



PHYSICIAN SAFETY INFORMATION

2013

It is important that everyday precautions be taken to minimize various risks, including those related to patient safety, environmental safety and is properly implemented. It is critical that all hospital staff know the appropriate emergency procedures to be instituted should an incident or failure occur.

Our hospital will have periodic unannounced surveys conducted by the local or state fire marshal, the Nebraska Department of Health and Human Services, Centers For Medicare & Medicaid Services (CMS), the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) and others. They may stop and ask you questions. It is important that you take the time to answer the questions to the best of your ability.

They may ask you to describe or demonstrate the following:

1. Risks within the hospital's environment
2. Actions to eliminate, minimize, or report risks
3. Procedures to follow in the event of an incident
4. Reporting processes for common problems, failures, and user errors

The following information is provided to help you respond appropriately if an incident were to happen or if you were stopped and asked what you would do during an incident.

This information manual also contains information on Risk Management and Infection Control.

Fire Safety

**THE NEBRASKA
MEDICAL CENTER
IS A SMOKE FREE
CAMPUS.**

- **No smoking
anywhere starting:**

3/21/ 2011.



Fire Safety



- **In case of fire R A C E**
 - **Rescue**
 - **Alarm** -
 - Dial **9-5555 (off Campus 911)**
 - Pull fire alarm pull station
 - **Confine the fire by closing the doors to the room where fire is located**
 - **Extinguish or Evacuate**

MEDICAL STAFF

DURING FIRE EMERGENCIES - Report to evacuation area and continue care of patients.

Fire Extinguisher Operation

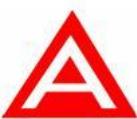


Hold Extinguishers
upright

- To operate fire extinguishers - **PASS**
 - Pull the pin
 - Aim at the base of the fire
 - Squeeze the trigger
 - Sweep the agent over the entire fire surface

Smother option - blankets,
coats, etc.

Classes of Fire



- CLASS A Ordinary Combustible



- CLASS B Flammable or Combustible Liquids



- CLASS C Electrical



- CLASS K Kitchen (Grease)

TYPES OF EXTINGUISHERS AT THE NEBRASKA MEDICAL CENTER

Pictorial Symbols



- ABC Extinguishers contains: Ammonium Phosphate, (most common in hospital). Those containing Halon or Halotron are used in computer rooms and areas with expensive electronic equipment



- AC water mist extinguishers are in OR rooms and adjacent to the MRI units. They can be used on wood, paper, textiles and also electrical fires.



- K extinguishers are located in the kitchens. They are excellent on grease fires.

TYPES OF EXTINGUISHERS AT THE NEBRASKA MEDICAL CENTER



AC WATER MIST

K Wet Agent



Emergency Preparedness

Severe Weather

- **Thunderstorm Watch - Conditions are right for severe weather**
- **Thunderstorm Warning A severe thunderstorm is moving into the area (heavy rain, hail, strong winds)**

Emergency Preparedness

Severe Weather



- Tornado Watch: (The atmospheric conditions are right for a tornado)
- Tornado Warning: (A tornado has been sighted in the local area)

MEDICAL STAFF – DURING TORNADO WARNINGS

- Do not leave building.
- Report to the tornado evacuation area on the patient care units and assist in the care and comforting of patients.
- Stay away from exterior doors and windows.

Emergency Preparedness

Disaster Preparedness



- External Disaster
 - *Code Triage* – Activated when the Nebraska Medical Center is impacted by an external disaster.

MEDICAL STAFF – DURING DISASTER PLAN ACTIVATION

Report Labor Pool area to be set up in the University Tower Cafeteria Main Dining Room (North West Corner) where a staffing area will be established to assign staff.

Emergency Preparedness

Medical Emergencies



- Medical Emergencies
 - Cardiac Arrest = “Code Blue”
 - Dial 9-5555
 - Give
 - room number,
 - building name,
 - location
 - description of emergency.

MEDICAL EQUIPMENT



- All medical equipment must be checked by Biomedical Instrumentation regardless of ownership prior to place in service and or used in the facility. This includes equipment rented for procedures, equipment owned by medical staff and equipment brought in for trial or training.

Defective Equipment

- Medical Equipment Repair
 - Defective medical equipment should be promptly identified and labeled with a “Defective Medical Equipment Tag” and should be sent or taken to Biomedical Instrumentation for repair.

05103 DEFECTIVE MEDICAL EQUIPMENT
DO NOT USE

Date: _____

DEPARTMENT/UNIT: _____ REPORTED BY: _____
EQUIPMENT DESCRIPTION: _____ EQUIPMENT ID TAG #: _____
PROBLEM DESCRIPTION: _____

WAS THIS EQUIPMENT INVOLVED IN A PATIENT INJURY INCIDENT? NO _____ YES _____ (IF YES, SEE BACK FOR INSTRUCTIONS)

PICKED UP BY: _____ DATE: _____
Page 1

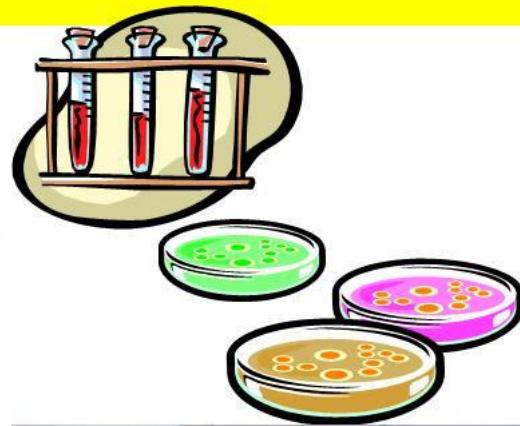
RETURNED BY: _____ DATE: _____
ACCEPTED BY: _____ DATE: _____
Page 2

EQUIPMENT DISPOSITION:
RETURN TO DEPARTMENT: NOT ABLE TO DUPLICATE PROBLEM _____
EQUIPMENT IS NOT REPAIRABLE: REPAIR COST EXCEEDS MARKET VALUE _____
PARTS NO LONGER AVAILABLE _____

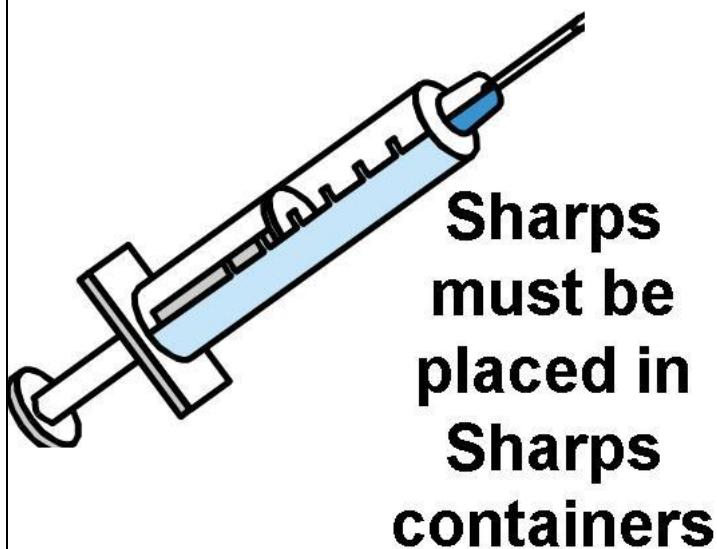
BIOMEDICAL INSTRUMENTATION AND IMAGING SERVICES
EXT. 2-2068 OR 2-3165

Biohazardous Waste

- Biohazardous waste is waste capable of causing infectious disease in humans must be place in Biohazardous Waste containers.
 - Examples
 - Blood and body fluids in pourable or dripable amounts
 - Blood and body fluids that once dry, will flake off
 - Discarded sharps
 - Inoculated culture media, tissues and slides



WARNING



Utility Management Emergency Power

- Emergency Electrical Outlets
 - Emergency electrical outlets are **RED** in color or labeled with word “Emergency.” They are connected to the hospital’s emergency generators
 - Generators will power emergency circuits within 10 seconds of outage.



Utility Management Medical Gas Shutoffs

- Medical Gas Emergency Shut-off Valves -
 - The medical shut-off valves allow any of the medical gases (air, oxygen, vacuum) to be turned off at predetermined rooms and areas. These rooms or areas are identified on the valve.



Labeled with room or area served by valve

Security

- Infant Abduction (Code Adam)
 - Be alert to any unusual behavior you encounter from individuals.
- Report Suspicious behavior to Security at Ext. 9-5111
- Protection of Valuables
 - Office - Lock all valuables in your desk or locker. Do not leave money laying out in the open.
 - Automobile - Do not leave valuables in plain site inside vehicle. Always lock all doors when leaving vehicle.



