identification method has been designed to take into account a certain degree of inappropriate utilization, the presence of false positives again highlights the need for interventions to reduce the overuse and improve the standardization of antibiotics in Japan[12].

The applications of this validated method of HAI identification include large-scale HAI identification at the hospital level and above, as well as providing a context of multi-institutional data in which the performance of individual hospitals in HAI control and antibiotic utilization may be gauged. Additionally, this indicator may also be useful in cost-of-illness analyses where the additional costs associated with identified HAIs are calculated, and further used in downstream analyses such as cost-effectiveness studies of infection control interventions.

A possible limitation of this study concerns the interpretation of Cohen's kappa coefficient: The various methods of interpretation have no empirical foundation and are therefore arbitrary[14, 18-19]. However, as there is no universally accepted interpretation standard for kappa, the abovementioned methods of interpretation are generally used in studies that present kappa coefficients.

Conclusion

We have developed a screening method to identify HAIs in large groups of patients using administrative data with a far higher accuracy than previously available. The validation of our novel method of HAI identification based on antibiotic utilization patterns from administrative data shows that this is an accurate indicator for large-scale studies, and is ready to be used for this purpose.

Footnotes:

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Figure Legend

Figure: Healthcare-Associated Infection incidence by hospital and in total as identified by chart review based on CDC criteria.

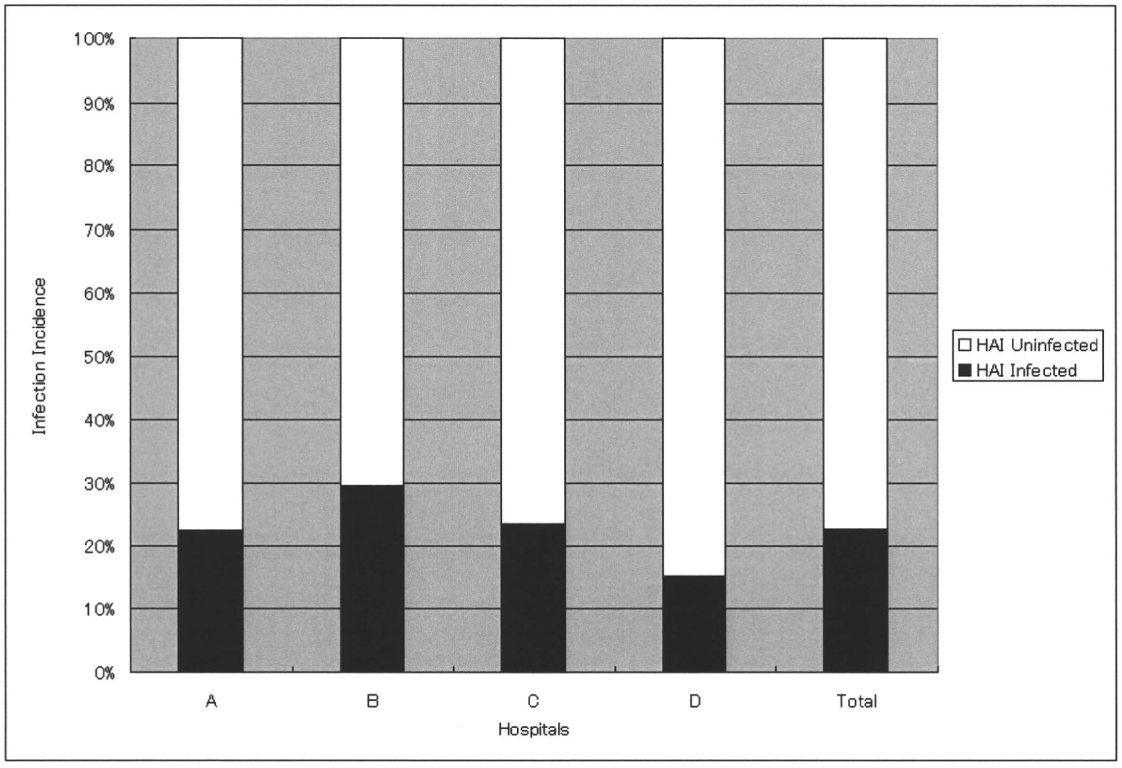

Table I
Healthcare-Associated Infection cases and non-cases as identified by chart review and administrative data

Hospitals	HAI cases (identified by both methods	HAI cases (identified by chart review only)	HAI cases (identified by administrative data only)	Non-HAI cases (identified by both methods)	Overall
A	38	3	15	127	183
B	24	3	6	91	124
C	32	2	9	74	117
D	23	1	9	127	160
Total	117	9	39	419	584

Table 2
Healthcare-Associated Infection cases and non-cases as identified by chart review and administrative data

Hospitals	HAI cases (identified by both methods	HAI cases (identified by chart review only)	HAI cases (identified by administrative data only)	Non-HAI cases (identified by both methods)	Overall
A	38	3	15	127	183
B	24	3	6	91	124
C	32	2	9	74	117
D	23	1	9	127	160
Total	117	9	39	419	584

Table III

Sensitivities, specificities, positive predictive values and negative predictive values of our method of Healthcare-Associated Infection identification by hospital and in total

Hospitals	A	B	C	D	Overall
Sensitivity	0.93 (0.81~0.98)	0.89 (0.72~0.96)	0.94 (0.81~0.99)	0.96 (0.80~0.99)	0.93 (0.87~0.96)
Specificity	0.89 (0.83~0.94)	0.94 (0.87~0.97)	0.89 (0.81~0.94)	0.93 (0.88~0.97)	0.91 (0.89~0.94)
Positive Predictive Value	0.72 (0.58~0.82)	0.8 (0.63~0.91)	0.78 (0.63~0.88)	0.72 (0.55~0.84)	0.75 (0.68~0.81)
Negative Predictive Value	0.98 (0.93~0.99)	0.97 (0.91~0.99)	0.97 (0.91~0.99)	0.99 (0.96~0.99)	0.98 (0.96~0.99)

Values are presented as [Mean (95% Confidence Interval)]

研究成果の刊行に関する一覧表

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