

# **Pediatric Vaccines: 2007 Recommendations**

**September 2007**



Anita Freeman, RN, MSN  
Program Specialist

**V A C C I N E S**

Build your child's health



# Objectives

- Understand the role of the Advisory Committee on Immunization Practices.
- Identify pediatric groups recommended to receive influenza vaccination.
- Select recommended ages for rotavirus vaccine.
- Select recommended ages for pneumococcal conjugate vaccine.
- Identify appropriate ages to receive MMRV and Tdap vaccines.

A decorative background featuring a yellow balloon with a string in the top left, a light blue balloon in the middle left, and a purple balloon in the bottom left. Yellow streamers and small yellow triangles are scattered throughout the scene.

# Presentation Outline

- Immunization Schedules
- Texas immunization system
- 2007 Influenza vaccination recommendations
- Selected pediatric vaccines
- Adolescent vaccines and recommendations
- 2006 National Immunization Survey



# How schedules have changed!



# Number of Vaccines in the Routine Childhood Schedule

- 1985 (7)

- Measles
- Rubella
- Mumps
- Diphtheria
- Tetanus
- Pertussis
- Polio

- 1995 (10)

- Measles
- Rubella
- Mumps
- Diphtheria
- Tetanus
- Pertussis
- Polio
- Hib (infant)
- Hepatitis B
- Varicella

- 2007 (14)

- Measles
- Rubella
- Mumps
- Diphtheria
- Tetanus
- Pertussis
- Polio
- Hib (infant)
- Hepatitis B
- Varicella
- Pneumococcal
- Influenza
- Meningococcal
- Hepatitis A
- Rotavirus

# 1994 Childhood Schedule

TABLE 3. Recommended schedule for routine active vaccination of infants and children\*

Vaccine	At birth (before hospital discharge)	1-2 months	2 months†	4 months	6 months	6-18 months	12-15 months	15 months	4-6 years (before school entry)
Diphtheria-tetanus- pertussis <sup>‡</sup>			DTP	DTP	DTP			DTaP/DTP <sup>†</sup>	DTaP/DTP
Polio, live oral			OPV	OPV	OPV**				OPV
Measles-mumps- rubella							MMR		MMR <sup>††</sup>
<i>Haemophilus</i> <i>influenzae</i> type b conjugate HbOC/PRP-T <sup>§,§§</sup> PRP-OMP <sup>§§</sup>			Hib Hib	Hib Hib	Hib		Hib <sup>††</sup> Hib <sup>††</sup>		
Hepatitis B*** Option 1 Option 2	HepB	HepB <sup>†††</sup> HepB <sup>†††</sup>		HepB <sup>†††</sup>		HepB <sup>†††</sup> HepB <sup>†††</sup>			

\*See Table 4 for the recommended immunization schedule for infants and children up to their seventh birthday who do not begin the vaccination series at the recommended times or who are >1 month behind in the immunization schedule.

† Can be administered as early as 6 weeks of age.

‡ Two DTP and Hib combination vaccines are available (DTP/HbOC [TETRAMUNE™]; and PRP-T [ActHIB™, OmniHIB™] which can be reconstituted with DTP vaccine produced by Connaught).

§ This dose of DTP can be administered as early as 12 months of age provided that the interval since the previous dose of DTP is at least 6 months. *Diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP)* is currently recommended only for use as the fourth and/or fifth doses of the DTP series among children aged 15 months through 6 years (before the seventh birthday). Some experts prefer to administer these vaccines at 18 months of age.

\*\* The American Academy of Pediatrics (AAP) recommends this dose of vaccine at 6-18 months of age.

†† The AAP recommends that two doses of MMR should be administered by 12 years of age with the second dose being administered preferentially at entry to middle school or junior high school.

§§ HbOC: [HibTITER®] (Lederle Praxi). PRP-T: [ActHIB™, OmniHIB™] (Pasteur Merieux). PRP-OMP: [PedvaxHIB®] (Merck, Sharp, and Dohme). A DTP/Hib combination vaccine can be used in place of HbOC/PRP-T.

††† After the primary infant Hib conjugate vaccine series is completed, any of the licensed Hib conjugate vaccines may be used as a booster dose at age 12-15 months.

\*\*\* For use among infants born to HBsAg-negative mothers. The first dose should be administered during the newborn period, preferably before hospital discharge, but no later than age 2 months. Premature infants of HBsAg-negative mothers should receive the first dose of the hepatitis B vaccine series at the time of hospital discharge or when the other routine childhood vaccines are initiated. (All infants born to HBsAg-positive mothers should receive immunoprophylaxis for hepatitis B as soon as possible after birth.)

†††† Hepatitis B vaccine can be administered simultaneously at the same visit with DTP (or DTaP), OPV, Hib, and/or MMR.

1994 childhood immunization schedule



# 2007 Childhood Schedule (0-6 years)

DEPARTMENT OF HEALTH AND HUMAN SERVICES • CENTERS FOR DISEASE CONTROL AND PREVENTION

## Recommended Immunization Schedule for Persons Aged 0–6 Years—UNITED STATES • 2007

Vaccine▼	Age►	Birth	1 month	2 months	4 months	6 months	12 months	15 months	18 months	19–23 months	2–3 years	4–6 years
Hepatitis B <sup>1</sup>	HepB		HepB	<i>see footnote 1</i>		HepB				HepB Series		
Rotavirus <sup>2</sup>				Rota	Rota	Rota						
Diphtheria, Tetanus, Pertussis <sup>3</sup>				DTaP	DTaP	DTaP		DTaP				DTaP
<i>Haemophilus influenzae</i> type b <sup>4</sup>				Hib	Hib	<i>Hib</i> <sup>4</sup>		Hib		Hib		
Pneumococcal <sup>5</sup>				PCV	PCV	PCV		PCV			PCV PPV	
Inactivated Poliovirus				IPV	IPV		IPV					IPV
Influenza <sup>6</sup>						Influenza (Yearly)						
Measles, Mumps, Rubella <sup>7</sup>							MMR					MMR
Varicella <sup>8</sup>							Varicella					Varicella
Hepatitis A <sup>9</sup>							HepA (2 doses)				HepA Series	
Meningococcal <sup>10</sup>											MPSV4	

 Range of recommended ages

 Catch-up immunization

 Certain high-risk groups

This schedule indicates the recommended ages for routine administration of currently licensed childhood vaccines, as of December 1, 2006, for children aged 0–6 years. Additional information is available at <http://www.cdc.gov/nip/recs/child-schedule.htm>. Any dose not administered at the recommended age should be administered at any subsequent visit, when indicated and feasible. Additional vaccines may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and

other components of the vaccine are not contraindicated and if approved by the Food and Drug Administration for that dose of the series. Providers should consult the respective Advisory Committee on Immunization Practices statement for detailed recommendations. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete a VAERS form is available at <http://www.vaers.hhs.gov> or by telephone, 800-822-7967.



