Methods. CDC’s Emerging Infections Program conducted active, laboratory- and population-based surveillance for NTM cases occurring in 4 sites (Colorado [5 counties], Minnesota [2 counties], New York [2 counties], and Oregon [3 counties PNTM; statewide ENTM]) during October 1, 2019–March 31, 2020. PNTM cases were defined according to current published microbiologic criteria, based on isolation of NTM in respiratory cultures or tissue. ENTM cases required NTM isolation from a non-pulmonary specimen, excluding stool or rectal swabs. Demographic, clinical, exposure, and laboratory data were collected via medical record review. We calculated overall incidence per 100,000 population using census data and performed descriptive analyses of medical record data.

Results. Overall, 299 NTM cases were reported (231 [77%] PNTM). M. avium was the most commonly isolated species (Table). NTM incidence was 3.8 per 100,000 (PNTM 5.3/100,000; ENTM 0.7/100,000). Most patients with available data had ≥1 sign or symptom in the 14 days before culture (63 [97%] ENTM, 203 [92%] PNTM). During the surveillance period, 187 (63%) had their first infection-defining culture collected in an outpatient setting (33 [49%] ENTM, 154 [67%] PNTM). Of PNTM cases, 145 (64%) were female, and 154 (67%) had underlying pulmonary disease. Among ENTM cases, 29 (43%) were female, 9 (13%) had diabetes, 8 (12%) had HIV and 27 (40%) had infection at the site of a medical device or healthcare procedure. Common ENTM infection types were lymphadenitis (16 [24%]) and skin abscess (12 [18%]). Overall, 299 NTM cases were reported (231 [77%] PNTM); M. avium was the most commonly isolated species (Table). NTM incidence was 3.8 per 100,000 (PNTM 5.3/100,000; ENTM 0.7/100,000). Most patients with available data had ≥1 sign or symptom in the 14 days before culture (63 [97%] ENTM, 203 [92%] PNTM). During the surveillance period, 187 (63%) had their first infection-defining culture collected in an outpatient setting (33 [49%] ENTM, 154 [67%] PNTM). Of PNTM cases, 145 (64%) were female, and 154 (67%) had underlying pulmonary disease. Among ENTM cases, 29 (43%) were female, 9 (13%) had diabetes, 8 (12%) had HIV and 27 (40%) had infection at the site of a medical device or healthcare procedure. Common ENTM infection types were lymphadenitis (16 [24%]) and skin abscess (12 [18%]).

Table. Characteristics of persons with NTM infection identified in population-based surveillance, October 1, 2019–March 31, 2020.

| Characteristic | PNTM | ENTM | Overall |
|---------------|------|------|--------|
| Age (mean [SD]) | 62.9 [17.7] | 61.8 [17.7] | 62.3 [17.7] |
| Gender | Male: 143 (57.6%) | 59 (41.2%) | 202 (40.4%) |
| Race | White: 230 (84.4%) | 154 (67.1%) | 384 (77.0%) |
| Ethnicity | Hispanic: 39 (13.6%) | 15 (11.2%) | 54 (10.8%) |
| Site of infection | Respiratory: 186 (69.0%) | 145 (64.1%) | 331 (65.8%) |
| NTM species | M. avium: 182 (68.9%) | 146 (102.6%) | 328 (66.8%) |
| NTM complex | M. avium complex: 180 (67.8%) | 145 (102.6%) | 325 (65.9%) |
| Resistance pattern | Extensively drug-resistant: 1 (0.4%) | 0 (0.0%) | 1 (0.2%) |
| Location of culture collection | Outpatient | 188 (70.8%) | 276 (55.6%) |
| Diagnosis | Pulmonary | 231 (84.2%) | 305 (61.6%) |

Conclusion. Characterizing disease burden and affected populations with population-based NTM surveillance will provide data to inform potential interventions and monitor prevention strategy impact.

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N3C Basic Demographic Data

Methods. COVID-19 is defined by positive lab result (PCR, antigen, or antibody) or COVID-19 coding diagnosis, as defined by N3C. PNTMI phenotype was built with N3C Data Enclave concept set tool, and ATLAS (https://atlas.ohdsi.org/). We limited analysis to adults (18 years old or older). We used de-identified data sets stripped of protected health information (PHI). We used N3C Data Enclave analytical tools for exploratory data analysis, and descriptive statistics.

