Representativeness of a national surveillance network for healthcare-associated infections in long-term care facilities in the Netherlands

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Introduction:

The Dutch national surveillance network for HAIs in long-term care facilities (LTCFs) contains amongst others a national database for point prevalence surveys since 2009 (SNIV).

In addition, in 2017 a random sample of LTCFs in the Netherlands participated in the third point prevalence survey of healthcare-associated infections (HAIs) and antimicrobial use in European long-term care facilities: HALT-3. This HALT project is initiated by the European Centre for Disease Prevention and control (ECDC). The aim of our study was to determine the representativeness of the Dutch surveillance network in LTCFs by comparison of LTCFs participating in SNIV to the random sample of LTCFs participating in HALT3.

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Materials/Methods:

Based on the HALT-3 protocol (ref), a random sample difference was not statistically significant. In minimum of 42 LTCFs was considered representative sub-analysis, the difference was no longer present of the Netherlands. To reach this, 97 LTCFs were contacted in several random selection rounds. To increase participation rate, the research team offered the option to perform the registration for the LTCF.

Concomitantly, LTCFs with a minimum of 50 beds were requested to participate on a voluntary basis in the routine/bi-annual national surveillance network (SNIV).

In both HALT and SNIV, of all residents demographic characteristics as well as antibiotic use and presence of clinically diagnosed infections (gastroenteritis, lower respiratory tract infection (LRTI), urinary tract infection (UTI), bacterial conjunctivitis, bloodstream infection, skin infection) were reported. For each prevalence, 95% confidence intervals (CI) were calculated using Wilson score.

Results:

In total, 47 LTCFs and 3665 residents were included in the HALT random sample in 2017. Of these, 27 LTCFs performed the registration themselves, and in 20 LTCFs registration was performed by the research team. The random sample included 2 LTCFs that already participate in SNIV. In SNIV 32 LTCFs and 2530 residents participated in 2017 (Figure 1). The overall prevalence of registered HAIs did not significantly differ between HALT and SNIV: 3.0% (CI: 2.5-3.6) in HALT, compared to 3.3% (CI: 2.7-4.1) in SNIV (Table 1). When comparing separate HAIs, the prevalence did not significantly differ.

Skin infections were more frequently reported in HALT (1.2%) compared to SNIV (0.9%) but the when comparing the SNIV LTCFs to the LTCFs that performed the registration themselves (o.8%, CI 0.5-1.2). Further in-depth analysis of characteristics of residents and LTCFs is needed to find whether the resident population as well as LTCFs are comparable in both groups.

Table 1. Prevalence of HAI

	HALT	SNIV
Urinary Tract Infection	43/3665 (1.2%, 95% Cl 0.9-1.6)	34/2530 (1.3%, 95% Cl 1.1-1.9)
Lower Respiratory Tract Infection	19/3665 (0.5%, 95% Cl 0.3-0.8)	16/2530 (0.6%, 95% Cl 0.4-1.0)
Skin infection	45/3665 (1.2%, 95% Cl 0.9-1.6)	23/2530 (0.9%, 95%Cl 0.6-1.4)
Sepsis	2/3665 (>0.1%, 95% Cl 0.0-0.2)	3/2530 (0.1%, 95% Cl 0.0-0.3)
Gastroenteritis	o/3665 (o.o%, 95% CI n.a.)	1/2530 (>0.1%, 95% Cl 0.0-0.2)
Bacterial conjunctivitis	2/3665 (>0.1%, 95% Cl 0.0-0.2)	8/2530 (0.3%, 95% CI 0.2-0.6)
Total HAI	110/3665 (3.0%, 95% Cl 2.5-3.6)	84/2530 (3.3%, 95% Cl 2.7-4.1)

Conclusion

The results of the biannual study imply that LTCFs participating on a voluntary basis in the SNIV network are a representative national sample of LTCFs in the Netherlands, and provides a good overview of HAIs in Dutch LTCFs. Registration performed by an external registration team increased the participation rate, however, it was not a necessity for reaching a representative national sample.

