122. All-Cause Mortality Increased With Nontuberculous Mycobacterial Lung Disease in US Medicare

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Background. Nontuberculous Mycobacterial Lung Disease (NTMLD) is a chronic, debilitating, and progressive disease. This study evaluates all-cause mortality in patients with NTMLD in the US Medicare.

Methods. Patients (n = 43,394) were identified from the Medicare database (excluding Part C) based on physician claims for NTMLD on ≥2 separate occasions ≥30 days apart between 2007 and 2015. About 12% patients were <65 years and qualified for Medicare due to disability. A control cohort (n = 84,814) was randomly selected and matched to the NTMLD sample by age and sex. The NTMLD diagnosis date was assigned to the matched controls as an index date. Poisson and Cox regression were used to derive descriptive rates and adjusted risk of mortality accounting for baseline comorbidities of pulmonary, immune, cardiovascular, cancer, and other disorders.

Results. Mean age was 74 (±10) years and 68% were female in both NTMLD and control cohorts. Mean Charlson comorbidity index (CCI) was 2.9 (standard deviation ±2.6) in NTMLD vs. 1.3 (±1.9) in control cohort. In Medicare members ≥65 years, mean age was 76 (±7) years and 70% were female. Mean CCI was 2.8 (±2.5) in NTMLD cohort vs. 1.4 (±2.0) in control cohort. In Medicare members <65, mean age was 53 (±10) and 49% were female. Mean CCI was 3.8 (±3.3) in NTMLD vs. 1.1 (±1.9) in the control. Observed yearly mortality rates were 9.8% in NTMLD vs. 4.7% in control cohort (rate ratio [RR] = 2.1; 95% CI: 2.03–2.13). In ≥65 Medicare members, the observed rates were 9.7% in NTMLD vs. 5.0% in control cohort (RR = 2.0; 1.9–2.0). In Medicare members <65, the observed rates were 10.4% in NTMLD vs. 2.5% in control cohort (RR = 4.1; 3.8–4.5). Compared with the Asian race, observed mortality was higher in NTMLD patients of Native American (hazard ratio [HR] = 1.69, 1.30–2.19), Black (HR = 1.23; 1.08–1.39), Hispanic (HR = 1.27, 1.07–1.51), or White (HR = 1.18, 1.06–1.31) race (Figure 1). Mortality rates were elevated with NTMLD relative to controls in all age categories from ≥65 years (Figure 2). Adjusted mortality increased with NTMLD by 35% overall (HR = 1.35; 1.3–1.4), by 23% in age group ≥65 (HR = 1.23, 1.19–1.27), and almost doubled in age group <65 (HR = 1.97, 1.80–2.15).

Conclusion. Among US Medicare enrollees, NTMLD was associated with a 35% increased risk of mortality overall.

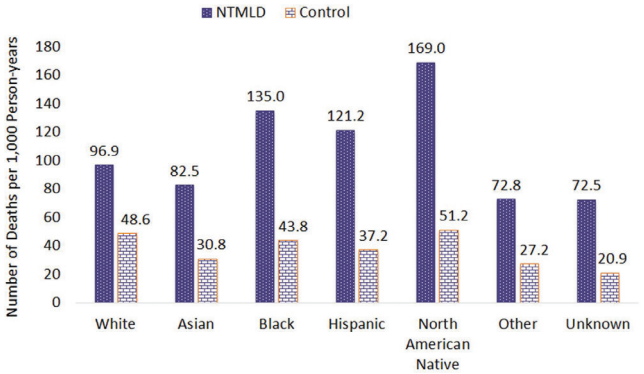

Figure 1: Observed mortality by race groups

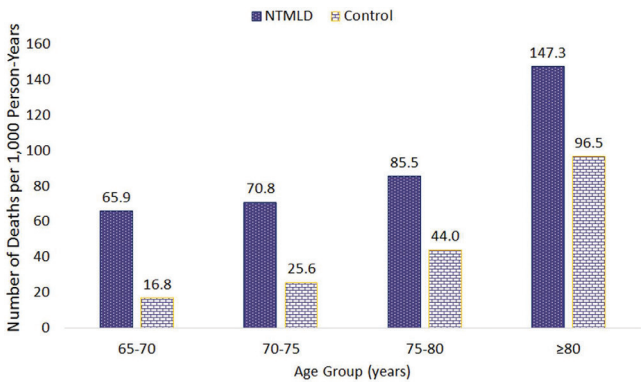

Figure 2: Observed mortality by age groups

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This abstract has been withdrawn at the author's request.

