School Influenza Immunization Project 2009-10 (SIIP)

Training for Volunteers
Fall 2009

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What, Why and How of This Year's Influenza Season

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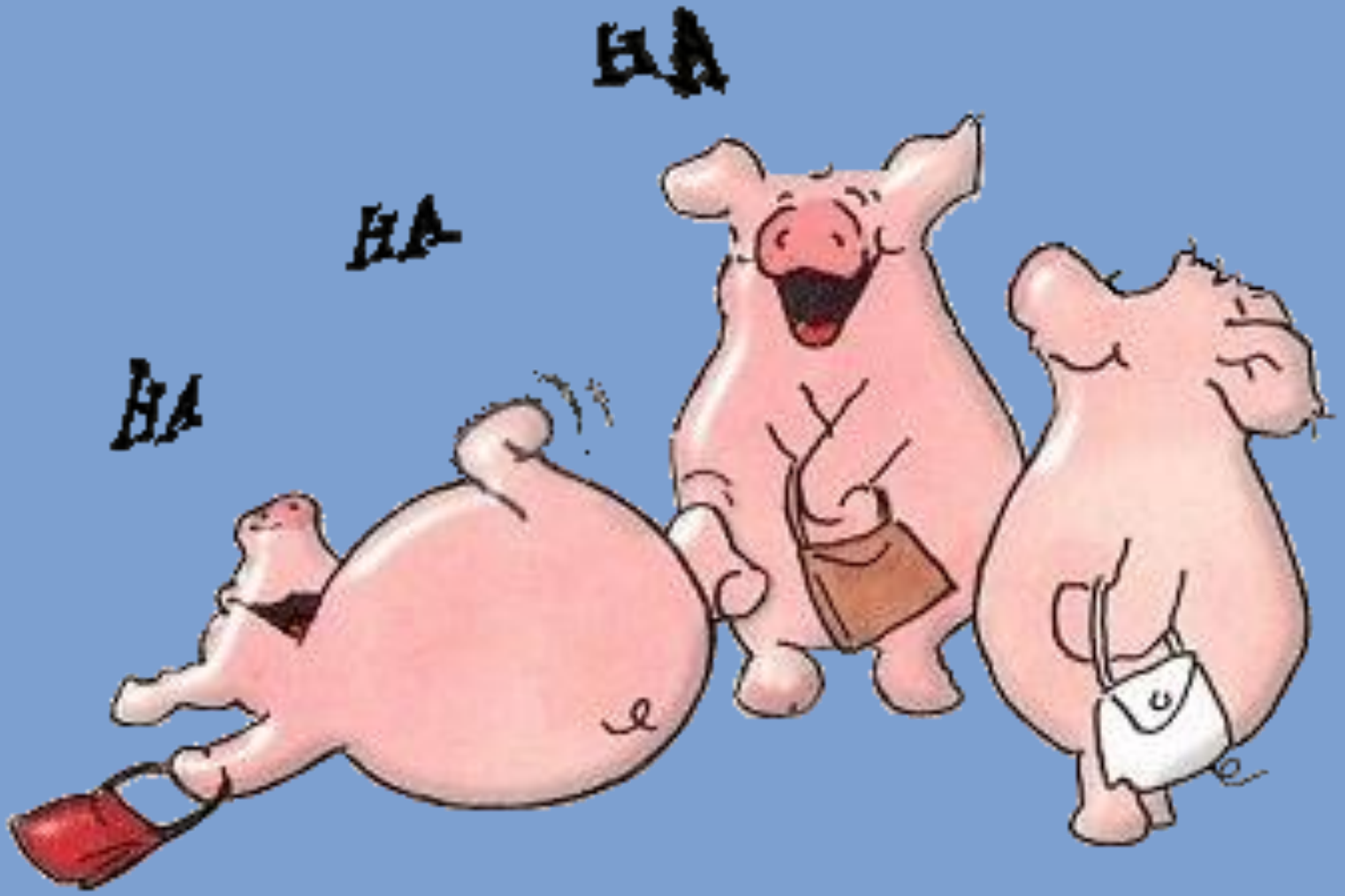
Up-to-date H1N1 Announcement

If you receive an email from the Department of Health

telling you not to eat canned pork

because of swine flu...Ignore it.

It's just


HA
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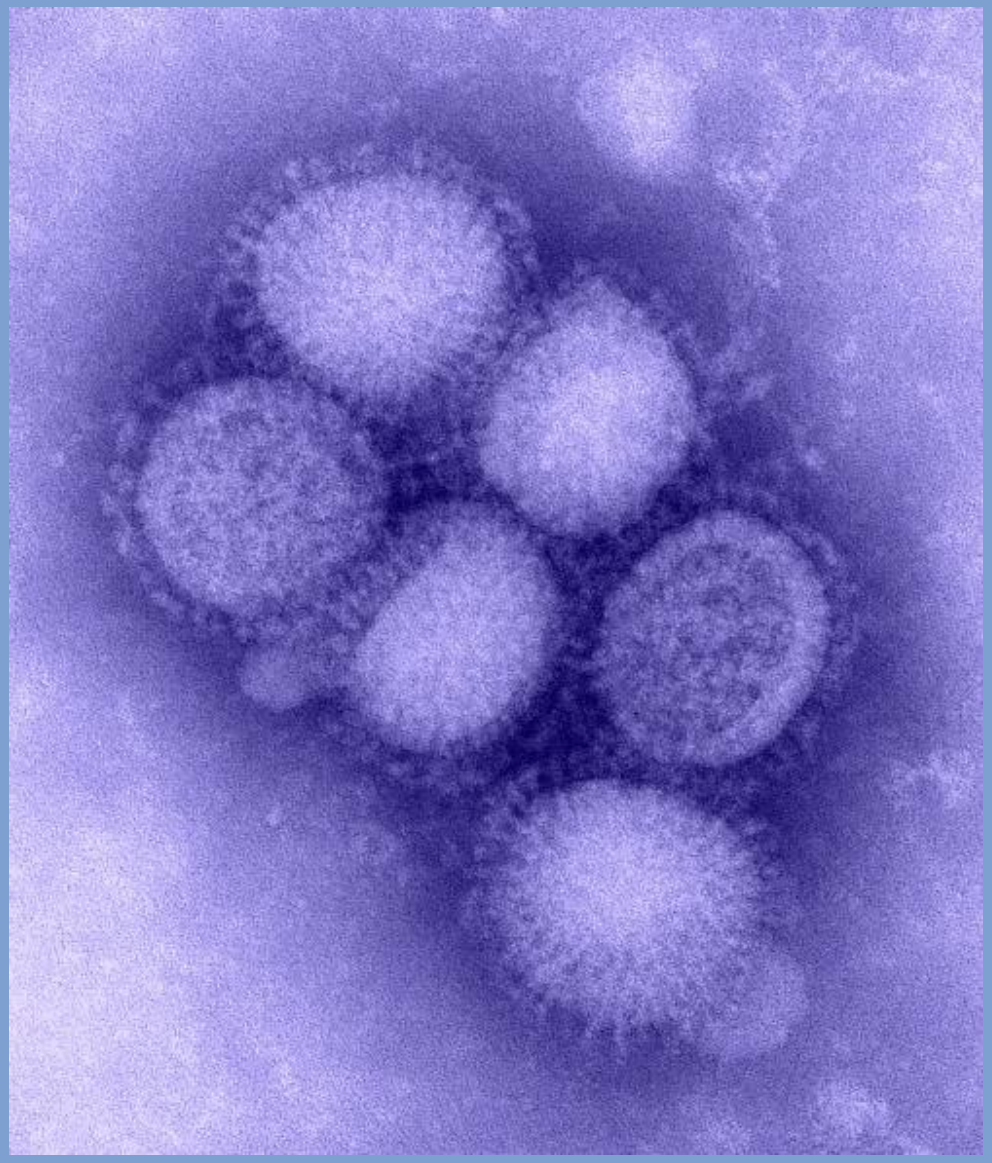
WHAT?

The Enemy



Influenza Virus, the Chameleon

- Antigenic drift
- Antigenic shift
- Antigenic shift

The Valiant Protectors

- Secretory Antibody
  - Mucosal IgA
    - – Anti-hemaglutinin (HA)
    - – Anti-neuraminidase (NA)

Important in resistance to infection

- Systemic Antibody
  - Serum IgG
    - – Anti- HA – Primary form of protection
    - – Anti-NA – May provide additional protection
    - – Anti-structural protein (M protein)

Important in recovery

- Cell-mediated immunity

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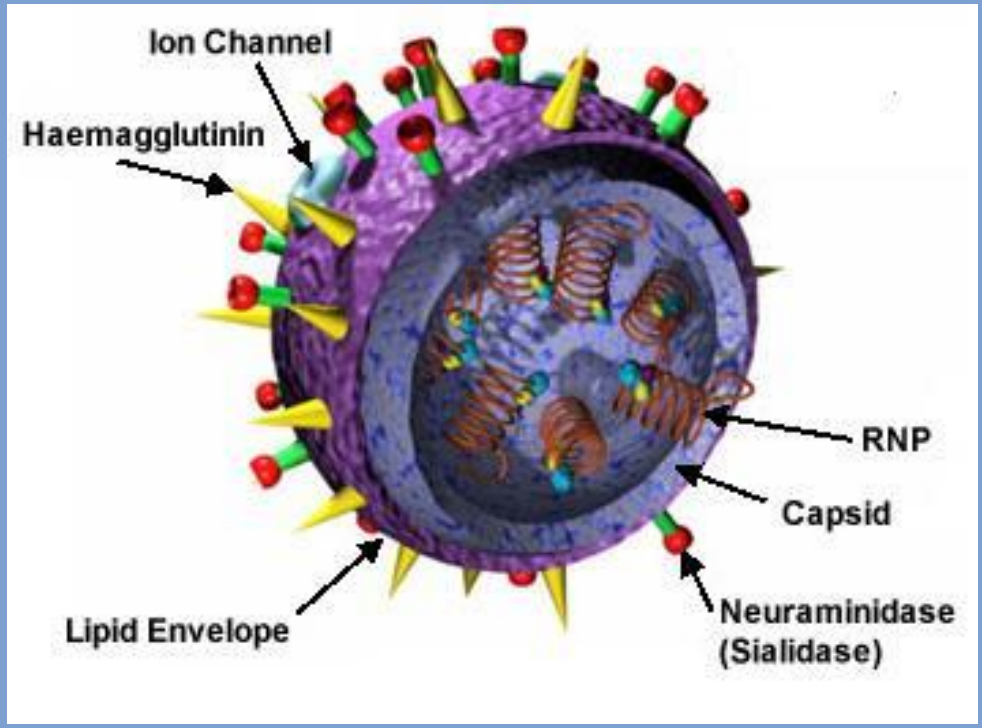
2, 3, 4, or 5 Types of Influenza?

