REFERENCE #	CITATION	EVIDENCE TYPE	SAMPLE SIZE/ POPULATION	INTERVENTION(S)	CONTROL/ COMPARISON	OUTCOME MEASURE(S)	CONCLUSION(S)	CONSENSUS SCORE
1	Guideline for sterile technique. In: Guidelines for Perioperative Practice. Denver, CO: AORN, Inc; 2019:931-972.	Guideline	n/a	n/a	n/a	n/a	Provides guidance for sterile technique and wearing of masks.	IVA
2	Guideline for transmission-based precautions. In: Guidelines for Perioperative Practice. Denver, CO: AORN, Inc; 2019:1093-1120.	Guideline	n/a	n/a	n/a	n/a	Provides guidance for use of PPE, including wearing of masks.	IVA
3	Guideline for hand hygiene. In: In: Guidelines for Perioperative Practice. Denver, CO: AORN, Inc; 2019:289-314.	Guideline	n/a	n/a	n/a	n/a	Provides guidance for hand hygiene, nail polish, and wearing of rings, watches, and bracelets.	IVA
4	Background G. Laundry and bedding. Guidelines for Environmental Infection Control in Health-Care Facilities (2003). Centers for Disease Control and Prevention. https://www.cdc.gov/infectioncontrol/guidelines/environmental/background/laundry.html. Updated November 5, 2015. Accessed April 3, 2019.	Guideline	n/a	n/a	n/a	n/a	CDC guideline for laundering	IVA
5	Abu Radwan M, Ahmad M. The microorganisms on nurses' and health care workers' uniforms in the intensive care units. Clin Nurs Res. 2019:28(1):94-106.	Nonexperimental	115 HCWs in ICUs, 305 cultures	n/a	n/a	Microorganisms present	All uniforms carried bacteria. Potentially pathogenic organisms are carried on uniforms and can be transmitted to other people and objects in the environment.	IIIB
6	Colclasure VJ, Soderquist TJ, Lynch T, et al. Coliform bacteria, fabrics, and the environment. Am J Infect Control. 2015;43(2):154-158.	Quasi-experimental	Fabrics (100% cotton. Cotton blend and silk)	Inoculated with bacterial strains	N/A	Viability of coliform bacteria on the fabrics	Coliform bacteria adheres to fabrics for an extended period of time.	IIB
7	Davidson T, Lewandowski E, Smerecki M, et al. Taking your work home with you: potential risks of contaminated clothing and hair in the dental clinic and attitudes about infection control. Can J Infect Control. 2017;32(3):137-142.	Quasi-experimental	Sterile scrub swatches (12-at the waist and 10 at a hair band) dental staff members	swatches attached to staff members	N/A	Bacteria present and type	Significant amount of bacteria was found on both scrubs and in hair, some was pathogenic. Emphasized importance of laundering and covering hair to prevent cross contamination	IIB
8	Gupta P, Bairagi N, Priyadarshini R, Singh A, Chauhan D, Gupta D. Bacterial contamination of nurses' white coats after first and second shift. Am J Infect Control. 2017;45(1):86-88.	Quasi-experimental	10 polyester and 10 cotton blend swatches	Nurses wore the swatches during patient care	poly and poly cotton were compared	Microorganisms present	The microbial load on the poly/cotton blend had 60% higher bacteria than that on the poly fabric	IIC
9	Gupta P, Bairagi N, Priyadarshini R, Singh A, Chauhan D, Gupta D. Bacterial contamination of nurses' white coats made from polyester and polyester cotton blend fabrics. J Hosp Infect. 2016;94(1):92-94.	Quasi-experimental	180 swatches, poly/cotton blend and poly	Nurses wore patches on two shifts during patient care	poly/cotton blend and poly were compared	Microorganisms present	Contamination of the blend fabric was significantly higher than the poly, after the second shift the bacterial colonies increased on both types of fabrics, E coli being the most abundant and staph the second most abundant	IIC
10	Mitchell A, Spencer M, Edmiston Jr C, Edmiston CJ. Role of healthcare apparel and other healthcare textiles in the transmission of pathogens: a review of the literature. J Hosp Infect. 2015;90(4):285-292.	Literature Review	n/a	n/a	n/a	n/a	Illustrates that health care worker apparel is a vector for transmission of microorganisms.	VA

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11	Thom KA, Escobar D, Boutin MA, Zhan M, Harris AD, Johnson JK. Frequent contamination of nursing scrubs is associated with specific care activities. Am J Infect Control. 2018;46(5):503-506.	Quasi-experimental	90 HCWs and 720 scrub samples	Participants were given 4 sets of scrubs and randomized to which shift they should be worn. Scrubs were laundered at home. Sampling of the scrubs was done randomly in the last 4 hours of a 12 hour shift.	n/a	Microorganisms present	30% of the scrubs sampled were contaminated with bacteria. Scrubs are a potential reservoir for pathogenic organisms. Scrubs were my likely to be contaminated when caring for patients with a wound.	IIA
12	Sanon MA, Watkins S. Nurses' uniforms: how many bacteria do they carry after one shift? J Public Health Epidemiol. 2012;4(10):311-315.	Quasi-experimental	10 nurses working in a telemetry unit in one hospital	Nurses were given sterile scrub tops to wear on day or night shift while caring for patients (12 hours)	Sterile scrub top	Presence of pathogens	Pathogenic organisms were present on all of the tops, more on the night shift. Uniforms can be contaminated and health care workers are wearing them into the public environment with the potential to spread disease	IIC
13	Halliwell C. Nurses' uniforms: off the radar. A review of guidelines and laundering practices. Healthc Infect. 2012;17(1):18-24.	Literature Review	n/a	n/a	n/a	n/a	This lit review describes how uniforms, clothing, linen and inadequate laundering processes have been identified as the primary sources of contamination leading to infection. The paper introduced the concept that nurses' uniforms may act as a secondary source of contamination for hands.	VA
14	Perry C, Marshall R, Jones E. Bacterial contamination of uniforms. J Hosp Infect. 2001;48(3):238-241.	Nonexperimental	57 staff members on five wards	n/a	n/a	Bacterial counts on uniforms	Staphylococcus aureus, Clostridium difficile and vancomycin-resistant enterococci were detected on uniforms both before and after a span of duty. Staff should be provided with written guidance on home laundering of uniforms that should include a minimum temperature and laundering as a separate load.	IIIB