# 2007 Schedule 7-18 yr/olds

DEPARTMENT OF HEALTH AND HUMAN SERVICES • CENTERS FOR DISEASE CONTROL AND PREVENTION

## Recommended Immunization Schedule for Persons Aged 7–18 Years—UNITED STATES • 2007

Vaccine ▼	Age ▶	7–10 years	11–12 YEARS	13–14 years	15 years	16–18 years
Tetanus, Diphtheria, Pertussis <sup>1</sup>	<i>see footnote 1</i>		<b>Tdap</b>		<b>Tdap</b>	
Human Papillomavirus <sup>2</sup>	<i>see footnote 2</i>		<b>HPV (3 doses)</b>		<b>HPV Series</b>	
Meningococcal <sup>3</sup>		<b>MPSV4</b>	<b>MCV4</b>		<b>MCV4<sup>3</sup></b> <b>MCV4</b>	
Pneumococcal <sup>4</sup>			<b>PPV</b>			
Influenza <sup>5</sup>			<b>Influenza (Yearly)</b>			
Hepatitis A <sup>6</sup>			<b>HepA Series</b>			
Hepatitis B <sup>7</sup>			<b>HepB Series</b>			
Inactivated Poliovirus <sup>8</sup>			<b>IPV Series</b>			
Measles, Mumps, Rubella <sup>9</sup>			<b>MMR Series</b>			
Varicella <sup>10</sup>			<b>Varicella Series</b>			



This schedule indicates the recommended ages for routine administration of currently licensed childhood vaccines, as of December 1, 2006, for children aged 7–18 years. Additional information is available at <http://www.cdc.gov/nip/recs/child-schedule.htm>. Any dose not administered at the recommended age should be administered at any subsequent visit, when indicated and feasible. Additional vaccines may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and other components

of the vaccine are not contraindicated and if approved by the Food and Drug Administration for that dose of the series. Providers should consult the respective Advisory Committee on Immunization Practices statement for detailed recommendations. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete a VAERS form is available at <http://www.vaers.hhs.gov> or by telephone, 800-822-7967.

# Advisory Committee On Immunization Practices (ACIP)

- 15 experts on vaccines/immunizations
- Selected by Secretary of Health and Human Services
- Develops written recommendations for childhood and adult vaccines
- Recommended childhood vaccines incorporated into Vaccines for Children Program



# Recommendations vs Requirements

- ACIP makes ***recommendations*** on vaccines for all age groups;
- Texas establishes minimum immunization ***requirements*** for day cares and schools;
- *These are not always the same!*
- There are **no** changes to school requirements for Fall 2007.





