PEDIATRIC INFECTIOUS DISEASE UPDATE

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H1N1 Pandemic Influenza 2009

CHRONOLOGY OF H1N1 PANDEMIC FLU

17 APRIL 2009	Two children in California became ill due to novel influenza A (H1N1) virus presumed swine origin. But since they have no histories of exposure to pigs, there's a possibility of human-to-human spread of this virus.
23 APRIL 2009	Several patients with acute respiratory disease in Mexico were confirmed to have swine-origin Influenza A (H1N1) virus infections.
27 APRIL 2009	Pandemic Alert Phase 4
29 APRIL 2009	Pandemic Alert Phase 5

MAY 2009	Philippines had the first case of H1N1
11 JUNE 2009	Pandemic Alert Phase 6 (WHO regions reported cases of H1N1)
15 JUNE 2009	76 countries reported 35,928 laboratory confirmed new cases of H1N1 influenza infection including 163 related deaths.
OCTOBER 2009	The Philippines has documented 4,549 cases with (majority 10-19 years) and 28 deaths (50 years old with underlying illness).

SPECTRUM OF DISEASE

- Non-febrile / febrile
- Malaise and headache
- Mild upper respiratory tract illness (cough and/or sore throat)
- Severe or fatal pneumonia (sudden and very rapid deterioration on Day 5 or 6 as primary viral pneumonia and multi-organ dysfunction syndrome, predominantly obese male)
- Gastro-intestinal manifestations (nausea, vomiting, and/or diarrhea)

REVIEW OF PEDIATRIC DEATHS

- Two groups
  - Children < 5 years old
  - with high risk chronic medical conditions

Healthy children >5 years of age with severe/fatal outcomes had bacterial coinfection.

INFLUENZA-ASSOCIATED PEDIATRIC MORTALITY

- Since August 30 to October 31 2009, 236 reports of pediatric deaths associated with laboratory-confirmed influenza infection

  - 195 (83%) cases- associated with laboratory-confirmed 2009 H1N1 virus

  - 40 pediatric deaths- associated with influenza A

  - 1 death was associated with an influenza B virus infection

- Of the 236 pediatric deaths reported occurring since August 30

  -43 (18.2%) were among children aged <2 years

  - 26(11.0%) were among children aged 2 to 4 years

  -87(36.9%) were among children aged 5 to 11 years, and

  - 80 (33.9%) were among children aged 12-17 years

Anti-Viral Agent for Treatment and Chemoprophylaxis

- Rimantadine and Amantadine – 100% resistant
- Oseltamavir and Zanamavir

Control Measures

- H1N1 Pandemic Flu Vaccination

  Public health authorities and vaccine manufacturers have agreed that ***vaccines will not be available to the private market*** and the government will decide who will receive the vaccination

- Other preventive measures
  - Social distancing
  - Hand Hygiene
  - Respiratory Etiquette
  - Home Isolation for mild illness

LEPTOSPIROSIS

Typhoon Ondoy

Typhoon Ondoy

- **Top morbidities in sentinel evacuation centers :**
  - **acute respiratory illness, skin infections/wounds, diarrhea, febrile illness, influenza-like illness, severe acute respiratory illness, and pneumonia**

Leptospirosis

- October 17, 2009
  - Philippine Society for Microbiology and Infectious Diseases, Inc. Issued an Interim Statements on the Role of Antibiotic Chemoprophylaxis in Leptospirosis
  - Antibiotic prophylaxis of leptospirosis may be achieved by administration of doxycycline depending on the risk category of exposure.

Antibiotic Chemoprophylaxis in Leptospirosis

- **LOW RISK**
  - **individuals with a single history of** wading in flood or contaminated water and absence of wounds, cuts or open lesions of the skin.
  - Doxycycline (hydrochloride or hyclate) at 2 capsules of 100 mg single dose within 24 to 72 hours
- **MODERATE RISK**
  - **individuals with a single history** of wading in flood or contaminated water and the presence of wounds, cuts, or open lesions of the skin, OR accidental ingestion of contaminated water.
  - Doxycycline (hydrochloride or hyclate) at 2 capsules of 100 mg OD for 3-5 days to be started immediately within 24 to 72 hours from exposure.
- **HIGH RISK**
  - **individuals with continuous exposure** (defined as those having more than a single exposure or several days such as those residing in flooded areas, rescuers and relief workers) of wading in flood or contaminated water **with or without wounds, cuts or open lesions of the skin.** Swimming in flooded water and ingestion of contaminated water are also considered high risk.
  - Doxycycline (hydrochloride or hyclate) at 2 capsules of 100 mg once weekly until the end of exposure.