15	Goyal S, Khot SC, Ramachandran V, Shah KP, Musher DM. Bacterial contamination of medical providers' white coats and surgical scrubs: a systematic review. Am J Infect Control. 2019. doi: 10.1016/j.ajic.2019.01.012.	Systematic Review	22 articles, 16 cross-sectional studies, 4 RCTs, and 2 cohort studies	n/a	n/a	n/a	Provider attire is a potential source of pathogenic bacterial transmission in health care settings. There is limited data on the link between provider attire and health care associated infections. The review gave some guidance on strategies to reduce the spread of bacterial pathogens including MDROs that have the potential to cause HAIs.	IIIA

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16	Munk S, Johansen C, Stahnke LH, Adler-Nissen J. Microbial survival and odor in laundry. J Surfact Deterg. 2001:4(4)385-394.	Quasi-experimental	There were several experiments on at least 5 different fabric swatches	At least 3 or 4 experiments were conducted on the fabric swatches that looked at type of microorganism, whether it was removed by laundering.	Compared UK and US	Survival and transfer of microorganisms, odor of textile, effect if temperature and heated drying on survival of microorganisms, odor formation, and analysis	Microorganisms survive laundering at low temps in most commercial laundering facilities.	IIB
17	Nordstrom JM, Reynolds KA, Gerba CP. Comparison of bacteria on new, disposable, laundered, and unlaundered hospital scrubs. Am J Infect Control. 2012;40(6):539-543.	Nonexperimental	Scrubs	n/a	n/a	Number and identity of bacteria present	Home laundered scrubs had a significantly higher total bacterial count than facility laundered and found no significant difference in bacterial counts between hospital laundered, unused, or new disposable scrubs	IIIA
18	Callewaert C, Van Nevel S, Kerckhof FM, Granitsiotis MS, Boon N. Bacterial exchange in household washing machines. Front Microbiol. 2015;6:1381.	Nonexperimental	5 washing machines	n/a	Before and after the laundering process	Bacterial counts of wash water before	A microbiological exchange takes place in the washing machine.	IIIC
19	Gerba CP, Kennedy D. Enteric virus survival during household laundering and impact of disinfection with sodium hypochlorite. Appl Environ Microbiol. 2007;73(14):4425-4428.	Quasi-experimental	4 laundry swatches	Swatches inoculated with viruses	n/a	Virus concentration after washing in home laundry	Common laundry did not eliminate enteric and respiratory viruses from clothing.	IIB
20	Gattlen J, Amberg C, Zinn M, Mauclaire L. Biofilms isolated from washing machines from three continents and their tolerance to a standard detergent. Biofouling. 2010;26(8):873-882.	Nonexperimental	11 washing machines from four countries on three continents	n/a	n/a	Biofilms	There were 94 isolated strains, 30% were potential human pathogens. Different detergents were used and were insufficient to completely clean washing machine surfaces from cell debris and esopolymeric substances.	IIIB

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21	Wright SN, Gerry JS, Busowski MT, et al. Gordonia bronchialis sternal wound infection in 3 patients following open heart surgery: intraoperative transmission from a healthcare worker. Infect Control Hosp Epidemiol. 2012;33(12):1238-1241.	Case Report	Reported three cases of postoperative Gordonia bronchialis sternal infections after coronary artery bypass grafting surgery.	n/a	n/a	n/a	*G bronchialis* was isolated from the scrub attire, axilla, hands, and purse of a nurse anesthetist and was implicated as the cause of the SSIs. Cultures taken from her roommate, who was also a nurse, showed the same microorganism. After notification of the culture results, the nurse anesthetist discarded her front-loading washing machine. During the next year, the nurse anesthetist's and her roommate's scrub attire, hands, nares, and scalps tested negative for *G bronchialis* . The authors concluded that the home washing machine was the likely bacterial reservoir. Home laundering may not reliably kill all pathogens, and the pathogens may survive in the form of biofilm within the washing machine. Biofilms have been implicated in the malodor emitting from washing machines. The author recommended that hospital laundering of scrub attire be implemented as a measure to reduce patients' risk of developing an SSI. Further research is needed to demonstrate a causal relationship between home laundering and human disease.	VA
22	Lakdawala N, Pham J, Shah M, Holton J. Effectiveness of low-temperature domestic laundry on the decontamination of healthcare workers' uniforms. Infect Control Hosp Epidemiol. 2011;32(11):1103-1108.	Nonexperimental	10 nurses from different hospital wards	n/a	n/a	Presence of viable organisms	Concluded that at 140°F wash for 10 mins was sufficient to decontaminate hospital uniforms and reduce the bacterial load by at least a 7-log reduction.	IIIA
23	Patel SN, Murray-Leonard J, Wilson AP. Laundering of hospital staff uniforms at home. J Hosp Infect. 2006;62(1):89-93.	Quasi-experimental	10 fabric samples	5 bacterial inoculated swatches were laundered at 40°C using washing powder without bleach and 5 swatches were laundered at 60°C with the same washing powder without bleach	An uninoculated swatch washed at the same parameters	Total viable bacterial count	Concluded that even though a 104°F washing cycle did not remove S. aureus; adding sequential tumble drying or ironing did reduce the bacteria to an undetectable rate. Washing at 140°F produced a greater reduction in total viable organism count compared to the 140°F wash.	IIA
24	Al-Benna S. Laundering of theatre scrubs at home. J Perioper Pract. 2010;20(11):392-396.	Literature Review	n/a	n/a	n/a	n/a	There was little scientific evidence that facility laundering was better than home laundering but guidelines for home laundering should be established and followed.	VA

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25	ANSI/AAMI ST65:2008/(R)2013: Processing of Reusable Surgical Textiles for Use in Health Care Facilities. Arlington, VA: Association for the Advancement of Medical Instrumentation; 2013.	Guideline	n/a	n/a	n/a	n/a	Guideline for processing textiles	IVC
26	29 CFR 1910.1030: Bloodborne pathogens. Occupational Safety and Health Administration. https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=10051&p_table=STANDARDS. Accessed April 3, 2019.	Regulatory	n/a	n/a	n/a	n/a	OSHA Bloodborne Pathogen Standard	n/a
27	29 CFR 1910.132: General requirements. Occupational Safety and Health Administration. https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.132. Accessed April 3, 2019.	Regulatory	n/a	n/a	n/a	n/a	OSHA General Requirements	n/a
