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Pulmonary Nontuberculous Mycobacteria, Ontario, Canada, 2020

Appendix

Appendix Table 1. Number and percent of nontuberculous mycobacterial species by age group of patients in the microbiological standard and strict disease state, Ontario, 2020*

NTM Species	Standard definition age groups (years) †‡					
	0-19	20-39	40-59	60-69	70-79	80+
<i>M. avium</i> (n=1,954)	15 (0.8%)	153 (7.8%)	321 (16.4%)	508 (26.0%)	555 (28.4%)	401 (20.5%)
<i>M. intracellulare</i> (n=182)	1 (0.5%)	7 (3.8%)	20 (11.0%)	37 (20.3%)	66 (36.3%)	51 (28.0%)
<i>M. chimaera</i> (n=39)	1 (2.6%)	2 (5.1%)	10 (25.6%)	11 (28.2%)	8 (20.5%)	7 (17.9%)
<i>M. abscessus</i> (n=164)	12 (7.3%)	31 (18.9%)	18 (11.0%)	32 (19.5%)	51 (31.1%)	20 (12.2%)
<i>M. xenopi</i> (n=123)	0 (0.0%)	6 (4.9%)	18 (14.6%)	42 (34.1%)	39 (31.7%)	18 (14.6%)
<i>M. fortuitum</i> (n=98)	0 (0.0%)	3 (3.1%)	23 (23.5%)	26 (26.5%)	27 (27.6%)	19 (19.4%)
<i>M. goodnae</i> (n=117)	1 (0.9%)	12 (10.3%)	24 (20.5%)	26 (22.2%)	28 (23.9%)	26 (22.2%)
Other NTM (n=147)	1 (0.7%)	24 (16.3%)	25 (17.0%)	43 (29.3%)	31 (21.1%)	23 (15.6%)
Total (n=2,824)	31 (1.1%)	238 (8.4%)	459 (16.3%)	725 (25.7%)	805 (28.5%)	565 (20.0%)
Total age standardized prevalence ratio	0.05	0.30	0.61	2.14	3.69	4.46
	Strict definition age groups (years) §‡					
	0-19	20-39	40-59	60-69	70-79	80+
<i>M. avium</i> (n=1,171)	13 (1.1%)	74 (6.3%)	172 (14.7%)	303 (25.9%)	351 (30.0%)	257 (21.9%)
<i>M. intracellulare</i> (n=101)	1 (1.0%)	3 (3.0%)	11 (10.9%)	23 (22.8%)	40 (39.6%)	23 (22.2%)
<i>M. chimaera</i> (n=18)	0 (0%)	1 (5.6%)	5 (27.8%)	3 (16.7%)	6 (33.3%)	3 (16.7%)
<i>M. abscessus</i> (n=114)	8 (7.0%)	24 (21.1%)	13 (11.4%)	23 (20.2%)	35 (30.7%)	11 (9.6%)
<i>M. xenopi</i> (n=63)	0 (0.0%)	2 (3.2%)	9 (14.3%)	23 (36.5%)	18 (28.6%)	11 (17.5%)
<i>M. fortuitum</i> (n=53)	0 (0.0%)	1 (1.9%)	10 (18.9%)	16 (30.2%)	18 (34.0%)	8 (15.1%)
<i>M. goodnae</i> (n=26)	0 (0.0%)	3 (11.5%)	1 (3.8%)	7 (26.9%)	6 (23.1%)	9 (34.6%)
Other NTM (n=56)	1 (1.8%)	6 (10.7%)	11 (19.6%)	22 (39.3%)	11 (19.6%)	5 (8.9%)
Total	23 (1.4%)	114 (7.1%)	232 (14.5%)	420 (26.2%)	485 (30.3%)	327 (20.4%)
Total age standardized prevalence ratio	0.07	0.25	0.55	2.19	3.93	4.56

*Counts within each disease definition represent unique patients; some patients fulfilled criteria for >1 species.

†Standard microbiological criteria: ≥2 sputum cultures with the same species, or 1 bronchoscopic or lung biopsy culture

‡Age unknown for 1 (<0.1%) person each with standard and strict microbiological disease respectively

§Strict microbiological criteria (subset of standard): ≥3 sputum cultures with the same species, or ≥2 bronchoscopic cultures with the same species, or 1 bronchoscopic plus 1 sputum culture with the same species, or 1 lung biopsy culture.