- Seasonal
  - A (H1N1)
  - A (H3N2)
  - B
- 2009 Pandemic (Swine) A (H1N1)
- Avian A (H5N1)



"We must not underestimate an enemy like pandemic (H1N1) 2009, especially now… this is not a time for complacency."

Hebert & MacDonald, CMAJ, August 17, 2009

Novel H1N1 Facts as of 8/28/09

- Cases confirmed or probable:
  U.S. 43,771+, New Mexico 232 (7/24),
- Deaths: U.S. 556 (8/28), N.M. 1 (Aug. 8, 45 y.o. with chronic liver failure, from Sierra County)
- Estimate of total U.S. cases: >1,000,000
- No protection from seasonal flu vaccine; older adults have some protection
- Virus sensitive to oseltamivir (Tamiflu – except for 11 resistant strains so far) and zanamivir (Relenza), not adamantanes

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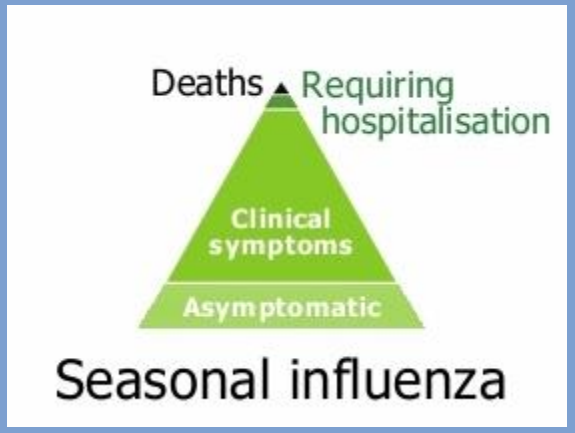
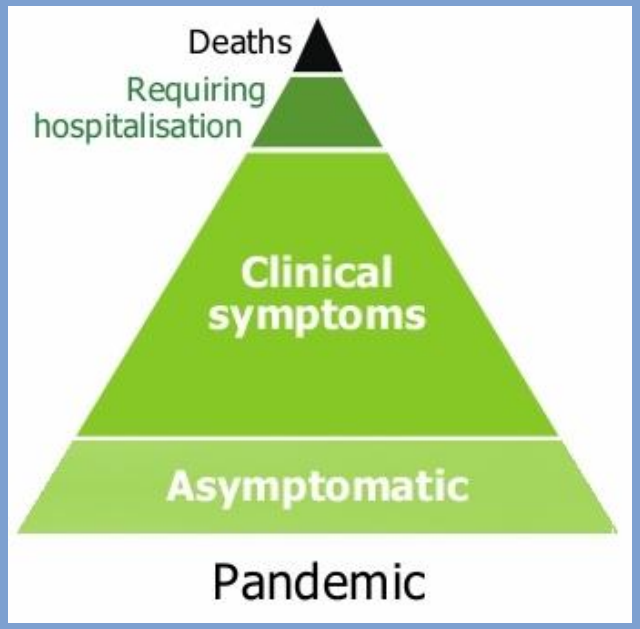
Seasonal Flu Predictions for the Average Year

Flu Predictions for the Coming Year

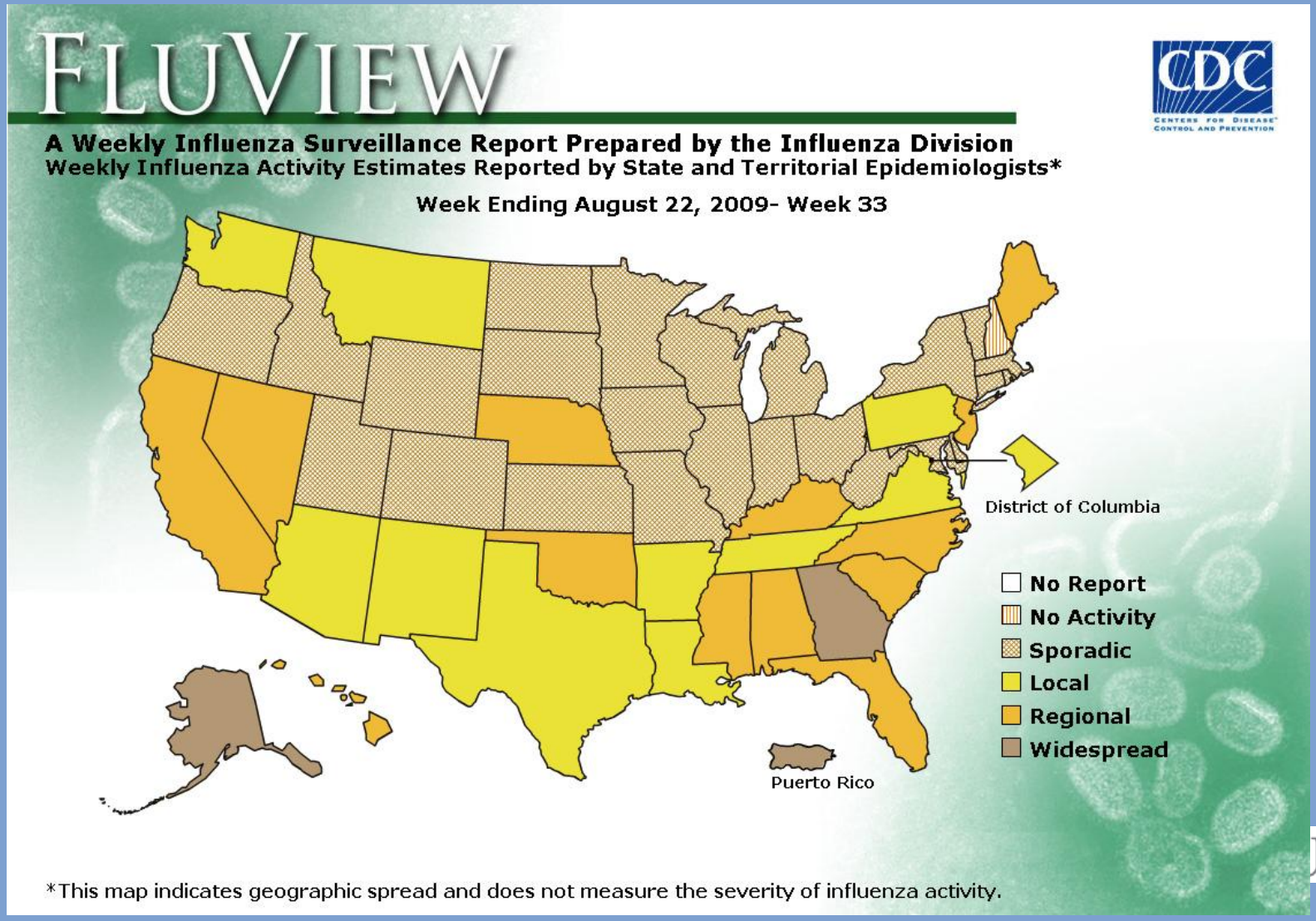
- Deaths: 36,000
- Hospitalizations: 200,000
- Doctor Visits, etc. – millions



- Deaths: 90,000?
- Hospitalizations: 600,000?
- Doctor Visits, etc. – many millions



The U.S. Situation As of August 22

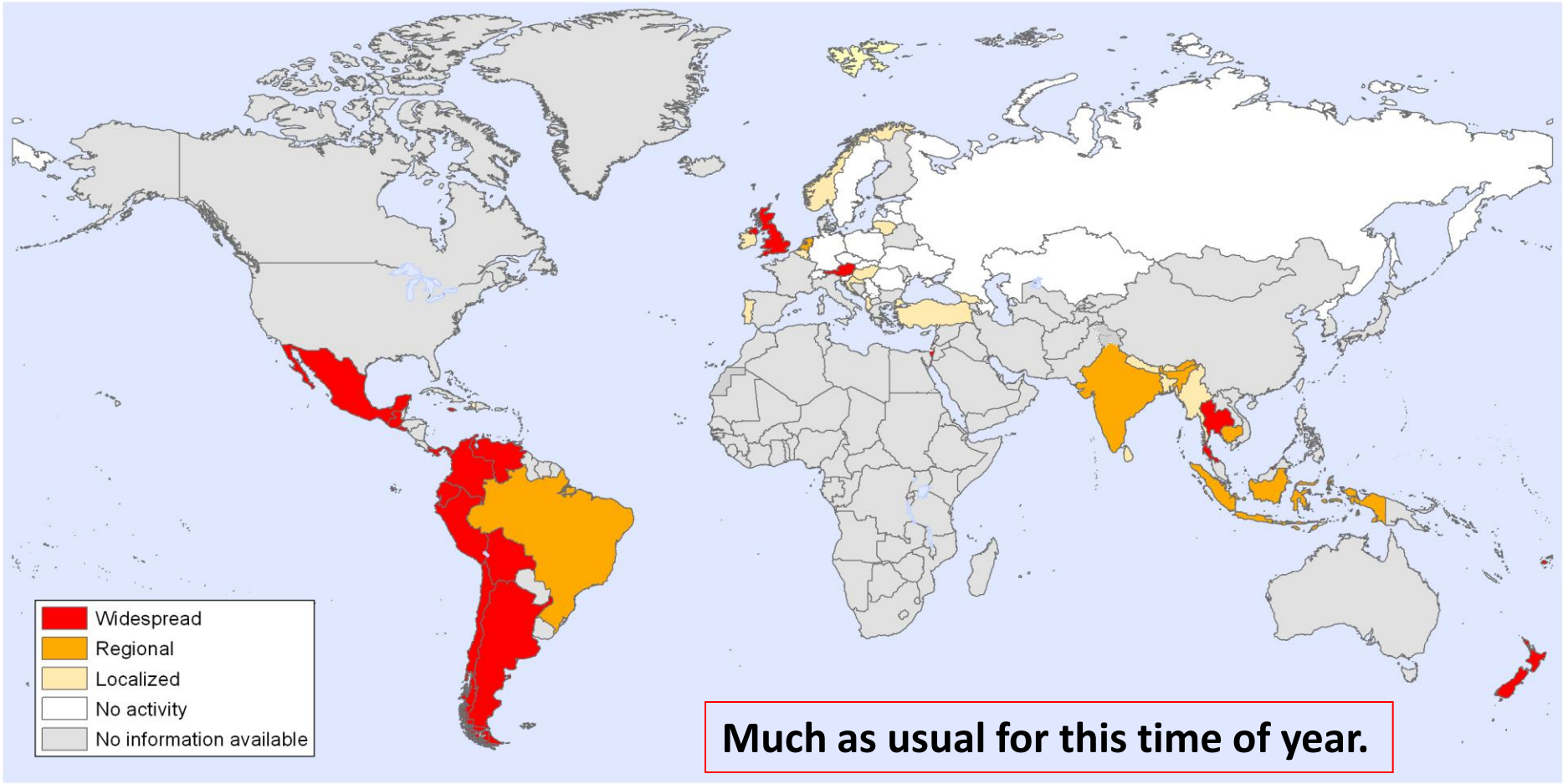


The World Situation As of August 15

Geographic spread of influenza activity

(Geographic spread reflects the number and distribution of regions within a country reporting influenza activity.)