28	Tammelin A, Domicel P, Hambraeus A, Stahle E. Dispersal of methicillin-resistant Staphylococcus epidermidis by staff in an operating suite for thoracic and cardiovascular surgery: relation to skin carriage and clothing. J Hosp Infect. 2000;44(2):119-126.	Quasi-experimental	4 part study , hospital staff	Multiple tests in tightly woven scrubs	Conventional scrub suits	Dispersal of *Staphylococcus epidermidis*	Although tightly woven scrub suits significantly reduced the amount of bacteria shed into the air, the amount of MRSE was not significantly reduced.	IIC
29	Tammelin A, Hambraeus A, Stahle E. Source and route of methicillin-resistant Staphylococcus epidermidis transmitted to the surgical wound during cardio-thoracic surgery. Possibility of preventing wound contamination by use of special scrub suits. J Hosp Infect. 2001;47(4):266-276.	Nonexperimental	33 staff wearing conventional scrubs and 32 staff wearing special scrubs during CABG surgeries	n/a	Conventional scrubs (cotton/poly, 270x230 thread count per 10 cm) and special scrub suits (cotton/poly, 560x395 per 10 cm)	Bacteria present on wound, skin, hand and in the air	Wearing of the special scrub attire did not reduce the number of MRSE air samples when compared to conventional attire, demonstrating that a tighter woven scrub was not superior to conventional scrub attire (tightly woven) at decreasing air contamination.	IIIC
30	Andersen BM, Solheim N. Occlusive scrub suits in operating theaters during cataract surgery: effect on airborne contamination. Infect Control Hosp Epidemiol. 2002;23(4):218-220.	Nonexperimental	12 perioperative personnel	n/a	Cotton scrubs and scrubs made of 100% polypropylene	Airborne bacterial colony forming units present	There was a significant reduction in airborne bacteria when the occlusive scrub suits were worn	IIIC
31	Tammelin A, Ljungqvist B, Reinmüller B. Comparison of three distinct surgical clothing systems for protection from air-borne bacteria: a prospective observational study. Patient Saf Surg. 2012;6(1):23.	Nonexperimental	5-9 OR personnel during 21 orthopedic procedures, all wore 3 different scrub suits	n/a	2 polyester types and one mixed cotton/poly	Colony forming units in the air	Polyester had a better protective capacity than the cotton/poly.	IIIC
32	Tammelin A, Ljungqvist B, Reinmüller B. Single-use surgical clothing system for reduction of airborne bacteria in the operating room. J Hosp Infect. 2013;84(3):245-247.	Nonexperimental	10 operations and sampled in a dispersing chamber	n/a	Mixed material reusable scrubs (cotton/poly) and single use scrubs (polypropylene)	Colony forming units in the air	Counts of colony forming units were significantly lower when using single use clothing.	IIIC
33	Lidwell OM, Lowbury EJL, Whyte W, Blowers R, Stanley SJ, Lowe D. Airborne contamination of wounds in joint replacement operations: the relationship to sepsis rates. J Hosp Infect. 1983;4(2):111-131.	Nonexperimental	14 hospitals operating rooms joint replacement operations	n/a	Conventional operating rooms and ultraclean operating rooms	Mean air contamination of wounds	Good correlation between air contamination and wound contamination. Air was the route of contamination and was less in ultraclean air rooms.	IIIB

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34	Mariscal A, Lopez-Gigosos RM, Carnero-Varo M, Fernandez-Crehuet J. Antimicrobial effect of medical textiles containing bioactive fibres. Eur J Clin Microbiol Infect Dis. 2011;30(2):227-232.	Quasi-experimental	Laboratory	Fabric containing silver	Untreated fabric	Inhibition of bacterial growth (33 strains)	All strains except 2 had inhibition of growth at 72 hours	IIB
35	Chen-Yu JH, Eberhardt DM, Kincade DH. Antibacterial and laundering properties of AMS and PHMB as finishing agents on fabric for health care workers' uniforms. Clothing and Textiles Research Journal. 2007;25(3):258-272.	Quasi-experimental	12 experiments on 2 antibacterial fabrics	Before laundering and after 5, 10, and 25 laundering cycles	Control fabric that did not contain antibacterial properties	Tested the ability of the antimicrobial fabric to reduce levels of *Staphyloccous aureus* and *Klebsiella pneumoniae*	The antibacterial finishes provided a significant reduction of Staphylococcus aureus and Klebsiella pneumoniae. The researchers concluded that adding antibacterial finishes to fabric was an effective method of reducing bacterial contamination.	IIA
36	Kasuga E, Kawakami Y, Matsumoto T, et al. Bactericidal activities of woven cotton and nonwoven polypropylene fabrics coated with hydroxyapatite-binding silver/titanium dioxide ceramic nanocomposite "Earth-plus." Int J Nanomedicine. 2011;6:1937-1943.	Quasi-experimental	Woven cotton fabrics and nonwoven polypropylene fabrics coated with hydroxyapatite-binding silver/titanium dioxide ceramic composite	9 bacterial isolates were dropped onto the fabric	N/A	Amount of bacteria present on the fabrics	Found that bacterial cell counts of Staphylococcus aureus and Escherichia coli on both the woven and nonwoven fabrics decreased to below 2-log10 CFU/mL within six hours and were undetectable at the end of the 18 hour incubation period. Bacterial cell counts of Pseudomonas aeruginosa could not be detected after three to six hours. The researchers found that bacterial counts on the coated woven fabric decreased more rapidly than counts on the coated nonwoven fabric. The bacterial counts on the uncoated woven and nonwoven fabric did not decrease during the 18-hour incubation period.	IIB
37	Sun G, Qian L, Xu X. Antimicrobial and medical-use textiles. Textile Asia. 2001;32(9):33-35.	Nonexperimental	Laboratory	n/a	2 fabric types, cotton and poly/cotton treated with antibacterial properties	Tested against staph and e-coli	After a contact time of 2 minutes with the bacteria, the fabrics exhibited antibacterial properties resistant to staph and e coli	IIIB
38	Gerba CP, Sifuentes LY, Lopez GU, Abd-Elmaksoud S, Calabrese J, Tanner B. Wide-spectrum activity of a silver-impregnated fabric. Am J Infect Control. 2016;44(6):689-690.	Quasi-experimental	Laboratory, swatches were exposed to bacteria for 2, 4 and 24 hours	Silver impregnated cloth	Cotton fabric cloth that did not contain silver	Reduction of bacteria	The silver impregnated cloth exhibited a 3-log reduction of all of the microorganisms tested within 2 hours except MRSA, T. menta, C.diff and 2 viruses. Within 24 hours all vegetative bacteria had reduced by more than 4-logs and were virtually undetectable. C-Diff was the most resistant but decreased by almost 90% in 96 hours.	IIC
