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Figure 1. Postoperative Urine Culture Outcomes by Preoperative Colonising Organism

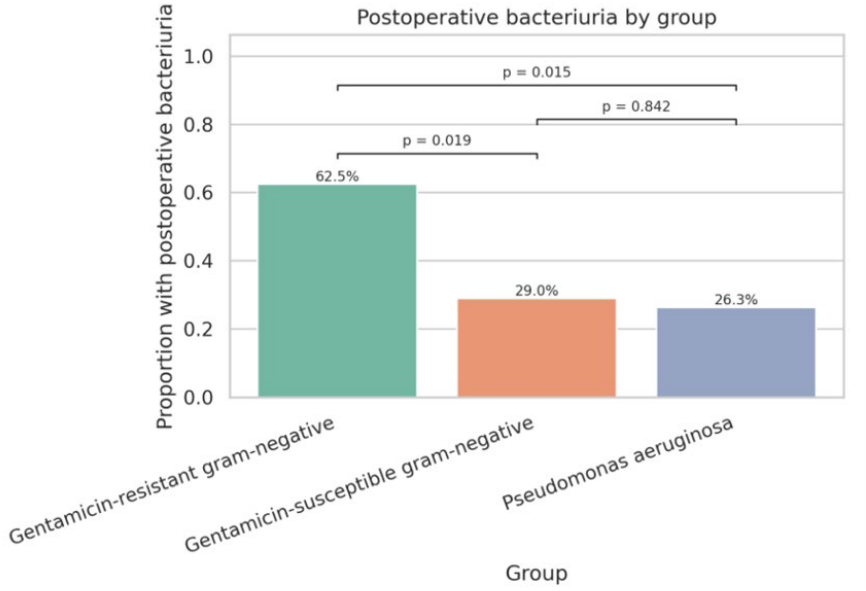

Figure 1: Postoperative Urine Culture Outcomes by Preoperative Colonising Organism

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Antimicrobial Stewardship (AMS) program in Lombardy region: analysis of effectiveness and costs

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Background

Antimicrobial stewardship (AMS) programs have demonstrated effectiveness in improving antibiotic prescribing.RF-net project aims to assess the cost-effectiveness of an AMS program in tertiary healthcare facilities and compare hospital mortality before and during program implementation

Methods

Prospective, multicenter, pre-post study. The AMS intervention, standardized across Lombardy centers, included: (1)defining the AMS group, (2) reviewing appropriateness of carbapenems and anti-carbapenemase-producing Enterobacterales antibiotics, (3)implementing microbiological reports/antibiotic consumption tracking, and (4)educational interventions. The intervention start varied by center, with a 13-month observation period (6 months pre-intervention phase-PIP, 1-month buffer phase-BP, and 6 months intervention phase-IP). Data were sourced from regional healthcare databases (SDO ICD-9CM codes, File R for antibiotics, and Microbio for microbiological data), while healthcare costs were provided by each center.The statistical unit was the month-department

Results

A total of sixteen centres participated, encompassing 265 departments. In 6/16 centres (37.5%), the intervention involved >15 departments, in 1/16 (6.3%) between 10-15, and in 9/16 (56.2%) <10 departments. Four centres (25%) implemented the intervention hospital-wide, while 12/16 (75%) applied it to selected departments. In table 1 are described overall healthcare procedures and related costs. In univariate analysis (Table 2), healthcare costs for infectious diseases (ID) consultations significantly increased during IP with a difference of 0.13 (0.05-0.22), p<0.0001, as well as bacterial and fungal-related exams, 0.13 (0.04-0.21), p<0.0001 and 0.13 (0.02-0.24), p 0.02 respectively. Conversely, meropenem procurement significantly decreased during IP by -0.19 (-0.35 -0.03), p 0.02, as well as piperacillin/tazobactam -0.29 (-0.39 -0.19), p<0.0001, cefotaxime -0.15 (-0.28 -0.01), p 0.03 and imipenem/cilastatin -0.1 (-0.2 – 0.0), p 0.04(Table 3). Both meropenem/vaborbactam and ceftazidime/avibactam, have shown a significant reduction in IP, -0.14 (-0.26 -0.03), p 0.01 and -0.31 (-0.41 -0.21), p<0.0001 respectively. No significant reduction in mortality was observed

