We used NYC surveillance data to:

- At least two recent analyses (of data from the Veteran's Administration and the ARTEMIS trial) suggest that less frequent testing might be appropriate.
- Modeling suggests that less frequent testing would save money.
- We used NYC surveillance data to:
  - Determine whether some patients could safely undergo less frequent CD4 testing less often.

Study design/source

- We conducted a population-based, retrospective cohort using NYC HIV Surveillance Registry (HSR) data beginning 1/1/07.
- The NYC HIV Surveillance Registry contains all diagnoses of HIV and AIDS and is continually updated with new diagnoses, laboratory results, and other clinical information required by law. As of 12/31/12, NYC HSR contained a cumulative total of 220,934 cases, and 7,300,000 laboratory tests.
- To enter the cohort in the following calendar year, HIV patients ≥13 years old as of 1/1 of the prior calendar year were included. Annual frequency of CD4 monitoring.
- Patients were followed through 2012, and censored at first VL ≥400 copies/mL or the last CD4/VL.

Methods

- A multivariate Cox model was used to identify factors associated with the probability of CD4 dropping to <200 cells/mm3.
- Tied patients were handled by assigning each tied event of CD4≥350 cells/mm3 a unique time point, a value equally spaced between the times of the events.
- Patients with CD4≥350 cells/mm3 who are virologically stable, CD4 should be measured according to existing guidelines.

Results

- Mean (standard deviation [SD]) and median (interquartile range [IQR]) were used.
- Mean CD4 cell count among stable patients was 536 ± 169 cells/mm3.
- The annual number of CD4 measurements among stable patients varied little by gender, age, race/ethnicity, transmission risk, or year of diagnosis, but the most frequent testing appeared to be associated with initial CD4≥350 cells/mm3.
- The probability of CD4 dropping to <200 cells/mm3 was >90% among those with initial CD4≥350 cells/mm3.
- The probability of maintaining CD4≥350 cells/mm3 for at least 2 years was 86% among those with initial CD4≥350 cells/mm3.
- In 2011, 80% of stable patients had testing at least twice yearly.

Discussion

- For patients with CD4≥350 cells/mm3 who were virally stable, these findings suggest that limited CD4 monitoring is appropriate.
- Additional testing is unlikely to require clinical action (e.g., initiation of prophylaxis for opportunistic infections).
- For patients with CD4≥350 cells/mm3 who were virally stable, CD4 should be measured according to existing guidelines.

Fiscal implications

- At the New York State Medicaid rate of US$64.93 for a CD4 test (2013), for stable HIV patients with CD4≥350 cells/mm3, NYC would save:
  - ~US$3.0 million annually if CD4 monitoring were limited to once yearly monitoring.
  - ~US$3.0 million annually if CD4 monitoring was limited to once yearly monitoring.
- Future analyses are planned to study the impact of the new NYS guidelines (released January 2014); they also advise less frequent monitoring of stable patients.

Limitations

- Use of surveillance data for the analytic cohort is limited by the following:
  - Only CD4 measurements obtained in the jurisdiction are reported and can be correlated (probably of CD4 drop) and CD4 monitoring frequency may be underestimated.
  - Other covariates, such as socio-demographics that might drive CD4 trajectories or measurement frequency (e.g., antidepressant use), are not available.
- Excess that used currently for NYC surveillance analyses (VL=20)

References

- Panel on Antiretroviral Guidelines for Adults and Adolescents. Guidelines for the use of antiretroviral agents in HIV-1-infected adults. Available at: http://www.hivguidelines.org/clinical-guidelines/adults/antiretroviral-therapy/
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"CD4 Cell Count Monitoring Frequency Among HIV+ Persons in New York City (NYC), 2007-2011"