Vaccine Preventable Diseases, 2002-2011

Michael Cooper, MD, MS

September 2012

SOA/DHSS/DPH/SOE/ID

- State of Alaska
  - Dept. of Health and Social Services
    - Division of Public Health
      - Section of Epidemiology
        - » Infectious Disease Program

Alaska Department of Health and Social Services
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Ward B. Hurlburt, M.D.

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- Epidemiology
- Chronic Disease Prevention & Health Promotion
- Emergency Programs
- Women's, Children's & Family Health
- Bureau of Vital Stat.
- State Laboratory
- State Medical Examiner's Office
- Health Planning & Systems Development

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* Regional Health Information Org.
* Electronic Health Record workgroups

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Kimberli Poppe-Smart

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* Advisory Board on Alcoholism and Drug Abuse
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- Revenue
- Fiscal
- Grants & Contracts
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- Regulations

Rev. 061312

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Organization Chart

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Vacant Health Manager IV

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- Emergency Medical
- Trauma

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- Children's Health

Epidemiology
Joe McLaughlin, MD

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- HIV-STD
- Immunization
- Outbreak Surveillance and Response
- Environmental Public Health

Public Health Labs
Bernd Jilly, PhD

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- Viral Immunology
- Molecular Virology
- Radiology
- Mycobacteriology
- Mycology
- STD
- Analytical Chemistry
- Bioterrorism

Jill Lewis
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Rhonda Richtsmeier, RN

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- South Central Region
- Southwest Region
- Southeast Region
- Frontier Region

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Kathy Allely

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- Cardiovascular Health
- Diabetes
- Health Promotion
- Obesity
- Tobacco
- School Health

Bureau of Vital Statistics
Phillip Mitchell

- Vital Event Certificates
- Health Statistics
- Vital Records Management
- Special Services

Administrative Services
Vacant

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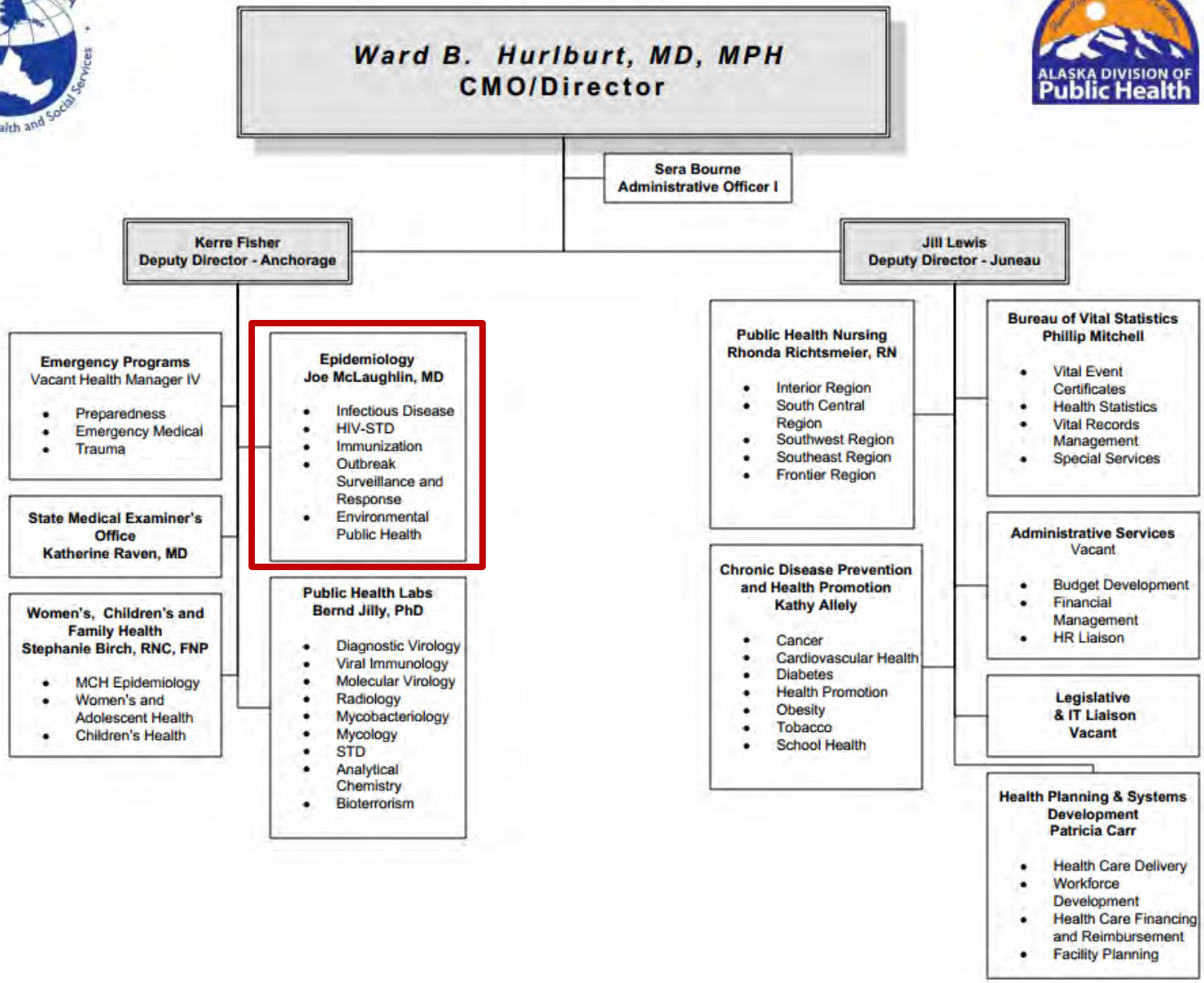
- Financial Management
- HR Liaison

Legislative & IT Liaison
Vacant

Health Planning & Systems Development
Patricia Carr

- Health Care Delivery
- Workforce Development
- Health Care Financing and Reimbursement
- Facility Planning

Department of Health and Social Services - Division of Public Health
Organization Chart



Epidemiology Programs

Mission: The mission of the Immunization Program is to prevent and control vaccine-preventable diseases in Alaska by:

- providing vaccines to health care providers at no cost;
- enforcing school and child care immunization regulations;
- providing immunization education and training for health care providers and the general public;
- coordinating surveillance and control efforts for vaccine-preventable diseases; and
- supporting efforts to increase vaccinations for all Alaskans.

- Immunization
- Infectious Diseases & Tuberculosis Control
- Injury Surveillance

Objectives

- Epidemiology of Vaccine Preventable Diseases, 2002-2011

Infectious Diseases

Infectious diseases reportable by health care providers

Acquired immunodeficiency syndrome (AIDS)
Anthrax*
Botulism*
Brucellosis
Campylobacteriosis
Chancroid
Chlamydia trachomatis infection
Cholera (see *Vibrio*)
Cryptosporidiosis
Cyclosporiasis
Diphtheria*
Echinococcosis
Escherichia coli O157:H7 infection
Giardiasis
Gonorrhea
Haemophilus influenzae invasive disease
Hemorrhagic fever*
Hepatitis (type A, B, or C)
Human immunodeficiency virus (HIV) infection
Legionellosis (Legionnaires' disease or Pontiac Fever)
Leprosy (Hansen Disease)
Listeriosis
Lyme disease
Malaria
Measles*
Meningococcal invasive disease*
Mumps
Paralytic shellfish poisoning*
Pertussis
Plague*
Poliomyelitis*
Prion diseases
Psittacosis
Q fever
Rabies*
Rheumatic fever
Rubella*
Salmonellosis
Severe acute respiratory syndrome (SARS)*
Shigellosis
Smallpox*
Streptococcus agalactiae (Group B streptococcus), invasive disease
Streptococcus pneumoniae (pneumococcus), invasive disease
Streptococcus pyogenes (Group A streptococcus), invasive disease and streptococcal toxic shock syndrome
Suspected novel strains of influenza*
Syphilis
Tetanus*
Trichinosis
Tuberculosis
Tularemia*
Typhoid fever
Varicella (chickenpox)
Vibrio infection, including cholera
West Nile virus infection
Yellow fever
Yersiniosis

Vaccine Preventable Diseases

Infectious diseases reportable by health care providers

Anthrax*

Diphtheria*

Haemophilus influenzae invasive disease

Hepatitis (type A, B, or C)

