

Understanding Pneumococcal Disease in Ontario through Surveillance

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CBSN

Canadian Bacterial Surveillance Network

CBSN

Objectives:

- To monitor trends in pneumococcal disease epidemiology across Canada
- To examine the incidence and epidemiological drivers of antimicrobial resistance

S. pneumoniae Surveillance

- First collection in 1988, annually since 1993
- Across Canada
 - All 10 provinces, 2 territories
 - 110 sites, 45 “consistent submitters”
- Annually: consecutive sample, then all sterile site isolates
- All isolates have broth microdilution susceptibility and clin/epi data:
 - age/gender/site of isolation/hospital
- Selected isolates with molecular typing/serotyping

**31,988 isolates;
12,199 serotyped;
73% from
consistent submitters**

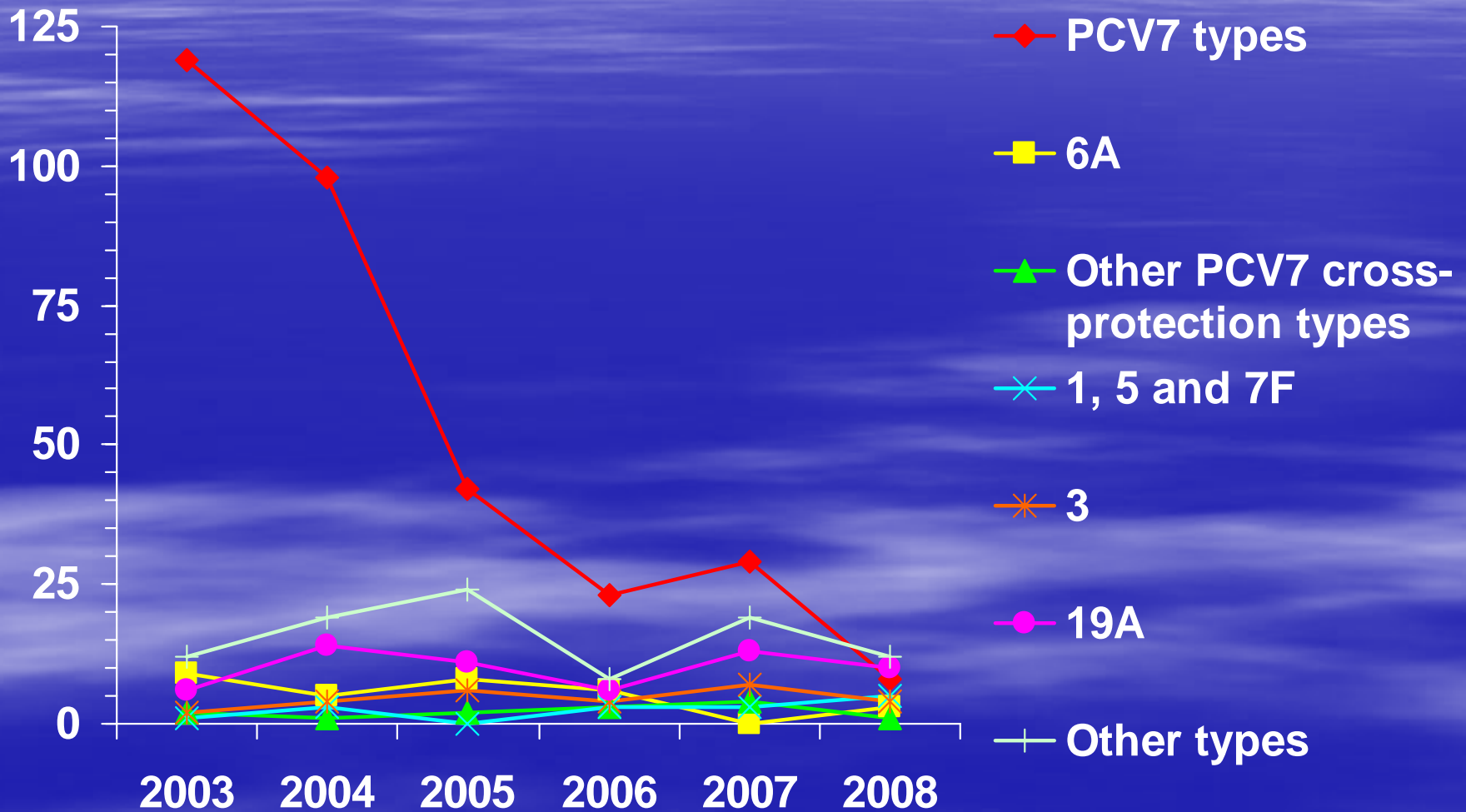


Trends in Invasive Pneumococcal Disease (IPD) in Ontario

Introduction of Pneumococcal Vaccines, Ontario

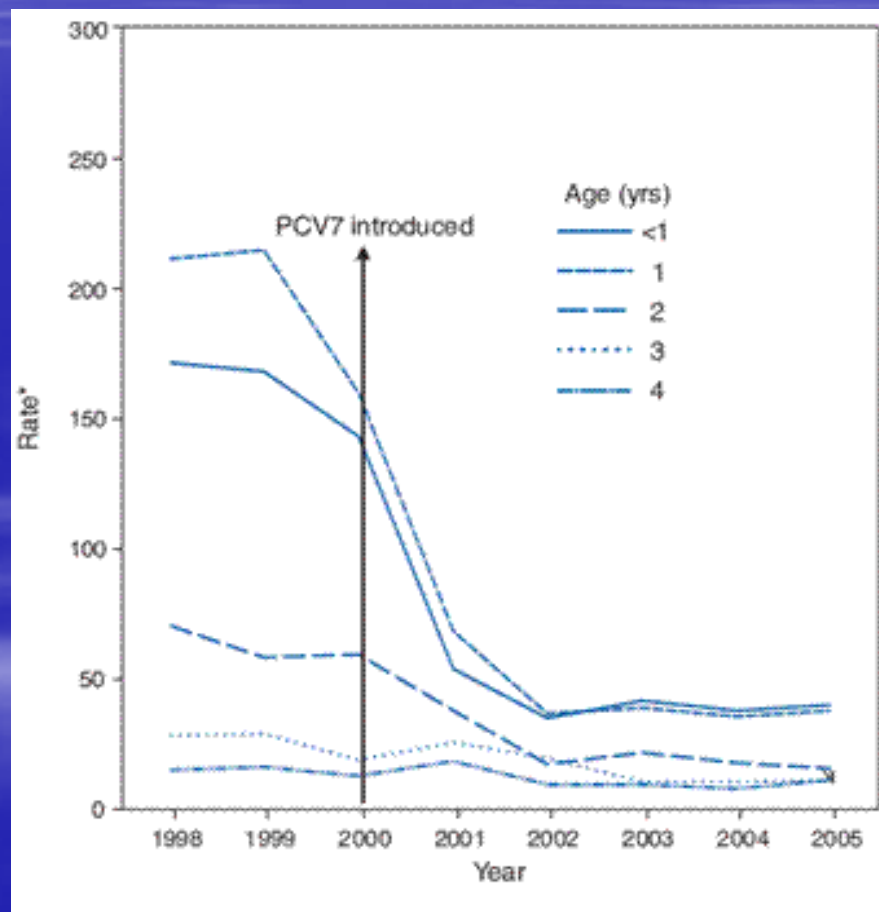
- Oct 1996 – PPV23 program for adults
 - Increased coverage from 2% to 35% in adults
- Dec 2001 – PCV7 licensed
 - Gradual increase in use in children (to about 1 dose per child, or 4 doses for 20% of children)
- Jan 2005 – provincial PCV7 program
 - No catch-up; start with birth cohort
- Oct 2009 Synflorix™ introduced

