Survival on Dry Inanimate Surfaces

Pathogen: Bacteria	Survival on Dry Inanimate Surfaces (range from studies)
Acinetobacter	3 days to 5 months
Campylobacter jejuni	Up to 6 days
Clostridium difficile (spores)	5 months
Escherichia coli	1.5 hours to 16 months
Enterococcus spp. Including VRE and VSE	5 days to 4 months
Haemophilus influenza	12 days
Klebsiella spp.	2 hours to greater than 30 months
Mycobacterium tuberculosis	1 day to 4 months
Proteus vulgaris	1-2 days
Pseudomonas aeruginosa	6 hours to 16 months; 5 weeks on dry floors
Staphylococcus aureus (including MRSA)	7 days to 7 months
Streptococcus pneumoniae	1 to 20 days
Streptococcus pyogenes	3 days to 6.5 months

Kramer A. (A Review) BMC Infect Dis 2006;6:130//(2) Bonilla H F, Zervos M J, Kauffman C A. Infect Control Hosp Epidemiol. 1996;17: 770-71

Survival on Dry Inanimate Surfaces

Pathogen: Fungi/Yeast	Survival on Dry Inanimate Surfaces
Aspergillus conidia (spores)	Months or longer
Candida albicans	1-120 days

Pathogen: Viruses	Survival on Dry Inanimate Surfaces
Adenovirus	7 days to 3 months
Coronavirus (SARS, GI infections, cold)	3-28 days (2)
Coxsackie virus	More than 2 weeks
Cytomegalovirus	8 hours
HBV	2 hours to 60 days
HIV	More than 7 days
Influenza virus	1-2 days
Norovirus	Stable in the environment per CDC
Papillomavirus 16	More than 7 days
Respiratory syncytial virus (RSV)	Up to 6 hours
Rotavirus	2 days to 2 months

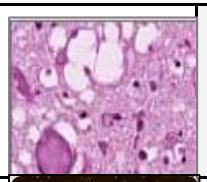
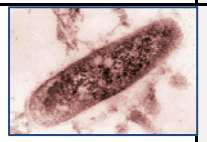
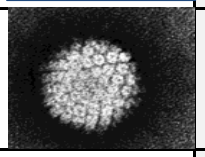
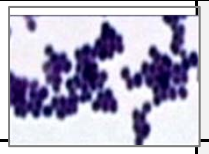
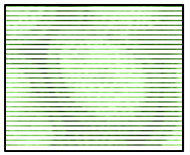
Kramer A. (A Systematic Review) BMC Infect Dis 2006;6:130//(2) Casanova Applied Environ Microbiol 2010; 76:2712