Typhoon Ondoy

- **As of 5 November 2009,**
  - **210 816 families / 1 103 569 individuals reside in still-flooded areas in 152 barangays in 29 municipalities of NCR (Pasig , Taguig, Muntinlupa) and Region IV-A (Laguna and Rizal provinces)**

Leptospirosis

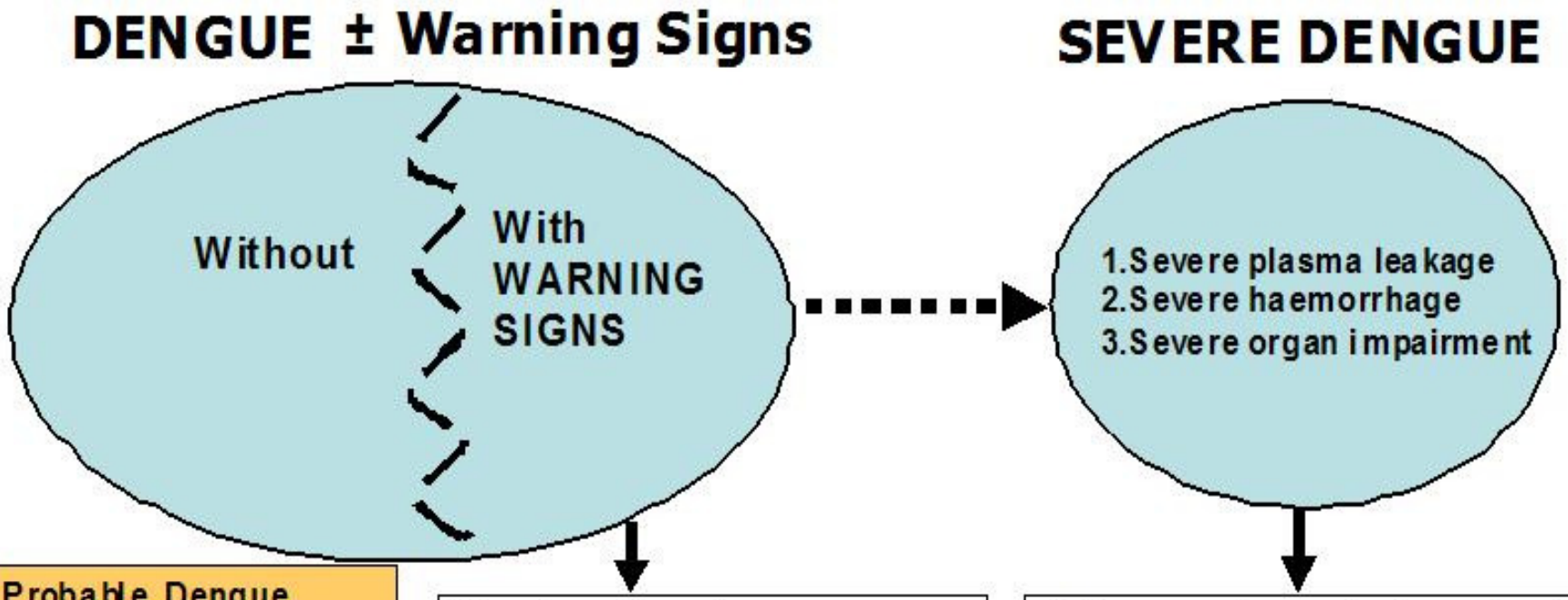
Leptospirosis cases from NCR, Regions I, II, III, IVA and CAR since the disaster

- totals 3,125 cases
- 240 cumulative mortalities
- 73% of cases are from NCR alone

* DOH, Nov. 5, 2009

DENGUE

Revised Dengue Classification



Probable Dengue

Live in / travel to dengue endemic area. Fever and 2 of the following criteria:

- Nausea, vomiting
- Rash
- Aches and pains
- Tourniquet test +ve
- Leucopenia
- Any warning sign

Lab. confirmed dengue

(important when no sign of plasma leakage)

Warning Signs*

- Abdominal pain or tenderness
- Persistent vomiting
- Clinical fluid accumulation
- Mucosal bleed
- Lethargy; restlessness
- Liver enlargement > 2cm
- *Laboratory:* Increase in HCT concurrent with rapid decrease in platelet count

1. Severe plasma leakage leading to

- Shock (DSS)
- Fluid accumulation with respiratory distress

2. Severe bleeding
as evaluated by clinician

3. Severe organ involvement

- *Liver:* AST or ALT>=1000
- *CNS:* Impaired consciousness
- *Heart and other organs*

* ***Requiring strict observation and medical intervention***

Suggested dengue case classification and levels of severity

DENGUE ± WARNING SIGNS	SEVERE DENGUE
Dengue with OR without warning signs	1. Severe plasma leakage 2. Severe haemorrhage 3.Severe organ impairment

Probable dengue	Warning signs* *(requiring strict observation and medical intervention)	CRITERIA FOR SEVERE DENGUE
live in /travel to dengue endemic area. **Fever and 2 of the following criteria:** • Nausea, vomiting • Rash • Aches and pains • Tourniquet test positive • Leukopenia • Any warning sign	•Abdominal pain or tenderness • Persistent vomiting • Clinical fluid accumulation • Mucosal bleed • Lethargy, restlessness • Liver enlargement >2 cm • Laboratory: increase in HCT concurrent with rapid decrease in platelet count	**Severe plasma leakageleading to:** • Shock (DSS) • Fluid accumulation with respiratorydistress **Severe bleeding**as evaluated by clinician **Severe organ involvement** • Liver: AST or ALT >=1000 • CNS: Impairedconsciousness • Heart and other organs

Clinical Practice in the Management of Dengue

Good Practice	Bad Practice
1 Assessment and follow-up of patients with non-severe dengue and careful instruction of warning signs to watch out for	Sending patients with non-severe dengue home with no follow-up and inadequate instructions
2 Administration of paracetamol for high fever	Administration of acetylsalicylic acid (aspirin) if the patient is uncomfortable or ibuprofen
3 Obtaining a haematocrit level before and after fluid boluses with respect to fluid therapy	Not knowing when haematocrit levels are taken
4 Clinical assessment of the haemodynamic status before and after each fluid bolus	No clinical assessment of patient with respect to fluid therapy
5 Interpretation of haematocrit levels in the context of fluid administered and haemodynamic status	Interpretation of haematocrit levels independent of clinical assessment
6 Administration of intravenous fluids for repeated vomiting or a high or rapidly rising haematocrit	Administration of intravenous fluids to any patient with non-severe dengue

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Antimicrobial Resistance Rates

Department of Health Antimicrobial Resistance Surveillance

(Jan. to Dec., 2007 – 2008)

Prepared by the Antimicrobial Resistance Surveillance Reference Laboratory, RITM

Enteric Pathogens

PERCENT RESISTANCE (NUMBER TESTED)

ORGANISMS	Ampicillin		Chloramphenicol		Ciprofloxacin	
A. Enteric Pathogens	2007	2008	2007	2008	2007	2008
1. Salmonella typhi	2.3(87)	0.4(252)	0(222)	0(248)		
2. Nontyphoidal Salmonella	15.5(84)	18.3(71)	9.7(72)	4.6(65)	2.9(69)	0(74)
3. Shigella	87.5(16)	83.3(12)	57.1(14)	46.2(13)	5.3(19)	7.7(13)
4. Vibrio cholera			1(51)	1.1(89)		

Salmonella Typhi- No resistance to chloramphenicol for 2007-2008.
- Ampicillin and Cotrimoxazole

Nontyphoidal Salmonella- No resistance to Ciprofloxacin in 2008
- Increase sensitivity to Chloramphenicol

Shigella – Highly resistant in Ampicillin, Chloramphenicol and Cotrimoxazole
- No resistance to Nalidixc Acid