“CODE SILVER” ACTIVE SHOOTER ON CAMPUS

CALL 911 (WHEN SAFE TO DO SO)

Turn off lights

Close blinds

Block windows

Turn off radios or other devices that emit sound

Keep yourself out of sight and take adequate cover/protection, i.e. concrete walls, thick desks, filing cabinets

Silence cell phones

*Long Beach Hospital
Shooting
Leaves Three Dead
1:18 PM | April 16, 2009*



Rapid Response Team (RRT)

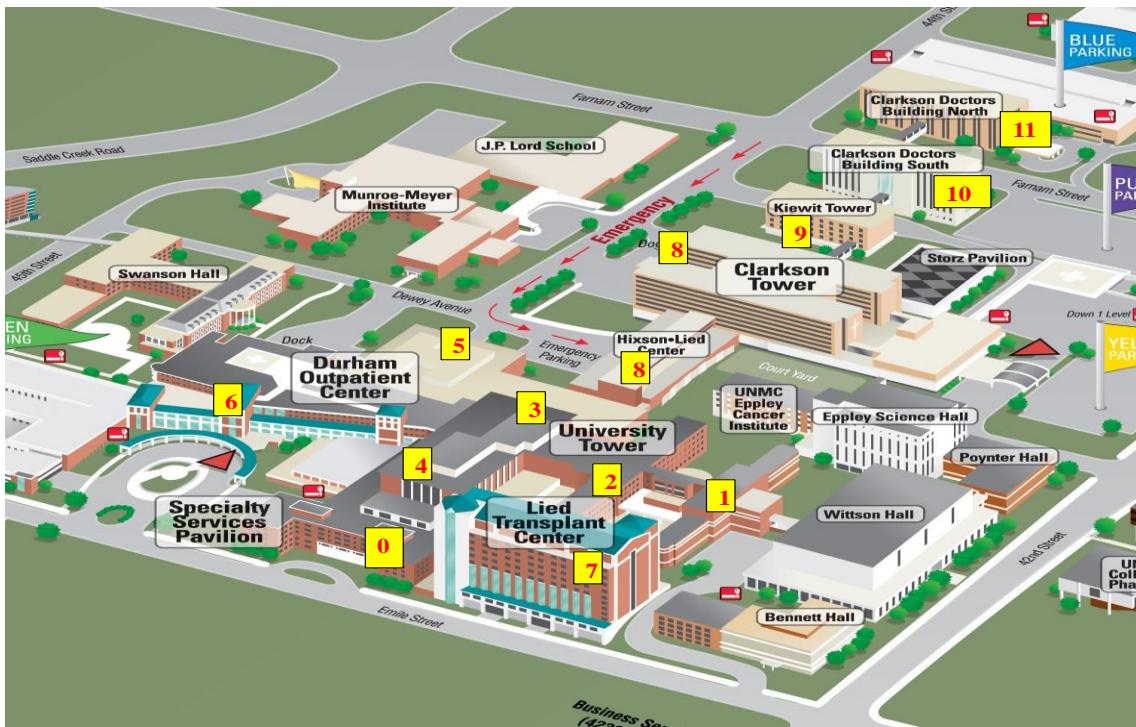
Purpose: To provide rapid and early intervention for patients whose condition may be deteriorating, in order to promote better outcomes and reduce hospital deaths.

Activating the RRT

- Licensed care giver feels that a patient needs immediate or emergency intervention.
- **Adult** care provider or designee calls 9-5555 stating "activate **adult** RRT to room_____(and indicate Private or Academic)".
- **Pediatric** care provider or designee calls 9-5555 stating "activate **pediatric** RRT to room_____."
- Primary attending physician is to be notified by patient's nurse also when RRT activated.

RRT Response

- Clarkson Family Practice Resident will respond for **ADULT** Private patients
- UNMC Internal Medicine Resident will respond for **ADULT** Academic patients
- UNMC Pediatric Resident will respond for **ALL PEDIATRIC** patients
- Critical Care RN and Respiratory Care Practitioner will respond to all RRT activations.



To understand the room numbering system for all hospital/patient care buildings, just REMEMBER: "Floor, Building and Room Number." Example: room 5345

- The first number "5" is the floor number
- The second number "3" is the building/tower number
- The last set of numbers "45" is the room number.
- So room 5345 means it is on the 5th floor, building 3 which is the University Tower, room number 45.
- The **Hixson Lied Center (HLC)** Building is building number 8 (the same as the Clarkson Tower).
- The HLC is distinguished by being paged out as a 5 digit number with the floor number being first, the HLC building being next, and the last three digits are the room numbers.
- Example: room 28269
 - The first number 2 is the second floor,
 - The second number 8 is HLC building
 - The last set of three numbers is room 269
- The other #8 building - Clarkson Tower and all other buildings will have a 4 digit number.

RISK MANAGEMENT AND PATIENT SAFETY

Risk Management and Patient Safety rely on an “**early warning system**” to receive notification of untoward medical/surgical events. Early notification provides for:

- Immediate investigation of the event to determine system failure(s) and facilitate quality improvement activities. **Root Cause Analysis** meetings are called for serious events to identify the system failure(s) and develop action steps to prevent further incidents and injuries.
- Immediate gathering of information to prevent or prepare for litigation.

The early warning system is activated in two ways:

1. Incident Reports. For help to locate screens for the on-line incident reporting system you can ask a staff nurse, call the Patient Safety Coordinator at 9-3463, hospital Risk Management at 9-6466, or UNMC Physicians Risk Management at 9-4068.
2. Verbal reports. If a serious patient event occurs, call Risk Management during business hours. After hours or on holidays, call the Operator and ask to speak to the Risk Manager on call.

Patient Care Events to report to Risk Management include but are not limited to:

- An **unanticipated**, negative medical/surgical outcome, (e.g. cardiac arrest, hemorrhage, death),
- Maternal or fetal injury or death and other poor perinatal outcomes, (e.g. low Apgar scores, failed forceps delivery or injury from forceps),
- Significant neurological injury,
- Medication errors causing serious injury or death,
- Surgery on the wrong body part, regardless of how minor,
- Patient or family threatens to sue,
- Implanted devices that fail and lead to patient injury or death,
- Patient/family complaints that cannot be resolved,
- Consent issues.

Actions to take if a reportable event occurs:

- Take care of the patient first.
- Call Risk Management for advice/collaboration on risk avoidance tactics and to discuss disclosure to the patient/family.
- Communicate with the patient/family *after* reviewing hospital policy LD-08, “Disclosure for an Unanticipated Outcome”.
- Save any physical evidence involved in the event, e.g. packaging, instruments, equipment with settings untouched, etc.
- Document the event accurately in the medical record, including discussions with the patient/family.
- Avoid discussing the event with anyone other than direct care providers and Risk Management.

RISK MANAGEMENT AND PATIENT SAFETY RESOURCES

SITUATION	WHO REPORTS	WHO TO CALL
Patient Care Events	UNMC Physicians	<p>UNMC Physicians Risk Management</p> <ul style="list-style-type: none"> • Christine Hoskin, Risk Manager @ 9-4068 and Hospital Risk Management • Linda Dabelstein @ 9-6466 or the on-call Risk Manager.
	Private physicians	<p>Hospital Risk Management:</p> <ul style="list-style-type: none"> • Dave Poppert, Risk Manager @ 2-3431 • Linda Dabelstein, Coordinator @ 9-6466
Systems Issues or Quality Concerns	All physicians	<p>Patient Safety: Sara Meier, Patient Safety Coordinator @ 9-3463</p>
1. Receipt of Summons/Complaint/Subpoena, 2. Unexpected calls from an attorney 3. Events over which you could be sued individually	<p>UNMC Physicians</p> <p>Private Practice Physicians</p>	<p>UNMC Physicians Risk Management:</p> <ul style="list-style-type: none"> • Christine Hoskin, Risk Manager @ 9-4068 <p>Notify your insurance carrier</p>

INFECTION CONTROL

Compliance Monitoring

Each department and employee has a responsibility to support and adhere to The Nebraska Medical Center's Exposure Control Plans for Bloodborne Pathogens and Tuberculosis. Non-compliance to OSHA standards could mean potential institutional fines of **\$7,000-\$70,000 for EACH INCIDENT.**

The Nebraska Medical Center's Bloodborne Pathogen Exposure Control Plan is based on Occupational Safety and Health Administration's (OSHA) final Bloodborne Pathogen standard, December 6, 1991. A copy of The Nebraska Medical Center Bloodborne Pathogen Exposure Control Plan, the Federal OSHA Bloodborne Pathogen Standard and the Tuberculosis Exposure Control Plan is found with The Nebraska Medical Center Policy and Procedures, on the hospital computer network drive.

Infection Control Violation Incidents

Appropriate infection control activities are necessary to ensure the highest quality of medical care as well as safety for patients, employees, and other persons. Infection control violations will be documented promptly on a violation form by the individual who notices the incident and submitted to Healthcare Epidemiology. Communication regarding the violation will occur with the appropriate manager. The identity of the individuals filing the reports, as well as the individuals named in the complaints will not be made known. The accountable director or manager will accomplish education and/or constructive action. A copy of the blank form may be obtained from The Nebraska Medical Center Policy and Procedures, on the hospital computer network drive, and on the Department of Healthcare Epidemiology web site: [Forms, Signs, Hand Gel | Healthcare Epidemiology](#)

Elements of an Infection

In order for an infection to occur, three elements must be present. First, there must be microorganisms (germs) in sufficient numbers to produce disease; second, there must be a route of transmission for the microorganism and third, the person must be susceptible to the invading organism. Infection cannot occur if all three of these elements are not present.