Appendix Table 2. Prevalence per 100,000 population and number of cases of nontuberculous mycobacterial pulmonary disease per standard definition* by species and health region in Ontario, 2020

Health Region	<i>M. avium</i>	<i>M. intracellulare</i>	<i>M. abscessus</i>	Other Species	All Species
North West	2.5 (6)	0.4 (1)	0.4 (1)	0.4 (1)	3.8 (9)
North East	5.0 (28)	1.6 (9)	0.5 (3)	1.3 (7)	8.4 (47)
Eastern	2.6 (51)	0.6 (12)	0.5 (10)	2.1 (41)	5.9 (114)
Central East	10.8 (486)	1.0 (47)	1.5 (66)	3.6 (163)	17.0 (762)
Toronto	38.3 (1,195)	2.0 (62)	1.9 (60)	7.6 (237)	49.8 (1,554)
Central West	5.3 (151)	1.1 (32)	0.7 (20)	1.6 (45)	8.7 (248)
South West	2.2 (37)	1.1 (19)	0.2 (4)	1.8 (30)	5.3 (90)
Total Ontario	13.1 (1,954)	1.2 (182)	1.1 (164)	3.5 (524)	19.0 (2,824)

*Standard microbiological criteria: ≥ 2 sputum cultures with the same species, or 1 bronchoscopic or lung biopsy culture.

Appendix Table 3. Number, percent and prevalence per 100,000 of pulmonary nontuberculous mycobacterial disease, by non-overlapping microbiological definitions, Ontario, 2020*

NTM species/subspecies	Exclusively standard definition†	Strict definition‡
Common MAC species		
<i>M. avium</i>	783 (58.6%) / 5.32	1,171 (73.1%) / 7.95
<i>M. intracellulare</i>	81 (6.1%) / 0.55	101 (6.3%) / 0.69
<i>M. chimaera</i>	21 (1.6%) / 0.14	18 (1.1%) / 0.12
<i>M. abscessus</i> and its subspecies		
<i>M. abscessus</i> (total)	50 (8.5%) / 0.77	114 (7.1%) / 0.77
subspecies <i>abscessus</i>	29 (2.2%) / 0.20	66 (4.1%) / 0.45
subspecies <i>bolletii</i>	0 (0%) / 0	1 (0.06%) / 0.01
subspecies <i>massiliense</i>	14 (1.1%) / 0.10	38 (2.4%) / 0.26
subspecies unassigned	7 (0.5%) / 0.05	9 (0.6%) / 0.06
Other species		
<i>M. xenopi</i>	60 (4.5%) / 0.41	63 (3.9%) / 0.43
<i>M. fortuitum</i>	45 (3.4%) / 0.31	53 (3.3%) / 0.36
<i>M. gordonae</i>	91 (6.8%) / 0.62	26 (1.6%) / 0.18
Other NTM species	91 (6.8%) / 0.62	56 (3.5%) / 0.38
Total	1,336 (100%) / 9.07	1,602 (100%) / 10.9

*Counts within each disease definition represent unique patients; some patients fulfilled criteria for >1 species.

†Exclusively standard microbiological criteria: 2 sputum cultures with the same species, or 1 bronchoscopic or lung biopsy culture

‡Strict microbiological criteria: ≥ 3 sputum cultures with the same species, or ≥ 2 bronchoscopic cultures with the same species, or 1 bronchoscopic plus 1 sputum culture with the same species, or 1 lung biopsy culture.

Appendix Table 4. Number of patients with pulmonary nontuberculous mycobacteria by non-overlapping microbiological definitions, *Mycobacterium* species and sex, Ontario, 2020*

NTM Species	Exclusively standard definition†			Strict definition‡		
	Female	Male	Unknown	Female	Male	Unknown
<i>M. avium</i>	398 (50.8%)	375 (47.9%)	10 (1.3%)	653 (55.8%)	506 (43.2%)	12 (1.0%)
<i>M. intracellulare</i>	43 (53.1%)	37 (45.7%)	1 (1.2%)	71 (70.3%)	28 (27.7%)	2 (2.0%)
<i>M. chimaera</i>	7 (33.3%)	14 (66.7%)	0	10 (55.6)	8 (44.4%)	0
<i>M. abscessus</i>	34 (68.0%)	16 (32.0%)	0	68 (59.6%)	46 (40.4%)	0
<i>M. xenopi</i>	34 (56.7%)	23 (38.3%)	3 (5.0%)	29 (46.0%)	34 (54.0)	0
<i>M. fortuitum</i>	21 (46.7%)	23 (51.1%)	1 (2.2%)	26 (49.1%)	27 (50.9%)	0
<i>M. gordonae</i>	36 (39.6%)	54 (59.3%)	1 (1.1%)	10 (38.5%)	16 (61.5%)	0
Other NTM	42 (46.2%)	47 (51.6%)	2 (2.2%)	25 (44.6%)	31 (55.4%)	0
Total	615 (50.3%)	589 (48.2%)	18 (1.5%)	892 (55.7%)	696 (43.4%)	14 (0.9%)

*Counts within each disease definition represent unique patients; some patients fulfilled criteria for >1 species.

†Exclusively standard microbiological criteria: 2 sputum cultures with the same species, or 1 bronchoscopic or lung biopsy culture

‡Strict microbiological criteria: ≥ 3 sputum cultures with the same species, or ≥ 2 bronchoscopic cultures with the same species, or 1 bronchoscopic plus 1 sputum culture with the same species, or 1 lung biopsy culture.