Serotype Groups by Year in Ontario

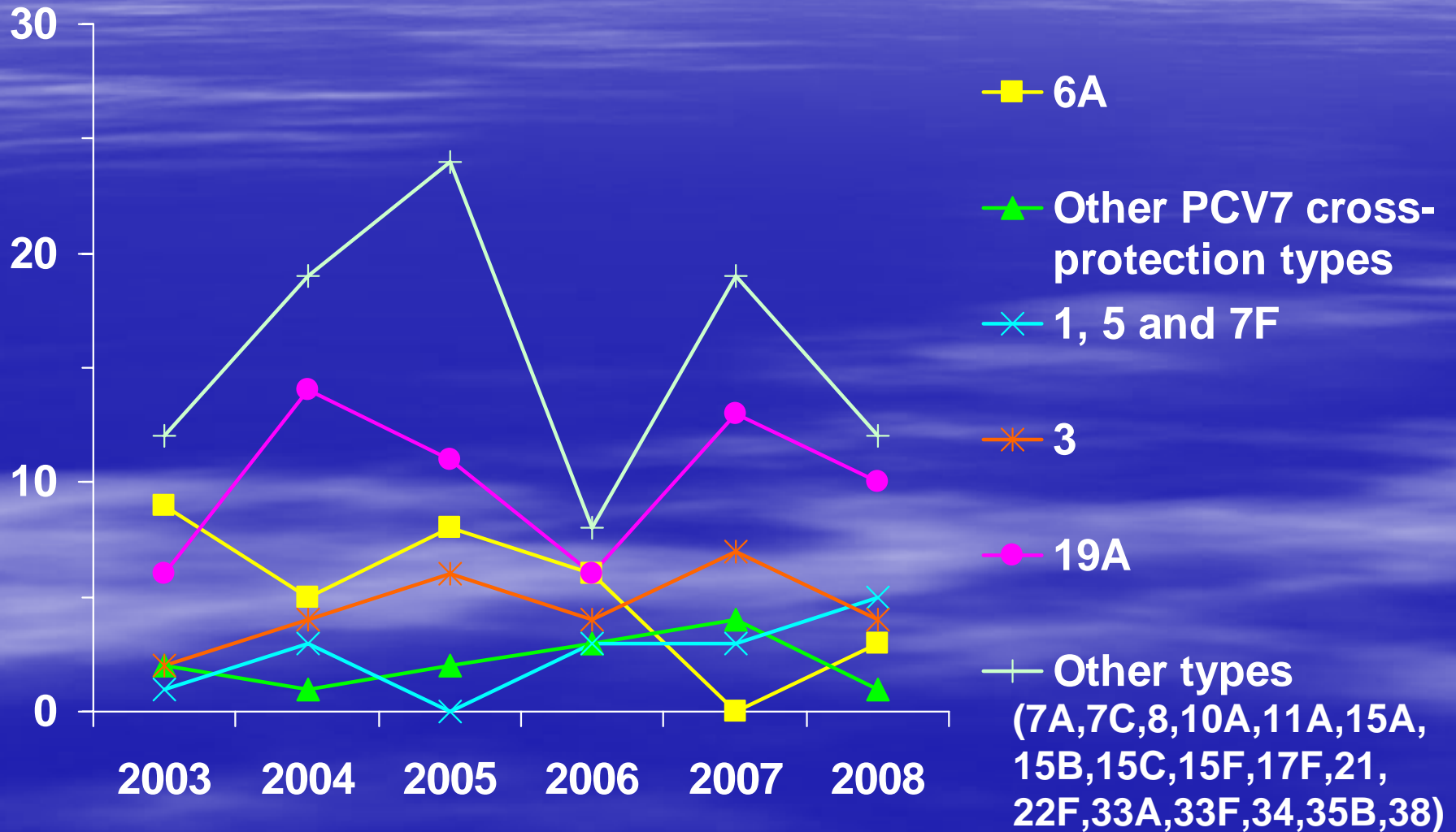


Invasive Pneumococcal Disease in Children 5 Years After Conjugate Vaccine Introduction, 1998--2005

