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# Prenatal HIV Screening: Gaps and Best Practices

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## Background

Since the advent of greatly enhanced medical protocols to prevent viral transmission during childbirth, mother-to-child transmission of human immunodeficiency virus (HIV) is now almost entirely preventable if the correct prophylaxis is administered around delivery.[1,2] Without intervention, a child born in the US to a mother with HIV has an approximately 1 in 4 chance of being infected with HIV.[3-5] With proper perinatal HIV prophylaxis, the risk of mother-to-child transmission can now be reduced to < 2%,[6-10] making detection and treatment of HIV in pregnant women a public health imperative.

Although universal testing for HIV among pregnant women has been an accepted national recommendation since shortly after the introduction of prophylaxis to reduce mother-to-child transmission,[11,12] studies have shown that screening rates often remain well below 100%.[13-17] To decrease barriers to testing, the Centers for Disease Control and Prevention (CDC) has recommended an "opt-out" prenatal HIV testing policy since 1999, whereby a pregnant woman will be screened unless she actively refuses testing.[18] Opt-out testing has been shown to increase prenatal HIV screening.[19]

Prenatal HIV screening is considered important enough that it has been included as a core quality indicator in the Government Performance and Results Act (GPRA), through which the Indian Health Service (IHS) is accountable to the US Congress. IHS measures, and reports via GPRA, the percent of pregnant women who are screened for HIV during their pregnancy. The nationwide rate of prenatal HIV screening in IHS increased from the baseline October 2005 rate of 54%, low but similar to estimates in other US groups,[20] to 74% in October 2007.

This project's goals were to understand the process of prenatal HIV testing in IHS; efficiently and accurately estimate HIV screening rates among pregnant IHS American Indians and Alaska Natives (AI/ANs) nationwide; and to improve prenatal HIV screening rates in Indian Country. The project was supported and funded by the Minority AIDS Initiative (MAI), and implemented by the Division of Epidemiology and Disease Prevention in collaboration with the National IHS HIV/AIDS Program.

## Methods

We randomly selected service units nationwide. The sample was weighted by geography and user population, so larger service units in Areas with a larger user population were more likely to be selected.

We sent selected service units a standardized set of computer commands to draw up a list of patients who were seen in prenatal care during March 2005 - March 2006 but were not screened for HIV, making them GPRA "misses." These patients were put into random order and the first 25 available charts on the list were reviewed. Some small clinics had fewer than 25 GPRA misses during the study period, in which case all available misses were reviewed.

We used the standard IHS definition of prenatal care: at least two visits with Purpose of Visit (POV) of pregnancy during the past 20 months, with one diagnosis occurring during the reporting period, and with no documented miscarriage or abortion occurring after the second pregnancy POV.

A standardized data collection instrument was used to record patient data, including date of birth, estimated date of

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confinement, dates of HIV and other routine infectious disease tests (syphilis, gonorrhea/chlamydia, and hepatitis B), and other relevant aspects of care such as transfers or documentation of a declined HIV test. Data from either physical charts or electronic health records (EHRs) were recorded in a database that contained no patient identifiers. No personally identifiable data left any site.