Vibrio Cholera- No resistance to Tetracycline in 2008

	PERCENT RESISTANCE (NUMBER TESTED)					
ORGANISMS	Cotrimoxazole		Tetracycline		Nalidixic Acid	
A. Enteric Pathogens	2007	2008	2007	2008	2007	2008
1. Salmonella typhi	1.7(241)	0.9(219)				
2. Nontyphoidal Salmonella	26.9(52)	13.9(36)				
3. Shigella	65(20)	54.5(11)			5.9(17)	0(12)
4. Vibrio cholera	1(51)	1.1(90)	1.9(49)	0(89)		

- Salmonella Typhi- No resistance to chloramphenicol for 2007-2008.
- - Still sensitive to Ampicillin and Cotrimoxazole
- Nontyphoidal Salmonella- No resistance to Ciprofloxacin in 2008
- - Increase sensitivity to Chloramphenicol in 2008
- Shigella - No resistance to Nalidixc Acid
  - Still sensitive to Ciprofloxacin
  - Highly resistant to Ampicillin, Chloramphenicol and Cotrimoxazole
- Vibrio Cholera- No resistance to Tetracycline in 2008

ARI Pathogens

PERCENT RESISTANCE (NUMBER TESTED)

B. ARI Pathogens	Ampicillin		Cefuroxime		Chloramphenicol	
	2007	2008	2007	2008	2007	2008
1. Streptococcus pnuemoniae					5.2(96)	5.3(113)
2. Haemophilus influenzae	11.1(82)	10.3(97)			8(75)	15.4(91)
3. Moraxella catarrhalis	19.6(453)	23.3(437)				

PERCENT RESISTANCE (NUMBER TESTED)

B. ARI Pathogens	Ciprofloxacin		Co-amoxiclav		Cotrimoxazole	
	2007	2008	2007	2008	2007	2008
1. Streptococcus pnuemoniae					18.5(108)	22.6(115)
2. Haemophilus influenzae					13.4(67)	22(82)
3. Moraxella catarrhalis			11.4(455)	16.1(453)	49.6(427)	46.4(425)

PERCENT RESISTANCE (NUMBER TESTED)

B. ARI Pathogens	Erythromycin		Penicillin		Ampsulbactam	
	2007	2008	2007	2008	2007	2008
1. Streptococcus pnuemoniae			0.9(106)	0(116)		
2. Haemophilus influenzae						
3. Moraxella catarrhalis	32.7(456)	36.8(459)				

- Streptococcus pnuemoneae – No resistance to Penicillin
- Haemophilius Influenza- Sensitive to Ampicillin

  -Increasing resistance to Chloramphenicol and Cotrimoxazole

Staphylococci and Enterococci

PERCENT RESISTANCE (NUMBER TESTED)

	Ampicillin		Berzylpenicillin		Ciprofloxacin		Cotrimoxazole	
C. Staphylococci and Enterococci	2007	2008	2007	2008	2007	2008	2007	2008
1. Staphylococcus aureus			95(1200)	94.3(1115)	5.6(990)	7(969)	4.3(1054)	5.2(993)
2. Staphylococcus epidermidis			92.1(303)	92.7(341)			38.6(285)	43.1(320)
3. Enterococcus faecalis	2.6(115)	3.4(179)						

PERCENT RESISTANCE (NUMBER TESTED)

	Erythromycin		Oxacillin		Vancomycin	
C. Staphylococci and Enterococci	2007	2008	2007	2008	2007	2008
1. Staphylococcus aureus	7.7(1157)	8.9(1140)	30.6(1173)	31(1141)	0(1228)	0(1132)
2. Staphylococcus epidermidis	55.9(299)	52.2(343)	61.7(295)	54.8(332)	0(301)	0(349)
3. Enterococcus faecalis					0.5(187)	0(225)

Enterobacteriaceae

PERCENT RESISTANCE (NUMBER TESTED)

	Amikacin		Ampicillin		Ampi-sulbactam	
D. Enterobacteriaceae	2007	2008	2007	2008	2007	2008
1. E. Coli	9.6(2477)	8.7(2433)	74.3(2540)	77.7(2825)	23.7(2160)	24.6(2259)
2. Klebsiella	12.5(1842)	11.8(1943)			24.6(1358)	28(1538)
3.Enterobacter	10.9(1477)	12.4(1429)				

