



Increase in Transmitted HIV Drug Resistance among Persons Undergoing Genotypic Resistance Testing in Ontario, Canada, 2002-2009

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What research question is addressed by 'Increase in Transmitted HIV Drug Resistance among Persons Undergoing Genotypic Resistance Testing in Ontario, Canada, 2002-09'?

HIV treatment success may be compromised if people acquired a drug-resistant strain of HIV when they were first infected. Treatment guidelines recommend that PHAs get drug resistance testing done at the time of HIV diagnosis, before starting treatment, to find out whether they have a drug-resistant HIV. This study aimed to learn how many recently-diagnosed PHAs in Ontario have drug resistance testing done, and among those who do, how many are infected with a drug-resistant strain of HIV.

What was the study conclusion?

Drug resistance testing at HIV diagnosis became more common over time, such that by 2009, 83% of newly-diagnosed PHAs were tested. Among those tested in 2002-09, 13.6% had one or more drug-resistant mutations of HIV. Most importantly, the proportion infected with a drug resistant strain tripled and was 27% for PHAs diagnosed in 2008-09.

Why is this question important?

Testing HIV strain and genotype at the time of diagnosis will give PHAs the most information about their HIV, to properly tailor antiretroviral therapy and respond best to their medication needs. It is also important for public health reasons because it tells us how much HIV circulating in Ontario is resistant to antiretroviral treatments.

How was the study conducted?

This study analysed data collected for the OHTN Cohort Study (OCS), including information from medical charts, interviews, and results from the Public Health Laboratories (Public Health Ontario) on PHAs in Ontario receiving HIV care. Only patients who were diagnosed from 2002 to 2009 were included in the study (totalling 626 people).



What were the main results of the study?

More than half of the participants (53.2%) had undergone genotypic resistance testing when they were diagnosed with HIV. Over time, the proportion of people undergoing genotyping testing rose from 30.0% in 2002 to 82.6% in 2009.

Nearly 14% of all PHAs who had their HIV tested had one or more drug-resistant mutations. There were different resistance patterns found among the HIV tested. The proportions of drug resistance were as follows:

- 8.8% conferred resistance to nucleoside/tide reverse transcriptase inhibitors (NRTIs);
- 4.8% conferred resistance to non-nucleoside reverse transcriptase inhibitors (NNRTIs); and,
- 2.7% conferred resistance to protease inhibitors.

Drug resistance increased over time, with PHAs diagnosed in 2008-09 being 8 times more likely to have NNRTI resistance and 4 times more likely to have NRTI resistance, compared to PHAs diagnosed in 2002-07. .

What do the study results mean for the treatment and care of people living with HIV?

PHAs who have not started on antiretroviral treatment will benefit from knowing if they may be infected with a resistant strain of HIV. Selecting treatment based on drug resistance testing leads to better treatment outcomes and it is more cost-effective.

Where can I find the full-length publication of this study?

This study was published in the Journal of Antimicrobial Chemotherapy. The full text version is available at: <http://jac.oxfordjournals.org/content/67/11/2755>.

The **Ontario HIV Treatment Network Cohort Study (OCS)** is an ongoing research study that collects clinical, social and behavioural information about people living with HIV (PHA) in Ontario. Participation in the study is voluntary, and all personally identifying information of study participants is removed to ensure confidentiality. The OCS was established to improve our understanding of HIV and to inform HIV prevention, care and treatment strategies for people living with HIV and groups at increased risk of HIV infection. For more information about the OCS, please contact the OCS Research Coordinator, Brooke Ellis at: bellis@ohln.on.ca.