

Bacterial Pathogens

“Diseases”

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<i>Disease</i>	<i>Pathogen</i>	<i>Signs & Symptoms</i>	<i>Transmission</i>	<i>Antimicrobial drugs</i>
Postoperative wound infection	- <i>Staphylococcus aureus</i> - <i>Enterococcus</i>		-during surgeries, if the surgeon is not wearing a mask. -then patients touch the surgery site and infection spread	-Benzyl penicillin if the strain is sensitive -Cloxacillin or Methicillin is used against β -lactamase producing strains -Vancomycin for infections with MRSA strains
Staphylococcal Toxic Shock Syndrome (STSS)	<i>staphylococcus aureus</i> (that produce TSST)	fever, hypotension, myalgia, vomiting, diarrhoea, mucosal hyperemia and erythematous rash	*in the vagina of menstruating woman who uses highly absorbent vaginal tampons so called: Menstrual associated STSS	
Staphylococcal Scalded Skin Syndrome (SSSS)	<i>staphylococcus aureus</i> (Exfoliative toxin)	outer layer of epidermis gets separated from the underlying tissues		
Skin Infections: Folliculitis Furuncle (boil) Abscess Carbuncle	<i>staphylococcus aureus</i>	- Folliculitis : small, red, around hair - Furuncle : tenderness, pus, رأس ابيض صغير - Carbuncle : eat underlying tissues	-start as normal flora, then invades wound site	

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stitch abscesses	<i>-Staphylococcus epidermidis</i>	red pain	-during surgeries, if the surgeon is not wearing a mask. -then patients touch the surgery site and infection spread	
bacteraemia	<i>-Staphylococcus epidermidis</i>	-Fever -hypotension -Gastrointestinal symptoms (abdominal pain, nausea, vomiting, diarrhea)	growth on implanted foreign bodies such as artificial valves, shunts, intravascular catheters and prosthetic appliances	
	<i>-Streptococcus pyogenes</i> <i>-Enterococcus</i> <i>-Streptococcus Pneumonia</i> <i>-Neisseria gonorrhoeae</i> <i>-Haemophilus influenzae</i> <i>-pseudomonads aeruginosa</i> <i>-Salmoella Typhi</i>			
Endocarditis	<i>-staphylococcus epidermidis</i> <i>-Enterococcus</i>		drug addicts -unsterilized needles -sharing needles	

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Urinary tract infections	-staphylococcus saprophyticus <i>(*mostly in sexually active young women)</i> -Enterococcus	-dysuria (painful urination) -frequent urination		saprophyticus is resistant to Novobiocin
	-pseudomonads aeruginosa		indwelling urinary catheters	
Dental carries	<i>Streptococcus mutans</i> (<i>A viridans streptococci</i>)	tooth decay تسوس الأسنان		
pharyngitis (strep throat) <i>*90% of cases of pharyngitis</i>	<i>Streptococcus pyogenes</i>	-sore throat (difficulty in swallowing) and pain -swelling on neck -fever -tiredness		
Impetigo	<i>Streptococcus pyogenes</i>	Small red spots around mouth		
Scarlet fever-rash	<i>Streptococcus pyogenes</i>	begins on the chest and spreads across the body		

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Pyoderma	<i>Streptococcus pyogenes</i>	pus-producing lesion that usually occurs on the face, arms, or legs		
Necrotizing fasciitis	<i>Streptococcus pyogenes</i>	toxin production destroys tissues and eventually muscle and fat tissue (flesh eating bacteria)		
Rheumatic fever	<i>Streptococcus pyogenes</i>			
Glomerulonephritits	<i>Streptococcus pyogenes</i>	Antigens accumulate in the kidney's pores, causing the kidney to lose its ability to filter		
Pneumonia	<i>Streptococcus Pneumonia</i>	<ul style="list-style-type: none"> -Coughing with hemoptysis -Fever -Dyspnea (short breath) -Chest pain -Fluids in lungs 		

