Nontuberculous mycobacteria in Queensland

2016

Case definition (1 January 2012 onwards)

Isolation or detection by NAAT of any nontuberculous mycobacteria* from any site **OR**

Detection of acid fast bacilli (AFB) by histology.

**Excludes Mycobacterium leprae*

Data for this report were extracted from the Notifiable Diseases System on 22 March 2017 by notification date. Nontuberculous mycobacteria notification data are available in the Queensland Health Weekly Notifiable Conditions Report here.

Notifications of nontuberculous mycobacteria in Queensland

There were 1,315 cases of nontuberculous mycobacteria notified, with a notification rate of 27.5 cases per 100,000 population in 2016. Notifications have been increasing approximately 14 per cent per year over the five year period (Figure 1).

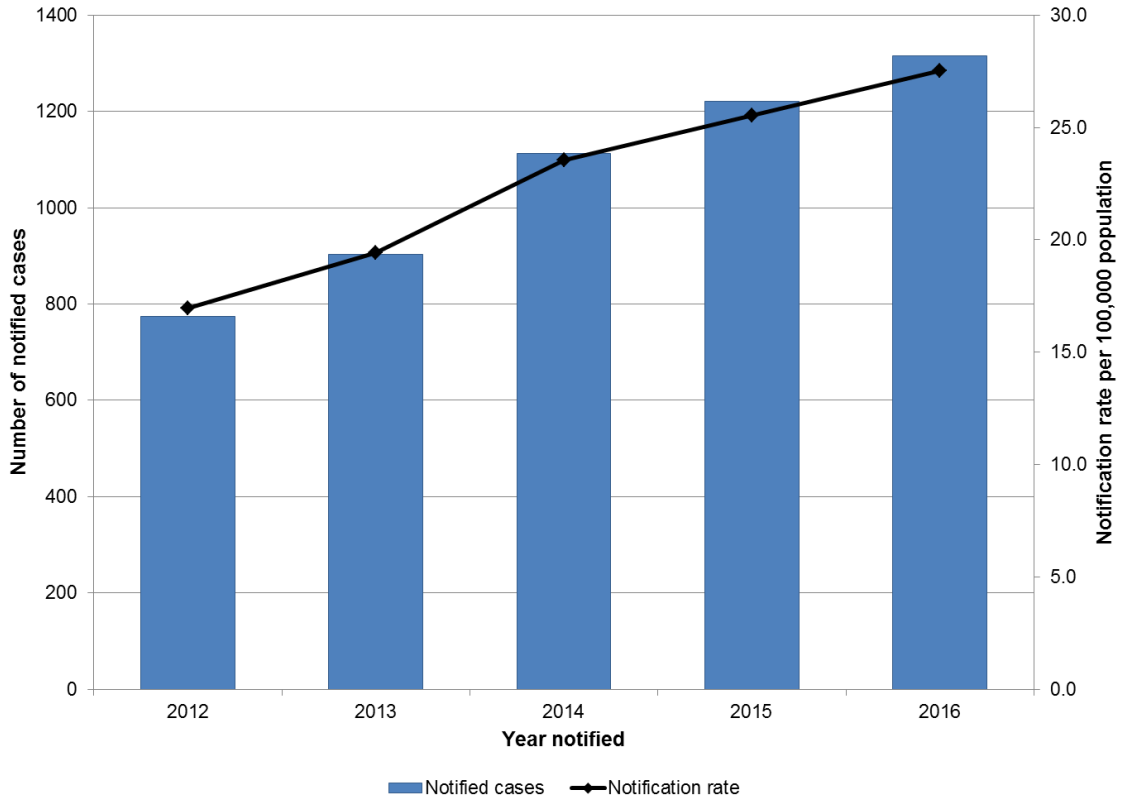

Figure 1: Number of notified cases and notification rate* of nontuberculous mycobacteria, Queensland, 2012-2016

*Notification rates calculated using Queensland Estimated Resident Population (ERP) 2012-2015. 2015 ERP was used to calculate 2016 rates.

Demographic information

There were 636 male cases (48 per cent) and 679 female cases (52 per cent). The age range of cases was one year to 95 years, with a median age of 67 years. The most frequently notified age group was the 65-69 year old group (Figure 2).

