

Table 19.1. Reservoirs of Infectious Agents in the Environment

Reservoir	Associated Pathogens	Transmission	Significance	Prevention/Control
Air filters <sup>a</sup>	<i>Aspergillus</i>	Airborne	Moderate <sup>b</sup>	Replace soiled filters periodically
Chutes	<i>Pseudomonas</i> , <i>Staphylococci</i>	Airborne	Low	Proper design and placement
False ceilings <sup>a</sup>	<i>Rhizopus</i>	Airborne	Low	Barrier protection during reconstruction
Fireproof materials <sup>a</sup>	<i>Aspergillus</i>	Airborne	Low	Add fungicide to moist material
Humidifiers/nebulizers <sup>a</sup>	<i>Acinetobacter</i> , <i>Legionella</i> , <i>Pseudomonas</i>	Airborne, large droplet	High	Avoid when possible; use sterile water; disinfect between use
Outside construction <sup>a</sup> plus inadequate ventilation	<i>Rhizopus</i> , <i>Aspergillus</i>	Airborne	High	Use at least 95% efficiency filters in hospital; filter all hospital air
Pigeon droppings <sup>a</sup>	<i>Aspergillus</i>	Airborne	Low	Maintain filter efficiency; filter all hospital air
Inhaled medications	<i>Pseudomonas</i> , <i>Klebsiella</i> , <i>Serratia</i>	Inhalation	Moderate	Sterile preparation by pharmacy
Showers	<i>Legionella</i>	Inhalation	Low	Prohibit in immunocompromised patients
Ventilators <sup>a</sup>	<i>Pseudomonas</i>	Inhalation	Moderate	Follow current CDC guidelines
Bronchoscopes	<i>Serratia</i> , <i>Pseudomonas</i> , <i>Mycobacteria</i>	Contact	Moderate	Pseudoepidemics common; follow disinfection guidelines
Contaminated germicides	<i>Pseudomonas</i>	Contact	High	Avoid extrinsic contamination and seek verification of manufacturer's microbiocidal efficacy claims.
Dialysis water	GNR	Contact	Moderate	Follow guidelines: dialysate $\leq$ 2000 organisms/ml; water $\leq$ 200 organisms/ml
ECG electrodes	<i>S. aureus</i> , GNR	Contact	None	Disinfect after use or use disposable leads
Elasticized bandages	<i>Zygomycetes</i>	Contact	Moderate	Avoid in immunocompromised patients or over nonintact skin
Electronic thermometers	<i>C. difficile</i>	Contact	Low	Probe cover, disinfect each day
Endoscopes	<i>Salmonella</i> , <i>Pseudomonas</i>	Contact	High	Follow proper disinfection procedures
Faucet aerators	<i>Pseudomonas</i>	Contact, large droplet	Low	No precautions necessary
Ice baths	<i>Staphylococcus</i> , <i>Ewingella</i>	Contact	Moderate	Avoid direct contact with ice to cool IV solution/syringes; use closed system for thermofiltration

Intraaortic balloon pump	<i>Pseudomonas</i>	Contact	Low	Add germicide to water reservoir
Mattresses	<i>Pseudomonas</i> , <i>Acinetobacter</i>	Contact	Moderate	Use intact plastic cover, disinfect between patients
Plaster	<i>Pseudomonas</i> , <i>Bacillus</i> , <i>Cunninghamella</i> , <i>Clostridia</i>	Contact	Moderate	Use judiciously in immunocompromised patients or over nonintact skin
Potable water	<i>Pseudomonas</i> , <i>Mycobacteria</i> , <i>Flavobacteria</i> , <i>Serratia</i> , <i>Acinetobacter</i> , <i>Legionella</i>	Contact	Moderate	Follow public health guidelines
Pressure transducers	<i>Pseudomonas</i> , <i>Enterobacter</i> , <i>Serratia</i>	Contact	Moderate	Disinfect transducer between patients and replace disposable dome; use good aseptic technique
Sinks	<i>Pseudomonas</i>	Contact, large droplet	Low	Use separate sinks for handwashing and disposal of contaminated fluids
Suction apparatus	<i>Klebsiella</i> , <i>Salmonella</i> , <i>Pseudomonas</i> , <i>Proteus</i>	Contact, large droplet	Low	Avoid backflow; avoid aerosolization; disinfect between patient use
Thermometers (glass) Tub immersion	<i>Salmonella</i> <i>Pseudomonas</i>	Contact Contact	Moderate (rectal only) Moderate	Disinfect between use Add germicide to water; drain and disinfect after each use
Urine-measuring devices	<i>Serratia</i>	Contact	Moderate	Disinfect between patients, good handwashing
Water baths	<i>Pseudomonas</i> , <i>Acinetobacter</i>	Contact	Moderate	Add germicide to water bath or use plastic overwrap
Electric breast pumps	<i>Pseudomonas</i> , <i>Klebsiella</i> , <i>Serratia</i>	Ingestion	Moderate	Follow guidelines
Enteral feeds	GNR	Ingestion	Low	Use sterile commercial feeds or aseptically prepared feeds; refrigerate; minimize manipulation; use closed administration set
Food <sup>a</sup>	<i>Salmonella</i> , <i>S. aureus</i> , <i>Clostridia</i> , <i>Vibrios</i> , hepatitis A, Norwalk virus	Ingestion	High	Follow local health guidelines

(continued)

Table 19.1. (continued)

Reservoir	Associated Pathogens	Transmission	Significance	Prevention/Control
Ice/ice machines	<i>Legionella</i> , <i>Enterobacter</i> , <i>Pseudomonas</i> , <i>Salmonella</i>	Ingestion, Contact	Moderate	Periodic cleaning
Air-fluidized beds	—	—	None	Follow manufacturer's recommendations
Carpets	—	—	None	Prudent to avoid in areas of heavy soiling
Flowers	GNR	—	None	Prudent to avoid in the ICU and immunocompromised patients' rooms
Fresh vegetables <sup>a</sup>	Aerobic gram-negative rods, <i>Listeria</i>	—	None	Prudent to avoid in immunocompromised patients
Pets	<i>Salmonella</i>	—	None	Prudent to avoid in hospital setting (except seeing eye dogs)
Stethoscopes	<i>Staphylococci</i>	—	None	Prudent to clean periodically with alcohol
Toilets	—	—	None	Utilize good hand washing
Medical waste	—	—	None	Follow state and federal regulations

<sup>a</sup>Discussed elsewhere in book.

<sup>b</sup>High, multiple well-described outbreaks due to this reservoir; moderate, occasional well-described outbreaks; low, rare well-described outbreaks; none, actual infection not demonstrated; GNR, gram-negative rods.

Reference

Rutala WA and Weber DJ. 1993. Environmental Issues and Nosocomial Infections. In Wenzel RP, editor: Prevention and Control of Nosocomial Infections. Williams and Wilkins, pp. 420-449.

