Drug susceptibility testing and mortality in patients treated for tuberculosis in high-burden countries: a multicentre cohort study

Kathrin Zürcher, Marie Ballif, Lukas Fenner, Sonia Borrell, Peter M. Keller, Joachim Gnokoro, Olivier Marcy, Marcel Yotebieng, Lameck Diero, E. Jane Carter, Neesha Rockwood, Robert J. Wilkinson, Helen Cox, Nicholas Ezati, Alash'le G. Abimiku, Jimena Collantes, Anchalee Avihingsanon, Kamon Kawkitinarong, Miriam Reinhard, Rico Hömke, Robin Huebner, Sebastien Gagneux, Erik C. Böttger, Matthias Egger, on behalf of the International Epidemiology Databases to Evaluate AIDS (IeDEA)

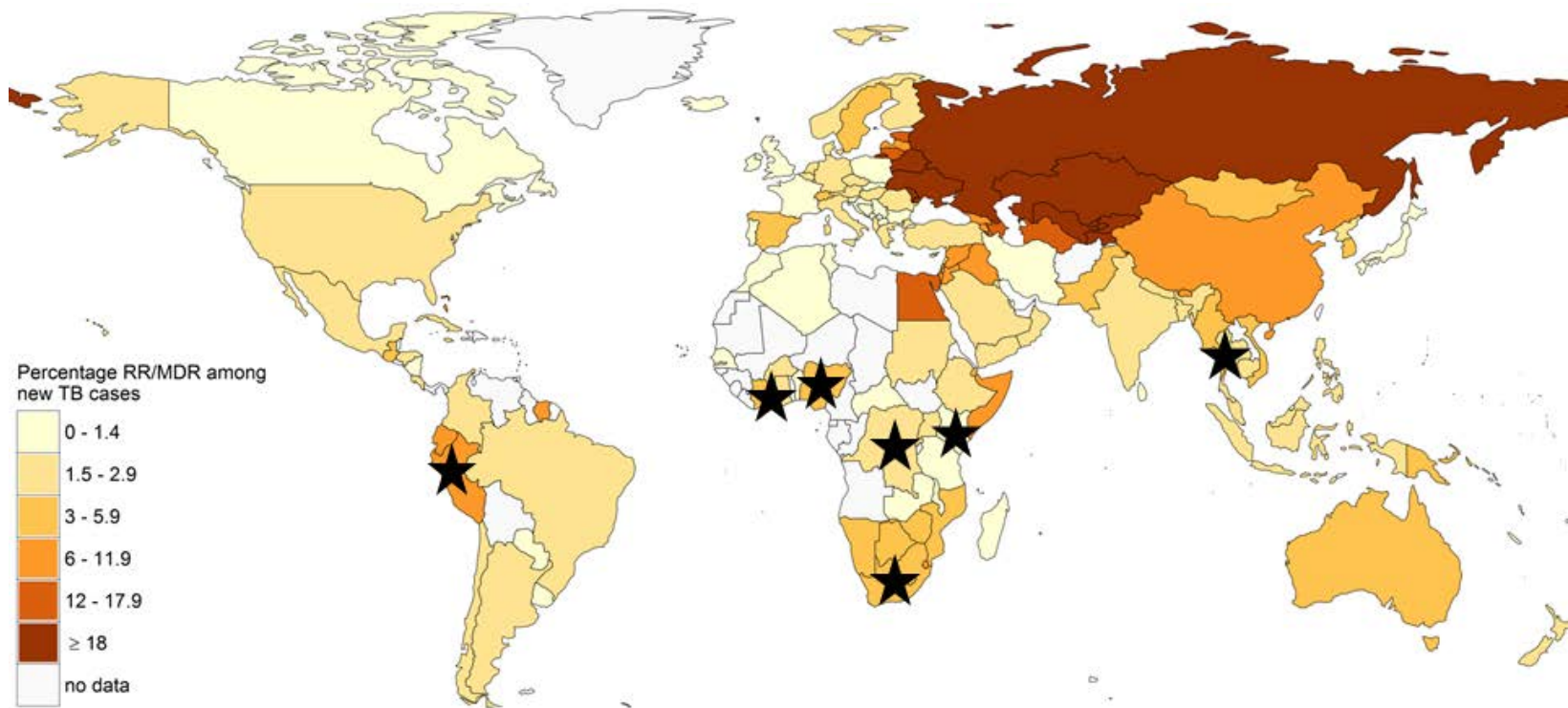28. Tuberkulose-Symposium, 27.3.2019, Magglingen Switzerland

A i m

We compared results of resistance testing done at HIV clinics or TB clinics in low- and middle-income countries with results from phenotypic drug susceptibility testing done at the Swiss National Center for Mycobacteria (Zurich), and examined mortality by treatment adequacy.

