2010 Immunization Update

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Disclosures

No financial conflict or interest with the manufacturer of any product named during this course.

Disclosures

- I will not discuss the use of vaccines in a manner that differs from the product insert, with the exception of PCV13 vaccine, HPV vaccine and MCV4 vaccine
- I will not discuss unlicensed vaccines

Overview

- Influenza vaccination
- Pneumococcal conjugate vaccine (PCV13)
- Meningococcal conjugate vaccine (MCV4) revaccination
- New human papillomavirus vaccine (Cervarix)
- Pertussis outbreaks and Tdap

Influenza

- Highly infectious viral illness
- First pandemic in 1580
- At least 6 pandemics since late 19th century
- Estimated 21 million deaths worldwide in pandemic of 1918-1919
- Pandemics of 1957 and 1968 of lesser severity
- H1N1 Pandemic declared June 11, 2009

Impact of Influenza-United States, 1990-1999

- Approximately 17,000 – 51,000 influenza-associated deaths during each influenza season
- Persons 65 years of age and older account for more than 90% of deaths

Influenza Vaccines

Inactivated subunit (TIV)

- intramuscular
- trivalent
- split virus and subunit types
- duration of immunity 1 year or less

Live attenuated vaccine (LAIV)

- intranasal
- trivalent
- duration of immunity at least 1 year

Influenzas Vaccine Strain Recommendations, 2010-2011

Trivalent influenza vaccine for the 2010-2011 season will contain

- A/California/7/2009-like (2009 H1N1)
- A/Perth/16/2009-like (H3N2)
- B/Brisbane/60/2008-like (B/Victoria lineage)

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Inactivated Influenza Vaccine Efficacy

- 90% in children
- 70% - 90% effective among healthy persons younger than 65 years of age
- In those older than 65 years
  - 57-58% effective
  - 20-70% effective in preventing hospitalization
  - 80% effective in preventing death

CSL Vaccine

Found to increase the rate of febrile seizures 10-fold among children 6 mos – 8 years

Not recommended for children 6 mos – 5 years

Only recommended for high-risk 5 years – 8 years

Inactivated Influenza Vaccine Schedule

Age Group	Dose	No. Doses
6-35 mos	0.25 mL	1 or 2
3-8 yrs	0.50 mL	1 or 2
9 yrs and older	0.50 mL	1

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Influenza Vaccination Schedule

One dose is recommended for most people

Children younger than 9 years who are receiving seasonal influenza vaccine for the first time, or received only 1 dose of seasonal vaccine the previous season (if it was their first vaccination season) should receive 2 doses this season

Children younger than 9 years who did not receive any monovalent H1N1 vaccine last season should receive 2 doses this season