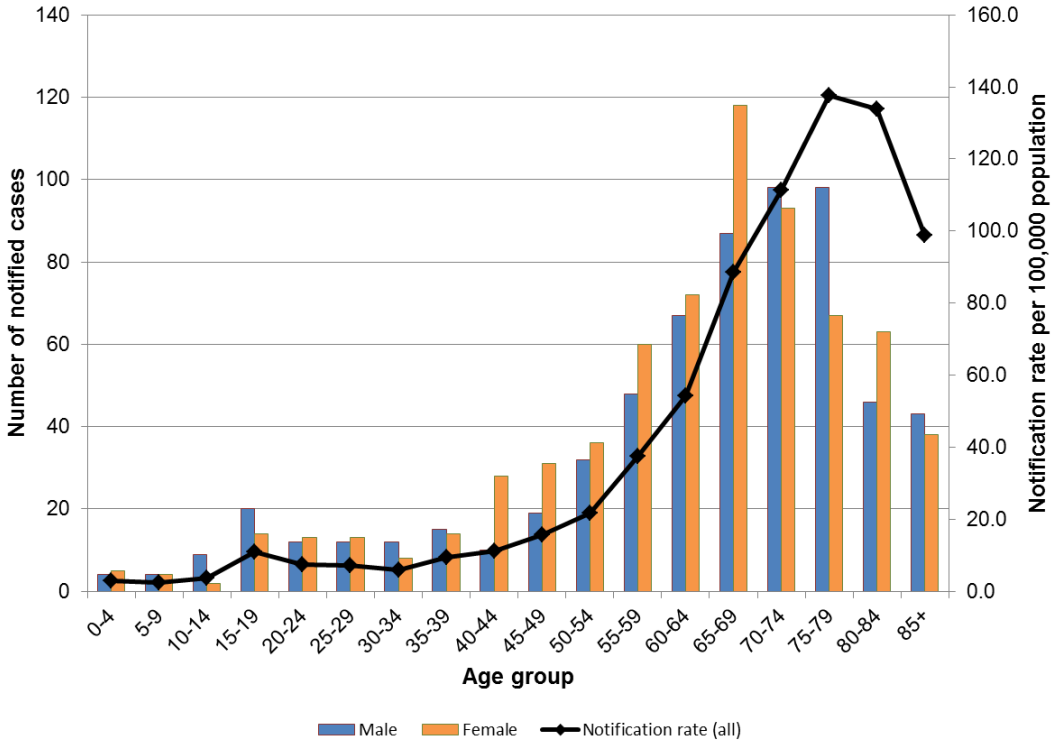

Figure 2: Number of notified cases and notification rate of nontuberculous mycobacteria by sex and age group, Queensland, 2016

Forty-four per cent of notified cases resided in the Metro North and Metro South Hospital and Health Service (HHS) areas. The highest notification rate was in Torres and Cape HHS which had a notification rate of 69.4 cases per 100,000 population per year though the number of cases reported was small (18 cases) (Table 1).

Table 1: Number of cases and notification rate per 100,000 population of nontuberculous mycobacterium cases by hospital and health service of residence, Queensland, 2016

HHS of residence	Number of notified cases (%)	Notification rate per 100,000 population
Cairns and Hinterland	72 (5%)	28.9
Central Queensland	54 (4%)	23.6
Central West	5 (0%)	41.1
Darling Downs	73 (6%)	26.2
Gold Coast	126 (10%)	22.1
Mackay	42 (3%)	23.0
Metro North	264 (20%)	27.6
Metro South	292 (22%)	26.5
North West	5 (0%)	15.4
South West	9 (1%)	34.0
Sunshine Coast	82 (6%)	21.0
Torres and Cape	18 (1%)	69.4
Townsville	102 (8%)	42.0
West Moreton	64 (5%)	23.8
Wide Bay	107 (8%)	50.3
Total	**1315 (100%)**	**27.5**

Laboratory testing

Ninety-eight per cent of notifications were based on a positive culture or nucleic acid test result, with only 27 notifications (2 per cent) based on a positive AFB result only; however these results are only reported from the public pathology laboratory leading to likely underreporting of probable NTM cases. Cases with pulmonary specimen types (including sputum, bronchial washings/brushings/lavage) account for 1,154 cases (88 per cent), 8 cases (1 per cent) with specimens from the breast, 2 cases (0 per cent) with positive lymph nodes, and 148 cases (11 per cent) listed other specimen types (swab, tissue, blood, aspirate, fluid etc. from other sites) (Table 2). Full details on specimen type and site are not always available. These cases have been classified in the other category. It is possible that some tissue specimens that did not have complete details on specimen site may have been lung tissue which could have resulted in a larger proportion of cases with pulmonary involvement.