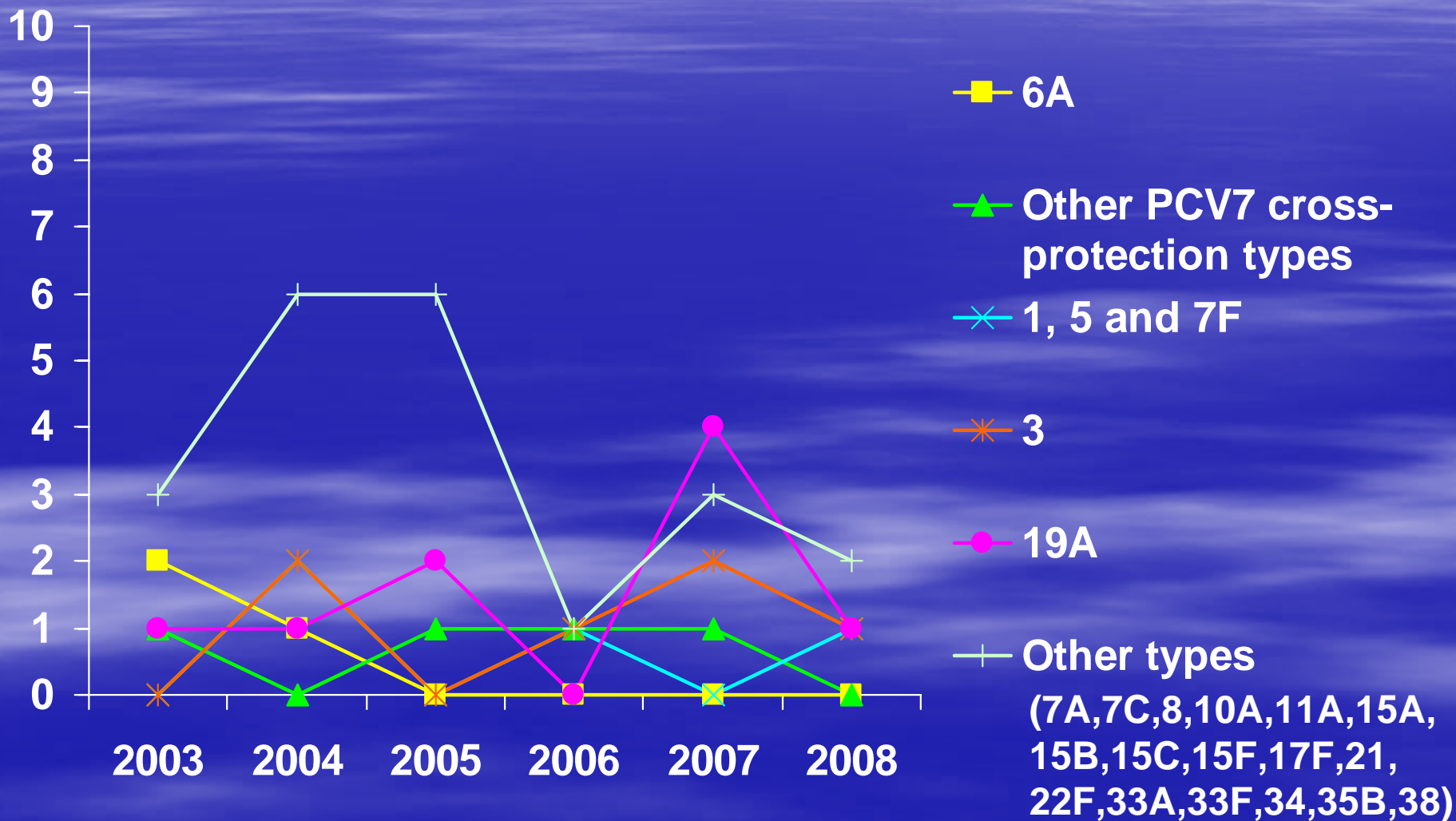
- The overall incidence of IPD among children aged <5 years declined from 99 cases/ 100,000 during 1998--1999 to 23 cases/100,000 in 2005



