

RESEARCH LETTER

Tuberculosis Notifications and Mortality in Greece During 2003 to 2012

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ABBREVIATIONS

HIV = human immunodeficiency virus
TB = tuberculosis

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Dear Editor,

According to the latest World Health Organization report, the rate of new tuberculosis (TB) cases has been falling worldwide for over a decade.¹ However, TB continues to be a major global public health problem; in 2013, an estimated 9.0 million people developed TB and 1.5 million died from the disease; and thus surveillance is an essential part of any TB control plan.¹ There is evidence that financial crisis can influence tuberculosis incidence and mortality.²

Greece is considered a low incidence country for TB. However, since the final quarter of 2008, Greece has entered the most serious financial downturn in the country's modern history and this has posed major threats to the health of the population.³ Rates of several communicable diseases have also increased.⁴ Specifically, a human immunodeficiency virus (HIV) outbreak among intravenous drug users occurred in 2011 and worsened in 2012, increasing the total number of HIV infections reported in Greece from 530 in 2010 to 826 in 2011 and 1,001 in 2012.⁵ Furthermore, many previously rare or absent infections have also now been reported, including malaria in 2011 and 2012 (previously absent since 1974), West Nile virus in 2010–2012 (never previously reported) and rabies in 2012 (previously absent since 1987).⁴ In view of this financial crisis we sought to evaluate its potential impact on the notification rate and the mortality due to TB among the whole Greek population. We evaluated the potential association between the financial crisis period (January 2008 to December 2012) and TB notifications and mortality (using data from the Hellenic Statistical Authority; <http://www.statistics.gr>), with the pre-crisis period (January 2003 to December 2007) of similar duration as the referent.

Over the 10 years assessed (2003–2012), 6,239 cases of TB were reported in Greece, yielding a total notification rate of 5.59 per 100,000 population (95% confidence intervals-CI, 4.98–6.20) (Table 1). By period, 3,433 TB cases were reported in the pre-crisis period, and 2,806 cases during the crisis period. The notification rate for the pre-crisis period was 6.19 (95% CI, 5.59–6.80) per 100,000; 4.98 (95% CI, 4.13–5.84) for the crisis period.

During the years 2003 to 2012, 850 deaths due to TB were recorded in Greece, yielding a total mortality rate of 0.80 per 100,000 population (95% CI, 0.35–1.58) (Table 1). By period, 449 deaths were recorded in the pre-crisis period, and 401 deaths in the crisis period. The mortality rate did not differ between the two periods.

Our findings suggest that the TB notification rate slightly decreased, whereas the mortality rate remained relatively stable during the Greek financial crisis. These find-

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TABLE 1. Tuberculosis Notifications and Deaths in Greece During 2002 to 2013

| Year | Number of TB cases notified | Notification rate per 100,000 population | Deaths due to TB | Mortality rate per 100,000 population |
|------|-----------------------------|--|------------------|---------------------------------------|
| 2003 | 616 | 5.60 | 107 | 0.97 |
| 2004 | 713 | 6.46 | 75 | 0.68 |
| 2005 | 760 | 6.86 | 90 | 0.81 |
| 2006 | 681 | 6.12 | 81 | 0.73 |
| 2007 | 663 | 5.93 | 96 | 0.86 |
| 2008 | 669 | 5.97 | 80 | 0.71 |
| 2009 | 593 | 5.27 | 87 | 0.77 |
| 2010 | 487 | 4.31 | 71 | 0.63 |
| 2011 | 493 | 4.36 | 67 | 0.59 |
| 2012 | 564 | 5.00 | 96 | 0.85 |

Source: Data on TB cases and deaths were derived from the Hellenic Statistical Authority (ELSTAT; <http://www.statistics.gr>). Date last accessed November 19, 2013. Rate calculated using the beginning-of-the-year populations projected by ELSTAT. The 2012 data are provisional, and are subject to change. TB = tuberculosis.

ings are reassuring, especially given the fact that there was an undisputable increase in the incidence of other communicable diseases during the financial crisis. A plausible explanation of our findings could be that the time period of observations is too short to show any deterioration. Another reason, and in contrast to other communicable diseases, could be that the health care system in Greece regarding TB diagnosis, reporting, and treatment has maintained its potency and has not been influenced by the economic crisis. However, this initial further decrease in the number of TB cases could be because the exactly opposite scenario is happening; the healthcare system may experience difficulties in diagnosing and notifying TB.⁶ This can very well be the case in Greece, since there were significant healthcare budget cuts in the last few years due to the economic hardship.³ All the necessary actions should be taken to maintain and/ or strengthen TB surveillance in Greece, especially if one considers that even before the crisis (for the period 2004–2008) there was an estimated underreporting of TB cases in Greece of around 80%.⁷

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