HAI-Net: Surgical site infections

Data quality

Jolanta Griškevičienė Surveillance and Response Unit
European Centre for Disease Prevention and Control

Warsaw 24 November 2011

Objective

To discuss data quality:

- Missing data: levels/ values
- Uniqueness of identifiers
  - Hospital Id/ UnitId
- Dates:
  - Chronological sequence:
    - Admission<Operation<Dischrage<Follow up
    - Differences between dates
    - Date of operation within reporting period.
- Duplicated records
  - More than 1 SSI per patient. Criteria to keep more than 1 SSI.
- Completness of data
- What is Surgical site infection in our data base.

Missing data levels

1. HAISSI
2. HAISSI OP
3. HAISSI OP INF
4. HAISSI OP INF RES
5. HAISSICOVERAGE (Total number of operations performed in the country by type of operation).

Data cleaning performed:

1. HAISSI 1st level was deleted if data in levels 2.3.4 were not provided
2. No changes if „SurgicalSiteInfection =„Yes"" but no data provided in levels 3 and 4.
3. SurgicalSiteInfection changed into „Yes" if SurgicalSite Infection „No" but data provided in levels 3 and 4

Uniqueness of identifiers

1. HospitalId must be unique in the network better in the country. Preferable numeric and not missing.
2. UnitId must be unique in the hospital.

   Uniqueness of identifiers is important in data analysis by hospital by unit (e.g. in percentile distribution)

Qes 1? HospitalId should be the same in different years?

How to achieve this?

If hospitalId in year 2008 is H1 and next year 2009 HospitalId =H1. Is it the same hospital or not?

What are minimal requirements for hospitals, which are doing surveillance?

How long they should do surveillance?

-at least 1 month

-at least 3 months

-12 months/ per year?

How many operation they should provide?

-20, -50, -100?

Chronological sequence of dates

Date of admission

Date of operation

- Date of Onset

Date of discharge or date last-follow-up in hospital

- Date of Onset

Date of last follow-up post-discharge

How do you report date of discharge and date last follow up?

Date last follow up should be after date of discharge according to the protocol v1.01 (page 8):

Date of discharge: Date the patient was discharged from hospital where they underwent the operation under surveillance or date of in-hospital death **or date of last follow-up in hospital**. This date is used to calculate the number of post-operative in-hospital patient days.

Date of last follow-up post-discharge: Date **last information on the patient was obtained after discharge from hospital** for example from surgeon (out-patient department or private practice) or general practitioner. This date is used to calculate the total amount of follow-up days (in-hospital and post-discharge) (YYYY-MM-DD).

I would suggest protocol change

The protocol v1.01 (page 8):

Date of discharge: Date the patient was discharged from hospital where they underwent the operation under surveillance or date of in-hospital death ~~**or date of last follow-up in hospital**~~.–This date is used to calculate the number of post-operative in-hospital patient days.

Date of last follow-up : Date **last information on the patient was obtained after** **or before** **discharge from hospital** for example from surgeon (out-patient department or private practice) or general practitioner. This date is used to calculate the total amount of follow-up days (in-hospital and post-discharge) (YYYY-MM-DD).

Dates should be reported in chronological sequence

Date of admission

Date of operation

- Date of Onset (in-hospital SSI)

Date of discharge

- Date of Onset (post-discharge SSI)

Date of last follow-up post-discharge

Issues

Some issues related to simple technical mistakes during the preparation of data:

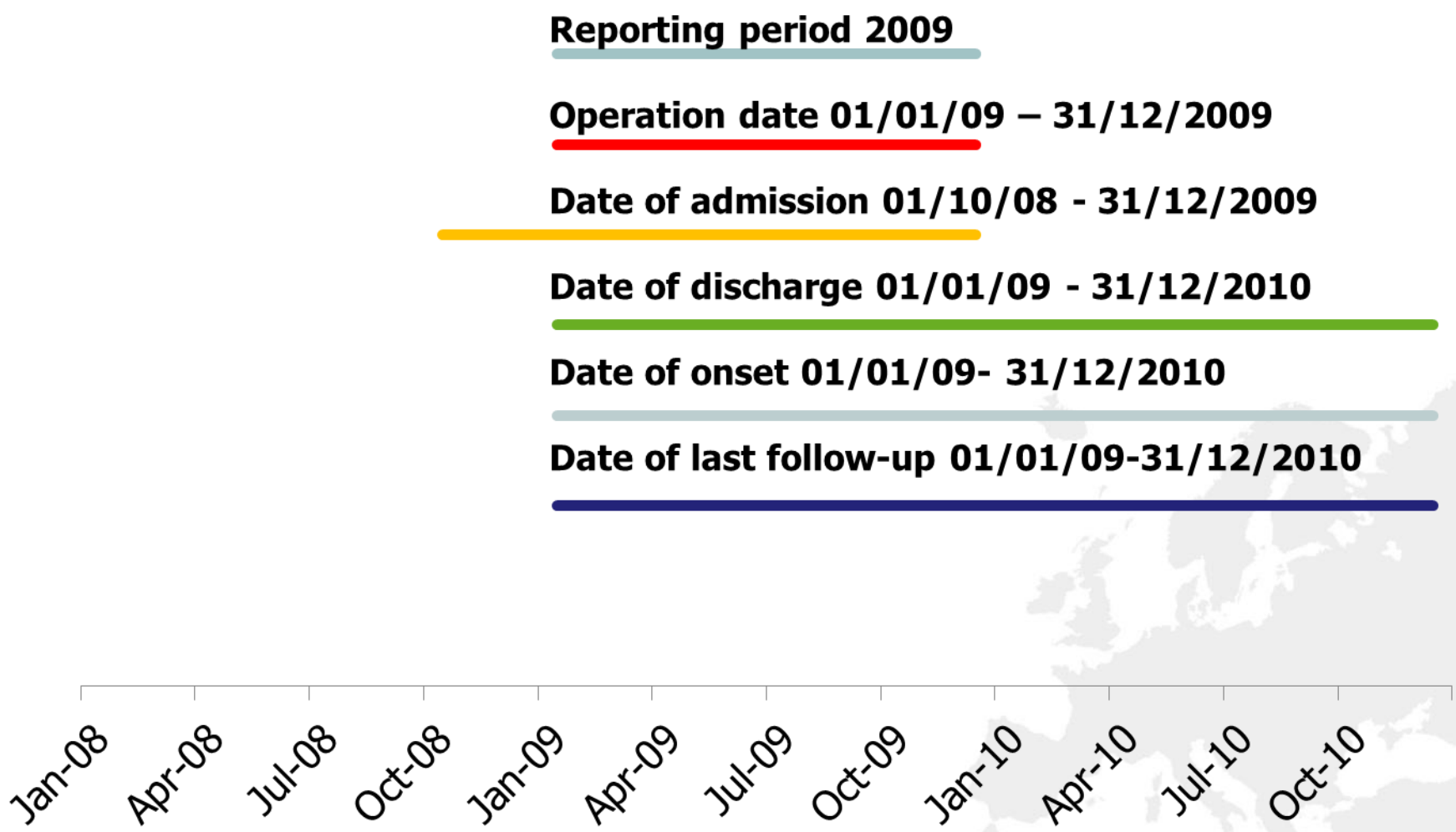
- 10/09/03 (Y/M/D) changed into 2003-09-10 (day- year)
- Date of birthday reported instead of date of admission
- Date of discharge instead of date of operation, etc.
- Mistyping of one of dates e.g. 2009-20089 2007-2047.

Before upload to TESSY please check:

1.Minimal and maximal dates.

2.Differences between dates.

Reported dates should correspond to reporting period



Differences between dates

1.

Date of admission

½ year =6 months<=182 days?

Date of operation

2.

Date of operation

½ year =6 months<=182 days?

Date of discharge

3.

Date of admission

½ year =6 months<=182 days?

Date of discharge

Changes were done if differences between dates were too big

1.

Date of admission (into missing)

½ year =6 months<182 days?

Date of operation

2.

Date of operation

½ year =6 months<182 days?

Date of discharge (into missing)

3.

Date of admission

½ year =6 months<182 days?

Date of discharge (into missing)

Surgical Site Infections

SSI criteria in 2009

CABG in 30 days
CHOL in 30 days
COLO in 30 days
CSEC in 30 days
HPRO in 1 year *
KPRO in 1 year *
LAM in 30 days

*France –in 30 days

Number of SSI deleted due to date of onset > 30 days or unknown date of onset

CABG in 30 days
CHOL in 30 days
COLO in 30 days
CSEC in 30 days
HPRO in 1 year *
KPRO in 1 year *
LAM in 30 days

*France –in 30 days

	> 30 days	Unknown
CABG	124	2
CHOL	16	13
COLO	24	18
CSEC	38	53
HPRO		31
KPRO		0
LAM	6	1

Coronary artery bypass graft Numerator in CI =1174

	In 30 days	> 30 days-1 year	UNK	sum
Post-discharge	404	102	0	506
In hospital	638	7	0	645
Unknown	132	15	2	149
sum	1174	124	2	1300

Coronary artery bypass graft Numerator in Incidence denisty =638

	In 30 days	> 30 days-1 year	UNK	sum
Post-discharge	404	102	0	506
In hospital	638	7	0	645
Unknown	132	15	2	149
sum	1174	124	2	1300