PERCENT RESISTANCE (NUMBER TESTED)

	Cefuroxime		Ciprofloxacin		Ceftriaxone		Cephalothin	
D. Enterobacteriaceae	2007	2008	2007	2008	2007	2008	2007	2008
1. *E. Coli*	23.2(1183)	13.9(1590)	38.8(2548)	36.2(25950	13.6(2283)	12.1(2435)	43.6(1504)	38.6(1361)
2. *Klebsiella*	38(841)	21.2(1092)	25.2(1832)	24.6(1992)	19.4(1705)	19.2(1929)	45.8(1106)	45.3(1065)
3.*Enterobacter*			23.7(1438)	23.2(14160	22.5(1393)	26.6(1400)	79(872)	78.7(863)

PERCENT RESISTANCE (NUMBER TESTED)

	Gentamycin		Cotrimoxazole		Cefepine		Imipenem	
D. Enterobacteriaceae	2007	2008	2007	2008	2007	2008	2007	2008
1. E. Coli	23.5(2615)	24.7(2561)	67.2(2442)	65(2504)	13.2(1504)	13.1(2365)		
2. Klebsiella	21.7(1887)	21.9(1675)			6.9(1759)	7.8(2365)	0.4(2043)	0.6(2085)
3.Enterobacter	22.5(1388)	28.9(1452)			11.1(1416)	13.2(13.2)	2.5(1531)	2.3(1374)

Gram-Negative Nonfermentative Bacilli

PERCENT RESISTANCE (NUMBER TESTED)

	Amikacin		Cefepine		Ceftazidime	
E. Gram negative nonfermentative bacili	2007	2008	2007	2008	2007	2008
1. Pseudomonas aeruginosa	14.2(1961)	12.4(1828)	11.9(1946)	13.1(1710)	14.8(1864)	15.4(1709)

PERCENT RESISTANCE (NUMBER TESTED)

	Ciprofloxacin		Gentamycin		Imipinem	
E. Gram negative nonfermentative bacili	2007	2008	2007	2008	2007	2008
1. Pseudomonas aeruginosa	28.3(1799)	28.3(1709)	24.6(1839)	24.1(1707)	14(1961)	15.9(1696)

PERCENT RESISTANCE (NUMBER TESTED)

	Netilmicin		Piper-Tazo		Tobramycin	
E. Gram negative nonfermentative bacili	2007	2008	2007	2008	2007	2008
1. Pseudomonas aeruginosa	11.4(1098)	14(344)	15.1(962)	10.8(928)	23.7(1786)	21.8(1692)

Neisseria Gonorrhea

PERCENT RESISTANCE (NUMBER TESTED)

	Cefixime		Ceftriaxone		Ciprofloxacin		Ofloxacin	
	2007	2008	2007	2008	2007	2008	2007	2008
F. Neisseria gonorrheae	0(106)	0(75)	0(114)	0(82)	56.8(111)	47.8(69)	56.7(104)	54.1(74)

