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Science to accelerate universal health coverage

Integrating tuberculosis and HIV services in low- and middle- income countries: a systematic review

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EXECUTIVE SUMMARY

Background: Tuberculosis and human immunodeficiency virus (HIV) infection are diseases of major public health importance in low and middle-income countries. Overlap varies: in 2007, HIV prevalence in tuberculosis patients was 73% in South Africa, compared with 1.9% in China. There is increasing recognition of the importance of effective management of tuberculosis and HIV disease together, and the need for service integration.

Aim and objectives: Our aim was to synthesise knowledge concerning the integrated delivery of TB/HIV services at health facility level in low- and middle-income countries. Specific objectives were to summarise how tuberculosis and HIV services have been integrated; to describe strengths and weakness of different models; to describe how effectiveness of integration has been measured; to identify barriers to integration; to identify gaps in knowledge and to formulate research priorities.

Methods: We conducted a systematic review of literature from low- or middle-income countries describing implementation of integrated HIV and tuberculosis services at health facility level. We did not limit to studies reporting outcome measures, or to specified study designs.

Findings: Among 1954 peer-reviewed articles/reports and 170 abstracts retrieved, 63 papers and 70 abstracts met our inclusion criteria, describing 136 examples of models of integration. We categorised examples into five models: a) tuberculosis service, referring for HIV testing and treatment (16 examples); b) tuberculosis service, testing for HIV and referring for treatment (35 examples); c) HIV service, referring for tuberculosis screening and treatment (11 examples); d) HIV service, screening for tuberculosis and referring for treatment (30 examples); e) "single facility" where tuberculosis and HIV services were provided in the same facility (44 examples). In 18 papers, the model could not be classified. Reports of closer integration were generally more recently published, and mostly from sub-Saharan Africa.

Strengths and weaknesses of different models of integration

Models based on referral only are easiest to implement, requiring as little as additional staff training and supervision, if a functional referral system exists. The key weakness is that referral may fail, especially if the referral pathway is complex. In referral-based models, poor communication between services may result in suboptimal care, for example if neither service implements co-trimoxazole preventive therapy; and poor communication about drug regimens increases risks of drug interactions. Models with closer integration require more staff training and may also require additional infrastructure (e.g. private space for HIV counselling; integrated records). More integrated models hold potential efficiencies from both the provider and the user perspective; this may be more important where there is a high prevalence of HIV among tuberculosis patients. Infection control to minimise risk of tuberculosis transmission is a key concern.

Methodology to measure effectiveness of integration

94/136 reports included outcomes reporting coverage, for example the proportion of patients with tuberculosis tested for HIV, or vice versa; far fewer included "downstream" impacts such as outcomes of tuberculosis treatment or antiretroviral therapy (ART). Two studies compared outcomes of integrated vs. standard care models: there were no randomised trials. Very few studies addressed the perspectives of either service users or staff. Five studies documented costs but none directly measured cost-effectiveness of integrated services.

Barriers and enablers of integration

Barriers include: service users being unconvinced of the need for additional testing or screening, and, in models based on referral, having difficulty accessing the facility they are referred to; weak referral systems, and poor communication between services; data systems poorly designed for coordinated care, lack of private space for HIV testing, and buildings poorly designed for airborne infection control; staff who are already overburdened, are not trained in coordinated care and are not motivated to take on additional activities; unreliable supplies of ART, isoniazid preventive therapy and HIV test kits. Enablers of integration included, for referral-based systems, joint staff training and having an identified staff member responsible for integrated care.

Conclusions: Comparison of different models of integration of tuberculosis and HIV services is made difficult by a paucity of studies which: compare outcomes to a "control", or between different systems; report impacts relevant to patients (such as outcomes on treatment and mortality); include the perspectives of staff and service users; report costs or cost-effectiveness. Integrated care programmes should, at minimum, report standard outcomes and impacts, to facilitate comparisons. Research is needed to investigate potential efficiencies of integrated care from the perspective of both provider and service user. Robust comparisons of the impacts of different models need to compare facilities as the unit of observation, ideally in cluster-randomised trials.