Hand Hygiene

Hand hygiene before and after patient contact is the single most important means of preventing the spread of infection. Routine handwashing for visibly soiled hands consists of the use of soap, running water, and friction for at least **15 seconds**. Wearing gloves **does not** eliminate the need for handwashing.

A few examples of times to execute hand hygiene are as follows:

- After removing gloves
- Before and after patient contact
- Before performing a clean procedure, after a dirty procedure for the same patient

Examples of times when hands must be **washed** are as follows:

- When hands are visibly soiled
- After using the restroom
- Prior to eating

Alcohol-based hand sanitizers should not be used when hands are visibly soiled or in the presence of bacterial spores (e.g., *Clostridium difficile*, *Bacillus anthracis*). Alcohol-based hand sanitizers are effective in reducing germs on skin. However, alcohol-based hand sanitizers are NOT reliable in killing bacterial spores. Gloves and gowns are required when performing care for patients with *Clostridium difficile*-associated diarrhea. After gloves are removed, hands should be washed with an antimicrobial soap and water.

No artificial fingernails or extenders are allowed for personnel involved in direct inpatient care and/or the care of high-risk (e.g., immunocompromised) patients. Natural nails are maintained at a short (1/4 inch or less) length. If polish is worn, it must not be chipped or peeling.

Hand jewelry should be kept to a minimal (e.g., wedding band) to enhance hand hygiene.

The Hand Hygiene policy, IC02 is located in the Surveillance, Prevention and Infection Control section of The Nebraska Medical Center's policies and procedures.



BLOODBORNE PATHOGENS

Bloodborne pathogens are pathogenic microorganisms that are present in human blood and certain body fluids that can cause disease in humans. These pathogens include, but are not limited to Hepatitis B virus (HBV), Hepatitis C virus (HCV) and Human Immunodeficiency Virus (HIV).

Hepatitis B virus (HBV) can cause inflammation of the liver. The spectrum of illness due to HBV ranges from asymptomatic or mild infection to fulminate liver necrosis and death. Since the virus is able to cross intact mucus membranes, you can spread it to your family and friends. HBV can survive on environmental surfaces dried and at room temperature for at least a week. HBV can be transmitted through percutaneous injuries, mucosal routes, infective blood or body fluids, sexual contact, by use of contaminated needles/sharps or can be introduced at birth.

Human Immunodeficiency Virus (HIV) attacks the body's immune system leading to an end stage infection called Acquired Immune Deficiency Syndrome (AIDS). AIDS leaves a person vulnerable to rare life-threatening opportunistic diseases. Informed consent for HIV testing must be obtained on all routine testing at The Nebraska Medical Center. When a healthcare worker exposure occurs and the source individual refuses to give consent for testing, Nebraska law allows blood of source individual to be tested without consent, if it is available (Appendix VII. 1998 Nebraska Revised Statute, 71-514.03).

HIV can be transmitted through several mechanisms. They are:

1. Blood to blood contact - Incidents (e.g., needle sticks or sharp injuries)
Direct inoculation (from illicit drug paraphernalia)
Transfusions or transplants (infected blood or organs)
2. Vertical Transmission - Infected mother to child prenatally through placenta
During the birthing process
Post-partum with breast feeding
3. Sexual contact - Heterosexual or homosexual activity

Employee Categories and Job Descriptions

Exposure risk is indicated within each job description. Each job description classifies the potential of Bloodborne pathogen exposure. The Bloodborne pathogen risk classifications are as follows:

- Reasonably Anticipated (previously, Category I or II)
- Not Anticipated (previously, Category III)

Hepatitis B Vaccine

The Hepatitis B Virus (HBV) vaccine series is offered free of charge to employees who fall into a risk category of "Reasonable Anticipated". Any employee who falls into a risk category of "Reasonably Anticipated" exposure, who initially declines Hepatitis B vaccination must sign a Hepatitis B declination form. If at a later date the HCW decides to accept the vaccine, the vaccine will be provided at that time without cost. This form will be placed in the employee's health record in Employee Health.

The HBV vaccine is given in a series of three injections:

1. Initial
2. One month after initial
3. Six months after initial

After receiving the vaccination series antibody titers are generally adequate to assist in protecting against HBV. However, 5-10% of HBV vaccination recipients do not develop an adequate titer conversion. An antibody titer is drawn within six to eight weeks after completion of the initial series to assess for adequacy of response.

Non- responders should undergo a second series of vaccination. After the second series, if the titer remains non-reactive, a hepatitis B surface antigen (HbsAG) is drawn and an appointment with a provider in Employee Health is scheduled. Non-responders are considered susceptible to disease.

Hepatitis B Vaccinations for Medical Personnel and Employees

Prophylaxis (the HBV vaccination series) is provided free of charge to all UNMC and The Nebraska Medical Center employees who have a reasonable risk for occupational exposure during the course of performing their duties. The Nebraska Medical Center Employee Health provides Hepatitis B Vaccination for all employees. These vaccinations are prepared from recombinant yeast cultures and are free of association with human blood or blood products. Routine boosters are not currently required. Any employee at risk for exposure who declines hepatitis B vaccination must sign a **DECLINATION FORM**.

Exposure Control

Standard Precautions involve protecting yourself and others from **all** blood and body fluids (except sweat). Standard Precautions are practiced in the care of all patients at The Nebraska Medical Center. Any blood or body fluid is considered a potential source of bloodborne disease.

Personal Protective Equipment (PPE) is equipment (e.g., gloves, gown, masks, eye protection, and face shields) that, under normal conditions of use, protects you from contact with blood, body fluid or other potentially infectious materials. Employees should determine at the department level the type, proper use, location, removal, handling, decontamination, and disposal of PPE. Proper fit and removal is essential to ensure protection of all healthcare workers against blood and body fluids. PPE must be removed before leaving the work area or patient room.

Appropriate personal protective equipment shall be accessible in the work area. The type of PPE used for any given task depends upon the degree of anticipated exposure. Masks in combination with eye protection devices, such as goggles or glasses with solid side shields, or chin-length face shields, shall be worn whenever splashes, spray, splatter, or droplets of blood or other potentially infectious materials may be generated and eye, nose, or mouth contamination can be reasonably anticipated.

Work practice controls are a means to reduce the likelihood of exposure. Examples of work practice controls are as follows:

- ◆ Executing hand hygiene
- ◆ Prohibiting two-handed recapping of needles
- ◆ Activating safety mechanism, after using safer medical devices

Eating, drinking, applying cosmetics (except hand lotion), and handling contact lenses are prohibited in work areas where there is potential for exposure to blood and/or body fluids.

Engineering controls are physical and mechanical systems your employer provides to eliminate hazards at their source. The Nebraska Medical Center will provide engineering controls to minimize employee exposure by either removing the hazard from the workplace or isolating the hazard from the employee (e.g., sharps containers, safer medical devices).

To be effective, engineering controls require proper use by each employee. Examples of engineering controls are as follows:

- ◆ Safer Medical Devices (e.g., self-sheathing needles)
- ◆ Sharps disposal containers
- ◆ Infectious waste containers

Safer Medical Devices

Federal law requires the use of safer medical devices such as protected, blunted or self-retracting needles and sharps to reduce injury to healthcare workers. Such devices will be used when applicable. Blunted (activated) safer devices are considered sharps and must be discarded in a sharps container. Do not place safer devices in general (regular) waste.

Hazard Communication

Specific labeling with the biohazard symbol or the use of red bags or containers is required to warn employees of potential hazards.

Biohazard waste is defined as materials of biological origin that are capable of producing an infectious disease in humans or animals (e.g., blood, body fluids and inoculated culture media), in amounts that can be poured, dripped or flaked (if dry).

The Nebraska Medical Center supports OSHA's definitions for regular and regulated waste and compliance with regulations.

Biohazardous Labels are fluorescent orange-red signs which indicate potentially infectious materials. These labels are affixed on containers used to store, transport or ship blood or other potentially infectious materials. A rigid or semi-rigid, leak-proof container which is clearly marked with the biohazardous label is used for infectious materials (except sharps). Exceptions to labeling are outlined in the Bloodborne Pathogens Standard. Examples of items requiring labels:

- ◆ Specimen refrigerators
- ◆ Specimen freezers
- ◆ Contaminated equipment, requiring repair outside of the Nebraska Medical Center



- ◆ Sharps containers
- ◆ Specimen refrigerators

Housekeeping

EVERY employee is responsible for good housekeeping. Good housekeeping helps to protect everyone. Standard Precautions will be used with soiled linen and contaminated equipment. Protective clothing will be worn to prevent occupational exposures. Clean all equipment and environmental surfaces as soon as possible after contact with potentially infectious materials. Surfaces are disinfected with approved low-level cleaners/disinfectants. Examples of approved low-level disinfectants:

- ◆ Quaternary ammonia
- ◆ Sodium hypochlorite (Household Bleach)
- ◆ Phenolics
- ◆ Alcohol

Blood spills are cleaned immediately and the area disinfected with 1:10 solution of sodium hypochlorite 5.25% (household bleach) or a phenolic solution.