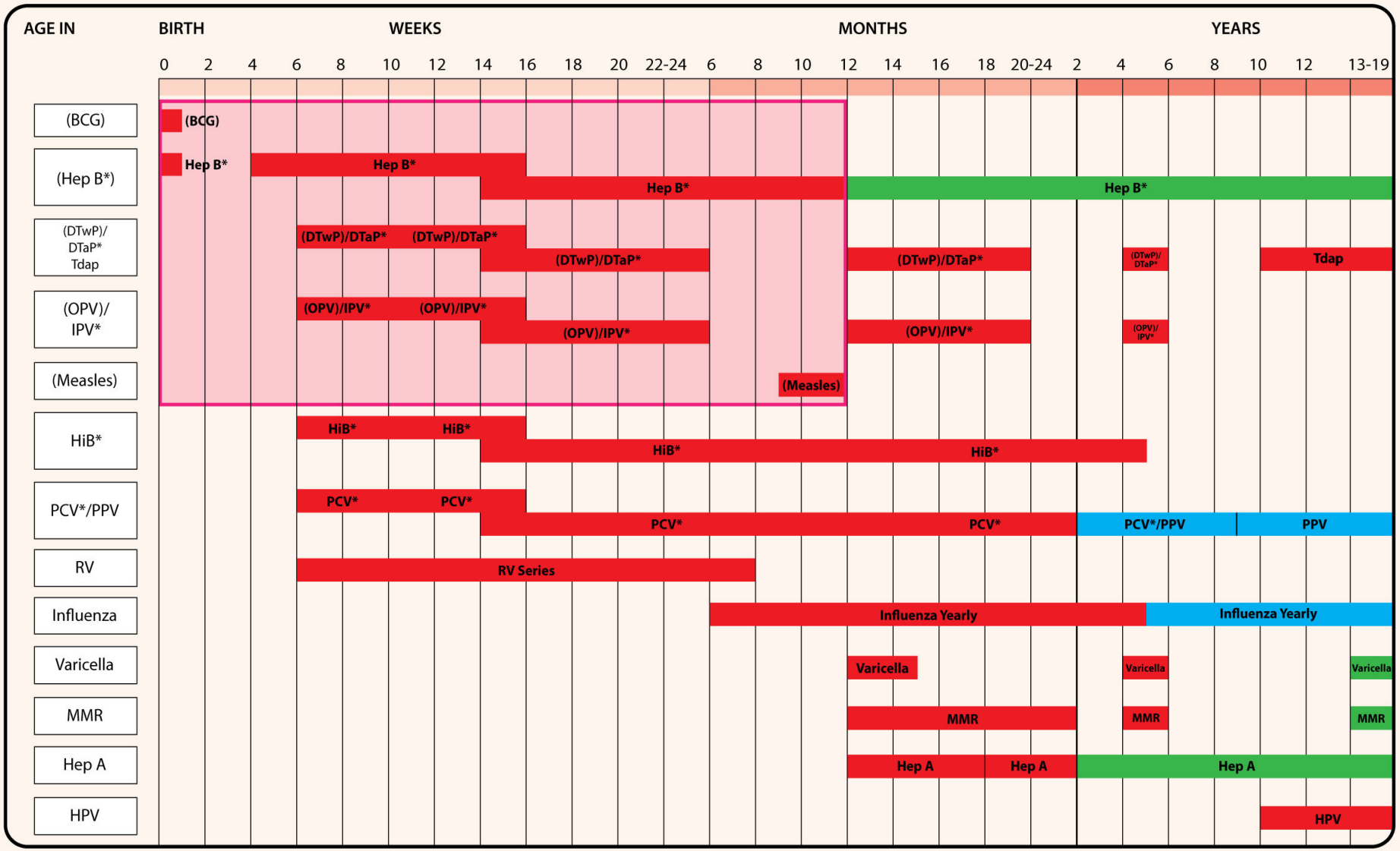
PERCENT RESISTANCE (NUMBER TESTED)

	Penicillin		Spectinomycin		Tetracyclin	
	2007	2008	2007	2008	2007	2008
F. Neisseria gonorrheae	85.6(111)	70.7(75)	0(103)	0(70)	53.6(112)	81.4(70)

CHILDHOOD IMMUNIZATION SCHEDULE 2010

Philippine Foundation for Vaccination

Childhood Immunization Schedule 2009



Annotations:

PHILIPPINE EPI VACCINES:
Vaccines in the pink area, enclosed in parenthesis, are vaccines given in the Philippine Expanded Program of Immunization (EPI) of the Department of Health. Vaccines in the EPI include: BCG, DTwP, OPV, Measles, and Hepatitis B.

OTHER RECOMMENDED VACCINES:
Vaccines outside the pink area are the Other Recommended Vaccines. These vaccines are not part of the Philippine EPI but because of merit are advocated by the Philippine Pediatric Society (PPS), Pediatric Infectious Disease Society of the Philippines (PIDSP), and the Philippine Foundation for Vaccination (PFV). Other recommended vaccines include: Hib, MMR, Varicella, Hepatitis A, DTaP, Tdap, IPV, Pneumococcal, Rotavirus, Influenza, and Human Papillomavirus (HPV) Vaccines.

VACCINES FOR SPECIAL GROUPS:

These are vaccines which are not part of the Philippine EPI or Other Recommended Vaccines but available data support its use in certain conditions or in selected populations. Vaccines for Special Groups include: Meningococcal, Typhoid and Rabies Vaccines.

