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& Infection Control



20 June to
23 June 2017
Geneva
Switzerland

REDUCTION IN *CLOSTRIDIUM DIFFICILE* INFECTION ASSOCIATED WITH THE INTRODUCTION OF A HYDROGEN PEROXIDE AND SILVER CATIONS DISINFECTION SYSTEM

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DISCLOSURES

- Nothing to disclose

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OBJECTIVE

Evaluate the effectiveness of disinfection with a system based on a micro-nebulization of hydrogen peroxide and silver cations of rooms vacated by patients with *Clostridium difficile* infection (CDI)

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METHODS

The levels of CDI incidence were monitored in:

24 wards of Maggiore Hospital of Lodi - 650 beds (Italy)

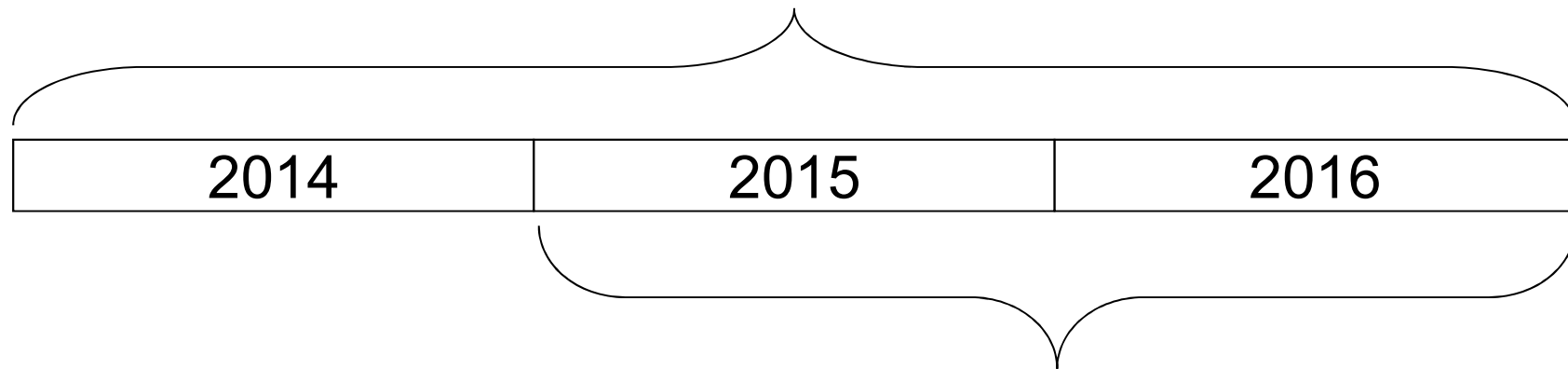
between **January 1st, 2014 and December 31st, 2016**