Status as of Week 32
03 Aug - 09 Aug 2009



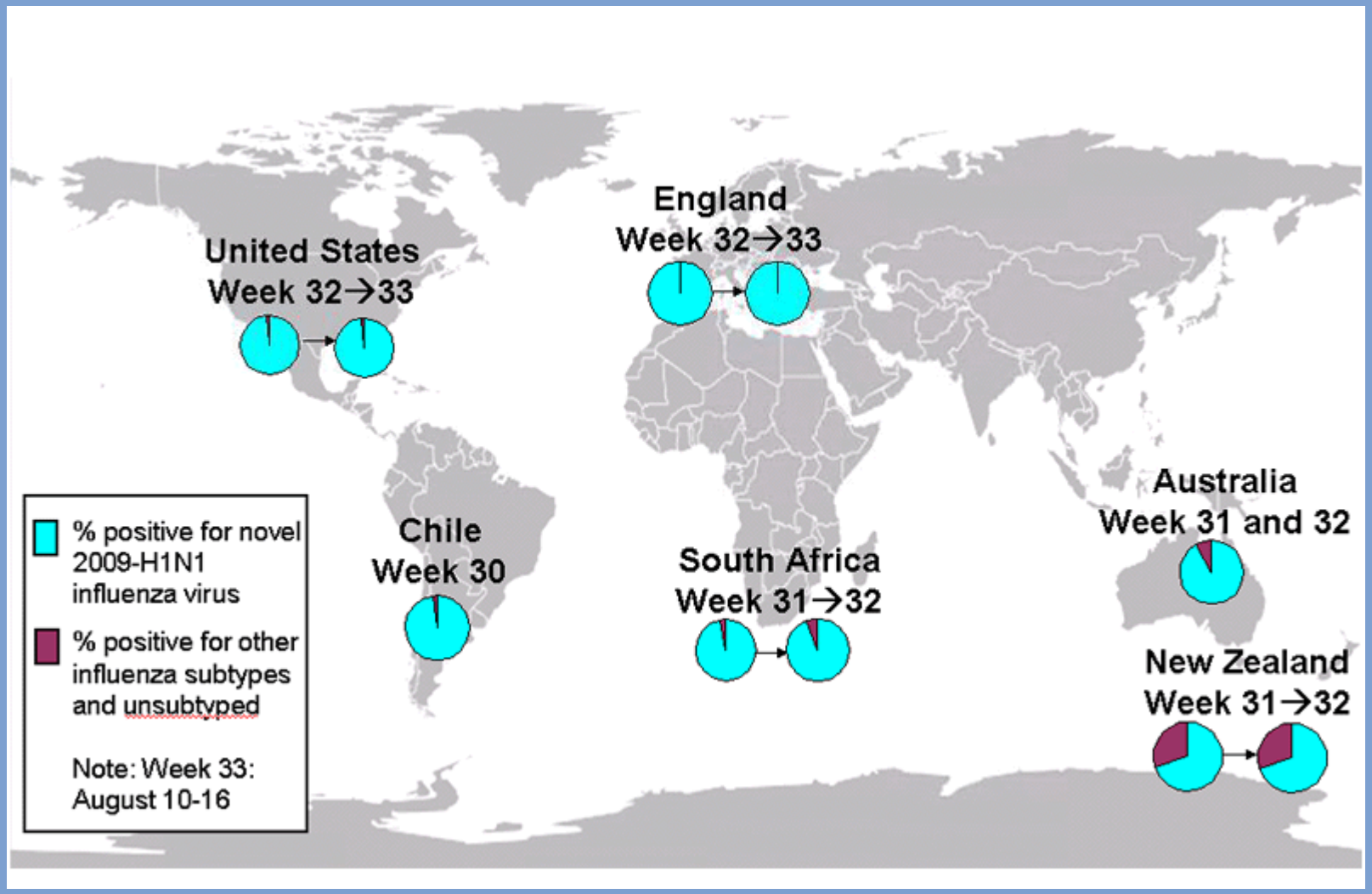
Much as usual for this time of year.

Map produced: 19 August 2009 11:39 GMT

Data Source: World Health Organization
Map Production: Public Health Information and Geographic Information Systems (GIS)
World Health Organization

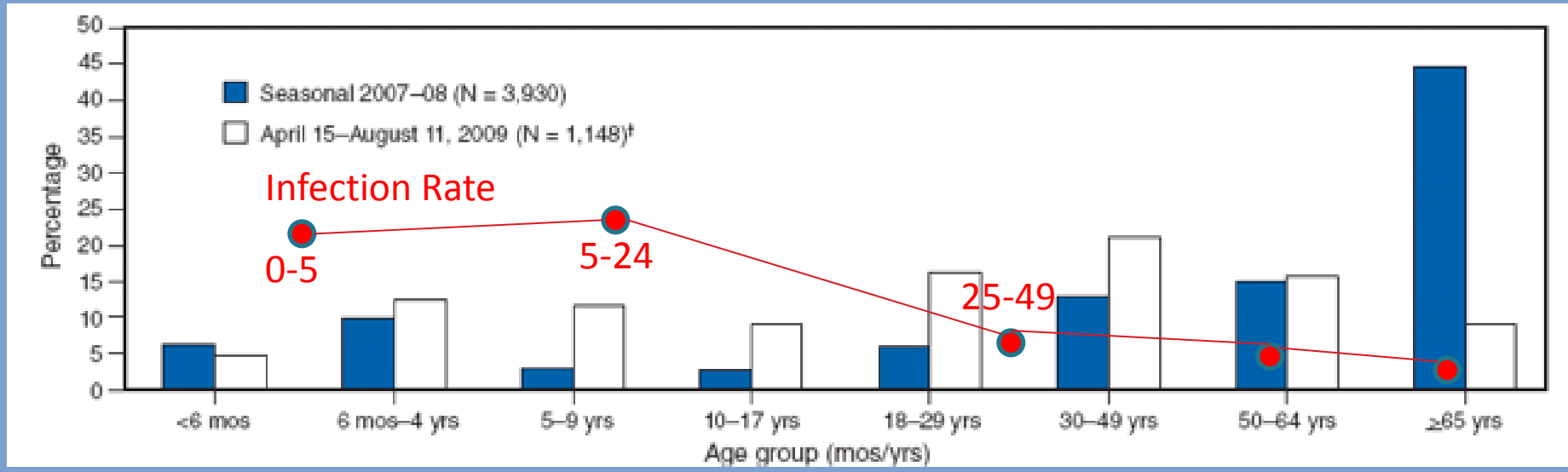
World Health Organization

But What Is Unusual…



Hospitalized Patients - Ages

Infected Patients - Ages



Questions for the 2009-2010 Influenza Season

- How bad will it be?
- Which viruses will be around?
- Who will be at highest risk?
- How many shots/sprays will each person need?
  - Trivalent inactivated (shot) or Flumist® (spray)
  - Seasonal and swine (novel H1N1)
- How sensitive will the viruses be to antivirals?
- How good will be the match between vaccines and circulating viruses?
- Where will everyone get their shots/sprays?

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WHY?

Infectious disease experts expect the unexpected with respect to swine flu

We must be ready for various scenarios.

– NEJM editorial

Which Scenario Do We Want?

- An uncontrolled disaster?

New Orleans after
Hurricane Katrina, August 2005

- A prepared response?

Production of influenza vaccine

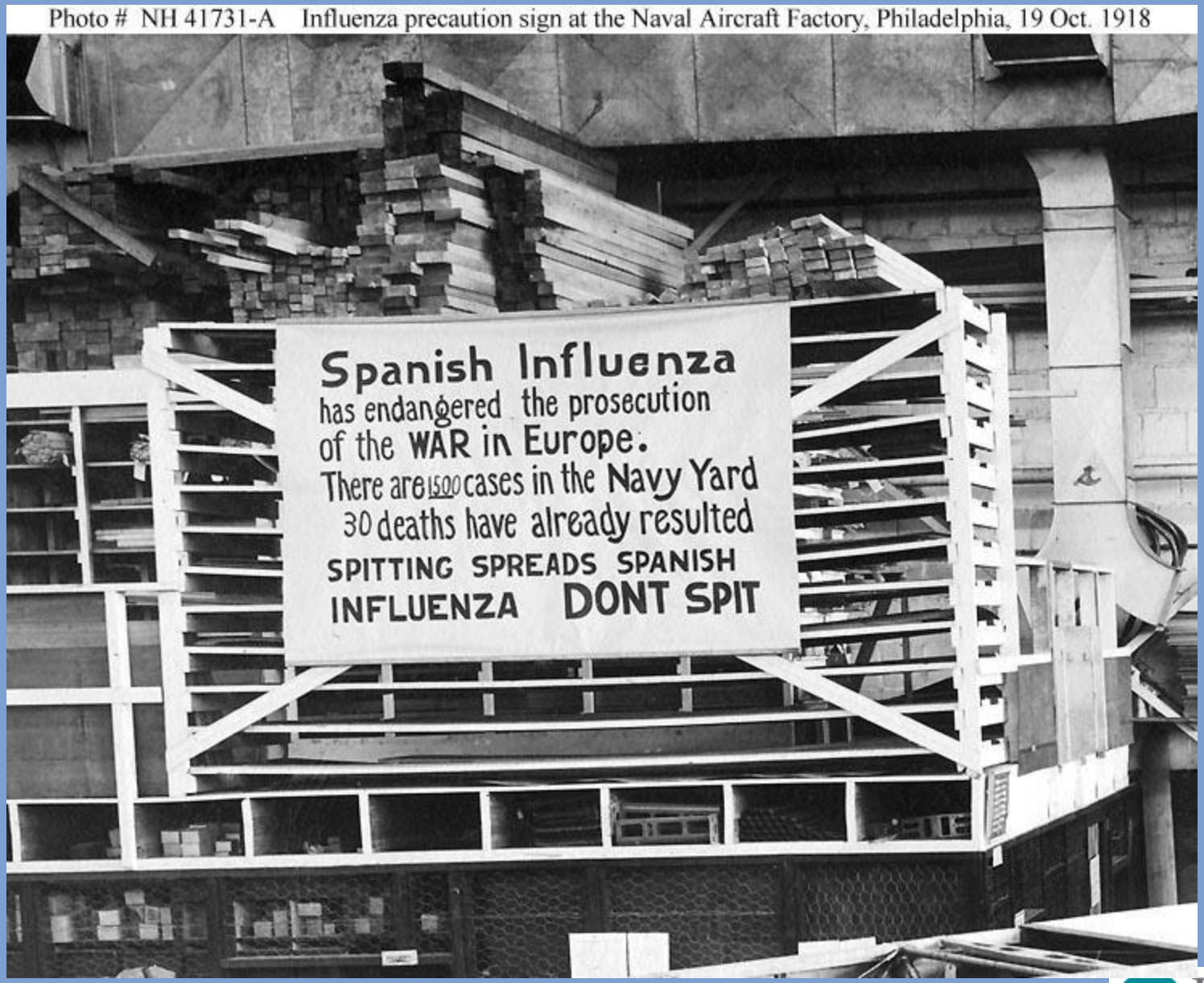


Photo # NH 41731-A Influenza precaution sign at the Naval Aircraft Factory, Philadelphia, 19 Oct. 1918
Spanish Influenza
has endangered the prosecution
of the WAR in Europe.
There are 1500 cases in the Navy Yard
30 deaths have already resulted
SPITTING SPREADS SPANISH
INFLUENZA DONT SPIT

U.S. Naval Center during 1918 epidemic.