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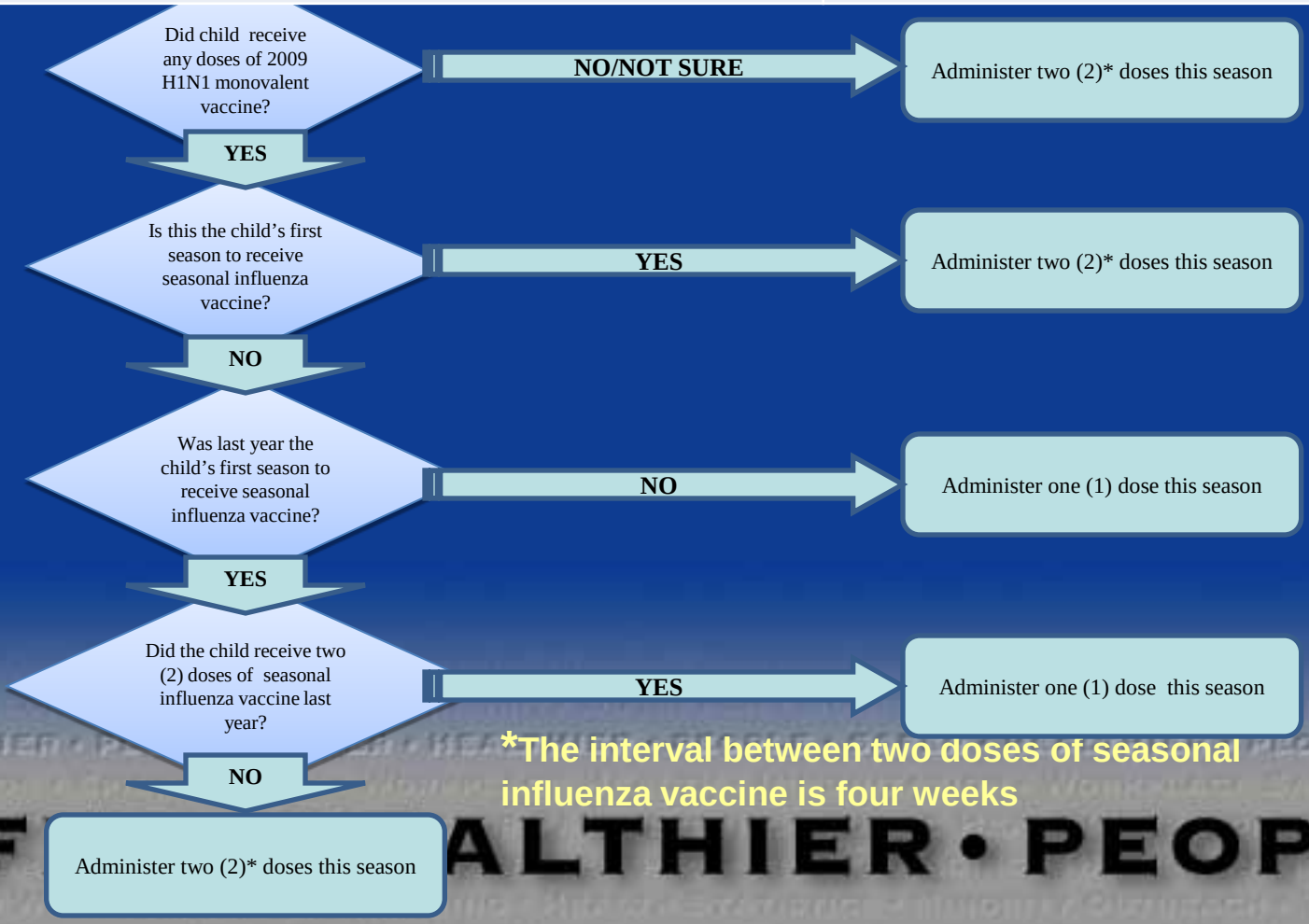
Number of 2010-2011 Seasonal Influenza Vaccine Doses Recommended For Children

Infants under 6 months of age	**No influenza vaccine**
Children 6 months through 8 years	**Follow algorithm below**
Children 9 years of age and older	**One (1) dose this season**



*The interval between two doses of seasonal influenza vaccine is four weeks

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Influenza Vaccine Recommendations for the 2010-2011 Season

- On February 24, 2010, ACIP unanimously approved a revision for the 2010-2011 influenza season
- Influenza vaccination recommendations for adults were expanded to include all adults beginning in the 2010-11 influenza season
- All people age 6 months and older are now recommended to receive annual influenza vaccination

Inactivated Influenza Vaccine Contraindications and Precautions

- Severe allergic reaction to a vaccine component (e.g., egg) or following a prior dose of vaccine (contraindication)
- Moderate or severe acute illness (precaution)
- History of Guillian-Barré syndrome within 6 weeks following a previous dose of TIV or LAIV (precaution)

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Live Attenuated Influenza Vaccine

- Intranasal
- Trivalent: same strains as TIV
- Attenuated: produce mild or no signs or symptoms of influenza
- Temperature-sensitive: do not replicate efficiently at 38º-39º C (temperature of the lower airways)
- Cold-adapted: replicate efficiently at 25º C (temperature of the upper airway)

Live Attenuated Influenza Vaccine Contraindications and Precautions

- Children younger than 2 years of age*
- Persons 50 years of age or older*
- Persons with chronic medical conditions*
- Children and adolescents receiving long-term aspirin therapy*

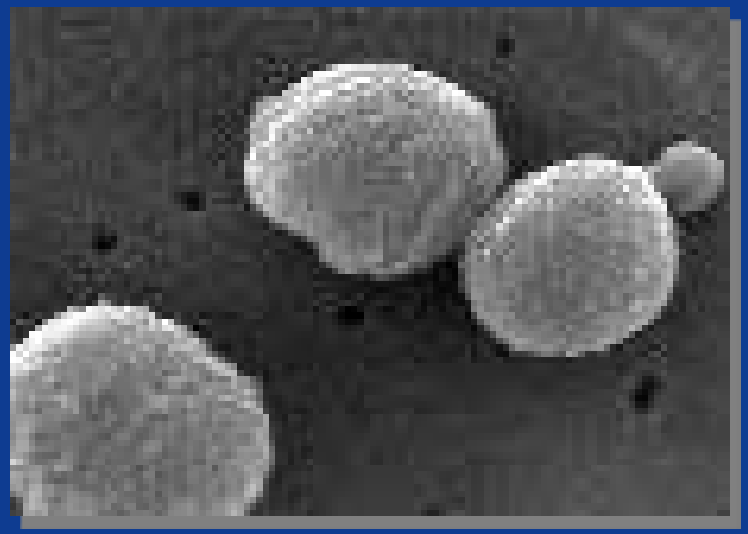
***These persons should receive inactivated influenza vaccine**