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Sinusitis	- <i>Streptococcus Pneumonia</i> - <i>Haemophilus influenzae b</i>	-Severe headache -Runny nose	via respiratory droplets, or direct contact with contaminated secretions	for Hib: -Vaccination -effective 3rd generation cephalosporin
Otitis media	- <i>Streptococcus Pneumonia</i> - <i>Haemophilus influenzae b</i>	-Severe pain in ear -Fluid accumulate		
Neonatal disease in the form of: -pneumonia -meningitis -bacteremia	<i>Streptococcus agalactiae</i>	-Early onset in those less than 7 days old -High mortality rate	Vertical transmission of the organism from the mother يعني يكون بالvagina لدى الام، وعند الولادة ينتقل للطفل	making a cesarean section delivery can prevent this ولادة قيصرية
Neonatal disease in the form of: -meningitis	<i>Streptococcus agalactiae</i>	-Stiff neck -loss of some motor and sensory functions -No normal reflex	-Late-onset infection between 1 week and 3 months after birth -Mortality rate is not as high as early-onset	
Some Infections: -Systemic -Cutaneous -UTI	<i>Streptococcus agalactiae</i>			

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Urethritis	<i>Neisseria gonorrhoeae</i>	<ul style="list-style-type: none"> -purulent discharge -dysuria (painful urination) -acute and symptomatic after 2-5 day incubation period 	sexual contact	ceftriaxone
Cervicitis	<i>Neisseria gonorrhoeae</i>	<ul style="list-style-type: none"> -mild pain -discharge -dysurea -mostly asymptomatic 	sexual contact	ceftriaxone
Pelvic Inflammatory Disease	<i>Neisseria gonorrhoeae</i>	<ul style="list-style-type: none"> -ectopic pregnancy -infertility 	sexual contact	ceftriaxone
Disseminated Gonococcal Infection: bacteremia	<i>Neisseria gonorrhoeae</i>		sexual contact	ceftriaxone

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Meningitis	<p>1-<i>Streptococcus Pneumonia</i> 2-<i>Neisseria meningitidis</i></p> <p>-Hib (pre vaccination) -<i>Listeria monocytogenes</i></p>	<p>-Fever -Fatigue -Weakness</p> <p>-CNS: convulsion, motor disability, loss of consciousness</p> <p>-Thrombocytopenia results in bleeding and skin petchiae</p> <p>-Disseminated intravascular coagulation (DIC)</p> <p>*Fatal if not treated early (death within 6 hours of initial presentation)</p>	<p>by inhalation of respiratory droplets through close contacts with infectious person</p>	<p>بالترتيب حسب الاقوى:</p> <p>-Cephalosporins -Chloramphenicol -Pencillin(if sensitive)</p> <p>**Vaccination to prevent this: Polyvalent vaccine containing serogroups A, C, Y, and W135</p>

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<p>whooping Cough (Pertussis)</p>	<p><i>-Bordetella pertussis</i></p>	<p>-Catarrhal Stage 1-2 weeks: runny nose, sneezing, low fever, and a mild cough (common mistaken for cold) -Paroxysmal Stage 1-6 weeks: whooping cough, which consists of bursts or paroxysms of numerous, rapid coughs, that end with a long inspiratory effort with high pitched whoop and rarely using intercostal muscles for breathing</p>	<p>-Very contagious -By direct contact of respiratory secretions -Resides in upper airway pathways, mostly the trachea and bronchi</p>	<p>-Antibiotic Therapy: Erythromycin Azithromycin Clarithromycin</p> <p>Vaccination: DTaP</p>
<p>Pulmonary infections</p>	<p><i>-pseudomonads aeruginosa</i></p>		<p>common in cystic fibrosis patients</p>	
<p>Primary skin infections</p>	<p><i>-pseudomonads aeruginosa</i></p>		<p>-Opportunistic infections of existing wounds (e.g., burns) -infections of hair follicles</p>	
<p>Ear infections "swimmer's ear"</p>	<p><i>-pseudomonads aeruginosa</i></p>	<p>-mild irritation of external ear -invasive destruction of cranial bones</p>	<p>Swimming pools</p>	

