A Canadian report described a 2015 transmission of HIV resistant to tenofovir (TDF) & emtricitabine (FTC) (the components of PrEP) in a person adherent to PrEP.

In 2016, a similar transmission likely occurred in King Co., WA.

Preventing transmission of HIV strains potentially rendering PrEP ineffective is a public health priority.

METHODS

People Living With HIV (PLWH) and 2017 residents of King Co. are described using National HIV Surveillance System (NHS) data: 1. Most recent viral load (VL) data from NHSS -- within 24 mos. of 12/2017 -- identified viremia, defined as plasma viral load of >2,000 copies per mL. Substantial viremia was VL ≥ 10,000.

Partial pol (~1K of PR & RT) sequences were collected since 2003.

PrEP-resistant strains had mutations conferring intermediate to high (higher) level resistance to TDF and FTC, as categorized by the Stanford database algorithm.

Investigations: At four time-points, Data to Care (D2C) staff investigated people with viremia (or no VL) and PrEP-resistant virus (Table). Investigations include provider & patient conversations to:

• Promote engagement in HIV care and reduction of viremia.

• Discuss potential for HIV transmission to partners on PrEP.

• If other interventions promoting care engagement are not successful, staff refer to a low-barrier walk-in clinic.

Primary TDF/FTC Resistance was sought within one year of new HIV diagnoses (primary resistance) from 2008 to 2017. Genetic similarity clustering was based on a 1.5% TN93 distance threshold.

E. Buskin, Mark Fleming, and 2017 residents of King Co.

• Time-points
• Viremia > 1K
• Substantial Viremia > 10K
• No Viral Load in 2+ Years
• TDF/FTC resistance same time
• TDF/FTC resistance at ANY time

2016 X X X 21
2017 (1) X X 21
2017 (2) X X X 25
2018 X X X 11

Vi etas were three of 1,817 (0.17%) people newly diagnosed with HIV had TDF/FTC resistance in a reported sequence.

All three were virally suppressed at their most recent VL.

Assuming similar prevalence for people with no genotypic sequence reported (N=506) we estimate a total of four individuals with primary TDF/FTC resistance in the decade (<1/year).

There has been no increasing trend in resistance since the 2012 licensure of Truvada™ (comprised of TDF & FTC) for PrEP.

Two of three primary TDF/FDC resistant cases were in separate genetic similarity clusters consisting of 19 and 72 PLWH. (For comparison, 42% of newly diagnosed cases were in clusters.)

Other cluster members did not have the characteristic mutations of TDF/FTC resistance present in the three with transmitted resistance.