

The Impact of In-House HIV Confirmatory Testing on Linkage to Care in Alaska

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Project Background

With a land area of 663,300 square miles Alaska is the largest state in the United States, larger than the states of Texas, California, and Montana combined. Approximately 82% of Alaskan communities are not connected to a highway or road system, leaving air travel as a primary method of in-state transportation for both people and supplies. The Alaska State Virology Lab (ASVL) is located in Fairbanks, Alaska, and provides statewide viral diagnostic services that aid in the diagnosis and surveillance of human viral diseases that are of public health importance. With vast distances, extreme weather, and a lack of developed road infrastructure the timely transportation and delivery of laboratory specimens can be a challenge.

Prior to 2012, only antibody screening for human immunodeficiency virus (HIV) via enzyme immunoassay (EIA) was available at ASVL. If initial EIA results were reactive in duplicate, specimen were then sent to an out-of-state reference laboratory for confirmatory Western Blots (WB). The recipient reference laboratory also had to complete their diagnostic algorithm, necessitating a second set of reactive EIAs before the confirmatory WB could be performed. The duplication of the initial steps in the testing algorithm, coupled with challenges of geography and shipment logistics, resulted in significant delays from the point of collection to confirmation of a reactive test. In turn, these delays extended the timeline for providing positive results to HIV infected persons and linking them to HIV medical care, which can impact health outcomes and transmission of HIV.¹

In 2012, ASVL implemented a new HIV testing algorithm that included in-house confirmatory testing using the BioRad Multispot HIV-1/HIV-2 antibody differentiation immunoassay. This project evaluated the impact of the new testing algorithm by comparing the timeliness of HIV test reporting and linkage to care before and after implementation of the new HIV testing algorithm at ASVL.

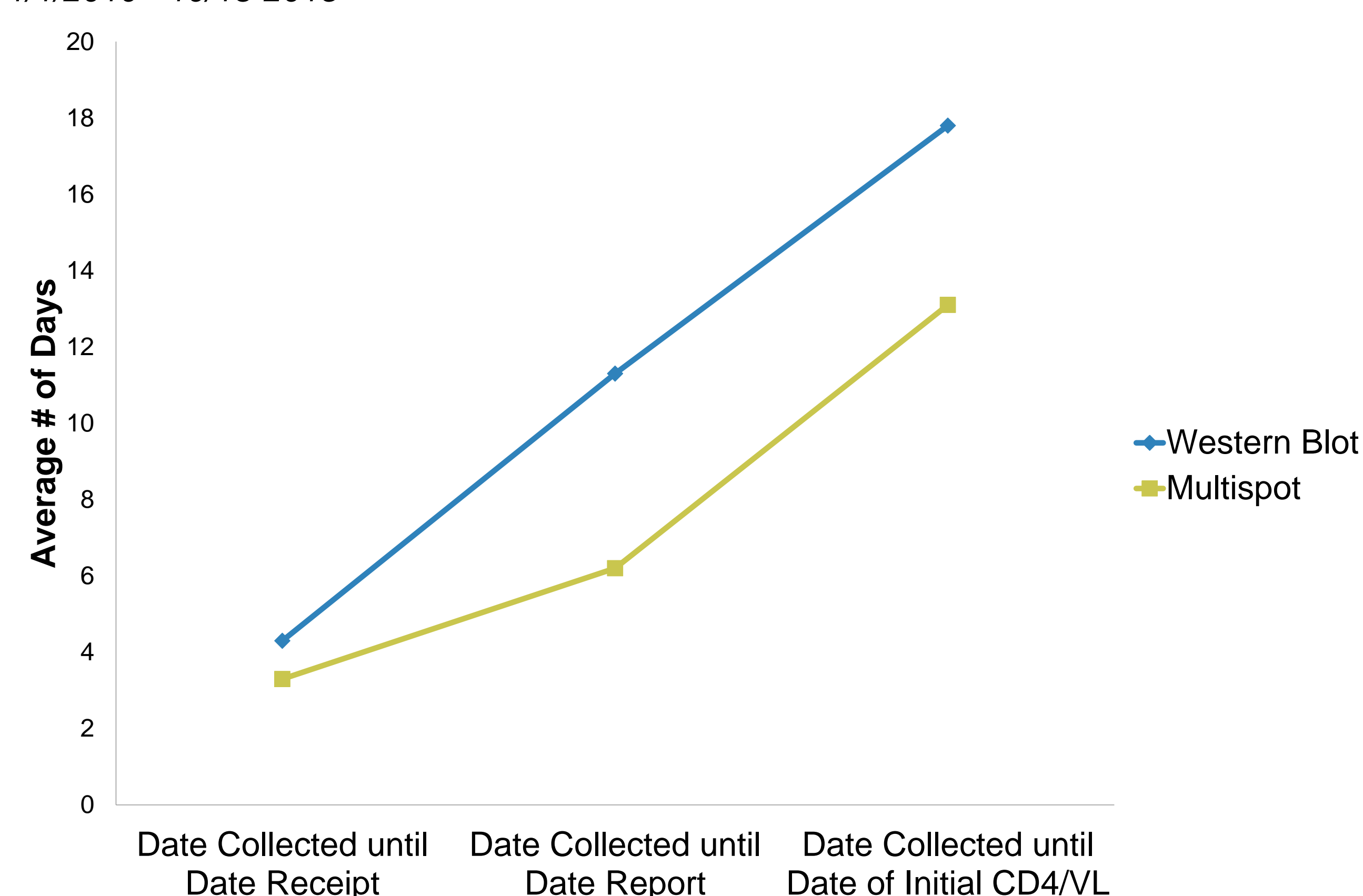
Methods

Laboratory data from January 2010 through October 2015 were analyzed to determine the average number of days from the specimen collection date to the date of laboratory report, as well as the date of initial CD4 and viral load (VL), which are used as a proxy to determine if an HIV patient has been linked to medical care. The average number of days from the date of report to the date of initial CD4 and VL testing were also analyzed to determine if the Alaska Section of Epidemiology's new Linkage to Care (L2C) Program, which was implemented during the same period, might have also affected the linkage to care turnaround time.

