

EPI CONNECTIONS

December 2008

A Bimonthly Newsletter of the Communicable Disease Division

Use Pentacel Vaccine to Ensure There Is Enough Hib Vaccine for Children Who Need It

The shortage of Hib vaccine is expected to continue through the middle of 2009. Therefore, the Centers for Disease Control and Prevention (CDC) is still directing providers to withhold the booster dose of Hib for healthy children until the shortage is resolved. In addition, they are directing providers to use the combination vaccine Pentacel, which contains DTaP, polio, and Hib vaccines, for the first three doses of the series as a way of expanding the Hib supply. Although Pentacel is licensed for the first four doses of the series, it currently CANNOT be used for the fourth dose, because the fourth Hib dose must be deferred during the shortage.

The following guidance has been developed to assist health care providers with questions about Pentacel's implementation.

Pentacel can be used when a child needs DTaP, IPV, and Hib, and **minimal intervals for ALL three vaccines are met**. The following tables show how Pentacel could be used with children who have already started the series of these vaccines. Each row of the tables reflects a different scenario, based on the age of the child. The "Age at Last Dose" and "Vaccine History" columns provide information about vaccines the child has received; the next two columns advise which vaccines should be given if Pentacel is used. Other vaccines the child would need, such as rotavirus and Prevnar, are not listed.

Practices using single-antigen vaccines that want to begin using Pentacel (Figure 1).

1. Pentacel could be used as the first dose in the primary series for two-month-olds, and could be continued through the third dose in the series.
2. For infants already started on single-antigen vaccines, practices can finish the series with Pentacel when the next dose in the series is needed.

Figure 1

Age at Last Dose	Vaccine History (Vaccines Received at Last Visit)	Age at Next Dose	Vaccines to be Given
2 mos.	# 1 DTaP # 1 IPV # 1 Hib # 1 hep B	4 mos.	#2 Pentacel (DTaP, IPV and Hib) #2 hep B (Note: if child had received hep B birth dose, no hep B would be needed at 4 months of age.)
4 mos.	#2 DTaP #2 IPV #2 Hib #2 hep B	6 mos.	#3 Pentacel (DTaP, IPV and Hib) #3 hep B
6 mos.	#3 DTaP #3 IPV #3 Hib #3 hep B	12-18 mos.	#4 DTaP

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Use Caution When Diagnosing and Treating E. coli

During September and October 2008, Boulder County Public Health (BCPH) staff investigated an outbreak of E. coli O157:H7. Full details of this outbreak will be provided in the January issue of *Epi Connections*. However, it is important to highlight the following clinical items related to identifying and treating E. coli infections.

E. coli O157:H7 is one serotype of Shiga toxin-producing E. coli (STEC). Shiga toxin is produced by both *Shigella dysenteriae* and STEC. Therefore, lab results simply identifying the presence of Shiga toxin do NOT warrant antimicrobial treatment; culture must be used to confirm either *Shigella* or STEC. In Colorado, *Shigella dysenteriae* is rare, and it is more likely that the presence of Shiga toxin is indicative of E. coli infection. The action of the Shiga toxin on intestinal cells can produce a hemorrhagic colitis. Absorption of the toxin in the circulation can result in systemic complications that include Hemolytic Uremic Syndrome (HUS) and post-diarrheal thrombotic thrombocytopenic purpura (TTP).

Use caution before prescribing antibiotics to a patient suspected of having E. coli O157. There are concerns about the possibility of antibiotics increasing the risk of HUS, although this has not yet been proven. A recent review of HUS by Ijima, et al in the *Journal of Clinical and Experimental Nephrology* summarizes:

"The use of antibiotics in patients with definite or possible enteric STEC infections is controversial; however, there has been no randomized controlled trial to date showing the effectiveness of antibiotics for the prevention of the development of HUS. Thus, most investigators in western countries believe that antibiotics should not be administered to patients with such infections, and the management of HUS remains supportive."

Please call the BCPH Communicable Disease Control Program at 303-413-7500 to report any cases of E. coli or for further information.





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- Single-antigen DTaP is used for the fourth dose of the DTaP series. The fourth polio dose can be given at 4-5 years; the booster dose of Hib will be given after the shortage is resolved.