124. Microbiological Outcomes With Plazomicin (PLZ) Versus Meropenem (MEM) in Patients With Complicated Urinary Tract Infections (cUTI), Including Acute Pyelonephritis (AP) in the EPIC Study

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Background. PLZ is a next-generation aminoglycoside (AG) that is structurally protected from common AG-modifying enzymes (AMEs) in Enterobacteriaceae and with *in vitro* activity against multidrug-resistant Enterobacteriaceae, including ESBL-producing, AG-resistant, and carbapenem-resistant isolates. We report microbiological outcomes in the EPIC study, including outcomes for resistant pathogens and by the PLZ MIC.

Methods. EPIC was a multinational, randomized, double-blind study in hospitalized patients with cUTI or AP. Patients received IV PLZ (15 mg/kg q24h) or IV MEM (1 g q8h) for 4–7 days, followed by optional oral therapy, for a total of 7–10 days of therapy. The extended mMITT population included patients with ≥1 qualifying baseline pathogen (≥10^5 CFU/mL urine) who received study drug. Microbiological outcomes were assessed at TOC (day 15–19). Isolate identification and susceptibility testing were conducted by a central laboratory. Whole-genome sequencing was used to identify AME and β-lactamase genes.

Results. Of 609 patients enrolled, 407 (66.8%) were included in the extended mMITT population. The most common uropathogen was *Escherichia coli* (63.4%) followed by *Klebsiella pneumoniae* (19.7%). PLZ and MEM $MIC_{50/90}$ for Enterobacteriaceae were 0.5/2 µg/mL (range: ≤0.06–>128 mg/mL) and 0.015/0.06 mg/mL (range: ≤0.004–128 mg/mL), respectively. ESBL and AG-NS phenotypes were found in 29% and 27% of isolates, respectively. Genotyping detected β-lactamase and AME genes in 32.5% and 36.8% of isolates, respectively, most commonly $bla_{CTX\text{-}M\text{-}15}$ (n = 98), $bla_{OXA\text{-}1/OXA\text{-}30}$ (n = 82), *aac(6′)Ib-cr* (n = 79), and *aac(3)-IIa* (n = 56). Rates of microbiological eradication are shown in Table 1. All

Enterobacteriaceae in the PLZ group with a PLZ MIC of 4 μg/mL (6/6) were eradicated at TOC (Table 2). Across 49 patients with concurrent bacteremia, 100% (27/27) and 96% (24/25) of Enterobacteriaceae were cleared from the blood at TOC in the PLZ and MEM groups, respectively.

Conclusion. PLZ demonstrated comparable or higher microbiological eradication rates compared with MEM for common Gram-negative uropathogens, including resistant pathogens. The results support PLZ as a potential treatment option for cUTI, including AP, caused by Enterobacteriaceae with PLZ MICs of ≤4 mg/mL.

Table 1. Per-Pathogen Microbiological Eradication at TOC[a] by Resistance Phenotype and Resistance Mechanism (Extended mMITT Population)

Pathogen	PLZ (N = 202) n/N1 (%)	MEM (N = 205) n/N1 (%)	Difference PLZ Minus MEM (95% CI)
Overall	191/215 (88.8)	164/222 (73.9)	15.0 (7.4 to 22.4)
Enterobacteriaceae	189/213 (88.7)	161/217 (74.2)	14.5 (6.9 to 22.0)
AG-NS phenotype[b]	46/60 (76.7)	37/58 (63.8)	12.9 (-4.8 to 29.6)
ESBL phenotype[c]	47/59 (79.7)	47/67 (70.1)	9.5 (-6.9 to 25.0)
AME-gene positive[d]	51/67 (76.1)	49/75 (65.3)	10.8 (-5.3 to 25.9)
aac(6')Ib-cr	29/38 (76.3)	29/41 (70.7)	5.6 (-15.5 to 25.8)
aac(3)-IIa	18/25 (72.0)	21/31 (67.7)	4.3 (-22.0 to 28.7)
β-Lactamase-gene positive[d]	62/80 (77.5)	53/81 (65.4)	12.1 (-2.8 to 26.2)
$bla_{CTX\text{-}M\text{-}15}$	39/48 (81.3)	36/50 (72.0)	9.3 (-9.0 to 26.7)
$bla_{OXA\text{-}1/OXA\text{-}30}$	31/42 (73.8)	27/40 (67.5)	6.3 (-14.7 to 26.8)