Measles*

Meningococcal invasive disease*

Mumps

Pertussis

Poliomyelitis*

Rabies*

Rubella*

Smallpox*

Streptococcus pneumoniae (pneumococcus), invasive disease

Suspected novel strains of influenza*

Tetanus*

Typhoid fever

Varicella (chickenpox)

Yellow fever

Infectious Diseases

Infectious diseases reportable by health care providers

Poliomyelitis*

Rubella*

Diphtheria*

Streptococcus pneumoniae (pneumococcus), invasive disease

Haemophilus influenzae invasive disease

Hepatitis (type A, B, or C)

Tetanus*

Measles*

Meningococcal invasive disease*

Mumps

Varicella (chickenpox)

Pertussis

Infectious diseases reportable by health care providers

Rubella*

Haemophilus influenzae invasive disease

Streptococcus pneumoniae (pneumococcus), invasive disease

Hepatitis (type A, B, or C)

Tetanus*

Varicella (chickenpox)

Meningococcal invasive disease*

Mumps

Pertussis

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Infectious diseases reportable by health care providers

Rubella*

Haemophilus influenzae invasive disease

Streptococcus pneumoniae (pneumococcus), invasive disease

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Tetanus*

Varicella (chickenpox)

Meningococcal invasive disease*

Mumps

Pertussis

Infectious Diseases

Infectious diseases reportable by health care providers

Haemophilus influenzae invasive disease

Hepatitis (type A, B, or C)

Meningococcal invasive disease*

Mumps

Pertussis

Rubella*

Streptococcus pneumoniae (pneumococcus), invasive disease

Tetanus*

Varicella (chickenpox)

Vaccine Preventable Diseases, Alaska, 2001-2011

Haemophilus influenza - Invasive

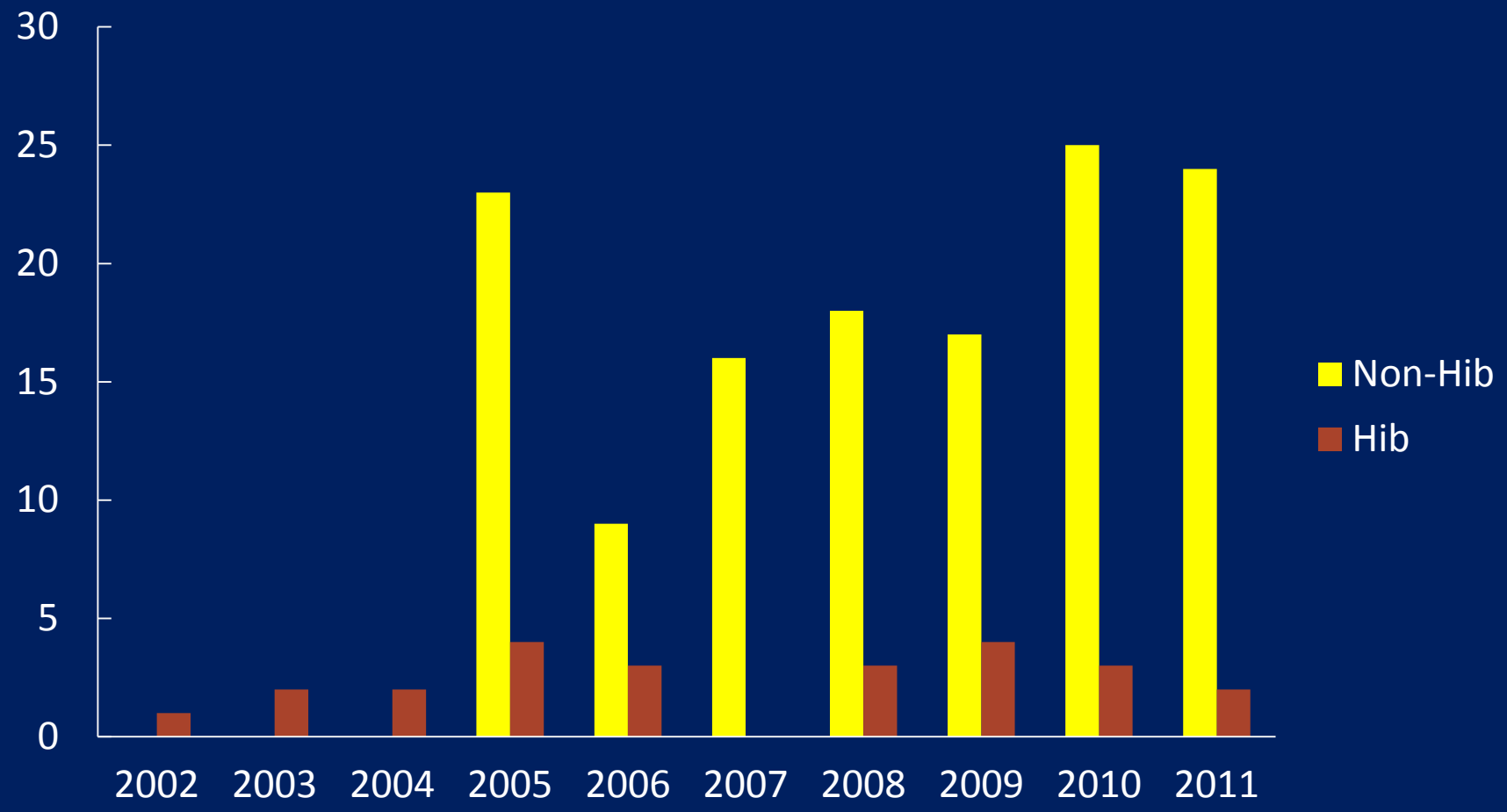
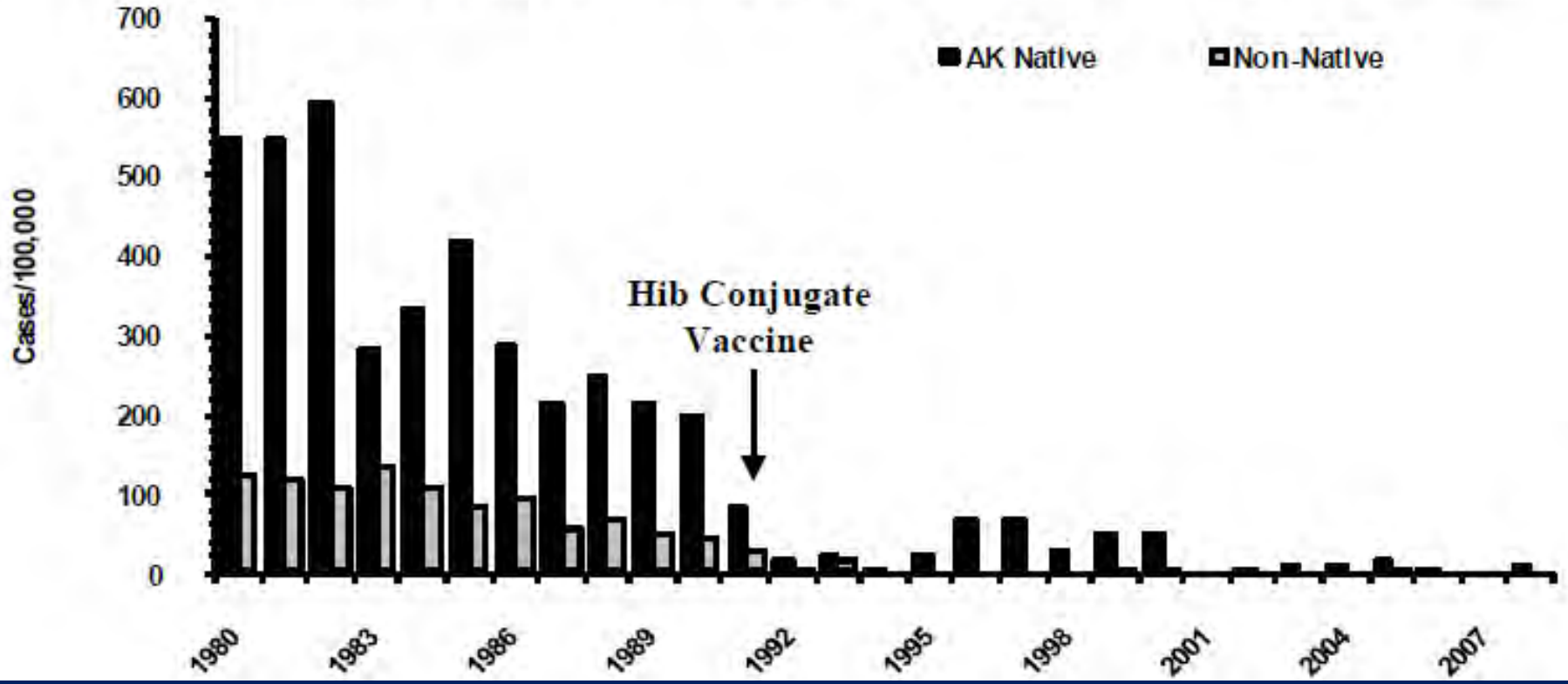
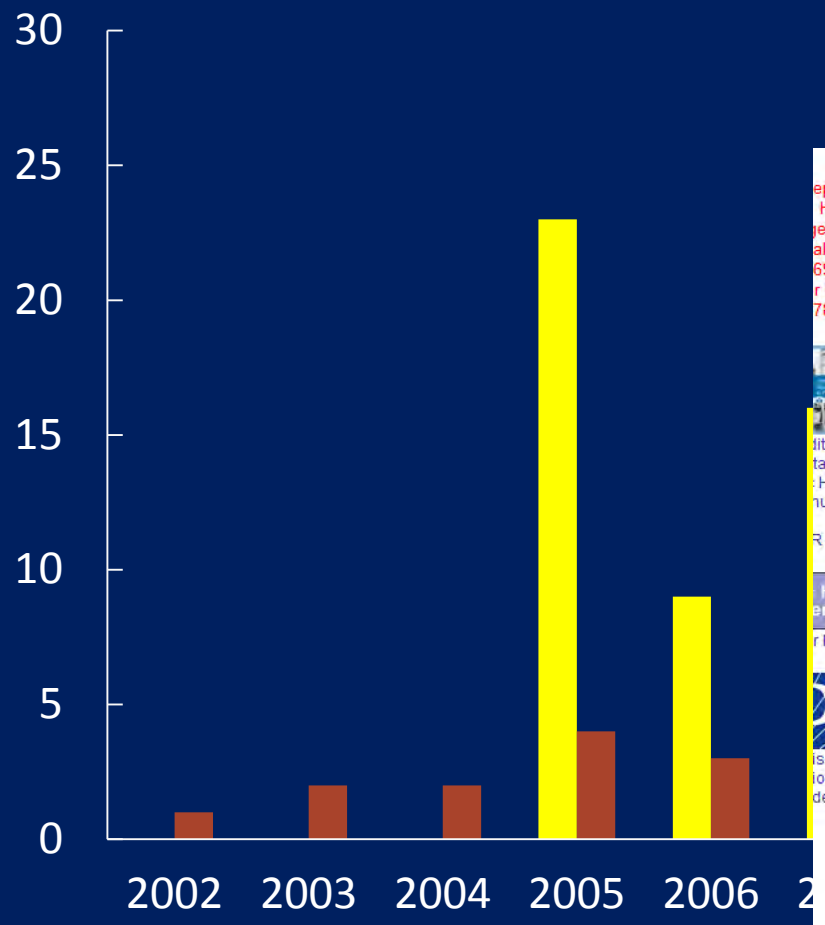