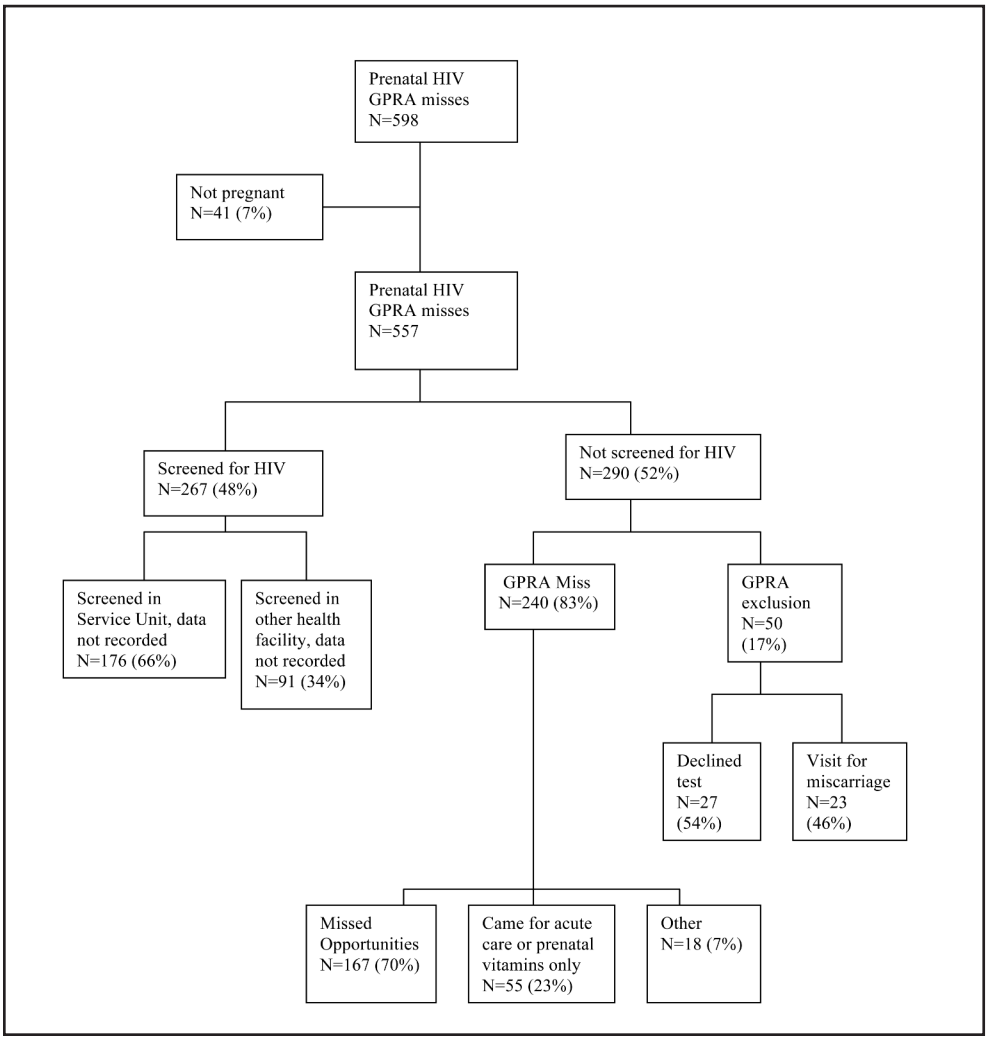
Investigators also gathered qualitative data about patient and data flow during on-site interviews with clinical health providers, administrative officers, and health technologists for recommendations on improvements.

Each service unit in the sample was given facility-specific results of our investigation within two weeks of our visit.

## Results

We reviewed 598 records from 27 sites, of which 41 (7%) were not pregnant and removed from further analysis. Of the remaining 557 charts, 290 (52%) were not screened for HIV, and 267 (48%) had been screened for HIV, as per figure 1.

**Figure 1. Prenatal HIV GPRA "Misses"**




*Not tested for HIV:* Among the 290 pregnant women not screened for HIV, the majority had no HIV screening despite having had ≥ 2 prenatal care encounters (167/290, 58%). These women represent "missed opportunities," patients whose care fell outside of current recommendations and could not be otherwise explained.

It was difficult to determine underlying causes of the missed opportunities in chart review. However, a majority of misses (118/167, 71%) had prenatal testing for other infectious diseases, so providers appeared to have specifically (and incorrectly) excluded HIV from these patients' prenatal testing.

Fifty misses (50/290, 17%) were women who declined or had a miscarriage/termination. If documented in RPMS, GPRA logic removes women who declined an HIV test or had a miscarriage/termination from the prenatal pool, so these patients should not be a miss, and instead represent data error.

*Tested for HIV:* Of the 267 charts that had a documented HIV test, 176 (66%) had a test ordered by the service unit with the result in the chart, but not recorded in RPMS. This type of data entry error is the result of either omission or miscoding. Ninety-one (34%) charts had prenatal HIV tests that had been faxed or e-mailed to the service unit by a previous prenatal provider (usually another IHS facility) that had not been entered into RPMS.

In sum, according to GPRA, the testing rate of the patients in this sample was 0% (0/598). However, with exclusions from the denominator of women who did not need to be tested (not pregnant, miscarriage, declined testing), and additions to the numerator (women who were tested, but the result was not recorded), the true testing rate in this sample was 53% (267/507).