(Keywords: surveillance, healthcare-associated infections, long-term care facilities, prevalence, HALT)

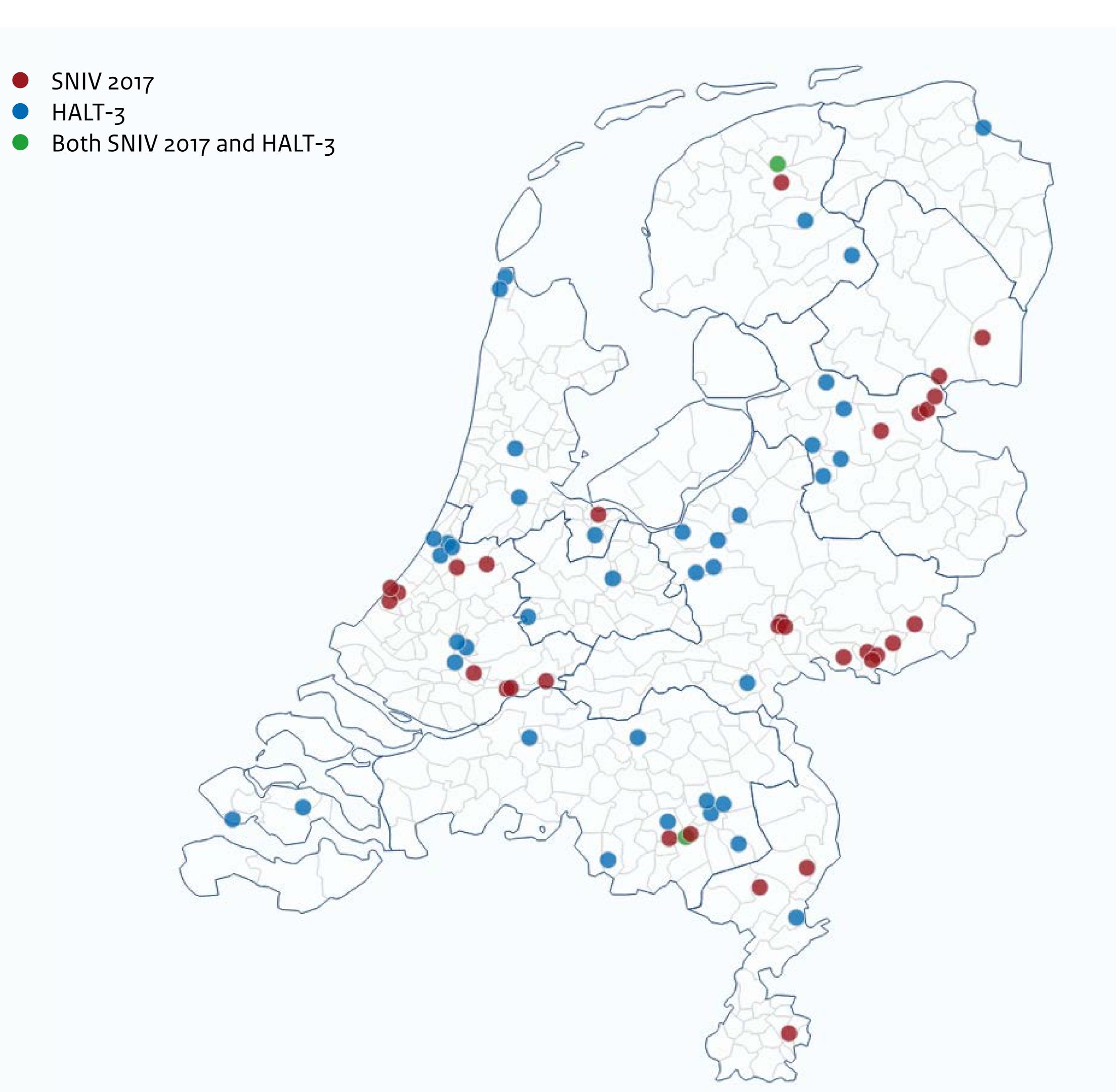


Figure 1. Participating long-term care facilities