> DDMMYYYY </div>	Gender:	<input type="checkbox"/> Male <input type="checkbox"/> Female
Surveillance plan date:	<div style="border: 1px solid black; width: 100px; height: 20px; margin: 0 auto;"></div> <div style="display: flex; justify-content: space-around; font-size: 0.8em;"> MMYY </div>	Facility ID:	<div style="border: 1px solid black; width: 100px; height: 20px; margin: 0 auto;"></div> <div style="display: flex; justify-content: space-around; font-size: 0.8em;"> S## </div>	Ward/Unit:	
		Location:	<input type="checkbox"/> Outpatient <input type="checkbox"/> Inpatient <input type="checkbox"/> Both		

<p>SECTION II: OPERATIVE PROCEDURE INFORMATION</p> <p>NHSN procedure name & code:</p> <p>Emergency:</p> <input type="checkbox"/> Yes <input type="checkbox"/> No	<p>Admission date</p> <div style="border: 1px solid black; width: 100px; height: 20px; margin: 0 auto;"></div> <p>Discharge date</p> <div style="border: 1px solid black; width: 100px; height: 20px; margin: 0 auto;"></div> <p>Date of procedure</p> <div style="border: 1px solid black; width: 100px; height: 20px; margin: 0 auto;"></div> <div style="display: flex; justify-content: space-around; font-size: 0.8em;"> DDMMYY </div> <p>Operative surgeon ID</p> <div style="border: 1px solid black; width: 100px; height: 20px; margin: 0 auto;"></div>	<p>Post-procedure BSI:</p> <input type="checkbox"/> Yes <input type="checkbox"/> No
<p>Multiple procedures:</p> <input type="checkbox"/> Yes, specify: <input type="checkbox"/> No <input type="checkbox"/> N/A	<p>SECTION III: PATIENT RISK INDEX CATEGORY</p> <p>ASA score</p> <div style="border: 1px solid black; width: 100px; height: 20px; margin: 0 auto;"></div> <p>Wound class</p> <div style="border: 1px solid black; width: 100px; height: 20px; margin: 0 auto;"></div> <p>Procedure duration</p> <div style="border: 1px solid black; width: 100px; height: 20px; margin: 0 auto;"></div> <p>Total</p> <div style="border: 1px solid black; width: 100px; height: 20px; margin: 0 auto;"></div>	<p>Post-procedure pneumonia (PPP):</p> <input type="checkbox"/> Yes <input type="checkbox"/> No
<p>Pre-procedure diagnosis:</p>	<p>Put 1 if ASA score was 3, 4, 5; otherwise 0</p> <p>Put 1 if the wound class was III or IV, otherwise 0</p> <p>Put 1 if the procedure duration exceeds the operation-specific cut-point, otherwise 0</p> <p>Risk index category of 0, 1, 2 or 3</p>	<p>Hospitalization death:</p> <input type="checkbox"/> Yes, complete below <input type="checkbox"/> No
<p>Donor Site:</p> <input type="checkbox"/> Yes, from where: <input type="checkbox"/> No <input type="checkbox"/> N/A	<p>SECTION IV: SSI EVENT INFORMATION</p> <p>SSI diagnosed:</p> <input type="checkbox"/> Yes, complete below <input type="checkbox"/> No	<p>Death date:</p> <div style="border: 1px solid black; width: 100px; height: 20px; margin: 0 auto;"></div> <div style="display: flex; justify-content: space-around; font-size: 0.8em;"> DDMMYY </div>
<p>Laparoscope/endoscope used:</p> <input type="checkbox"/> Yes <input type="checkbox"/> No	<p>SSI Category: (See the back)</p> <input type="checkbox"/> Superficial incisional primary (SIP) <input type="checkbox"/> Superficial incisional secondary (SIS) <input type="checkbox"/> Deep incisional primary (DIP) <input type="checkbox"/> Deep incisional secondary (DIS) <input type="checkbox"/> Organ/Space, specify:	<p>SSI contributed to death:</p> <input type="checkbox"/> Yes <input type="checkbox"/> No
<p>Implant:</p> <input type="checkbox"/> Yes <input type="checkbox"/> No	<p>SSI detected:</p> <input type="checkbox"/> Before discharge <input type="checkbox"/> After discharge <input type="checkbox"/> On readmission	<p>SECTION V: LABORATORY RECORD</p> <p>Time of specimen collection</p> <p>-----:----- AM / PM</p> <p>Organism identified:</p> <input type="checkbox"/> Yes, complete the back <input type="checkbox"/> No
<p>Trauma:</p> <input type="checkbox"/> Yes <input type="checkbox"/> No	<p>Wound class:</p> <input type="checkbox"/> I-Clean <input type="checkbox"/> II-Clean-Contaminated <input type="checkbox"/> III-Contaminated <input type="checkbox"/> IV-Dirty or infected	<p>Important note: If the procedure is CS, complete the following:</p> <p>Ht (cm): ----- Wt (kg): -----</p> <p>Labor duration (h):-----</p> <p>Blood loss (ml):-----</p>
<p>General anesthesia:</p> <input type="checkbox"/> Yes <input type="checkbox"/> No	<p>ASA score:</p> <div style="border: 1px solid black; width: 100px; height: 20px; margin: 0 auto;"></div>	<p>COMMENTS:</p> <div style="border: 1px solid black; height: 100px; margin: 0 auto;"></div>
<p>Actual procedure duration (min):</p> <div style="border: 1px solid black; width: 100px; height: 20px; margin: 0 auto;"></div>	<p>Proc. duration cut-off point (min):</p> <div style="border: 1px solid black; width: 100px; height: 20px; margin: 0 auto;"></div>	<p>Date data collected</p> <div style="border: 1px solid black; width: 100px; height: 20px; margin: 0 auto;"></div> <p>Collector ID</p> <div style="border: 1px solid black; width: 100px; height: 20px; margin: 0 auto;"></div> <p>Date data entered</p> <div style="border: 1px solid black; width: 100px; height: 20px; margin: 0 auto;"></div> <p>Data entry ID</p> <div style="border: 1px solid black; width: 100px; height: 20px; margin: 0 auto;"></div> <p style="text-align: center;">Data entry stamp</p>

