

Background

- Adverse drug reactions (ADRs) are among the top 10 causes of death in North America
- Pharmacogenomics is the study of how genes affect a person's response to drug
- Genetic markers can be used to develop predictive diagnostic tests that contribute to the prevention of severe ADRs
- The Canadian Pharmacogenomics Network for Drug Safety (CPNDS) is an innovative, national program that aims reduce serious ADRs in children and has been founded in 2005 by the team of Bruce Carleton et al. from the University of British Columbia
- The pharmacovigilance team of the department of pharmacy has been participating in this network since 2006

Objectives

- To describe the long-term contribution of a mother-child university hospital in the CPNDS project

Methods

- Retrospective descriptive study from May 1st 2006 to June 30th 2018
- A profile of patient recruitment and research perspectives is proposed

Results

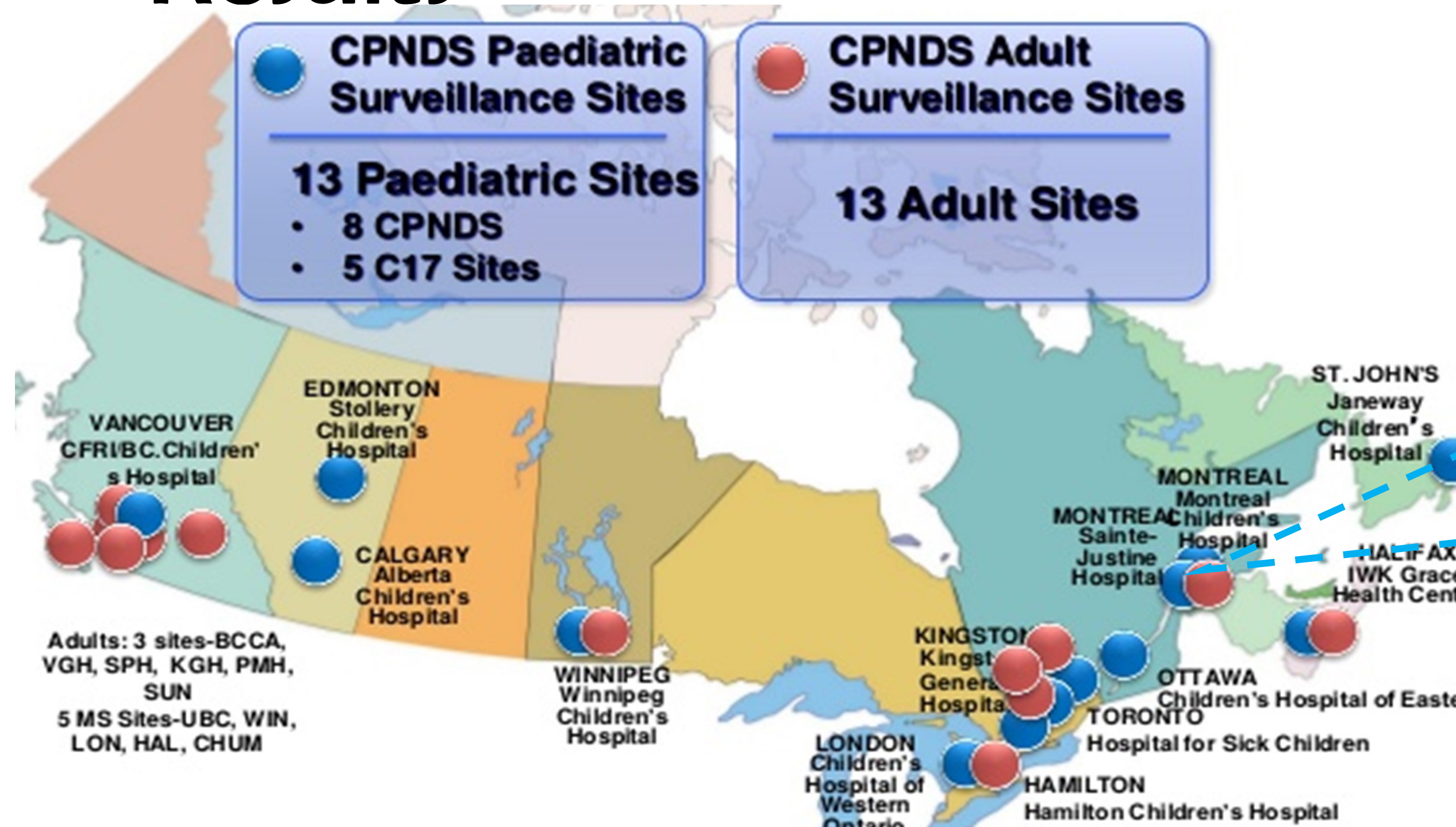


Figure 1: CPNDS nationwide sites

Discoveries and publications

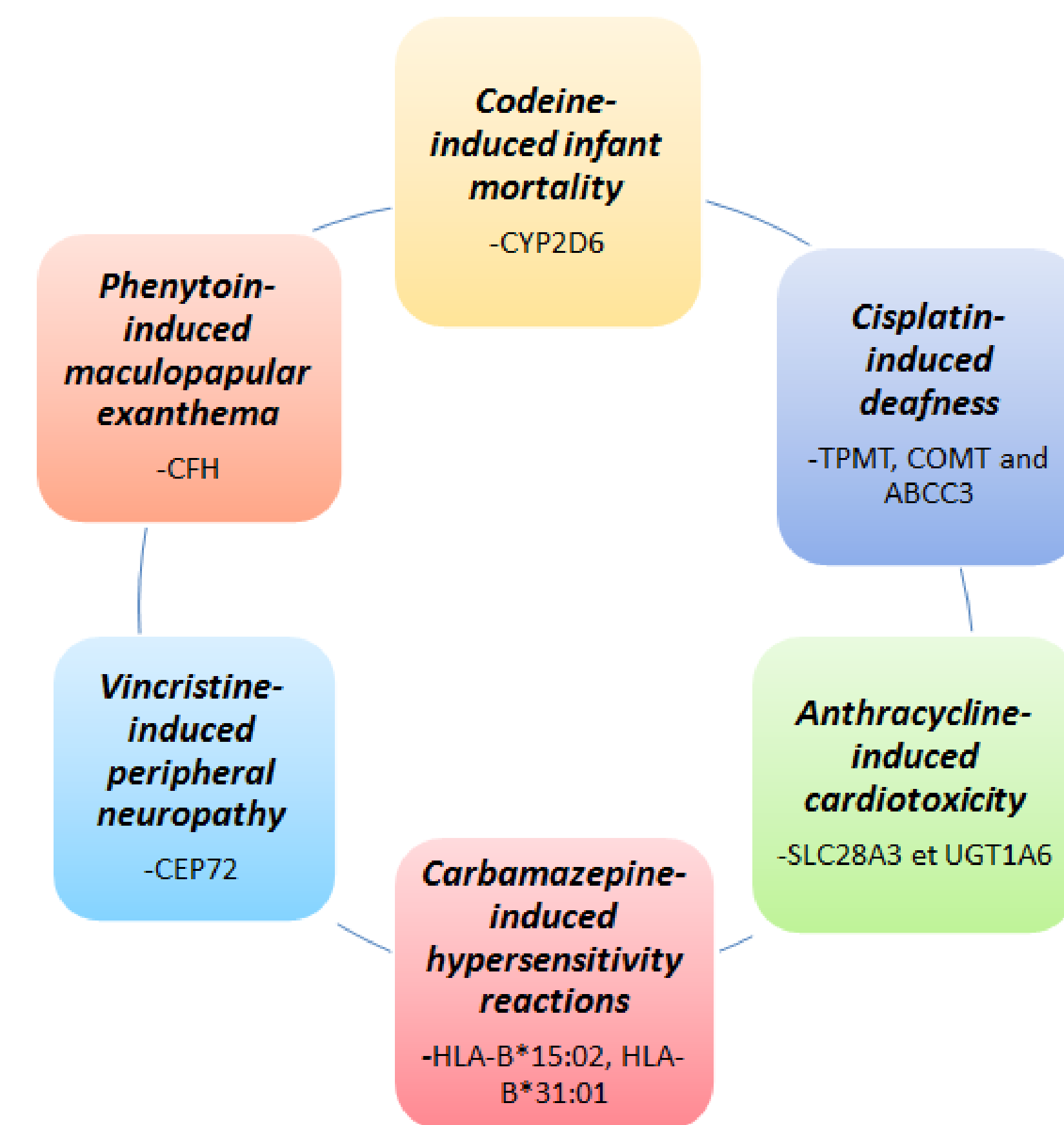


Figure 2: Some polymorphisms for which the CPNDS team participated in the discovery

As of June 30th 2018, CPNDS has participated in the discovery of 6 polymorphisms involved in important adverse drug reactions.

CPNDS Network publications (since 2010):

- 11 (2*) related to cisplatin-induced hearing loss
- 9 (2*) related to anthracycline-induced cardiotoxicity
- 16 related to codein-induced infant mortality
- 2 related to carbamazepine-induced hypersensitivity reactions
- 1 related to phenytoin-induced maculopapular exanthema

6 clinical practice guidelines/recommendations has been published

*Publication including CHU Sainte-Justine

CPNDS's current target

Table 1: CPNDS's current target and objectives

Corticosteroid-induced avascular necrosis	Recruit 20 cases + 41 cases for replication = total of 61 cases by September 2019
Vincristine-induced peripheral neuropathy	Complete clinical characterization by January 2019
L-asparaginase-induced pancreatitis	Recruit 31 cases+ 60 cases for replication = total of 91 cases. Discovery: March 2019. Replication: March 2020
L-asparaginase-induced hypersensitivity/ anaphylaxis	Recruit 45 cases for replication by March 2019
Methotrexate-induced mucositis	Complete clinical characterization by March 2018

173 medical records reviewed by the pharmacovigilance coordinator in 2018 for methotrexate-induced mucositis!!

At Sainte-Justine site

- A pharmacovigilance coordinator provide local assistance and documentation for ADRs reporting at the hospital. The coordinator also actively recruit patients for the CPNDS project.
- Since May 4th 2006, eight pharmacovigilance coordinators have participated in the recruitment of patients.

As of June 30th 2018:

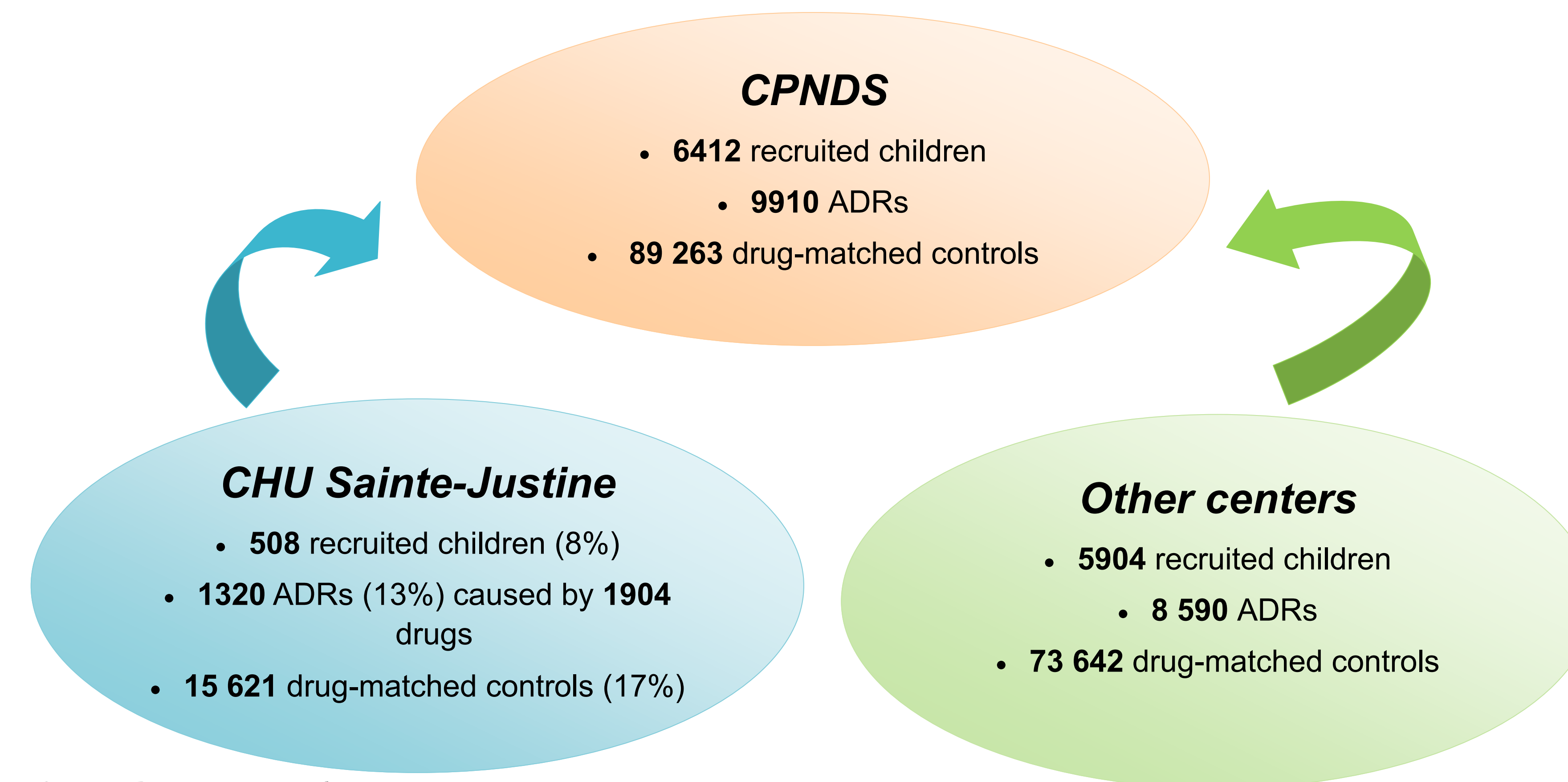


Figure 3: Recruitment numbers

CPNDS: Canadian Pharmacogenomic Network for Drug Safety
ADR: Adverse drug reaction

Personalized Medicine Program implementation

- Based on the group's scientific findings, CPNDS has developed an adverse drug reaction prevention program over the last years for anthracycline-induced cardiotoxicity and cisplatin-induced hearing loss.
- Objectives are to implement this adverse reaction program across 10 pediatric centers and determine how pharmacogenomic testing are perceived and utilized by physicians, patients and families before and after testing.
- To this date, 253 patients are enrolled at the Vancouver site, 185 for anthracyclines, 32 for cisplatin and 36 for both. Other sites are at various state of implementation.
- At Sainte-Justine, the convenience and scientific steps of ethics submission are approved. Beginning of recruitment is planned for late 2018.

Discussion / Conclusion

- CPNDS is an important player in the Canadian healthcare network and supports the development of personalized medicine.
- CHU Sainte-Justine is an active player in the CPNDS network since 2006.
- CHU Sainte-Justine-CPNDS collaboration should contribute in 2019 to a local genetic testing program for targeted populations.