Speciation was conducted on specimens for 1,002 cases (76 per cent), with the most common species identified being *M. intracellulare* (36 per cent), *M. fortuitum* (8 per cent), *M. abscessus* (8 per cent) and *M. avium* (7 per cent) (Table 2). There appear to have been increases in some of the rarer species in 2016, in particular, *M.paraffinicum* (5 cases in 2012), *M. mucogenicum* (2 cases in 2012) and *M. asiaticum* (2 cases in 2012), however due to small numbers of cases in general the change from 2012 to 2016 have not been statistically significant.

One case of *M. chimaera* infection was identified in Queensland in a patient that had undergone cardiac surgery in Queensland,[1] following a worldwide identification of *M. chimaera* in heater cooler units which are used for certain types of open heart surgery.[2] It is unclear whether *M. chimaera* has existed in Queensland previously, as these organisms usually are identified in *M. avium* complex, but historically have not further been investigated.

Table 2: Nontuberculous mycobacterium cases by species and specimen type, 2016

Species	Pulmonary	Breast	Lymph node	Other	Total
M. intracellulare	456 (40%)	-	-	11 (7%)	**467 (36%)**
M. fortuitum	64 (6%)	4 (50%)	-	42 (28%)	**110 (8%)**
M. abscessus	87 (8%)	1 (13%)	-	18 (12%)	**106 (8%)**
M. avium	88 (8%)	-	1 (50%)	8 (5%)	**97 (7%)**
M. chelonae	25 (2%)	1 (13%)	-	17 (11%)	**43 (3%)**
M. avium complex	34 (3%)	-	-	3 (2%)	**37 (3%)**
M. gordonae	23 (2%)	1 (13%)	-	1 (1%)	**25 (2%)**
M. kansasii	18 (2%)	-	-	1 (1%)	**19 (2%)**
M. paraffinicum	15 (1%)	-	-	1 (1%)	**16 (1%)**
M. haemophilum	1 (0%)	-	1 (50%)	8 (5%)	**10 (1%)**
M. marinum	-	-	-	10 (7%)	**10 (1%)**
M. asiaticum	7 (1%)	-	-	1 (1%)	**8 (1%)**
M. mucogenicum	5 (0%)	-	-	2 (1%)	**7 (1%)**
M. triplex	6 (1%)	-	-	1 (1%)	**7 (1%)**
M. interjectum	5 (0%)	-	-	-	**5 (1%)**
M. xenopi	5 (0%)	-	-	-	**5 (1%)**
M. goodii	-	-	-	4 (3%)	**4 (1%)**
M. lentiflavum	4 (0%)	-	-	-	**4 (1%)**
M. scrofulacem	4 (0%)	-	-	-	**4 (1%)**
M. shimoidei	2 (0%)	-	-	1 (1%)	**3 (1%)**
M. szulgai	3 (0%)	-	-	-	**3 (1%)**
M. chimaera	1 (0%)	-	-	1 (1%)	**2 (1%)**
M. palustre	2 (0%)	-	-	-	**2 (1%)**
M. simiae	2 (0%)	-	-	-	**2 (1%)**
M. arupense	-	-	-	1 (1%)	**1 (1%)**
M. kubicae	1 (0%)	-	-	-	**1 (1%)**
M. kumamotonense	1 (0%)	-	-	-	**1 (1%)**
M. neoaurum	-	-	-	1 (1%)	**1 (1%)**
M. paragordonae	1 (0%)	-	-	-	**1 (1%)**
M. smegmatis	-	-	-	1 (1%)	**1 (1%)**
M. wolinskyi	-	-	-	1 (1%)	**1 (1%)**
Mycobacterium sp. Slow Grower	39 (3%)	-	-	2 (1%)	**41 (3%)**
Mycobacterium sp. Rapid Grower	5 (0%)	-	-	5 (3%)	**10 (1%)**
Mycobacterium sp. (unspecified)	250 (22%)	1 (13%)	-	10 (7%)	**261 (20%)**
Total	**1154 (100%)**	**8 (100%)**	**2 (100%)**	**148 (100%)**	**1315 (100%)**

References

[1] Bursle, E., Playford, E.G., Coulter, C., Griffin, P. 2017. First Australian case of disseminated *Mycobacterium chimaera* infection post-cardiothoracic surgery. *Infection, Disease & Health* [in press]. Abstract available from *http://www.sciencedirect.com/science/article/pii/S2468045117300020*

[2] Queensland Health. 2016. Mycobacterium chimaera in heater cooler units (News alert, 23 August 2016). Available from URL https://www.health.qld.gov.au/news-alerts/news/160823-mycobacterium-chimaera