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Microbial Etiology of Postoperative Spinal Fusion Infections and Factors Associated with Gram-Negative Infections, United States, 2021–2022

Appendix

Appendix Table. Pathogens Associated with Spinal Fusion Surgical Site Infections

Organism	Count
<i>Achromobacter xylosoxidans</i>	3
<i>Acinetobacter</i>	6
<i>Acinetobacter baumannii</i>	20
<i>Acinetobacter calcoaceticus</i>	2
<i>Acinetobacter calcoaceticus-baumannii</i> complex	4
<i>Acinetobacter lwoffii</i>	1
<i>Acinetobacter pittii</i>	3
<i>Acinetobacter radioresistens</i>	4
<i>Actinomyces</i>	4
<i>Actinomyces israelii</i>	1
<i>Actinomyces neuii</i>	2
<i>Actinomyces odontolyticus</i>	1
<i>Actinomyces radingae</i>	1
<i>Actinotignum schaalii</i>	2
<i>Aerococcus urinae</i>	1
<i>Aeromonas</i>	1
<i>Aeromonas hydrophila</i> complex	2
Anaerobe	3
Anaerobic Gram-negative bacillus	1
Anaerobic Gram-positive bacillus	3
Anaerobic Gram-positive coccus	6
<i>Anaerococcus</i>	3
<i>Anaerococcus vaginalis</i>	2
<i>Aspergillus fumigatus</i>	2
<i>Bacillus</i>	10
<i>Bacillus cereus</i>	3
<i>Bacillus cereus</i> group	2
<i>Bacillus</i> , not <i>B. anthracis</i>	4
<i>Bacteroides</i>	4
<i>Bacteroides caccae</i>	1
<i>Bacteroides fragilis</i>	39
<i>Bacteroides fragilis</i> group	8
<i>Bacteroides ovatus</i>	7
<i>Bacteroides thetaiotaomicron</i>	8
<i>Bacteroides vulgatus</i>	2
Beta-hemolytic <i>streptococcus</i>	13
Beta-hemolytic <i>Streptococcus</i> , group A	3
Beta-hemolytic <i>streptococcus</i> , non-Group A, non-Group B	2
<i>Bipolaris</i>	1

Organism	Count
<i>Burkholderia cepacia</i>	1
<i>Candida albicans</i>	110
<i>Candida auris</i>	2
<i>Candida dubliniensis</i>	5
<i>Candida glabrata</i>	16
<i>Candida guilliermondii</i>	1
<i>Candida lusitanae</i>	1
<i>Candida metapsilosis</i>	1
<i>Candida orthopsilosis</i>	1
<i>Candida parapsilosis</i>	21
<i>Candida tropicalis</i>	6
<i>Capnocytophaga</i>	1
<i>Chryseomonas luteola</i>	1
<i>Citrobacter</i>	1
<i>Citrobacter amalonaticus</i>	1
<i>Citrobacter braakii</i>	4
<i>Citrobacter freundii</i>	24
<i>Citrobacter koseri</i>	37
<i>Cladosporium</i>	4
<i>Clostridium bifermentans</i>	3
<i>Clostridium perfringens</i>	3
<i>Coliform bacteria</i>	2
<i>Corynebacterium</i>	47
<i>Corynebacterium amycolatum</i>	7
<i>Corynebacterium coyleae</i>	3
<i>Corynebacterium glucuronolyticum</i>	2
<i>Corynebacterium jeikeium</i>	4
<i>Corynebacterium striatum</i>	43
<i>Corynebacterium tuberculostrictum</i>	4
<i>Corynebacterium, not C. jeikeium</i>	2
<i>Curtobacterium</i>	3
<i>Curtobacterium albidum</i>	1
<i>Cutibacterium</i>	39
<i>Cutibacterium acnes</i>	242
Diphtheroids	29
Diphtheroids, aerobic	1
<i>Enterobacter</i>	5
<i>Enterobacter amnigenus</i>	1
<i>Enterobacter asburiae</i>	2
<i>Enterobacter cloacae</i>	129
<i>Enterobacter cloacae complex</i>	155
<i>Enterobacter hormaechei</i>	3
<i>Enterococcus</i>	25
<i>Enterococcus avium</i>	6
<i>Enterococcus faecalis</i>	253
<i>Enterococcus faecium</i>	75
<i>Enterococcus gallinarum</i>	2
Enteropathogenic <i>Escherichia coli</i>	1
<i>Escherichia coli</i>	579
<i>Escherichia vulneris</i>	1
<i>Finnegoldia magna</i>	35
<i>Fungi</i>	1
<i>Fusobacterium nucleatum</i>	4
<i>Globicatella sanguinis</i>	1
Gram-negative bacillus	17
Gram-negative bacillus, fermentative	2
Gram-positive bacillus	8
Gram-positive coccus	23
<i>Granulicatella adiacens</i>	5
<i>Granulicatella elegans</i>	1
<i>Hemophilus</i>	1
<i>Hemophilus parainfluenzae</i>	8
<i>Hafnia alvei</i>	3
<i>Klebsiella</i>	10
<i>Klebsiella aerogenes</i>	81
<i>Klebsiella oxytoca</i>	68
<i>Klebsiella pneumoniae</i>	281
<i>Klebsiella pneumoniae pneumoniae</i>	27
<i>Klebsiella variicola</i>	5