SECTION V: LABORATORY RECORD

[illegible]

For **MDR P. aeruginosa** and **K. pneumoniae**: Resistant to all agents tested in at least 3 or 4 antimicrobial classes, including penicillins, cephalosporins, aminoglycosides, fluoroquinolones, and carbapenems. For **MDR A. baumannii**: Resistant to all agents tested in at least 3 antimicrobial classes, including penicillins, cephalosporins, aminoglycosides, fluoroquinolones, carbapenems, and sulbactam. For **all three organisms**: The requirement is to test for at least one agent in 4 antimicrobials classes: β -lactams (penicillins and cephalosporins), aminoglycosides, fluoroquinolones, and carbapenems.

Name of other organisms	Date of record DD-MM-YY	Antimicrobial sensitivity (type antimicrobial names)					
		1-	2-	3-	4-	5-	6-

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

AMIK = amikacin	AMP = ampicillin	AZTREON = aztreonam	CEFAZ = cefazolin	CEFEP = cefepime	CEFTAZ = ceftazidime	CEFTOX = cefotaxime
CEFTRI = ceftriaxone	CEFU = cefuroxime	CIP = ciprofloxacin	CLINDA = clindamycin	ERYTH = erythromycin	GEN/TOB = gentamicin/tobramycin	IMI = imipenem
LEVO = levofloxacin	LNZ = linezolid	MERO = meropenem	MET = metronidazole	MUP = mupirocin	NIT = nitrofurantoin	OXA = oxacillin
PEN = penicillin	PIP = piperacillin	RIF = rifampin	SXT/TMZ = sulfamethoxazole/trimethoprim	TAZ = piperacillin-tazobactam (tazocin)	VANC = vancomycin	

Superficial Incisional SSI

Superficial Incisional SSTI
Infection occurs within 30 days after the operation, **and** infection involves only the skin or subcutaneous tissue **and** at least one of the following:

- ☐ Pulent drainage (culture documentation not required)
- ☐ Organisms isolated from fluid/tissue culture of superficial incision
- ☐ At least one of the following signs and symptoms of infection: pain or tenderness, localized swelling, redness, heat, superficial incision is deliberately opened by surgeon and is culture-positive or not cultured. A culture-negative finding does not meet this criterion
- ☐ Surgeon or attending physician declares the wound to be infected

Deep Incisional SSI

Infection occurs within 30 days of operation or within one year if an implant is present, **and** infection involves deep soft tissue (e.g., fascial and muscle layers) of the incision **and** at least one of the following:

of the incision **and** at least one of the following:

- ☐ Purulent drainage from the deep incision but without organ/space involvement
- ☐ A deep incision spontaneously dehisces or is deliberately opened by a surgeon and is culture-positive or not cultured when the patient has at least one of the following signs and symptoms: fever ($>38^{\circ}\text{C}$) or localized pain or tenderness. A culture-negative finding does not meet this criterion
- ☐ Deep abscess is identified by direct examination, during reoperation, or by histopathologic or radiological examination
- ☐ Surgeon or attending physician declares that a deep incisional infection is present

Organ/Space SSI

Infection occurs within 30 days after operation or within one year if an implant is present **and** infection involves any part of the body, excluding the skin incision, fascia, or muscle layers, that is opened or manipulated during the operative procedure **and** at least one of the following:

- ☐ Purulent drainage from a drain placed by a stab wound into the organ/space
- ☐ Organisms isolated from an aseptically obtained culture of fluid or tissue in the organ/space
- ☐ Abscess or other evidence of infection involving the organ/space by direct examination, during reoperation, or by histopathological or radiological examination
- ☐ Diagnosis of organ/space SSI by surgeon or attending physician

☐ Diagnosis of inguinal space CSI by surgeon or attending physician

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

SSI FORM INSTRUCTIONS

DISCLAIMER:

Assurance of Confidentiality: The information obtained in this surveillance system that would permit the 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 must be completed for all surgical patients in any inpatient/outpatient setting where (at least one) selected NHSN operative procedure is performed in the event that the 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: This item is a 9-digit number that will be assigned to every patient by the participating hospitals of the GCC surveillance plan as described below:

- I. The first digit refers to the state numbers 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 NGHHA and had the medical record number 1052647, he would 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 that the GCC surveillance plan was recorded (which is the month the procedure was done).

Facility ID: This item is a 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC Center for Infection Control, with the first digit referring to the state and the last 2 digits referring to state-specific numbers.

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

Location: Check the ward/unit type. Note: If the SSI develops in a patient within 24 hours of discharge from a location, indicate the discharging location, not the current location of the patient.

SECTION II: OPERATIVE PROCEDURE INFORMATION

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

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

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

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).

Pre-procedure diagnosis: Record the pre-procedure diagnosis (e.g., acute cholecystitis).

Donor site: This item only applies to some procedures (e.g., the leg could be the donor site incision for coronary artery bypass graft (CBGB)).

Laparoscope/endoscope used: Check "Yes" if the entire operative procedure was performed using an endoscope/laparoscope; otherwise, check "No."

NOTE: For CBGB, if the donor vessel was harvested using an endoscope, check "Yes."

Implant: Check "Yes" if an implant was placed during the operative procedure; otherwise, check "No." Examples of implants include: heart valves, mechanical heart, metal rods, mesh, sternal wires, screws, and cements.

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

Wound class: This classification is 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:** This category includes 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:** This category includes 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:** This category includes open, fresh, accidental wounds. In addition, operations with major breaks in sterile technique (e.g., open cardiac massage), gross spillage from the gastrointestinal tract, and incisions in which acute, nonpurulent inflammation is encountered are included in this category.
- **IV- Dirty or Infected:** This category 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.

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

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

Actual procedure duration (min): This value 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-off point (min): This value is the procedure duration cut-off point assigned by NHSN. For example, 56 min is the cut-point for a C-section procedure.

Admission date: Record the date the patient was admitted to the facility.

Discharge date: Record the date the patient was discharged from the facility.

