

Introduction

Fecal excretion of antibiotic and the spread of resistant bacteria in the environment have become major public health threats in recent years, particularly for ESBL-PE. It may be related to quality of the equipment and materials in the hospital settings and to the level of knowledge and practice of HCWs regarding excreta management. The purpose of this study was to assess HCWs excreta management and its possible association with ESBL-PE incidence rate (IR) and hydro-alcoholic product (HAP) consumption at the 3,000-bed Nantes University Hospital, France.

Materials and Methods

We performed a quantitative study for HCWs and hospital wards assessment from February to May 2014.

Two self-report questionnaires were sent to :

- 800 HCWs to access the level of knowledge and practices
- and 70 nurse-supervisors to evaluate 74 wards equipment for excreta management (medical, surgical, rehabilitation and long term care).

Score definition and calculation:

The performance was classified in good (score 1), intermediate (score 2) and bad (score 3) levels of equipment (items 1 to 13), knowledge (items 1 to 7) and practices (items 1 to 15) based on pre-established scores including different items.

- Score 1 (good performance): well-equipped ward, HCWs with high level of knowledge and practices
- Score 2 (intermediate performance): intermediate level
- Score 3 (bad performance): bad-equipped wards, HCWs with low level of knowledge and practices

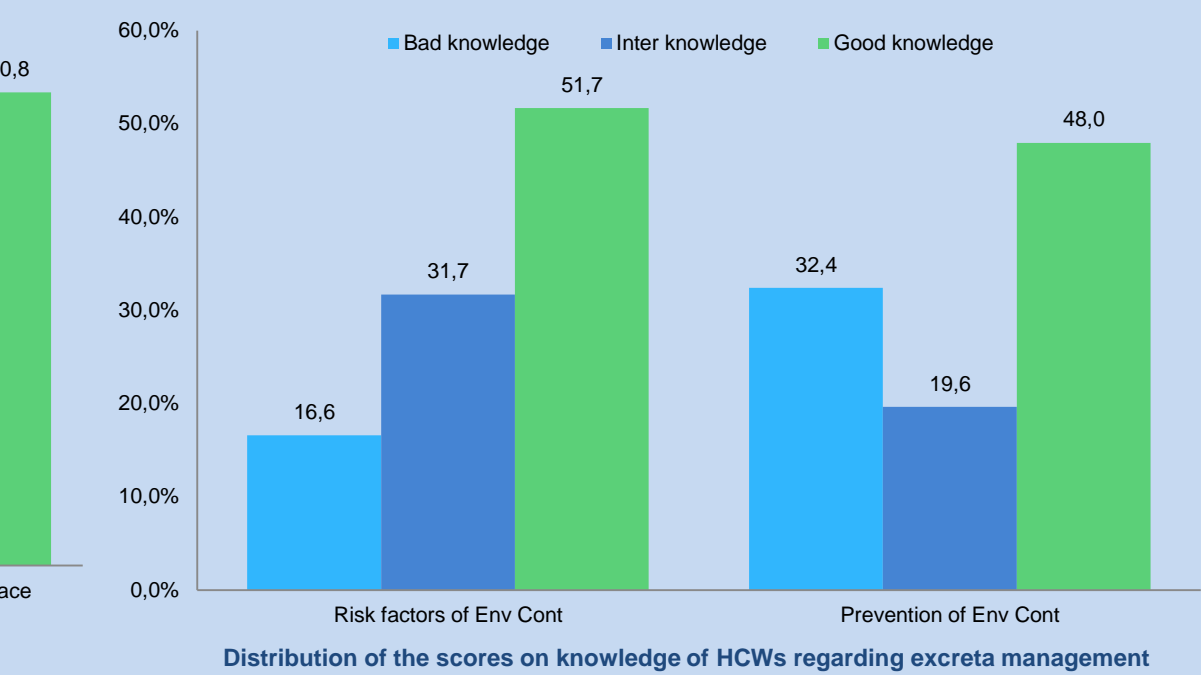
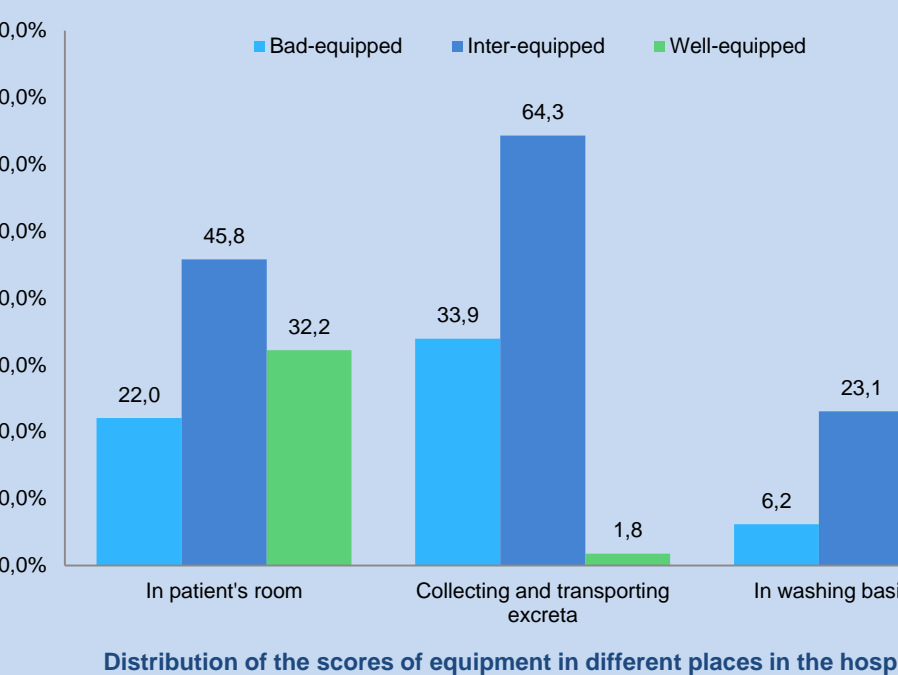
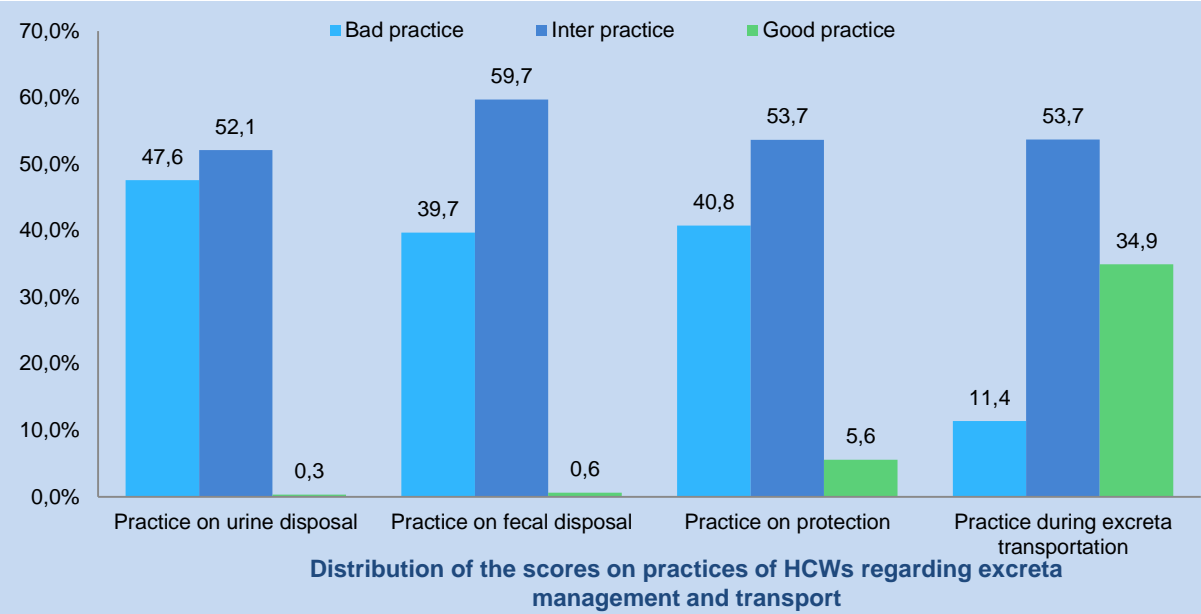
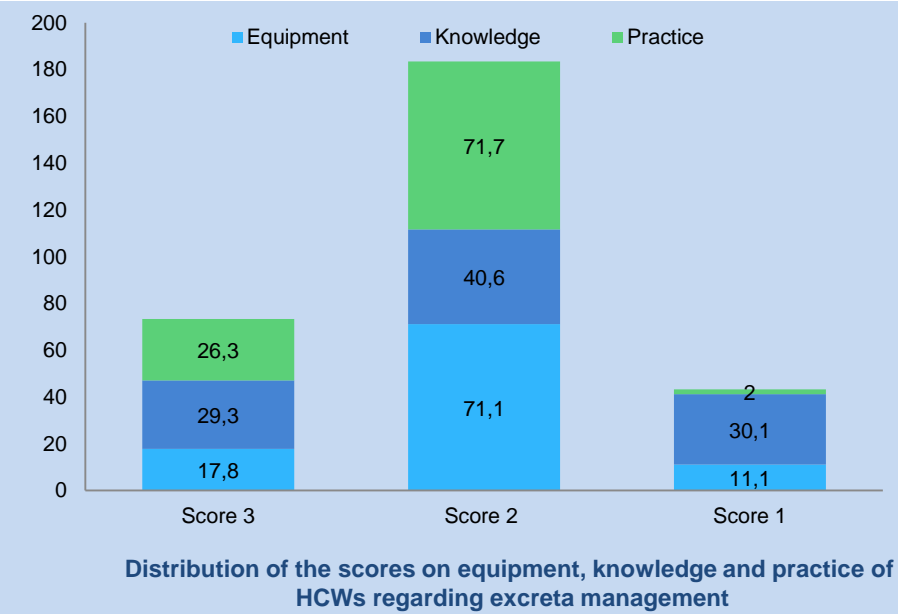
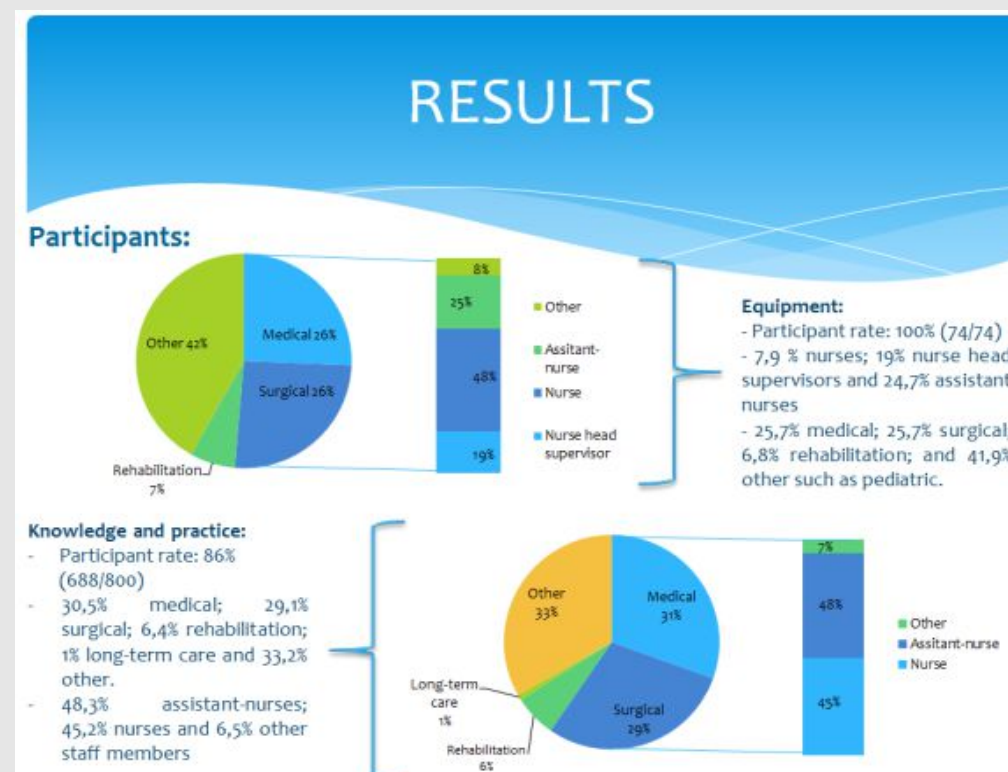
ESBL incidence rate per 1,000 patient-days (indicator 1): Data were collected from the laboratory database.

