**Appendix 1: data specifications and algorithm specifications**

**Table S1: Specifications of data extractions from the electronic health records needed for algorithm application.**

|  |  |  |
| --- | --- | --- |
| ***Data variable*** | ***Data type*** | **Period** |
| PREZIESnumber or anonymous (surveillance) study number [1] | Numeric/text | NA |
| **Demographics** |  |  |
| Age (in years) or date of birth [1] | Numeric/date | NA |
| Sex [1] | Numeric | NA |
| **Index surgery** |  |  |
| Date of index surgery [1] | Date | NA |
| Description procedure; PREZIES code/procedure code (i.e. ICD-9/10/CTG) [1] | Text | NA |
| **Admission of index surgery** |  |  |
| Admission date [1] | Date | NA |
| Discharge date [1] | Date | NA |
| **Readmission(s)** |  |  |
| Admission date [0..\*] | Date | Date of index surgery + 120 days |
| Discharge date [0..\*] | Date | Date of index surgery + 120 days |
| Treating specialty [0..\*] | Text/category | Date of index surgery + 120 days |
| **Re-operation** |  |  |
| Date of re-operation [0..\*] | Date | Date of index surgery + 120 days |
| Procedure code (i.e. ICD-9/10/CTG) [0..\*] | Text | Date of index surgery + 120 days |
| Description of procedure [0..\*] | Text | Date of index surgery + 120 days |
| Treating specialty [0..\*] | Text/category | Date of index surgery + 120 days |
| **Microbiology cultures** |  |  |
| Date of culture [0..\*] | Date | Date of index surgery + 120 days |
| Sample number of culture [0..\*] | Numeric/text | Date of index surgery + 120 days |
| Cultured material (i.e. wound, blood) [0..\*] | Text/category | Date of index surgery + 120 days |
| Cultured material open text [0..\*] | Text | Date of index surgery + 120 days |
| Result (species) [0..\*] | Text | Date of index surgery + 120 days |
| Assessment positive/negative [0..\*] | Text/category | Date of index surgery + 120 days |
| **Antibiotic use#** |  |  |
| Code (ATC in categories J01) OR description [0..\*] | Numeric/Text | Date of index surgery + 120 days |
| Start date [0..\*] | Date | Date of index surgery + 120 days |
| Stop date [0..\*] | Date | Date of index surgery + 120 days |
| [1] = Single record; [0..\*] = can appear several times. | | |

# Regardless of mode of administration. Including outpatient prescriptions.

**General rules for applying the algorithm (data cleaning)**

* Patients can be included several times in the data as they can have TKA/THA at different sites, and can have multiple re-admissions, antibiotics or microbiology results.
* If start- and stop date of antibiotic prescriptions or admission/discharge dates are swapped: the number of days is converted from minus to plus.
* If a second or subsequent index surgery takes place within the follow-up period of a previous index surgery, the follow-up period of the first surgery is censored on the date of surgery of the next one (i.e. if a THA takes place within the follow-up period of a previous TKA, the follow-up date of TKA will be the date of surgery of the THA). In this way, a subsequent index surgery does not count as a re-operation of the first index surgery.
* If a person has two index surgeries on the same day, the follow-up period is for both surgeries 90 days, unless another index surgery takes place in this follow-up period (see rule above).
* Microbiology results obtained from 1 culture count as 1 result.
* In case of various assessments (positive/negative) obtained from 1 culture it is counted as positive.
* If an algorithm element cannot be computed due to incomplete data, the index surgery is flagged positive on that algorithm element.

**Table S2: Algorithm specifications**

|  |  |  |
| --- | --- | --- |
| **Elements algorithm** | **Criteria (high probability if >=3 criteria are met)a:** | **Specification:** |
| **Microbiology** | >=1 positive culture OR >=5 cultures obtained | >= 1 positive microbiological culture or >= 5 cultures obtained from potentially relevant body site(s), such as wound cultures, pus, joint aspirations, prosthetic material, tissue, blood cultures, unspecified material. All cultures are taken into account from day 1\* until end follow-up. |
| **Antibiotics** | >/= 14 days of antibiotic exposure post-operative | All antibiotic orders (ATC J01) prescribed from day 2\* until end of follow-up, including outpatient prescriptions but excluding ICU prescriptions. All antibiotic episodes are summed up; however overlapping episodes count as 1 day (e.g. two antibiotic prescriptions, one for 4 days and one for 8 days of which 3 days overlap result in a total of 9 days of antibiotic exposure). |
| **(Re)Admissions** | Length of stay of initial surgery >= 14 days OR >= 1 re-admission | Length of hospital stay of the index admission (i.e., admission during which the TKA/THA took place) of >= 14 days ((discharge date – date of index surgery) +1)  or  >=1 readmission(s) for the relevant specialty (i.e. orthopedics, trauma or surgery), after the index surgery but within follow up |
| **Re-operation** | >=1 re-operation by orthopedics | Surgeries performed by the department of orthopedics, after the index surgery and within the follow-up period. No further restrictions. |
| \*Date of initial, index surgery = day 0  a All criteria should be fulfilled within 120 days after the index surgery | | |