

EAST CAROLINA UNIVERSITY
INFECTION CONTROL POLICY

Infection Control During Construction, Renovation, or Maintenance Projects

Date Originated: May 22, 2002

Date Reviewed: 5.22.02

Date Approved: May 22, 2002

5.22.03, 6.1.06, 6.2.2009

6.4.13, 9.13.16

Approved by:

Chairman, Infection Control Committee

Infection Control Nurse

I. Purpose:

At Brody School of Medicine, the health and safety of all patients, visitors, faculty, staff, students, contractors, and general public is of utmost importance. As a result, health and safety programs must be in place to protect people, property, the environment, and as well as to comply with governmental health and safety regulations.

The Infection Control During Construction, Renovation, or Maintenance Policy has been developed to prevent dust-born infections related to air handling and environmental dispersion during construction, renovation, or maintenance projects in the patient care areas.

This policy also applies to all repair and refurbishment projects. The American Institute of Architects (AIA) guidelines are the current standard required in project design at ECU and Infection Control Risk Assessment for healthcare facility projects is current standard practice.

II. The policy contains:

- Describes the use of the project process review.
- Provisions for ongoing input from infection control for continuous long-range planning in new construction or major renovation or maintenance plans and designs.
- Elements necessary to carry out construction processes.
- Infection Control Construction Permit
- BSOM Health Questionnaire for Construction Workers (English)
- BSOM Health Questionnaire for Construction Workers (Spanish)

III. Definitions:

Project Coordinator:

- An ECU employee who is responsible for the project.

Project Process:

- Each Project has a Design Development distribution list
- A multi-disciplinary team is assembled to incorporate infection control into the project (Prospective Health, Infection Control, Biohazard Safety, Housekeeping, Facility Services, Third Party Project Monitor and Contractor.)
- A risk assessment is done and the following is done using the instrument in “Appendix A”.
 1. Identification of target patient populations
 2. Categorize the nature of the construction
 3. Identify the risk level by class and control procedures necessary
- An Infection Control Construction Permit is issued

IV. Provisions for ongoing input from Infection Control

- Infection Control included on the design development distribution list on all projects.
- An Infection Control Risk Assessment should be done on projects or activities done in patient care areas.
- Infection Control will review infection control project notifications.
- Infection Control will work with Department Managers to address staff and patient infection control issues as needed.
- Representatives from ECU will inspect area(s) periodically to assess efficacy of

barrier precautions.

- Infection Control will notify the Project Coordinator of any suggestions during construction or of problems encountered during the construction

V. Supplemental General Conditions for Construction Workers

- **Employee Health:** The site superintendent (contractor) will be oriented when working in an acute care environment if there is a significant population of immunosuppressed patients who are susceptible to infections. Part of this orientation will be to emphasize that construction workers should not report to duty if sick with a potentially contagious illness.
- **Inspections:** Infection Control will inspect the area prior to the initiation of the project to determine if there is an infection risk to construction workers associated with planned renovation or new construction and remove these hazards prior to initiation of construction. Repeat inspections of the area are conducted by Infection Control during new construction or renovations to ensure the precautions identified during the risk assessment haven been implemented in conjunction with the ECU Project Coordinator.
- **Exposure Control for Bloodborne Pathogens:** Workers should not attempt to handle needles or sharp medical devices found during construction. In the event of a blood exposure (sharp, skin or mucous membrane contact) the supervisor should be immediately be notified.
- **Standard Precautions:** If construction workers will be expected to use Standard Precautions or Personal Protective Equipment (PPE) in a project, this expectation will be explicitly stated in the Bid Specification describing the work to be done before the project is bid on. In this case, the training and PPE will be provided by the contractor.
- **Ventilation System:** To preclude the bypass of unfiltered air, all windows and outside doors should remain closed. Windows or openings to the job site may be open if the widows are within the job site barriers and the bypass of air to other areas of the clinic is prohibited. If a contractor's activities involve the possibility of creating fumes or vapors in or near the clinic, the contractor should notify **Plant Engineering** and **Environmental Health and Safety** to advise of these activities to preclude the exposure of patients, visitors, and staff. **If the contractor's activities are anticipated to necessitate the shut down of ventilation systems the contractor should contact Plant Engineering.**
- **Water Leaks/Openings/Breaks in Walls:** Water leaks can become reservoirs for fungus thus necessitating immediate repair. Openings or breaks in walls, foundations, window frames, etc., require immediate repair to preserve a clean environment and fire/smoke protection barriers.