Figure. Invasive Hib Disease in Children Aged <5 Years — Alaska, 1980–2008



Haemophilus influenza - Invasive



Epidemiology

Documents associated with Haemophilus Influenzae

List Documents by Subject List Documents by Date

Haemophilus Influenzae				
8/11/2009	Bulletin	19	Four Cases of Invasive *Haemophilus influenzae* Type b – Southwestern Alaska, 2009	(pdf-89K)
12/5/1997	Bulletin	41	New Vaccine Recommendation for Prevention of Haemophilus Influenzae	
7/9/1996	Bulletin	23	Haemophilus influenzae type b Meningitis - A Vaccine Preventable Disease	
6/17/1983	Bulletin	14	Antibiotic Prophylaxis	
10/1/1982	Bulletin	19	Hemophilus Influenzae Meningitis Epidemiologic Summary	
12/28/1979	Bulletin	22	Ampicillin-Resistance	
11/2/1979	Bulletin	20	Antibiotic Prophylaxis Study	
2/13/1976	Bulletin	2	Ampicillin-Resistant Organisms in Alaska	
3/31/1975	Bulletin	7	Hemophilus Influenzae Meningitis Treatment	
2/10/1975	Bulletin	4	Ampicillin-Resistance	

State of Alaska Epidemiology

Bulletin

Department of Health and Social Services
William H. Hogan, MSW Commissioner

Division of Public Health
Deborah L. Erickson, Acting Director

Editors:
Joe McLaughlin, MD, MPH
Elizabeth Funk, MD, MPH

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24 Hour Emergency 1-800-478-0084

Bulletin No. 19 August 11, 2009

Four Cases of Invasive *Haemophilus influenzae* Type b – Southwestern Alaska, 2009

Background

First available in Alaska in 1991, *Haemophilus influenzae* type b (Hib) conjugate vaccine has resulted in one of the greatest public health successes of the last 25 years. Prior to vaccine availability, Hib was the most common cause of meningitis in children, and Alaska Native children aged <5 years experienced rates of Hib disease that were 6-fold higher than similarly aged children in the United States (400–700 vs. 60–100 cases per 100,000 persons, respectively).[1] The highest reported rate of Hib disease occurred in children from the Yukon-Kuskokwim (YK) Delta and Kotzebue, where 2–4% of infants experienced Hib disease in the first year of life.[1]

Since routine vaccination was instituted, Hib disease rates in Alaska children have decreased by more than 95%. However, an analysis of Hib incidence from 2000–2006 revealed that Alaska Natives continue to experience substantially higher rates of Hib diseases compared to non-Native Alaskans (6.0 and 0.4 cases per 100,000 persons, respectively; Figure).[2] Since 2002, 11 of 14 (79%) Hib cases in children aged <10 years occurred in the YK Delta.

Age-appropriate vaccination coverage rates for Alaska Native children aged 3–27 months are reported quarterly through the Alaska Native Tribal Health Consortium Immunization Program, and have ranged from 72% to 88% since 2007. Although age-

recently finished chemotherapy for acute lymphoblastic leukemia). Three of the children were fully vaccinated; the fourth, a 6-month old, was under-vaccinated, having received a first dose of PRP-T (ACTHib®) outside Alaska at age 3 months. A second dose had not yet been administered.