Only cases of healthcare-associated CDI were included in the analysis



METHODS

Deep cleaning of surfaces with a detergent/chlorine agent at 5,000 ppm

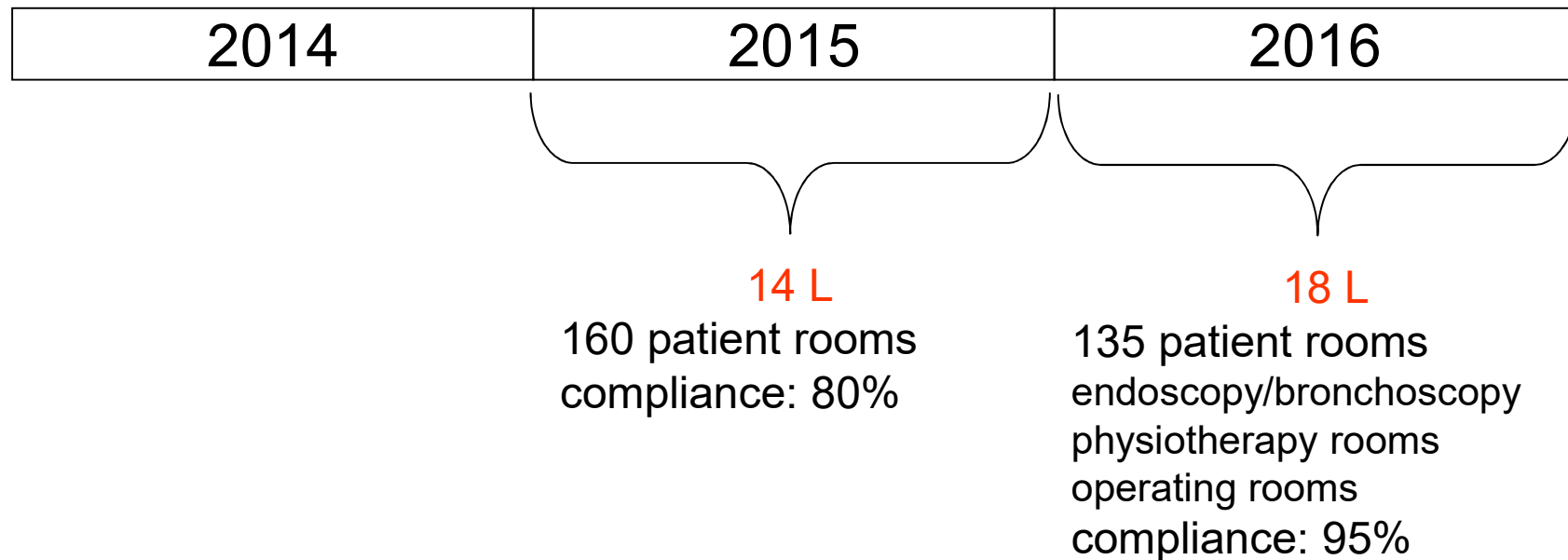


Decontamination system based on a solution of
8% **hydrogen peroxide** + 60 ppm **active silver ions**
(HyperDRYMist®, 99Technologies)



METHODS

H₂O₂ + Ag cations utilization





METHODS

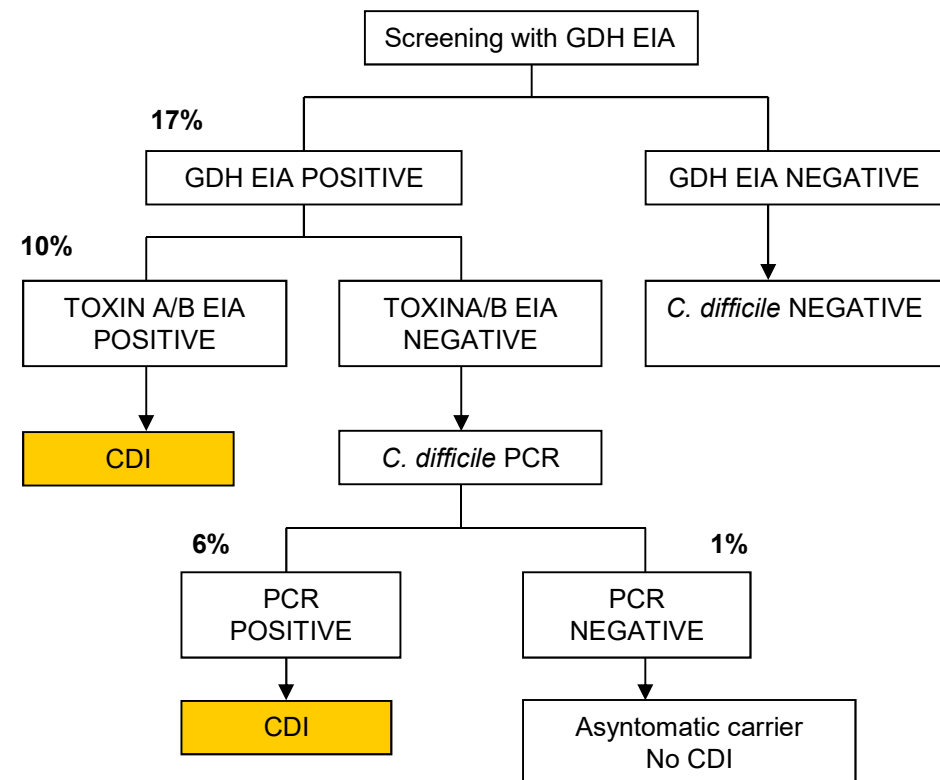
2014 - 2016

3-STEP DIAGNOSTIC ALGORITHM

glutamate dehydrogenase (EIA)

toxin A/B (EIA)

± molecular (GeneXpert ®, Cepheid)