Annual hydro-alcoholic product (HAP) consumption rate per 1,000 patient-days (indicator 2): Data were collected from a specific database provided by the Pharmacy.

Data collection and analysis:

Sphinx Plus-V5® software (Chavanod, France) was used for data collection and STATA V15® software (StataCorp LP, Texas, USA) was used for data analysis.

Linear regression was performed to evaluate the association between HCWs knowledge/practices and ward equipment and ESBL-PE incidence rate according to the different scores.



Service	IR ESBL/ 1,000 patient-days (PDs)	HAP consumption per litter/ 1,000 patient-days
Medical	0.54	41.39
Surgical	0.97	25.47
Rehabilitation	0.31	20.14
Long-term care	0.03	7.37

Results 2014 - ESBL incidence rate and consumption of Hydro-Alcoholic product per 1000

Variable	ESBL IR			HAP consumption		
	Coef.	p-value	95% CI	Coef.	p-value	95% CI
Equipment	0.07	0.48	-0.12 0.25	-4.69	0.16	-11.3 1.99
Knowledge	0.32	0.28	-0.26 0.91	-1.33	0.23	-3.56 0.88
Practices	-0.15	0.002	-0.24 -0.06	2.68	0.12	-0.75 6.12

Results from univariate analysis (linear regression)

Conclusions

Lack of recommended practices on excreta management could increase the spread of ESBL-PE in healthcare settings. Public health efforts to enhance knowledge and practice of HCWs related to excreta management need to be developed and integrated in infection control programs to control the spread of multidrug-resistant bacteria from the gut flora.