Appendix A

Infection Control Risk Assessment Matrix of Precautions for Construction & Renovation

Step One:

Using the following table, *identify* the Type of Construction Project Activity (Type A-D)

| | |
|---------------|--|
| TYPE A | <p>Inspection and Non-Invasive Activities. Includes, but is not limited to:</p> <ul style="list-style-type: none"> • removal of ceiling tiles for visual inspection limited to 1 tile per 50 square feet • painting (but not sanding) • wall covering, electrical trim work, minor plumbing, and activities which do not generate dust or require cutting of walls or access to ceilings other than for visual inspection. |
| TYPE B | <p>Small scale, short duration activities which create minimal dust Includes, but is not limited to:</p> <ul style="list-style-type: none"> • installation of telephone and computer cabling • access to chase spaces • cutting of walls or ceiling where dust migration can be controlled. |
| TYPE C | <p>Work that generates a moderate to high level of dust or requires demolition or removal of any fixed building components or assemblies</p> <ul style="list-style-type: none"> • sanding of walls for painting or wall covering • removal of floor coverings, ceiling tiles and casework • new wall covering • minor duct work or electrical work above ceilings • major cabling activities • any activity which cannot be completed within a single work shift. |
| TYPE D | <p>Major demolition and construction projects Includes, but is not limited to:</p> <ul style="list-style-type: none"> • activities which require consecutive work shifts • requires heavy demolition or removal of a complete cabling system • new construction. |

STEP 1: _____

Steps 1-3 Adapted with permission V Kennedy, B Barnard, St Luke Episcopal Hospital, Houston TX; C Fine, CA
Steps 4-14 Adapted with permission Fairview University Medical Center, Minneapolis MN
Forms modified and provided courtesy of J Bartley, ECSI Inc 2002

Step Two

Using the following table, *identify the Patient Risk* Groups that will be affected.
If more than one risk group will be affected, select the higher risk group:

| Low Risk | Medium Risk | High Risk | Highest Risk |
|--------------|---|---|---|
| Office areas | <ul style="list-style-type: none"> • Cardiology • Echocardiography • Endoscopy • Nuclear Medicine • Physical Therapy • Radiology/MRI • Respiratory Therapy | <ul style="list-style-type: none"> • CCU • Emergency Room • Labor & Delivery • Laboratories (specimens) • Newborn Nursery • Outpatient Surgery • Pediatrics • Pharmacy • Post Anesthesia Care Unit • Surgical Units | <ul style="list-style-type: none"> • Any area caring for immunocompromised patients • Burn Unit • Cardiac Cath Lab • Central Sterile Supply • Intensive Care Units • Medical Unit • Negative pressure isolation rooms • Oncology • Operating rooms including C-section rooms |

Step 2 _____

Step Three: *Match* the

Patient Risk Group (**Low, Medium, High, Highest**) with the planned...
Construction Project Type (**A, B, C, D**) on the following matrix, to find the...
Class of Precautions (**I, II, III, or IV**) or level of infection control activities required.

Class I-IV **or** Color-Coded Precautions **are delineated on the following page.**

IC Matrix – Class of Precautions: Construction Project by Patient Risk

| Patient Risk Group | Construction Project Type | | | |
|---------------------------|---------------------------|---------------|---------------|---------------|
| | Type A | Type B | Type C | Type D |
| LOW Risk Group | I | II | II | III/IV |
| MEDIUM Risk Group | I | II | III | IV |
| HIGH Risk Group | I | II | III/IV | IV |
| HIGHEST Risk Group | II | III/IV | III/IV | IV |

Note: Infection Control approval will be required when the Construction Activity and Risk Level indicate that **Class III or Class IV** control procedures are necessary.

Step 3 _____

Steps 1-3 Adapted with permission V Kennedy, B Barnard, St Luke Episcopal Hospital, Houston TX; C Fine, CA
Steps 4-14 Adapted with permission Fairview University Medical Center, Minneapolis MN by ECSI Inc 2001
Forms modified and provided courtesy of J Bartley, ECSI Inc 2002