Discussion

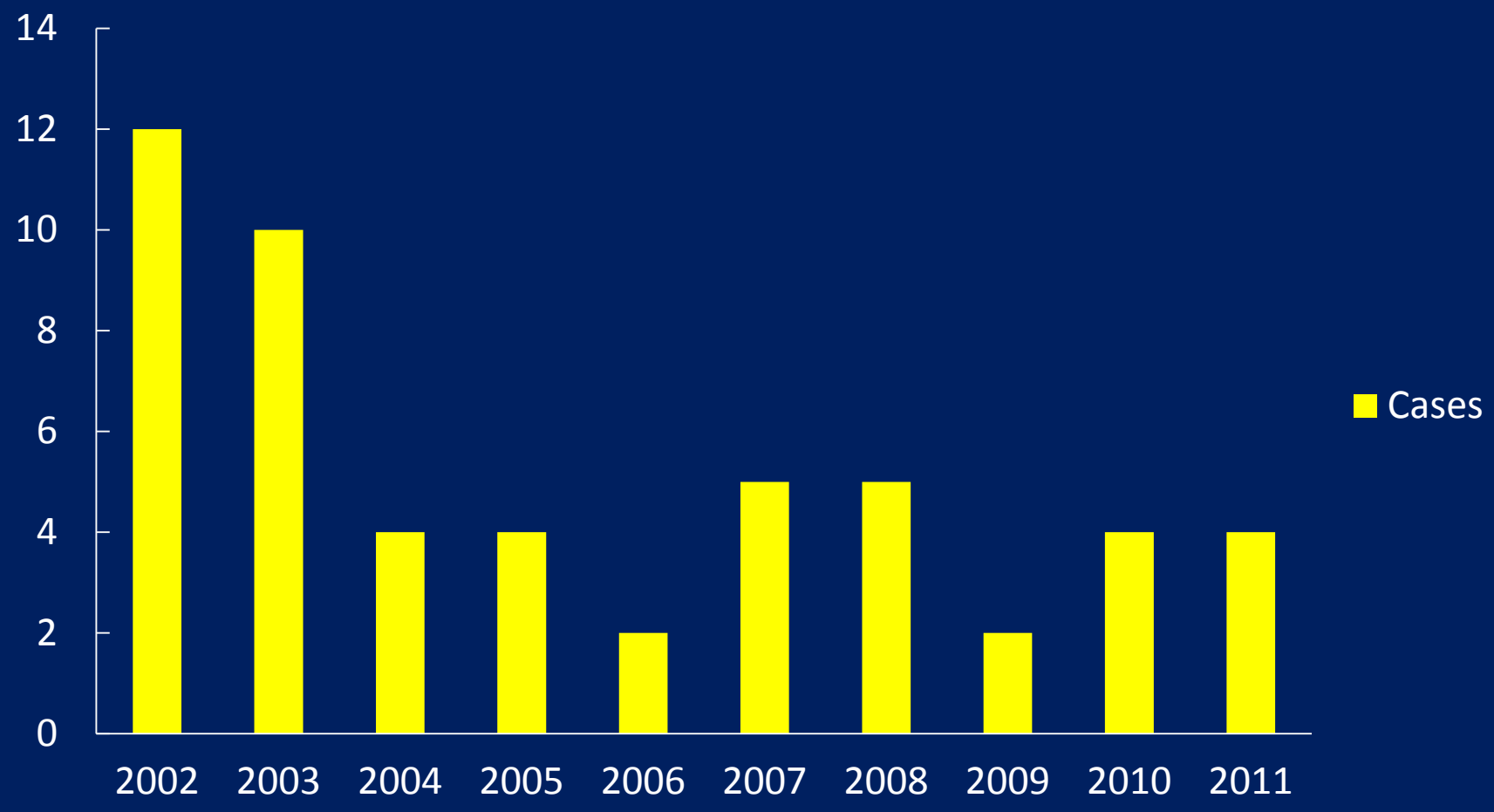
These recent cases are a reminder that Hib bacteria are still circulating in Alaska. Transmission is increased when Hib vaccine coverage levels are low and the protective effect of herd immunity is diminished. Herd immunity is particularly important to protect persons, such as immunocompromised children, who may not respond as well to Hib vaccine.

The under-vaccinated child had received a Hib vaccine (ACTHib®) which does not induce protective antibody levels until the third dose. This case is a reminder of the importance of using PRP-OMP vaccine in Alaska, which has been demonstrated to induce protective antibody levels after the first vaccine dose.[3] Fortunately, Alaska has been able to continue to provide PRP-OMP vaccine in spite of a recent national shortage of this vaccine.

