

PERTUSSIS: PRENATAL PREVENTION PARAMOUNT

*"It will perhaps surprise you that at a time when the world of medicine is up in the great arms to fight the great epidemic diseases which the war has sown broadcast, I have chosen as subject for the lecture which I have the honor of giving this evening an everyday malady as whooping cough.....However, the fact remains,—and at least in those countries which have spared the great epidemics,—that whooping cough is beginning to occupy the front rank among those diseases which are attracting the attention of public health administrators."*¹

Dr. Thorvald Madsen, 1925

After an undeniable vaccination triumph against such fearsome diseases, whooping cough remains a stubborn public health challenge. This issue of the *CD Summary* highlights how severe the disease can be in infancy, reviews the recent epidemiology of pertussis in Oregon and underscores the importance of maternal vaccination.

SEVERE ILLNESS IN AN INFANT

During 2012, a neonate with pertussis was reported. The newborn was hospitalized for 90 days, spent 75 days in the ICU, required ECMO for 43 days and hemodialysis for 31 days, and suffered complications including stroke. Hospital charges totaled \$1.5 million. The baby was finally discharged on oxygen and with a feeding tube.²

Five years later, the child still suffered the ill effects of that devastating illness. The child failed to meet developmental milestones, required substantial ongoing medical care, and bore the burden of chronic lung disease, stroke, epilepsy, impaired neurologic development, and problems with vision (Figure 1, verso).³

PERTUSSIS IN OREGON

A total of 4,341 cases and 112 outbreaks of pertussis have been reported

during the last decade in Oregon. The increase in reported cases is due to increased awareness, better reporting, better diagnoses and waning immunity.⁴

Infants suffered the highest incidence rate, which peaked in 2012 at 253 cases per 100,000. Infants accounted for 452 (10%) of reported cases, 144 (72%) of 158 pertussis-associated hospitalizations, and all five pertussis deaths. Stricken infants were hospitalized for a total of 1047 (median, 4) days. The youngest infants suffered the worst: those <6 months of age had the highest incidence and hospitalization rate of all age groups (Figures 2 and 3).

In 2019, 392 cases and 23 outbreaks of pertussis were reported in Oregon. Eighteen (78%) of the

Figure 2. Annual incidence of reported pertussis by age group, Oregon, 2010–2019

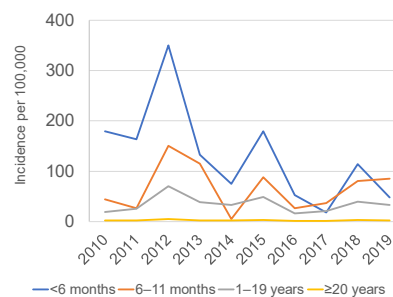
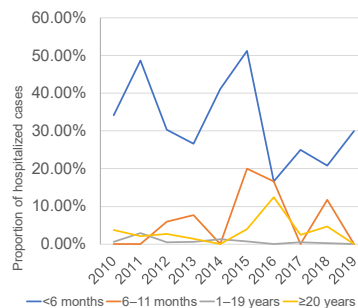


Figure 3. Proportion of pertussis hospitalizations by age group, Oregon, 2010–2019



NOTICE OF PROPOSED PERMANENT RULE MAKING ON COVID-19

Temporary rules requiring reporting of test results (positive and negative) for SARS-CoV-2, of hospitalization or death due to COVID-19, and cases of multisystem inflammatory syndrome in children (MIS-C) have been promulgated over the past few months. These temporary rules are set to expire September 4, 2020.

With SARS-CoV-2 showing no inclination to go away quietly, we propose to make this reportability permanent, along with exclusions of persons with COVID-19 from work or attendance at school or a child care center during their periods of contagion. You may **comment in person** on these proposed permanent rule changes at a public hearing to be held via conference call at 10:00 A.M. Friday, August 21, 2020:

DIAL: 1-877-848-7030

ACCESS CODE: 2030826#

Send written comments before 5:00 P.M. August 26, 2020, to

Heather Owens
Administrative Rules Coordinator
OHA, Public Health Division
800 NE Oregon Street, Suite 930
Portland, Oregon 97232

email: publichealth.rules@dhsosha.state.or.us

fax: 971-673-1299

View all the documents here:

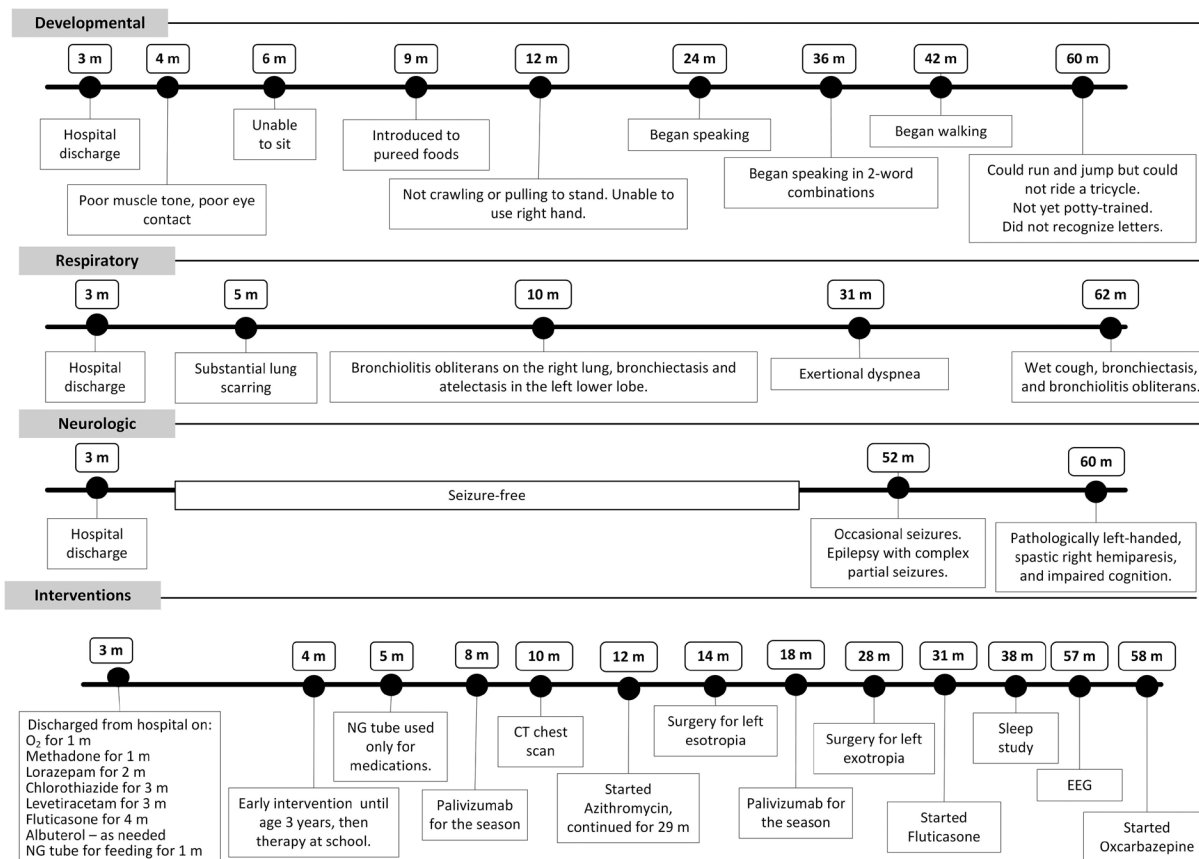
[COVID-19 Proposed Permanent Rules](#)

outbreaks occurred in school settings, and the 10–19-year-old age group accounted for 179 (46%) of the cases, Infants had the highest incidence — 64 per 100,000. Hospitalization was limited to infants: one newborn and two cases <2 months old.

MATERNAL TDAP VACCINATION

In 2012, in an effort to reduce the infant burden of pertussis and to protect those too young to be vaccinated, Tdap

Figure 1. Posthospitalization observations and interventions in a severe case of pertussis in an infant, by age and organ system, Oregon, 2012–2017.



Abbreviations: CT, computed tomography; EEG, electroencephalogram; m, month; NG, nasogastric.

was recommended during each pregnancy. To maximize transplacental antibody transfer, Tdap should be administered at 27–36 weeks’ gestation. Because immunity wanes, vaccination during each pregnancy is needed. Data on the safety of Tdap for both pregnant women and their infants continues to be reassuring, with no reported increase in adverse events and no observation of new or unexpected vaccine safety concerns.⁴

A CDC evaluation (including Oregon data), showed that maternal Tdap received during the third trimester of pregnancy was 78% effective in preventing pertussis cases and 91% effective against pertussis hospitalization among infants <2 months of age.⁵

GETTING PREGNANT WOMEN VACCINATED

The Oregon Immunization Program estimated from data in Oregon’s ALERT Immunization Information System that only 69% of women who delivered babies in 2017 got Tdap during their pregnancy.*

Recent studies show that pregnant women have the highest Tdap uptake when it is strongly recommended by

*Oregon Maternal Immunization Data, Accessed 10 June 2020

their provider, and especially among those who stock the vaccine.⁶ An internet survey of women who were pregnant at any time since 2018 fielded during March 27–April 8, 2019, and completed by 2,626 women demonstrated a 55% maternal Tdap rate. Among women whose providers offered vaccination or provided referrals the rate jumped to 70.5%. Reasons for not being vaccinated included not knowing that vaccination is needed during each pregnancy and concerns for the safety of the infant.⁷