Organism	Count
<i>Kocuria</i>	1
<i>Lactobacillus</i>	11
<i>Lactobacillus casei</i>	1
<i>Leclercia adecarboxylata</i>	1
<i>Micrococcus luteus</i>	4
<i>Morganella morganii</i>	87
<i>Mycobacterium</i>	2
<i>Mycobacterium avium</i>	1
<i>Mycobacterium chelonae</i>	1
<i>Mycobacterium fortuitum</i>	3
<i>Mycobacterium smegmatis</i>	1
<i>Mycobacterium tuberculosis complex</i>	1
<i>Mycoplasma hominis</i>	4
<i>Neisseria</i>	1
<i>Ochrobactrum anthropi</i>	1
<i>Paenibacillus provencensis</i>	1
<i>Pantoea</i>	6
<i>Pantoea agglomerans</i>	4
<i>Parabacteroides distasonis</i>	1
<i>Pasteurella multocida multocida</i>	1
<i>Peptoniphilus</i>	3
<i>Peptoniphilus asaccharolyticus</i>	7
<i>Peptoniphilus harei</i>	4
<i>Peptostreptococcus</i>	9
<i>Prevotella</i>	15
<i>Prevotella bivia</i>	18
<i>Prevotella disiens</i>	3
<i>Prevotella intermedia</i>	1
<i>Prevotella melaninogenica</i>	3
<i>Propionibacterium</i>	21
<i>Propionibacterium avidum</i>	5
<i>Proteus</i>	4
<i>Proteus hauseri</i>	1
<i>Proteus mirabilis</i>	367
<i>Proteus penneri</i>	5
<i>Proteus vulgaris</i>	21
<i>Providencia rettgeri</i>	4
<i>Providencia stuartii</i>	3
<i>Pseudomonas</i>	6
<i>Pseudomonas aeruginosa</i>	523
<i>Pseudomonas fluorescens</i>	1
<i>Pseudomonas mendocina</i>	1
<i>Pseudomonas putida</i>	2
<i>Pseudomonas stutzeri</i>	2
<i>Raoultella ornithinolytica</i>	3
<i>Rhodotorula rubra</i>	1
<i>Rothia mucilaginosa</i>	1
<i>Salmonella</i>	1
<i>Serratia</i>	3
<i>Serratia liquefaciens</i>	1
<i>Serratia marcescens</i>	160
Small-colony-forming β -hemolytic group C streptococci	3
<i>Staphylococcus</i>	39
<i>Staphylococcus aureus</i>	2275
<i>Staphylococcus capitis</i>	23
<i>Staphylococcus capitis capitis</i>	2
<i>Staphylococcus caprae</i>	4
<i>Staphylococcus cohnii</i>	2
<i>Staphylococcus epidermidis</i>	536
<i>Staphylococcus hemolyticus</i>	15
<i>Staphylococcus hominis</i>	18
<i>Staphylococcus intermedius</i>	5
<i>Staphylococcus kloosii</i>	1
<i>Staphylococcus lugdunensis</i>	73
<i>Staphylococcus pettenkoferi</i>	1
<i>Staphylococcus pseudintermedius</i>	11
<i>Staphylococcus saccharolyticus</i>	7
<i>Staphylococcus saprophyticus</i>	2
<i>Staphylococcus saprophyticus saprophyticus</i>	1

