

Decreasing prevalence of healthcare associated infections and increasing antimicrobial use in hospitals in the Netherlands from 2007-2016.

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Background:

Prevalence of Healthcare Associated Infections (HAIs) and antimicrobial use in hospitals in the Netherlands has been measured using voluntary biannual national Point Prevalence Surveys (PPS) since 2007. This study investigates trends in Dutch prevalence of HAIs and antibiotic use from 2007-2016.

Methods:

- Inclusion of all inpatients, except for patients in psychiatric and day-care wards.
- Data collection on the survey-day of:
 - the presence of and category of HAIs;
 - demographics and McCabe severity of illness score;
 - surgery since admission and medical device use;
 - antimicrobial use (excluding antivirals) and its indication;
- HAIs have been defined following to the ECDC definitions;
- Trends over time were calculated with linear and logistic regression methods.

Results:

- From 2007-2016, data was reported for 171116 patients in almost 70% of the hospitals.
- Annual prevalence of HAIs with onset during hospitalization decreased from 7.0% (95%CI: 6.6%-7.5%) in 2007 to 3.8% (95%CI: 3.5%-4.1%) in 2016. From 2014 onwards, when HAIs on admission were added, the prevalence of HAIs increased to 5.5% (95%CI: 5.1%-5.9%). (Figure 1).
- Most prominent trends were seen for surgical site infections, urinary tract infections and combined other infections (e.g. skin-, eye- ear-, nose-infection) (Figure 2).

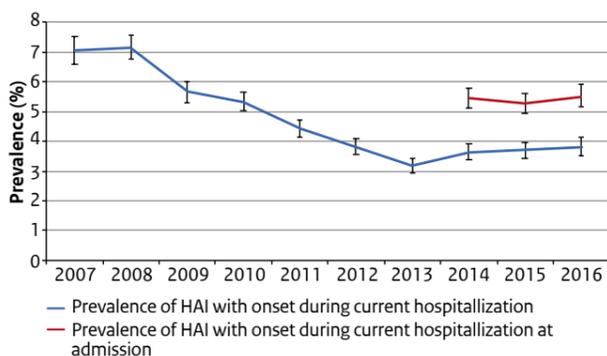


Figure 1: Overall prevalence of HAI.

- Of the HAIs already present at admission, 19% were related to admission in another hospital than the hospital reporting the HAI, and 68% were SSIs.
- There was an increase in elderly patients >65 years ($p < 0.001$) and a decrease in LOS from 10 (2007) to 7 days (2016) ($p < 0.001$).

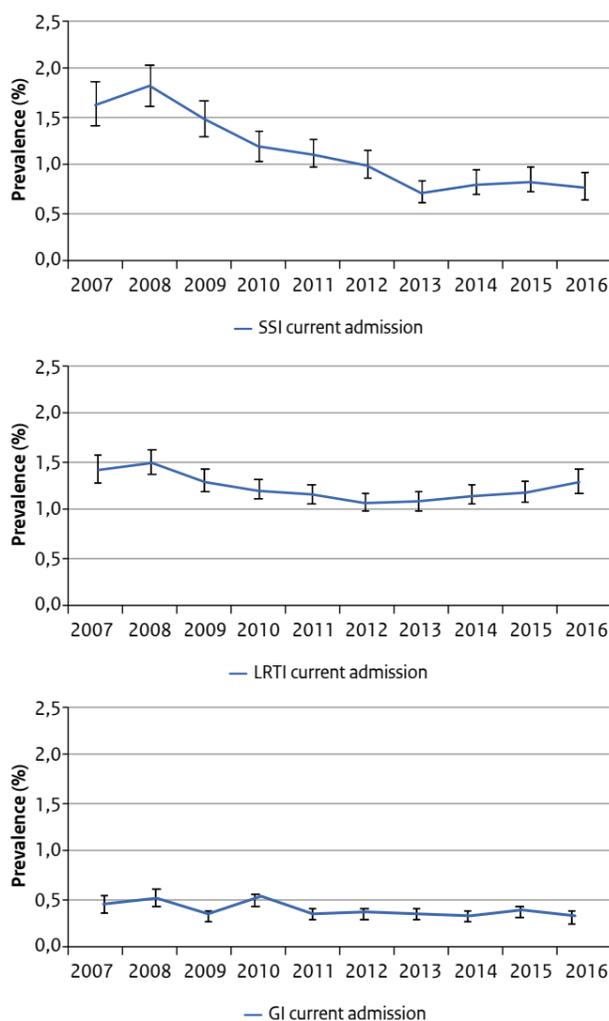


Figure 2: Prevalence of surgical site infection (SSI), urinary tract infection (UTI), lower respiratory tract infection (LRTI), bloodstream infection (BSI), gastro-intestinal infection (GI), and other infections with onset during current admission with 95%-CI, from 2007-2016.