**TEXAS**

Department of  
State Health Services

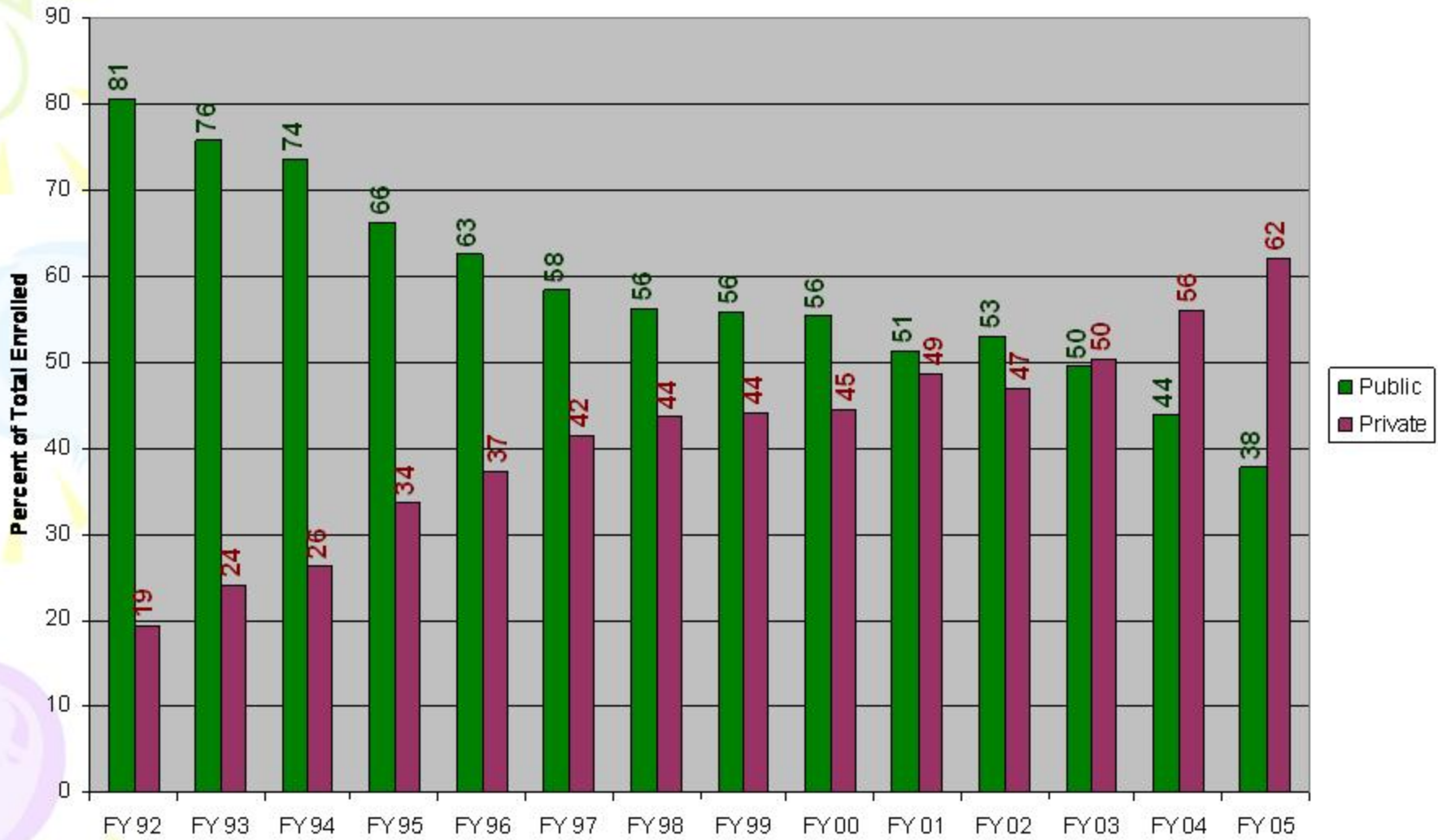
# DSHS Immunization Branch-Organization

Texas Vaccines  
*for* Children



- Texas Vaccines for Children (TVFC)
  - Over 3400 providers
  - Free vaccines for eligible groups birth through 18 years:
    - Medicaid & CHIP
    - Uninsured
    - Underinsured
    - Native Alaskan or Native American Indian

### Percent Doses Administered Public vs. Private Providers







# DSHS Immunization Branch-Organization

- First Quarter 2007
  - 62.4 million records
  - 5.4 million children
  - 2 million children under 6
  - >3,399 online users
  - >37,000 histories generated per month on average

***ImmTrac***  
Texas Immunization Registry





# Immunization Funding

- Centers for Disease Control and Prevention:
  - Vaccines
  - Infrastructure
- State General Revenue:
  - Legislative appropriations
  - Exceptional items
  - Infrastructure





# Children and Influenza



- Rates of infection highest among children
- Rates of serious illness and death highest in elders and children under 2 years of age



# 2007 Recommendations

- All children 6 months to 59 months of age
- Children 6-18 years of age receiving long-term ASA therapy
- Children with chronic medical conditions
- Adults and children in household with children under 5 years, emphasis on persons with children under 6 months/age
- Caregivers of children and elderly





# Influenza Vaccines

- Children 6 through 59 months of age
  - ***Inactivated influenza vaccine only***
  - Fluzone (sanofi pasteur)
- Children 4 years and older
  - Fluzone and Fluvirin (Novartis)
- Children 5 and older
  - Fluzone, Fluvirin, FluMist
- ***New Dosing Instructions!***



# Timing of Influenza Vaccination

- Flu activity can begin as early as October
- Activity peaks 80% of the time in January or later
- Begin giving as soon as vaccine is available
- Offer flu vaccine throughout flu season (December through March)

# Live Attenuated Influenza Vaccine (LAIV)

- Store at refrigerator temperature;
- ***Do not freeze!***
- 5 years of age through 49 years of age
- Same dose regardless of age
- Intranasal; ½ dose each nostril
- Children 9 and over; single dose
- Children 5-8 years old:
  - Two doses
  - Separate doses by 6-10 weeks





# Selected Pediatric Vaccines

- Rotavirus vaccine
- Pneumococcal conjugate vaccine
- Meningococcal vaccine
- Human Papillomavirus vaccine
- Tetanus, Diphtheria, Acellular Pertussis (Tdap)
- 2<sup>nd</sup> dose Varicella
- Combination Vaccines



# Rotavirus Disease

- Causes illness in 2.7 million children annually in US
- Accounts for 40-50% of diarrhea-related hospitalizations
- Most infections between November and May
- 20-60 deaths each year in US

# Rotavirus Vaccine



- RotaTeq
- Oral
- 2, 4, 6 months
- Do not start after 12 weeks of age
- Incidence of intussusception same in study and placebo groups



# Risk Factors for Pneumococcal Disease



- Attend child care
- Sickle cell disease
- Asplenia
- HIV infection
- Alaska native
- African American
- Some American Indian groups
- Cochlear implants

# Pneumococcal Disease in Children



- Pneumonia
- Bacteremia
- Meningitis
- Common cause of acute otitis media



# Pneumococcal Vaccines

- Pneumococcal Conjugate (PCV7):
  - Prevnar
  - 4 doses (2, 4, 6 and 12-15 months/age)
  - More than 90% effective against invasive disease
- Pneumococcal Polysaccharide-Not effective in children under 2 years of age





# PCV 7-Special Circumstances

- Unvaccinated 7-11 months/age
  - Two doses at least 4 weeks apart
  - Booster at 12-15 months
- Unvaccinated 12-23 months/age:
  - Two doses at least 8 weeks apart
- Unvaccinated 24-59 months/age:
  - Single dose



# Pneumococcal Polysaccharide Vaccine

- Children 2 and older who have:
  - Chronic illness
  - Asplenia
  - Immunocompromised state
  - HIV infection
  - Renal failure
  - Nephrotic syndrom
  - Organ transplant

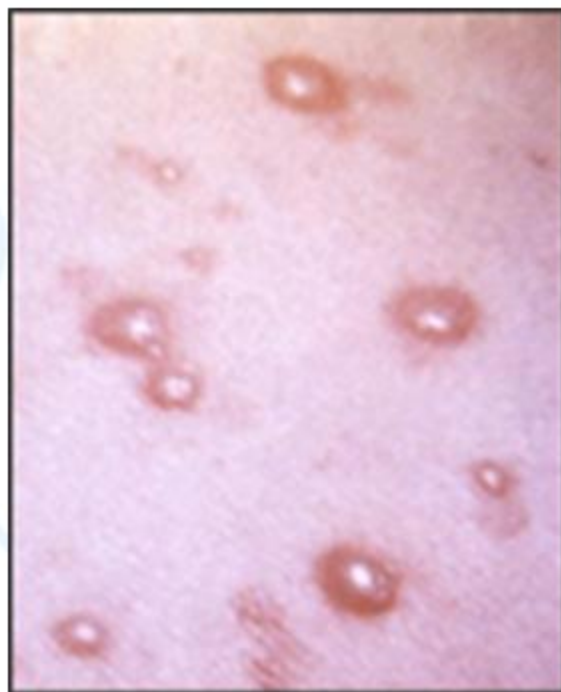


# Recommended for Revaccination

- Persons 2 yrs/age and over with:
  - Asplenia
  - Chronic renal failure
  - Nephrotic syndrome
  - Immunosuppressive conditions



# Varicella 2007 Change in Recommendations



## Adolescents:

- 2 doses 4-8 weeks apart

## Children:

- 2 doses:
  - 1<sup>st</sup> at **12-15 months**
  - 2<sup>nd</sup> at 4-6 years

# Hepatitis A – 2005 Change

- Now recommended for ALL children between 12 to 23 months/age.
- Same dosing for 1-18 years/age
- Two dose schedule:
  - Havrix-Initial dose & 2<sup>nd</sup> **6-12 months later**
  - VAQTA-Initial dose & 2<sup>nd</sup> **6-18 months later**

A decorative background on the left side of the slide features a yellow balloon at the top, a light blue balloon in the middle, and a purple balloon at the bottom. Yellow streamers and small yellow triangles are scattered around the balloons.

