I. Purpose: To provide evidenced based strategies to eliminate or reduce HAI’s.

A. Catheter Related Bloodstream Infection:
According to literature from the CDC, *Each year, an estimated 250,000 cases of central line-- associated occur in hospitals in the United States, with an estimated attributable mortality of 12%--25% for each infection. The marginal cost to the health-care system is approximately $25,000 per episode.*

NEH has adopted those practices that have demonstrated success in reduction of CRBSI. These practices include but are not limited to:

I. Health-care worker education and training
   1. Educate health-care workers regarding the indications for intravascular catheter use, proper procedures for the insertion and maintenance of intravascular catheters, and appropriate infection-control measures to prevent intravascular catheter-related infections
   2. Assess knowledge of and adherence to guidelines periodically for all persons who insert and manage intravascular catheters

II. Surveillance
   1. Perform daily surveillance of all positive blood cultures and follow CDC criteria for CRBSI.

III. Hand hygiene
   1. Observe proper hand-hygiene procedures either by washing hands with conventional antiseptic-containing soap and water or with waterless gels or foams. Observe hand hygiene before and after palpating catheter insertion sites, as well as before and after inserting, replacing, accessing, repairing, or dressing an intravascular catheter. Palpation of the insertion site should not be performed after the application of antiseptic, unless aseptic technique is maintained
   2. Use of gloves does not obviate the need for hand hygiene

IV. Aseptic technique during catheter insertion and care
   1. Maintain aseptic technique for the insertion and care of intravascular catheters
   2. Wear clean or sterile gloves when inserting an intravascular catheter as required by the Occupational Safety and Health Administration Bloodborne Pathogens Standard. Wearing clean gloves rather than sterile gloves is acceptable for the insertion of peripheral intravascular catheters if the access site is not touched after the application of skin antiseptics. Sterile gloves should be worn for the insertion of arterial and central catheters.

V. Catheter insertion
   1. Choose the optimal insertion site (subclavian)

VI. Catheter site care
   1. Disinfect clean skin with an appropriate antiseptic before catheter insertion and during dressing changes using 2% chlorhexidine based preparation. Tincture of iodine, an iodophor, or 70% alcohol can be used is allergy’s are a concern. All CHG to dry before insertion.
VII. Catheter-site dressing regimens
   1. Use either sterile gauze or sterile, transparent, semipermeable dressing to cover the catheter site
   2. Do not use topical antibiotic ointment or creams on insertion sites (except when using dialysis catheters) because of their potential to promote fungal infections and antimicrobial resistance

VIII. Selection and replacement of intravascular catheters
   1. Select the catheter, insertion technique, and insertion site with the lowest risk for complications (infectious and noninfectious) for the anticipated type and duration of IV therapy
   2. Promptly remove any intravascular catheter that is no longer essential

IX. Replacement of administration sets*, needleless systems, and parenteral fluids
   1. Replace administration sets, including secondary sets and add-on devices, no more frequently than at 96-hour intervals, unless catheter-related infection is suspected or documented
   2. Replace tubing used to administer blood, blood products, or lipid emulsions (those combined with amino acids and glucose in a 3-in-1 admixture or infused separately) per 1 unit unless subsequent units are started within 4 hours of the time the first unit is hung. Example: the first unit is started at 12:00 noon. The same filter may be used if the subsequent units are started by 4:00 pm.
   3. Replace tubing used to administer propofol infusions every 6 or 12 hours, depending on its use, per the manufacturer’s recommendation

X. IV-injection ports
   1. Clean injection ports with 70% alcohol or an iodophor before accessing the system

XI. Preparation and quality control of IV admixtures
   1. Do not combine the leftover content of single-use vials for later use
   2. Cleanse the access diaphragm of multidose vials with 70% alcohol before inserting a device into the vial. Multidose vials are expired 28 days after opening.
   3. Use a sterile device to access a multidose vial and avoid touch contamination of the device before penetrating the access diaphragm
   4. Discard multidose vial if sterility is compromised

XII. In-line filters
   1. Do not use filters routinely for infection-control purposes

XIII. IV-therapy personnel
   1. Designate trained personnel for the insertion and maintenance of intravascular catheters

Together with the CDC, the Institute for Healthcare Improvement has grouped “best practice” interventions in what are referred to as Bundles. These practices include:

**Hand Hygiene:** See Policy #2.1 Hand Hygiene is completed prior to insertion of any intravascular device.

**Maximal Barrier Precautions Upon Insertion:** This includes the use of sterile gown, gloves, mask, cap and large sterile drape (Maximum Barrier Precautions) Patient is also masked or draped during procedure.

**Chlorhexidine Skin Antisepsis:** This is the preferred product for skin antisepsis. The exception is if the patient has an allergy or is < 2 years of age or patient is allergic. See VI of this policy.

**Optimal Catheter Site Selection:** with Subclavian Vein as the Preferred Site for Non Tunneled Catheters. Also consider a PICC placement if the line will be used for >5 days

**Daily Review of Line Necessity with Prompt Removal of Unnecessary Lines.**

**B. Prevention of Postoperative Pneumonia:** These practices include but are not limited to:
1. Instruct preoperative patients, especially those at high risk for contracting pneumonia, about taking deep breaths, cough and ambulate as soon as medically indicated in the postoperative period.

