



MEDIA RELEASE

FACULTY OF MEDICINE AND HEALTH SCIENCES, STELLENBOSCH UNIVERSITY AND COCHRANE SOUTH AFRICA, SOUTH AFRICAN MEDICAL RESEARCH COUNCIL

Study shows children with multidrug-resistant tuberculosis can be treated

CAPE TOWN | 16 AUGUST 2018 | The results of a large, international systematic review published in the journal *PLOS Medicine* show that tuberculosis treatment is successful in children with multidrug-resistant tuberculosis (MDR-TB). The study was used to inform the World Health Organization guidelines on treatment of MDR-TB in children.

The study, which involved a collaborative group of international researchers, included a systematic review and patient data meta-analysis on the clinical characteristics and treatment outcomes of 975 children from 18 countries. The results show that 78% (764 of 975) of these children had successful treatment outcomes when treated with second-line MDR-TB drugs.

“An estimated 32 000 children develop multidrug-resistant tuberculosis (resistant to the two main TB drugs, namely isoniazid and rifampicin), each year. Treatment for MDR-TB is of a longer duration and requires drugs that are more toxic. These regimens are frequently hard to tolerate, particularly in children, due to the length of treatment, drug toxicity and the lack of child-friendly formulations,” said one of the authors Prof. Anneke Hesselning from the Desmond Tutu TB Centre, Faculty of Medicine and Health Sciences, Stellenbosch University. “To date, little has been known about the optimal treatment for these children. This review therefore gives vitally important information as to potential outcomes and some very good news for the TB field.”

“There are too few examples where researchers share their data for the public good, and this is impressively what this global team of researchers did – this helped to ensure that we could capture all published and unpublished evidence for treating children with MDR-TB. The search yielded 2772 reports and, ultimately, 33 studies were eligible for inclusion,” said Dr Tamara Kredo, co-author and Senior Specialist at Cochrane South Africa, an intramural research unit of the South African Medical Research Council.

Need for HIV treatment

The review also showed the urgent need for HIV treatment in children with HIV and TB co-infection. TB treatment was less successful in children who were HIV positive but not receiving antiretroviral therapy (ART).

“Treatment was successful in only 56% of children with bacteriologically confirmed TB who were infected with HIV who did not receive any antiretroviral treatment during MDR-TB therapy,” said Hesselning, “compared to 82% in children infected with HIV who received ART during MDR-TB therapy.”

“This highlights the urgent need for ART in these children, which should be a priority in our setting, where rates of HIV/TB coinfection are so high,” she added.

Malnutrition was shown as another factor that affected treatment outcome and highlights the need for aggressive solutions.

Second-line injectable agents and high-dose isoniazid were associated with treatment success. However, a high proportion of children with non-severe disease who received no second-line injectable agents still did well.

“This means children with non-severe disease may be able to be spared from these more toxic medications,” said Hesselning.

“Further work is still needed on individual drug effects on treatment outcome,” added Kredo. “Although these results were used to update the WHO guidelines, further rigorously collected evidence is needed to help guide the management of MDR-TB treatment in children globally. This work gives us more understanding of the potential success of treatment, the potential for certain children to receive less-intensive, less-toxic regimens, and an understanding of risk factors for poor outcomes across settings, which is important for designing future treatment regimens.”

NOTES FOR THE EDITOR:

The article can be found at

<http://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1002591>

The WHO guidelines on TB management in children can be found at

<http://www.who.int/tb/areas-of-work/drug-resistant-tb/treatment/resources/en/>

Key points

- A systematic review and patient data meta-analysis was performed on the clinical characteristics and treatment outcomes on 975 children with TB from 18 countries.
- This was a collaboration of global researchers. The results informed the WHO guidelines on TB management in children.
- The results suggests that children respond favourably to MDR-TB treatment - 78% had successful treatment outcomes treated with the second-line MDR-TB drugs, despite the high burden of severe disease.
- The low success rate in children infected with HIV who did not receive ART during their MDR-TB treatment highlights the need for ART in these children.
- Malnutrition and not being treated for HIV significantly increased the risk of poor TB treatment outcomes – therefore HIV treatment should be started as soon as possible, and malnutrition should be aggressively treated.

- Consideration should be given to using high-dose isoniazid, and if children have non-severe disease, the possibility of excluding second-line injectable agents from the treatment regimen should be considered.
- The findings of individual drug effects on treatment outcome need further evaluation.

Stellenbosch University

Stellenbosch University is amongst South Africa's leading tertiary institutions based on research output, student pass rates and rated scientists, and is recognised internationally as an academic institution of excellence. It boasts the highest weighted research output per full-time academic staff member of all South African universities and the second-highest number of scientists in South Africa who have been rated by the National Research Foundation (NRF). The university is home to an academic community of 29 000 students (including 4 000 foreign students from 100 different countries) as well as 3 000 permanent staff members (including 1 000 academics) across ten faculties and five campuses. For more information visit www.sun.ac.za.

South African Medical Research Council (SAMRC)

The scope of the SAMRC's research includes basic laboratory investigations, clinical research and public health studies. Research at the SAMRC focuses on the top 10 causes of death in South Africa. To assist with delivering on this vital mandate, the organisation is led by the National Department of Health, and works with other key stakeholders such as the Department of Science and Technology, South African and international science councils, medical schools, universities, research institutions and international collaborators. For further information, please visit www.samrc.ac.za.

Cochrane SA

Cochrane South Africa is an intramural research unit of the South African Medical Research Council and part of the global, independent Cochrane network of researchers, professionals, patients, carers and people interested in health. Cochrane is a non-profit organisation that prepares and disseminates information (in the form of reviews) on what works and what doesn't in healthcare. These reviews enable policy makers, health service providers and the public to make informed decisions about healthcare. More information is available at www.southafrica.cochrane.org.

For media enquiries contact:

Wilma Stassen, Faculty of Medicine and Health Sciences, Stellenbosch University
email: wstassen@sun.ac.za; +27 21 938 9359

Michelle Galloway, Cochrane SA
email: michelle.galloway@mrc.ac.za; +27 84 604 4955

END