Table 1: Characteristics of Patients with MRSA and CRKP

Demographics	MRSA alone n-161	CRKP alone n-215	MRSA & CRKP n-15
Age			
18-35	53	36	5
36-50	25	85	7
Above 50	83	94	3
Sex			
Female	72	80	7
Male	89	135	8
Length of Stay(Average)	92	110	9
>50 days	69	105	6
<49 days			

Fig 2: MRSA, CRKP in ICU and HDU 2013-2017

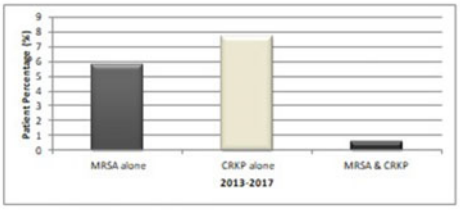

Fig 1: Total Patients on ICU and HDU during the period of Study

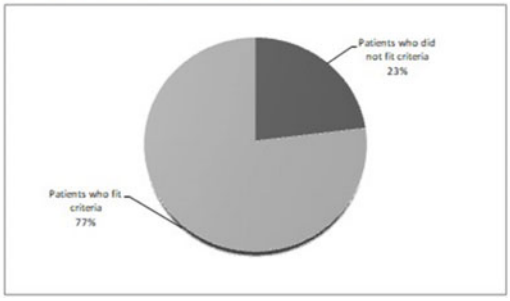

Fig3: MRSA & CRKP co-colonization and co-infection Death 2013-2017

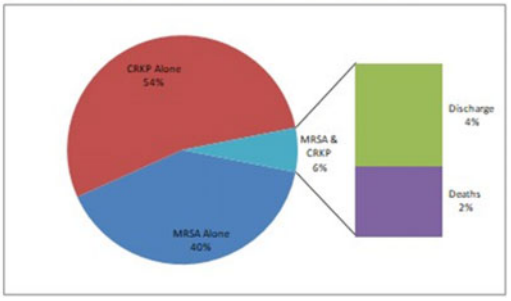

Fig. 1.

were length of stay after transplantation, delayed graft function (ie, dialysis after the transplantation) and postoperative care in an intensive care unit. At the 6-month follow-up, we identified urinary infection and surgical site infection as risk factors. One death occurred due to stroke in the group of colonized patients, unrelated to infectious causes. **Conclusions:** These results show fundamental aspects for health professionals for bacterial characterization, transmission, and resistance mechanisms and, mainly, tools for prevention and control of multidrug-resistant bacteria from patients colonized under conservative treatment before the complexity of high-risk procedures begins, such as dialysis and transplantation to reduce morbidity and mortality.

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Colonization With Antibiotic-Resistant Gram-Negative Bacteria in Population-Based Hospital and Community Settings in Chile

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Background: Estimating the burden of intestinal colonization with antibiotic-resistant gram-negative bacteria (AR-GNB) is critical to understanding their global epidemiology and spread. We aimed to determine the prevalence of, and risk factors for, intestinal colonization due to AR-GNB in population-based hospital and community settings in Chile. **Methods:** Between December 2018 and May 2019, we enrolled randomly selected hospitalized adults in 4 tertiary-care public hospitals (Antofagasta, Santiago, Curico and Puerto Montt), and adults residing in a community-based cohort in the rural town of Molina. Following informed consent, we collected rectal swabs and epidemiological information through a standardized questionnaire. Swabs were plated onto MacConkey agar with 2 μg/mL ciprofloxacin or ceftazidime. All recovered morphotypes were identified, and antibiotic susceptibility testing was performed via disk diffusion. The primary outcome was the prevalence of colonization with fluoroquinolone (FQ)- or third-generation cephalosporin (3GC)–resistant GNB. The secondary outcome was the prevalence of colonization with multidrug-resistant (MDR) GNB, defined as GNB resistant to ≥3 antibiotic classes.

