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EUHEA CONFERENCE 2020
Virtual conference
9 July 2020

Abstracts

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› Which is the relationship between the fiscal sustainability of the health system and the welfare being of citizens? Evidence from OECD countries

Cost of Illness Studies

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∨ A PROBIOTIC-BASED SANITATION SYSTEM FOR THE REDUCTION OF HEALTHCARE ASSOCIATED INFECTIONS AND ANTIMICROBIAL RESISTANCES: A BUDGET IMPACT ANALYSIS

OBJECTIVES

Antibiotic resistance is a significant cause of morbidity, mortality and social and economic burden. About 700,000 deaths each year in the world may be due to bacteria resistant to antibiotics. The large quantity of antimicrobials used in hospitals let microorganisms in this setting to develop genetic mutations allowing them to be more resistant to antibiotics than those isolated in the community. In hospital setting, the Probiotic Cleaning Hygiene System (PCHS), based on Bacillus probiotic spores, showed to decrease surface pathogens up to 90% more than conventional chemical cleaning (CCC). The aim of the study was to compare PCHS to CCC in terms of reduction of Healthcare Associated Infections (HAIs) and related antibiotic resistances and to evaluate the economic consequences of PCHS vs. CCC through a budget impact analysis (BIA) from the hospital perspective in Italy.

METHODS

Incidence rates of HAIs and related antibiotic resistances were estimated from a multicenter pre-post (6 months CCC + 6 months PCHS) intervention study conducted on 11,461 patients in five Italian hospitals (internal medicine, geriatrics and neurology wards). A propensity score matching (PSM) procedure has been applied in order to select and compare patients managed with PCHS or CCC with the same clinical characteristics. A BIA model was developed to compare the current scenario of use of CCC with a future scenario considering PCHS in the next five years. Being the costs of the two sanitation approaches comparable, the analysis focused on costs of pharmacological treatments for the management of HAIs, which were available from the same study.

RESULTS

The PSM yielded a sample of 8320 patients (4160 per group) with identical clinical characteristics (100% reduction bias on all the variables). The cumulative incidence of HAI decreased significantly from 4.6% to 2.4% ($p < 0.0001$) moving from the traditional sanitation system to PCHS (OR = 0.47, CI95% 0.37-0.60), with antibiotic resistances of 1.13% and 0.53%, respectively. The use of PCHS over CCC in internal medicine, geriatrics and neurology wards in Italian hospitals in the next 5 years is expected to save globally 63.6 million Euros, of which, 52.8 million Euros for the management of resistant HAIs.

DISCUSSION

PCHS could be a cost-saving strategy in comparison to conventional chemical cleaning for the hospital environments, from an Italian hospital perspective, leading to lower HAIs rates and antibiotic resistances. The appropriateness of antibiotics and the promotion of environmentally sustainable sanitation systems, such as the PCHS, could create the conditions to increase protection of health, not only in Italy, but throughout the world.

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