TDAP OKAY FOR TD

ACIP voted in October to allow either Td or Tdap to be used in situations where only Td vaccine is currently recommended: decennial booster, tetanus prophylaxis for wound management, and catch-up immunization including for pregnant women. Many providers had been doing this anyway. Published and unpublished data show no unusual events or increased reporting of any adverse events with closely spaced Tdap. The new recommendation will increase flexibility for providers and may benefit pertussis control.⁸

WHITHER THE WHOOP? ¹

Pertussis is here and will be with us for the foreseeable future. The current

COVID-19 RESOURCES

COVID-19 UPDATES

Keep current on COVID-19 in Oregon

COVID-19 DASHBOARD

Indicators measuring health burden of and public health capacity to respond.

HEALTHCARE PARTNERS

Resources for healthcare personnel, partners and local public health

LTCF TESTING PLAN (pdf)

Long-term Care Facility (LTCF) baseline and on-going testing plan.

RE-OPENING GUIDELINES

Governor Brown’s phased approach

vaccine is protective, but it’s not enough to eradicate pertussis. Infants bear the highest risk, so public health priority is on protecting them. Infant protection might motivate expectant mothers towards vaccination, so providers should promote vaccination and address misconceptions and safety concerns. And as Madsen said, “take the poison out of its sting.”¹¹

FOR MORE INFORMATION

- Oregon Maternal Immunization Data, www.oregon.gov/oha/PH/PREVENTIONWELLNESS/VACCINES/IMMUNIZATION/Pages/researchmaternal.aspx

Click for
CME credits

Click to sign
up for CD Sum-
mary

Click to view
previous CD
summaries



Providence Portland Medical Center designates this enduring material for a maximum of .5 *AMA PRA Category 1 credit*[™]. Physicians should claim only the credit commensurate with the extent of their participation in the activity. Portland Providence Medical Center is accredited by the Oregon Medical Association to sponsor continuing medical education of physicians.

You can get this document in other languages, large print, braille or a format you prefer. Contact the Public Health Division at 971-673-1222. We accept all relay calls or you can dial 711. for TTY.

- Oregon Maternal Immunization Toolkit., www.oregon.gov/oha/PH/PREVENTIONWELLNESS/VACCINES/IMMUNIZATION/IMMUNIZATION-PROVIDERRESOURCES/Pages/maternalImm.aspx
- CDC. Toolkit for Prenatal Care Providers, www.cdc.gov/vaccines/pregnancy/hcp-toolkit/index.html

Practices — United States, 2019. [MMWR](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6907a1.htm). 2020;69:77–83.

REFERENCES

1. Madsen Th. Whooping Cough. [Boston Med Surg J](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1192020/). January 8, 1925. 50–60. DOI: 10.1056/NEJM192501081920202
2. Liko J, Koenig WJ, Cieslak PR. Suffer the infants: A severe case of pertussis in Oregon, 2012. [Public Health Rep](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6907a1.htm). 2015;130:435–9.
3. Liko J, Koenig WJ, Cieslak PR. Five-year follow-up of a severe case of pertussis in Oregon, 2012. [Public Health Rep](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6907a1.htm). 2019;134:587–91.
4. Liang JL, Tiwari T, Moro P, Messonnier NE, Reingold A, Sawyer M, et al. Prevention of pertussis, tetanus and diphtheria with vaccines in the United States: Recommendations of the Advisory Committee on Immunization Practices (ACIP). [MMWR](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6907a1.htm). 2018, Apr 27;67:1–44.
5. Skoff TH, Blain AE, Watt J, Scherzinger K, McMahon M, Zansky SM, et al. Impact of the U.S. maternal tetanus, diphtheria, and acellular pertussis vaccination program on preventing pertussis in infants <2 months of age: A case-control evaluation. [Clin Infect Dis](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6907a1.htm). 2017;29:65:1977–83.
6. Wales DP, Khan S, Suresh D, Ata A, Morris B. Factors associated with Tdap vaccination receipt during pregnancy: A cross-sectional study. [Public Health](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6907a1.htm). 2019;179:38–44.
7. Lindley MC, Kahn KE, Bardenheier BH, D'Angelo DV, Dawood FS, Fink RV, et al. Vital signs: Burden and prevention of influenza and pertussis among pregnant women and infants — United States. [MMWR](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6907a1.htm). 2019; 68:885–92.
8. Havers FP, Moro PL, Hunter P, Hariri S, Bernstein H. Use of tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccines: Updated recommendations of the Advisory Committee on Immunization