Small Blood Spill

- ◆ Contain spill
- ◆ Absorb blood
- ◆ Disinfect

Large Blood Spill

- ◆ Contain spill
- ◆ Secure area
- ◆ Absorb Blood/OPIM

-On campus contact EVS

Pager 402-888-3876 (Clarkson)

Pager 402-888-3877 (University)

-Off campus contact immediate Supervisor

Exposure Incidents

A bloodborne pathogen exposure incident is defined as a specific eye, mouth or other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials. In the event of a blood or body fluid exposure, the healthcare worker or volunteer should:

1. Wash the affected area immediately with soap and water (mucous membranes should be flushed with water)
2. **DO NOT WAIT.** Report your exposure **immediately** by either presenting to the Nebraska Medical Center Employee Health Department for a risk assessment and assistance in determining needed healthcare follow-up during the hours Monday-Friday 7:00 am to 4:30 pm or by calling 402-559-OUCH (6824) which is available 24 hours a day, 7 days a week.
3. the post-exposure paging system for risk assessment and assistance in determining needed healthcare follow-up
4. The post-exposure paging system, answered by registered nurses at the Medical Communications Center (MCC), is also available 24 hours a day, 7 days a week. The post-exposure paging system is accessed as follows:

Pager Number	Phone Number	Location
*9-888-OUCH (6824)	9-OUCH (6824)	On campus
1-402-888-OUCH (6824)	1-402-559-OUCH (6824)	Calling from off-campus
1-402-888-OUCH (6824)	1-402-559-OUCH (6824)	Calling from long distance

5. Inform the appropriate supervisor
6. Document the exposure on The Nebraska Medical Center employee incident report form
http://intranet.nebraskamed.com/departments/performance_improvement/pswecare/Employee_Incident.pdf

Counseling regarding prophylaxis will be provided as part of the assessment/evaluation. The Employee Health Nurse Case Manager will assist in the risk assessment of an exposure incident to determine when medical evaluation and follow-up are necessary.

Post-exposure Evaluation and Follow-up Procedure

The Nebraska Medical Center will provide for a confidential, post-exposure medical evaluation and follow-up at a reasonable time and place.

Record Keeping

The Nebraska Medical Center Employee Health will maintain records of all exposure incidents, post-exposure follow-up, and hepatitis B vaccination status as required by law/statute. Confidentiality of records and counseling will be maintained.

Employee Training

Specific information and training about occupational hazards and required protective measures will be provided to new employees through general and departmental orientation. Retraining is required annually. Bloodborne pathogen training records must be maintained for three years.

TUBERCULOSIS

The Nebraska Medical Center Tuberculosis (TB) Exposure Control Plan is based on the CDC guideline for prevention of TB and requirements mandated by the Occupational Safety and Health Administration (OSHA).

What is TB?

Tuberculosis (TB) is an infection with the bacteria *Mycobacterium tuberculosis*. It is usually a respiratory illness spread through the air. Any procedures that produce aerosols of patient secretions can transmit TB (e.g., irrigating, centrifuging, administering medications or treatments that induce coughing, suctioning of the airway, sputum induction, endotracheal intubation).

Control of TB

The Control of TB is based on the following three factors, in order of importance:

- Administrative measures
- Engineering controls
- Personal protective equipment

The goal is to detect, isolate, and treat those with active TB in order to decrease the risk of transmission to healthcare workers, patients, volunteers, visitors, and others.

Incidence of TB

Nebraska has a very low incidence of TB

Cases of Tuberculosis		
	State of Nebraska	The Nebraska Medical Center
2005	35	2
2006	25	3
2007	25	4
2008	33	5
2009	32	7
2010	27	2

Risks of TB Transmission and Infection

Infection occurs when a person inhales *Mycobacterium tuberculosis* bacteria. The bacteria travel to the lungs and can be spread throughout the body. In 2-10 weeks, the immune system limits spread of the infection, but the bacteria may remain latent. At this time, the person may have a positive PPD skin test, but has no symptoms of the disease and is not infectious. There is a 10% risk of later developing active TB, and risk is greatest in the first two years after infection. Prophylactic drug therapy may be used to decrease the risk of developing disease.

Drug therapy is also available for active TB disease. It is important to take the medicine as prescribed. Severely immunocompromised HCWs may be at greater risk of becoming infected if exposed to TB.

Detection of Patients Who May Have TB

A diagnosis of TB should be considered in any patient with a persistent cough (>3 weeks) bloody sputum, night sweats, weight loss, anorexia, or fever.

Also take precautions if:

- the history and physical are indicative of TB
- testing is being performed for acid-fast bacilli (e.g., sputum smears/cultures) to assess for active tuberculosis
- lab or radiology tests indicate possible TB

Take appropriate precautions to protect yourself and others if TB is suspected (e.g., In ambulatory Care and Emergency settings, patients with signs or symptoms of TB are evaluated promptly to reduce time spent in waiting area). Persons exhibiting signs or symptoms of an infectious respiratory tract illness will be asked to wear a surgical mask, contain respiratory secretions and practice hand hygiene. It is the responsibility of all of us to do this.

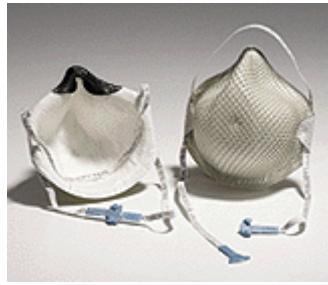
Isolation of TB Patients

Patients suspected or known to have infectious TB are placed in **Airborne Precautions**. This consists of a designated private room with appropriate ventilation. To set up the portable HEPA (TB) unit call Facilities Management at 552-3347 (north campus) or 559-4050 (south campus).

These rooms have six air exchanges or more per hour and negative air pressure in relation to surrounding areas. The rooms are at negative pressure in relation to the halls and surrounding areas, and are monitored when used for TB patients. Air is not re-circulated into the general circulation unless filtered through a HEPA (high-efficiency particulate air) filter.

Patients are to remain in their rooms with the doors closed. This includes the patient server door (Clarkson Tower). If possible, all procedures are performed in the patient room. If the patient must leave the room, the patient should wear a regular surgical mask if medically possible. If the patient has an oxygen mask, use the mask in transport. Patients should be instructed to cover their mouth and nose when coughing or sneezing.

The number of personnel entering the room is restricted. An isolation sign is placed on the door.



An **N 95 respirator** is to be used by all personnel and visitors entering the room. Staff is to be fit-tested by Employee Health before wearing a respirator.

Before the room is used for another patient, enough time should elapse for 99% of the contaminants to be removed from the air (approximately 60 minutes with 6 air exchanges per hour).

Healthcare Worker Evaluation and Screening

Employee purified protein derivative (PPD) testing is done at least annually to detect trends in transmission and to provide for early follow-up and treatment. Notify Employee Health if you develop signs and symptoms or if you are exposed to TB. Employees diagnosed with TB must have approval from Employee Health before returning to work. Refer to the TB Exposure Control Plan in your area if you need more specific information, or call Healthcare Epidemiology at 402-559-5276.

Transmission Based Precautions

Patients with various conditions are placed into isolation to minimize the risk of transmission to other patients and healthcare workers. A full listing of isolation precautions can be found on the Nebraska Medical Center Intranet at the departmental Healthcare Epidemiology website. These recommendations are based on guidelines from the Centers for Disease Control and Prevention (CDC) [CDC Isolation Guideline](#)

There are three major classifications of transmission based isolation precautions in addition to the continuous use of Standard Precautions:

Contact Precautions

Contact precautions are utilized in the care of patients infected or colonized with epidemiologically important microorganisms that can be transmitted via direct contact or indirect contact with environmental surfaces and vectors. The most common bacteria requiring contact isolation are MRSA, VRE, and *C. difficile*. Precautions include:

- Private room (cohorting is considered at times of limited bed availability, consult the Department of Healthcare Epidemiology)
- Strict adherence to hand hygiene

- Gloves
- Gowns if contact is anticipated between the healthcare worker's clothing and the patient or patient-care environment
- Masks/eye protection if patient has respiratory infection and is coughing/being suctioned or has wound irrigation
- Dedicated patient care equipment (stethoscope, scale, etc.)

Droplet Precautions

Droplet precautions are used for a patient known or suspected to be infected with a pathogen transmitted by respiratory droplets. The most common organisms requiring use of droplet precautions are meningococcus, influenza, and pertussis. Precautions include:

- Private room (cohorting is considered at times of limited bed availability, consult the Department of Healthcare Epidemiology)
- Strict adherence to hand hygiene
- Mask (surgical) upon entering room

Airborne Precautions

Airborne precautions are utilized in the care of patients known or suspected to be infected with pathogens transmitted by airborne droplet nuclei (small particles that can remain suspended in the air). The most common diseases/pathogens requiring airborne precautions are pulmonary tuberculosis, chickenpox, and disseminated varicella. Precautions include:

- Private room with negative pressure and special ventilation
- N-95 respirators are used for care of patients known or suspected to be infected with tuberculosis or SARS patients (Healthcare workers should be fit-tested before wearing N-95 respirators or caring for patients in airborne isolation).