Results. We identified five hundred and eighty six individuals from 19 sites fulfilling the PNTMI phenotype (9.46 cases per 100,000 people). After our age limit, 555 individuals were included for analysis (Figure 2). 340 were females (61.3%), 447 of white race (80.5%), and 30 were Hispanic (5.4%). Additional descriptive statistics and statistical significance testing are provided (Table 1). The most common concept were “Non-tuberculous mycobacterial pneumonia”, and ‘Pulmonary Mycobacterium avium complex infection”. Four sites accounted for more than 50% of identified patients (Figure 2). We identified 24 individuals with COVID-19 (4.3%), and 44 deaths in this cohort (7.9%). Deaths were unrelated to COVID-19 event.

Figure 1. Basic demographic data of pulmonary non-tuberculous Mycobacterium infection phenotype in N3C.
We identified 35 patients treated with CPI who had a diagnosis of LTBI. Patients were divided into 2 groups: CPI alone (23 patients, 65.7%) and CPI+INH (12 patients, 34.3%). The majority of patients in both groups had renal cell carcinoma (34.3%) and melanoma (17.1%). Nivolumab as monotherapy was the most commonly used CPI agent in both groups (37.1%), whereas nivolumab and ipilimumab combination was mainly used in the CPI group (34.7%) compared to CPI+INH group (8.3%). In the CPI+INH group, 7 patients (58.3%) developed moderate to severe hepatotoxicity that led to discontinuation of INH and CPI therapy versus none in the CPI group (p = 0.001). There was no statistically significant difference in the alanine aminotransferase (ALT) at baseline between both groups (p = 0.117), whereas the median ALT level was significantly higher during CPI+INH therapy compared to CPI alone (135 U/L vs 24 U/L respectively, p = 0.025). Furthermore, immune-related adverse events were reported in a total of 12 of 35 patients (34.2%). None of the patients in either group developed tuberculosis reactivation during the follow up period of up to 1148 days.

Conclusion. Our data suggest that latent tuberculosis reactivation is rare in cancer patients on CPI immunotherapy. Hepatotoxicity remains a concern in this patient population with LTBI treated with CPI and INH. With the widespread use of CPI, close laboratory and clinical monitoring is required to avoid life-threatening drug-induced liver injury and interruption of LTBI therapy and immunotherapy. Further clinical studies are warranted to determine the optimal management of LTBI during CPI therapy.

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1410. Isoniazid Therapy for Latent Tuberculosis Infection in Patients with Cancer Treated with Checkpoint Inhibitors Immunotherapy

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Background. Data on the efficacy and tolerability of latent tuberculosis infection (LTBI) treatment in cancer patients receiving checkpoint inhibitor immunotherapy (CPI) is limited. We sought to assess LTBI therapy and its adverse events and outcomes in patients treated with CPI.

Methods. We performed a retrospective cohort study at MD Anderson Cancer Center of adult patients, between April 2016 and May 2021, who were receiving CPI and were diagnosed with LTBI based on positive T-Spot TB test. We then compared those patients treated with isoniazid (INH) 5mg/kg daily versus those that did not receive INH therapy.

Results. We identified 35 patients treated with CPI who had a diagnosis of LTBI. Patients were divided into 2 groups: CPI alone (23 patients, 65.7%) and CPI+INH (12 patients, 34.3%). The majority of patients in both groups had renal cell carcinoma (34.3%) and melanoma (17.1%). Nivolumab as monotherapy was the most commonly used CPI agent in both groups (37.1%), whereas nivolumab and ipilimumab combination was mainly used in the CPI group (34.7%) compared to CPI+INH group (8.3%). In the CPI+INH group, 7 patients (58.3%) developed moderate to severe hepatotoxicity that led to discontinuation of INH and CPI therapy versus none in the CPI group (p = 0.001). There was no statistically significant difference in the alanine aminotransferase (ALT) at baseline between both groups (p = 0.117), whereas the median ALT level was significantly higher during CPI+INH therapy compared to CPI alone (135 U/L vs 24 U/L respectively, p = 0.025). Furthermore, immune-related adverse events were reported in a total of 12 of 35 patients (34.2%). None of the patients in either group developed tuberculosis reactivation during the follow up period of up to 1148 days.

Conclusion. Our data suggest that latent tuberculosis reactivation is rare in cancer patients on CPI immunotherapy. Hepatotoxicity remains a concern in this patient population with LTBI treated with CPI and INH. With the widespread use of CPI, close laboratory and clinical monitoring is required to avoid life-threatening drug-induced liver injury and interruption of LTBI therapy and immunotherapy. Further clinical studies are warranted to determine the optimal management of LTBI during CPI therapy.

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