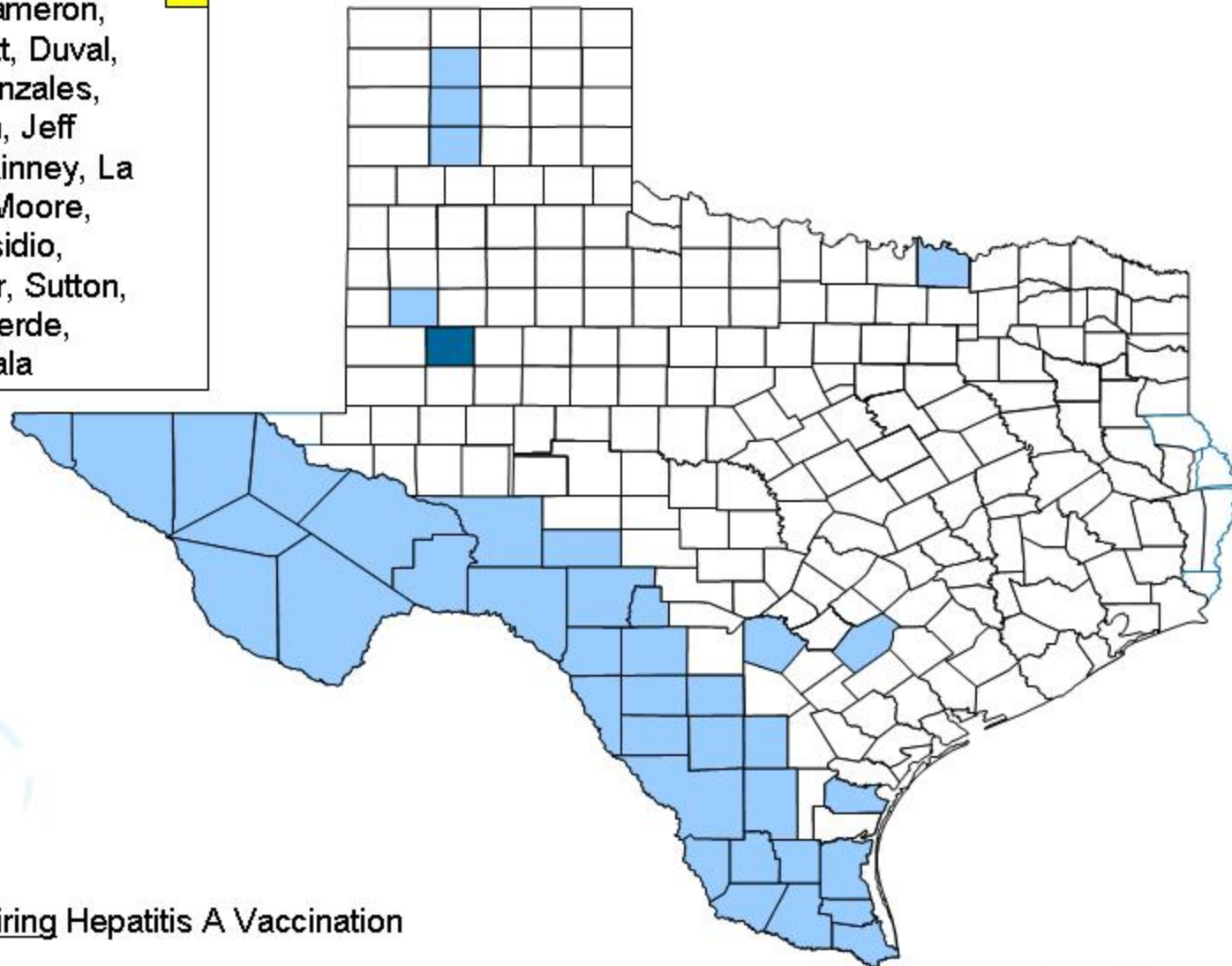
# Hepatitis A Requirements

- Texas changed requirements 9/1/05
- Required statewide for:
  - Children in child care facilities
  - Children in pre-K
- Required in some counties for K-3<sup>rd</sup>



# Texas Counties Requiring Hepatitis A For Grades K - 3

Bexar, Brewster, Brooks, Cameron,  
Crockett, Culberson, Dimmitt, Duval,  
Edwards, El Paso, Frio, Gonzales,  
Grayson, Hidalgo, Hudspeth, Jeff  
Davis, Jim Hogg, Kenedy, Kinney, La  
Salle, Maverick, McMullen, Moore,  
Nueces, Pecos, Potter, Presidio,  
Randall, Real, Reeves, Starr, Sutton,  
Terrell, Terry, Uvalde, Val Verde,  
Webb, Willacy, Zapata, Zavala



40 Counties Requiring Hepatitis A Vaccination



# Strategies to Decrease Hepatitis B Infections

- Prevent perinatal transmission
- Routine vaccination of infants
- Vaccination of high risk children
- Vaccination of adolescents
- Vaccination of high risk adults



# Texas Challenge

- **800 to 1,200 infants are born to HBsAg positive women every year in Texas**
- **In 2005, ONLY 37% to 55% infants were reported and of these infants, only**
  - **89 % received HBIG and first dose Hep B vaccine**
  - **70% completed vaccine series by 8 months**
  - **54% received post vaccination serology testing**