Categories were not mutually exclusive. Bivariate and multivariate analyses were performed to describe risk factors for colonization with these categories. **Results:** In total, 775 hospitalized adults and 357 community participants were enrolled, with a median age of 60 years (IQR, 42–72) and 55 years (IQR, 48–62) years, respectively. Among hospitalized participants, the prevalence of colonization with FQ- or 3GC-resistant GNB was 47% (95% CI, 43%–50%) and 41% (95% CI, 38%–45%), respectively, whereas the prevalence of MDR-GNB colonization was 27% (95% CI, 24%–31%). In the community setting, the prevalence of colonization with either FQ-, 3GC-resistant GNB, or MDR-GNB was 40% (95% CI, 34%–45%), 29% (95% CI, 24%– 34%), and 5% (95% CI, 3%–8%), respectively. Independent risk factors for hospital MDR-GNB colonization included the hospital of admission, unit of hospitalization (intensive care units carried the highest risk), in-hospital antimicrobial exposure, comorbidities (Charlson index), and length of stay. In the community setting, recent antibiotic exposure (<3 months) predicted colonization with either FQ- or 3GC-resistant GNB, and alcohol consumption was inversely associated with MDR GNB colonization. **Conclusions:** A high burden of colonization with AR-GNB was observed in this sample of hospitalized and community-dwelling adults in Chile. The high burden of colonization with GNB resistant to commonly used antibiotics such as FQ and 3GC found in community dwellers, suggests that the community may be a relevant source of antibiotic resistance. Efforts to understand relatedness between resistant strains circulating in the community and the hospital are needed.

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Comparative Evaluation of the Microbicidal Activity of Low-Temperature Sterilization Technologies to Steam Sterilization

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Background: Most medical and surgical devices used in healthcare facilities are made of materials that are sterilized by heat (ie, heat stable), primarily steam sterilization. Low-temperature sterilization methods developed for heat and moisture sensitive devices include ethylene oxide gas (ETO), hydrogen peroxide gas plasma (HPGP), vaporized hydrogen peroxide (VHP), and hydrogen peroxide plus ozone. This study is the first to evaluate the microbicidal activity of the FDA-cleared VHP sterilizer and other methods (Table 1) in the presence of salt and serum (10% FCS). **Methods:** Brushed stainless steel discs (test carriers) were inoculated with test microbes (Table 1) and subjected to 4 sterilization methods: steam, ETO, VHP and HPGP. **Results:** Steam sterilization killed all 5 vegetative and 3 spore-forming test organisms in the presence of salt and serum (Table 1). Similarly, the ETO and the HPGP sterilizers inactivated the test organisms with a failure rate of 1.9% for each (ie, 6 of 310 for ETO and 5 of 270 for HPGP). Although steam had no failures compared to both ETO and HPGP, which demonstrated some failures for vegetative bacteria, there was no significant difference comparing the failure rate of steam to either ETO ($P > .05$) or HPGP ($P > .05$). However, the VHP system tested failed to inactivate all the test organisms in 76.3% of the tests (206 of 270; $P <$

Table. Comparative evaluation of the microbicidal activities of sterilization technologies in the presence of salt and serum

Organism	Mean Carrier Quantitation (Day of Run)	Percentage Failure (carriers positive/carriers tested)			
		Steam	ETO	HPGP	VHP
Vegetative Cells (total)		0 (0/140)	3 (6/220)	3 (5/180)	72 (129/180)
PA	$2.0x10^6$	0 (0/30)	0 (0/50)	0 (0/40)	13 (5/40)
EC	$3.4x10^6$	0 (0/30)	4 (2/50)	3 (1/40)	75 (30/40)
VRE	$2.8x10^6$	0 (0/30)	8 (4/50)	10 (4/40)	93 (37/40)
SA	$2.3x10^6$	0 (0/30)	0 (0/40)	0 (0/30)	93 (28/30)
MT	$5.2x10^4$	0 (0/20)	0 (0/30)	0 (0/30)	97 (29/30)
Spores (total)		0 (0/80)	0 (0/90)	0 (0/90)	86 (77/90)
BA	$1.2x10^5$	0 (0/30)	0 (0/30)	0 (0/30)	83 (25/30)
GS	$5.1x10^4$	0 (0/30)	0 (0/30)	0 (0/30)	73 (22/30)
CD	$4.4x10^4$	0 (0/20)	0 (0/30)	0 (0/30)	100 (30/30)
Overall		0 (0/220)	2 (6/310)	2 (5/270)	76 (206/270)

Abbreviations: PA-*Pseudomonas aeruginosa*, EC-*Escherichia coli*; VRE-vancomycin-resistant enterococci; SA-*Staphylococcus aureus*; BA-*Bacillus atropheaus* spores; GS-*Geobacillus stearothermophilus* spores; CD-*Clostridioides difficile* spores; MT-*Mycobacterium terrae*; ETO-ethylene oxide; ND-not done; Veg-vegetative cells