39	Bearman GM, Rosato A, Elam K, et al. A crossover trial of antimicrobial scrubs to reduce methicillin-resistant Staphylococcus aureus burden on healthcare worker apparel. Infect Control Hosp Epidemiol. 2012;33(3):268-275.	RCT	30 antimicrobial scrubs worn in an ICU	Antimicrobial scrubs	Untreated scrubs	Log reduction in MRSA, VRE, GNRs	Study scrubs were associated with a 4–7 mean log reduction in MRSA burden but not VRE or GNRs. A prospective trial is needed to measure the impact of antimicrobial impregnated apparel on MRSA transmission rates.	IA

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40	Boutin MA, Thom KA, Zhan M, Johnson JK. A randomized crossover trial to decrease bacterial contamination on hospital scrubs. Infect Control Hosp Epidemiol. 2014;35(11):1411-1413.	RCT	90 ICU HCWs uniforms, 720 samples	2 uniform sets treated with the antibacterial agent using a proprietary curing process	2 uniform sets that were untreated	Overall rate of scrub contamination with pathogenic bacteria (*Staphylococcus aureus* , *Enterococcus* species, or gram-negative bacteria)	Antimicrobial coating of scrubs was not effective in preventing bacterial contamination.	IA
41	Burden M, Keniston A, Frank MG, et al. Bacterial contamination of healthcare workers' uniforms: a randomized controlled trial of antimicrobial scrubs. J Hosp Med. 2013;8(7):380-385.	RCT	109 HCWs on internal medicine ward, uniforms	Antimicrobial scrubs	Standard cotton poly scrubs	Total bacteria count	No evidence that antimicrobial scrubs decreased bacterial contamination of scrubs or HCW skin.	IA
42	Condo C, Messi P, Anacarso I, et al. Antimicrobial activity of silver doped fabrics for the production of hospital uniforms. New Microbiol. 2015;38(4):551-558.	Quasi-experimental	Laboratory	Subjected to different bacterial strains	2 types of fabrics (plain weave and textile weave) poly/cotton impregnated with silver colloid	Growth of bacteria on the fabrics	Significant differences were not observed between the antimicrobial scrubs and regular scrubs when worn by hospital staff	IIA
43	Anderson DJ, Addison R, Lokhnygina Y, et al. The Antimicrobial Scrub Contamination and Transmission (ASCOT) trial: a three-arm, blinded, randomized controlled trial with crossover design to determine the efficacy of antimicrobial-impregnated scrubs in preventing healthcare provider contamination. Infect Control Hosp Epidemiol. 2017;38(10):1147-1154.	RCT	40 ICU nurses wearing control and intervention scrubs	Surgical scrubs with silver alloy imbedded (one arm) surgical scrubs with organosilane based quaternary ammonium and hydrophobic fluoroacrylate copolymer emulsion (arm two)	Standard cotton poly scrubs	Total contamination of scrubs measured as the sum of CFUs on scrubs at each sampled location	Scrub type was not associated with a change in contamination of scrub clothing. Did not support the use of antimicrobial scrubs.	IA
44	Markel TA, Gormley T, Greeley D, Ostojic J, Wagner J. Wearing long sleeves while prepping a patient in the operating room decreases airborne contaminants. Am J Infect Control. 2018;46(4):369-374.	Quasi-experimental	3 hospitals, 3 OR's	Mock skin prep procedures performed with covered arms	Bare arms	Airborne contamination and microbes present	Presence of particulates and shedding was decreased when arms were covered	IIB
45	Chow CJ, Hayes LM, Saltzman DA. The impact of perioperative warm-up jackets on surgical site infection: cost without benefit? Am J Surg. 2016;212(5):863-865.	Organizational Experience	26,300 procedures	n/a	n/a	n/a	The researchers looked at SSI rates before and after implementing cover jackets for ALL perioperative personnel in their facility There was no statistical significance in SSI rates before and after policy implementation. They spent approximately $1000 a month on laundering costs.	VB
46	Elmously A, Gray KD, Michelassi F, et al. Operating room attire policy and healthcare cost: favoring evidence over action for prevention of surgical site infections. J Am Coll Surg. 2019;228(1):98-106.	Organizational Experience	25,170 patients	n/a	n/a	n/a	SSI rates before and after implementing AORN "policy" No difference in SSI rates before and after the policy and the cost of attire for one person went from $.07-0.12 to $1.11 to 1.38 after the policy change.	VB

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47	Treakle AM, Thom KA, Furuno JP, Strauss SM, Harris AD, Perencevich EN. Bacterial contamination of health care workers' white coats. Am J Infect Control. 2009;37(2):101-105.	Nonexperimental	149 Grand Rounds attendees white coats	n/a	n/a	Contamination of nosocomial pathogens	23% of the white coats tested were contaminated with staph aureus, 18% were MRSA, none were contaminated with VRE.	IIIB
48	Munoz-Price LS, Arheart KL, Lubarsky DA, Birnbach DJ. Differential laundering practices of white coats and scrubs among health care professionals. Am J Infect Control. 2013;41(6):565-567.	Qualitative	Survey of physician laundering practices	n/a	n/a	Laundering practices	Recommended that lab coats be laundered regularly (ie, at least once or twice per week) and whenever dirty or soiled with body fluids. The researchers also recommended that the lab coats be laundered in hot water with bleach to reduce or eliminate potential pathogens.	IIIA
49	Munoz-Price LS, Arheart KL, Mills JP, et al. Associations between bacterial contamination of health care workers' hands and contamination of white coats and scrubs. Am J Infect Control. 2012;40(9):e245-e248.	Organizational Experience	119 HCW hands and uniforms	n/a	n/a	n/a	Contamination of the hands was associated with a greater likelihood of the presence of pathogens on white coats. Further studies are needed.	VA
50	Kaplan C, Mendiola R, Ndjatou V, Chapnick E, Minkoff H. The role of covering gowns in reducing rates of bacterial contamination of scrub suits. Am J Obstet Gynecol. 2003;188(5):1154-1155.	Quasi-experimental	75 clinicians wearing a covering garment outside designated area, or outside of the hospital	Sampling the fabric after the clinicians participated in routine clinical activity	Not wearing a covering garment	Bacterial growth	150 samples were taken from the uniforms that were worn underneath the covering garment. There was no significant difference in groups that wore a covering garment compared to those that did not. Wearing of a covering garment did not reduce rates of scrub contamination.	IIC