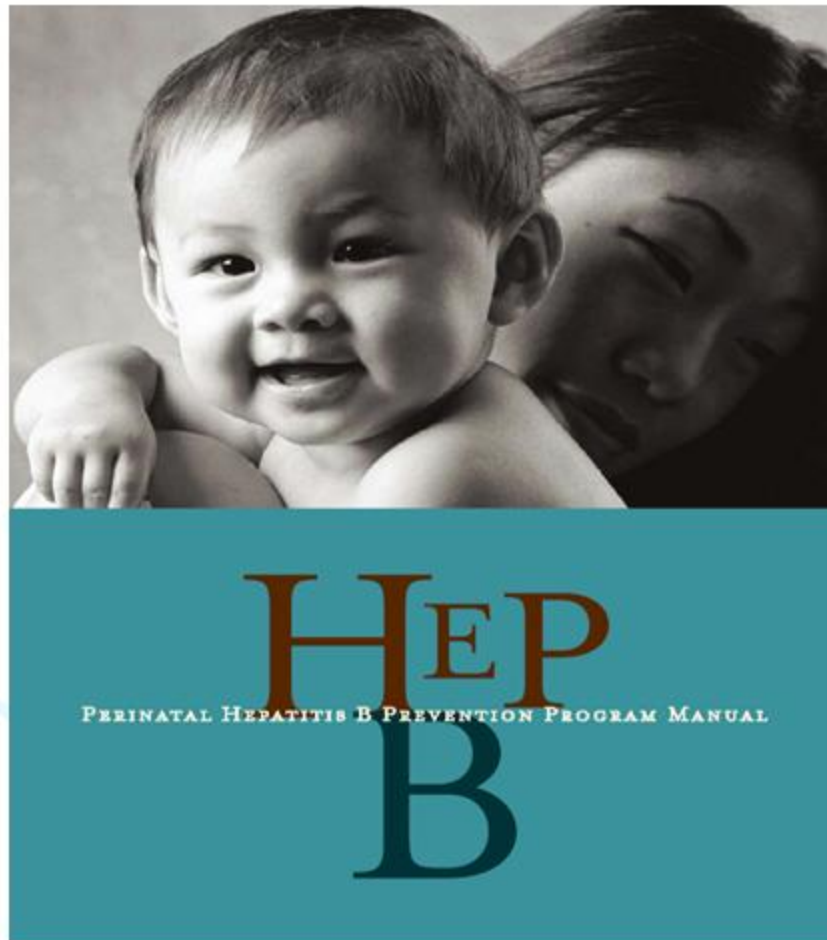
# Hepatitis B

## Screening and Reporting

- **Texas law requires all pregnant women be screened for hepatitis B at first prenatal visit and at the time of delivery for each pregnancy (*Texas Administrative Code Title 25, Part 1 Chapter 97, subchapter F, §97.135* )**
- **Mandatory reporting of all positive HBsAg mothers to DSHS (*Texas Administrative Code Title 25, Part 1 Chapter 97, subchapter A, §97.3*)**

# Manual

<http://www.TexasPerinatalHepB.org>





# Combination Vaccines

- Comvax

- Hep B & Hib

- 2, 4, 12-15 months

- Pediarix

- DTaP, Hep B, IPV

- 2, 4, 6 months

- Licensed for 6 weeks to 7 years

*Neither can be used for the Hep B birth dose!*



# Mumps, Measles, Rubella, and Varicella Vaccine (MMRV)

- ProQuad
- Children 12 months through 12 years of age
- Should not be given to 13+ year olds
- Must be kept frozen at all times
- Supply currently depleted through end of 2007
- Return to using MMR and varicella vaccines

# Adolescent Vaccines



Doctors recommend a pre-teen check-up for all 11 and 12 year olds.



[CLICK HERE  
TO LEARN MORE](#)

Are you looking for  
materials to  
**EDUCATE PARENTS**  
about pre-teen vaccines  
and the **11** and **12** year old  
check-up?

[CLICK HERE TO LEARN MORE](#)





# The CDC Media Campaign Goals

- Motivate caregivers of 11 and 12 year olds to have their pre-teens immunized with Tdap, MCV4 and HPV (for girls).
- Motivate caregivers to get their pre-teens caught up on missed childhood vaccines.
- Through additional targeting of African Americans and Hispanics, increase awareness of immunization recommendations and benefits (and thereby increase immunization rates and prevent disparities).
- Promote the 11 to 12 year old medical check-up.
- Provide healthcare providers with educational materials to facilitate their efforts.

## Recommended Immunization Schedule for Persons Aged 7–18 Years—UNITED STATES • 2007

Vaccine ▼	Age ►	7–10 years	11–12 YEARS	13–14 years	15 years	16–18 years
Tetanus, Diphtheria, Pertussis <sup>1</sup>	<i>see footnote 1</i>		<b>Tdap</b>		<b>Tdap</b>	
Human Papillomavirus <sup>2</sup>	<i>see footnote 2</i>		<b>HPV (3 doses)</b>		<b>HPV Series</b>	
Meningococcal <sup>3</sup>	<b>MPSV4</b>		<b>MCV4</b>		<b>MCV4<sup>3</sup></b> <b>MCV4</b>	
Pneumococcal <sup>4</sup>			<b>PPV</b>			
Influenza <sup>5</sup>			<b>Influenza (Yearly)</b>			
Hepatitis A <sup>6</sup>			<b>HepA Series</b>			
Hepatitis B <sup>7</sup>			<b>HepB Series</b>			
Inactivated Poliovirus <sup>8</sup>			<b>IPV Series</b>			
Measles, Mumps, Rubella <sup>9</sup>			<b>MMR Series</b>			
Varicella <sup>10</sup>			<b>Varicella Series</b>			

	Range of recommended ages
	Catch-up immunization
	Certain high-risk groups

This schedule indicates the recommended ages for routine administration of currently licensed childhood vaccines, as of December 1, 2006, for children aged 7–18 years. Additional information is available at <http://www.cdc.gov/nip/recs/child-schedule.htm>. Any dose not administered at the recommended age should be administered at any subsequent visit, when indicated and feasible. Additional vaccines may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and other components

of the vaccine are not contraindicated and if approved by the Food and Drug Administration for that dose of the series. Providers should consult the respective Advisory Committee on Immunization Practices statement for detailed recommendations. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete a VAERS form is available at <http://www.vaers.hhs.gov> or by telephone, 800-822-7967.