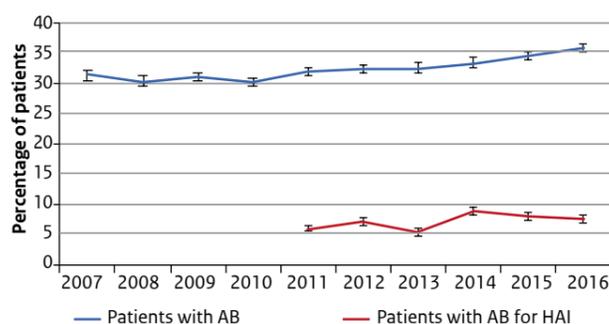


Figure 3: Patients treated with antimicrobials (AB).

- Treatment with antimicrobials increased from 31.5% to 36.0% (Figure 3).
- There was an increase in the use of peripheral venous catheters (Figure 4).

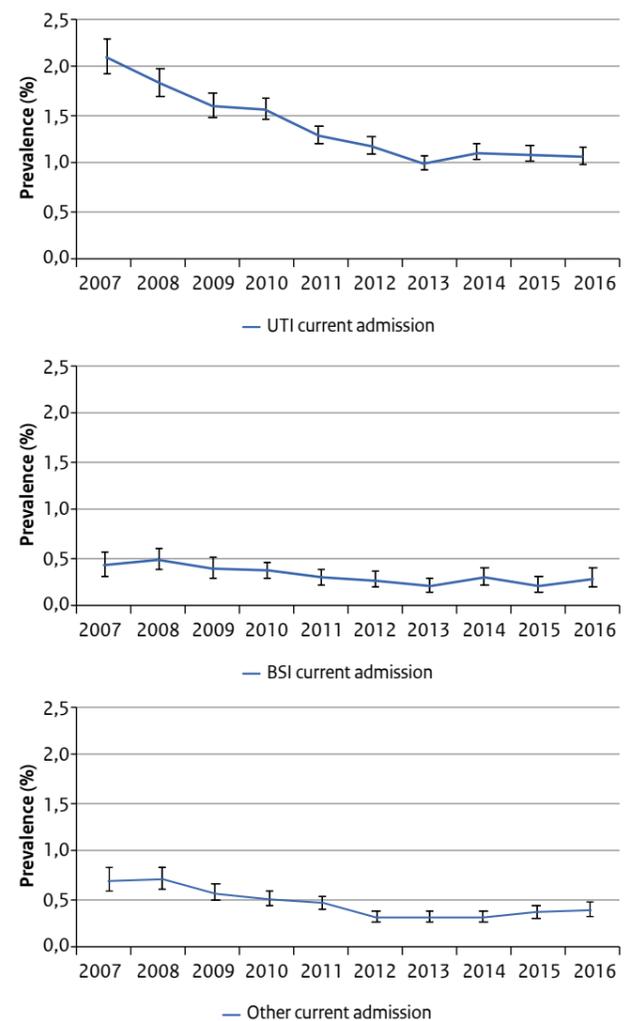


Figure 4: Proportion of patients with medical device use.

Conclusions:

- Repeated PPS-data from 2007-2016 show a decrease in the prevalence of HAI with onset during hospitalization.
- The percentage of patients with antibiotic use increased and the mean LOS decreased.
- In addition to targeted incidence surveillance repeated PPSs of HAIs are well equipped to measure trends in the national prevalence of HAIs.
- Although prevalence rates are not suitable for direct comparison of hospitals, they indicate on national level the areas for targeted interventions to reduce the burden of HAIs.
- To optimize the surveillance and reduce the workload, it is important to focus on the development of semi-automated surveillance in the near future.