51	Loh W, Ng VV, Holton J. Bacterial flora on the white coats of medical students. J Hosp Infect. 2000;45(1):65-68.	Nonexperimental	100 medical students	n/a	n/a	Survey to determine when white coats were worn and the degree of bacterial contamination	White coats of medical students were more likely to be contaminated at points of frequent contact with patients such as the sleeve and pocket. The survey demonstrated that the white coats were only laundered occasionally. Study supports the view that the white coat is a potential source of contamination.	IIIB
52	Haun N, Hooper-Lane C, Safdar N. Healthcare personnel attire and devices as fomites: a systematic review. Infect Control Hosp Epidemiol. 2016;37(11):1367-1373.	Systematic Review	72 studies, 3 prospective, 4 correlational, 65 cross-sectional	n/a	n/a	n/a	72 individual studies assessed contamination of a variety of items, including white coats, neckties, stethoscopes, and mobile electronic devices, with varied pathogens including Staphylococcus aureus, including methicillin-resistant S. aureus gram-negative rods, and enterococci. contaminating rates were from 0-32%. Four studies evaluated for possible connection between healthcare personnel contaminants and clinical isolates with no unequivocally direct link identified.	IIIA
53	Du ZY, Zhang MX, Shi MH, Zhou HQ, Yu Y. Bacterial contamination of medical uniforms: a cross-sectional study from Suzhou City, China. J Pak Med Assoc. 2017;67(11):1740-1742.	Nonexperimental	122 white coats	n/a	n/a	Presence of microorganisms	61.5% of the coats were contaminated with bacteria. They are a reservoir for bacteria and potentially a source of infections.	IIIB

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54	Summers MM, Lynch PF, Black T. Hair as a reservoir of staphylococci. J Clin Pathol. 1965;18:13-15.	Nonexperimental	Patients and staff	n/a	n/a	Presence of staph aureus	In hospital staff and in-patients, the staphylococci were highly resistant to antibiotics, and phage types usually classified and "hospital staphylococci predominated. There were more staph post op wound infections in hair carriers than in non-carriers, and in three cases the staph was the same phage type as those that were isolated pre-operatively from the hair.	IIIB
55	Spruce L. Surgical head coverings: a literature review. AORN J. 2017;106(4):306-316.	Literature Review	n/a	n/a	n/a	n/a	There is no conclusive evidence that covering the hair prevents SSI. The literature has established risk to patients who are exposed to the skin and hair of individuals working in the periop setting and case studies that have demonstrated a causative relationship between exposure and SSIs.	VA
56	Boyce JM. Evidence in support of covering the hair of OR personnel. AORN J. 2014;99(1):4-8.	Expert Opinion	n/a	n/a	n/a	n/a	Supports covering hair.	VA
57	Berrios-Torres SI, Umscheid CA, Bratzler DW, et al; Healthcare Infection Control Practices Advisory Committee. Centers for Disease Control and Prevention guideline for the prevention of surgical site infection, 2017 (Supplement). https://jamanetwork.com/journals/jamasurgery/fullarticle/2623725. Accessed April 4, 2019.	Guideline	n/a	n/a	n/a	n/a	Supplementary to CDC SSI guideline- wear a mask, fully cover hair and facial hair, change scrubs when contaminated.	IVA
58	Haskins IN, Prabhu AS, Krpata DM, et al. Is there an association between surgeon hat type and 30-day wound events following ventral hernia repair? Hernia. 2017;21(4):495-503.	Nonexperimental	68 surgeons	n/a	n/a	SSIs	Type of hat worn did not correlate with SSI rates.	IIIC
59	Kothari SN, Anderson MJ, Borgert AJ, Kallies KJ, Kowalski TJ. Bouffant vs skull cap and impact on surgical site infection: does operating room headwear really matter? J Am Coll Surg. 2018;227(2):198-202.	Nonexperimental	1543 patients	n/a	n/a	SSIs	Type of hat worn did not correlate with SSI rates.	IIIA
60	Rios-Diaz AJ, Chevrollier G, Witmer H, et al. The art and science of surgery: do the data support the banning of surgical skull caps? Surgery. 2018;164(5):921-925.	Organizational Experience	1,901 patients, 1950 procedures 767 before and 1,183 after implementing headwear policy	n/a	n/a	n/a	The strict implementation of bouffant or helmet headwear, with the removal of skull caps was not associated with decreased SSIs for clean and clean-contaminated cases. Further evidence is required to assess the validity of headwear guidelines.	VB
61	Mastro TDMD, Farley TAMD, Elliott JAPD, et al. An outbreak of surgical-wound infections due to group A streptococcus carried on the scalp. N Engl J Med. 1990;323(14):968-972.	Case Report	n/a	n/a	n/a	n/a	Report of a prolonged outbreak of group A B-hemolytic streptococcus postoperative SSIs in 20 patients during a 3 year period. Culturing of samples from personnel identified a surgical tech as the carrier. The tech did not directly participate in the procedures but had entered the OR and was shedding the organism from lesions on her scalp.	VA

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62	Rahav G, Pitlik S, Amitai Z, et al. An outbreak of Mycobacterium jacuzzii infection following insertion of breast implants. Clin Infect Dis. 2006;43(7):823-830.	Case Report	n/a	n/a	n/a	n/a	Surgeon who was carrying a new strain of mycobacteria was the cause of the outbreak. The case report identified the colonization of human skin and human-to-human transmission.	VA
63	Richet HM, Craven PC, Brown JM, et al. A cluster of Rhodococcus (Gordona) bronchialis sternal-wound infections after coronary-artery bypass surgery. N Engl J Med. 1991;324(2):104-109.	Case Report	n/a	n/a	n/a	n/a	A hospital outbreak of SSIs caused by a single genetically distinct strain of R. bronchialis that was traced to an operating room nurse. The nurse contaminated her fingers while touching her scalp and the contaminated the water from the water bath for the activated clotting time test during the surgery.	VB