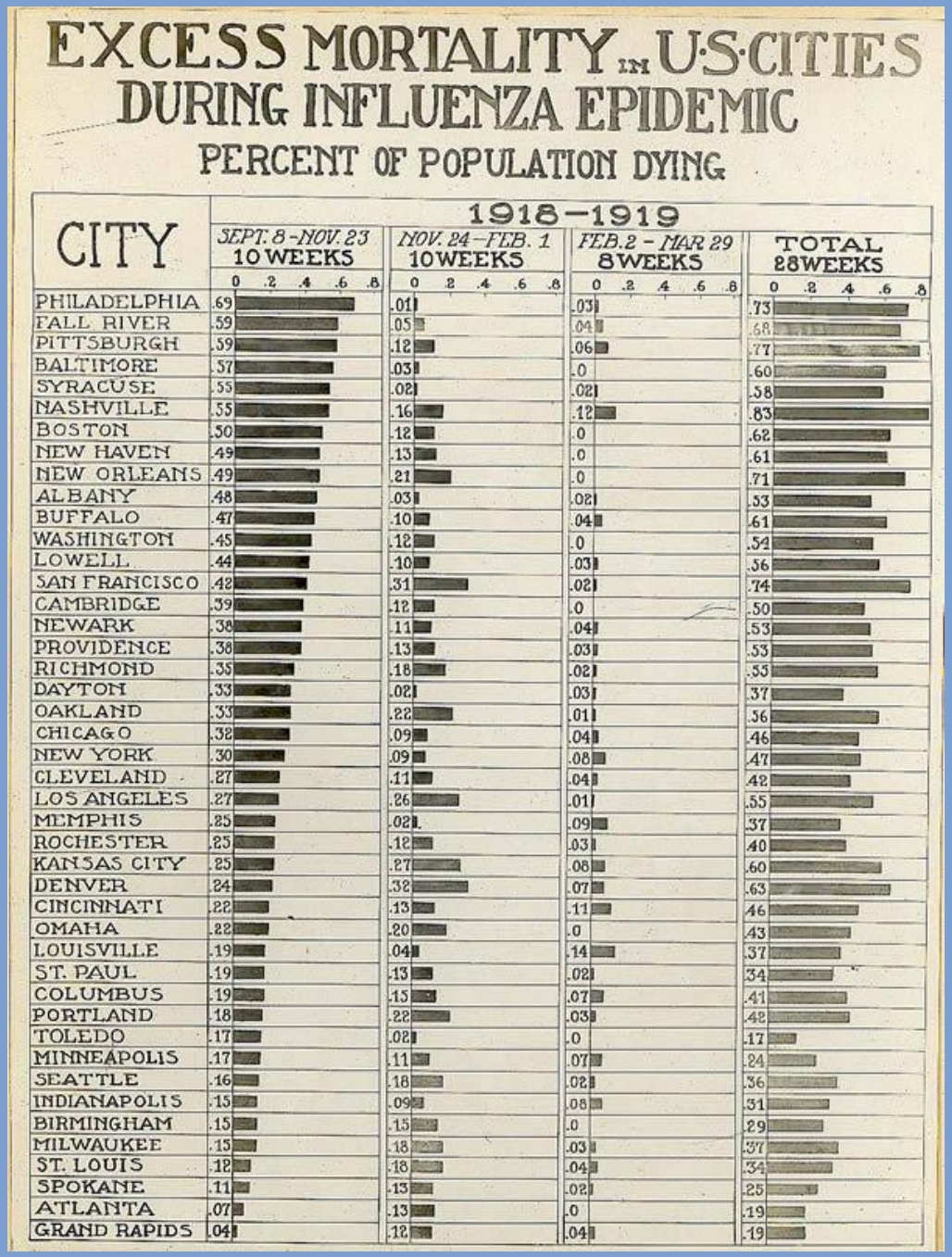
DDLEBURY, VERMONT, FRIDAY, OCTOBER 4, 1

DEATH TOLL AND SICK LIST IS ONE OF THE HEAVIEST ON RECORD

Practically Every State in the Union is Affected; Innumerable Cases in the County

Several Funerals Will be Held Tomorrow—All Public Meetings Have Been Cancelled——College is Under Martial Law

Victims of the 1918 influenza outbreak in Kansas.



EXCESS MORTALITY IN U·S·CITIES DURING INFLUENZA EPIDEMIC

PERCENT OF POPULATION DYING

1918–1919

CITY	SEPT. 8 – NOV. 23 10 WEEKS	NOV. 24 – FEB. 1 10 WEEKS	FEB. 2 – MAR 29 8 WEEKS	TOTAL 28 WEEKS
	0 .2 .4 .6 .8	0 .2 .4 .6 .8	0 .2 .4 .6 .8	0 .2 .4 .6 .8
PHILADELPHIA	.69	.01	.03	.73
FALL RIVER	.59	.05	.04	.68
PITTSBURGH	.59	.12	.06	.77
BALTIMORE	.57	.03	.0	.60
SYRACUSE	.55	.02	.02	.58
NASHVILLE	.55	.16	.12	.83
BOSTON	.50	.12	.0	.62
NEW HAVEN	.49	.13	.0	.61
NEW ORLEANS	.49	.21	.0	.71
ALBANY	.48	.03	.02	.53
BUFFALO	.47	.10	.04	.61
WASHINGTON	.45	.12	.0	.54
LOWELL	.44	.10	.03	.56
SAN FRANCISCO	.42	.31	.02	.74
CAMBRIDGE	.39	.12	.0	.50
NEWARK	.38	.11	.04	.53
PROVIDENCE	.38	.13	.03	.53
RICHMOND	.35	.18	.02	.55
DAYTON	.33	.02	.03	.37
OAKLAND	.33	.22	.01	.56
CHICAGO	.32	.09	.04	.46
NEW YORK	.30	.09	.08	.47
CLEVELAND	.27	.11	.04	.42
LOS ANGELES	.27	.26	.01	.55
MEMPHIS	.25	.02	.09	.37
ROCHESTER	.25	.12	.03	.40
KANSAS CITY	.25	.27	.08	.60
DENVER	.24	.32	.07	.63
CINCINNATI	.22	.13	.11	.46
OMAHA	.22	.20	.0	.43
LOUISVILLE	.19	.04	.14	.37
ST. PAUL	.19	.13	.02	.34
COLUMBUS	.19	.15	.07	.41
PORTLAND	.18	.22	.03	.42
TOLEDO	.17	.02	.0	.17
MINNEAPOLIS	.17	.11	.07	.24
SEATTLE	.16	.18	.02	.36
INDIANAPOLIS	.15	.09	.08	.31
BIRMINGHAM	.15	.15	.0	.29
MILWAUKEE	.15	.18	.03	.37
ST. LOUIS	.12	.18	.04	.34
SPOKANE	.11	.13	.02	.25
ATLANTA	.07	.13	.0	.19
GRAND RAPIDS	.04	.12	.04	.19

Albuquerque population, 1918-19:
15,000
Deaths at 0.8%=120

Albuquerque metro population, 2009:
850,000
Deaths at 0.8% = 6800

At 0.1% = 850!

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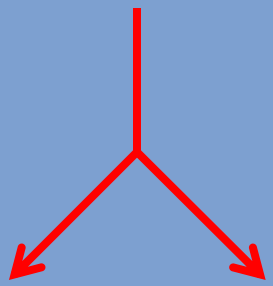
Spanish influenza was a more severe version of your typical flu, with the usual sore throat, headaches and fever. However, in many patients, the disease quickly progressed to something much worse than the sniffles. Extreme chills and fatigue were often accompanied by fluid in the lungs. One doctor treating the infected described a grim scene: "The faces wear a bluish cast; a cough brings up the blood-stained sputum. In the morning, the dead bodies are stacked about the morgue like cordwood."

1918 and 2009

- 1918-1919
  - No color photos
  - News travels slowly, slowed by censorship
  - During World War I
  - Malnutrition widespread
  - No antibiotics
  - No antivirals
  - No vaccines
  - Well-developed public health infrastructure
- 2009-2010
  - Colorful pictures, not just language
  - News instantaneous
  - Only “small” wars going on
  - Malnutrition rare in developed countries
  - Antibiotics available
  - Antivirals available
  - Public health infrastructure has taken big hits
  - Vaccines may prevent many cases

Approach to H1N1 for Fall 2009



- Vaccinate as many as possible
- Priorities established by CDC
  - Emergency and Health care workers*
  - People 6 mo.-24 yrs.*
  - Pregnant women*
  - Those who care for children <6 mo. old*
  - Adults with conditions making them at risk

- Plan for epidemic of moderate or high severity
- Health Department has plan in place

http://www.health.state.nm.us/flu/providers/Master%20Pandemic%20Influenza%20Appendicies%2010March2006%20FINAL1.pdf

HOW?

