How Does Integrating HIV and TB Services Affect Health Outcomes for HIV-TB Coinfected Patients in Ukraine? Results from an Impact Evaluation

Smisha Agarwal, PhD[1]; Kristen Brugh, PhD[2]; Siân Curtis, PhD[1]; Zulfiya Charyeva, PhD[2], Stephanie Mullen, PhD[3]; Martha Skiles, PhD[1]; Randall Teal, MA[4]; Olga Zaliznyak, MA[5]; Tatyana Senik, MA[5]; Sabrina Eagan, MSN, MPH[3]
[1]MEASURE Evaluation, University of North Carolina at Chapel Hill; [2]MEASURE Evaluation, Palladium; [3]MEASURE Evaluation, JSI; [4]Consultant, [5]IFAK Institut, Ukraine

Introduction

Ukraine is one of the 10 countries with the highest incidence of multidrug-resistant TB,[1] and about a quarter of all TB patients are also infected with HIV.[2] Funded by the United States Agency for International Development, the Strengthening Tuberculosis Control in Ukraine (STbCU) project aimed to strengthen the integration of TB and HIV services to improve timeliness of care and enhance the life expectancy of patients with HIV-TB coinfections.

This impact evaluation of the STbCU project examines the relationship between the project's TB-HIV integration strategy and TB/HIV service utilization and mortality outcomes. MEASURE Evaluation, which is funded by the United States Agency for International Development, employed a mixed-methods approach, with a quasi-experimental, quantitative evaluation design, complemented by qualitative interviews to inform the findings. Using data abstracted from TB and HIV health facility records at baseline and end line, we employ a Cox-proportional hazards model with a difference-in-differences approach, to assess the impact of integration interventions on time from registration to diagnostic testing and treatment for coinfected patients at AIDS centers and TB dispensaries.

Methods

Evaluation Questions
The quantitative component of this evaluation sought to answer three questions relevant to TB-HIV service integration:

1. What proportion of TB and HIV/AIDS patients complete each step in the cascade of services from screening to treatment, per national protocol?

2. Do service integration, training, and support between TB and HIV/AIDS services decrease the lag between each step of service (screening, testing, and treatment) for TB and HIV/AIDS patients?

3. Do service integration, training, and support between TB and HIV/AIDS services decrease all-cause mortality among the TB-HIV coinfected patients?

- Employed a mixed-methods approach, with a quasi-experimental, quantitative evaluation design, complemented by qualitative interviews
- Purposively selected three intervention oblasts and three comparison oblasts matched on TB and HIV disease rates, population density, and level of socioeconomic development

Methods

- Individual medical record data were randomly selected for two patient cohorts from each oblast: (1) TB patients starting TB intensive treatment during calendar year 2012, at baseline, and from April 1, 2014 to June 30, 2015, at end line; and (2) HIV patients newly registered during calendar year 2012, at baseline, and from April 1, 2014 to June 30 2015, at end line. Each cohort (TB and HIV) was sampled independently. TB-HIV coinfected patients were over-sampled
- Used standardized data abstraction tools to abstract data from HIV and TB health facility records at baseline in 2012 (N=2,491) and end line in 2015 (N=2,993)
- Employed a Cox-proportional hazards model with a difference-in-differences approach to assess the impact of integration on screening, diagnostic testing, and treatment for HIV and TB

Results

- All integration outcomes examined improved between baseline and end line in both program and comparison areas, although some improvements were not statistically significant.
- Figures 1 and 2 present Kaplan-Meier survival curves. The curves show a decline in time to ART initiation in both program and comparison areas with larger declines in the project areas (blue curves).
- The Cox proportional hazards model found that the HIV-TB integration program was associated with a significant increase in timely initiation of ART in AIDS centers (Hazard Ratio = 1.49, $p<0.05$), and TB facilities (Hazard Ratio = 2.91, $p<0.001$).
- Although all-cause mortality declined slightly in both program and comparison areas, the declines were not statistically significant, and there were no significant program impacts on this outcome in the Cox proportional hazards models.
- Improvements were consistently larger in the area (program vs comparison) that had the poorer outcome at baseline, resulting in convergence in outcomes between program and comparison areas over time.

Figure 1. Time to ART initiation among coinfected patients at AIDS centers by intervention status

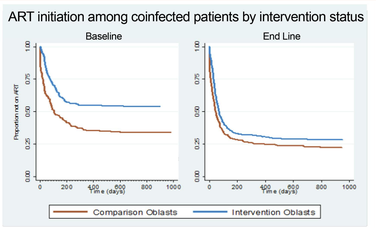
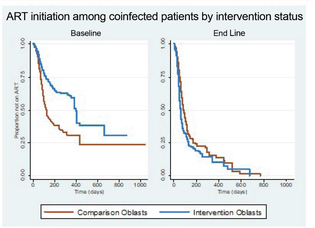


Figure 2. Time to ART initiation among coinfected patients at TB dispensaries by intervention status



Discussion and Conclusion

The results show a significant program impact on timing of ART initiation. Although all-cause mortality declined slightly among coinfected patients in both program and comparison areas, the declines were not statistically significant despite the improvement in ART initiation. We were not able to control for disease severity in the Cox models owing to the amount of missing data on important variables, such as CD4 cell count and TB disease stage, particularly at baseline. In addition, despite over-sampling coinfected patients, the number of deaths observed in the sampled records was small, giving us limited statistical power to detect statistically significant changes in mortality.

The quality of the routinely collected data used for this evaluation improved between baseline and end line, but further improvements are needed both for patient management and program evaluation.

For More Information

See the final report posted at the MEASURE Evaluation website https://**www.measureevaluation.org**

Contact **Zulfiya Charyeva** (zulfiya.charyeva@thepalladiumgroup.com), **Siân Curtis** (scurtis@email.unc.edu), **Stephanie Mullen** (stephanie_mullen@jsi.com)

References

1. World Health Organization. (2017). Global Tuberculosis Report. [Online]. Retrieved from http://www.who.int/tb/publications/global_report/gtbr2017_main_text.pdf
2. World Health Organization (Regional Office for Europe). (2017). Surveillance report: Tuberculosis surveillance and monitoring in Europe. Retrieved from http://www.euro.who.int/__data/assets/pdf_file/0020/334703/tuberculosis-surveillance-and-monitoring-in-europe-2017.pdf?ua=1

This poster was produced with the support of the United States Agency for International Development (USAID) under the terms of MEASURE Evaluation cooperative agreement AID-OAA-L-14-00004. MEASURE Evaluation is implemented by the Carolina Population Center, University of North Carolina at Chapel Hill in partnership with ICF International; John Snow, Inc.; Management Sciences for Health; Palladium; and Tulane University. Views expressed are not necessarily those of USAID or the United States government.
GR-18-42

www.measureevaluation.org