BCG
Given Intradermally (ID)
BCG should be given at the earliest possible age after birth preferably within the first 2 months of life. For healthy infants and children >2 months who are not given BCG at birth, PPD prior to BCG vaccination is not necessary. However, PPD is recommended prior to BCG vaccination if any of the following are present: suspected congenital TB, history of close contact to known or suspected infectious cases of TB, clinical findings suggestive of TB and/or chest x-ray suggestive of TB. In the presence of any of these conditions, an induration of ≥ 5 mm is considered positive.
The dose of BCG is 0.05 ml for infants < 12 months of age and 0.1 ml for children ≥12 months of age.

MEASLES
Given subcutaneously (SQ)
Measles vaccine is given at 9 months of age but may be given as early as 6 months of age in cases of outbreaks.

HEPATITIS B VACCINE
Given intramuscularly (IM)
The first dose is given within the first 12 hours of life. The hepatitis B birth dose may be used as the first dose in a 3-dose primary series. Doses are given at least 4 weeks apart. A fourth dose is needed for the following:

- If the third dose is given at age <6 months
- If no birth dose is given using the EPI schedule of 6, 10, and 14 weeks
- For preterms less than 2 kgs, the initial dose should not be counted in the 3-dose immunization schedule.

PNEUMOCOCCAL VACCINES (PCV/PPV)
Given intramuscularly (IM)
The minimum age for pneumococcal conjugate vaccine (PCV) is 6 weeks of age and for pneumococcal polysaccharide vaccine (PPV) is 2 years of age. PPV is recommended for high risk children ≥2 years of age in addition to PCV. For healthy children, no additional doses of PPV are needed if the PCV series is completed.

HEPATITIS A
Given intramuscularly (IM)
Hepatitis A vaccine is recommended for all children aged ≥12 months. A second dose of the vaccine is given 6 to 12 months after the first dose.

ROTAVIRUS VACCINE (RV)
Given per orem (PO)
The monovalent human rotavirus vaccine (RV1) is given as a 2-dose series. The pentavalent human bovine rotavirus vaccine (RV5) is given as a 3-dose series. The first dose of the vaccine is administered from age 6 weeks to 14 weeks and 6 days. There is insufficient data on safety of the first dose of rotavirus vaccine in older infants. The minimum interval between doses is 4 weeks. The second dose of RV1 should not be administered later than 24 weeks of age. The 3rd dose of RV5 should not be administered later than 32 weeks of age.

VARICELLA VACCINE
Given subcutaneously (SQ)
The first dose of the vaccine is administered from age 12-15 months. The second dose of the varicella vaccine is administered at age 4-6 years or at an earlier age provided the interval between the first and the second dose is at least 3 months. A second dose of the vaccine is recommended for children, adolescents, and adults who previously received only one dose of the vaccine. All individuals aged ≥13 years and without previous evidence of immunity should receive 2 doses of varicella vaccine given at least 4 weeks apart.

INFLUENZA VACCINE
Given intramuscularly or subcutaneously (IM/SQ)
Recommended for all children 6 months to 5 years old, children with the following high risk conditions: chronic cardiovascular disease (eg. CHD, vascular disease), chronic metabolic and renal disorders, chronic lung disease (eg. asthma), hemoglobinopathies, and children receiving long term aspirin therapy. Influenza vaccine may also be given to healthy children >5 years old who want to be protected against influenza.
Children aged 6 months to 8 years receiving influenza vaccine for the first time should receive 2 doses of the vaccine given at least 4 weeks apart initially and one dose yearly thereafter.
Children who received only one dose of influenza vaccine in the first year of life should receive 2 doses of the vaccine the following year.
Children who received a single dose of influenza vaccine for 2 consecutive years should continue receiving single annual doses.
Yearly vaccination should preferably be given between February to June.

HUMAN PAPILLOMAVIRUS VACCINE (HPV)
Given intramuscularly (IM)
Primary vaccination consists of a 3-dose series. Bivalent HPV is indicated for females 10-55 years old following a recommended schedule of 0, 1 and 6 months. Quadrivalent HPV is given to females 10-45 years old following a recommended schedule of 0, 2, and 6 months. The minimum interval between the first and second dose is at least one month and the minimum interval between the second and third dose is at least 3 months.