Two Types of Vaccine

- Live Attenuated Influenza Vaccine (LAIV)

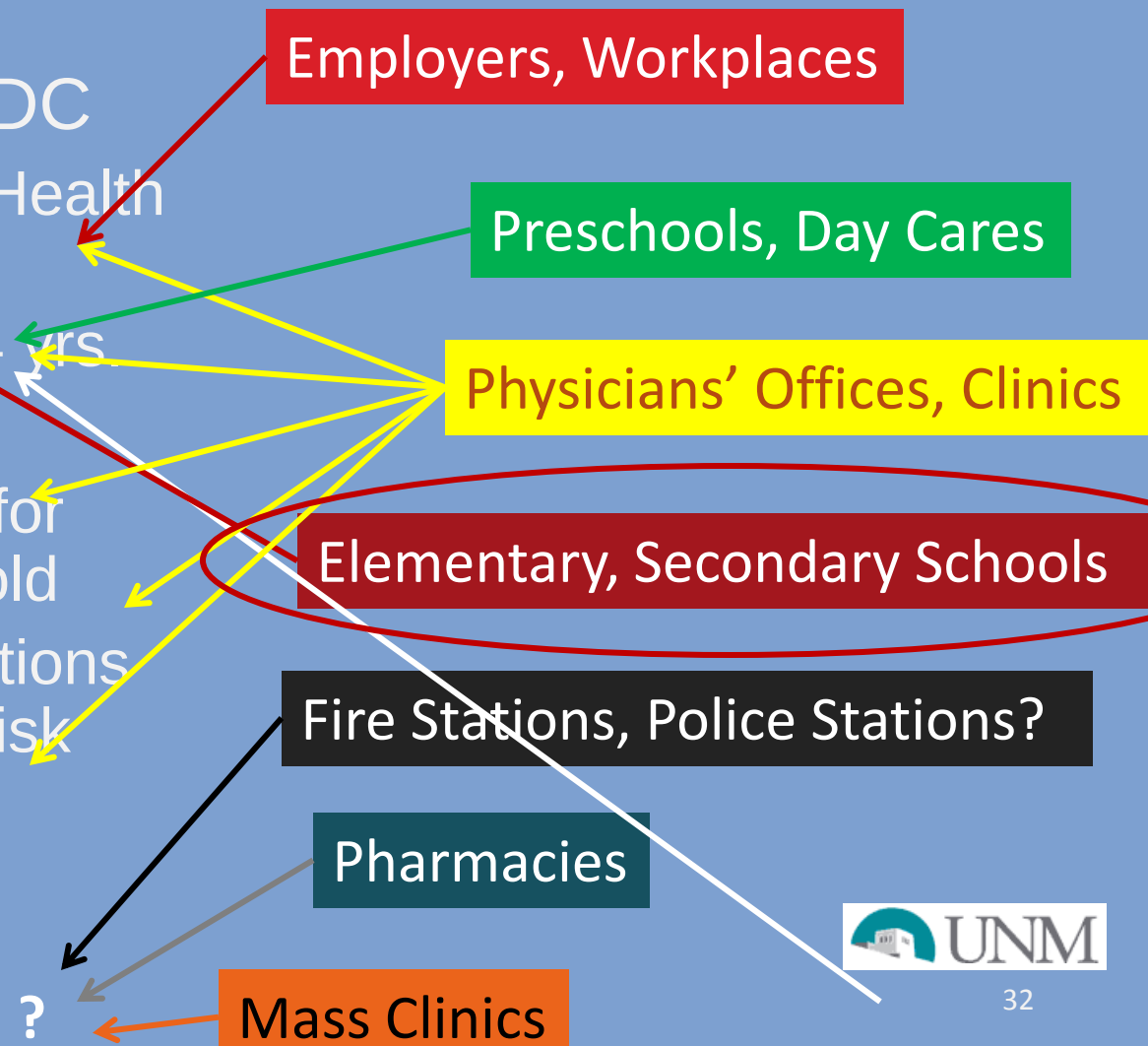
- Trivalent Inactivated Vaccine (IM)

Indications and Contraindications

	Indications	Contraindications
TIV (injectable)	Patients over 6 months	Anaphylaxis to eggs Severe allergic reaction to prior dose Moderate or severe illness
LAIV (nasal spray)	Healthy patients 2 – 49 yrs.	Anaphylaxis to eggs Severe allergic reaction to prior dose Chronic diseases with increased risk from influenza (asthma, diabetes…) Pregnancy Immunosuppressed patients Moderate or severe illness

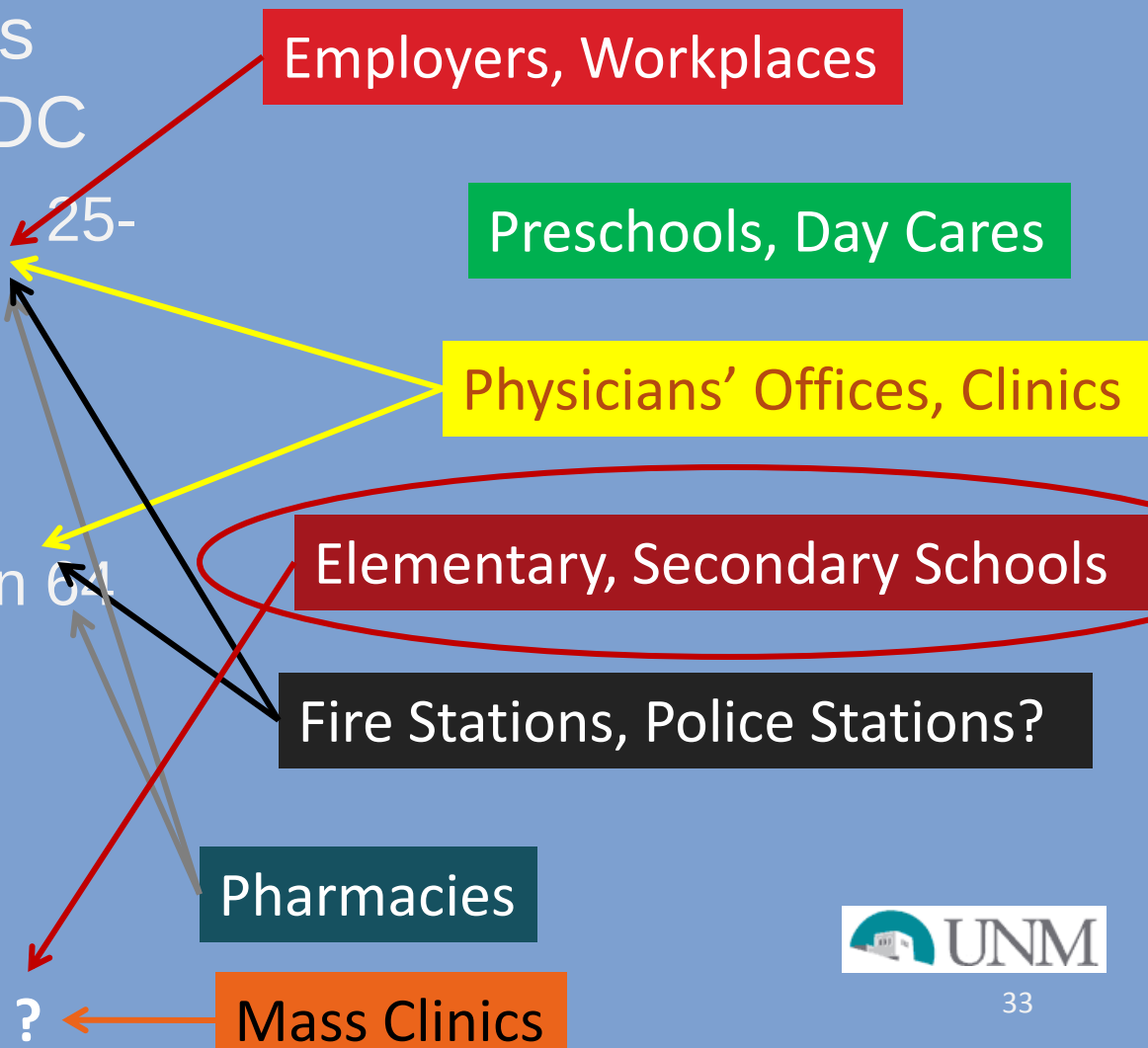
How to Immunize All Those People

- First Priorities as established by CDC
  - Emergency and Health care workers
  - People 6 mo. -24 yrs.
  - Pregnant women
  - Those who care for children <6 mo. old
  - Adults with conditions making them at risk



How to Immunize All Those People – Next Priorities

- Second Priority as established by CDC
  - All Others Aged 25-64
- Third Priority
  - Those Older Than 64



2.5 Million Doses in a Few Months

- Problems to Solve
  - Seasonal Influenza
  - Novel H1N1 (Swine) Influenza
  - Uncertain Vaccine Arrival
  - Vaccine Storage
  - Staged Vaccine Arrival
  - Tiered Delivery of H1N1 Vaccine

VS.

- Assets
  - NM State Department of Health
  - CDC/WHO
  - Nurses, including retired nurses
  - Physicians of NM
  - Pharmacists
  - Emergency Preparedness People
  - Students
  - Hospitals
  - Service Organizations (Kiwanis, Rotary…)

855000	Population of Albuquerque Metro Area in mid 2009 minus 6 months' births
1710000	Number of doses of novel H1N1 vaccine needed
709650	Population needing seasonal flu vaccine (83% of over 6 months pop.)
33750	Estimate of number of children between 6 months and 9 years, 3/4 needing two shots
2453400	Total doses of influenza vaccine needed for Albuquerque metro area

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Challenges and Opportunities: Why You Should Be Involved

- Chance to prevent serious disease
- Interaction with other health professionals in cooperative effort
- Learn concepts of the most important public health measure: immunization
- Learn about the most important vaccine-preventable disease: influenza
- Learn about design and execution of a public health response to potential disaster
- And…

Epidemics Since 1919

- 1957: Asian influenza

  "When U.S. children went back to school in the fall, they spread the disease in classrooms and brought it home to their families. Infection rates were highest among school children, young adults, and pregnant women in October 1957. Most influenza-and pneumonia-related deaths occurred between September 1957 and March 1958. The elderly had the highest rates of death." Total deaths 69,800.

- 1968: Hong Kong influenza

  "This pandemic did not gain momentum until near the school holidays in December. Since children were at home and did not infect one another at school… Those over the age of 65 were most likely to die. The same virus returned in 1970 and 1972."

- 1976: Swine Flu

  Never moved outside the Fort Dix area.

This is Our Pandemic!

We Have to Get It Right,

We and Our Partners.

For both pandemic and seasonal influenza, we'd like to have you involved!