Live Attenuated Influenza Vaccine Contraindications and Precautions

- Immunosuppression from any cause*
- Pregnant women*
- Children younger than 5 years with recurrent wheezing*
- Severe (anaphylactic) allergy to egg or other vaccine components
- History of Guillian-Barré syndrome within 6 weeks following a previous dose of TIV or LAIV (precaution)
- Moderate or severe acute illness

***These persons should receive inactivated influenza vaccine**

Streptococcus pneumoniae



- Second most common cause of vaccine-preventable death in the U.S. (after influenza)
- Major clinical syndromes include pneumonia, bacteremia, and meningitis

PCV13

- Manufactured by Wyeth (vaccine subsidiary of Pfizer)
- Trade name Prevnar-13
- Licensed February 25, 2010
- Approved for children 6 weeks through 5 years

PCV13 - Schedule

Routine recommended ages the same as PCV7

2, 4, 6 months, booster 12-15 months

Catch-up through 4 years for healthy children

Catch-up through 5 years for high-risk children

Children Completely Vaccinated with PCV7

- A supplemental dose of PCV13 is recommended 8 weeks after the last dose of PCV7
- Extends to 5th birthday for healthy children (to 6th birthday for high risk)

Meningococcal Disease

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N Engl J Med. 2001;344:1372

Meningococcal Vaccine Recommendations (2005, 2007)

Routinely recommended for:

- All children at 11-18 years of age
- All college freshmen living in a dormitory
- Other persons 2 through 55 years of age at increased risk of invasive meningococcal disease

MMWR 2007;56(No. 31):794-5.

Meningococcal Vaccine Recommendations

Recommended for persons at increased risk of meningococcal disease:

- Microbiologists who are routinely exposed to isolates of *N. meningitidis(isolates)*
- Military recruits
- Persons who travel to and U.S. citizens who reside in countries in which *N. meningitidis* is hyperendemic or epidemic
- Persistent complement component deficiency
- functional or anatomic asplenia

***MMWR* 2005; 54(RR-7);1-21**

Meningococcal Conjugate Vaccine (MenACWY)

Quadrivalent polysaccharide vaccine (A, C, Y, W-135)

Menactra - conjugated to diphtheria toxoid ($MenACWY_D$)

Administered by intramuscular injection

Single dose vials do not contain a preservative

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MenACWY$_D$

Approved only for persons 2 through 55 years of age

Persons 56 years and older at increased risk should receive the meningococcal POLYSACCHARIDE vaccine

Meningococcal vaccine is not routinely recommended for persons 2-10 years of age who are not in a high risk group

New Meningococcal Conjugate Vaccine (MenACWY$_{Crm197}$)

- Licensed by Novartis: Menveo
- Approved 11 through 55 years
- No preference between Menveo or Menactra (but only Menactra can be given 2-10 years of age)

Revaccination Recommendations

- Persons who remain at risk for meningococcal meningitis should receive a revaccination dose at a five year interval
- Children through age 18 years who received their first dose of MenACWY or MPSV at ages 2 through 6 years and remain at increased risk for meningococcal disease should receive an dose of MenACWY after 3 years