Date of procedure: Record the date the procedure was conducted.

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

SECTION III: PATIENT RISK INDEX CATEGORY

ASA score: If the ASA score was 3, 4, 5, record a score of 1, otherwise 0.

Wound class: If the wound was contaminated or a dirty procedure (Surgical site wound classification Class III or IV) was used, record a score of 1, otherwise 0.

Procedure duration: If the procedure duration was > procedure-specific cut-off point (75th percentile), record a score of 1; otherwise, record a 0. For example, 2 hours is the cut-off 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 answer all of the questions in this section, as applicable. If no SSI was diagnosed, then check "No," and do not answer any other question in that section.

SSI date: Record the date the SSI was diagnosed.

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 correspond 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., a patient with an 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.

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."

Post-procedure BSI or pneumonia: Check "Yes" if this event occurred after an NHSN-defined procedure in admitted patients but before discharge from the facility; otherwise check "No"

Death: Check "Yes" if patient died during the hospitalization; otherwise, check "No."

Hospitalization death: Check "Yes" if the 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 the death).

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.

Superficial Incisional SSI

Infection occurs within 30 days after the operation, **and** infection involves only the skin or subcutaneous tissue **and** at least one of the following:

Purulent drainage (culture documentation not required)

- Organisms isolated from fluid/tissue culture of superficial incision
- At least one of the following signs and symptoms of infection: pain or tenderness, localized swelling, redness, heat, superficial incision that is deliberately opened by the surgeon, and culture-positive or not cultured. A culture-negative finding does not meet this criterion.
- Surgeon or attending physician declares the wound to be infected.

Deep Incisional SSI

Infection occurs within 30 days of operation or within one year if an implant is present, **and** infection involves deep soft tissue (e.g., facial and muscle layers) of the incision **and** at least one of the following:

- Purulent drainage from the deep incision without organ/space involvement
- A deep incision spontaneously dehisces or is deliberately opened by a surgeon and is culture-positive or not cultured when the patient has at least one of the following signs and symptoms: fever ($>38^{\circ}\text{C}$), or localized pain or tenderness. A culture-negative finding does not meet this criterion.
- Deep abscess is identified by direct examination, during reoperation, or by histopathological or radiological examination.
- Surgeon or attending physician declares that a deep incisional infection is present.

Organ/Space SSI

Infection occurs within 30 days after operation or within one year if an implant is present, **and** infection involves any part of the body, excluding the skin incision, fascia, or muscle layers, that is opened or manipulated during the operative procedure **and** at least one of the following:

- Purulent drainage from a drain placed by a stab wound into the organ/space
- Organisms isolated from an aseptically obtained culture of fluid or tissue in the organ/space
- Abscess or other evidence of infection involving the organ/space by direct examination, during reoperation, or by histopathological or radiological examination
- Diagnosis of organ/space SSI by surgeon or attending physician

There are 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 who 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 who has had an operation with more than one incision (e.g., donor site [leg] incision for CBGB).

SECTION V: LABORATORY RECORD

Organism identified: Record "Yes" if a pathogen was identified or "No" if otherwise; if "Yes," specify the details on the 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 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. Additional antimicrobial agents and sensitivity results may be reported for up to a total of 20 agents.

For other organisms and their antimicrobial agents and sensitivity: Same as above, but record the name of the antimicrobial agent(s).

MDRO (3) and (4): *P. aeruginosa*, *K. pneumoniae*, and *A. baumannii* are required to be tested for at least one agent in 4 antimicrobials classes: b-lactams (penicillins and cephalosporins), aminoglycosides, fluoroquinolones, and carbapenems. For MDR *P. aeruginosa* and *K. pneumoniae*, the organisms must be resistant to all agents tested in at least 3 or 4 antimicrobial classes, including penicillins, cephalosporins, aminoglycosides, fluoroquinolones, and carbapenems. For MDR *A. baumannii*, the organisms must be resistant to all agents tested in at least 3 or 4 antimicrobial classes, including penicillins, cephalosporins, aminoglycosides, fluoroquinolones, carbapenems, and 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 into 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: Bundles' Forms & Instructions

CENTRAL LINE BUNDLE FORM INSTRUCTIONS

DISCLAIMER:

Assurance of Confidentiality: The information obtained in this surveillance system that would permit the 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 must be completed for the majority of patients with one or more central lines in the ICU, NICU, SCA, or other inpatient locations in the event that the "Central Line Bundle" is recorded at your facility in this particular month. One form is required for each central line.

