Supplementary Appendix 1. Search strategy

We performed literature searches in the databases described in the Methods section with the terms: 1) hydrogen peroxide producing systems: ("hydrogen peroxide"[MeSH Terms] OR ("hydrogen"[All Fields] AND "peroxide"[All Fields]) OR "hydrogen peroxide"[All Fields]) AND producing[All Fields] AND systems[All Fields]); 2) hydrogen peroxide vapor: hidrogen[All Fields] AND ("peroxides"[MeSH Terms] OR "peroxides"[All Fields] OR "peroxide"[All Fields]) AND vapor[All Fields]); 3) ultraviolet light: ("ultraviolet light"[All Fields]); 4) environmental decontamination: ("environment"[MeSH Terms] OR "environment"[All Fields] OR "environmental"[All Fields]) AND ("decontamination"[MeSH Terms] OR "decontamination"[All Fields]); 5) environmental disinfection: ("environment"[MeSH Terms] OR "environment"[All Fields] OR "environmental"[All Fields]) AND ("disinfection"[MeSH Terms] OR "disinfection"[All Fields]); 6) room disinfection: room[All Fields] AND ("disinfection"[MeSH Terms] OR "disinfection"[All Fields]); 7) terminal cleaning: terminal[All Fields] AND cleaning[All Fields]; 8) MRSA: (MRSA [MeSH Terms] OR methicillin-resistant *Staphylococcus aureus* [MeSH Terms] OR methicillin AND resistant AND *Staphylococcus aureus* [MeSH Terms]); 9) VRE: (VRE [MeSH Terms] OR vancomycin-resistant *Enterococcus* [MeSH Terms] OR vancomycin AND resistant AND *Enterococcus* [MeSH Terms]); 10) *Clostridium difficile*: ("*Clostridium difficile*"[MeSH Terms] OR ("*Clostridium*"[All Fields] AND "difficile"[All Fields]) OR "*Clostridium difficile*"[All Fields]); 11) multi-drug resistant organisms (MDROs): (multi-drug[All Fields] AND resistant[All Fields] AND organisms[All Fields]); 12) healthcare associated infections (HAIs): ("healthcare associated infections"[All Fields]). We reviewed the reference lists of retrieved articles to identify studies that were not identified from the preliminary literature searches.

Supplementary Appendix 2. Table . Quality assessment scores for the reviewed manuscripts\*

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Quality criterion** | Levin | Hass | Miller | Nagajara | Vianna | Napolitano | Bernard | Catalanotti | McMullen | Sampathkumar | Pegues | Green | Anderson | Boyce | Cooper | Passaretti | Manian | Mitchell | Horn | McCord |
| **Representativeness** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Study population description | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 2 | 4 | 4 | 4 | 4 | 4 |
| Inclusion/exclusion criteria | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 2 | 4 | 4 | 4 | 4 | 4 |
| Location/setting description | 4 | 4 | 3 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 3 | 2 | 4 | 4 | 4 | 3 | 2 |
| **Bias and confounding** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Study population corresponded to larger population in all key factors | 4 | 4 | 4 | 4 | 2 | 2 | 4 | 4 | 4 | 3 | 4 | 3 | 4 | 3 | 2 | 4 | 3 | 4 | 3 | 4 |
| Masking | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| How similar was the assessment of outcomes between groups | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 2 | 4 | 4 | 4 | 4 | 4 |
| Accounted for confounding interventions | 3 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 3 | 3 | 4 | 2 | 4 | 2 | 2 | 3 | 3 | 4 | 3 | 2 |
| Compliance rates | 4 | 4 | 2 | 2 | 2 | 4 | 2 | 2 | 4 | 4 | 4 | 2 | 4 | 2 | 2 | 4 | 4 | 2 | 2 | 2 |
| **Description of intervention** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Replication possible given descriptions of intervention | 3 | 4 | 2 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 4 | 3 | 4 | 3 | 2 | 4 | 4 | 4 | 3 | 3 |
| **Outcomes and follow-up** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Outcome assessment procedure clearly defined | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 4 | 3 | 4 | 3 | 2 | 4 | 4 | 4 | 3 | 4 |
| Groups equivalent in attrition/LOS/death/patient days | 4 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 2 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| **Statistical analysis** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Description and appropriateness of methods | 2 | 4 | 3 | 3 | 3 | 4 | 2 | 2 | 3 | 3 | 4 | 3 | 4 | 3 | 2 | 4 | 3 | 4 | 3 | 4 |
| Tested differences between groups and variability | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |

LOS = length of stay

\*Key: 1: not applicable; 2: inadequate, not stated; 3: partially adequate; 4: completely adequate.