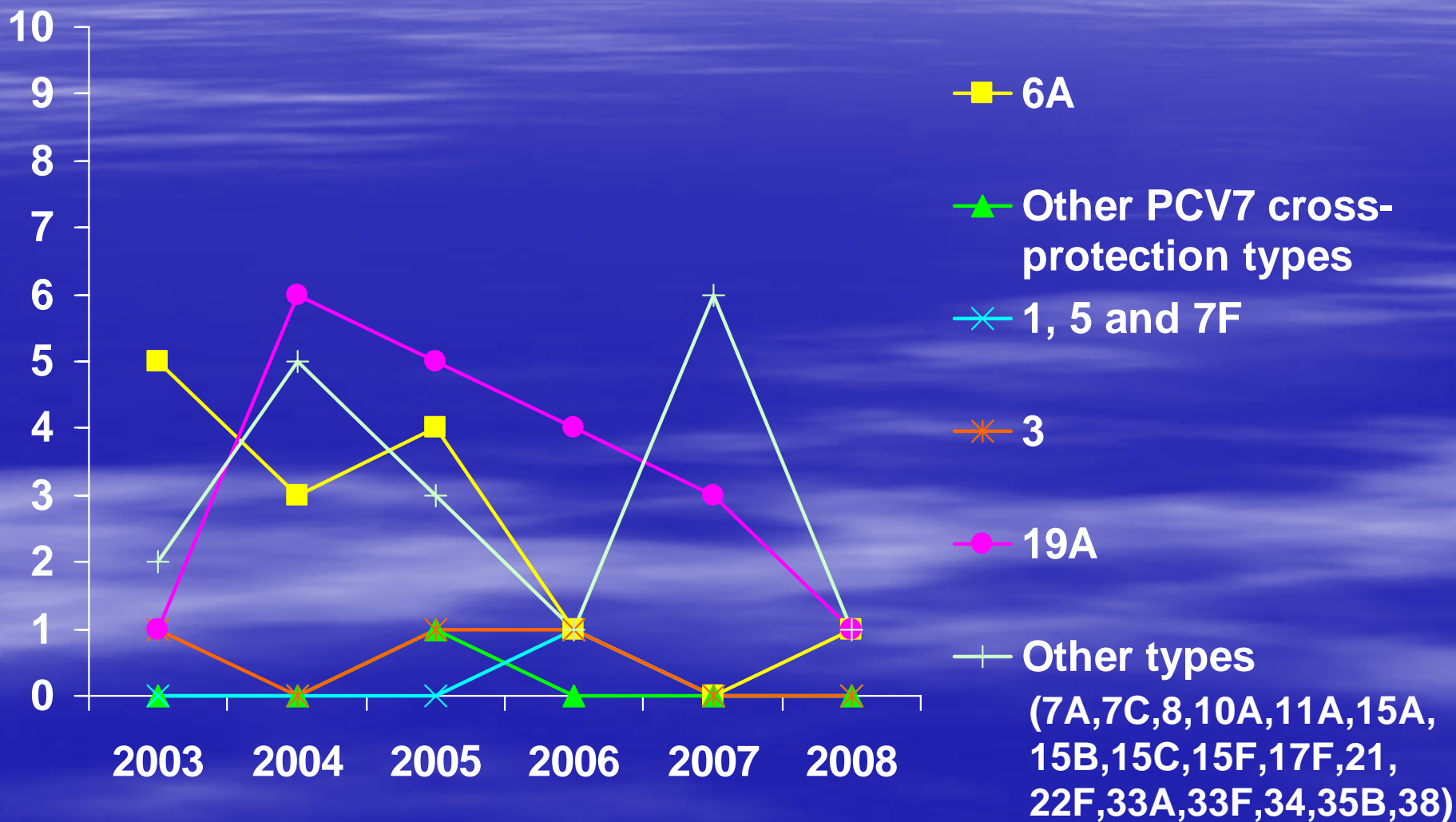
Serotype Groups (Other than PCV7) by Year in Ontario