SECTION I: PATIENT AND HOSPITAL INFORMATION

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

- K. The first digit refers to the state numbers 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 NGHHA and had the medical record number 1052647, he would 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, which is recorded as "DD-MM-YYYY."

Gender: Check male or female.

Surveillance plan date: Record the month and year that the GCC surveillance plan was recorded (which is the month the central line was inserted and/or bundles data are collected).

Facility ID: This item is a 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC Center for Infection Control, with the first digit referring to the state and the last 2 digits referring to state-specific numbers.

Location: Central line bundle surveillance may be conducted in (1) intensive care units (ICUs), (2) neonatal/pediatric intensive care units (NICUs/PICUs), (3) specialty care areas (including hematology/oncology wards, bone marrow transplant units, solid organ transplant units, inpatient dialysis units, and long-term acute care areas), and (4) 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 necessary to add the specific ward/clinic/unit in your hospital from which data have been collected (e.g., other inpatients: ward 15, general medicine).

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.

Bundle goal: Preventing BSI by implementing well-documented 5 components of care:

- 1. Hand hygiene:** Washing hands or using an alcohol-based waterless hand cleaner helps prevent contamination of central line sites and resultant bloodstream infections.
- 2. Maximal barrier precautions:** Applying maximal barrier precautions in preparation for line insertion (**provider:** wearing cap, mask, sterile gloves, and sterile gown; **patient:** covering head and body with large sterile drape).
- 3. Chlorhexidine skin antisepsis:** Chlorhexidine skin antisepsis provides better skin antisepsis than other antiseptic agents such as povidone-iodine solutions. The concentration is 2% chlorhexidine in alcohol for adults, pediatrics, and neonates >2 wk or >1,500 g and 2% aqueous chlorhexidine for neonates <2 wk or <1,500 g.
- 4. Optimal catheter site selection:** The subclavian vein is the preferred site for non-tunneled catheters in adults, the femoral vein is preferred for pediatrics, and the umbilical vein or PICC site is preferred for neonates. Compliance is considered adequate 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 the central line's 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 7 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: Completing 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 was used.). "Not documented" means that the data

are missing (e.g., there is no mention in the nurse notes 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 into 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.

Add your
institution
Logo
here

-----Add Your Hospital Name Here-----
-----Add Your Hospital Name Here-----
Infection Prevention & Control Program

Adult Ventilator Bundle
Infection Control Surveillance Form



SECTION I: PATIENT AND HOSPITAL INFORMATION																				
Patient ID:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Date of birth:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Gender:	<input type="checkbox"/> Male	<input type="checkbox"/> Female
Surveillance plan date:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Facility ID:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Location:	<input type="checkbox"/> Intensive care unit (ICU):	-----
	S	#	#	#	#	#	#	#	#		S	#	#						<input type="checkbox"/> Specialty care area (SCA):	-----
	M	M	Y	Y															<input type="checkbox"/> Other:	-----

SECTION II: BUNDLE VARIABLES										
	DD/MM	DD/MM	DD/MM	DD/MM	DD/MM	DD/MM	DD/MM	DD/MM	DD/MM	DD/MM
	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A
1. Elevation of the head of the bed to between 30 and 45 degrees	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A
2. Daily "sedation interruption" and daily assessment of readiness to extubate	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A
3. Peptic ulcer disease (PUD) prophylaxis	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A
4. Deep venous thrombosis (DVT) prophylaxis (unless contraindicated)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A
5. Daily oral care: 0.12% oral chlorhexidine for use as a mouth rinse	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/D <input type="checkbox"/> N/A
Overall compliance: (compliant for all the above 5 components)	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
COMMENTS:										
Date data collected	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Collector ID	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Data entry stamp										
Date data entered	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Data entry ID	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

ADULT VENTILATOR BUNDLE FORM INSTRUCTIONS

DISCLAIMER:

Assurance of Confidentiality: The information obtained in this surveillance system that would permit the 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 must be completed in a given month for the majority of patients on a ventilator in the ICU, SCA, or other inpatient locations in the event that the ventilator bundle is recorded at your facility in this particular month.