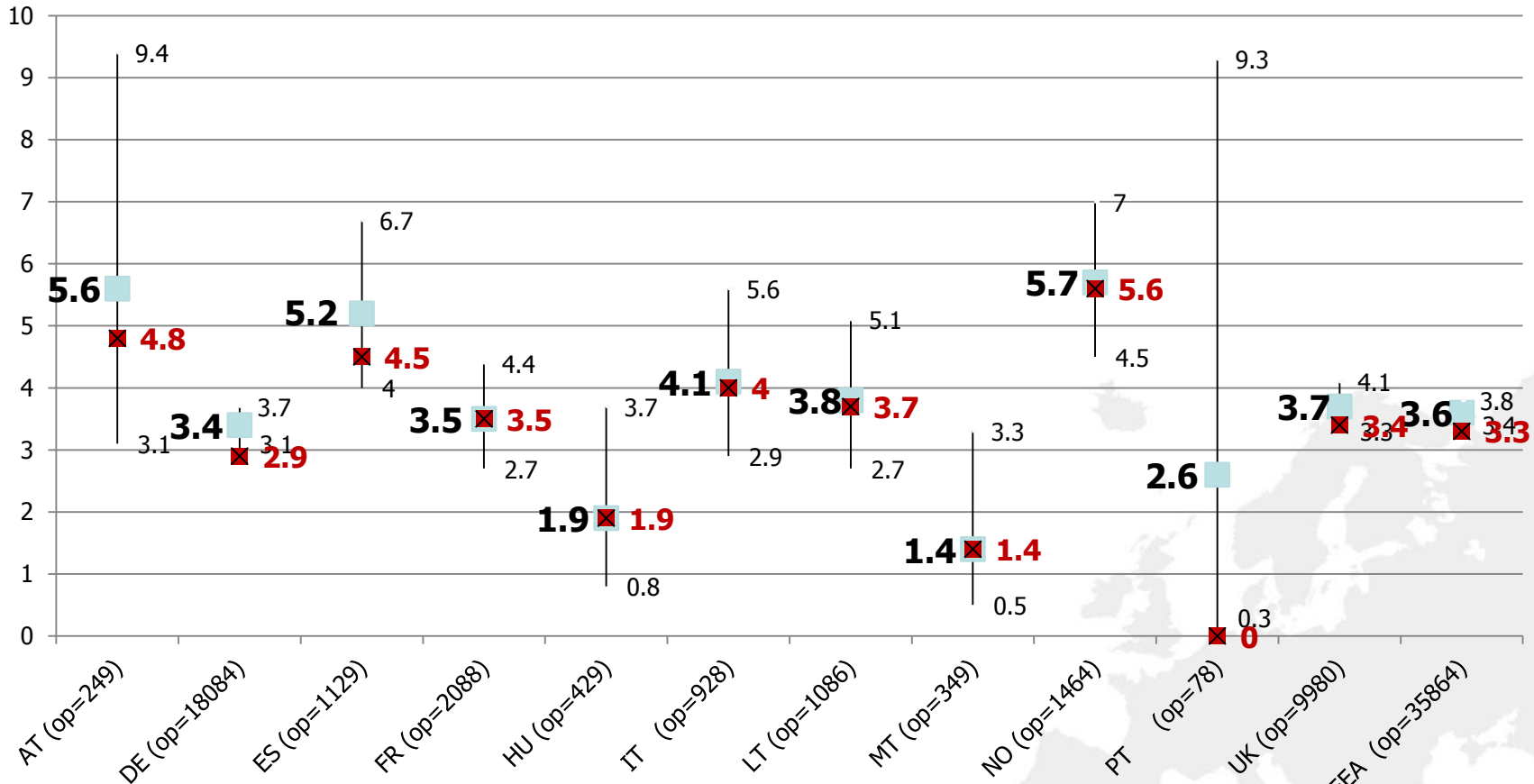
Coronary artery bypass graft: Numerator in CI =1170 in hospitals with >=20 operations

	In 30 days	> 30 days-1 year	UNK	sum
Post-discharge	404	102	0	506
In hospital	638	7	0	645
Unknown	132	15	2	149
sum	1174 *(1170)	124	2	1300

Coronary artery bypass graft: Numerator=637 in CI in hospital with >=20 operations

	In 30 days	> 30 days-1 year	UNK	sum
Post-discharge	404	102	0	506
In hospital	638 (637*)	7	0	645
Unknown	132	15	2	149
sum	1174	124	2	1300

Cumulative incidence of SSI in CABG (ALL reported in 30 days only)



If we are excluding some SSI case from data analysis we are underestimating incidences of SSI.