Organism	Count
<i>Staphylococcus schleiferi</i>	5
<i>Staphylococcus sciuri</i>	1
<i>Staphylococcus simulans</i>	3
<i>Staphylococcus warneri</i>	6
<i>Staphylococcus</i> , coagulase negative	246
<i>Staphylococcus</i> , coagulase positive	3
<i>Stenotrophomonas maltophilia</i>	6
<i>Streptococcus</i>	12
<i>Streptococcus agalactiae</i> (group B streptococci)	63
<i>Streptococcus anginosus</i>	18
<i>Streptococcus anginosus</i> group	3
<i>Streptococcus constellatus</i>	10
<i>Streptococcus constellatus constellatus</i>	1
<i>Streptococcus dysgalactiae</i>	11
<i>Streptococcus dysgalactiae dysgalactiae</i>	1
<i>Streptococcus dysgalactiae equisimilis</i>	5
<i>Streptococcus gordonii</i>	1
<i>Streptococcus intermedius</i>	12
<i>Streptococcus mitis</i>	2
<i>Streptococcus mitis</i> group	3
<i>Streptococcus oralis</i>	1
<i>Streptococcus parasanguinis</i>	2
<i>Streptococcus pneumoniae</i>	1
<i>Streptococcus pyogenes</i> (group A streptococci)	14
<i>Streptococcus salivarius</i>	1
<i>Streptococcus sanguinis</i>	2
<i>Streptococcus</i> , group C	5
<i>Streptococcus</i> , group G	1
<i>Veillonella</i>	2
<i>Veillonella parvula</i>	4
Viridans group streptococci	8
Yeast	13
<i>Abiotrophia</i>	1
<i>Abiotrophia defectiva</i>	1
<i>Acinetobacter ursingii</i>	2
<i>Actinomyces europaeus</i>	1
Alpha-hemolytic streptococcus	3
<i>Arcanobacterium hemolyticum</i>	1
<i>Bacteroides pyogenes</i>	1
<i>Brevundimonas</i>	1
<i>Campylobacter ureolyticus</i>	1
<i>Citrobacter werkmanii</i>	1
<i>Clostridium innocuum</i>	1
<i>Corynebacterium propinquum</i>	1
<i>Dermabacter hominis</i>	1
<i>Eggerthella lenta</i>	1
<i>Eikenella</i>	1
<i>Eikenella corrodens</i>	1
<i>Enterobacter cancerogenus</i>	1
<i>Enterococcus casseliflavus</i>	2
<i>Enterococcus raffinosus</i>	2
<i>Fingoldia</i>	1
Gamma (non)-hemolytic streptococcus	1
<i>Micrococcus</i>	2
<i>Oligella urethralis</i>	1
<i>Pluralibacter gergoviae</i>	1
<i>Prevotella buccae</i>	1
<i>Prevotella denticola</i>	2
<i>Prevotella oris</i>	1
<i>Propionibacterium granulosum</i>	1
<i>Raoultella</i>	1
<i>Rothia</i>	1
<i>Staphylococcus auricularis</i>	1
<i>Staphylococcus xylosus</i>	1
<i>Stenotrophomonas</i>	1
<i>Veillonella dispar</i>	1
<i>Actinomyces meyeri</i>	1
<i>Clostridium cadaveris</i>	1
<i>Corynebacterium aurimucosum</i>	2

Organism	Count
<i>Corynebacterium kroppenstedtii</i>	1
<i>Corynebacterium minutissimum</i>	1
<i>Fusobacterium</i>	1
<i>Fusobacterium necrophorum</i>	1
<i>Moraxella osloensis</i>	1
<i>Neisseria oralis</i>	1
<i>Peptostreptococcus anaerobius</i>	2
<i>Porphyromonas somerae</i>	2
<i>Staphylococcus hominis hominis</i>	2
<i>Staphylococcus pasteurii</i>	1
<i>Streptococcus gallolyticus</i>	1