SECTION I: PATIENT AND HOSPITAL INFORMATION

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

M. The first digit refers to the state numbers 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 NGHHA and had the medical record number 1052647, he would 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 that the GCC surveillance plan was recorded (which is the month the ventilator is inserted and/or ventilator bundle data are collected).

Facility ID: This item is a 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC Center for Infection Control, with the first digit referring to the state and the last 2 digits referring to state-specific numbers.

Location: Ventilator bundle surveillance may be conducted in (1) intensive care units (ICUs), (2) specialty care areas (including hematology/oncology wards, bone marrow transplant units, solid organ transplant units, inpatient dialysis units, and long-term acute care areas), 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 from which data have been collected (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 use a frequency of 3-4 times/day

Note: Completing 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. Attach additional form(s) if more than 10 days of ventilator data are available. Bed head elevation needs to be verified by the ICP at the time of bundle data collection. In the last question, check "Yes" if all 5 components were compliant 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 into 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.

Add your
institution
Logo
here

-----Add Your Hospital Name Here-----
-----Add Your Hospital Name Here-----
Infection Prevention & Control Program

**Urinary Catheter Bundle
Infection Control Surveillance Form**



Surveillance plan date:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Facility ID:	<input type="text"/>	<input type="text"/>	<input type="text"/>	Location:	<input type="checkbox"/> Intensive care unit (ICU): -----
	M	M	Y	Y		S	#	#		<input type="checkbox"/> Specialty care area (SCA) : -----

	Patient MRN	Age (years)	Gender	1. Avoid unnecessary urinary catheters	2. Insert using aseptic technique	3. Maintain catheters based on recommended guidelines	4. Review catheter necessity daily and remove promptly	5.- All four elements combined
1			<input type="checkbox"/> M <input type="checkbox"/> F	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
2			<input type="checkbox"/> M <input type="checkbox"/> F	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
3			<input type="checkbox"/> M <input type="checkbox"/> F	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
4			<input type="checkbox"/> M <input type="checkbox"/> F	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
5			<input type="checkbox"/> M <input type="checkbox"/> F	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
6			<input type="checkbox"/> M <input type="checkbox"/> F	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
7			<input type="checkbox"/> M <input type="checkbox"/> F	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
8			<input type="checkbox"/> M <input type="checkbox"/> F	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
9			<input type="checkbox"/> M <input type="checkbox"/> F	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
10			<input type="checkbox"/> M <input type="checkbox"/> F	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
11			<input type="checkbox"/> M <input type="checkbox"/> F	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
12			<input type="checkbox"/> M <input type="checkbox"/> F	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
13			<input type="checkbox"/> M <input type="checkbox"/> F	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
14			<input type="checkbox"/> M <input type="checkbox"/> F	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
15			<input type="checkbox"/> M <input type="checkbox"/> F	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
16			<input type="checkbox"/> M <input type="checkbox"/> F	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
17			<input type="checkbox"/> M <input type="checkbox"/> F	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
18			<input type="checkbox"/> M <input type="checkbox"/> F	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
19			<input type="checkbox"/> M <input type="checkbox"/> F	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
20			<input type="checkbox"/> M <input type="checkbox"/> F	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No

COMMENTS:

Date data collected	D	D	M	M	Y	Y	Data entry stamp	Date data entered	D	D	M	M	Y	Y
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>			<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Collector ID	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		Data entry ID	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

ADULT URINARY CATHETER BUNDLE FORM INSTRUCTIONS

DISCLAIMER:

Assurance of Confidentiality: The information obtained in this surveillance system that would permit the 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 must be completed on sample days (e.g., 2-3 days a week) in a given month for all/majority of patients with indwelling urinary catheters in the ICU, SCA, or other inpatient locations in the event that the urinary catheter bundle is recorded at your facility in this particular month.

