

Biological Agent Reference Sheet (BARS)

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BIOLOGICAL AGENT REFERENCE SHEET

Staphylococcus aureus

CHARACTERISTICS	
<i>Morphology</i>	Gram-positive cocci, usually occurs in clusters, non-spore forming, non-motile, coagulase positive, facultative anaerobes.
<i>Growth Conditions</i>	Tryptic Soy Broth

HEALTH HAZARDS	
<i>Host Range</i>	Humans, wild and domestic animals
<i>Modes of Transmission</i>	Ingestion of food containing enterotoxins, contact with nasal carriers, contact with draining lesions or purulent discharges, also spread by person-to-person contact; Indirectly by contact with fomites; Indirectly or directly by contact with infected animals
<i>Signs and Symptoms</i>	<i>Accidental ingestion:</i> violent onset of severe nausea, cramps, vomiting, and diarrhea if preformed enterotoxin is present <i>Surface infections:</i> impetigo, folliculitis, abscesses, boils, infected lacerations <i>Systemic infections:</i> onset of fever, headache, myalgia, can progress to endocarditis, meningitis, septic arthritis, pneumonia, osteomyelitis, sepsis
<i>Infectious Dose</i>	Virulence varies for different strains
<i>Incubation Period</i>	30 minutes-8 hours when consuming contaminated food with enterotoxin. Otherwise, typically 4 – 10 days; disease may not occur until several months after colonization of mucosal surfaces.

MEDICAL PRECAUTIONS / TREATMENT	
<i>Prophylaxis</i>	Hand-hygiene; Elimination of nasal carriage by using topical mupirocin. Mupirocin also eliminates transient hand carriage by eliminating the mucosal reservoir
<i>Vaccines</i>	None
<i>Treatment</i>	Incision and drainage for localized skin infections; antibiotic therapy for severe infections; Many strains resistant to antibiotics; Sensitivity must be determined for each strain
<i>Surveillance</i>	Monitor for signs of food poisoning when ingestion occurs. Monitor for skin inflammation; isolation of organism from wound, blood, CSF, or urine.
<i>Emory Requirements</i>	Report all exposures

LABORATORY HAZARDS	
<i>Laboratory Acquired Infections (LAIs)</i>	29 reported cases up to 1973 with 1 death. Most common cause of laboratory infection was accidental self-exposure via the mucous membranes by touching contaminated hands to face or eyes.
<i>Sources</i>	Contaminated food, blood, abscesses, lesion exudates, CSF, respiratory specimen, feces, and urine

SUPPLEMENTAL REFERENCES	
<i>Canadian MSDS</i>	http://www.phac-aspc.gc.ca/lab-bio/res/psds-ftss/staphylococcus-aureus-eng.php
<i>BMBL: 5th Edition</i>	http://www.cdc.gov/OD/ohs/biosfty/bmb15/BMBL_5th_Edition_n.pdf
<i>CDC Guidelines</i>	http://www.cdc.gov/hai/organisms/staph.html

CONTAINMENT REQUIREMENTS	
<i>BSL-2</i>	For all activities involving known or potentially infected cultures
<i>BSL-3</i>	Activities with high potential for aerosol or droplet production and activities using large quantities of <i>S. aureus</i>
<i>ABSL-2</i>	For all procedures utilizing infected animals
<i>ABSL-3</i>	For all procedures with high potential for aerosol or droplet production

SPILL PROCEDURES	
<i>Small</i>	Notify others working in the lab. Allow aerosols to settle. Don appropriate PPE. Cover area of the spill with paper towels and apply an EPA registered disinfectant, working from the perimeter towards the center. Allow 30 minutes of contact time before disposal and cleanup of spill materials.
<i>Large</i>	Contact Emory's Biosafety Officer (404-727-8863), the EHSO Office (404-727-5922), or The Spill Response Team (404-727-2888).

EXPOSURE PROCEDURES		
<i>Mucous membrane</i>	Flush eyes, mouth or nose for 15 minutes at eyewash station.	
<i>Other Exposure</i>	Wash area with soap and water for 15 minutes.	
<i>Reporting</i>	Immediately report incident to supervisor, complete an employee incident report in PeopleSoft.	
<i>Medical Follow up</i>	<i>7am-4pm (OIM):</i> EUH (404-686-7941) EUHM (404-686-7106) WW (404-728-6431)	<i>After Hours:</i> OIM NP On Call 404-686-5500 PIC# 50464
	<i>Needle Stick (OIM):</i> EUH (404-686-8587) EUHM (404-686-2352)	<i>Yerkes:</i> Maureen Thompson Office (404-727-8012) Cell (404-275-0963)

VIABILITY	
<i>Disinfection</i>	70% ethanol, chlorohexadine, 1% sodium hypochlorite, 2% glutaraldehyde, formaldehyde, .25% benzalkonium chloride
<i>Inactivation</i>	Sensitive to dry heat. Dry Heat (160-170°C for at least 1 hour).
<i>Survival Outside Host</i>	Carcass and organs – 42 days; Skin – 30 minutes to 38 days; meat products – 60 days; floor – less than 7 days; glassware – 46 hours; sunlight – 17 hours; UV light – 7 hours

PERSONAL PROTECTIVE EQUIPMENT (PPE)	
<i>Minimum PPE Requirements</i>	At minimum, personnel are required to don gloves, closed toed shoes, lab coat, and appropriate face and eye protection prior to working with <i>S. aureus</i> . Additional PPE may be required depending on lab specific SOPs.
<i>Additional Precautions</i>	Avoid injuries from contaminated sharp instruments. Avoid bites and scratches from infected animals. Avoid direct contact with open skin or lesions of skin.