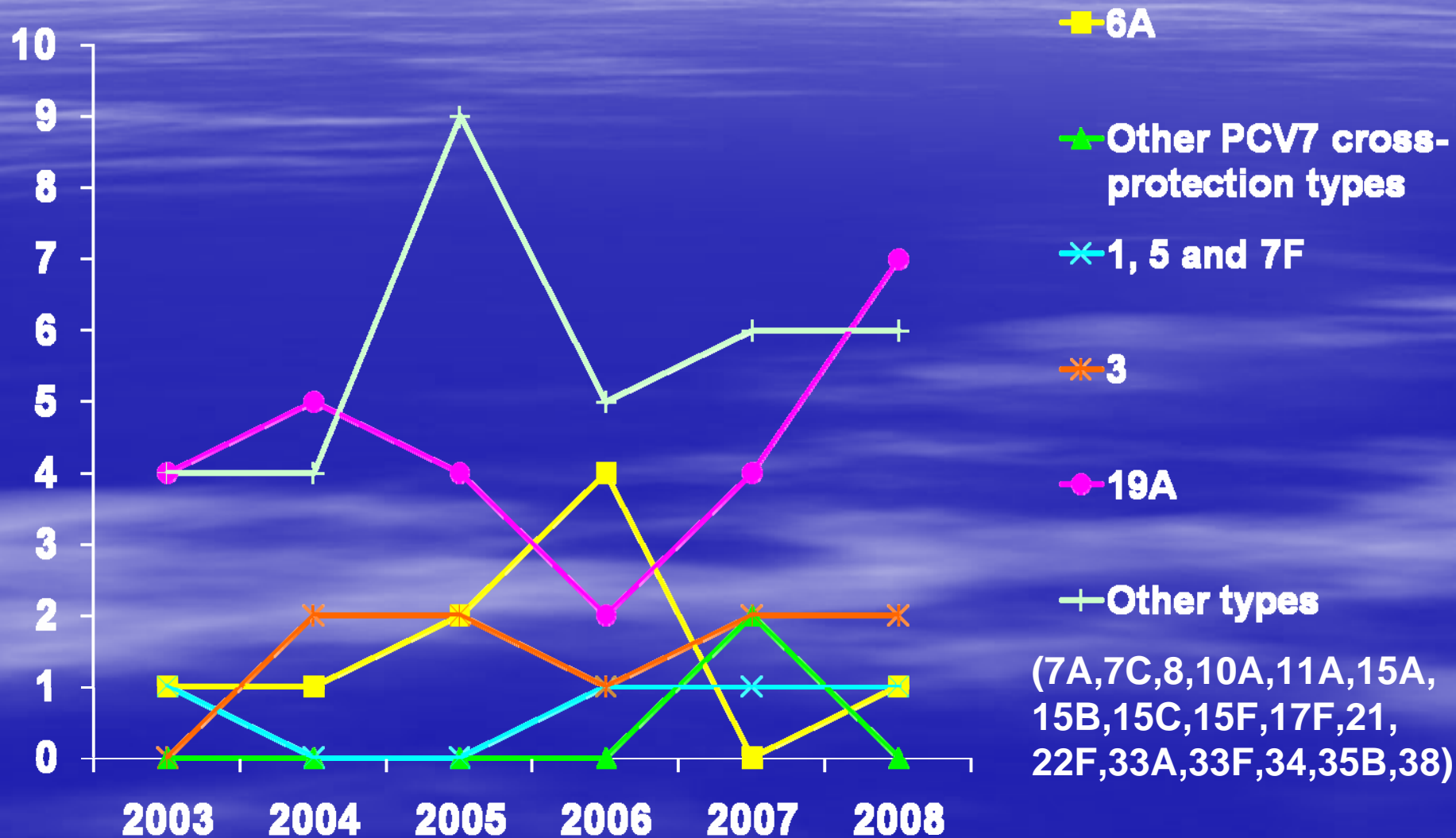
Serotype Groups (Other than PCV7) by Year in <1-Year-Olds in Ontario