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METHODS

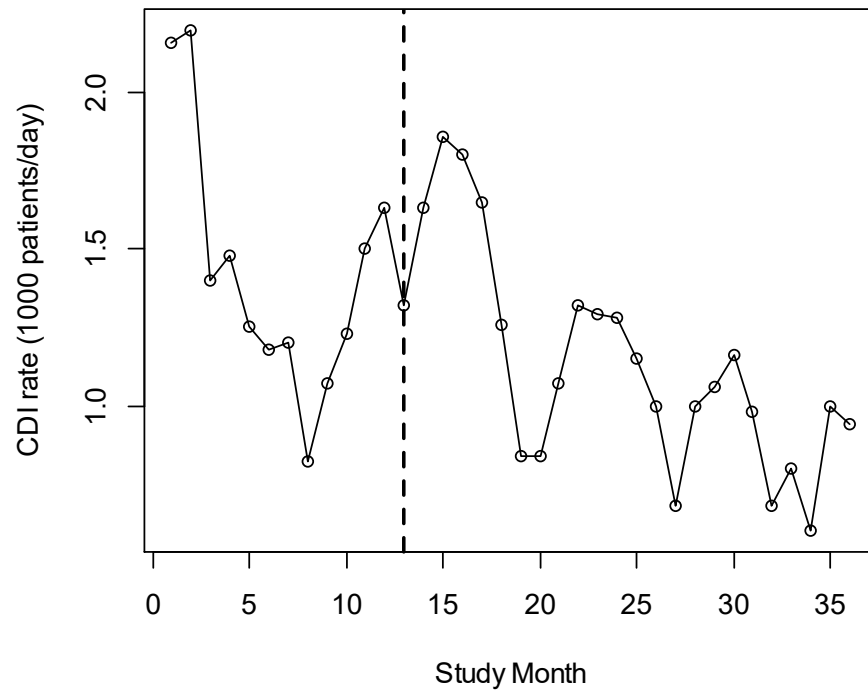
STATISTICAL ANALYSIS

Regression models for the CDI rates having the main intervention term “month>12” along with parametric trigonometric components (sine and cosine) to account for the seasonality were fitted

Appropriate hypothesis testing were carried out via the F statistic to test for changes after the 13th month



RESULTS

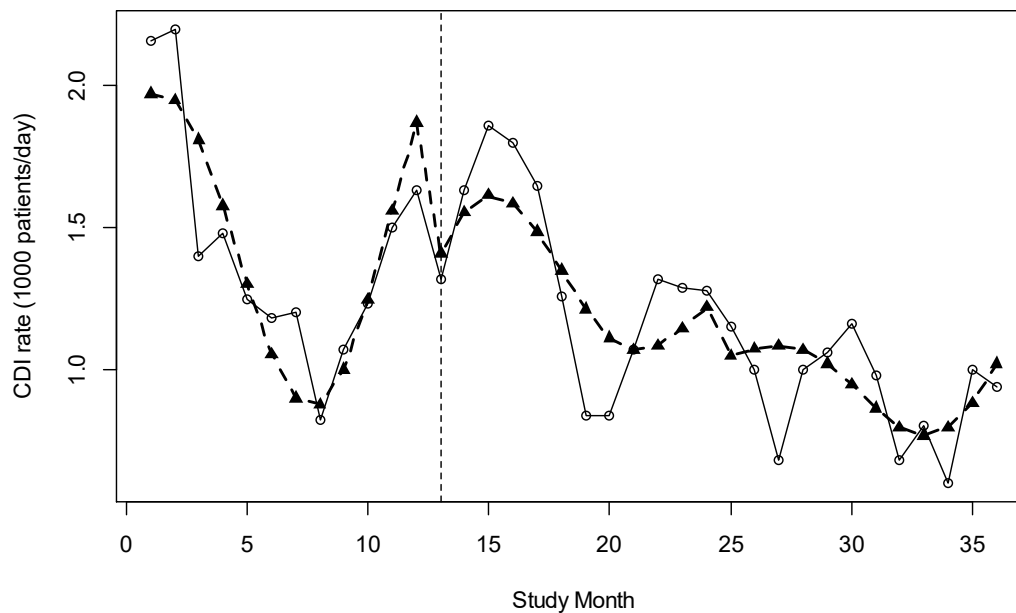


	2014	2015	2016
CDI rates per 1,000 patient-days	1.73	1.32	0.93

	2014	2015	2016
Age (years), Med	79.5	79.8	79
Gender, female %	53	61	57
Length of stay (days), Med	11	10	11



RESULTS



The regression model accounting for seasonality and change after the 13th month

Estimated decrease of CDI after the 12th month (adjusted for seasonality) is 0.48 ($p < 0.0001$)