Revaccination Recommendations

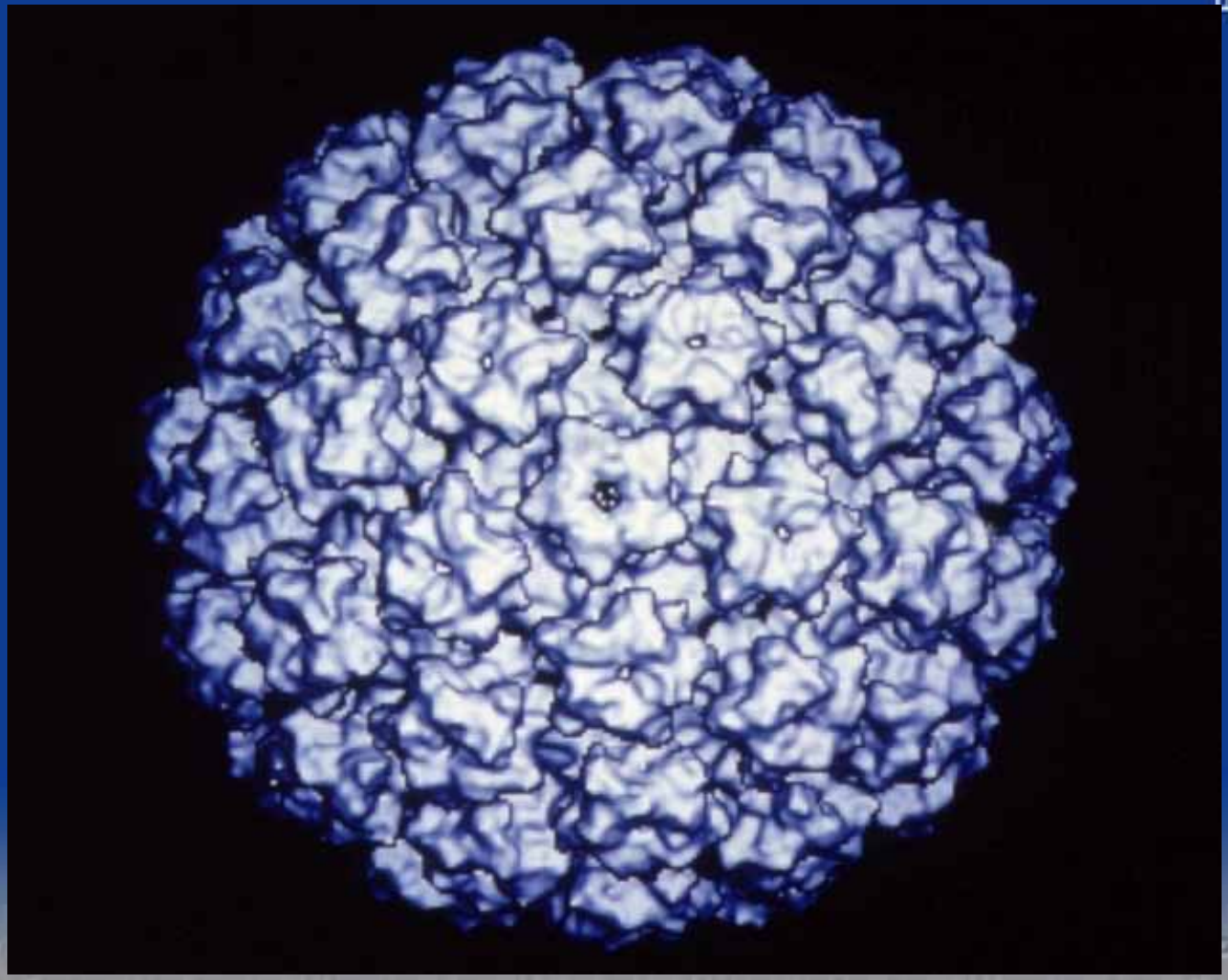
High-risk persons who should be revaccinated with MenACWY

- persistent complement component deficiency
- anatomic or functional asplenia
- frequent travelers to or persons living in areas with high rates of meningococcal disease

Revaccination Recommendations

- Meningococcal revaccination recommendation (following a previous dose of MenACWY) does NOT apply to children whose only risk factor is living in on-campus housing
- These adolescents need a dose of MenACWY if their only previous dose was MPSV

Human Papillomavirus



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Human Papillomavirus Vaccines

	HPV Strains
HPV4 (Gardasil)	16, 18, (70% cervical other anogenital cancers) 6, 11 (90% genital warts)
HPV2 (Cervarix)	16, 18 (70% cervical cancers)

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Recommendations for Vaccination of Females

- ACIP recommends vaccination with either the bivalent HPV vaccine or the quadrivalent HPV vaccine for prevention of cervical cancers and precancers.

- ACIP recommends vaccination with the quadrivalent HPV vaccine for prevention of cervical cancers and precancers, vulvar and vaginal cancers and precancers, and genital warts.

Recommendation: Interchangeability of Vaccines

ACIP recommends that the HPV vaccine series be completed with the same HPV vaccine product whenever possible

However, if vaccination providers do not know or have available the HPV vaccine product previously administered, either HPV vaccine product can be used to continue or complete the series to provide protection against HPV 16 and 18

FDA Licensure: Indications for Quadrivalent HPV Vaccine in Males

Prevention genital warts due to HPV types 6 and 11

Approved for use in males aged 9 through 26 years

http://www.fda.gov/BiologicsBloodVaccines/Vaccines/ApprovedProducts/ucm094042.htm

Recommendations for Vaccination of Males

Recommendations:

Quadrivalent HPV vaccine may be given to males aged 9 through 26 years to reduce their likelihood of acquiring genital warts. Quadrivalent HPV vaccine would be most effective when given before exposure to HPV through sexual contact.