Recommendations

1. Ensure timely vaccination and maintenance of high vaccine coverage rates. In Alaska, three doses of PedvaxHIB® at

Hepatitis A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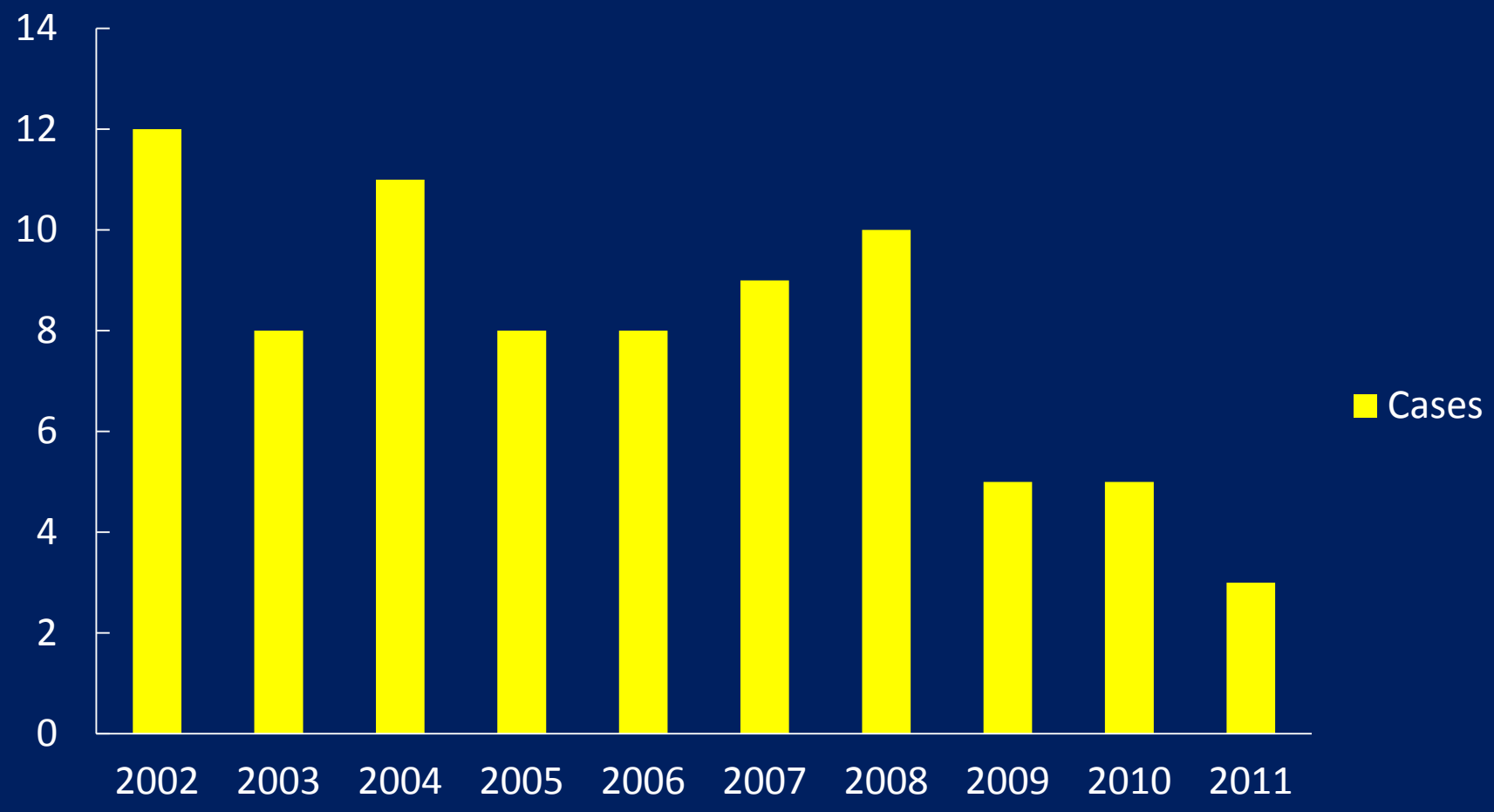
Hepatitis B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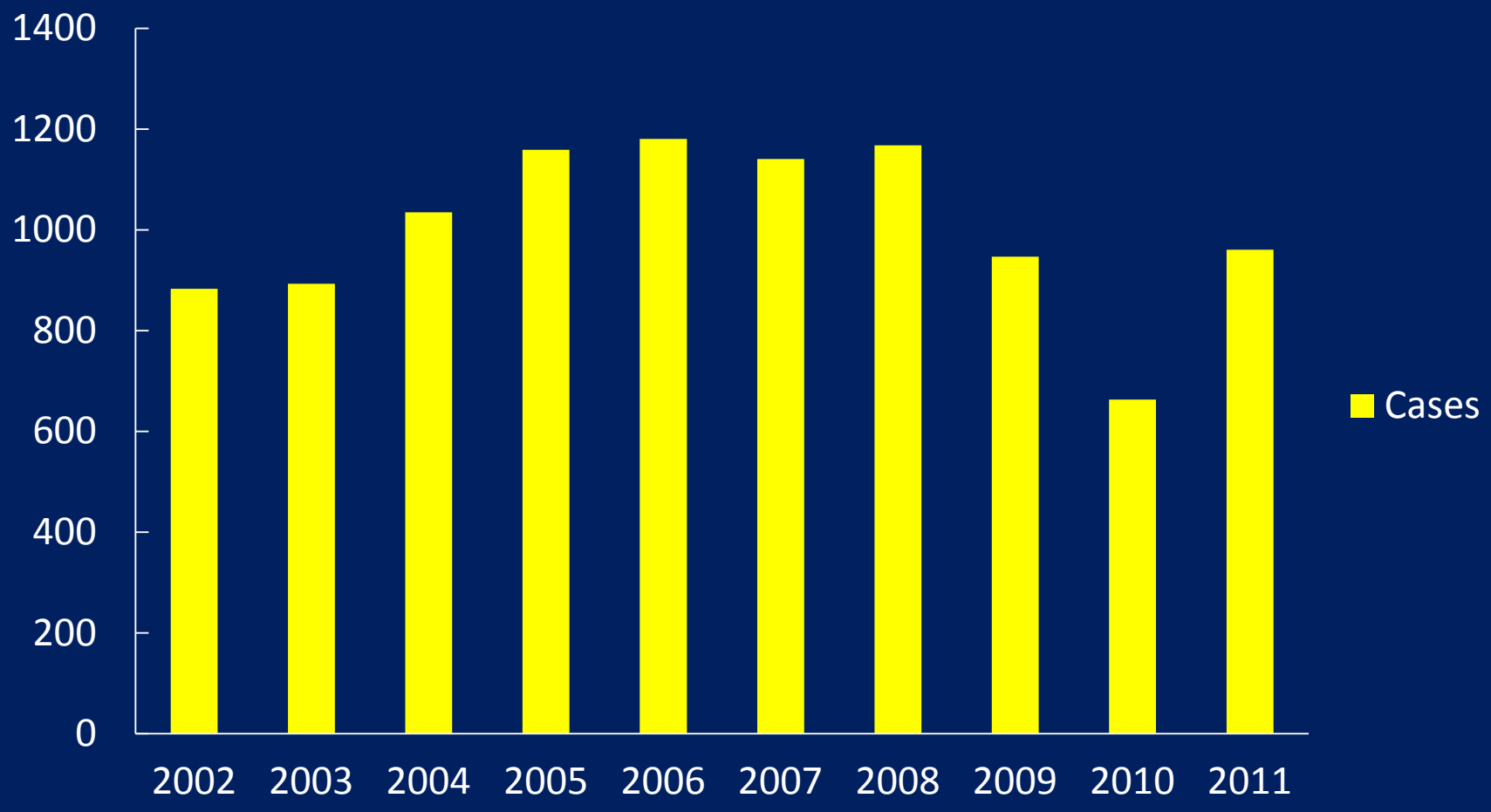
Hepatitis C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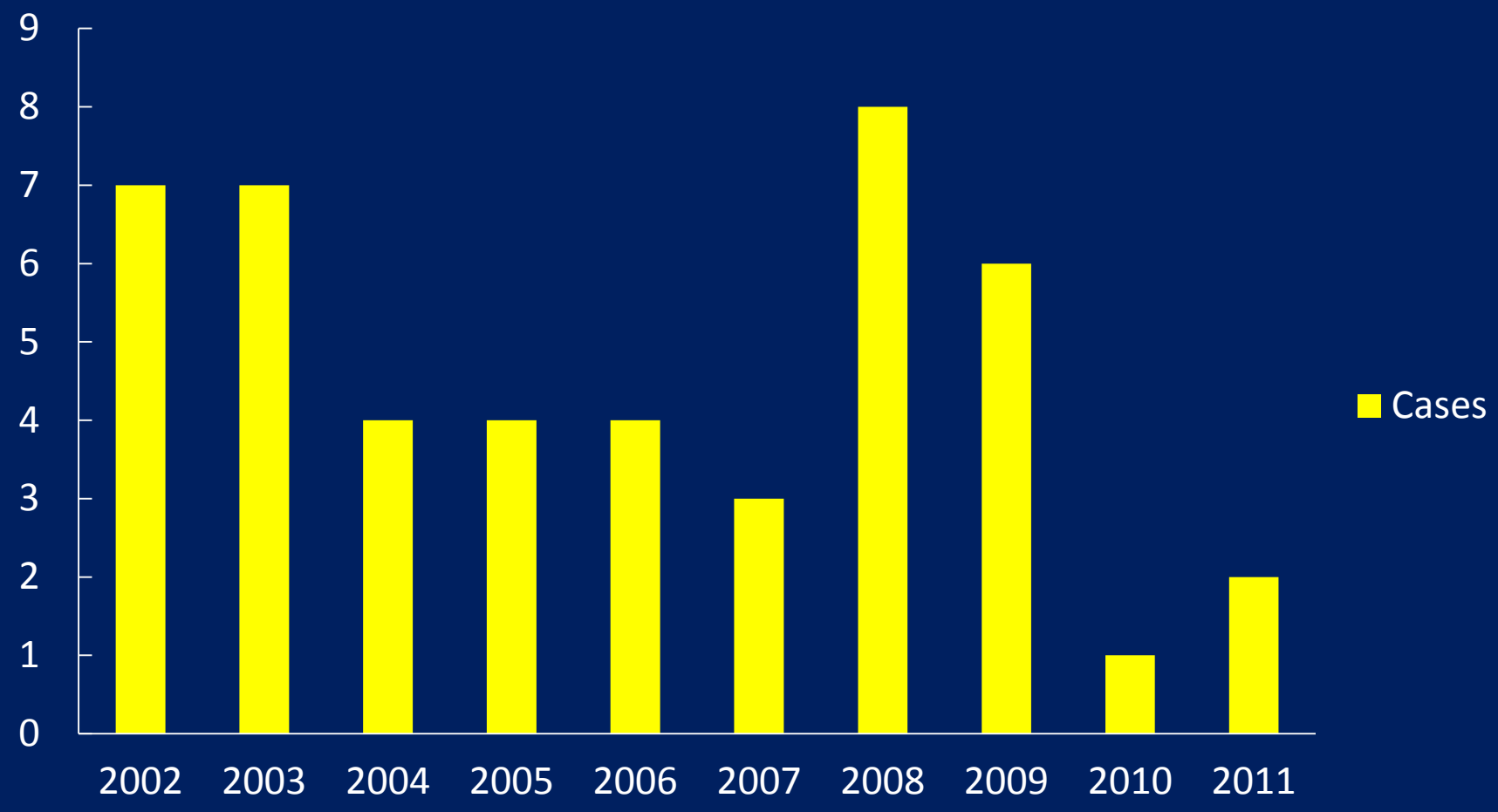
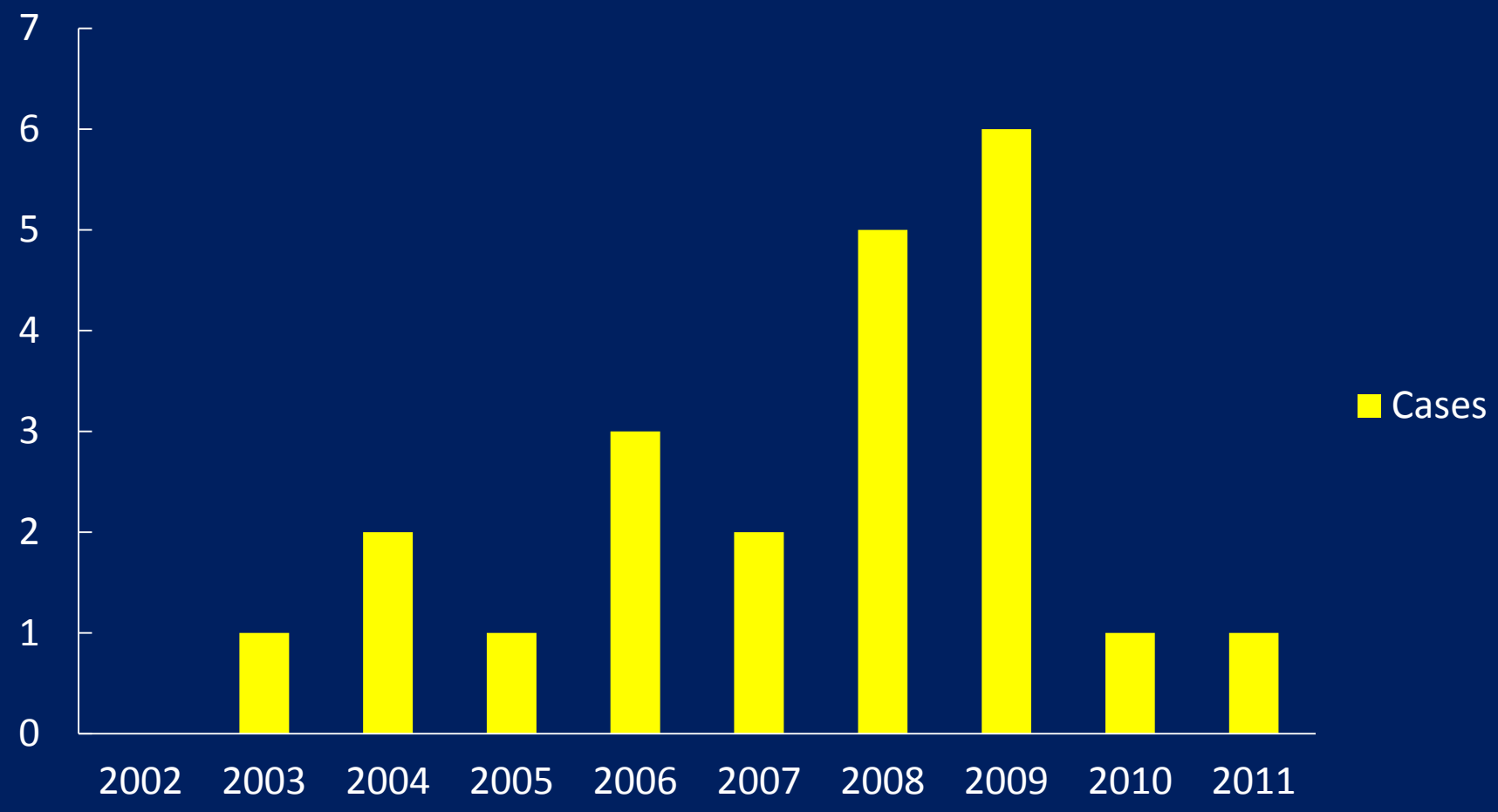
Cases