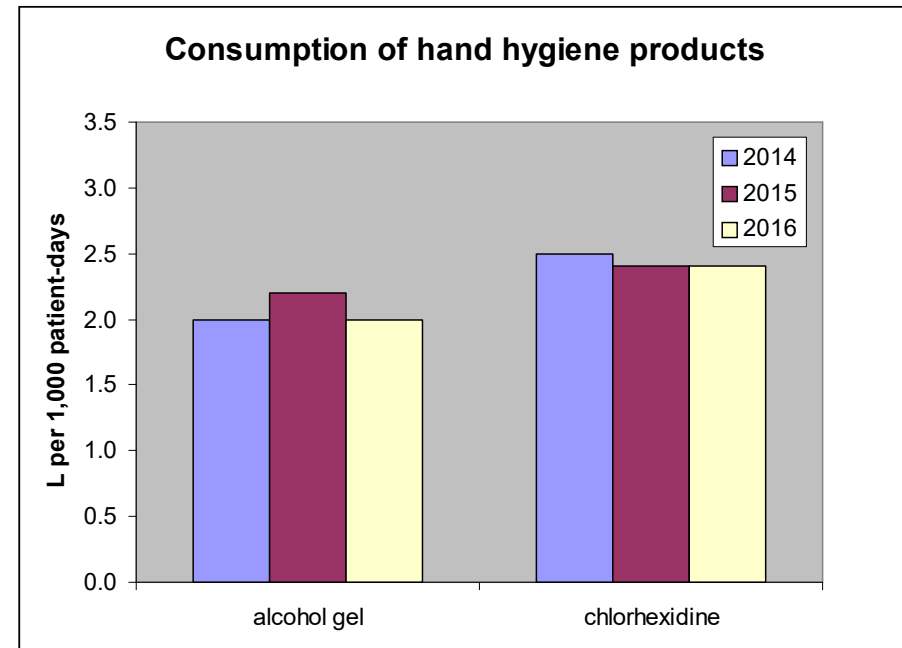
The breakpoint model identified a significant change in the CDI rate from January 2015



RESULTS

The hypothesis that this breakpoint is likely to be explained by the introduction of HDM[®] disinfection is also supported by the fact that data on hand hygiene compliance and data on defined daily doses (DDD) of antibiotics and proton-pump inhibitors didn't change during the period of observation

No new infection control initiatives were implemented

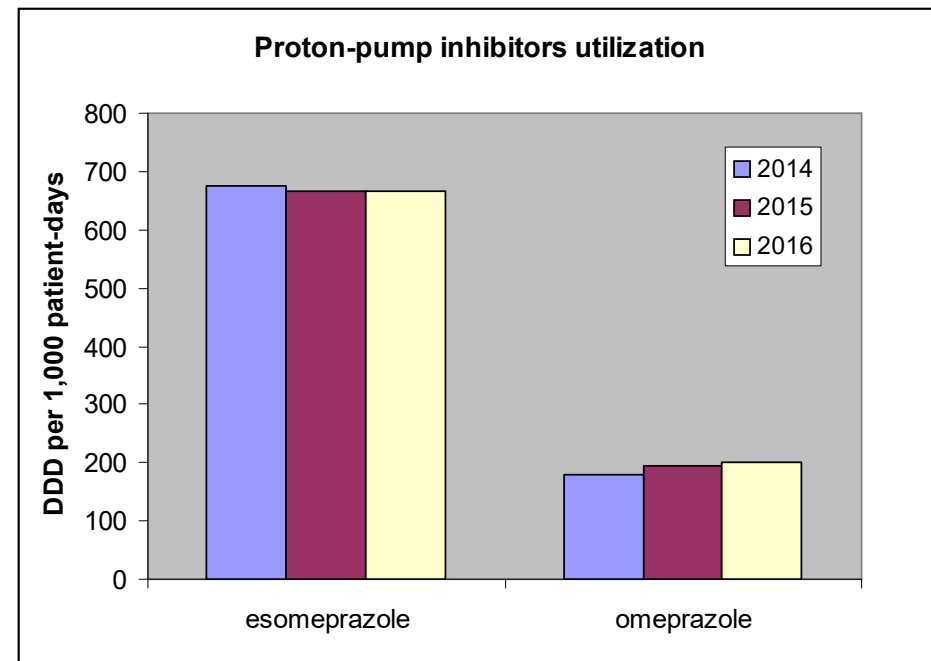
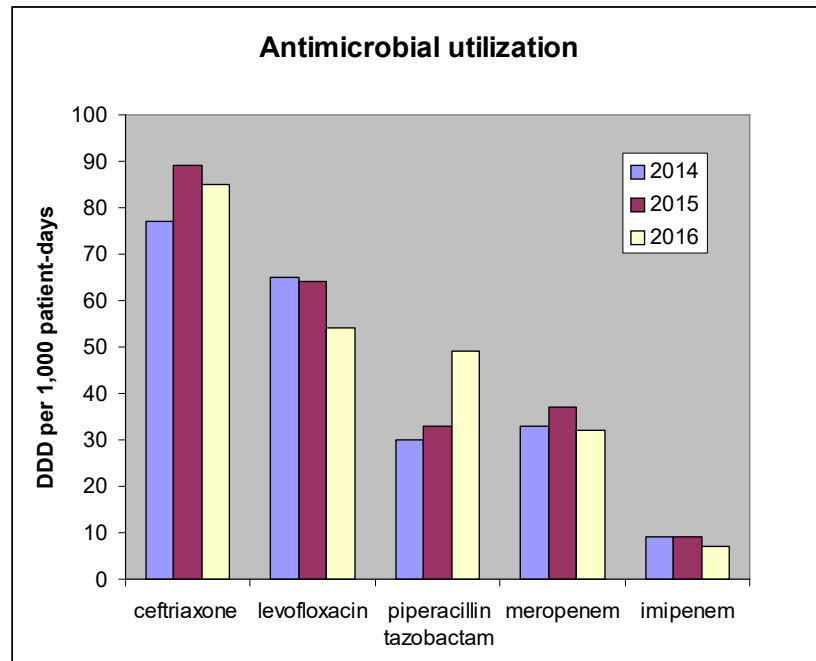