Surveillance plan date: Record the month and year that the GCC surveillance plan was recorded (which is the month the urinary catheter is inserted and/or urinary catheter bundle data are collected).

Facility ID: This item is a 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC Center for Infection Control, with the first digit referring to the state and the last 2 digits referring to state-specific numbers.

Location: Urinary catheter bundle surveillance may be conducted in (1) intensive care units (ICUs), (2) specialty care areas (including hematology/oncology wards, bone marrow transplant units, solid organ transplant units, inpatient dialysis units, and long-term acute care areas), and (3) any other location in the institution where patients are housed overnight (e.g., surgical wards).

Bundle goal: Preventing UTIs 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 the 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 or multiple traumatic injuries such as pelvic fractures)
- As an exception, at the patient's 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
- Use aseptic technique for the catheter insertion
 - Gloves, a drape, and sponges
 - Sterile or antiseptic solution for cleaning the urethral meatus
 - Single-use packet of sterile lubricant jelly for insertion
- Use as small a catheter as possible that allows 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 be replaced, use aseptic technique

4. Daily review of the catheter's necessity and prompt removal when unnecessary:

- Daily review of the catheter's necessity should be conducted using the same criteria for appropriate insertion shown above.

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 into 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.



National Guard Health Affairs
GCC Centre for Infection Control
Infection Prevention & Control Program

Surgical Site Infection Bundle (SSI)
Infection Control Surveillance Form



SECTION I: PATIENT AND HOSPITAL INFORMATION									
Patient ID	<div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div>	Date of birth	<div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div>	Gender	<input type="checkbox"/> Male <input type="checkbox"/> Female				
Surveillance plan date	<div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div>	Facility ID	<div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div>	Ward/unit		Location	<input type="checkbox"/> Outpatient <input type="checkbox"/> Inpatient <input type="checkbox"/> 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*					<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not documented <input type="checkbox"/> N/A				
2. Prophylactic antibiotic(s) is (are) consistent with the recently updated GCC guidelines for surgical prophylaxis					<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not documented <input type="checkbox"/> N/A				
3. Discontinuation of prophylactic antibiotic(s) within 24 hours after surgery**					<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not documented <input type="checkbox"/> N/A				
Antibiotic (1)		Name:							
		Dose:			<div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin: 2px;"></div>				

SSI BUNDLE FORM INSTRUCTIONS

DISCLAIMER:

Assurance of Confidentiality: The information obtained in this surveillance system that would permit the 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 must be completed for a sample/all surgical patients in any inpatient/outpatient setting where (at least one) selected NHSN Operative Procedure is performed in the event that the SSI bundle for that selected procedure is recorded at your facility in this particular month.

*Sample suggested is about 20% of the NHSN operative procedures performed (but not less than 28 or more than 111).

SECTION I: PATIENT AND HOSPITAL INFORMATION

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

- O. The first digit refers to the state numbers 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 NGHHA and had the medical record number 1052647, he would 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 that the GCC surveillance plan was recorded (which is the month the procedure is done).

Facility ID: This item is a 3-digit number that will be assigned to every GCC surveillance plan hospital by the GCC Center for Infection Control, with the first digit referring to the state and the last 2 digits referring to 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.

Bundle goal: Preventing SSIs 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.

* During C-section, prophylactic antibiotic is given after clamping the cord.

** During cardiovascular surgery, prophylactic antibiotic(s) should be discontinued 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). Any preoperative hair removal should not occur in the operating room itself because loose hairs are difficult to control.

3. Maintenance of Postoperative Glucose Control (for diabetics and cardiac patients only)

The degree of hyperglycemia in the postoperative period is correlated with the rate of SSIs in patients undergoing major cardiac surgery. Also, stringent glucose control in surgical intensive care unit patients reduces mortality.

4. Maintenance of Postoperative Normothermia (for all patients)

Preventing hypothermia is beneficial in reducing SSI in patients undergoing colorectal surgery and may be beneficial for other patients as well.

Note: Completing 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 has 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 into 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.