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Eye infections	<i>-pseudomonads aeruginosa</i>		-contact lens wearer -Opportunistic infections of exposed, mildly damaged corneas	
Diarrhea	<i>enterotoxigenic (ETEC)</i> <i>enteropathogenic (EPEC)</i> <i>enteroinvasive (EIEC)</i> <i>enterohemorrhagic(EHEC)</i> <i>enteroaggregative (EAEC)</i>		-person-to-person contact -contaminated water -contaminated food	
Traveler diarrhea	<i>ETEC</i>	-Watery diarrhea -not invasive	-High infecting dose (p2p is unusual) -Food and water contamination, animals not involved	1.TMP-SMX
Acute or chronic diarrhea in infants	<i>EPEC</i>	changes in the cell morphology (pedestals)	-Feco-oral route -Low infecting dose in infant -High infecting dose in adult	(trimethoprim/ sulfamethoxazole 2.fluoroquinolones
Prolonged watery diarrhea >14d (Chronic)	<i>EAEC</i>	watery diarrhea and blood mucus		

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Shigelosis	<i>EIEC</i>	Dysentery usually with blood	<ul style="list-style-type: none"> -Contaminated food and water -High infection dose (low p2p) 	<ol style="list-style-type: none"> 1.TMP-SMX 2.fluoroquinolones 3.Antimotility agents
HUS (hemolytic uremic syndrome)	<i>EHEC-> O157:H7</i>	<ul style="list-style-type: none"> -Oliguria احتباس البول -Edema -Pallor -Renal failure -Thrombocytopenia -progressing to the triad of microangiopathic hemolytic anemia -mortality rate is 5% 	<ul style="list-style-type: none"> -Person to person -By animal (cattle) -Low infection dose (100) -Hamburger (under cooked) -More in developed countries 	<ol style="list-style-type: none"> 1.TMP-SMX 2.fluoroquinolones 3.Antimotility agents <ul style="list-style-type: none"> -Requiring transfusion and hemodialysis for survival *30% of those who survive suffer sequelae such as: renal impairment or hypertension

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Hemorrhagic colitis	<i>EHEC</i> -> <i>O157:H7</i>	<ul style="list-style-type: none"> -Crampy abdominal pain -Little or no fever -Bloody diarrhea -HUS -Capillary thrombosis -Inflammation of the colonic mucosa 	<ul style="list-style-type: none"> -Person to person -By animal (cattle) -Low infection dose (100) -Hamburger (uncooked) -More in developed countries 	<ul style="list-style-type: none"> 1.TMP-SMX 2.fluoroquinolones 3.Antimotility agents 4.Hemodialysis
glomerular swelling	<i>EHEC</i> -> <i>O157:H7</i>	deposition of fibrin and platelets in the microvasculature		

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<p>Mild Gastroenteritis</p>	<p><i>Salmonella enterica (Non-Typhi)</i></p>	<ul style="list-style-type: none"> -inflammatory response -Abdominal pain -Fever -Diarrhea 	<ul style="list-style-type: none"> -Transmission from animal to humans through improper food handling -Industrialized societies 	<ul style="list-style-type: none"> -The use of antimicrobial is restricted to: *those with severe infections *underlying risk factors, particularly children
<p>Typhoid fever (Enteric fever)</p> <p>multiorgan</p>	<p><i>-Salmoella Typhi</i> <i>-Paratyphi (A, B, C)</i></p>	<ul style="list-style-type: none"> -Fever associated with a headache -Slow pulse -Elevated temperature -Faint rash (rose spots): on the abdomen and chest -Hemorrhage (perforations of terminal ileum or proximal colon at the site of necrotic Peyer patches (after 2 weeks or more)) -Constipation -Myocarditis -Encephalopathy -Intravascular coagulation -Involvement of the mesenteric lymph nodes, liver, and spleen -Diarrhea (late stage) 	<ul style="list-style-type: none"> -fecal–oral route -Chronic carriers of serotype Typhi -In HUMANS only 	