64	Scheflan M, Wixtrom RN. Over troubled water: an outbreak of infection due to a new species of Mycobacterium following implant-based breast surgery. Plast Reconstr Surg. 2016;137(1):97-105.	Case Report	n/a	n/a	n/a	n/a	An SSI outbreak caused by a surgeon who was carrying a new strain of bacteria (mycobacterium jacuzzi) on his facial skin, eyebrows and hair contracted from a hot tub. 10 patients undergoing breast implant surgery at an outpatient surgery center developed SSIs.	VA
65	Dineen P, Drusin L. Epidemics of postoperative wound infections associated with hair carriers. Lancet. 1973;302(7839):1157-1159.	Case Report	n/a	n/a	n/a	n/a	A surgeon was associated with 11 severe SSIs and a staff nurse o a hospital ward was associated with 5 minor SSIs.	VA
66	Mase K, Hasegawa T, Horii T, et al. Firm adherence of Staphylococcus aureus and Staphylococcus epidermidis to human hair and effect of detergent treatment. Microbiol Immunol. 2000;44(8):653-656.	Quasi-experimental	3 hair samples	Inoculated with bacterial strains and then washed with detergent	Compared to hair that did not get washed with the detergent	Presence of bacteria after washing with the detergent	Bacteria were present on the surface of the cuticles of the hair and the attached bacteria were not completely removed by repeated washings with detergents demonstrating that the hair could be a source of bacterial contamination.	IIC
67	Parry JA, Karau MJ, Aho JM, Taunton M, Patel R. To beard or not to beard? Bacterial shedding among surgeons. Orthopedics. 2016;39(2):e290-e294.	Quasi-experimental	10 clean shaven and 10 bearded OR male personnel, length was 10mm, 10-19mm and 20mm or longer	A series of facial motions were done while wearing a mask, unmasked or a hood	Clean shaven compared to bearded	Bacterial shedding	While wearing a mask, bearded and clean shaven did not appear to have an increased likelihood of shedding. Hoods did not decrease the amount of shedding compared with masks alone.	IIA
68	McLure HA, Mannam M, Talboys CA, Azadian BS, Yentis SM. The effect of facial hair and sex on the dispersal of bacteria below a masked subject. Anaesthesia. 2000;55(2):173-176.	Quasi-experimental	10 bearded men	Participants wore masks and were asked to perform facial movements to wiggle the mask	10 clean shaven men and 10 female subjects	Amount of bacterial shedding	Wiggling the mask significantly increased the degree of bacterial shedding onto agar plates 15 cm below the lips in bearded men and females but not in clean shaven men. At rest without a mask, wiggling the bearded men shed significantly more bacteria than clean shaven men or women. to reduce the contamination of the sterile filed when masks are worn, females and beaded men should avoid wiggling the face mask and bearded men may consider removing the beards.	IIC
69	Wakeam E, Hernandez RA, Rivera Morales D, Finlayson SRG, Klompas M, Zinner MJ. Bacterial ecology of hospital workers' facial hair: a cross-sectional study. J Hosp Infect. 2014;87(1):63-67.	Nonexperimental	408 subjects	n/a	199 bearded men, 199 clean shaven men	Presence of bacteria	Both groups shed bacteria at high rates. The clean shaven group had a higher colonization rate for staph and MRSA. Recommended standard infection control practices to prevent contamination during sterile procedures.	IIIA

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70	Markel TA, Gormley T, Greeley D, et al. Hats off: a study of different operating room headgear assessed by environmental quality indicators. J Am Coll Surg. 2017;225(5):573-581.	Quasi-experimental	2 hospitals, 7 people. One OR in each facility.	1 hour long mock surgeries were done, disposable bouffants and disposable skull caps were worn	Cloth skull cap	Air particle counts, microbiologic air counts, and hat permeability, particle transmission and pore size	Disposable bouffants are not superior to either type of skull cap. Did not look at cloth bouffants.	IIC
71	Kanayama Katsuse A, Takishima M, Nagano M, et al. Cross-contamination of bacteria-colonized pierced earring holes and fingers in nurses is a potential source of health care-associated infections. Am J Infect Control. 2019;47(1):78-81.	Nonexperimental	200 nurses from 12 hospital wards	n/a	128 with pierced earring holes and 72 without a pierced earring hole	Presence of microorganisms on earlobes and fingers	Pierced earlobes can be a source of health care associated infections via cross-transmission of bacteria from earlobe holes to fingers.	IIIB
72	Rashid T, Vonville H, Hasan I, Garey KW. Mechanisms for floor surfaces or environmental ground contamination to cause human infection: a systematic review. Epidemiol Infect. 2017;145(1):347-357.	Systematic Review	30 studies, 19 examined direct pathways of transmission and 11, indirect pathways; 20 were observational and 10 were experimental studies.	n/a	n/a	n/a	Shoe soles are vectors of transmission.	IIIA
73	Amirfeyz R, Tasker A, Ali S, Bowker K, Blom A. Theatre shoes—a link in the common pathway of postoperative wound infection? Ann R Coll Surg Engl. 2007;89(6):605-608.	Nonexperimental	Shoes worn only in the surgical suite 40 at the beginning of the shift and 40 at the end of the shift	n/a	Shoes worn outside (40)	Number of bacteria	The results of the study demonstrated that 98% of the outdoor shoes were contaminated with coagulase-negative staphylococci, coliform, and *Bacillus* species compared with 56% of the shoes worn only in the surgical suite. Bacteria on the perioperative floor may contribute up to 15% of CFUs dispersed into the air by walking.	IIIB
74	29 CFR 1910.136. Personal protective equipment: foot protection. Occupational Safety and Health Administration. https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=standards&p_id=9786. Accessed April 3, 2019.	Regulatory	n/a	n/a	n/a	n/a	The OSHA regulations for foot protection require the use of protective footwear that meets ASTM F2414 standards in areas where there is a danger of foot injuries from falling or rolling objects or objects piercing the sole.	n/a
75	ASTM F2412-18a. Standard Test Methods for Foot Protection. West Conshohocken, PA: ASTM International; 2018.	Guideline	n/a	n/a	n/a	n/a	Guideline for testing shoes and degree of protection	IVC
76	Bell J, Collins JW, Dalsey E, Sublet V. Slip, Trip, and Fall Prevention for Healthcare Workers (DHHS [NIOSH] Publication Number 2011-123). Washington, DC: National Institute for Occupational Safety and Health; 2010.	Guideline	n/a	n/a	n/a	n/a	NIOSH Guideline for slips, trips and falls, wear non-skid shoes	IVB