Isolation Precautions Quick Reference

A full listing of pathogens/diseases and required isolation measures can be found on the Disease Isolation Chart on the Nebraska Medical Center intranet at: [Healthcare Epidemiology Department](#)

Removing a Patient from Isolation

MRSA and VRE

Patients infected or colonized with MRSA or VRE may remain colonized for prolonged periods and may continue to shed organisms into the environment, serving as a nidus for continued transmission. To document that a patient is "decolonized," obtain screening cultures (rectal swabs for VRE or nares swabs for MRSA).

- Patient should be off antibiotics for at least 48 hours
- Cultures should be obtained three times, one week apart

Tuberculosis

Patients with known or suspected TB can be removed from airborne isolation in the following situations:

- a. Suspected TB
 - Diagnosis is confirmed to be something other than tuberculosis, and tuberculosis is no longer in the differential diagnosis.
 - OR
 - Three sputum specimens from three separate days are reported as negative for acid fast bacilli (AFB).
- b. Smear positive for AFB
 - Cultures or other laboratory tests reveal AFB to be other species of AFB (non-tuberculous).
- c. Known Pulmonary TB
 - Patient is on effective therapy
 - Patient is clinically improving
 - Sputum smear is AFB-negative on three separate days

Guidelines for Prevention of Central Venous Catheter-Related Infections

1. Insert the central venous catheter (CVC) at the subclavian site unless the site is unavailable or medically contraindicated.
2. Do not administer systemic antimicrobial prophylaxis routinely before insertion or during use.
3. Use full sterile barrier precautions in the insertion of a CVC and maintain aseptic technique. This includes:
 - Hand Hygiene

- Long sleeve sterile gowns
 - Sterile gloves
 - Cap
 - Mask
 - Full-size sterile drape
 - Eye protection (bloodborne pathogen precautions)
4. Use 2% chlorhexidine with 70% alcohol (Chloraprep®) for local skin antisepsis. Use repeated back and forth strokes of the applicator sponge for approximately 30 seconds. Use of chlorhexidine is contraindicated in infants less than 2 months of age.
 5. If any component of the catheter or kit becomes contaminated, discard and replace with a sterile device or new kit.
 6. After insertion, the site should be covered with a sterile, dressing. Dressings should be changed:
 - Transparent dressings every 7 days and as needed if the dressing becomes loose, damp, or soiled.
 - Gauze dressings on short-term CVC sites should be changed every 2 days.
 - Exception: pediatric patients in which the risk for dislodging the catheter may outweigh the benefit of changing the dressing.
 - Do not use topical antibiotic ointment or creams on insertion sites, except for dialysis catheters because of their potential to promote fungal infections and antimicrobial resistance.
 7. Use prophylactic antimicrobial lock solution in patients with long term catheters who have a history of multiple catheter related blood stream infections despite optimal maximal adherence to aseptic technique
 8. Catheters placed under emergent or non-sterile conditions should be removed and replaced at a new site when the patient's condition allows.
 9. Do not:
 - Routinely replace catheters to prevent catheter related infections
 - Remove CVCs or PICCs on the basis of fever alone. Use clinical judgment as to whether infection is evident elsewhere or if there is a noninfectious cause of fever.
 - Use guidewire exchanges routinely for non-tunneled catheters to prevent infection
 - Use guidewire exchanges to replace a non-tunneled catheter suspected of infection.
 10. Do use a guidewire exchange to replace a malfunctioning non-tunneled catheter if no evidence of infection is present.
 11. **Promptly remove any intravascular catheter that is no longer essential.**

Full recommendations and supporting literature are available at
 Center for Disease Control [HICPAC Guidelines](#)

Guidelines for the Prevention of Surgical Site Infections

I. Preoperative

Preparation of the patient

1. Infections remote to the surgical site are identified and treated.
2. Control serum blood glucose levels; reduce glycosylated hemoglobin A1c levels to <7% before surgery, if possible.
3. Tobacco cessation is encouraged at least 30 days prior to an elective operation.
4. If hair removal is necessary, it is performed immediately before the operation, with electric clippers and not in the operating room.
5. Patients are required to shower or bathe with an antiseptic cleansing agent on at least the night before the operative day.
6. Chlorhexidine, iodophor, alcohol and tincture of iodine are the recommended antiseptics for preparing a patient's operative site. The prepared area is large enough to allow extension of the incision or creation of new incisions or drain sites, if necessary.
7. The patient is covered with sterile drapes in such a manner that no part of the patient is uncovered except the operating field and those parts necessary for anesthesia to be administered and maintained.
8. Maintain normothermia throughout surgical procedure (temperature ≥36°C).

Antimicrobial prophylaxis

1. Administer a prophylactic antimicrobial using the Nebraska Medical Center antimicrobial surgical prophylaxis order form only when indicated, and select it based on its efficacy against the most common pathogens causing SSI for a specific operation. Information regarding the Nebraska Medical Center's surgical prophylaxis order form and antimicrobial stewardship program is available at <http://www.nebraskamed.com/careers/education/asp/Index.aspx>.
2. If parenteral prophylactic antibiotics are indicated, they are to be started within 1 hour prior to the operative incision to maximize tissue concentration. Two hours are allowed for the administration of vancomycin and fluoroquinolones.

3. Prophylactic antibiotics shall not be continued for more than 24 hours post-op (48 hours post-op for cardiac procedures).
4. Re-dose antibiotic if needed based on $\frac{1}{2}$ life of antibiotic used and length of surgery (eg. cefazolin at 4 hours). See below for a link to the Antimicrobial Stewardship Surgical Prophylaxis order form:
<http://www.nebraskamed.com/Careers/Education-Programs/ASP/Surgical-Prophylaxis-Protocol>.
5. Adjust the antibiotic dose based on weight of patient (e.g. weight greater than 80 kg should receive 2 grams cefazolin instead of 1 gram). See Antimicrobial Stewardship Surgical Prophylaxis order form above for specific information.
6. For orthopedic procedures performed using a tourniquet, the antibiotic should be administered before application of the tourniquet.
7. Before elective colorectal operations, in addition to parenteral antibiotics, mechanical preparation of the colon is done by use of enemas and cathartic agents. Non-absorbable oral antimicrobial agents are administered in divided doses on the day before the operation.
8. Vancomycin is not recommended for routine use in antimicrobial prophylaxis.

Preparation of Surgical Personnel

1. The surgical team who will touch the sterile field, sterile instruments or an incisional wound, perform a preoperative surgical scrub or disinfection prior to every procedure. Application of a waterless, scrubless alcohol based hand antiseptic is an acceptable method of hand preparation for the surgical team.
2. Surgical personnel who have signs and symptoms of a transmissible infectious illness must report conditions promptly to their supervisor. Supervisors should assess and refer ill personnel to Employee Health. This includes, but is not limited to the following: generalized rash or skin lesions that are vesicular, pustular or weeping; jaundice; tuberculosis; diarrheal illness; and febrile or other contagious illness. Restriction from work is determined on a case by case basis and is dependent on the potentially infectious/contagious disease.
3. Routine culturing of Perioperative services personnel who use the OR is not recommended. However, culturing may be done as part of an epidemiologic investigation.

Surgical attire

1. Everyone entering the restricted and semi-restricted areas of surgery will wear surgical scrubs. Scrubs are the property of The Nebraska Medical Center and are not to be worn outdoors. Clean scrubs should not be taken home and worn to work the following day. They are not to be laundered at home but must be laundered by the approved hospital laundry.
2. Everyone who enters the OR wears a surgical mask at all times if a procedure is about to begin, is already underway, or if sterile instruments are exposed. The mask fully covers the mouth and nose and should cover facial hair (mustache/beard). The mask is worn throughout the operation. Masks are carefully removed and discarded after each use by handling the ties. Masks are not to be dangled around the neck or tucked into a pocket for future use.
3. Eye protection is an essential part of personal protective equipment in the surgical setting.
4. A cap or hood to fully cover hair on the head and neckline is worn when entering the restricted and semi-restricted areas of the surgery facility. Reusable cloth head coverings must be laundered routinely with a clean one worn each day/shift.
5. Scrub suits that are visibly soiled, contaminated, and/or penetrated by blood or other potentially infectious materials are changed.

II. Intra-operative Environmental

1. The procedure room is positive-pressure, with a minimum of 15 air changes per hour (of which at least 3 are fresh air).
2. Operating room doors are kept closed except as needed for passage of equipment, personnel, and the patient.
3. The number of personnel allowed into the surgical suite during a procedure is to be kept to a minimum.