Meningococcal – Invasive



Mumps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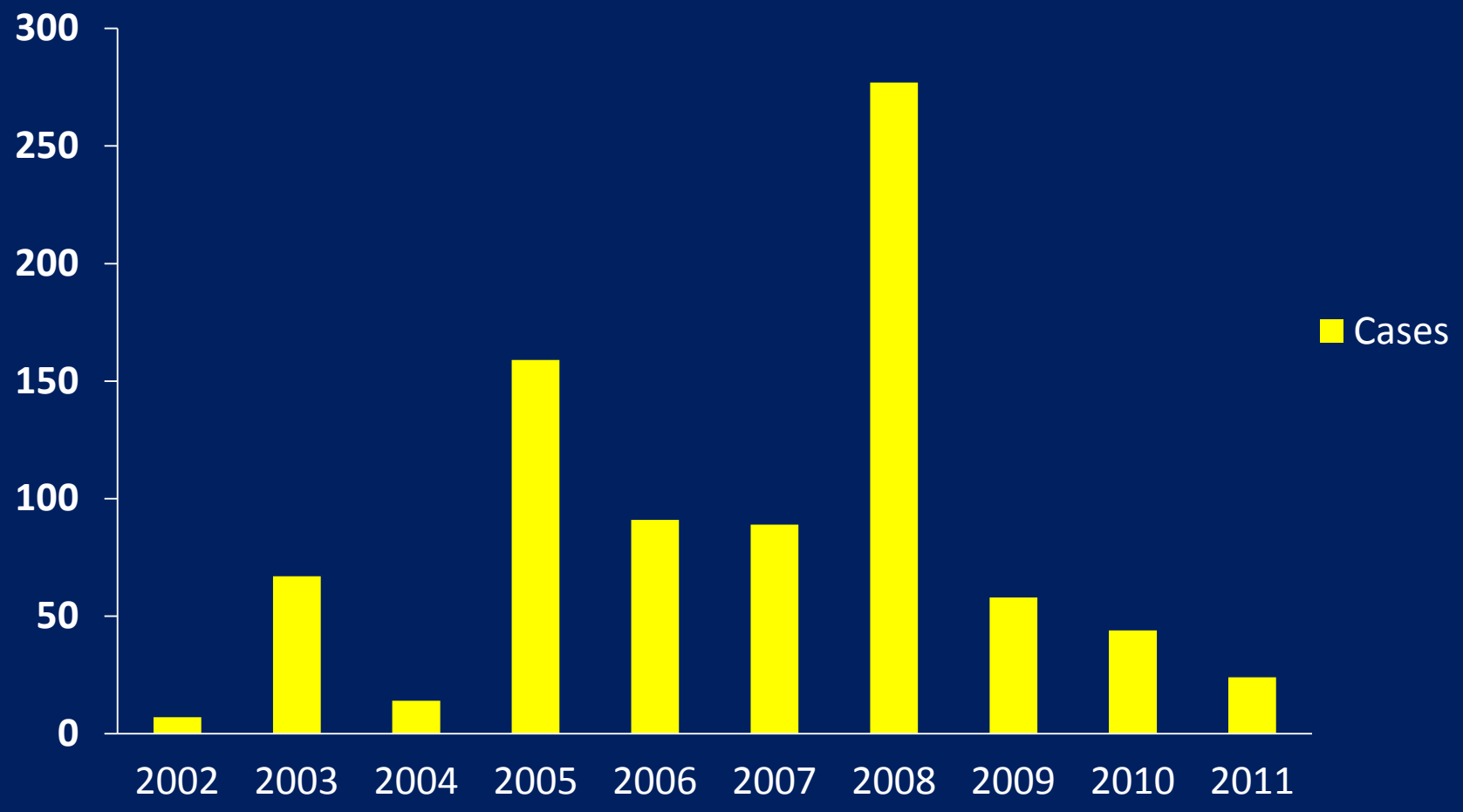
Pertussis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Cases

Epidemiology

Public Health > Epidemiology > Infectious Disease > Pertussis

Pertussis (whooping cough)

Pertussis (whooping cough) is at high levels in Alaska. Get protected!
Pertussis is a highly contagious disease caused by a bacteria that affects the lungs. While usually mild for adults, it can be deadly for very young children. Pertussis is spread through the air in droplets produced during coughing or sneezing. The best way to prevent pertussis is for all children to be fully vaccinated on time and for adolescents and adults to get a booster shot.

Getting vaccinated is the best way to protect yourself and others
Pertussis vaccine is safe, prevents disease, and saves lives. Widespread use of pertussis vaccine has helped reduce deaths and cases of pertussis by 90% over the years. In spite of this, numbers are increasing again, both in Alaska and across the United States.

Are you up to date? Act now to get vaccinated! Unimmunized adults and children can spread the disease to young children, who may be too young for the vaccine, and who are more likely to have severe illness and bad outcomes from pertussis.

Resources for the General Public

- Where to get vaccinated
  The best place to start is with your primary healthcare provider. Additionally, many local pharmacies offer pertussis vaccination. Click Here for information on State supplied vaccines for uninsured/underinsured individuals. Click here for the State of Alaska Immunization Homepage
- Pertussis factsheet and FAQs
- Information for close contacts to patients diagnosed with pertussis
- Listen to an adult or child with pertussis

Resources for Healthcare Providers

- Clinical diagnosis and treatment guidelines
- Reporting requirements
  Pertussis is a reportable condition. Follow this link for details on how to report.
- Laboratory forms and information
  - Pertussis testing form
  - Supply request form
  - Specific PCR guidelines and how to do a nasopharyngeal swab
- Section of Epidemiology Pertussis-related Bulletins
  - Chemoprophylaxis recommendations, September, 2010
  - Vaccination guidelines, May, 2011
- CDC pertussis website
  The Centers for Disease Control and Prevention site offers extensive, updated information on pertussis for everyone, from kids to health care providers. Check it out now!