# Adolescent Vaccines

- Human papillomavirus vaccine (HPV)
  - Licensed in 2006
  - Recommendations 3/23/2007
- Meningococcal conjugate vaccine (MCV)
  - Licensed in 2005
  - Simplified recommendations in 2007
- Tetanus, diphtheria, and acellular pertussis (Tdap)
  - Two vaccines licensed in 2005
  - Recommendations in 2006





# Human Papillomavirus Vaccine (HPV)

- Gardasil
  - 3 dose series
  - Given IM
  - Females 9-26 yr/old
  - Recommended at 11-12 years/age

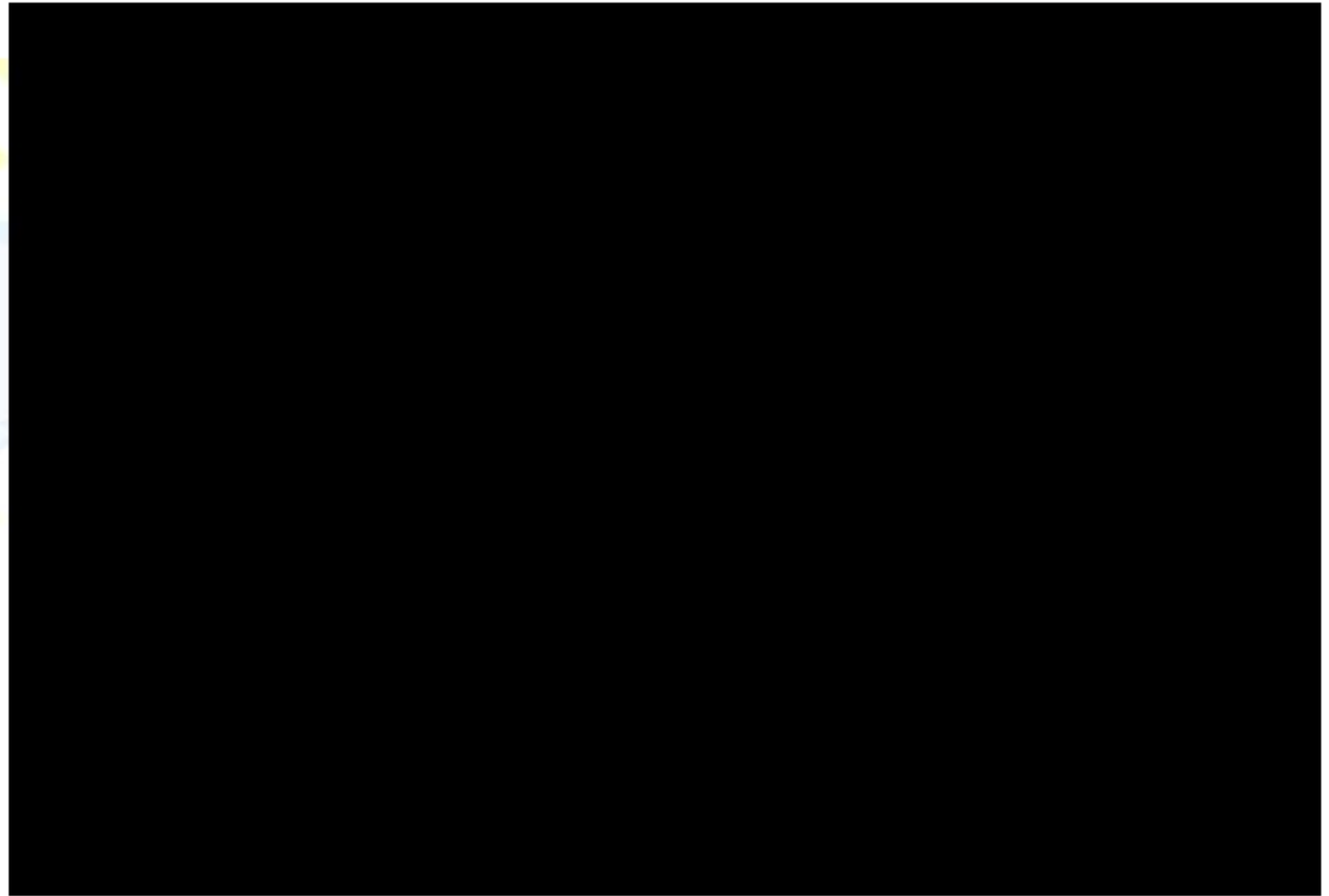


# Meningococcal conjugate vaccine (MCV)

- Menactra
- Single dose
- Recommended ages:
  - 11-18 yrs **New - June 2007**
  - Unvaccinated at high school entry (15 yrs)
  - College freshmen who live in dormitories