III. Postoperative Care

Incision Care

1. Personnel and medical staff use standard precautions and will sanitize their hands before and after dressing changes and any contact with the surgical site and/or patient.
2. It is recommended that primarily closed incisions are protected with a sterile dressing for 24 to 48 hours. When an incision dressing must be changed, before 48 hours has elapsed aseptic non-touch technique is used.
3. Tap water should not be allowed near a fresh surgical incision for 48 hours. This includes actions such as bathing, showering, or cleansing skin near the surgical area or dressing with tap water. Wounds that are not intact or left open to heal by secondary intention may have longer restrictions to tap water exposure.

Full recommendations and supporting literature are available at
[Society of Healthcare Epidemiology](#)

Recommendations for Routine Prevention and Control of
Multi-Drug Resistant Organisms (MDROs) in Healthcare Settings

Recommendations for routine prevention and control of MDROs in healthcare settings includes:

1. Place patients colonized or infection with an MDRO into contact isolation
 - a. private room
 - b. hand hygiene
 - c. PPE
 - d. dedicated medical equipment
2. Routinely clean the patient's environment
3. Use antimicrobials judiciously

Antimicrobial Stewardship Program

The Nebraska Medical Center has an active antimicrobial stewardship program. Antimicrobial stewardship is defined as a rational, systematic approach to the use of antimicrobial agents in order to achieve optimal outcomes. This means using the right agent, at the correct dose, for the appropriate duration in order to cure or prevent infection, while minimizing toxicity and emergence of resistance. The program employs an infection disease physician and an ID trained pharmacist and utilizes a variety of strategies to achieve this goal. A major component of the program is the use of an audit and feedback system. Physicians may be contacted by the Antimicrobial Stewardship staff with recommendations regarding the use of antimicrobials in patients.

Other resources including antibiograms and clinical pathways are available at:

<http://www.nebraskamed.com/careers/education/asp/index.aspx>

Resources available at this site:

- Antibiograms (Restricted)
- Antimicrobial Restrictions
- Antimicrobial and Clinical Microbiology Guidebook
- Clinical Pathways
- Antimicrobial Surgical Prophylaxis
- Clostridium difficile*-associated Disease (CDAD)
- Influenza Management
- Catheter Lock Techniques
- Pneumonia Order Sets
- Sepsis Information and Bundle
- Soft Tissue Infection Guidelines
- Antibiotic Desensitization Protocols

Full recommendations and supporting literature are available at
Center for Disease Control [HICPAC Guidelines](#)

Reportable Diseases

Nebraska law requires clinical laboratory personnel and physicians to report evidence of actual communicable disease to the local health department or the State Health Department of Health. In such instances, Healthcare Epidemiology will

complete a Disease Case Report and send it to the County Health Department. The relevant language in the Nebraska statute can be found in Nebraska Health and Human Services Title 173 – Control of Communicable Diseases or online at <http://www.hhs.state.ne.us/reg/t173.htm>. Please call Healthcare Epidemiology if you have concerns about the reporting.

Conclusion

The Nebraska Medical Center will support and comply with the OSHA Bloodborne Pathogen Standard and TB compliance documents. The Nebraska Medical Center recognizes the importance of preventing, identifying, and/or controlling infections so that safety can be maintained in healthcare workers, patients, volunteers, and visitors.

Infection Control Resources

Contact the hospital operator for Healthcare Epidemiology/Infection Control personnel on-call or phone the Department of Healthcare Epidemiology/Infection Control at 402-559-5276. Office hours are from 0800-1630. However, personnel are available for questions and assistance 24 hours daily.

Other Resources include:

- Employee Health
- The Nebraska Medical Center Policy and Procedures
- The Nebraska Medical Center Exposure Control Plans
- Departmental Policies and Procedures
- National, state, and local resources

REMEMBER! -- INFECTION CONTROL IS EVERYONE'S RESPONSIBILITY

Pandemic Flu

What is Pandemic Flu?

An influenza caused by a new influenza virus that people have not been exposed to before. This type of influenza is likely to be more severe, affect more people, and cause more deaths than seasonal influenza because people will not be immune to the new virus.

Symptoms of pandemic flu are similar to common influenza, but may be more severe and complications more serious. Typically, the elderly and very young are at increased risk for complications from the flu, but with pandemic flu, healthy adults may be at increased risk for serious complications as well.

The effects of a severe pandemic could be much more damaging than those of a regular flu season. It could lead to high levels of illness, death, social disruption, and economic loss. Everyday life could be disrupted because so many people in so many places become seriously ill at the same time. Impacts could range from school and business closings to the interruption of basic services such as public transportation and food delivery.

A pandemic will last much longer than an outbreak of typical influenza like we see every year. It is also likely that a pandemic will include "waves" of influenza activity that last 6 to 8 weeks.

What Challenges Might I (and My Family) Face if a Pandemic Were to Occur?

- **Social disruptions may be widespread and** usual services like banks, stores, restaurants, worship services, and government offices may be closed for periods of time. People with special needs (cancer treatment, physical therapy, prescription drugs, or care facilities) may have interruptions in services.
- **It may be difficult or impossible to work and** some businesses will continue during a pandemic, some will close. Some employees may be able to work from home. Some businesses or unions may resort to using leave policies. You may have a possible reduction or loss of income if you are unable to work or your place of employment is closed.
- **Some schools may close for extended periods of time** or may offer limited classes on-line
- **Transportation may be disrupted** and fuel shortages may arise if delivery problems develop due to illnesses.

How Can I Prepare for a Pandemic?

A pandemic would touch every aspect of society, so every part of society must begin to prepare. The effects of a pandemic can be lessened if you prepare ahead of time. Preparing for a disaster will help lessen the strain for potentially scarce items such as food, medications, and other essential items. It will also help bring peace of mind and confidence to deal with a pandemic.

Think about the challenges you might face during a pandemic, especially if the pandemic is severe. You can start to prepare by planning on how you will meet these challenges. Checklists and other tools have been prepared to help guide you in your planning efforts. To aid you in formulating a family plan, go to this web address:

Will Bird Flu Cause the Next Influenza Pandemic?

Avian influenza, or bird flu, is a disease of wild and farm birds caused by avian influenza viruses. Bird flu viruses do not typically infect humans, but since 1997 there have been a number of confirmed cases of human infection from bird flu viruses. Most of these resulted from direct or close contact with infected birds (for example: domesticated chickens, ducks and turkeys). It is important not to handle, play with, or pick up dead birds.

The spread of bird flu viruses from an infected person to another person has been reported very rarely and has not been reported to continue beyond one person. No one can predict with any certainty when the next influenza pandemic will occur, or even if the current circulating strain of H5N1 will mutate into a pandemic strain of flu. However, a pandemic influenza virus has three main characteristics, the influenza virus must:

- Be a new type of influenza virus that no one has been exposed to and has no immunity to it.
- Causes serious illness and is associated with a high mortality rate (highly pathogenic).
- Have sustained transmission from person to person.

Thus far, the bird flu virus has developed two of the three characteristics of a pandemic influenza. Scientists and experts from around the world are watching for changes in bird flu viruses that could lead to an influenza pandemic.

Basic Health Practices:

Limit the Spread of Germs and Prevent Infection

During a citywide catastrophe or a flu pandemic, hospitals and doctor's offices may be overwhelmed. It is important for you and your family to do everything you can to stay healthy and help prevent the spread of disease.

- Wash hands frequently with soap and water; teach children to do the same.
- Cover coughs and sneezes with tissues, and throw tissues away after use. Block cough or sneeze with your upper sleeve if you don't have tissue and wash hands each time after coughing, sneezing or blowing your nose.
- If soap and water are not readily available to wash hands, use alcohol hand gel (60 to 95%) to supplement hand washing.
- Use antiseptic wipes on your computer keyboard, mouse and phone every few weeks or when an ill coworker infects your office. Use the antibacterial lotions or hand gels when soap and water are not handy.
- Avoid touching eyes, nose and mouth to prevent germs from entering your body.
- Stay home from work and school if sick and contagious; keep your distance from other people to protect them from getting sick.
- If you suspect someone else, like a co-worker is ill, practice social distancing (stay at least 3 to 6 feet away from others). Encourage sick persons to go home to recover from their illness.
- Make sure that you and all of your family members are up to date on all your vaccinations, including the flu shot. A flu shot will not protect you against pandemic flu, but it will protect you against seasonal flu.
- A pneumococcal vaccination may help prevent secondary infection if you should become ill. Ask your physician for a pneumonia shot if you are over the age of 65 or have a chronic illness such as diabetes or asthma.
- Make sure your family knows how to prepare and cook food properly.
- Consider purchasing masks for family members to help protect against germs (for flu pandemic).
- Wash hands with soap and water after touching contaminated objects.