Some Thoughts on Mass Immunization Clinics

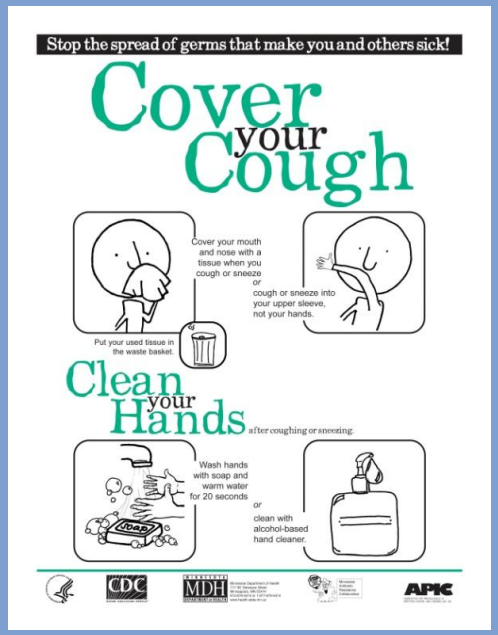
Anna Pentler, MPH, MBA
Executive Director
New Mexico Immunization Coalition

How to Immunize the Masses

- Bring the clinic to where people are (e.g. schools)
- Map out clinic flow, waiting areas, onsite education
- Develop clear roles for clinic staff and volunteers (ICS)
- Plan and prepare ahead of time

Mass Clinics

- Clearly mark different stations/areas
- Use waiting time for education on Influenza prevention
  - VIS
  - Cover your cough
  - Hand washing
  - Pandemic Influenza
    - upcoming clinics
    - who needs to be vaccinated



Mass Clinic Considerations

- Crowds
  - Mass clinic may be loud and not have much privacy
  - People may be unhappy to have wait a long time
  - People may be fearful
  - Children may cry, scream, run away
  - Teens (and others) may faint

Mass Clinic Considerations

- Safety
- Emergency plan and equipment
- Food and water for staff and volunteers
- Weather (if people will be waiting outdoors)


First Choice
COMMUNITY HEALTHCARE
SOUTH VALLEY CENTER

Special Considerations with Children

- Distraction, entertainment, calming techniques help
- Never force a child to get a shot or nasal spray if parent is not there, even if consent has been given


BALLOONS BALLONS GLOBOS

Special Considerations with Children

- Children and teens should always be seated when getting vaccinated
- Importance of post-vaccine 15 min. waiting period


Clifford's
DAY WITH DAD
Clifford's
DAY WITH DAD
CHICKEN
JOE

Summary

- Mass clinics can be effective way to quickly immunize large numbers of people
- Must be well-planned
- Must consider the audience to be immunized
- Mass clinics should be a positive experience for everyone!

PAPERWORK AND VACCINE ADMINISTRATION

Michel Disco, RPh
UNM College of Pharmacy

PAPERWORK

- INFORMED CONSENT
  - VIS
  - Screening questions
  - Safety
- DOCUMENTATION
  - Signature
  - Vaccine information

Informed Consent

- Patient/child name, DOB, phone
  - Contact information
- VIS – Vaccine Information Statement
  - Required by Federal, State law
  - TIV and LAIV
- Screening Questions - safety
- Consent – “give consent for administration of vaccine”

SCREENING QUESTIONS (TIV)

1. Is the person to be vaccinated sick today?

- There is no evidence that acute illness reduces vaccine efficacy or increases vaccine adverse events. Persons with an acute febrile illness usually should not be vaccinated until their symptoms have improved. Minor illnesses with or without fever do not contraindicate use of influenza vaccine. Do not withhold vaccination if a person is taking antibiotics.

Screening Question TIV

2. Does the person to be vaccinated have an allergy to eggs or to a component of the vaccine?

- Allergic reactions to any vaccine component can occur.
- The majority of reactions probably are caused by residual egg protein. Although current influenza vaccines contain only a limited quantity of egg protein, this protein can induce immediate allergic reactions among persons who have severe egg allergy. If a person can eat eggs, they can receive inactivated influenza vaccine.
- FluZone® (sanofi pasteur) contains gelatin as a stabilizer; therefore a history of anaphylactic reaction to gelatin is a contraindication.
- Some inactivated influenza vaccines contain thimerosal as a preservative. Most persons with sensitivity to thimerosal, such as that found in contact lens solution, do not experience reactions to thimerosal administered as a component of vaccines..

Screening Question TIV

3. Has the person to be vaccinated ever had a serious reaction to influenza vaccine in the past?

- Patients reporting a serious reaction to a previous dose of inactivated influenza vaccine should be asked to describe their symptoms.
- Immediate—presumably allergic—reactions are usually a contraindication to further vaccination against influenza.
- Fever, malaise, myalgia, and other systemic symptoms most often affect persons who are first-time vaccines. These mild-to-moderate local reactions are not a contra-indication to future vaccination.

Screening Question TIV

4. Has the person to be vaccinated ever had Guillain-Barré syndrome?

- It is prudent to avoid vaccinating persons who are not at high risk for severe influenza complications but who are known to have developed Guillain-Barré syndrome (GBS) within 6 weeks after receiving a previous influenza vaccination.
- Although data are limited, the established benefits of influenza vaccination for the majority of persons who have a history of GBS, and who are at high risk for severe complications from influenza, justify yearly vaccination.

Screening Questions - LAIV

1. Is the person to be vaccinated sick today?

- There is no evidence that acute illness reduces vaccine efficacy or increases vaccine adverse events. Persons with an acute febrile illness usually should not be vaccinated until their symptoms have improved. Minor illnesses with or without fever do not contraindicate use of influenza vaccine. Do not withhold vaccination if a person is taking antibiotics.
- Same as TIV question.

Screening Question LAIV

2. Does the person to be vaccinated have an allergy to eggs or to a component of the influenza vaccine?

- History of anaphylactic reaction—such as hives, wheezing, or difficulty breathing, or circulatory collapse or shock (not fainting)—after eating eggs or receiving any component of the intranasal live attenuated influenza vaccine (LAIV, trade name FluMist®) is usually a contraindication for further doses.

Screening Question LAIV

3. Has the person to be vaccinated ever had a serious reaction to intranasal influenza vaccine in the past?

- Patients reporting a serious reaction to a previous dose of LAIV should be asked to describe their symptoms. Immediate—presumably allergic—reactions are usually a contraindication to further vaccination with LAIV.

Screening Question LAIV

4. Is the person to be vaccinated younger than age 2 years or older than age 49 years?

- LAIV is not licensed for use in persons younger than age 2 years or older than age 49 years.

Screening Question - LAIV

5. Does the person to be vaccinated have a long-term health problem with heart disease, lung disease, asthma, kidney disease, metabolic disease (e.g., diabetes), anemia, or other blood disorders?

- Persons with any of these health conditions should not be given the LAIV (live vaccine). Instead, they should be vaccinated with the injectable influenza vaccine (TIV).

Screening Question LAIV

6. If the person to be vaccinated is a child age 2 through 4 years, in the past 12 months, has a healthcare provider ever told you that he or she had wheezing or asthma?

- LAIV is not recommended for children at this age with possible reactive airways disease (e.g., history of asthma or recurrent wheezing or whose parent or guardian answers yes to this question). Instead, they should be given TIV.

Screening Question - LAIV

7. Does the person to be vaccinated have a weakened immune system because of HIV/AIDS or another disease that affects the immune system, long-term treatment with drugs such as steroids, or cancer treatment with x-rays or drugs?

- Persons with weakened immune systems should not be given the LAIV. Instead, they should be given TIV.

Screening Question LAIV

8. Is the person to be vaccinated receiving aspirin therapy or aspirin-containing therapy?

- Because of the theoretical risk of Reye's syndrome, children and teens on aspirin therapy should not be given LAIV. Instead they should be vaccinated with the injectable influenza vaccine.

Screening Question LAIV

9. Is the person to be vaccinated pregnant or could she become pregnant within the next month?

- Pregnant women or women planning to become pregnant within a month should not be given LAIV (live vaccine). All pregnant women should, however, be vaccinated with the injectable influenza vaccine.

Screening Question LAIV

10. Has the person to be vaccinated ever had Guillain-Barré syndrome?

- It is prudent to avoid vaccinating persons who are not at high risk for severe influenza complications but who are known to have developed Guillain-Barré syndrome (GBS) within 6 weeks after receiving a previous influenza vaccination.

Screening Question LAIV

11. Does the person to be vaccinated live with or expect to have close contact with a person whose immune system is severely compromised and who must be in a protective environment (such as in a hospital room with reverse air flow)?

- Injectable influenza vaccine is preferred for persons who have close contact with severely immunosuppressed persons during periods in which the immunosuppressed person requires care in a protective environment.

Screening Question - LAIV

12. Has the person to be vaccinated received any other vaccinations in the past 4 weeks?

- Persons who were given an injectable live virus vaccine (e.g., MMR, varicella, or yellow fever) in the past 4 weeks should wait 28 days before receiving LAIV.
- There is no reason to defer giving LAIV if they were vaccinated with an inactivated vaccine or if they have recently received blood or other antibody-containing blood products (e.g., IG).

DOCUMENTATION

VIS – date given, language

Vaccine –
- Lot number
- Expiration date
- Manufacturer
- Administered: where, needle gauge

Provider – signature, date

DOCUMENTATION

- NMSIIS
  - web based system
  - training
- Card for patient
  - track flu vaccinations
    - Seasonal and novel H1N1

Emergency Management

- Localized
- Psychological
- Anaphylaxis

Emergency Management

- Local – injection site
  - Swelling, soreness – apply cold compress
  - Bleeding – Adhesive compress, pressure

- Psychological fright/syncope
  - Fright – patient sitting
  - Paleness, sweating, dizziness – sit, cold
  - Fall – loss of consciousness

Emergency Management

- Anaphylaxis – onset of itching, erythema, urticaria, angioedema, severe bronchospasm, SOB, shock, abdominal cramping, CV collapse

- Observe patient for generalized symptoms
  - Activate EMS, 911
  - Epinephrine, diphenhydramine
  - Monitor closely
  - Record all information

Vaccine Administration

Epidemiology and Prevention
of Vaccine-Preventable Diseases

National Immunization Program
Centers for Disease Control and Prevention

Revised January 2007

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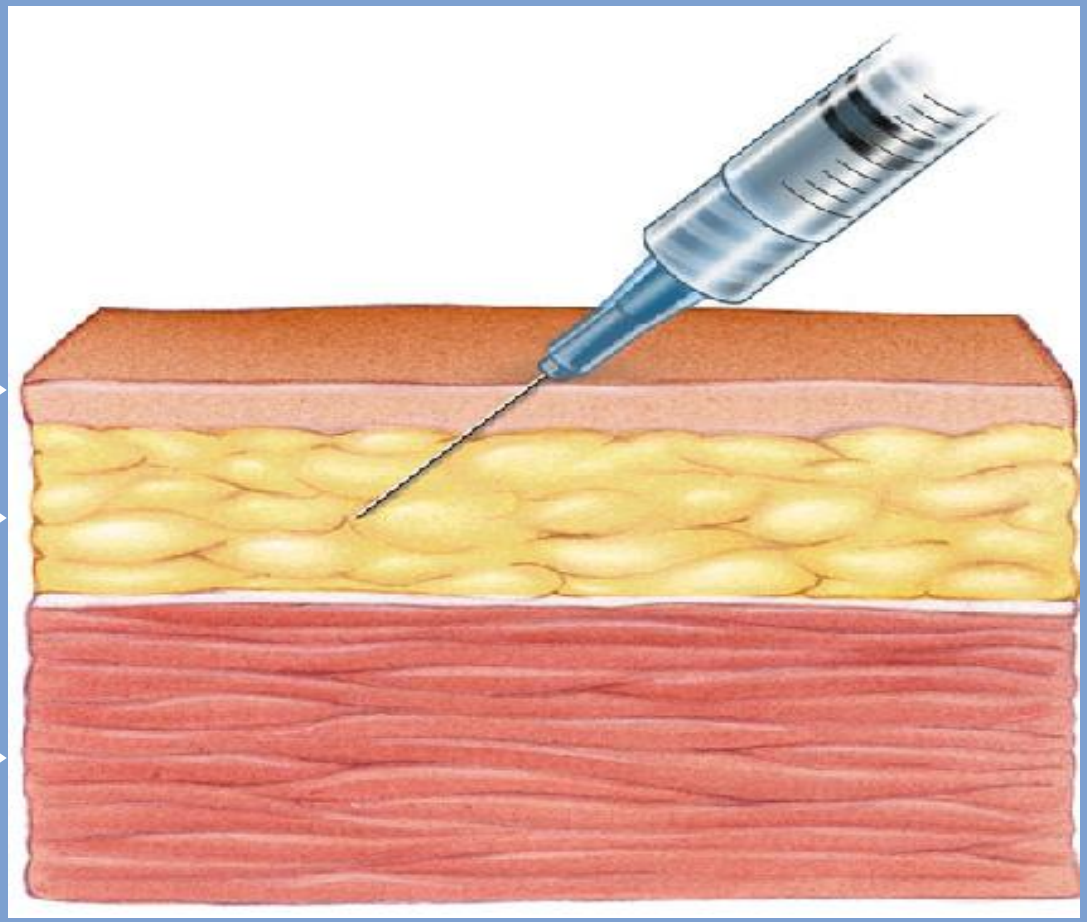
Importance of Proper Vaccine Administration Technique