Resources for Schools, Child Care, Camp Programs

- School exclusion guidelines
- Pertussis letter for camp programs
- Pertussis letter to parents
- Pertussis letter to school nurses

Bulletin

Division of Public Health
Beverly Wooley, Director

Editors:
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Bradford D. Gessner, MD, MPH

Local (907) 269-8000
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Bulletin No. 3 January 20, 2009

Clinics — Juneau, December 2008

Results

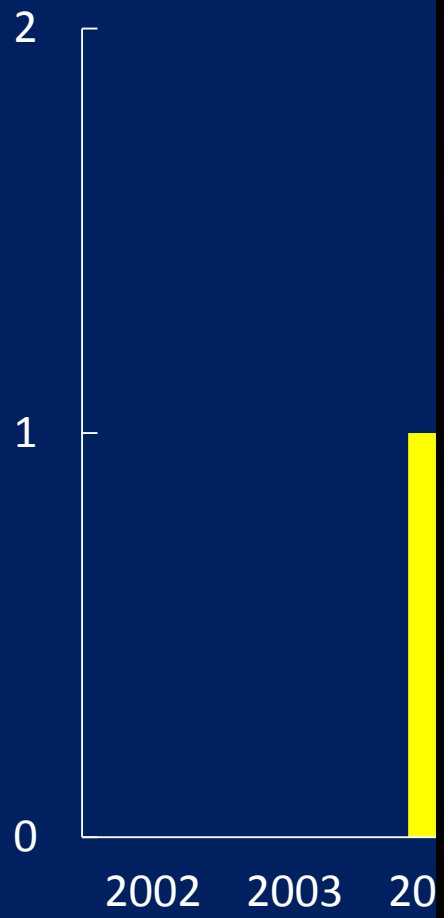
Clinics were held on December 16 at Floyd Dryden Middle School and December 17 at Dzantik'i Heeni Middle School. Each clinic ran from 2:00–8:00 PM. Immunization information was preloaded into a computerized immunization module (MassImms) that is part of VacTrAK, Alaska's new immunization information system;[3] this allowed clinic staff to easily review and update immunization information during registration.

The two clinics were attended by 800 persons; 777 (97%) attendees were vaccinated. Ages of attendees ranged from 4–70 years (Table 2). The average time for an individual to register, receive the vaccine, and check out was 2 minutes. Forty-nine (6%) individuals brought their immunization cards with them to the clinic. Twenty-three attendees were not vaccinated; 10 had a record of a previous Tdap in the MassImms database and 10 had a previous Tdap recorded on their immunization cards. Three attendees registered, but deferred vaccination for unknown reasons. Three individuals were inadvertently given an unnecessary Tdap prior to discovering evidence of a prevous Tdap on written vaccine records (2), and in the MassImms database (1).

Table 2: Number Vaccinated by Age Group

Age (Years)	Number Vaccinated (%)
0–4*	1 (<1)
5–9*	1 (<1)
10–14	149 (19)
15–19	63 (8)
20–29	73 (9)
30–39	106 (14)
40–49	182 (23)
≥50	202 (26)
Total	777 (100)

*Two patients aged <10 years received DTaP instead of Tdap.



State of Alaska Epidemiology

Bulletin

Department of Health and Social Services
Joel Gilbertson, Commissioner

Division of Public Health
Doug Bruce, Director

Section of Epidemiology
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Bulletin No. 2 February 2, 2004

Rubella Identified in Alaska after 11-Year Absence

On January 23, an alert Cordova physician assistant (PA) reported a suspected case of rubella in an un-vaccinated child who had recently returned from a trip to Florida. The Section of Epidemiology began an immediate investigation.

Case Report

On January 23, an 8-year-old Cordova student presented to the PA with malaise, fever, coryza, postauricular and anterior cervical lymphadenopathy, conjunctivitis, and a maculopapular rash. The rash began on his face on January 18 and spread to his trunk. He was un-vaccinated and had a religious exemption from school immunization requirements. The family flew to Florida for a 3-week vacation on December 26, 2003. From January 26, the child attended the children's portion of the religious convention with about 50 other children (aged 6-12) from around the world. He spent about 9 hours a day with this group. The family then returned to Alaska. A blood specimen drawn on January 28 was positive for rubella IgM at the State Public Health Laboratory – Fairbanks on January 30.

Investigation

Household members were evaluated for history of immunization or rubella disease. All siblings had previously received one MMR. A pregnant aunt had received one MMR and had a positive titer on record at her health care provider. Immunization records of all students

Congenital rubella syndrome (CRS) occurs in up to 90% of infants born to susceptible women who are infected with rubella during the first trimester of pregnancy. This risk of a single congenital defect falls to 10-20% by the 16th week of pregnancy, and defects are rare when the maternal infection occurs after the 20th week of gestation. CRS defects include spontaneous abortion, congenital malformations of major organ systems, deafness, cataracts, microcephaly, mental retardation, and bone disease.

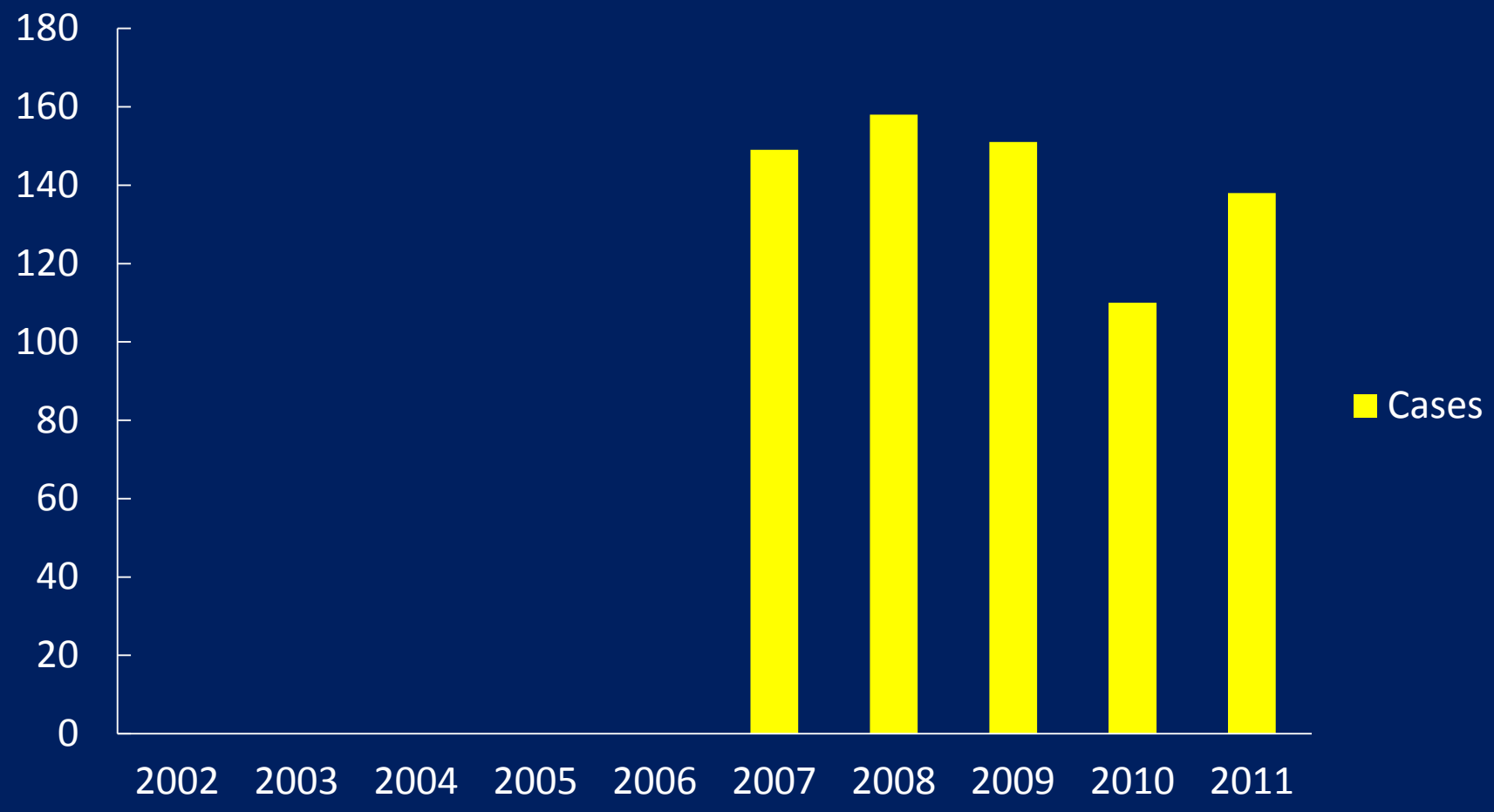
This is the first confirmed case of rubella in Alaska since 1993 when a foreign exchange student was identified with rubella in Anchorage.[1] This case again emphasizes the importance of immunizations in the school setting. All students should have their immunization status recorded in their school health record. Schools should be able to quickly identify all un-immunized students so that they may be advised of any known exposure to vaccine-preventable diseases and offered vaccination. To prevent CRS, pregnant women should be aware of their rubella immunization status and should receive a rubella titer prior to becoming pregnant.