Conclusions

This project represents an example of a structured AMS intervention implemented at a regional level, supported by standardized and aggregated data collection systems. The intervention was associated with a significant reduction in carbapenems and beta-lactam beta-lactamase inhibitors consumption and an increase of healthcare costs for ID consultations and bacterial/fungal-related exams, suggesting a more targeted and supported prescribing process

CENTRES		PHASE					
TOTAL		PRE-INTERVENTION PHASE		BUFFER PHASE		INTERVENTION PHASE	
		N	MEAN(MIN-MAX)	N	MEAN (MINMAX)	N	MEAN (MINMAX)
NUMBER OF DEPARTMENT-MONTHS		1502	15.62 (1.00 – 60.00)	257	2.75 (1.00 – 9.00)	1.346	13.94 (0.00-76.00)
TOTAL N OF HOSPITALISATION			34.99 (1.00 – 627.00)		57.18 (1.00 – 513.00)		34.96 (1.00 – 611.00)
MEAN HOSPITALIZATION _TOT			12.97 (1.00-138.00)		12.82 (1.00-58.43)		12.76 (1.00-170.00)
AVERAGE AGE OF HOSPITALIZATIONS			62.88 (18.00 - 89.00)		62.64 (20.33 – 84.66)		62.70 (18.33 – 91.00)
N_ MORTALITY			2.39 (1.00 – 33.00)		2.32 (1.00 – 31.00)		2.16 (1.00 – 42.00)
N_RADIOLOGY SERVICES			54.80 (0.00 – 611.00)		58.35 (0.00 – 631.00)		57.81 (0.00 – 588.00)
N_BLOOD TESTS			68.1.94 (0.00 – 6,306.00)		825.24 (0.00 – 6,244.00)		786.74 (0.00 – 7,656.00)
N_BLOOD CULTURES			9.40 (1.00 – 242.00)		12.28 (1.00 – 213.00)		10.56 (1.00 – 253.00)
N_BACTERIAL CULTURES			47.42 (0.00 – 547.00)		49.82 (0.00 – 373.00)		48.49 (0.00 – 483.00)
N_FUNGAL CULTURES			3.14 (0.00 – 61.00)		3.31 (0.00 – 51.00)		3.49 (0.00 – 74.00)
N_VIRUS/MYCOBACTERIA AND PARASITES DIAGNOSTIC			43.07 (0.00 – 886.00)		45.69 (0.00 – 602.00)		45.75 (0.00 – 775.00)
N_INFECTIOUS DISEASES CONSULTATION			2.75 (0.00 – 49.00)		3.30 (0.00 – 50.00)		3.20 (3.20 – 47.00)
COSTS RADIOLOGY _TOT			7,490.91 (0.00 – 116,354.88)		7,943.69 (0.00 – 62,193.07)		8,05 7.55 (0.00 – 66,370.56)
COSTS_BLOOD EXAMS _TOT			8,271.41 (0.00 – 123,169.6)		9,135.55 (0.00 – 122,458.96)		8,962.61 (0.00 – 132,449.20)
COSTS_BLOOD CULTURES_TOT			894.32 (0.00 – 24,653.00)		1,05 7.84 (0.00 – 13,839.00)		1,001.42 (0.00 – 19,494.00)
COSTS_BACTERIA L _TOT			1,481.75 (0.00 – 21,462.30)		1,702.39 (0.00 – 16,560.27)		1,697.23 (0.00 – 22,231.43)
COSTS_FUNGAL_TOT			136.99 (0.00 – 4,187.00)		144.08 (0.00 – 4,365.85)		143.97 (0.00 – 5,402.70)
COSTS_ VIRUS/MYCOBACTERIAAND PARASITES DIAGNOSTIC _TOT			2,481.04 (0.00 – 75,806.50)		2,87 1.81 (0.00 – 74,783.93)		2,811.31 (0.00 – 82,134.08)
COSTS_INFECTIOUS DISEASES (ID) CONSULTATION _TOT			116.51 (0.00 – 4,137.84)		139.86 (0.00 – 3,195.00)		136.26 (0.00 – 4,017.00)
COSTS_PERSONNEL_TOT			270,757.89 (81.63 – 19,493,33 5.37)		279,708.80 (85.40 – 19.1.23,27 3.46)		227,536.92 (0.00 – 20.838,00 3.82)
COSTS_HOSPITALISATION_TOT			42,592.05 (0.00 – 669,360.04)		44,618.02 (246.15 – 331,922.70)		42,733.04 (0.40 – 418,754.95)
COSTO_OPERATING ROOM_TOT			23,161.35 (0.00 – 1,654,364.78)		17,235.87 (0.00 – 221,403.84)		16,315.72 (0.00 – 349,649.83)