Vaccines for Children (VFC):

Quadrivalent HPV vaccine for males approved to be included in VFC enabling health care providers to obtain and provide vaccine but not actively promoting vaccination.

Human Papillomavirus Vaccine

- High efficacy without evidence of infection with vaccine HPV types
- No evidence that the vaccine had efficacy against existing disease or infection (i.e., the vaccine is not therapeutic)
- Prior infection with one HPV type did not diminish efficacy of the vaccine against other vaccine HPV types

Pertussis

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Tdap Vaccination of Adults 19 Through 64 Years of Age

- **Single dose of Adacel® or Boostrix to replace a single dose of Td**
- **May be given at an interval less than 10 years since receipt of last tetanus toxoid-containing vaccine**
- **Special emphasis on adults with close contact with infants (e.g., childcare and healthcare personnel, and parents)**

MMWR 2006;55(RR-17):1-37.

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Minimum Interval Between Td and Tdap

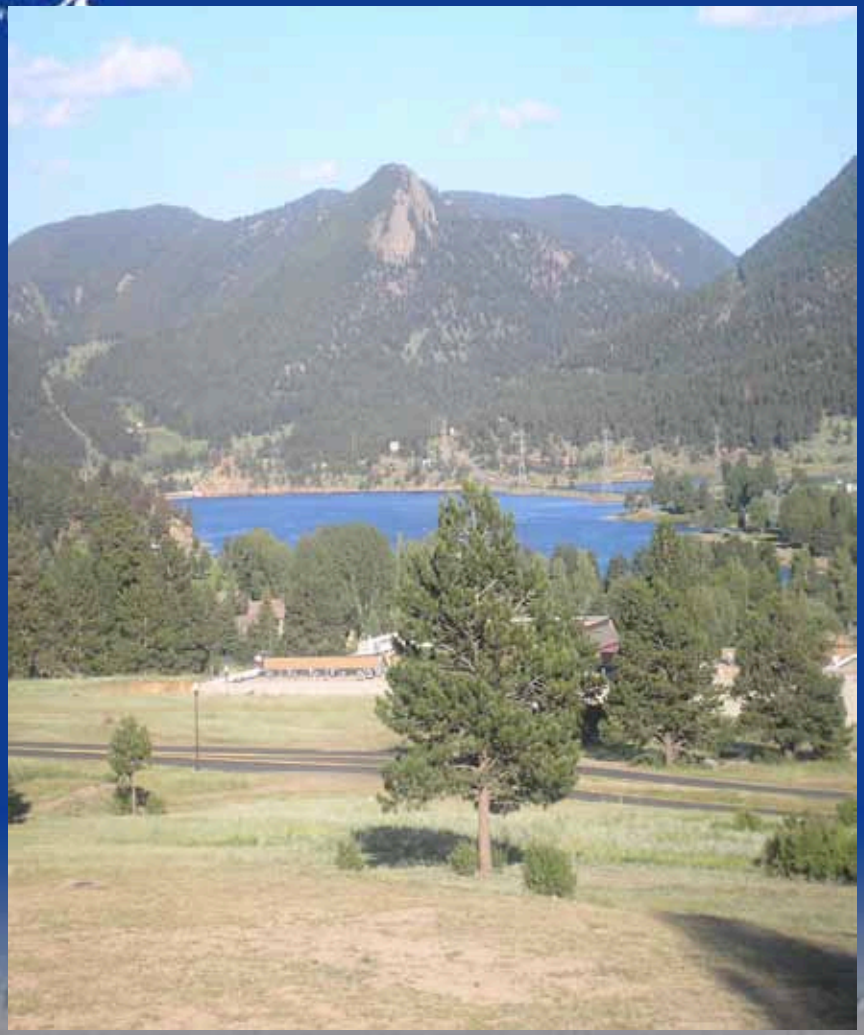
- **ACIP did not define an absolute minimum interval between Td and Tdap**
- **Interval between Td and Tdap may be shorter than 2 years if protection from pertussis needed**
- **Decision to administer Tdap based on whether the benefit of pertussis immunity outweighs the risk of a local adverse reaction**

MMWR 2006;55(RR-3):1-43.

Pertussis Outbreaks 2010

- Statewide outbreaks in California and South Carolina
- Multiple Outbreaks in New York, Ohio, Michigan,
- Providers can choose to vaccinate persons 7-9 years of age and older than 64 years based on local circumstances, after a discussion of risks and benefits with the patient

Thank You



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