Serotype Groups (Other than PCV7) by Year in 1-Year-Olds in Ontario

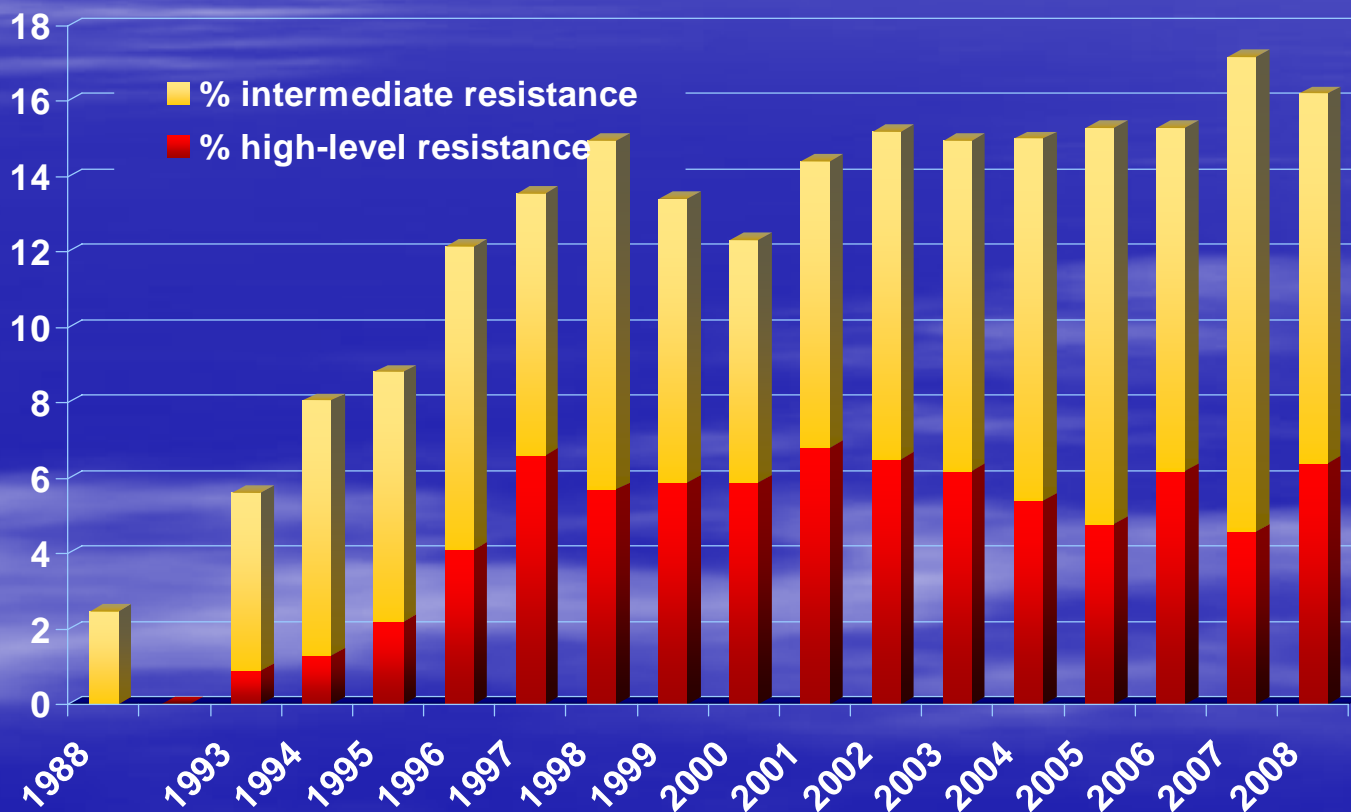


Serotype Groups (Other than PCV7) by Year in 2-4-Year-Olds in Ontario



Antibiotic Resistance

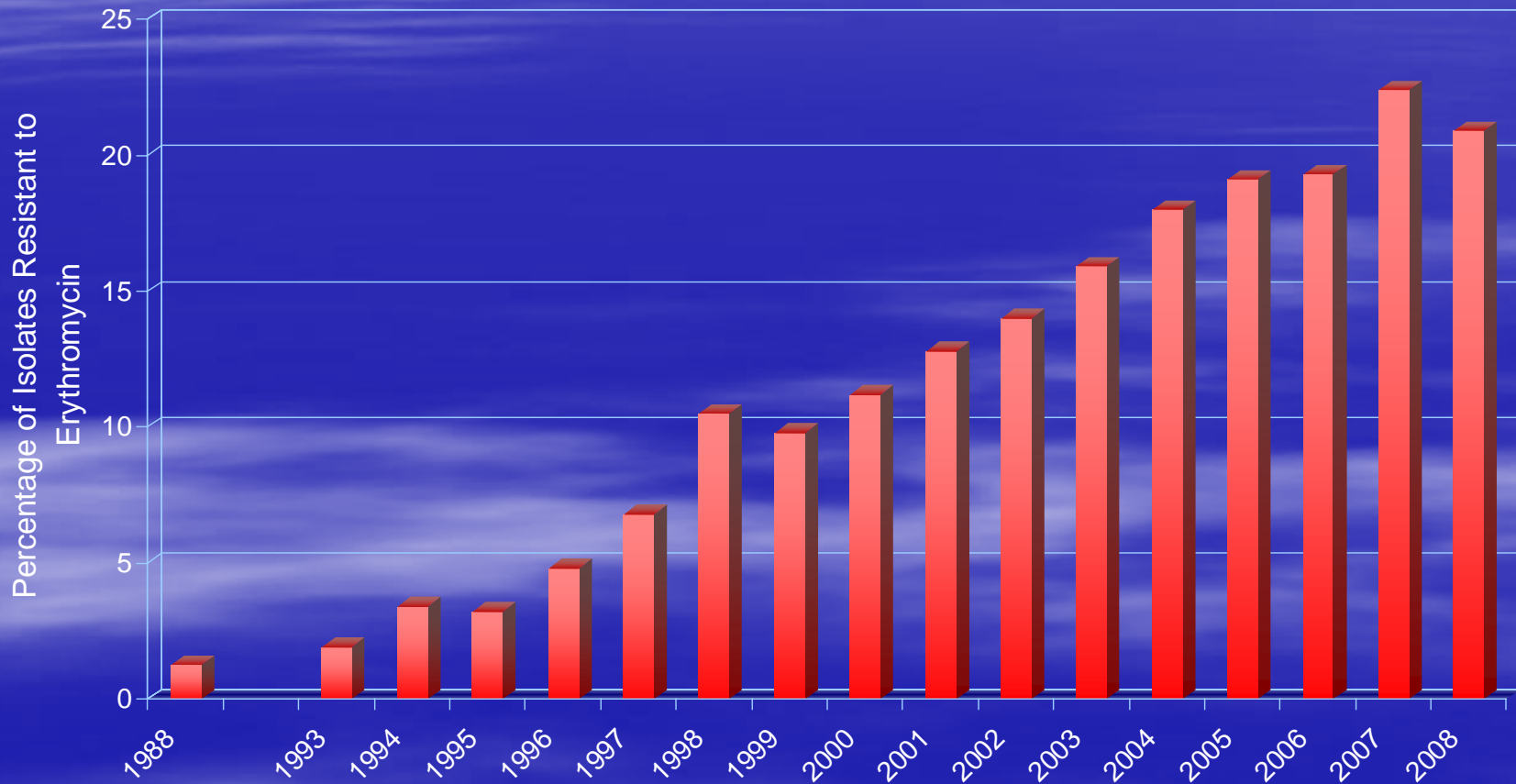
Percentage of Penicillin Non-Susceptible *S. pneumoniae* in Canada: 1988-2008