	N of centres included	Δ in post intervention phase	CI min post	CI max post	p-value
Costs ID consultation, tot	15	**0.13**	0.05	0.22	**<0.0001**
Costs Radiology, tot	15	0.07	-0.01	0.14	0.08
Costs Blood tests, tot	15	0.06	-0.02	0.13	0.13
Costs Blood cultures, tot	15	0.06	-0.01	0.13	0.11
Costs Bacterial cultures, tot	15	**0.13**	0.04	0.21	**<0.0001**
Costs Fungal cultures, tot	15	**0.13**	0.02	0.24	**0.02**
Costs Virus/Mycobacteria and parasites, tot	15	-0.04	-0.13	0.05	0.39
Costs of personnel, tot	15	0.02	-0.03	0.08	0.42

	N of centres included	Δ in post intervention phase	CI min post	CI max post	p-value
AMOXICILLIN/CLAVULANIC ACID	15	-0.06	-0-16	0.03	0.19
AMPICILLIN/SULBACTAM	15	-0.06	-0.18	0.06	0.31
PIPERACILLIN/TAZOBACTAM	15	**-0.29**	-0.39	-0.19	**<0.0001**
CEFTRIAXONE	15	-0.15	-0.25	-0.06	0.00
CEFOTAXIME	15	**-0.15**	-0.28	-0.01	**0.03**
CEFTAZIDIME	15	0.00	-0.1	0.1	0.97
CEFEPIME	15	0.17	0.08	0.27	0.00
MEROPENEM	15	**-0.19**	-0.35	-0.03	**0.02**
ERTAPENEM	15	0.07	-0.04	0.19	0.22
IMIPENEM/CILASTATIN	15	**-0.10**	-0.20	0.00	**0.04**
MEROPENEM/VABORBACTAM	15	**-0.14**	-0.26	-0.03	**0.01**
CEFTAZIDIME/AVIBACTAM	15	**-0.31**	-0.41	-0.21	**<0.0001**
CEFTOLOZANO/TAZOBACTAM	15	0.00	-0.11	0.11	0.97
IMIPENEM/RELEBACTAM	15	-0.01	-0.22	0.19	0.89
CEFIDEROCOL	15	-0.11	-0.35	0.13	0.35

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Epidemiological trends in *Clostridioides difficile* infections in France, 2019-2024: TRACE national population-based study

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Background
Clostridioides difficile infection (CDI) is a major cause of healthcare-associated diarrhea with 124,000 cases per year in Europe and 3% of attributable mortality. In France, most recent data (2017) indicated an incidence of at 3.1 cases/10,000 patient-days—below the European average. However, since 2017 no national estimate has been available. The TRACE study aimed to assess national CDI trends using the French National Health Data System (SNDS) from 2019 to 2024.

Methods
Patients ≥2 years old with CDI in hospital and community settings were included. SNDS definition was based on adapted ECDC-based algorithm combining (1) ICD-10 code A04.7 for hospitalized patients (2) a *Clostridioides difficile* test AND a targeted CDI antibiotics within a 7-day window for patients from the community. ICD-10 diagnoses, surgical procedure codes for digestive CDI complications, antibiotic dispensing and microbiology exams allowed estimation of annual incidence, new episodes and recurrent cases through a one-year back and one-year follow-up.

Results
Between 2019 and 2024, 206,640 distinct patients had at least one episode of CDI in France. In-hospital incidence increased from 2.84/10,000 hospitalization-days (HD) (n=14,532) in 2019 to 3.53/10,000 HD (n=16,633) in 2024. Outpatient CDI showed a marked increase from approximately 8,300 cases in 2019 to 25,800 in 2024.

Conclusions
This study provides the first nationwide CDI estimates in France since 2017 and suggests a rising trend in both hospital and community settings. A validated SNDS-based CDI detection tool could complement existing surveillance systems and strengthen national monitoring capacities. SNDS data could serve as a reference for evaluating future ORCHIDEE CDI indicators generated from clinical data warehouses. If these trends are confirmed, the contribution of medico-administrative databases to CDI surveillance should be reconsidered.