**Appendix 1** – Search strategy

For Medline the following MeSH terms were used:

“Surgical Wound Infection/” AND (“Population Surveillance/” OR “Sentinel Surveillance/”)

For EMBASE the following keywords were used:

'surgical site infection' AND surveillance AND [humans]/lim AND [1980-2016]/py

For the Cochrane database, the following MeSH terms were used:

#1 MeSH descriptor: [Surgical Wound Infection] explode all trees

#2 MeSH descriptor: [Population Surveillance] explode all trees

#3 MeSH descriptor: [Sentinel Surveillance] explode all trees

#4 #2 or #3

#5 #1 and #4

Search strategy: for Medline the following MeSH terms were used: “Surgical Wound Infection/” AND (“Population Surveillance/” OR “Sentinel Surveillance/”); for EMBASE the following keywords were used: 'surgical site infection' AND surveillance AND [humans]/lim AND [1980-2016]/py; for the Cochrane database, the following MeSH terms were used: #1 MeSH descriptor: [Surgical Wound Infection] explode all trees; #2 MeSH descriptor: [Population Surveillance] explode all trees; #3 MeSH descriptor: [Sentinel Surveillance] explode all trees; #4: #2 or #3; #5: #1 and #4

**Appendix 2**

Table 1 – Characteristics of the included studies

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| First author  Journal name  Year of publication | Country  (Network acronym) | Is surveillance voluntary or mandatory? | Is benchmarking performed? | Is there external validation of SSI surveillance data? | Is feedback to surgeons described? | Are structured interventions or quality improvement initiatives described? | What structured interventions or quality improvement initiatives are described? |
| Gastmeier1 Infect Control Hosp Epidemiol 2009 | Germany  (KISS) | Voluntary | Unclear / not stated | Unclear / not stated | No, feedback to institutions only | Unclear | N/A |
| Barwolff2 J Hosp Infect 2006 | Germany  (KISS) | Voluntary | Unclear / not stated | Unclear / not stated | No, feedback to institutions only | Yes | Not specified |
| Gastmeier3 Arch Orthop Trauma Surg 2005 | Germany  (KISS) | Voluntary | Yes | Yes | No, feedback to institutions only | Yes | Antibiotic prophylaxis Preoperative skin disinfection |
| Gastmeier4  J Hosp Infect  2006 | Germany  (KISS) | Voluntary | Unclear / not stated | Unclear / not stated | No, feedback to institutions only | Yes | Not specified |
| Geubbels5 Int J Q Health Care 2006 | Netherlands  (PREZIES) | Voluntary | Yes | Yes | No, feedback to institutions only | Yes | Not specified |
| Staszewicz6 J Hosp Infect 2014 | Switzerland | Voluntary | Unclear / not stated | No | Yes | Yes | Decolonization of S. aureus carriers |
| Cohen7  Ann Surg  2016 | USA  (ACS NSQIP) | Unclear / not specified | Yes | Unclear / not stated | No, feedback to institutions only | Yes | Not specified |

Table 2 - Functional characteristics of the surveillance networks

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| First author Publication year | SSI definition used | Risk index used | Type of surveillance performed | Is post-discharge surveillance performed? | Date of establishment of network (year) | Start of reported surveillance period | End of reported surveillance period | Number of hospitals at beginning of reporting period | Number of hospitals at end of reporting period |
| Gastmeier1 2009 | CDC | NNIS | Indirect prospective | Unclear | 1997 | 2000 | 2006 | Not reported | Not reported |
| Barwolff2 2006 | CDC | NNIS | Indirect prospective | Unclear | 1997 | 1997 | 2003 | 2 | 52 |
| Gastmeier3 2005 | CDC | NNIS | Indirect prospective | Unclear | 1997 | 1997 | 2003 | 3 | 25 |
| Gastmeier4  2006 | CDC | NNIS | Unclear / not specified | Yes | 1997 | 1997 | 2003 | 10 | 182 |
| Geubbels5 2006 | CDC | NNIS | Unclear / not specified | Unclear | 1996 | 1996 | 2004 | 37 | 8 |
| Staszewicz6 2014 | CDC | NNIS | Indirect prospective | Yes | 1998 | 1998 | 2010 | 6 | 23 |
| Cohen7  2016 | Not described | Not described | Unclear / not specified | Yes | Not stated | 2006 | 2013 | 515 | 91 |

**Appendix 3** – Time-trend of procedure-specific surgical site infection (SSI) rate ratios

Figure 1 - Time-trend of SSI rate ratios for cholecystectomy, hip prosthesis, and knee prosthesis



**References**

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