Patient recruitment and data collection

Clinical data and *Mycobacterium tuberculosis* isolates from 634 TB patients (≥16 years) stratified by HIV and drug resistance status in 7 countries


Percentage RR/MDR among new TB cases

- 0 - 1.4
- 1.5 - 2.9
- 3 - 5.9
- 6 - 11.9
- 12 - 17.9
- ≥ 18
- no data

Source figure: World Health Organization, Global tuberculosis report. 2017

Concordance and discordance of DST results

Concordance / discordance of DST results n=634 (%)		Reference laboratory	Local laboratories
Concordance	513 (80.9%)	Pan-susceptible Mono-resistance MDR Pre-XDR and XDR	Pan-susceptible Mono-resistance MDR Pre-XDR and XDR
Discordance potentially leading to under-treatment	23 (3.6%)	MDR Pre-XDR and XDR	Pan-susceptible MDR
Discordance potentially leading to over-treatment	67 (10.6%)	Pan-susceptible Pan-susceptible Mono-resistance MDR	Mono-resistance MDR MDR Pre-XDR or XDR
Other discordance	31 (4.9%)	Pan-susceptible Mono-resistance INH, MOX IHN, PZA	EMB, SM Pan-susceptible Mono-resistance MDR

Mortality during TB treatment by treatment adequacy
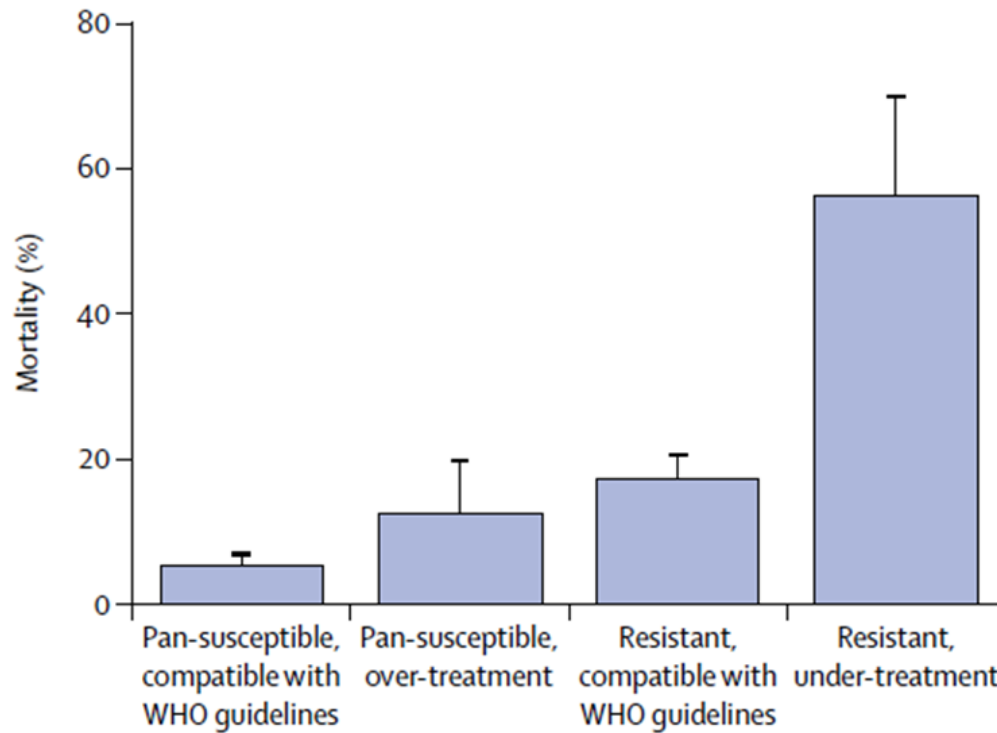
	No. of patients	No. of deaths (%)	aOR (95% CI)*
Pan-susceptible, adequate treatment **	336	20 (6.0)	1
Pan-susceptible, over-treatment	23	3 (13.0)	3.31 (0.82-13.45)
Any resistance, adequate treatment **	200	36 (18.0)	4.66 (2.16-9.14)
Any resistance, under-treatment	14	8 (53.1)	19.32 (5.59-66.73)

* adjusted for sex, age, sputum microscopy, and HIV status

** compatible with WHO guidelines

- Discordant DST results contributed to inadequate treatment and excess mortality

- Access to detailed resistance testing at treatment initiation needed to improve treatment outcomes

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