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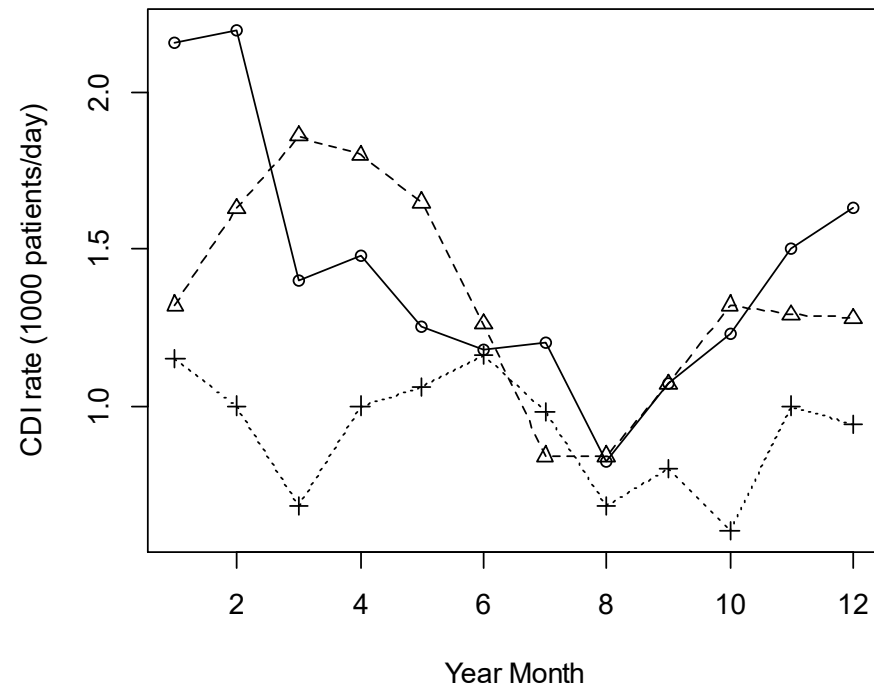
RESULTS

There is a significant change in the seasonal pattern ($p=0.0038$)

The clear-cut seasonal pattern observed in 2014 (dots + continuous line)

is strongly attenuated in 2015 (triangles + dashed line)

and disappears in 2016 (crosses + dotted line)



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CONCLUSION

Our data suggest that improved disinfection at the time of patient discharge using hydrogen peroxide and silver cations reduced transmission of CDI

This disinfection system, should be considered to augment the terminal disinfection of rooms vacated by patients with CDI