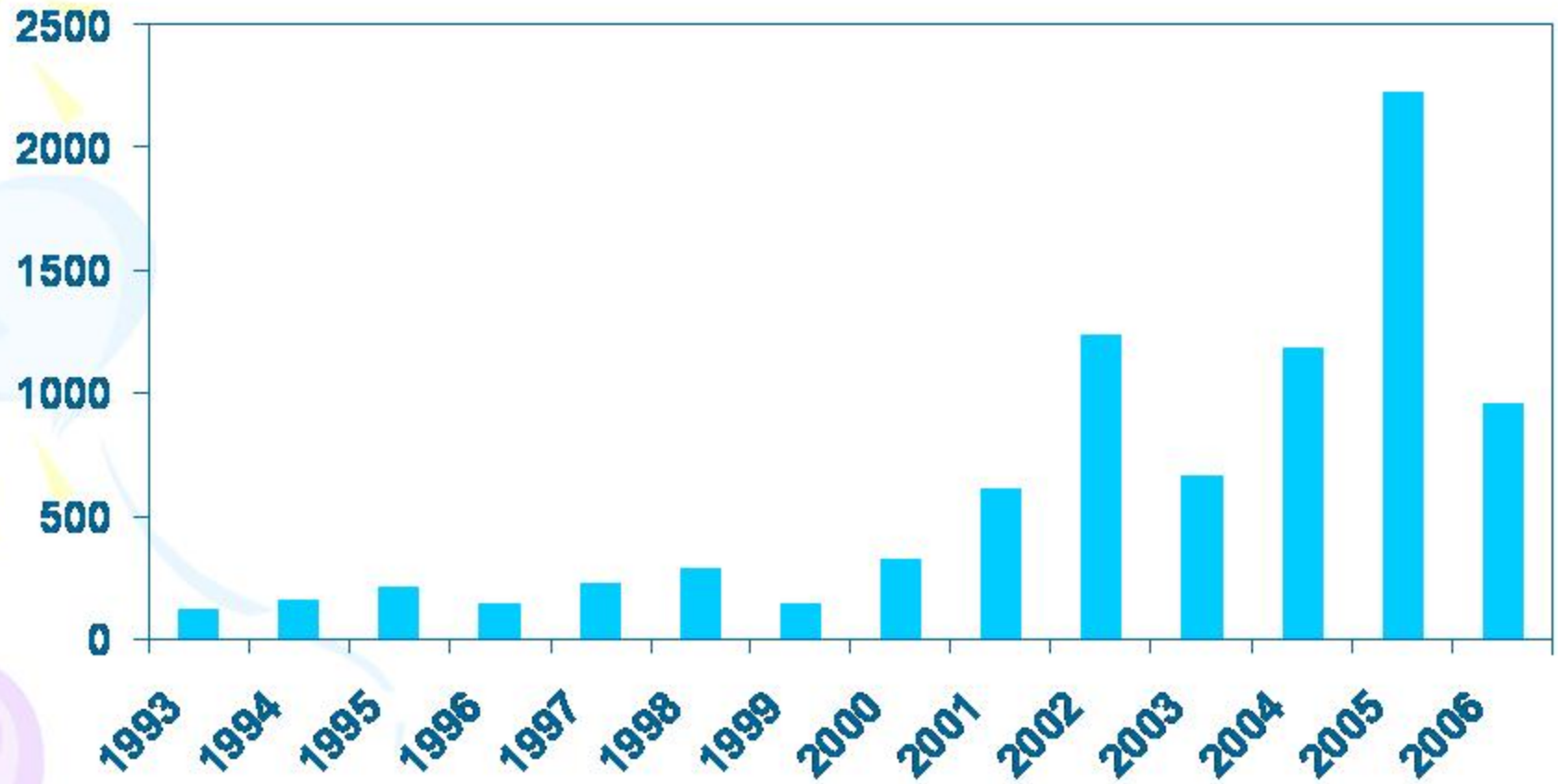
# DSHS Media Campaign



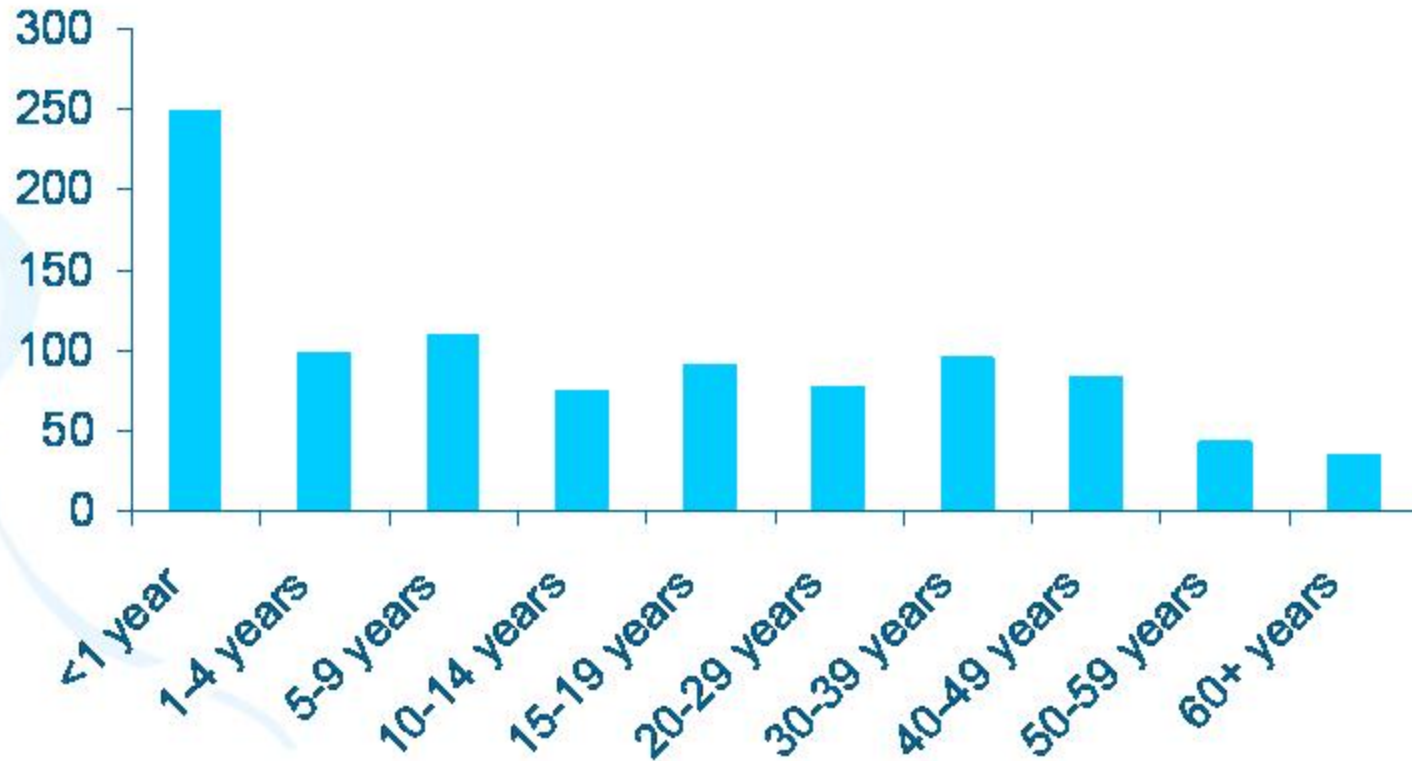




# Pertussis Cases in Texas 1993-2006



# 2006 Texas Pertussis Cases by Age Group







# Tetanus, Diphtheria, Acellular Pertussis (Tdap)

- Replace one dose of Td
- One dose only between 11-18 yr/age
  - BOOSTRIX-10-18 yr/age
  - ADACEL-11-64 yr/age

# Check Your Vials:

is  
it

Tdap  
DTaP  
or Td?

