Record linkage to enhance STD/HIV surveillance data for Oregon’s American Indian/Alaska Native population

Megan J Hoopes, MPH1, Sean Schafer, MD, MPH2, Erik Kaluska, BA3
1Northwest Tribal Epidemiology Center, NW Portland Area Indian Health Board, Portland, OR. 2Oregon Public Health Division, Portland, OR

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Introduction
American Indians/Alaska Natives (AI/AN) experience substantial sexual health disparities. Compared to other races/ethnicities, AI/AN:

- Have the 2nd highest rates of chlamydia and gonorrhea, after African Americans
- Rank third in rates of primary & secondary syphilis
- Have some of the lowest HIV/AIDS survival rates, with one in four surviving less than three years after diagnosis

Complicating surveillance efforts is the fact that AI/AN are frequently undercounted in disease surveillance systems, resulting in under-estimated morbidity and mortality. To the extent that this population is racially misclassified in sexually transmitted disease (STD) and HIV surveillance data, public health disease control efforts can be hampered.

Methods

Source data
- Case reports of reportable STDs (chlamydia, gonorrhea, primary and secondary syphilis (P&S)) and HIV among Oregon residents reported to Oregon Public Health Division between 2000-2009
- Patient enrollment records from Portland Area Indian Health Service (Idaho, Oregon, and Washington), 1986-2009, restricted to AI/AN beneficiaries. Eligibility for IHS services is based on enrollment in a federally recognized Indian tribe, and/or documented decedence from a tribal member; thus all beneficiaries are known to be of AI/AN race.

Linkage
- LinkPlus software (CDC) used to conduct probabilistic linkage between two source data sets
- Comparison of agreement and disagreement on personal identifying fields

Analysis
- Age-adjusted incidence rates (non-HIV STDS) and crude prevalence rates (HIV) were calculated by race and sex per 100,000 population, presented with 95% confidence intervals
- Numerators for AI/AN calculations include all matched cases (race correctly or incorrectly classified) plus unmatched AI/AN cases
- National Center for Health Statistics bridged-race population estimates used as population-at-risk denominators

Limitations
- Small numbers, unstable rate estimates
- Linkage data source does not represent entire AI/AN population; unable to validate race of unmatched AI/AN cases
- Specificity of AI/AN classification by surveillance cannot be assessed by this approach
- Post-linkage AI/AN rates may not be comparable to other states/areas which have not evaluated race data quality

Conclusions and Future Work
- The correct classification of race is an important factor in disease surveillance; accurate data should inform prevention/intervention efforts
- Linkage approach can increase accessibility and quality of health data for AI/AN
- Future study will look at HIV care and performance measures in more detail
- For over 20 years, Project Red Talon has provided STD/HIV prevention planning, surveillance, and capacity-building assistance to the NW Tribes. For more information, contact Stephanie Craig Rushing at scraig@npaihb.org or 503-416-3290.

References

Acknowledgements
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- Oregon Public Health Division, STD/TB/HIV Program
**Definition of terms**

- **Matched AI/AN case** – a reported STD/HIV case in which the individual is identified in both the IHS file and the Oregon STD/HIV Registry
  - Race correctly classified—a matched case for which the Oregon STD/HIV Registry identified the individual as AI/AN.
  - Race incorrectly classified—a matched case for which the Oregon STD/HIV Registry identified the individual as non-AI/AN or race was missing/unknown.
- **Unmatched AI/AN case**—a reported case in which the individual is identified as AI/AN in the Oregon STD/HIV Registry, but does not match with any individual in the IHS file. The IHS does not serve all AI/AN people in Oregon and is known to under-represent some subpopulations (e.g., urban Indians), thus these cases were included in analyses.

**Linkage and misclassification results**

- STD/HIV cases identified as AI/AN increased by 47.8% as a result of the linkage, from 2,007 to 2,966
- HIV cases identified as AI/AN increased by over 70%, from 72 to 123 cases
- The majority of misclassified records were coded as White; the linkage also identified a high number of cases that were of unknown or missing race
- Unmatched AI/AN cases were more likely to reside in urban areas and somewhat less likely to be female; age and disease distributions were similar between matched and unmatched AI/AN cases

**STD results (chlamydia, gonorrhea, P&S)**

- The correction of AI/AN race resulted in significantly higher average annual incidence rate estimates for chlamydia and gonorrhea. One additional AI/AN syphilis case was identified through the linkage.
- Chlamydia and gonorrhea rates for AI/AN females were approximately 50% higher than corresponding disease-specific rates for females of all other races; rates among AI/AN males were similar to other races.

**HIV results**

- HIV prevalence rates among AI/AN increased significantly, approaching the rate for all other races combined.
- AI/AN had a greater proportion of female HIV cases compared to all other races, and female point prevalence was 1.7 times greater among AI/AN.

The Northwest Portland Area Indian Health Board (NPAIHB) is a non-profit tribal advisory organization serving the 43 federally recognized tribes of Oregon, Washington, and Idaho. NPAIHB’s Northwest Tribal Epidemiology Center collaborates with Northwest Indian Tribes to provide health-related research, surveillance, and training to improve the quality of life of American Indians and Alaska Natives.