

UNIT COSTS OF NEEDLE AND SYRINGE PROGRAM PROVISION: A GLOBAL SYSTEMATIC REVIEW AND COST EXTRAPOLATION

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ABSTRACT

Background: Needle and syringe programs (NSP) are effective at preventing HIV and HCV among PWID, yet global coverage is low- in part because governments lack data on cost and cost-effectiveness of NSP in their countries. We conducted a global systematic review of unit costs of NSP provision and developed regression models for extrapolating costs in countries without data.

Methods: From January to October 2020, we conducted searches of 11 peer-reviewed literature databases and 5 grey literature sources using both economic and intervention-specific terms, with no geographic, date, or language restrictions. The outcome of interest was the cost per syringe distributed (converted and inflated to 2020 USD). A series of linear mixed-effects models were built to assess associations between the log unit cost per syringe distributed and country-level (per capita GDP, WHO Health Systems Ranking Index (HSRI), number of syringes distributed per PWID) and program-level (age, number of intervention components, and inclusion of ancillary services) predictors. Predictive accuracy was examined using a sequential 'leave one out' procedure to predict costs in countries with available data. Using the best performing model, unit NSP costs were extrapolated for countries without data.

Results: We identified 55 cost per syringe distributed estimates from 14 countries. The majority of estimates were from high-income countries (n=43), but estimates covered 4 high-income and 10 middle-income countries. There were no low-income country estimates. From the regression, a substantial portion of the variability in unit NSP costs were explained by WHO HSRI, inclusion of ancillary services, and program age. For the best performing model, all 14 country estimates fell within the prediction intervals; we extrapolated costs to 137 countries.

Conclusion: Our review identified key gaps in NSP costs for low-income settings. Regression models are useful for estimating costs in countries without data to inform HIV/HCV prevention programming.