When a Family Member is Ill

- Keep everyone's personal items separate. All household members should avoid sharing computers, pens, papers, clothes, towels, sheets, blankets, food or eating utensils.
- Disinfect doorknobs, switches, handles, toys and other surfaces.
- Use detergent and very hot water to wash clothes and then place in the dryer as the heat from dryer will also destroy germs. Wash your hands after handling dirty laundry.
- Wear disposable gloves when cleaning up body fluids.
- One person should be the designated care giver. The designated caregiver may choose to wear an N-95 mask when giving care to a family member ill with pandemic flu. If this is the case, the mask should NOT provide a false sense of security to the caregiver, meaning that the caregiver should continue to rely on:
 - good infection control practices
 - hand washing
 - social distancing as much as possible to protect them from contracting the pandemic flu rather than depending on a mask for protection.

Proper handling of foods can keep you safe from food-borne illnesses.

Handle Meat, Including Poultry, with Care:

Here are some tips for avoiding the viruses and bacteria that may exist in meat:

- Wash your hands well before and after touching meat.
- Store and prepare raw meat separately from other foods.
- When cooking, use a food thermometer to ensure food has reached the safe internal temperature of at least 165 ° F. This will destroy germs, including the H5N1 virus, if present.
- Use a clean platter for meat once it has been cooked or grilled (do not use the same plate that was used for raw meat)
- Do not let raw meat or its juices touch anything that will not be cooked afterward, such as fruits or foods that are ready to eat.
- Thoroughly clean all surfaces with warm soapy water where raw meat was prepared before using it to prepare something else.

Operating Room Fire Safety



Policies to Refer to

- EC -23 Laser Safety
- Electro Surgery
- Fire and Other Safety Precautions
- Skin Preparation

Would you turn on one of these tanks & strike a match in front of it? That is very similar to what occurs daily in the OR.
Cautery & other ignition sources are constantly in use in the Oxygen enriched environment.



SURGICAL FIRES Heat, fuel and oxygen — the "fire triangle" — are in abundance in ORs. Flammable materials include alcohol prepping agents, surgical gowns, drapes hoods and masks, which can be ignited by heat from lasers and electrosurgical devices.

The OR is an environment requiring constant monitoring of fire risks.

STATISTICS

Number of Surgical Procedures Yearly in the U.S.

23 Million Inpatient Surgical Procedures

27 Million Outpatient Surgical Procedures

50 Million Total Procedures

Statistics

Number of Surgical Fires Yearly

- 100 “Reported” OR Fires Yearly
- 200-300 OR Fires Yearly Not Reported
- Who Knows How Many “Near Misses”
 - 20 Patients Injured Yearly
 - 2 Patient Deaths Yearly

IT IS IMPORTANT TO UNDERSTAND

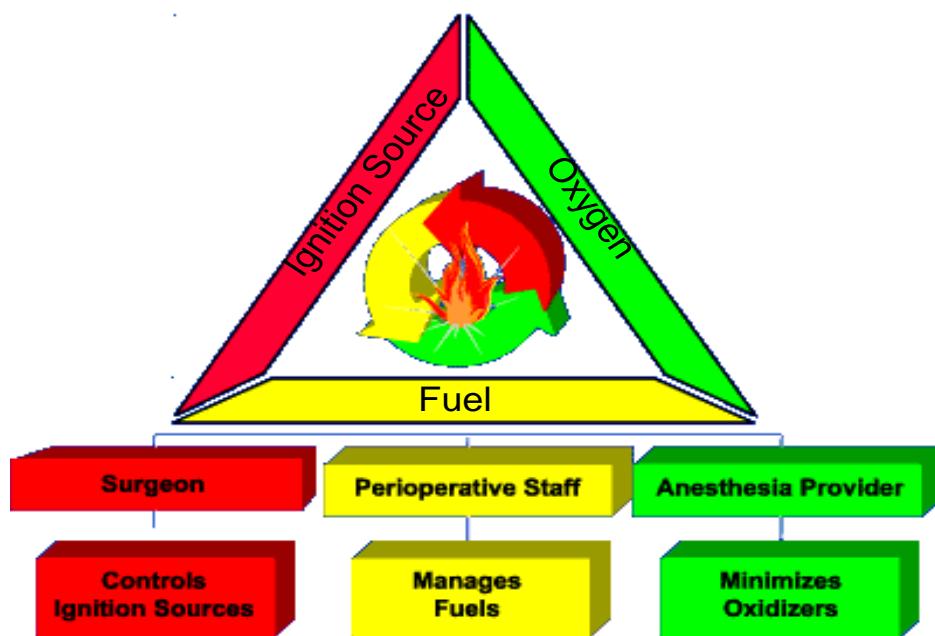
OR fires are 100%

PREVENTABLE

WHAT DO YOU NEED TO DO TO PREVENT OR FIRES?

- 1) Understand the causes of fires
- 2) Take steps to prevent fires
- 3) Be vigilant in your observation to prevent & contain possible fire situations
- 4) Model & teach preventative behavior

The Fire Triangle in the OR – The 3 elements that must come together to have a fire occur



The Elements of the Fire Triangle

1. FUEL SOURCES in the OR

- Alcohol, Collodion
- Linen, Drapes, Sponges
- Plastic Equipment Drapes & Anesthesia Equip.
- OR Table Pads
- Patients' tissues – Adipose, Skin, Hair
- Solutions, Ointments, Bone Cement
- Soda Lime
- Patient's hair – especially after prepping with alcohol
- Surgical caps worn by the patient

Fuel sources

Drapes & other materials used in the OR are fire resistant, but will burn and yield very toxic smoke due to the chemicals in the materials.

So, if the fire isn't extinguished rapidly (30 seconds) the smoke will be overwhelming.



Use of Alcohol Prep

Alcohol containing antiseptic solutions have unsurpassed antimicrobial properties.

Their use requires thoughtful consideration and site selection.

Fuel Sources - Alcohol

Because of its flammability and potential vapors/fumes, use of alcohol & preps

containing alcohol can cause significant risk in the OR. Precautions to be taken when using alcohol:

- Alcohol must be allowed to dry prior to using cautery
- Alcohol fumes should be allowed to dissipate prior to draping or before redraping after reprepping
 - **THIS PROCESS TAKES APPROXIMATELY FIVE (5) MINUTES.**
- Additional “time out” to be sure alcohol is dry prior to using cautery.

Elements of the Fire Triangle

2. OXYGEN & other gasses in the OR

- Oxygen Enriched Atmosphere
- Nitrous Oxide
- Oxygen per Nasal Cannula
- Tenting & Trapping of Oxygen & Gasses
- Gases in the GI Tract
- Emissions from the Rectum & Perineal Area

Elements of the Fire Triangle

3. HEAT – IGNITION SOURCES in the OR

Most common Ignition sources

- Cautery – Electro surgery
- Fiberoptic Light Cords/Sources
- Lasers

Other Ignition sources

- Defibrillator Paddles
- High Speed Burrs and Drills
- Malfunctioning Equipment

Most Common Anatomical Sites of Fires

- 34% - Airway (Upper -Trachea - Bronchus, etc.)
- 28% - Face, Head, Neck and Chest
- 24% - Anywhere Else on the Body
- 14% - In the Body

Why do the face & airway lead at 62%?

Fires of the Face, Head, Neck, Axilla,
Upper Chest

are close to the Oxygen Source



Airway –
A confined area full of 100% Oxygen
All it needs is a match
(ignition from cautery or a laser)



Fires Can Occur Anywhere Else on or in
the Body or in the OR suite

- Perineal area
- Anywhere - Alcohol prep
- Abdomen - Cauterizing – open or laparoscopically
- Drapes ignited by light cords or cautery pencils
- Surgeons' fiberoptic light cords coming unattached
 from head lamp.
- Cautery ground pads catching on fire

The key to fighting an OR fire is to

PREVENT IT.

Prevent – Control the Fuel Source

- Use only Laser ET tubes when lasering in any part of the airway.
- Be conscious of drapes, sponges, towels, linens in proximity to ignition sources
- Protect patient body hair, skin, adipose tissue as appropriate
- Alcohol soaked items or alcohol in close proximity to ignition sources need special precautions

What you can do to prevent OR fires.....

Specific measures to prevent fires when prepping with alcohol:

- Control the alcohol when prepping to minimize dripping & pooling.
 - Check any linens coming in contact with the patient to make sure they are not wet with alcohol. Remove wet linens if possible. If not possible, wick (soak up) the alcohol so that it is not pooled beneath the patient and allow linens to dry thoroughly.
- Allow preps containing alcohol to dry & vapors to dissipate before draping and using cautery.
 - **THIS PROCESS TAKES APPROXIMATELY FIVE (5) MINUTES.**
- When prepping in or near hair (e.g., chest, head, armpits, back, etc.), allow the prep to dry. After drying, a water based gel may be applied to coat the hair to keep it away from the incision and prevent it from becoming a potential fuel source
- Don't forget: When prepping with alcohol, **a verbal "Time Out" is required** to be certain the alcohol is dry & vapors have dissipated before use of an ignition or heat source (e.g. cautery, drill, fiberoptics cables, lasers, etc.)