[a]Microbiological eradication defined as a reduction in baseline pathogen from ≥10^5 CFU to <10^4 CFU in urine culture.
[b]AG-NS defined as nonsusceptible interpretation (intermediate or resistant) to any of amikacin, gentamicin, or tobramycin based on central laboratory MIC testing and Clinical and Laboratory Standards Institute 2016 breakpoints.
[c]ESBL phenotype defined as MIC ≥2 μg/mL to any of ceftazidime, aztreonam, or ceftriaxone based on central laboratory testing.
[d]All isolates with AG-NS and ESBL phenotypes were sequenced for both AME and ESBL genes.
N, number of patients in the specified population; N1, number of uropathogens in the specified category at baseline; n, number of uropathogens eradicated in the specified category.
CFU, colony forming units; CI, confidence interval; ESBL, extended-spectrum β-lactamase; MIC, minimum inhibitory concentration; $MIC_{50/90}$, minimum inhibitory concentration required to inhibit the growth of 50%/90% of organisms; mMITT, microbiological modified intent-to-treat; NS, nonsusceptible; TOC, test of cure.

Table 2. Per-Pathogen Microbiological Eradication at TOC[a] by Baseline PLZ MIC (Extended mMITT Population)

Pathogen	Baseline PLZ MIC (μg/mL)	PLZ (N = 202) n/N1 (%)
Enterobacteriaceae	≤0.06	2/2 (100)
	0.12	23/28 (82.1)
	0.25	60/68 (88.2)
	0.5	61/66 (92.4)
	1	19/21 (90.5)
	2	11/12 (91.7)
	4	6/6 (100)
	8	1/1 (100)
	16	1/1 (100)
	128	1/4 (25.0)
	>128	2/2 (100)

[a]Microbiological eradication defined as a reduction in baseline pathogen from ≥10^5 CFU to <10^4 CFU in urine culture.
N, number of patients in the specified population; N1, number of uropathogens in the specified category and MIC value at baseline; n, number of uropathogens eradicated in the specified category and MIC value.

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125. eGISP: Enhanced Surveillance of *Neisseria gonorrhoeae* Antimicrobial Susceptibility in the United States

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Background. The Gonococcal Isolate Surveillance Project (GISP), which monitors trends in *N. gonorrhoeae* susceptibility among men with gonococcal urethritis in sexually transmitted disease (STD) clinics, has informed treatment recommendations for 3 decades. However, it has been speculated that susceptibility patterns may differ in women, as well as in the pharynx and rectum. We describe preliminary findings from the enhanced GISP (eGISP), which expands surveillance to pharyngeal, rectal, and endocervical isolates.

Methods. In August 2017, select jurisdictions were funded to collect urogenital and extragenital specimens from men and women seen in participating STD clinics. Positive gonorrhea cultures were sent to regional laboratories for antimicrobial susceptibility testing (AST) by agar dilution. Isolates with elevated minimum inhibitory concentration (MIC) to azithromycin (AZI) (MIC ≥2.0 μg/mL), cefixime (CFX) (MIC ≥0.25 μg/mL), and/or ceftriaxone (CRO) (MIC ≥0.125 μg/mL) were designated as Alert isolates. Clinical and epidemiological data were linked to AST results.