77	Barr J, Siegel D. Dangers of dermatologic surgery: protect your feet. Dermatol Surg. 2004;30(12 Pt 1):1495-1497.	Nonexperimental	15 types of shoes were tested in a lab setting, chicken thighs were used to simulate feet	n/a	n/a	The degree of penetration of the shoes from the simulated scalpel.	60% of the shoes allowed the simulated scalpel to penetrate the chicken thigh. Six types were effective in preventing penetration of the simulated scalpel, sneaker suede, suede with inner mesh lining, leather with inner canvas lining, nonpliable leather, rubber with inner lining and new rubber shoes.	IIIB

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78	Caldwell NW, Guymon CH, Aden JK, Akers KS, Mann-Salinas E. Bacterial contamination of burn unit employee identity cards. J Burn Care Res. 2016;37(5):e470-e475.	Nonexperimental	60 HCWs (58 common access cards and 60 ID cards) in a burn unit	n/a	n/a	Presence of pathogenic organisms	75% contamination rate but contamination rate decreased when badges were cleaned. Recommended routine weekly cleaning of badges.	IIIA
79	Kotsanas D, Scott C, Gillespie EE, Korman TM, Stuart RL. What's hanging around your neck? Pathogenic bacteria on identity badges and lanyards. Med J Aust. 2008;188(1):5-8.	Nonexperimental	71 HCWs and 12 infection control staff	n/a	n/a	Presence of pathogenic bacteria on lanyards	The microorganisms recovered from lanyards and identification badges were methicillin-sensitive Staphylococcus aureus, MRSA, Enterococcus species, and Enterobacteriaceae. The researchers concluded that identification badges should be clipped on and disinfected regularly and that lanyards should be changed frequently or not be worn.	IIIB
80	Fafliora E, Bampalis VG, Lazarou N, et al. Bacterial contamination of medical devices in a Greek emergency department: impact of physicians' cleaning habits. Am J Infect Control. 2014;42(7):807-809.	Nonexperimental	88 physician stethoscopes working in a tertiary hospital	n/a	n/a	Bacteria present and type	All of the stethoscopes were contaminated.	IIIB
81	Rao DA, Aman A, Muhammad Mubeen S, Shah A. Bacterial contamination and stethoscope disinfection practices: a cross-sectional survey of healthcare workers in Karachi, Pakistan. Trop Doct. 2017;47(3):226-230.	Nonexperimental	Survey of 200 healthcare workers in a hospital in Pakistan; cultures of stethoscopes	n/a	n/a	Bacteria present and type	Most stethoscopes were contaminated, need for routine cleaning and penalties if they are not.	IIIB
82	Wood MW, Lund RC, Stevenson KB. Bacterial contamination of stethoscopes with antimicrobial diaphragm covers. Am J Infect Control. 2007;35(4):263-266.	Nonexperimental	74 clinicians	n/a	n/a	Surface cultures and questionnaire	Surface colony counts were significantly lower for uncovered stethoscope diaphragms (mean, 71.4 colonies) compared with covers used #1 week (mean, 246.5 colonies) and those .1 week old (mean, 335.6 colonies). After controlling for type of clinician, frequency of stethoscope cleaning, and method of stethoscope cleaning, only the presence of a stethoscope cover was associated with higher colony counts (P <.0001).	IIIB
83	Bernard L, Kereveur A, Durand D, et al. Bacterial contamination of hospital physicians' stethoscopes. Infect Control Hosp Epidemiol. 1999;20(9):626-628.	Nonexperimental	355 doctors in a general hospital	n/a	n/a	Presence of bacteria	Among the 355 stethoscopes tested, 234 carried different bacterial species; 31 carried potentially pathogenic bacteria. Although some bacteria deposited onto membranes could survive 6 to 18 hours, none survived after disinfection.	IIIB
84	Uneke CJ, Ogbonna A, Oyibo PG, Onu CM. Bacterial contamination of stethoscopes used by health workers: public health implications. J Infection Dev Ctries. 2010;4(7):436-441.	Nonexperimental	107 stethoscopes	n/a	n/a	Bacteria present on stethoscopes	Of the 107 stethoscopes surveyed, 84 (79%) were contaminated with bacteria; 59 (81%) of the contaminated stethoscopes belonged to physicians and 25 (74%) were from other health workers. Strict adherence to stethoscope disinfection practices by health workers can minimize cross-contamination and ensure improved patient safety in hospital environments.	IIIA

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85	Russell A, Secrest J, Schreeder C. Stethoscopes as a source of hospital-acquired methicillin-resistant Staphylococcus aureus. J Perianesth Nurs. 2012;27(2):82-87.	Quasi-experimental	141 stethoscopes	Cleaning the stethoscopes	Each stethoscope served as its own control	Bacterial growth before and after cleaning	Bacterial growth was noted in the precleaning group, but no MRSA colonies were detected. The post cleaning group had no bacterial growth. There was not enough data to statistically support that isopropyl alcohol is effective in decreasing bacterial counts; however, these findings suggest that current disinfection guidelines are effective in preventing MRSA colonization on stethoscopes in this setting.	IIA
86	Mehta AK, Halvosa JS, Gould CV, Steinberg JP. Efficacy of alcohol-based hand rubs in the disinfection of stethoscopes. Infect Control Hosp Epidemiol. 2010;31(8):870-872.	Quasi-experimental	84 stethoscopes	Pre and post test, cleaning stethoscopes with alcohol based hand rub	70% isopropyl alcohol	Bacteria present on stethoscopes	A single cleaning with alcohol based hand rub decreased bacteria by approximately 90%, 54% eradication of s. aureus. A single cleaning with an alcohol wipe wa.s more effective than the alcohol based hand rub. A single cleaning of the stethoscope with alcohol based hand rub followed by hand hygiene may be practical	IIB
87	Uneke CJ, Ogbonna A, Oyibo PG, Ekuma U. Bacteriological assessment of stethoscopes used by medical students in Nigeria: implications for nosocomial infection control. Healthc Q. 2009;12(3):132-138.	Nonexperimental	201 stethoscopes	n/a	n/a	Bacterial contamination	80.1% of the stethoscopes were contaminated. Stethoscopes that were cleaned with water or never cleaned had the highest rate of contamination. Those that were cleaned after each use and hand hygiene performed had the lowest rate of contamination.	IIIB
