

Background

Mother-to-child transmission (also known as perinatal transmission) of human immunodeficiency virus (HIV) can happen at any time during pregnancy, childbirth, and breastfeeding. One of the most important interventions for preventing perinatal transmission of HIV is providing recommended antiretroviral (ARV) drugs. ARV medications should be given to eligible pregnant people in the intrapartum period and to all HIV-exposed infants as close to the time of birth as possible, preferably within 6 hours of delivery.¹ However, recent case reviews conducted by the Minnesota HIV Fetal and Infant Morbidity and Mortality Review team (MN FIMR/HIV) found two instances where administration of intrapartum ARV medications to an eligible patient in a hospital were missed. The missed opportunities were a result of an inpatient pharmacy not stocking intravenous (IV) zidovudine (ZDV), also known as azidothymidine (AZT), in their facility and not having a plan in place for obtaining the medication in a timely manner.

Objectives

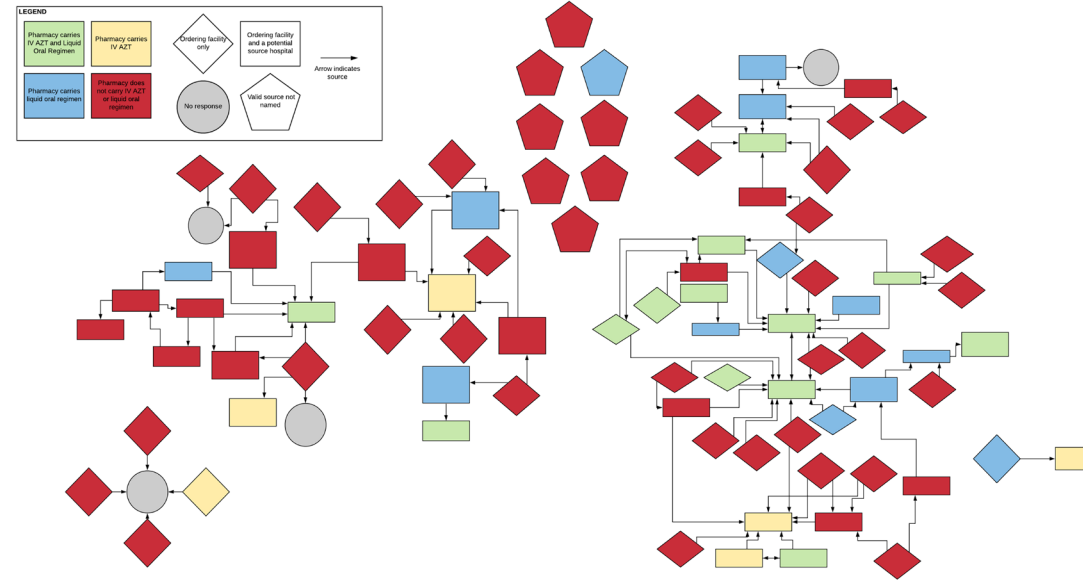
1. Describe how network analysis can be used in analyzing a public health problem.
2. Understand the differing availability of ARV medications in Minnesota hospitals with birthing facilities.
3. Understand the challenges in ensuring timely ARV access in hospitals in Minnesota.
4. Use results to develop interventions that promote equitable access to ARV medications for pregnant people with HIV during labor and delivery and for their infants immediately after birth.

Methods

From April 2019 to June 2019, the Minnesota Department of Health (MDH) conducted an informal telephone survey of 91 hospitals with labor and delivery facilities within the state and large bordering cities to ascertain the availability of ARV medications.

Inpatient pharmacies were contacted and a pharmacy staff member was asked if the facility had IV ZDV and liquid oral ZDV, nevirapine, or lamivudine in stock. In addition, the staff member was asked which facility they would contact to request a medication transfer in the case of pregnant person living with HIV being admitted in labor and requiring urgent ARV prophylaxis.

Figure 1. Visual Network



Results

Eighty-six hospitals participated in the survey:

- 7% (6/86) of hospitals stocked only IV ZDV.
- 15% (13/86) of hospitals stocked only one infant liquid oral ARV medication.
- 15% (13/86) of hospitals stocked both IV ZDV and at least one infant liquid oral ARV medication.
- 63% (54/86) of hospitals did not stock IV ZDV or at least one infant liquid oral ARV medication.
- 41% (22/54) of hospitals did not stock IV ZDV or at least one infant liquid oral ARV medication.
- 9% (8/86) of respondents did not name a valid source for transfer of IV ZDV and/or infant liquid oral ARV medication

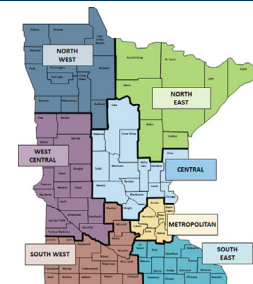
A visual network was created to illustrate the links between ordering facilities and named source hospitals. Key results of the network analysis:

- The strength of the supply network varied by geographic area of the state.
- Fewer hospitals in outstate regions kept ARV medications in stock.

Results Continued

- Some larger facilities were not aware that they were identified as a source facility within the network.
- There were greater physical distances between some ordering and source facilities in outstate regions compared to the metropolitan region.
- Several respondents from outstate facilities that did not stock ARV medications could not identify a valid source for obtaining the medications.

Figure 2. Regional Map of Minnesota



Conclusions

Stocking of ARV medications differed between facilities and may have been influenced by the size and geographic location of the facility. Access to intrapartum ARV prophylaxis is a key intervention for preventing perinatal HIV and should be equitable across all geographic areas in the state. Therefore, public health and maternal child health professionals should understand the ARV medication supply network in their community and work with pharmacists and birthing facilities to develop procedures that ensure timely access to ARV medications for when they are urgently needed.

As a result of this process improvement project, several opportunities to improve ARV access were identified:

- MN FIMR/HIV used the pharmacy survey information to develop a directory of ARV inventory in Minnesota hospitals. This directory can be used by MDH and local perinatal HIV care coordinators and physicians to facilitate quick transfer of ARV medications between source and ordering facilities. This directory is updated annually.
- Children's Minnesota Perinatal and Pediatric HIV Program contacted the facilities that did not stock ARV medications and could not identify a source to offer technical assistance and capacity building around ARV medications and reducing perinatal HIV transmission.
- A fact sheet detailing pharmacy best practices to promote ARV medication access was developed and made available on the MDH website.

Acknowledgements

Gina Liverseed¹, Karmen Dippmann¹, Daniel Jude³, Kathy Chinn¹, Alissa Fountain², Cheri Booth²

¹ Minnesota Department of Health, Saint Paul, MN

² Children's Minnesota, Saint Paul, MN

³ TrellisRX/North Memorial Health, Robbinsdale, MN



Special thanks to Minnesota FIMR/HIV team members for their commitment to case review and community action.

¹ Panel on Treatment of Pregnant Women with HIV Infection and Prevention of Perinatal Transmission. Recommendations for the Use of Antiretroviral Drugs in Pregnant Women with HIV Infection and Interventions to Reduce Perinatal HIV Transmission in the United States. Available at <https://clinicalinfo.hiv.gov/en/guidelines/perinatal>. Accessed 3/1/2022.