Results. From August 2017 to February 2018, 4 clinics in 4 jurisdictions submitted 468 positive gonococcal specimens for AST; 36.1% were from men who have sex with men (MSM), 51.9% from men who have sex with women (MSW), and 12.0% from women. Overall, 71.8% were urethral, 7.9% endocervical, 7.1% rectal, and 13.2% pharyngeal. Seventy-two isolates (15.4%) were Alerts: 97.2% (N = 70) had elevated MICs to AZI, 2.8% (N = 2) had elevated MICs to CFX, and none had elevated MICs to CRO. No isolate had elevated MICs to both AZI and CFX. Among MSM, 15.9% of urogenital isolates and 16.1% of extragenital isolates had an elevated AZI MIC. Among MSW, 11.8% of urogenital isolates and 14.3% of pharyngeal isolates had an elevated AZI MIC. Among women, 24.3% of endocervical isolates and 26.3% of extragenital isolates had an elevated AZI MIC.

Conclusion. Preliminary eGISP data suggest that enhanced surveillance of pharyngeal, rectal, and endocervical isolates is feasible and that elevated MICs to azithromycin are common among males and females. Including isolates from extragenital anatomic sites and women may help strengthen *N. gonorrhoeae* surveillance capacity.

Disclosures. **All authors:** No reported disclosures.

126. Robust and Persistent Vaginal Colonization with LACTIN-V Vaginal *Lactobacillus crispatus* Probiotic in a Double-Blind, Placebo-Controlled (DBPC) Phase 2b Trial to Prevent Recurrent UTI (rUTI)

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Background. We investigated vaginal colonization using repetitive sequence PCR (repPCR) and 16S rRNA sequencing in a Phase 2b DBPC trial of a *L. crispatus* intravaginal suppository probiotic for prevention of rUTI in premenopausal women.

Methods. Twenty-four young women with a history of rUTI and current culture-confirmed symptomatic UTI were enrolled and treated (Visit 0), then randomized (Visit 1) to receive an intravaginal suppository containing *L. crispatus* CTV-05 (LACTIN-V®, Osel, Inc.) or placebo daily for 5 days, then once weekly for 2 months. Participants were followed up during the 2-month probiotic/placebo intervention (Visits 2 to 4; active intervention) and during 2 months following the intervention (Visits 5 and 6; post-intervention). At each visit, vaginal swabs were collected for repPCR to determine the presence or absence of the probiotic strain and the duration of its presence in the vagina and for 16S rRNA-based sequence analysis to determine relative abundance of any *L. crispatus*.

Results. LACTIN-V vaginal suppository induced selective and sustained colonization in the probiotic but not the placebo recipients, as follows. Pre-intervention: Probiotic lactobacillus strain, not found in vaginal specimens obtained from participants in either arm of study. Active intervention: (1) Probiotic lactobacillus strain, (a) *Probiotic arm*: 100% of participants positive at one or more visits and (b) *Placebo arm*: 0% of participants positive at any time. (2) *L. crispatus* relative abundance, (a) *Probiotic arm*: above 90%, all specimens, all visits and (b) *Placebo arm*: below 15%, all specimens, all visits. Post-intervention: (1) Probiotic lactobacillus strain, (a) *Probiotic arm*: 75% of participants positive at Visit 5, 58% at Visit 6 and (b) *Placebo arm*: 0% of participants positive at Visits 5 and 6. (2) *L. crispatus* relative abundance, (a) *Probiotic arm*: 70% to 100% and (b) *Placebo arm*: below 15%.

Conclusion. LACTIN-V *L. crispatus* vaginal probiotic achieved robust and persistent colonization throughout 2 months of weekly dosing and for 2 months after the last dose in most participants.

Disclosures. **All authors:** No reported disclosures.

127. Urinary Tract Infection Incidence Is Associated with Recent Environmental Temperatures

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Background. Urinary tract infections (UTI) are one of the most common infections and the incidence of UTIs is seasonal, peaking in summer months. Relative to other times of the year, incidence of UTIs during the June to September period is approximately 10% greater. Prior work has suggested that a cause of this seasonality may be warmer temperatures during summer months. However, this work focused on inpatients and used average monthly temperatures.

Methods. We identified all UTI cases located in 1 of 397 metropolitan statistical areas (MSA) in the contiguous United States between 2011 and 2016 using the Truven