88	Bhatta DR, Gokhale S, Ansari MT, et al. Stethoscopes: a possible mode for transmission of nosocomial pathogens. J Clin Diagn Res. 2012;5(6):1173-1176.	Nonexperimental	58 stethoscopes	n/a	n/a	Bacteria present	Out of a total of 58 diaphragms, 52 (89.65%) were colonized by bacteria. Only 38 (65.51%) bells were found to be contaminated. Out of a total of 116 earpieces (58 left and 58 right), 84 (72.41%) were contaminated. The majority of the stethoscopes used by health care workers are contaminated with pathogenic as well as non-pathogenic bacterial agents and they may transmit nosocomial pathogens.	IIIB
89	Campos-Murguía A, León-Lara X, Muñoz JM, Macías AE, Álvarez JA. Stethoscopes as potential intrahospital carriers of pathogenic microorganisms. Am J Infect Control. 2014;42(1):82-83.	Nonexperimental	112 stethoscopes from 12 hospital departments	n/a	n/a	Bacterial colonization and presence of pathogenic bacteria	Stethoscope diaphragms are contaminated with bacteria, half of which was pathogenic. Recommend routine cleaning of stethoscopes with 70% alcohol, CHG or triclosan before and after patient use.	IIIB
90	Worster A, Tang PH, Srigley JA, Main CL. Examination of staphylococcal stethoscope contamination in the emergency department (pilot) study (EXSSCITED pilot study). Can J Emerg Med. 2011;13(4):239-244.	Nonexperimental	100 stethoscopes in Eds	n/a	n/a	Bacterial contamination	Fifty-four specimens grew coagulase-negative staphylococci and one grew methicillin-susceptible S. aureus. No MRSA was cultured. Only 8% of participants, all of whom were nurses, reported cleaning their stethoscope before or after each patient assessment.	IIIB

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91	Denholm JT, Levine A, Kerridge IH, Ashhurst-Smith C, Ferguson J, D'Este C. A microbiological survey of stethoscopes in Australian teaching hospitals: potential for nosocomial infection? Aust Infect Control. 2005;10(3):79.	Nonexperimental	250 stethoscopes, 77 doctors, 78 students and 95 ward based	n/a	n/a	Bacterial contamination	The study found that there were significantly more organisms isolated from personal stethoscopes than ward-base. There was no significant relationship between the frequency of stethoscope cleaning and degree of stethoscope contamination, nor was the amount of patients seen per day a significant factor. This study suggests that even regular cleaning of stethoscopes may be insufficient to prevent colonization with potentially pathogenic organisms, and that patients at high-risk for nosocomial infection should only be examined with stethoscopes that are restricted to single-patient use.	IIIA
92	Datta P, Rani H, Chander J, Gupta V. Bacterial contamination of mobile phones of health care workers. Indian J Med Microbiol. 2009;27(3):279-281.	Nonexperimental	200 health care workers mobile phones	n/a	n/a	Bacterial contamination	Of the 200 health care workers' mobile phones sampled, 144 (72%) were contaminated with bacteria, and 18% of those bacteria were MRSA. The researchers concluded that simple measures such as regular cleaning of cell phones and other hand-held electronic devices and improving hand hygiene may decrease patients' risk of acquiring HAIs from pathogens carried on personal mobile devices.	IIIC
93	Byrns G, Foong YC, Green M, et al. Mobile phones as a potential vehicle of infection in a hospital setting. J Occup Environ Hyg. 2015;12(10):D232-D235.	Nonexperimental	226 HCW mobile phones used in a regional hospital in Australia	n/a	n/a	Bacterial colonization and presence of pathogenic bacteria	While pathogenic bacteria are uncommon on mobile phones they are a possible source of bacteria in the hospital setting.	IIIB
94	Chang C, Chen S, Lu J, Chang C, Chang Y, Hsieh P. Nasal colonization and bacterial contamination of mobile phones carried by medical staff in the operating room. Plos One. 2017;12(5):e0175811.	Nonexperimental	216 cultures from 72 ortho OR staff members	n/a	n/a	Mobile phone contamination and colonization of staff members	There was a high rate of bacterial nasal colonization and mobile phone contamination. A mobile phone may be a reservoir for pathogen contamination in the OR.	IIIB
95	Khan A, Rao A, Reyes-Sacin C, et al. Use of portable electronic devices in a hospital setting and their potential for bacterial colonization. Am J Infect Control. 2015;43(3):286-288.	Nonexperimental	106 physician personal electronic devices	n/a	n/a	Presence of bacteria	All devices yielded at least 1 positive culture from the cover or screen. Devices can be colonized with a variety of bacteria.	IIIB
96	Kirkby S, Biggs C. Cell phones in the neonatal intensive care unit: How to eliminate unwanted germs. Adv Neonatal Care. 2016;16(6):404-409.	Organizational Experience	18 phones in use by nurses, physicians and parents in a NICU	n/a	n/a	Presence of bacteria	Every phone was contaminated with bacteria	VA
97	Lee YJ, Yoo CG, Lee CT, et al. Contamination rates between smart cell phones and non-smart cell phones of healthcare workers. J Hosp Med. 2013;8(3):144-147.	Nonexperimental	203 health care workers phones	n/a	Smart phones were compared with non-smart phones	Bacteria present and type	Smart phones had more bacteria than non-smart phones but all phones were contaminated, 1/4 of the bacteria were pathogenic.	IIIB

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98	Martínez-Gonzáles NE, Solorzano-Ibarra F, Cabrera-Díaz E, et al. Microbial contamination on cell phones used by undergraduate students. Can J Infect Control. 2017;32(4):211-216.	Nonexperimental	304 cell phones of undergraduate students	n/a	n/a	Presence of bacterial pathogens, yeasts, molds, e-coli, coliform and Enterobacter	Phones were a source of microbial contamination at various levels, recommended cleaning and disinfection	IIIB
99	Murgier J, Coste JF, Cavaignac E, et al. Microbial flora on cell-phones in an orthopedic surgery room before and after decontamination. Orthop Traumatol Surg Res. 2016;102(8):1093-1096.	Nonexperimental	52 health care worker cell phones in an ortho surgery	n/a	Compared before and after decontamination	CFUs	Cell phone contamination rate was 94% which significantly decreased after decontamination with a disinfectant	IIIB
100	Shakir IA, Patel NH, Chamberland RR, Kaar SG. Investigation of cell phones as a potential source of bacterial contamination in the operating room. J Bone Joint Surg (Am). 2015;97(3):225-231.	Nonexperimental	53 cell phones belonging to orthopedic surgeons	n/a	n/a	Presence of pathogenic bacteria	83% of the phones had the presence of pathogenic bacteria and are a potential source of nosocomial infections and should be cleaned more that once a week	IIIB