Description of Required Infection Control Precautions by Class

During Construction Period Project

Upon Completion of

| Class I | Class II | Class III |
|--|--|---|
| <ol style="list-style-type: none"> 1. Execute work by methods to minimize raising dust from construction operations. 2. Immediately replace a ceiling tile displaced for visual inspection. | <ol style="list-style-type: none"> 1. Provide active means to prevent airborne dust from dispersing into atmosphere. 2. Water mist work surfaces to control dust while cutting. 3. Seal unused doors with duct tape. 4. Block off and seal air vents. 5. Place dust mat at entrance and exit of work area. 6. Facilities Services remove or isolate HVAC system in areas where work is being performed. | <ol style="list-style-type: none"> 1. Wipe work surfaces with disinfectant. 2. Contain construction waste before transport in tightly covered containers. 3. Wet mop and/or vacuum with HEPA filtered vacuum before leaving work area. 4. Facilities Services remove isolation of HVAC system in areas where work is being performed. 5. Housekeeping may be called for terminal cleaning if needed. |
| <ol style="list-style-type: none"> 1. Facilities Services remove or isolate HVAC system in area where work is being done to prevent contamination of duct system. 2. Complete all critical barriers i.e. sheetrock, plywood, plastic, to seal area from non-work area or implement control cube method (cart with plastic covering and sealed connection to work site with HEPA vacuum for vacuuming prior to exit) before construction begins. 3. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. 4. Contain construction waste before transport in tightly covered containers. 5. Cover transport receptacles or carts. Tape covering unless solid lid. | <ol style="list-style-type: none"> 1. Do not remove barriers from work area until completed project is inspected by Biological Safety or Infection Control and thoroughly cleaned by the contractor. 2. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction. 3. Vacuum work area with HEPA filtered vacuums. 4. Wet mop area with disinfectant (Housekeeping may be called for terminal cleaning, before patient care resumes). 5. Facilities Services remove isolation of HVAC system in areas where work is being performed. | |

Steps 1-3 Adapted with permission V Kennedy, B Barnard, St. Luke Episcopal Hospital, Houston TX; C Fine, CA
 Steps 4-14 Adapted with permission Fairview University Medical Center, Minneapolis MN by ECSI Inc 2001
 Forms modified and provided courtesy of Bartley, ECSI Inc 2002

| | | |
|-----------------|---|---|
| Class IV | <ol style="list-style-type: none"> 1. Facilities Services isolate HVAC SYSTEM in area where work is being done to prevent contamination of duct system. 2. Complete all critical barriers i.e. sheetrock, plywood, plastic, to seal area from non work area of implement control cube method (cart with plastic covering and sealed connection to work site with HEPA vacuum for vacuuming prior to exit) before construction begins. 3. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. 4. Seal holes, pipes, conduits, and punctures appropriately. 5. Construct anteroom and require all personnel to using a HEPA vacuum cleaner before leaving work site or they can wear cloth or paper coveralls that are removed each time they leave the work site. 6. All personnel entering work site are required to wear shoe covers. Shoe covers must be changed each time the worker exits the work area. 7. Do not remove barriers from work area until completed project is inspected by Biological Safety and/ or Infection Control and thoroughly cleaned by contractor | <ol style="list-style-type: none"> 1. Remove barrier material carefully to minimize spreading of dirt and debris associated with construction. 2. Contain construction waste before transport in tightly covered containers. 3. Cover transport receptacles or carts. Tape covering unless solid lid. 4. Vacuum work area with HEPA filtered vacuums. 5. Wet mop area with disinfectant. 6. Facilities Services Remove isolation of HVAC system in areas where work is being performed 7. Housekeeping may be contacted for terminal cleaning before patient care resumes. |
|-----------------|---|---|

Steps 1-3 Adapted with permission V Kennedy, B Barnard, St Luke Episcopal Hospital, Houston TX; C Fine, CA
Steps 4-14 Adapted with permission Fairview University Medical Center, Minneapolis MN by ECSI Inc 2001
Forms modified and provided courtesy of J Bartley, ECSI Inc 2002

Step 4. Identify the areas surrounding the project area, assessing potential impact

| Unit Below | Unit Above | Lateral | Lateral | Behind | Front |
|------------|------------|------------|------------|------------|------------|
| Risk Group | Risk Group | Risk Group | Risk Group | Risk Group | Risk Group |

Step 5. Identify specific site of activity eq, patient rooms, medication room, etc.

Step 6. Identify issues related to: ventilation, plumbing, electrical in terms of the occurrence of probable outages.

Step 7. Identify containment measures, using prior assessment, What types of barriers? Eg, solids wall barriers); Will HEPA filtration be required?