## Tdap: Tetanus, Diphtheria, Pertussis

## new Preteens - Adults

### ADACEL™ (sanofi pasteur, formerly Aventis Pasteur) Ages 11-64 years



### Boostrix® (GlaxoSmithKline) Ages 10-18 years



## DTaP: Diphtheria, Tetanus, Pertussis

## Infants - Young Children

### DAPTACEL® (sanofi pasteur, formerly Aventis Pasteur) Ages 6 weeks up to 7 years



### Infanrix® (GlaxoSmithKline) Ages 6 weeks up to 7 years



### TRIPEDIA® (sanofi pasteur, formerly Aventis Pasteur) Ages 6 weeks up to 7 years



### Pediarix® (GlaxoSmithKline) Ages 6 weeks up to 7 years



## Td: Tetanus, Diphtheria

### Td (sanofi pasteur, formerly Aventis Pasteur) Ages 7 years and older



With the new Tdap vaccine, pertussis protection is available for teens and adults up to age 64. Carefully check your vaccine vials to ensure that you give the right vaccine to the appropriate age groups.

# NEW-Changes to Packaging



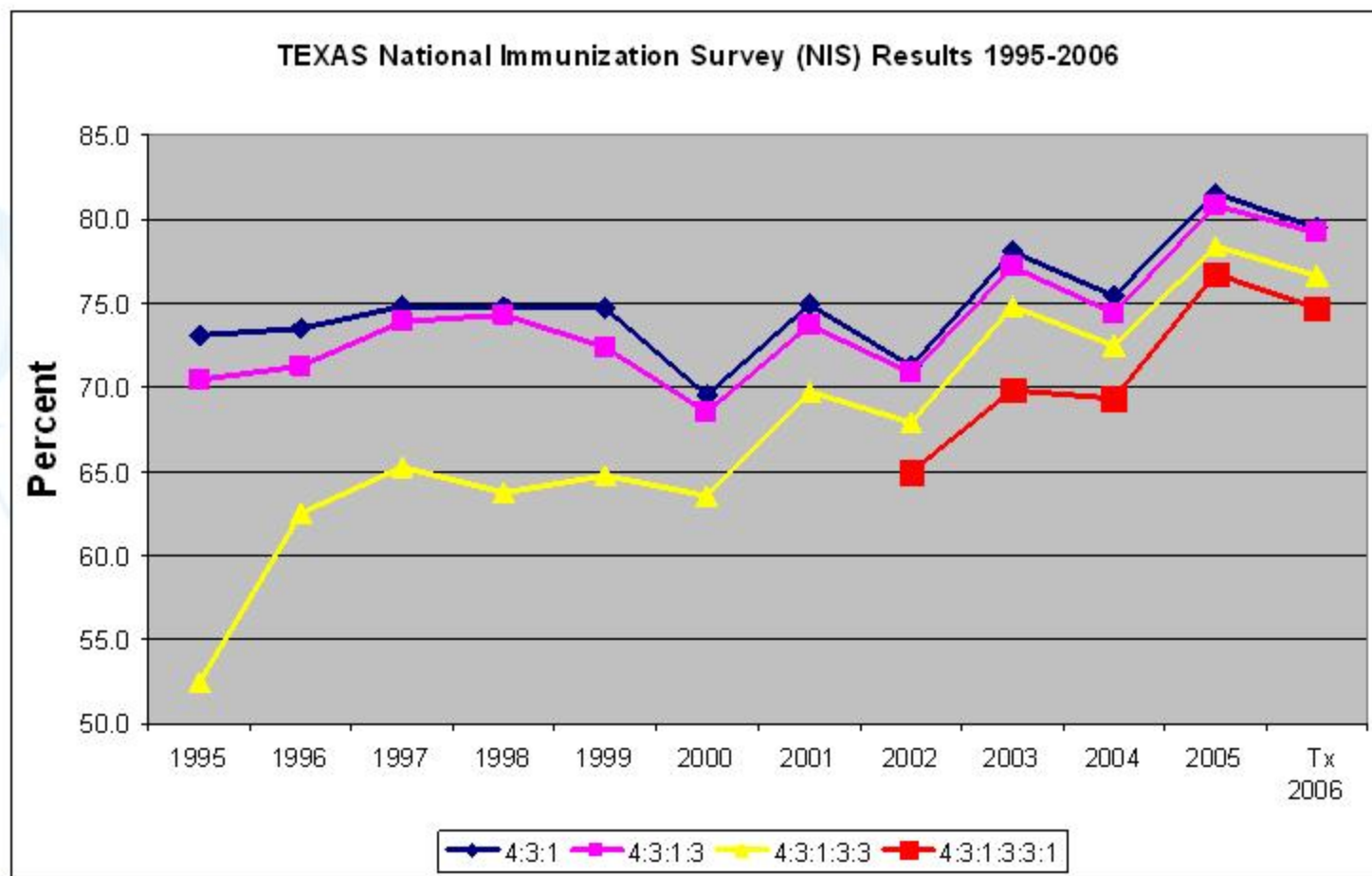




# Vaccine Information Statements (VIS)

- New:
  - Human papillomavirus
  - Zoster
- Revised
- DTaP
- Hepatitis B
- Varicella
- Meningococcal
- Influenza
  - TIV
  - LAIV

# 2006 National Immunization Survey Results



# The 4<sup>th</sup> DTaP

Type and Doses	U.S. 2010 Objective	1997	1998	1999	2000	2001	2002	2003	2004	2005
3rd DTP	90%	92%	NA	92%	91%	93%	93%	95%	92%	Not Available
4th DTP	90%	78%	78%	78%	73%	79%	75%	81%	78%	84%
3rd Polio	90%	88%	88%	85%	83%	88%	87%	90%	87%	93%
3rd Hib	90%	90%	91%	88%	90%	91%	89%	93%	89%	93%
1st MMR	90%	89%	90%	88%	87%	90%	91%	91%	89%	89%
3rd Hep B	90%	82%	79%	82%	85%	87%	86%	90%	88%	92%
1st Varicella	-	23%	44%	59%	74%	84%	83%	88%	85%	89%





# You can make a difference!

- Screen immunization status at each visit;
- Make sure children get the 4<sup>th</sup> DTaP;
- Use reminder/recall or tickler system;
- Follow only true contraindications;
- Give factual information to parents;
- Give all needed vaccinations simultaneously;
- Offer influenza throughout flu season;
- No missed opportunities to vaccinate!

# Help Raise Vaccine Coverage Levels in Texas!



- Become a TVFC provider
- Become an ImmTrac user :
  - Enter shot records
  - Look up immunization histories
  - Reminder and recall functions



# We're Here to Help!

- CDC: <http://www.cdc.gov/vaccines/>
- Website: [www.immunizetexas.org](http://www.immunizetexas.org)
- Toll Free number:  
1-800-252-9152