Results

The laboratory data showed that transitioning from WB performed by an out of state reference laboratory to Multispot HIV-1/HIV-2 antibody differentiation immunoassay performed in-house by ASVL reduced the average turnaround time from the collection date to the report date from 11.3 days [range 9–19] to 6.2 days [range 3–9]. Furthermore, the time from date of specimen collection to date of the initial CD4 and VL tests was reduced from an average of 17.8 days [range 11–29] to 13.1 days [range 4–28] (Figure 1).

Figure 1: Alaska State Virology Lab HIV Confirmatory Test Turn Around Times by Test Type 1/1/2010 - 10/18/2015



The average number of days from the date of report to the date of initial CD4 and VL did not change, indicating that the L2C program efforts did not impact turnaround times (Table 1).

Table 1: Alaska State Virology Lab HIV Confirmatory Test Turn Around Times by Test Type 1/2010 - 10/2015 (n=41)

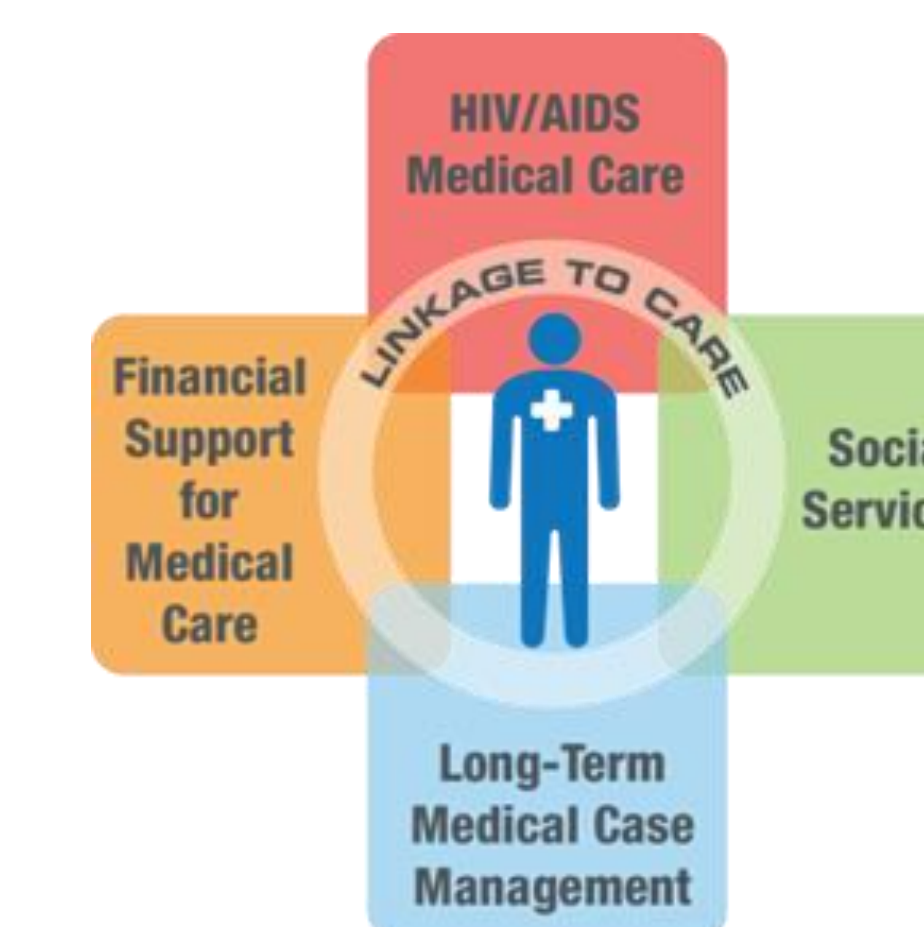
	Average number of days from specimen collection date until receipt date [range]	Average number of days from specimen collection date until report date [range]	Average number of days from specimen collection date until date of initial CD4/VL [range]	Average number of days from report date until initial CD4/VL [range]
Western Blot (n=16)	4.3 [1 - 7]	11.3 [9 - 19]	17.8 [11 - 29]	7.6 [1 - 18]
Multispot (n=25)	3.3 [2 - 6]	6.2 [3 - 9]	13.1 [4 - 28]	7.8 [0 - 25]

Discussion

Ensuring that persons with HIV infection receive appropriate medical care is critical for preventing disease progression and HIV transmission within the community.¹

- Engagement in HIV medical care:
- improves treatment adherence,
- increases survival rates,
- facilitates viral suppression, and
- reduces the risk of HIV transmission to others.²⁻⁴

In Alaska, persons newly diagnosed with HIV are offered Linkage to Care services by State of Alaska HIV/STD Program Staff. These services include:



The availability of an in-house confirmatory test at ASVL eliminated the need for repeated EIA testing by the reference laboratory and negated the need to ship specimen to an out-of-state reference laboratory. This reduction in turnaround time contributed to more timely linkage to HIV medical care for persons newly diagnosed with HIV in Alaska.

Conclusions

Offering in-house confirmatory testing for HIV reduced the turnaround time of test reporting and linkage to care. This reduction can result in direct health benefits to the patient as well as benefits to the wider public through prevention of HIV transmission.

References

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