(Note: Renovation/construction area shall be isolated from the occupied areas during construction and shall be negative with respect to surrounding areas)

Step 8. Consider potential risk of water damage. Is there a risk due to compromising structural integrity? (eg, wall, ceiling, roof)

Step 9. Work hours: Can or will the work be done during non-patient care hours?

Step 10. Do plans allow for adequate number of isolation/negative airflow rooms?

Step 11. Do the plans allow for the required number & type of handwashing sinks?

Step 12. Does the Infection Control staff agree with the minimum number of sinks for this project? (Verify against AIA Guidelines for types and area)

Step 13. Does the Infection Control staff agree with the plans relative to clean and soiled utility rooms?

Step 14. Plan to discuss the following containment issues with the project team.
Eg, traffic flow, housekeeping, debris removal (how and when)

Appendix: Identify and communicate the responsibility for project monitoring that includes infection control concerns and risks. The ICRA may be modified throughout the project. Revisions must be communicated to the Project Manager.

Steps 1-3 Adapted with permission V Kennedy, B Barnard, St Luke Episcopal Hospital, Houston TX; C Fine, CA
Steps 4-14 Adapted with permission Fairview University Medical Center, Minneapolis MN by ECSI Inc 2001
Modified and provided courtesy of J Bartley, ECSI Inc 2002

Appendix B

| Infection Control Construction Permit | | | | | |
|--|---|---|--|----|------------------------------|
| | | | | | Permit No: |
| Location of Construction: | | | Project Start Date: | | |
| Project Coordinator: | | | Estimated Duration: | | |
| Contractor Performing Work: | | | Permit Expiration Date: | | |
| Supervisor: | | | Telephone: | | |
| YES | NO | CONSTRUCTION ACTIVITY | YES | NO | INFECTION CONTROL RISK GROUP |
| | | TYPE A: Inspection, non-invasive activity | | | GROUP 1: Low Risk |
| | | TYPE B: Small scale, short duration, moderate to high levels | | | GROUP 2: Medium Risk |
| | | TYPE C: Activity generates moderate to high levels of dust, requires greater than 1 work shift for completion | | | GROUP 3: Medium/High Risk |
| | | TYPE D: Major demolition and constructive activities requiring consecutive work shifts | | | GROUP 4: Highest Risk |
| CLASS I Date: Initial: | 1. Execute work by methods to minimize raising dust from construction operations. 2. Immediately replace any ceiling tile displaced for visual inspection. | | 3. Minor Demolition for Remodeling. | | |
| CLASS II Date: Initial: | 1. Provide active means to prevent air-borne dust from dispersing into atmosphere 2. Water mist work surfaces to control dust while cutting. 3. Seal unused doors with duct tape. 4. Block off and seal air vents. 5. Wipe surfaces with disinfectant. | | 6. Contain construction waste before transport in tightly covered containers. 7. Wet mop and/or vacuum with HEPA filtered vacuum before leaving work area. 8. Place dust/tacky mat at entrance and exit of work area. 9. Remove or isolate HVAC system in areas where work is being performed. | | |
| CLASS III Date: Initial: | 1. Obtain infection control permit before construction begins 2. Isolate HVAC system in area where work is being done to prevent contamination of duct system. 3. Complete all critical barriers or implement control cube method before construction begins. 4. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. 5. Do not remove barriers from work area until complete project is thoroughly cleaned and visually inspected by Infection Control and Housekeeping. | | 6. Vacuum work area with HEPA filtered vacuums. 7. Wet mop with disinfectant 8. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction. 9. Contain construction waste before transport in tightly covered containers clean cart wheels prior to exiting construction area. 10. Cover transport receptacles or carts. Tape covering. 11. Remove or isolate HVAC system in areas where work is being performed. 12. Place dust/tacky mat at entrance and exit of work area. | | |
| CLASS IV Date: Initial: | 1. Obtain infection control permit before construction begins. 2. Isolate HVAC system in area where work is being done to prevent contamination of dust system. 3. Complete all critical barriers or implement control cube method before construction begins. 4. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. 5. Seal holes, pipes, conduits, and punctures appropriately. 6. Construct anteroom and require all personnel to pass through this room so they can be vacuumed using a HEPA vacuum cleaner before leaving work site or they can wear cloth or paper coveralls that are removed each time they leave the work site. | | 7. All personnel entering work site are required to wear shoe covers removed shoe covers before exiting work area. 8. Do not remove barriers from work area until completed project is thoroughly cleaned and visually inspected by Infection Control and Housekeeping. 9. Vacuum work area with HEPA filtered vacuums. 10. Wet mop with disinfectant. 11. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction. 12. Contain construction waste before transport in tightly covered containers clean cart wheels prior to exiting construction area. 13. Cover transport receptacles or carts. Tape covering. 14. Remove or isolate HVAC system in areas where work is being done. 15. Place dust/tacky mat at entrance and exit of work area. | | |
| Additional Requirements: | | | | | |
| Date | | | Initials | | |
| Date | | | Initials | | |
| Permit Request By:(Contractor/Facility Services) | | | Permit Authorized By:(Prospective Health) | | |
| Date: | | | Date: | | |
| Third Party Project Monitor: | | | | | |
| Date: | | | | | |