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Shigellosis	<i>Shigella dysenteriae</i> <i>type A1</i> (<i>Shiga bacillus</i>)	<ul style="list-style-type: none"> -inflammatory response -mucosal ulceration -abscess formation -dysentery (inflammatory, consisting of small-volume stools containing WBCs, RBCs, bacteria) -HUS 	<ul style="list-style-type: none"> -fecal–oral route -strictly human disease -person to person contact -extremely low infecting dose -secondary attack -contaminated food or water 	<ul style="list-style-type: none"> -Ciprofloxacin -Ceftriaxone -Azithromycin <p style="color: red; text-align: center;">Antispasmodic agents may aggravate the condition and are contraindicated in shigellosis and other invasive diarrheas</p>
Dysentery syndrome	<i>Shigella dysenteriae</i> <i>type A1</i> (<i>Shiga bacillus</i>)	<ul style="list-style-type: none"> -Cramps -Painful straining to pass stools (tenesmus), -A frequent, small-volume, bloody, mucoid fecal discharge 		

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Diphtheria	<i>Corynebacterium diphtheriae</i>	<ul style="list-style-type: none"> -Inflammation and Necrosis in the throat, pharynx and larynx -Gray-white pseudomembrane -Myocarditis -High Fatality -Cervical adenitis (bull neck) -Mechanical obstruction -Cardiac enlargement -Arrhythmias -CHF (Congestive heart failure) 	<ul style="list-style-type: none"> -Highly infectious -Droplets (larger than 5 microns in size) 	Triple Vaccine, DTP: given to children at 2, 4, and 6 months of age
Listeriosis (Invasive Infection)	<i>Listeria monocytogenes</i>	Intrauterine infection	-Transmitted transplacentally	Ampicillin TMP-SMX
Abortion	<ul style="list-style-type: none"> -<i>Listeria monocytogenes</i> -<i>Clostridium tetani</i> 			Ampicillin TMP-SMX

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Vomiting & Diarrhea	<i>Bacillus cereus</i>		Food-poisoning	conservative, no need for antibiotics
Septicemia (Sepsis)	<i>Bacillus subtilis</i>		in Infants and in Immunocompromised Patients	
	<i>Bacillus anthracis</i>		-By Inhalation -High Fatality (Biological War Agent)	
Cutaneous Anthrax (Wound Infection)	<i>Bacillus subtilis</i> <i>Bacillus anthracis</i>	-2-5 day erythematous papule -7-10 day ulcer(malignant pustule)	from animals and its products	
Pulmonary Anthrax		-Distress -Cyanosis 1-5 day -Fever cough -Edema -Hemorrhagic anthrax -Meningitis		

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Botulism	<i>Clostridium botulinum</i>	<p>-symptoms begin 18-36 hours after toxin ingestion:</p> <ul style="list-style-type: none"> -weakness -Dizziness -Dryness mouth -Nausea -Neurologic features.. <p>blurred vision, inability to swallow, difficulty in speech, weakness of skeletal muscles and Respiratory Paralysis</p> <p>-act on NM junction: Inhibit release of acetylcholine</p>	<ul style="list-style-type: none"> -Home canned, green bean, fish, mushroom -Infant honey cans 	<ul style="list-style-type: none"> -ABC -Antitoxin
Tetanus	<i>Clostridium tetani</i>	<ul style="list-style-type: none"> -Effect inhibitory neuron -Flaccid paralysis -1st: masseter muscle : enable to open mouth (lock jaw) or trismus 	<ul style="list-style-type: none"> -Wound: puncture wound with a splinter -highly fatal 	
Spasm	<i>Clostridium tetani</i>	<ul style="list-style-type: none"> -Spasmodic paralysis 		

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Gas gangren	<i>Clostridium perfringens</i>		<ul style="list-style-type: none"> -Traumatic wound and muscele damage -Compound wound -Bullet wound 	
Food poisoning	<i>Clostridium perfringens</i>	Intense Watery diarrhea, but No Fever	-contaminated food	
Antibiotic Associated diarrhea	<i>Clostridium difficile</i>	<ul style="list-style-type: none"> -Pseudomembraneuse Colitis -Bloody Diarrhea -Lethal inflammation of colon -Toxic megacolon 	10 Days after anti- biotic: (Lincomycin-Clindymicin, Cephalosporines)	<ul style="list-style-type: none"> 1-Stop Antibiotics 2-Give: metronidazol Vancomycin