Poster presentation

PP-001 THE REGRESSION DISCONTINUITY DESIGN: A NOVEL APPROACH TO ASSESSING THE REAL-WORLD EFFECTIVENESS OF HUMAN PAPILLOMAVIRUS (HPV) VACCINATION ON ANOGENITAL WARTS

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Background The human papillomavirus (HPV) vaccine and corresponding vaccination programs have been in Canada for over six years, yet there is no information on their effectiveness in reducing anogenital warts.

Objectives To assess the effect of the HPV vaccine (vaccine impact) and Ontario's Grade 8 HPV vaccination program (program impact) on anogenital warts using the Regression Discontinuity Design (RDD; a quasi-experimental, instrumental variable-based technique used to assess the causal effects of policy interventions).

Methods By linking Ontario's 36 immunization databases with provincial health records, we will identify a population-based cohort of all girls in Grade 8 in 2003/04-2008/09. Girls will be followed from September 1 of Grade 8 until August 31 of Grade 11. Exposure will be categorized based on HPV vaccine program eligibility (2003/04-2006/07 vs. 2007/08-2008/09) and actual vaccine receipt (0-2 vs. 3 doses). Outcomes will be identified based on a new diagnosis of and treatment for anogenital warts. For the RDD analysis, a continuous instrument will be created using birth month and year, where December 1993 (end of ineligible birth cohort) and January 1994 (start of eligible birth cohort) define the program eligibility cut-off. To estimate the program impact, local linear regression will be employed at the cut-off; here, exposure will be based on program eligibility (intention-to-treat). To estimate vaccine impact, we will use two-stage local linear regression, which will account for actual vaccination status. Several strategies will be used to test and minimize potential confounding bias – e.g., comparison of baseline characteristics, use of triangular kernel, optimal bandwidth selection.

Results Based on preliminary data (21 immunization databases), we identified a cohort of 155,999 ineligible and 75,508 eligible girls (N=231,507). Eligibility cohorts were similar across factors like age, urban/rural status, and vaccination history, suggesting they are balanced on factors other than program exposure. A graph of the probability of vaccination by instrument confirmed two additional RDD assumptions – there was discontinuity in exposure at the cut-off (4.6% vs. 45.8%) and no discontinuities at locations other than the cut-off.

Conclusions Preliminary results confirm the RDD is appropriate for use in this context. Complete, provincial-level results will be available by June 2013.