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Prenatal diagnosis of complex congenital heart disease – success and outcome: A 28-year retrospective study

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OBJECTIVES
Major advances have occurred in the fetal detection of, and postnatal surgery for, complex congenital heart disease (CCHD) during the past 30 years. The purpose of our study was to assess population-based changes in the detection rate and outcomes of CCHD in British Columbia (BC).

METHODS
Between 1981 and 2008 there were a total of 7,911 pregnancies referred to our institution, the only tertiary care centre for fetal echocardiography in BC and 687 CCHD were identified. They were classified into 7 groups: hypoplastic left heart (HLH), hypoplastic right heart (HRH), univentricular heart (UNI), complex defect (CPLX), conotruncal defects (CONO), atrioventricular septal defect (AVSD), and others (OTH). The study period was divided into 7 eras of 4 years each. After diagnosis, outcomes were classified as surgical repair, termination, compassionate care, stillbirth or unknown. Survival was calculated using Kaplan-Meier analysis.

RESULTS
The overall rate of prenatal diagnosis of CCHD increased constantly from 1.7/100, 000 pregnancies in the first era (1981-1984) to 95.2/100,000 in the last one (2005-2008). This improvement was observed in all groups of CCHD during the first 16 to 20 years, HLH, COA, AVSD reached a plateau in their detection rate; whereas, CONO, UNI, HRH continued to show an increase in their detection rate. After the diagnosis, parents opted for termination in 294 cases (43%) and surgical repair in 241 (35%). There were 89 fetuses with chromosomal and 47 with extracardiac abnormalities. For those opting for surgical repair, the overall 5-year survival was 77%, and there was no significant difference across eras.

CONCLUSION
Prenatal detection of CCHD has increased 50-fold during the past 28 years, reflecting major improvements in technology, knowledge, experience and training. The CONO group showed the greatest rate of diagnostic improvement. This is probably due to the inclusion of outflow tract views as part of screening protocols. The most common choice made by parents after diagnosis of CCHD was termination. Extra-cardiac and chromosomal abnormalities did not influence this decision. Survival for those having a surgical repair is good and did not differ across eras; however, more complex surgeries in the recent eras make comparisons difficult.