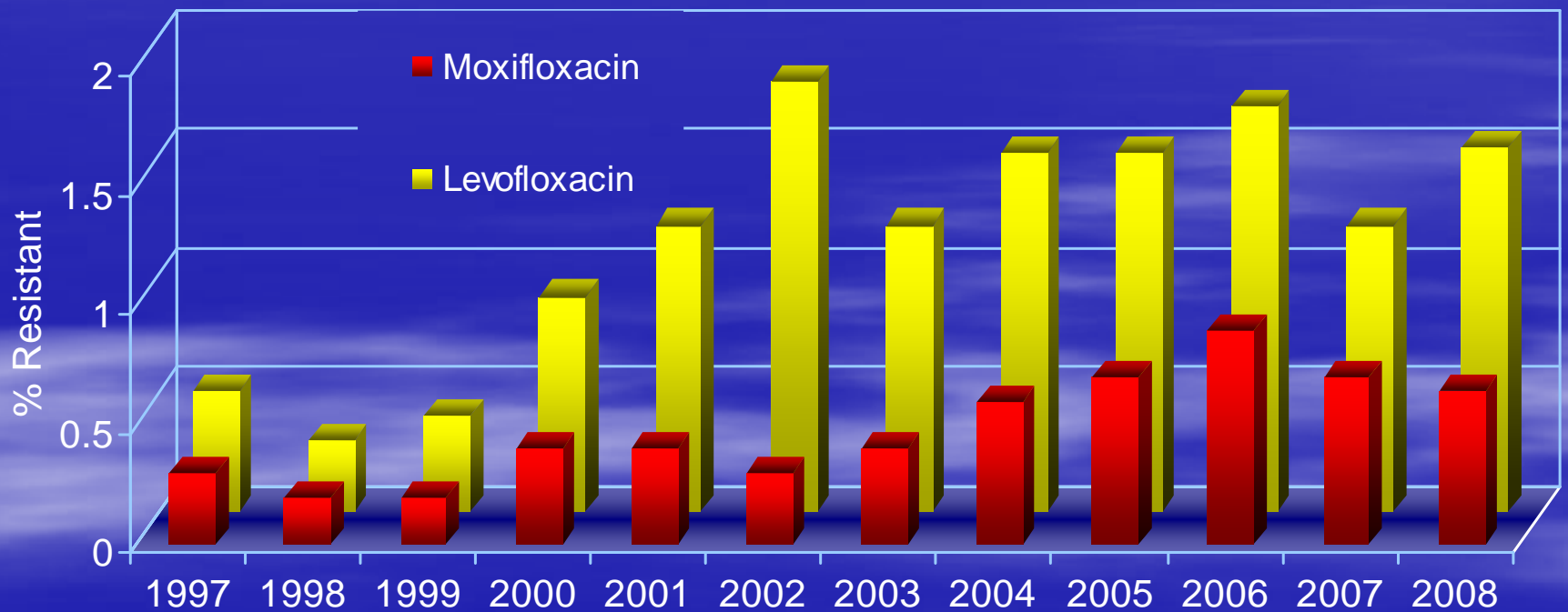
*Oral breakpoints used

Canadian Bacterial Surveillance Network, Feb 2009

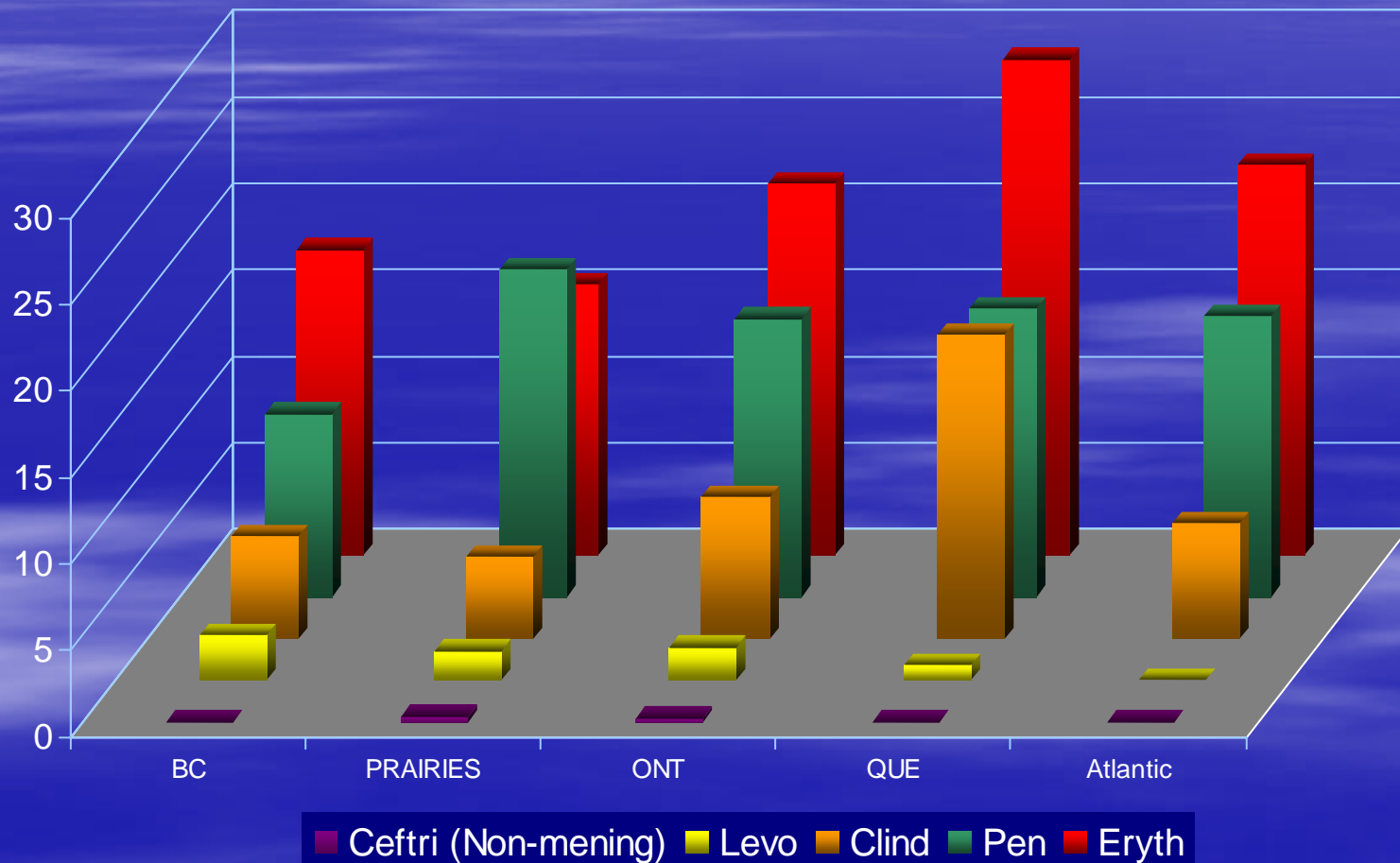
Macrolide-Resistant Pneumococci: Canadian Bacterial Surveillance Network, 1988-2008



Fluoroquinolone-Resistant Pneumococci: Canadian Bacterial Surveillance Network, 1997-2008



Percentage of Non-susceptible Isolates of *S. pneumoniae* in Geographic Regions of Canada, 2008



Controlling Antimicrobial Resistance

- Reducing colonization and infection
 - Pneumococcal vaccination
 - Influenza vaccination (immunization??)
- Reducing volume of antimicrobial use
 - Following guidelines for appropriate use in the outpatient setting
- When decision made to treat
 - Use right drug
 - Right dose
 - Right duration