In 30 days	• CABG = 1174 • COLO = 3964 • LAM = 125	CHOL = 888 CSEC = 4686
> 30 days -1 year	• CABG = 124 (+10.5%) • COLO = 24 (+0.6%) • LAM = 6 (+4.8%)	CHOL = 16 (+1.8%) CSEC = 38 (+0.8%)
Unknown	• CABG = 2 (+0.2%) • COLO = 18 (+0.5%) • LAM = 1 (+0.8%) • HPRO = 31 (+1.2%)	CHOL = 13 (+1.5%) CSEC = 53 (+1.1%) KPRO=0

Suggestion

To include all reported surgical site infections, which are reported as Surgical Site Infection„Yes".

Arguments:

1. A lot of patients has implant or medical device after operation, so they can have SSI later than 30 days after operation
2. Could be due to mistyping of date of onset (If > 2% in CSEC will be reported to countries in data quality report.)

Duplications

Duplication of surgical site infections for the same patient

Case 1

HPRO

Date of operation=09-Mar-2009

1 ssi in 8 days: 17-Mar-2009 /Superficial SSI/Proteus spp

2 ssi in 21 days: 30-Mar-2009/Superficail SSI/Klebsiella spp

Case 2:

KPRO

Date of operation=17-June-2009

1 ssi in 24 days: 10-July-2009 /OrganSSI/Acinetobacter spp

2 ssi in 241 days: 12-Feb-2009/Organ SSI/Staphylococcus aureus

Duplication of surgical site infections for the same patient

Case 3

CBGB

Date of operation=23-Mar-2009

1 ssi in 10 days: 01-Apr-2009 /Superficial SSI/ *S. aureus*

2 ssi in 37 days: 28-Apr-2009/Superficail SSI/ *S. aureus*

Case 4:

COLO

Date of operation=24-Nov-2009

1 ssi in 13 days: 06-Dec-2009 /OrganSSI/ *Enterococcus spp + E.coli*

2 ssi in 29 days: 22-Dec-2009/Organ SSI/unknown

Duplication of surgical site infections for the same patient

Case 5

COLO

Date of operation=17-May -2009

1 ssi in 6 days: 22-May-2009 /Deep SSI/ *E.coli*

2 ssi in 9 days: 25-May-2009/Deep SSI/ *Klebsiella spp*

Case 6:

COLO

Date of operation=20-Oct-2009

1 ssi in 7 days: 26-Oct-2009 /Deep *SSI/E.coli+ Streptococcus spp*

2 ssi in 24 days: 12-Nov-2009/Organ *SSI/E.coli+ Streptococcus spp+Bacteroides spp*

Other discrepancies

Other discrepancies

Endoscopic CSEC procedures

Age in CSEC more than 60 years

Duration of operation<10 minutes

we should agrree on accpetable „breakponts in duration of operation" min and max

Duration of operation > 12 hours (720 minutes)

Unit Specialty & opcode

Endsocopic procedures & icd9cm codes

Discrepancies: Unit speciality and operation code

Unitspecialty	Opcode							
	CBGB	CBGC	CHOL	COLO	CSEC	HPRO	KPRO	LAM
CA=General/ abdominal surgery	1571	68	7364	3180	366	1411	879	524
CC=Cardiovascular surgery	782	19	78	243	117	444	332	97
CM=Mixed surgical/medical			266	70	10793	3181	4146	
CN=Neurosurgery			1					1083
CO=Orthopaedic surgery			1		9	7269	4707	
GY=Gynaecology	2	6	106	171	7097	48	68	70
TR=Traumatology			4	46	116	1916	523	

Discrepancies: EndoscopicProc “Yes” or “No” ?

	Endoscopic	%	
CABG	244	0.7%	?
CHOL	53149	85.3%	
COLO	8322	20.7%	
CSEC	*		
HPRO	28	0.01%	?
KPRO	5	0.00%	?
LAM	80	0.9%	

Discrepancies: EndoscopicProc "Yes" and icd9 code?

	YES	NO	%	
51.23 laparoscopic cholecystectomy	9215	935	9.2%	
51.24 laparoscopic partial cholecystectomy	174	2	1.1%	
	9389	937	10.0%	

Data quality report

Data quality report

Technical document (feedback to MS) with all information about discrepancies in provided data:

Uniqueness

Completeness of levels

% of unknown information by variable

- Your advices how to improve template are very welcomed
- How many days and weeks do you need for data corrections (3-4 weeks ?)

Would you gess the name of the city?

Conclusion

Data quality, completness and accuaracy are crucial in the data surveillance and interpretation,

If some information is hidden, it is very difficult to have clear overview of situation...