Steps 1-3 Adapted with permission V Kennedy, B Barnard, St Luke Episcopal Hospital, Houston TX; C Fine, CA
Steps 4-14 Adapted with permission Fairview University Medical Center, Minneapolis MN

Forms modified and provided courtesy of J Bartley, ECSI Inc

Appendix C
BRODY SCHOOL OF MEDICINE
Health Questionnaire for Construction Workers

Name _____ Date _____ Permit # _____

- 1. Do you have a fever? Yes No
- 2. Have you ever been told you have infectious Tuberculosis? Yes No
- 3. Do you live with or have you been in close contact with someone who was recently diagnosed with TB? (e.g. shelter, roommate, close friend, relative) Yes No
- 4. Do you have a cough that has lasted longer than three weeks? Yes No
- 5. Do you cough up blood or mucous? Yes No
- 6. Have you lost your appetite? Yes No
- 7. Have you lost weight (more than 10 pounds) in the last two months without trying to? Yes No
- 8. Do you have night sweats (need to change the sheets or your clothes because they are wet)? Yes No
- 9. Have you been in contact with anyone with measles, mumps or chicken pox in the past 2 weeks Yes No

I UNDERSTAND THAT IF I EXPERIENCE ANY OF THE ABOVE SYMPTOMS, I AM NOT TO WORK AT THIS SITE UNTIL THE INFECTION OR SYMPTOMS HAVE RESOVED (OR IT HAS BEEN OVER 3 WEEKS FOR #9).

Signature

Site supervisor use (initial one):

- _____ I have reviewed and cleared this visitor to Brody School of Medicine for duration of project. An identification badge with name and date and number has been issued to this worker.
- _____ I am unable to clear this visitor due to a potential infectious risk to patients.

RETURN TO PROSPECTIVE HEALTH

Appendix D

BRODY SCHOOL OF MEDICINE (Escuela de Medicina de Brody) Cuestionario de la salud para los Trabajadores de Construcción

Nombre _____ Fecha _____ Permitter _____

1. Usted tiene fiebre? _____ Sí _____ No
2. Le han dicho alguna vez que tiene tuberculosis infecciosa?
_____ Sí _____ No
3. Usted vive o ha estado en contacto cercano con alguien que fue diagnosticado con tuberculosis recientemente? (por ejemplo, compañero de asilo, compañero de cuarto, amigo cercano, familiar) _____ Sí _____ No
4. Usted ha tenido tos que ha durado mas de tres semanas?
_____ Sí _____ No
5. Usted a tosido con sangre o moco? _____ Sí _____ No
6. Usted ha perdido su apetito? _____ Sí _____ No
7. Usted ha perdido peso (mas de 10 libras) en los últimos meses sin tratar?
_____ Sí _____ No
8. Usted Suda en la noche (necesita cambiar las sabanas o su ropa porque están mojadas)?
9. Usted ha estado en contacto con alguien que tiene varicela, sarampión o paperas?
_____ Sí _____ No

YO ENTIENDO QUE SI EH EXPERIMENTADO ALGUNO DE LOS SÍNTOMAS ANTES MENCIONADOS, NO DEBO DE TRABAJAR EN ESTE LUGAR HASTA QUE LA INFECCIÓN O LOS SÍNTOMAS SE HAYAN CURADO (O QUE HAYA PASADO MAS DE 3 SEMANAS DE HABER ESTADO EN CONTACTO CON ALGUIEN QUE HAYA TENIDO VARICELA, SARAMPIÓN Y PAPERAS)

Firma

Site supervisor use (initial one):

_____ I have reviewed and cleared this visitor to Brody School of Medicine for duration of project. An identification badge with name and date and number has been issued to this worker.

_____ I am unable to clear this visitor due to a potential infectious risk to patients.

VOLVER A LA PROSPECTIVA SALUD