What you can do to prevent OR fire

More specific measures to prevent fires when prepping with alcohol:

- If it becomes necessary to reprep a patient with alcohol
 - Remove drapes if at all possible before reprepping
 - Control alcohol to minimize dripping & pooling
 - Allow alcohol to dry & vapors to dissipate
 - Redrape after alcohol is dry & vapors have dissipated
 - Do not drape over existing drapes left on while reprepping
 - Note: This may trap vapors between the drapes
 - Note: Head hair can wick prep - Bonnets can trap vapors.
- Remember to do another time out after reprepping and redraping.

Prevention – Control Oxygen & Other Gases

- Be conscious of oxygen – turn off O₂ to nasal cannulae/tubing when no longer in use by patient.
- Be conscious of other gases in the environment including methane gas from the patient.
- Pack the rectum with a wet rolled gauze when lasering, cauterizing, etc. near rectum/perineum
- Locate gas shut offs for OR suite

Prevention – Control Ignition Sources

- Inspect equipment & send for repair as needed (i.e.. frayed cords, activation of electrical alarms)
- Place cautery pencils in holders when not in use.
- Activate light sources only at time of use.
- Put lasers in standby mode when not in use.

Follow RACE Protocol

- Rescue those in danger
- Alert
 - Pull alarm
 - Call 9-5555
 - Off campus call 911
- Confine the fire by closing doors
- Extinguish or evacuate

Evacuation

Evacuate in this order:

1. Horizontally – from OR to PACU
2. Vertically – from the floor you are on - down
the stairs to the main floor
3. To the outside

Know location of extinguishers & sterile fire blankets.



Let's review

1. What are the 3 elements of the fire triangle?
(Select all that apply.)
 - A. Oxygen
 - B. Heat or ignition source
 - C. Fuel
 - D. None of the above

2. Of the following, items that best represent ignition sources or heat of the fire triangle is (are):

- A. Alcohol
- B. Cautery
- C. Lasers
- D. Fiberoptics/Light sources
- E. Drills

3. Which of the following cases might be more prone to fires? (check all that apply)

- A. Lasering of vocal chords
- B. Eyelid Repair Surgery
- C. Inguinal Hernia

4. If working near a patient's rectum, it is advisable to take what precaution to prevent fires?
- A. Use a laser safe ET tube
 - B. Do not use cautery
 - C. Place a moist rolled gauze into the rectum to contain methane gas
 - D. No special precautions
5. We know that when a patient has been prepped with alcohol or an agent containing alcohol (Select all that apply)
- A. The alcohol must dry before cautery is used
 - B. No special precautions are taken
 - C. A special "time out" must be done to assure the alcohol is dry
 - D. Assure that alcohol has not pooled in the linens beneath the patient.

6. When prepping nipple line and above, the following precautions are taken: (Check all that apply).
- A. Check for wicking of alcohol prep into hair.
 - B. Always completely shave head, chest & armpits
 - C. Remember a bonnet can trap vapors
 - D. When prepping in or near hair (e.g., chest, head, armpits, back, etc.), allow the prep to dry.

References

- Health Care Quality Safety Alert: Preventing Operating Room Fires During Surgery; Massachusetts Department of Public Health, March, 2002.
- Smith, Carol; "Surgical Fires – Learn Not to Burn." AORN Journal, 2004; 80 (1) 23-40.
- OR Manager, "Meeting JCAHO's Goal on Surgical Fires" 2004; 32 (11) 26-28
- Bruley, Mark; Surgical Fires: Awareness of a Continuing Risk, 2004; Talk presented at the OR Managers Conference October, 2004, Chicago, Illinois

Safety & Infection Control Competency Assessment Physicians - 2013

1. Choose the correct statement about the hospitals emergency power.
 - a. Emergency power outlets are red in color
 - b. Emergency power is supplied by the hospital's emergency generator
 - c. Emergency generators will power up within 10 seconds of the loss of power from the utility company
 - d. All of the above
2. All new and demo equipment used in the treatment of a patient must be inspected by Biomedical Instrumentations prior to placing in service.
 - a. True
 - b. False
3. A good way to remember what to do during a fire is to remember what the acronym **RACE**. It stands for which following?
 - a. Remove or Rescue anyone in immediate danger
 - b. Remove or Rescue anyone in immediate danger. Activate the nearest fire pull station
 - c. Remove or Rescue anyone in immediate danger. Activate the nearest pull station. Confine the fire.
 - d. Remove or Rescue anyone in immediate danger. Activate the nearest pull station. Confine the fire. Extinguish the fire and/or Evacuate.
4. The acronym PASS which helps us to remember how to operate a fire extinguisher stands for;
 - a. Prepare to act, Assign staff as needed, Sequence activities and Standby for further instructions on when to use extinguishers
 - b. Prepare to Alert Staff for Safety in the event of a fire
 - c. Pull the pin, Aim at the base of the flames, Squeeze handle, Sweep agent back and forth over surface of fire
 - d. None of the above
5. In the event of a fire alarm physicians are asked to report to evacuation area and continue care of patients.
 - a. True
 - b. False
6. In addition to staying in the building and staying away form windows during tornado warnings physicians are also asked report to the tornado evacuation area on the patient care units and assist in the care and comforting of patients.
 - a. True
 - b. False
7. A Code Adam means that all hospital staff should be alert for someone trying to abduct an infant or child from the hospital or clinic.
 - a. True
 - b. False
8. A CODE Blue is called and a message is sent out over the pagers with the following information. "Adult Code Blue Clarkson Hospital (CH) Room (RM) 5850." Where is the CODE located at?
 - a. The 8th floor University Tower room 50
 - b. The 5th floor University Tower room 50
 - c. The 5th floor Clarkson tower room 50
 - d. The 8th floor Clarkson tower room 50
9. Evacuating the patients and/or reporting to designated shelter areas is done upon the notification of the which of the following:

- a. Severe Thunderstorm Watch
- b. Severe Thunderstorm Warning
- c. Tornado Watch
- d. Tornado Warning

PHYSICIAN'S INFECTION CONTROL COMPETENCY TEST - 2011

- 10. Standard Precautions are required when handling blood, body fluids and other potentially infectious materials.
 - a. True
 - b. False
- 11. Routine hand washing should be done for at least 15 seconds.
 - a. True
 - b. False
- 12. After using a safer medical device you must do the following for proper disposal:
 - a. Activate the safety mechanism and discard the device in a recyclable waste container
 - b. Activate the safety mechanism and discard the device in a general (regular) waste container.
 - c. Activate the safety mechanism and discard the device in a sharps (biohazardous) container.
 - d. Do not activate the safety mechanism and discard the device in a general (regular) waste container.
- 13. For all The Nebraska Medical Center employees at risk for occupational exposure to blood/body fluids, the Hepatitis B virus vaccination is required and it:
 - a. Provides adequate titer conversion in 90-95% of recipients after the initial series.
 - b. Does not require routine boosters.
 - c. Is free to the employee.
 - d. All answers are correct
- 14. Anyone with the following criteria should be isolated for tuberculosis (TB):
 - a. Persistent cough (>3 weeks), bloody sputum, night sweats, weight loss, anorexia, or fever.
 - b. History and physical indicative of TB.
 - c. Testing is being performed for acid-fast bacilli (e.g., sputum smears/cultures) to assess for active tuberculosis
 - d. Lab or radiology tests indicate possible TB
 - e. All answers are correct.
- 15. Healthcare workers must be "fit tested" by Employee Health before wearing the N95 respirator.
 - a. True
 - b. False
- 16. Nebraska State law requires that everyone must sign a consent before being tested for HIV.
 - a. True
 - b. False
- 17. Hand hygiene before and after patient contact is the *single most important means of preventing the spread of infection*.
 - a. True
 - b. False

QUESTIONS ON PANDEMIC FLU (All must answer)

- 18. Adults may be able to infect others beginning 1 day before symptoms develop to 5 days after becoming sick.
 - a. True
 - b. False

19. Pandemic flu is the same thing as regular flu.
 - a. True
 - b. False
20. The best way(s) to protect yourself and your family from flu includes the following:
 - a. Using appropriate hand hygiene
 - b. Social distancing (staying 3 to 6 feet away from people you know or suspect to be ill)
 - c. Getting vaccinated every year
 - d. All of the above
21. When caring for ill family members, if possible, only one person should be the designated care giver.
 - a. True
 - b. False

SURGICAL FIRE QUESTIONS

22. Common ignition sources of fire during surgical procedures are:
 - a. Cautery pencil
 - b. Fiber optic light source
 - c. Laser
 - d. All of the above
23. The most common anatomical site of a procedural fire is:
 - a. Perineal/Rectal Area
 - b. Abdominal Area
 - c. Head and Neck area
 - d. None of the above
24. When performing surgery near the rectum, fire from methane gas expulsion
 - a. Can be prevented by:
 - b. Draping patient with wet, cloth drape towels
 - c. Packing the rectum with a wet, rolled gauze sponge
 - d. Thorough preoperative bowel prep
 - e. None of the above
25. Which of the following may cause an increased risk of fire during a procedure?
 - a. Pooling of certain prep solutions
 - b. Failure to holster the cautery tip when not in use
 - c. Frayed electrical cords
 - d. Activated fiber optic light cords laying on drapes
 - e. All of the above