2. Patients at high risk include those who will have abdominal aortic aneurysm repair, thoracic surgery, or emergency surgery; those who will receive general anesthesia; those who are aged >60 years; those with totally dependent functional status; those who have had a weight loss >10%; those using steroids for chronic conditions; those with recent history of alcohol use, history of COPD, or smoking during the preceding year; those with impaired sensorium, a history of cerebrovascular accident with residual neurologic deficit, or low (<8mg/dL) or high (>22 mg/dL) blood urea nitrogen level; and those who will have received >4 units of blood before surgery.

3. Use incentive spirometry on postoperative patients at high risk for pneumonia as soon as possible post op day one and thereafter.

4. Elevate head of bed 30°

C. Ventilator Associated Pneumonia:

Ventilator-associated pneumonia (VAP) is a nosocomial lung infection that occurs in patients receiving mechanical ventilation and for whom the infection was not the reason for ventilation, i.e., the infection commenced after ventilation. VAP is identified according to the Centers for Disease Control (CDC) definition by using a combination of radiologic, clinical, and laboratory criteria. These practices include but are not limited to:

Mechanical ventilators

1. Do not change routinely, on the basis of duration of use, the breathing circuit (i.e., ventilator tubing and exhalation valve and the attached humidifier) that is in use on an individual patient. Change the circuit when it is visibly soiled or mechanically malfunctioning.

Together with the CDC, the Institute for Healthcare Improvement has grouped “best practice” interventions in what are referred to as Bundles. These practices include:

Elevation of the Head of the Bed: Elevation of the head of the bed is an integral part of the ventilator bundle and has been correlated with reduction in the rate of ventilator-associated pneumonia. The recommended elevation is 30-45 degrees.

Daily "Sedation Vacations" and Assessment of Readiness to Extubate: Using daily sedative interruptions and assessing the patient’s readiness to extubate are an integral part of the ventilator bundle and have been correlated with reduction in the rate of ventilator-associated pneumonia.

Peptic Ulcer Disease Prophylaxis: Stress ulcerations are the most common cause of gastrointestinal bleeding in intensive care unit patients, and the presence of gastrointestinal bleeding due to these lesions is associated with a five-fold increase in mortality compared to ICU patients without bleeding.

Deep Venous Thrombosis Prophylaxis: Applying deep venous thrombosis prophylaxis is an appropriate intervention in all patients who are sedentary; however, the higher incidence of deep venous thrombosis in critical illness justifies greater vigilance.

Oral Care

Mouth care twice daily with Chlorhexidine, mouth wash every 4 hours. Studies have shown oral care with CHG very beneficial in contributing to decrease VAP infection.
D. Surgical Site Infections:
Currently, in the United States alone, an estimated 27 million surgical procedures are performed each year. The CDC’s National Nosocomial Infections Surveillance (NNIS) system, established in 1970, monitors reported trends in nosocomial infections in U.S. acute-care hospitals. Based on NNIS system reports, SSIs are the third most frequently reported nosocomial infection, accounting for 14% to 16% of all nosocomial infections among hospitalized patients.

Among surgical patients, SSIs were the most common nosocomial infection, accounting for 38% of all such infections.
These practices include but are not limited to:

1. Preoperative:
   1. Whenever possible, identify and treat all infections remote to the surgical site before elective operation and postpone elective operations on patients with remote site infections until the infection has resolved.
   2. Do not remove hair preoperatively unless the hair at or around the incision site will interfere with the operation.
   3. If hair is removed, remove immediately before the operation, preferably with electric clippers. No razor shaving is allowed.

2. Antimicrobial prophylaxis
   1. Administer a prophylactic antimicrobial agent only when indicated, and select it based on its efficacy against the most common pathogens causing SSI for a specific operation and published recommendations.
   2. Administer by the intravenous route the initial dose of prophylactic antimicrobial agent, timed such that a bactericidal concentration of the drug is established in serum and tissues when the incision is made. Maintain therapeutic levels of the agent in serum and tissues throughout the operation and until, at most, a few hours after the incision is closed in the operating room.
   3. Before elective colorectal operations in addition to d2 above, mechanically prepare the colon by use of enemas and cathartic agents. Administer no absorbable oral antimicrobial agents in divided doses on the day before the operation.
   4. For high-risk cesarean section, administer the prophylactic antimicrobial agent immediately after the umbilical cord is clamped.

3. PAT Staph aureus
Staph aureus screening is done on total joints including hips and knees (but not limited too) and treated according.

References
Guidelines for Preventing Health-care Associated Pneumonia, 2003; Recommendations of CDC and the Healthcare Infection Control Practices Advisory committee; MMWR Recommendations and Reports March 26, 2004/53(RR03);1–36

Storage, Retention and Destruction

A. All policies are able to be retrieved upon request. Policies are stored in MCN Policy Manager and in paper format.

B. This policy will be reviewed at least every three years

C. Previous versions of this policy are archived in MCN Policy Manager. Policies in paper format are retained for 7 years, or 9 years if related to obstetric and newborn care.