- Promote optimal antibody response
- Reduce risk of local adverse reactions

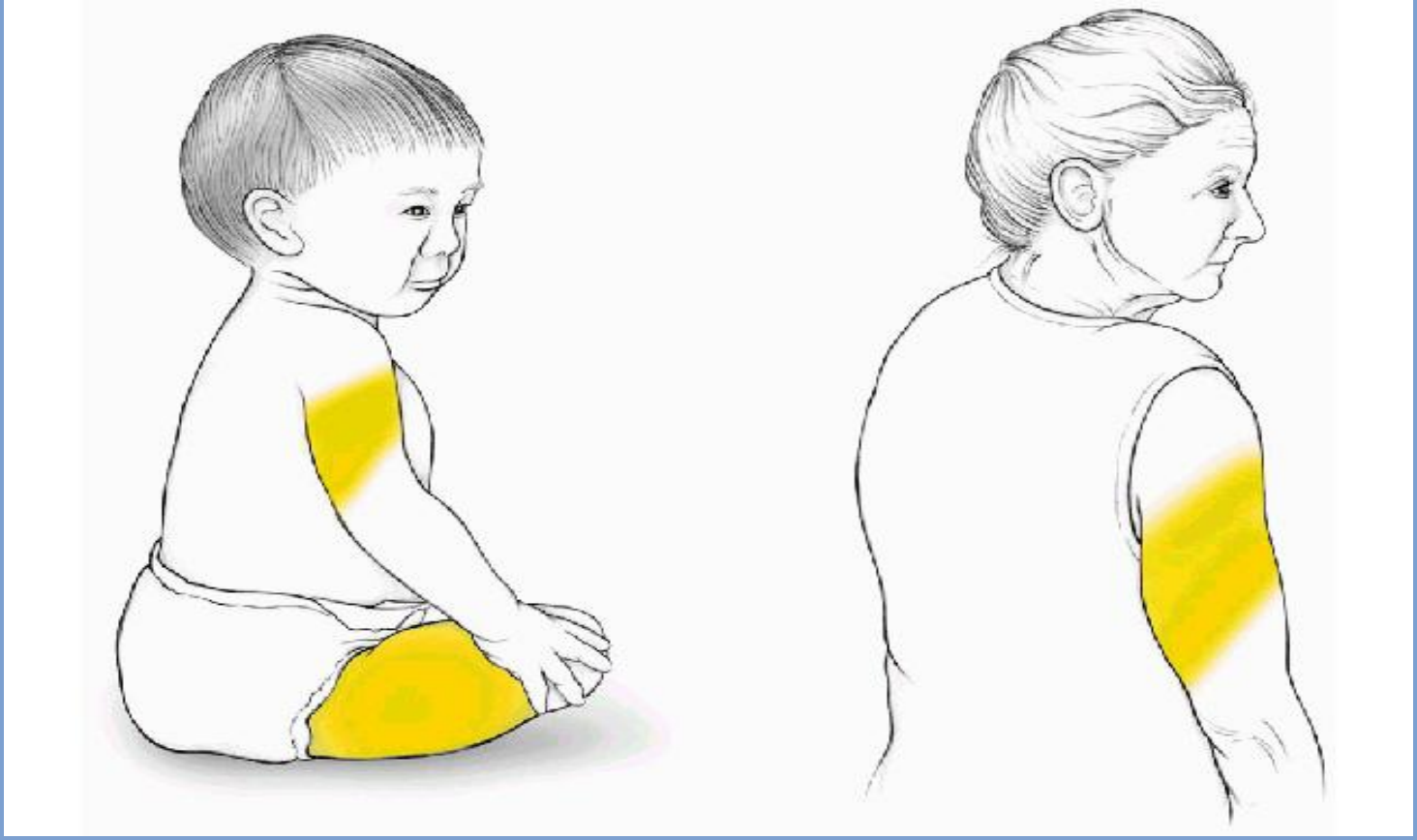
Subcutaneous Injection

- Injection into the fatty tissue below the dermis and above the muscle.
- Usual sites are thigh and upper outer triceps area of the arm.