Practices who used Pediarix (DTaP/IPV/Hep B) and are switching to Pentacel (DTaP/IPV/Hib)--must adjust the schedules so that both Hib and hepatitis B vaccines are given correctly (Figure 2).

Figure 2

Age at Last Dose	Vaccine History (Vaccines Received at Last Visit)	Age at Next Dose	Vaccines to be Given
2 mos.	#1 Pediarix (DTaP/IPV/hep B) #1 Hib	4 mos.	#2 Pentacel (DTaP/IPV/Hib) #2 hep B (if got hep B birth dose, none needed until 6 mo. of age)
4 mos.	#2 Pediarix (DTaP/IPV/hep B) #2 Hib	6 mos.	#3 Pentacel (DTaP/IPV/Hib) #3 or #4 hep B (needed even if received hep B birth dose)*
6 mos.	#3 Pediarix (DTaP/IPV/hep B) #3 Hib	12-18 mos.	#4 DTaP

Other considerations:

- Hepatitis B:** The last dose MUST be given on or after 6 months of age and with a minimal interval of 16 weeks between #1 and #3 and 8 weeks between #2 and #3. If the child received the first hepatitis B dose at birth, the schedule is birth, 2 months, 6 months.
- If the child received the first hepatitis B dose at birth and is receiving Pediarix, it is acceptable for the child to receive an extra dose. In this case, the schedule follows the Pediarix schedule: birth and 2,4,6 months.
- If the child received the first hepatitis B dose at birth and was started on Pediarix, and then switches to Pentacel, he/she will still need a hep B dose at 6 months so that the last dose is received on or after 6 months of age.

Polio: The fourth dose of polio is routinely given at 4-5 years of age; if Pentacel is used, it is acceptable to give it at 12-18 months of age, as long as there is a minimal interval of 1 month since the last polio dose; however, Pentacel cannot **currently** be used at 12-18 months if it means the child will be receiving the booster dose of Hib.

For more information about schedules for children at risk for hepatitis B or Hib disease, please call the Boulder County Immunization Program at 303-413-7548 or check the CDC website at <http://www.cdc.gov/vaccines>.

BCPH Immunization clinics no longer have single-antigen Hib vaccine. We use the combination vaccine Pentacel (DTaP, IPV, Hib) to provide Hib vaccine.

Epi-Eye

A Look Outside Our Community and Around the World

World AIDS Day 2008: A Global Update

On December 1, people from all countries will again celebrate World AIDS Day and examine how far we've come and how far we still have to go to defeat this pandemic. Great progress has been made to increase access to appropriate treatment therapies, but there still remains the need for improving prevention efforts.

The global prevalence of people living with HIV has stabilized at approximately 0.8%, or the equivalent of 33 million. The death rate has decreased as access to antiretroviral therapies has increased. An estimated 2.7 new infections occur annually.

Progress has been made in some countries where rates of new infections have fallen. Sub-Saharan Africa is still the most impacted region in the world, but even there most national epidemics have declined or stabilized in recent years. However, not all countries in that region share the same success. Recent data from Kenya has shown an increase in HIV prevalence from 6.5% to over 7%. Additionally, many countries outside of Africa continue to struggle with increasing rates, such as Russia, Germany, and Indonesia.

Women account for half of all HIV infections, and this number is increasing in several countries. In 2007, over 370,000 children under 15 years of age were infected with HIV. This number has declined since 2002, largely due to improvements in prevention of mother-to-child transmission (PMTCT) to 33% in low- and middle-income countries. Almost 90% of infected children live in sub-Saharan Africa.

In most areas outside of sub-Saharan Africa, HIV disproportionately affects injection drug users (IDU), men who have sex with men (MSM), and sex workers. One contributing factor is that over 60% of countries have policies that inhibit HIV prevention programs from effectively impacting these high-risk populations.

The Joint United Nations Programme on HIV/AIDS (UNAIDS) has made the following recommendations to nations and donors for combating the pandemic:

- Address societal causes of HIV risk, including gender inequality, stigma, and discrimination.
- Use proven best practices to prevent new infections, including education to young people and high-risk groups.
- Expand access to antiretroviral treatment and increase overall health care capacity.
- Reduce the impact on families and communities by providing education for orphans and income generation for adults.

Reference: UNAIDS 2008 Global Report www.unaids.org