Recommendations

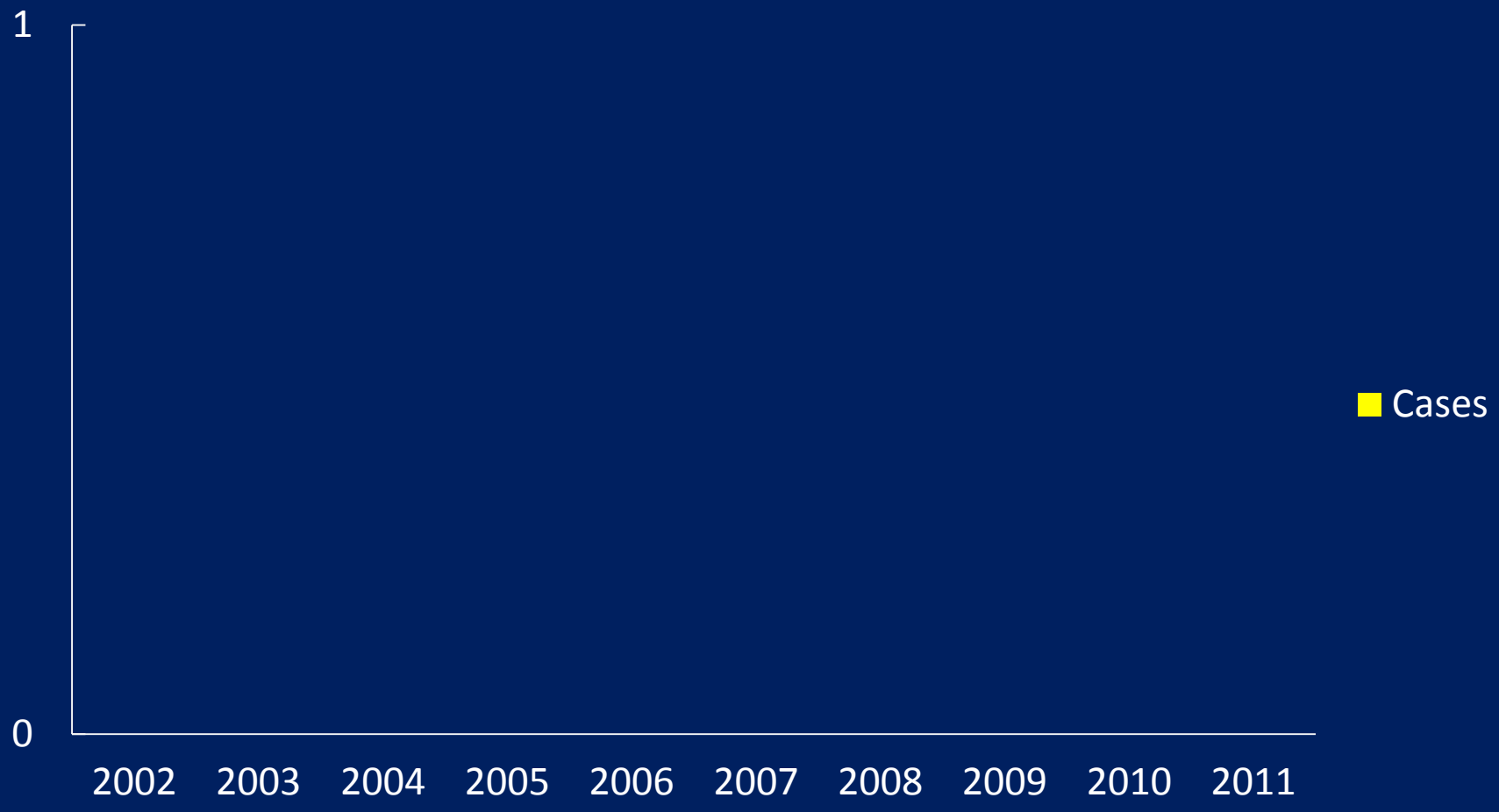
1. All immunization records of children who attend the affected school should be immediately evaluated. Parents of children who are un-immunized for rubella should be notified of a potential exposure to this case or rubella and offered an MMR for their child.

2. Any pregnant women at the school or who have

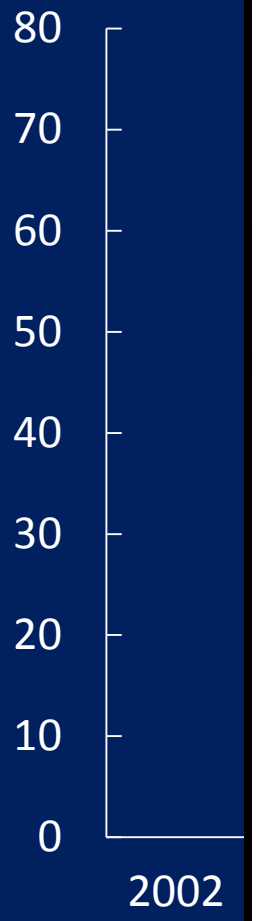
Streptococcus pneumonia - Invasive



Tetanus



Varicella (Chicken Pox)



State of Alaska Epidemiology **Bulletin**

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Bulletin No. 6 March 7, 2012

Outbreak of Chickenpox at a Child Care Facility — Kenai Peninsula, 2011

Background

Varicella is a highly contagious viral illness caused by the varicella-zoster virus. Symptoms typically include low-grade fever and a pruritic, vesicular rash. About half of infected children develop prodromal symptoms, including fever, malaise, anorexia, and headache for 1–2 days prior to appearance of a rash. Considerable respiratory or gastrointestinal symptoms are unusual. The incubation period is typically 14–16 days (range: 10–21 days); infected persons are usually contagious beginning 1–2 days before rash onset and continuing until all skin lesions have crusted over, usually within 5 days. Although typically a mild, self-limited disease in children, serious complications including secondary skin infections, pneumonia, and encephalitis can occur. Severe illness is more common in neonates, adolescents, adults, pregnant women, and immunocompromised persons.

Varicella vaccine was licensed by the U.S. Food and Drug Administration in 1995 and was added to the national routine childhood immunization schedule in 1996. Prior to this, virtually the entire birth cohort of U.S. children acquired varicella. The initial recommendation was for one dose for children aged 12 months to 12 years, and two doses (spaced 4–8 weeks apart) for persons aged ≥13 years. In 2006, the recommendation changed to include a second dose for children aged 12 months to 12 years in order to increase

second dose (at the 3-month interval), only one child received this second dose. Beyond the original four cases, no further cases of varicella were identified.

Box. Varicella Vaccination Guidelines

- Children should receive their first dose of varicella vaccine between 12–15 months of age, and their second dose between 4–6 years of age.
- Children may receive the second dose sooner than 4–6 years of age in outbreak settings. The recommended minimum interval between doses is 3 months for children aged <12 years.

Discussion

Outbreaks of varicella continue to occur despite the availability of an effective vaccine. In this outbreak, a vaccine-eligible child with a religious exemption from vaccination transmitted varicella to a vaccine-ineligible 7-month-old sibling, who was the source of the Facility A outbreak.

Alaska has one of the highest immunization exemption rates in the country,[3] and this pool of unvaccinated children substantially increases the risk of vaccine-preventable disease outbreaks in our state. As demonstrated in this report, some parents are willing to consider vaccinating their religiously exempted, unvaccinated children in an outbreak setting. This

- Thank you!

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