## Limitations

This project did not seek to determine what proportion of data entry errors were a result of laboratory tests done off site and not entered into RPMS (the time period of chart review preceded the release of the reference laboratory interface), lack of data entry, or data miscoding. Similarly, the reasons for clinical gaps are often not apparent in chart review, and so we relied on qualitative data to attempt to determine the reasons for misses. Qualitative data cannot be extrapolated to determine precisely the contributions of different

categories of apparent clinical or data-related misses, only the range of types and underlying causes of misses.

The sample was weighted towards larger facilities, which may under-represent the types of misses seen at smaller facilities.

## Discussion

Sites with the best performance often had protocols in place that tended to include HIV screening by default. These protocols included 1) testing as soon as possible in pregnancy, ideally immediately upon discovery of a positive pregnancy test, by the same nurses who performed the pregnancy test; 2) using opt-out methods to make an HIV test as routine as the other tests done during prenatal care; and 3) bundling HIV testing into a prenatal panel rather than ordering the test separately, either by pre-marking lab order forms or as the default order code with a contract lab. These safeguards effectively extend the opt-out principle to provider behavior, ensuring that the provider screens for HIV unless he or she actively withdraws the test. In this sample, bundling HIV with other routine prenatal infectious disease tests would have prevented most missed opportunities. Opt-out needs to be emphasized, as 5 of 27 (18.5%) service units in this sample were still not using opt-out, and instead used written consent.

The primary reason for apparent GPRA misses is not a lack of testing but rather data integrity. Patients in this sample had a screening rate according to GPRA of 0%, when in fact it was over 50%. Most facilities assumed, often correctly, that low prenatal HIV screening rates were data errors, with two detrimental effects: 1) low GPRA rates demoralized medical staff who felt they were performing better than the data indicated, and 2) data entry errors made identifying and rectifying clinical errors difficult. Once a site understood it had a proportion of clinical misses, they were generally quick to react and close the gaps. Many sites with low rates quickly realized double-digit gains in screening rates once they instituted some of the aforementioned clinical and data safeguards. Most notable was a large hospital seeing hundreds of prenatal patients each year that increased its score from 1% to 88%. It is critical that providers have data on key screening results and understand the reasons underlying those rates in order to take effective action.

## Recommendations

Clinical practice:

1. Ensure all staff understand opt-out testing, including contract workers.
2. Ensure HIV is bundled into a larger prenatal test panel.
3. Offer prenatal panel in the first visit -- the same visit as HCG+ result.
4. Make HIV test the default option unless the patient declines. If still using hard copies to order laboratory panels, pre-mark the master copy of intake slips with the routine prenatal ID tests.
5. Ensure women who present in term labor with no testing history are screened for HIV.
6. Consider testing for a second time during the 3rd trimester of pregnancy as per CDC guidelines in high-risk communities.
7. Ensure service units have a clear plan, including medical and social referrals, in the case of a positive HIV test result.

RPMS/ Data entry

8. Link reference laboratory directly to RPMS for automatic data entry, using the reference laboratory interface software application. If this is not possible, ensure sent out laboratory tests are entered into PCC as historical lab tests so they can be counted by CRS for GPRA reporting.
9. Review the standard ways that CRS looks for HIV testing results, and ensure that your medical staff is aware of the appropriate ways to record HIV testing data in RPMS.
10. Ensure the CRS taxonomy for HIV screens (i.e., BGP HIV TEST TAX) includes all HIV screening lab tests that are used at the facility.
11. In hard charts, standardize the location for HIV test results, and ensure that results are entered into the laboratory file.
12. Enter HIV tests from other facilities into RPMS. IHS is looking into ways to streamline this process for service units, similar to recording immunizations done at other facilities.

## Additional resources

CRS website: *http://www.ihs.gov/cio/crs/*

GPRA website: *http://www.ihs.gov/NonMedicalPrograms/PlanningEvaluation/pe-gpra.asp*

Performance Improvement Toolbox: *https://webmail.hhs.gov/exchweb/bin/redir.asp?URL=http://www.ihs.gov/cio/crs/crs_performance_improvement_toolbox.asp*

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