Editorials

Increasing drug resistant tuberculosis in the UK

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Control depends on a global perspective, not solely on local strategies

Tuberculosis has resurged in the United Kingdom over the past two decades, with 8000 cases being reported in 2006.**1** Previous reports have indicated a stable proportion of drug resistance in people with tuberculosis in the UK from 1993 to 1999.**2** In the accompanying paper, Kruijshaar and colleagues present an updated analysis of trends in drug resistance in tuberculosis cases in the UK.**3**

Kruijshaar and colleagues report an increasing proportion of isoniazid resistance (from 5% to 6.9%) and modest increases in the proportions of rifampicin resistance (1.0% to 1.2%) and multidrug resistance (0.8% to 0.9%).**3** However, the true burden of drug resistant tuberculosis is better shown by the incidence of resistant cases, rather than the proportion of cases that are resistant.**4** Although the increase in the proportion of resistant cases is modest, when combined with the rising incidence, the increase in numbers of resistant cases is greater than would be assumed by looking at proportions alone.

Globally, the incidence of tuberculosis may be showing early signs of decline, albeit with important regional variations.**5** Yet the incidence of multidrug resistant tuberculosis increased to an estimated 0.5 million cases in 2006.**6** In addition, extensively drug resistant strains have now been reported in at least 45 countries,**6** with two cases in the UK. Although the greatest impact will be in those settings with the highest tuberculosis and HIV burden, this must serve as a wake up call for global control of tuberculosis in all countries.

The central approach to the control of tuberculosis from the World Health Organization's Stop TB programme is the routine detection and treatment of smear positive cases.**7** In addition, the Global Plan to Stop TB advocates several other approaches, including intensified case finding for earlier detection of active tuberculosis, provision of isoniazid preventive therapy for HIV coinfected patients, and tuberculosis infection control in healthcare and congregate settings.**7** The potential impact of some of these approaches on the control of tuberculosis is being investigated currently; for example, in the cluster randomised trials and mathematical modelling of the Consortium to Respond Effectively to the AIDS-TB Epidemic (CREATE; www.tbhiv-create.org).

Recent efforts have revitalised research into new diagnostics for tuberculosis, some of which identify *Mycobacterium tuberculosis* and give isoniazid and rifampicin sensitivities within 24 hours.[8] These will greatly reduce the time that patients are treated with inappropriate regimens, with direct implications for the health of patients and onward transmission.[9] Treating patients with regimens that contain insufficient drugs to which the strain is sensitive will promote further resistance. New drugs are urgently needed for multidrug resistant strains, which currently require 18-24 months of treatment, and for extensively drug resistant strains, which are difficult to treat at all.

Kruijshaar and colleagues found that multidrug resistance was four times more common in people with a history of tuberculosis than in those without. Combined with the low degree of clustering of multidrug resistant strains, this may mean that transmission of resistant strains is uncommon and not a major concern. However, the increase in isoniazid resistance in London was largely caused by an outbreak of more than 300 cases.[3] Among the multidrug resistant cases, 73% had no history of tuberculosis. This suggests that most multidrug resistant cases were not caused by failure of previous treatment (acquired resistance), but by infection with a multidrug resistant strain (primary resistance). The low degree of clustering may be the result of transmission from multidrug resistant cases originating outside the UK.

High transmission of resistant tuberculosis has been shown in other settings—for example, the extensively drug resistant epidemic in Tugela Ferry, South Africa, which saw a high degree of nosocomial transmission and mortality that included healthcare workers.[10] Such experiences demonstrate the need to intensify strategies to curb transmission of resistant strains.

Infection control must be rigorously enforced. In resource poor settings this need not be expensive. A study from Lima, Peru, found that opening doors and windows greatly increased the number of air changes per hour, even compared with mechanically ventilated rooms.[11] Mathematical modelling of the Tugela Ferry outbreak has shown that using available strategies to control nosocomial infection could prevent half of their extensively drug resistant cases over the next five years.[12]

Molecular epidemiology should be considered internationally as a public health tool and not limited to research settings. This would enable quicker identification of possible outbreaks and greater understanding of the global epidemiology of tuberculosis.

Drug resistant tuberculosis in the UK cannot be controlled solely with local strategies—a global perspective is needed. This is best summed up by the slogan of World Tuberculosis Day 2007—"TB anywhere is TB everywhere."

Footnotes

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