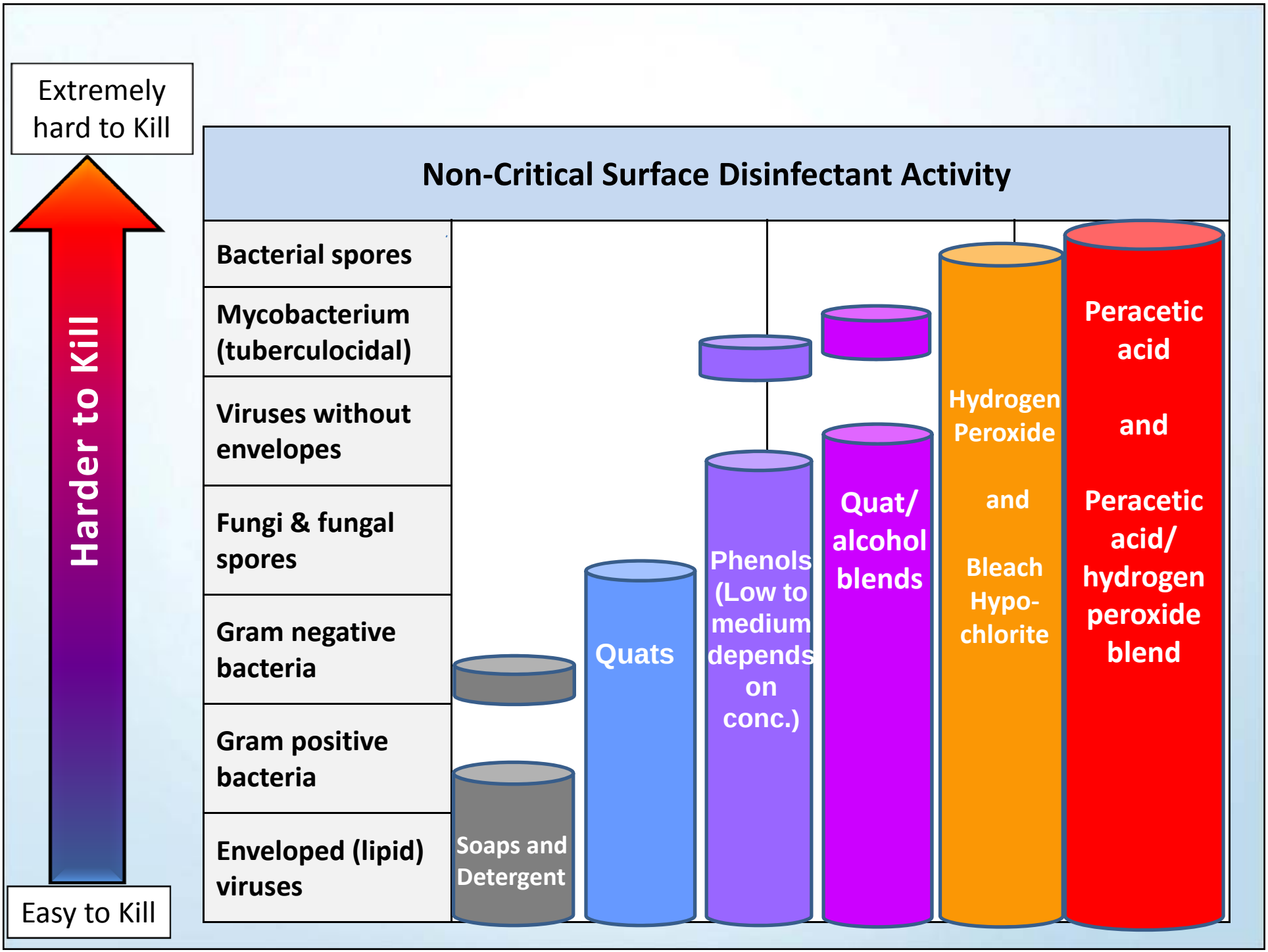
Levels of Disinfection Difficulty

Extremely Hard to kill

Harder to Kill

Easy to kill

Prions		Transmissible Spongiform Encephalopathy (TSE); Creutzfeldt-Jakob disease(CJD) Mad cow disease; Scrapies
Bacterial Spores		Spores of: C. difficile; C. tetanus; C. botulinum; C. perfringens; Anthrax
Mycobacteria		M. tuberculosis; M. avium
Viruses without envelopes		Norovirus; Rotavirus; Rhinovirus; Poliovirus; Papillomavirus (HPV); Coxsackie; Adenovirus
Fungi includes fungal spores		Aspergillus fumigatus, A. flavus; A. niger; Candida albicans
Gram negative bacteria		Pseudomonas, Acinetobacter, Klebsiella, E. coli; Enterobacteriaceae, Legionella
Gram positive bacteria		Staphylococcus; Enterococcus; Streptococcus; Clostridia vegetative rods
Viruses with lipid envelopes		Influenza; HBV; HCV; HIV; RSV; Coronavirus; CMV; HSV; Measles, Mumps; Rubella; VZV (Varicella-Zoster) Shingles/ Chickenpox


Extremely hard to Kill
Harder to Kill
Easy to Kill
Non-Critical Surface Disinfectant Activity
Bacterial spores
Mycobacterium (tuberculocidal)
Viruses without envelopes
Fungi & fungal spores
Gram negative bacteria
Gram positive bacteria
Enveloped (lipid) viruses
Soaps and Detergent
Quats
Phenols (Low to medium depends on conc.)
Quat/ alcohol blends
Hydrogen Peroxide and Bleach Hypo-chlorite
Peracetic acid and Peracetic acid/ hydrogen peroxide blend

Germicide Selection Questions to ask Is it:	**Ideal**	Bleach Self-mixed 5000 ppm	EPA approved C. difficile spore kill	Your Disinfectant	Another Candidate
Kills broad span of pathogens, removes guess work of which disinfectant at what dilution for each case	**Yes**				
Fast or very fast-acting	**Yes**				
Ready-to-use saturated wipes (less error)	**Yes**				
Minimum toxicity profile	**Yes**				
Inhalation: nonirritant non-asthmatic	**Yes**				
Compatible with cleaners/chemicals	**Yes**				
Leaves powdery, filmy, gummy residue	**No**				
Rinse required	**No**				
Room canisters for ready-use access	**Yes**				
Economical (pre-cleaning, rinsing, etc)	**Yes**				
Use-life stable: effective until all used	**Yes**				
Surface compatible (metals, plastics)	**Yes**				
One-step clean & disinfect (except *C. diff*)	**Yes**				