Subcutaneous (SubQ) Tissue



Subcutaneous Sites

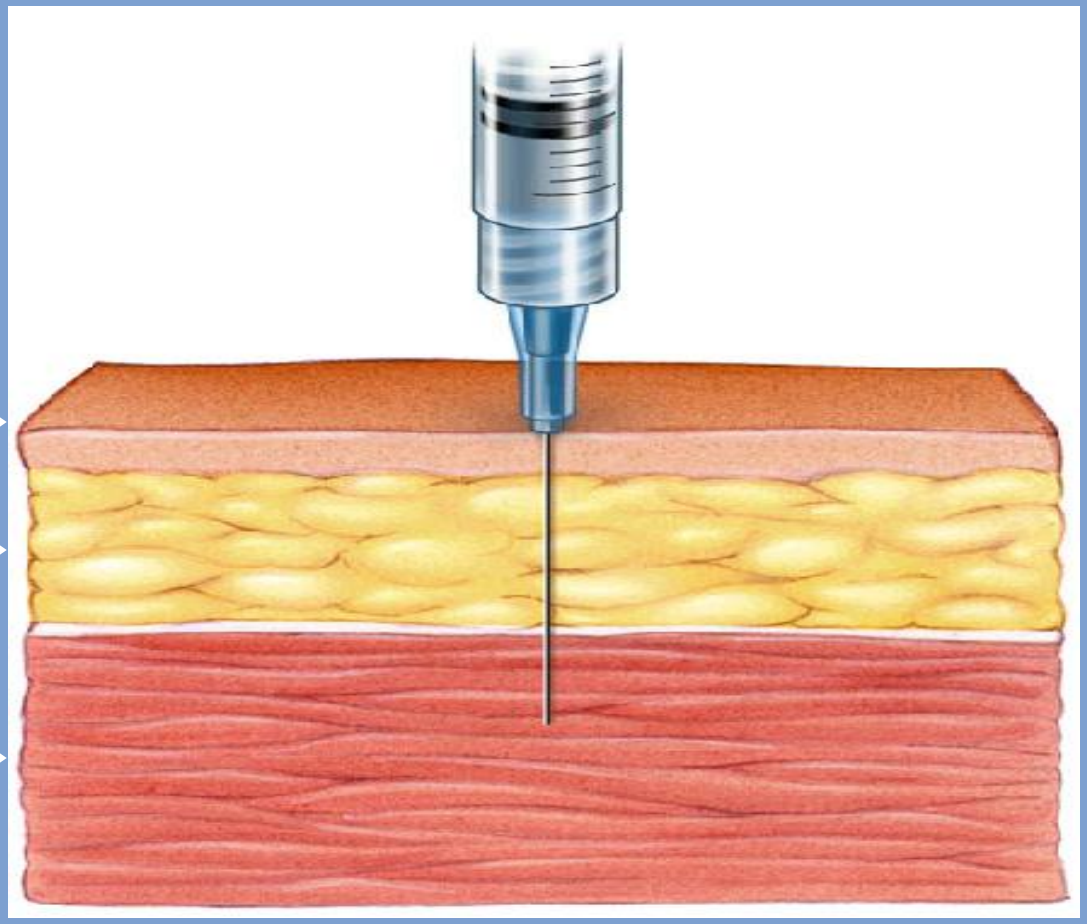


Subcutaneous Needle

- Gauge 23 to 25
- Length 5/8 inch
- Needle inserted at a 45º angle

Subcutaneous Injection Technique

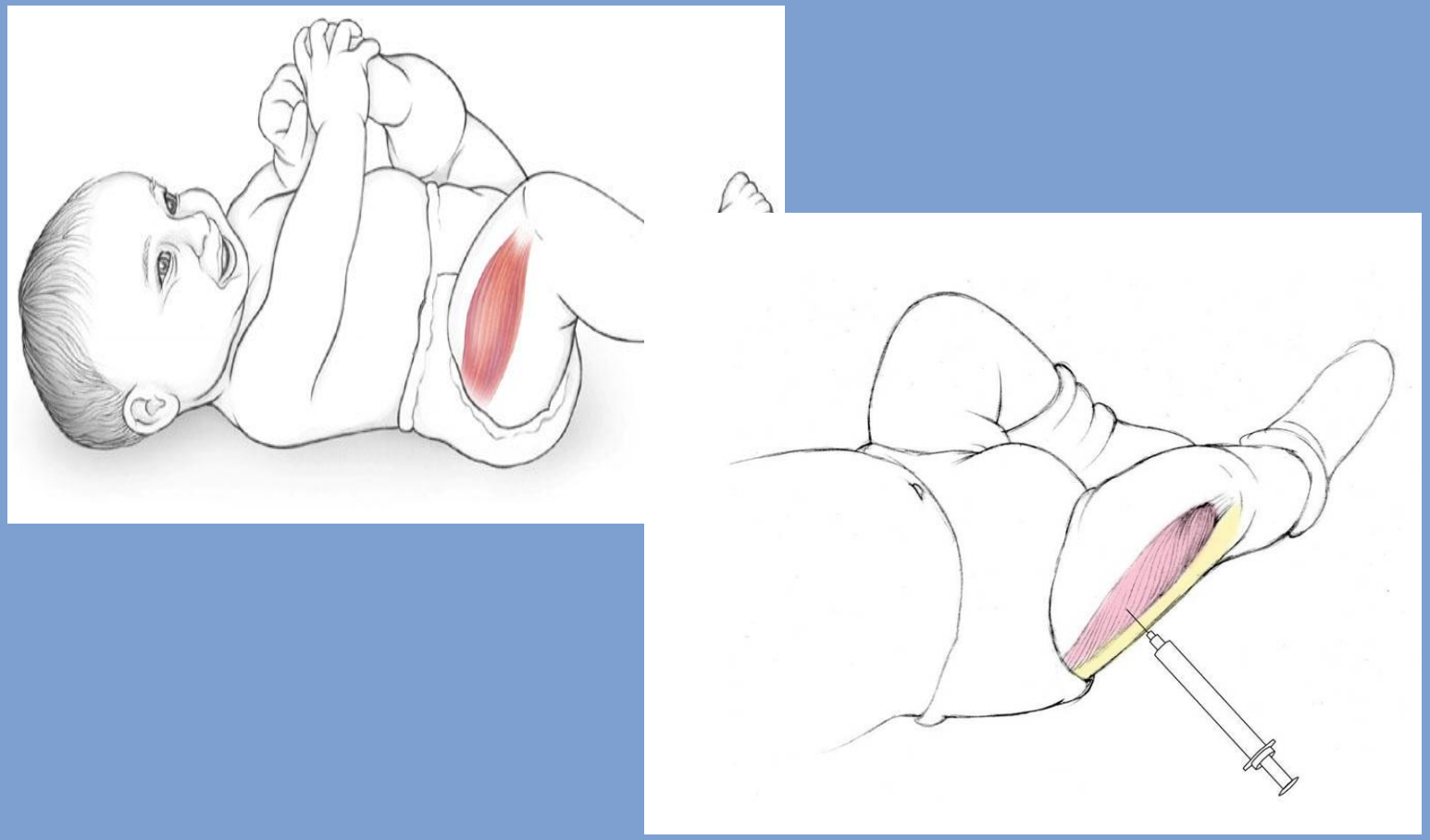
Intramuscular (IM) Tissue



Intramuscular Sites

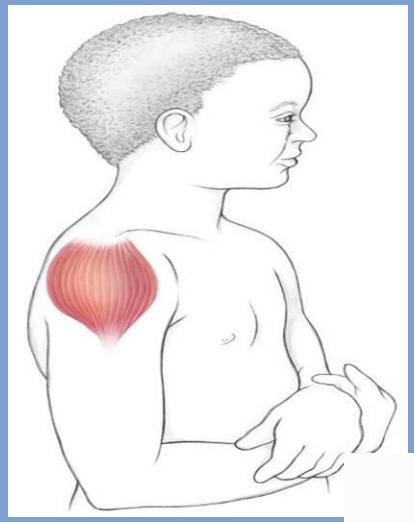
- Site selection depends on
  - person's age
  - muscle development
- Use deltoid muscle for older children, adults (toddlers only if adequate muscle mass)
- Use anatomical landmarks to locate site

IM Site - Infant

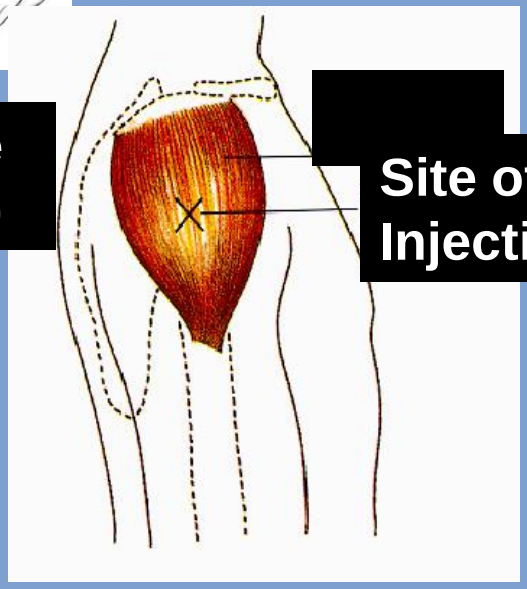


Anterolateral Thigh (vastus lateralis muscle)

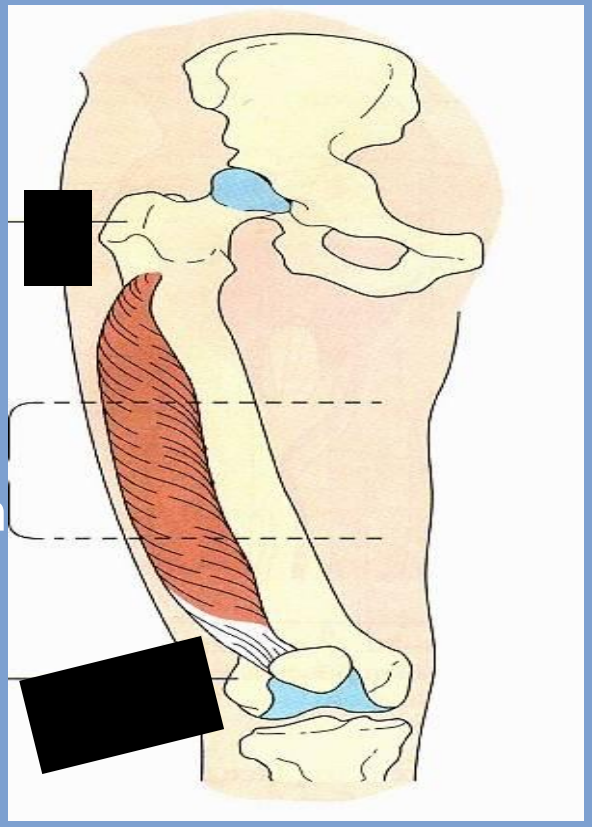
IM Sites
Child/Adolescent/Adult



Deltoid Muscle
(preferred site)



Site of
Injection



Vastus lateralis muscle
(alternative site)

UNM

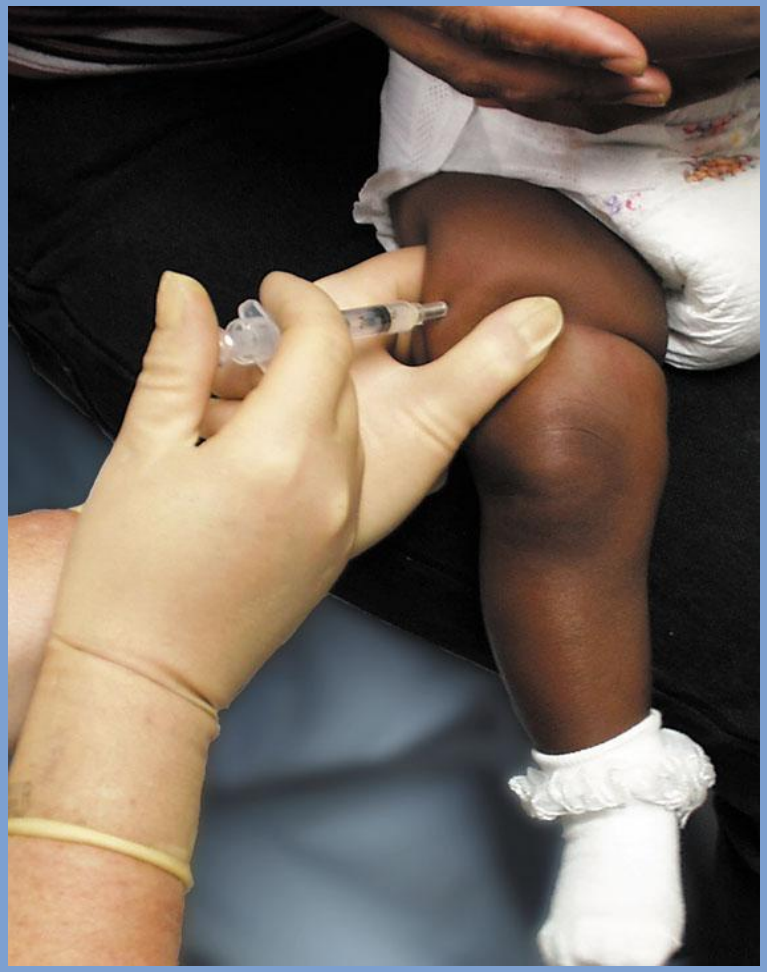
Intramuscular Needle

- Gauge: 22 to 25
- Length:
  - Newborn 5/8 inch
  - Infant 1 inch
  - Older children 5/8* to 1¼ inch
  - Adolescent/adult 1 to 1½ inch

*5/8 inch needle is adequate only for the deltoid muscle of older children if the skin is stretched flat and the needle inserted at a 90^{o} angle to the skin

UNM

Intramuscular Injection Technique



Infection Control

- Hand hygiene
  - recommended between patients
  - alcohol-based waterless antiseptic can be used
- Gloves
  - not required by OSHA unless:
    - potential for exposure to blood or body fluids
    - open lesions on the hands or
    - agency policy

Infection Control

- Equipment disposal
  - never detach, recap or cut a used needle
  - place in puncture-proof container
  - dispose as infectious medical waste
  - use safety needles or needle-free devices whenever available to reduce risk of injury

Other Vaccine Administration Issues

- Not necessary to change needles between drawing or reconstituting vaccine and administration unless needle is contaminated or bent.
- NEVER mix vaccines in the same syringe unless approved for mixing by the FDA.

Other Vaccine Administration Issues

- Injection sites in same limb should be separated by at least 1 inch if possible

- Aspiration
  - not required
  - no reports of injury from failure to aspirate
  - can result in wastage of vaccine

Latex Allergy

- Most often a contact-type allergy
- Person with anaphylactic allergy to latex generally should not receive vaccines supplied in vials or syringes that contain rubber
- Persons with latex allergies that are not anaphylactic can be vaccinated

Injection Pain

- Pain is subjective and influenced by:
  - person's age
  - anxiety level
  - previous healthcare experiences
  - culture
- Pain management
  - medical (e.g., anesthetics)
  - non-medical (e.g., diversionary techniques)

Vaccine Administration Errors

- Administration of the wrong formulation
- Wrong diluent
- Incorrect route of administration
- Wrong contraindications to deny or fail to vaccinate

National Immunization Program

Contact Information

- Telephone 800.CDC.INFO
- Email nipinfo@cdc.gov
- Website www.cdc.gov/nip

Error & Injury Prevention

- To help prevent error, pay close attention to technique and observe the '7 rights of medication administration'
- If needle stick injury:
  - Wash affected area with soap & water immediately
  - Notify your instructor
  - Have patient complete Use & Release of Information
  - Have patient complete HIV Consent
  - Follow your academic institution's policy on injuries
    - HSC students – UNM Student Health Center

Added: University of New Mexico Hospitals Vaccination Program 2009-10

7 Rights of Medication Administration

1. Right patient
2. Right medication
3. Right route
4. Right dose
5. Right time
6. Right documentation
7. Right reason

Added: University of New Mexico Hospitals Vaccination Program 2009-10

Questions?

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