TETANUS AND DIPHTHERIA TOXOIDS AND ACELLULAR PERTUSSIS (Tdap)
Given intramuscularly (IM)
Children and adolescents 10-18 years of age should receive a single dose of Tdap instead of Td for booster immunization against tetanus, diphtheria, and pertussis if they have not completed the recommended childhood DTP/DTaP immunization series and if they have not received either Td or Tdap. Thereafter, Td booster given every 10 years is recommended. An interval of at least 5 years from the last Td dose is recommended if Tdap is used as booster to reduce the risk of local and systemic reactions.

TYPHOID VACCINE
Given intramuscularly (IM)
Recommended for travelers to areas where there is risk of exposure to S. typhi and for persons with frequent exposure to S. typhi. A single dose may be given as early as 2 years of age with revaccination every 2 to 3 years if there is continued exposure to S. typhi.

MENINGOCOCCAL VACCINE
Given intramuscularly or subcutaneously (IM/SQ)
A single dose of meningococcal vaccine is recommended for all children aged ≥2 years known to be at high risk for disease.
In outbreak situations, infants <2 years of age (minimum of 3 months of age) may be given 2 doses of the vaccine 3 months apart.
Revaccination may be considered 3-5 years after the first dose for persons who remain at high risk for infection.

RABIES VACCINE
Given intramuscularly or intradermally (IM/ID)
The Anti-rabies Act of 2007 recommends routine rabies pre-exposure (PEP) for children aged 5-14 years in areas where there is high incidence of rabies (incidence > 2.5 human rabies/ million population).
There are 2 recommended regimens for pre-exposure prophylaxis:

- Intramuscular dose: PVRV 0.5 ml or PCECV 1 ml given on days 0, 7, 21 or 28 days.
- Intradermal dose: PVRV or PCECV 0.1 ml given on days 0, 7, 21 or 28 days.

Rabies vaccine should never be given in the gluteal area since absorption is unpredictable. For the intradermal dose, a repeat dose should be given if the vaccine is given subcutaneously.
After completion of 3 doses of rabies vaccine as pre-exposure prophylaxis, periodic booster doses are not recommended for the general population but may be given every 5 years depending on risk of exposure.
Any exposure, regardless of interval between re-exposure and last dose of the vaccine should receive two (2) booster doses as follows:
Day 0 - 1 dose
Day 3 - 1dose
Doses may be given intramuscularly (0.5ml PVRV or 1ml PCECV) or intradermally (0.1ml PVRV or PCECV).
There is no need to give rabies immune globulin (RIG).

DISCLAIMER:

The Childhood Immunization Schedule present recommendations for immunization of children and adolescents based on the knowledge, experience and premises current at the time of publication. The schedule represents a consensus with which physicians may at times disagree. No claim is made for infallibility, and the PPS, PIDSP and PFV acknowledge that individual circumstances may warrant decisions differing from the recommendations given here. The recommendations are not absolute. Physicians must regularly update their knowledge about specific vaccines and their use because information about safety and efficacy of vaccines and recommendations relative to their administration continue to develop after a vaccine is licensed.

Revisions and Additions

1. Philippine EPI vaccines now includes MMR and HIB
2. Pneumococcal Vaccines (PnCV/PPV)
   Pnuemococcal conjugate vaccine
3. Measels, Mumps, Rubella (MMR) (SQ)

   Minimum age is 12mos. Administer the second dose at age 4 through 6 years. However, the second dose may be administered before age 4 provided an interval of 28 days has lapsed the first dose

Revisions and Additions

4. MMRV (SQ)

   Combination MMRV may be given as an alternative to separately administered MMR and Varicella Vaccine.

5. Influenza Vaccine (IM/SQ)

   All children from 6mos to 18years should receive influenza vaccine.

Revisions and Additions

6. Human Papilloma Virus Vaccine (HPV)

   Primary vaccination consists of a 3-dose administered to females 10-18 years of age.

   Use in males 10-18 years of age for the anogenital warts is optional

7. Disclaimer

   The Childhood Immunization Schedule present recommendations for immunization of children and adolescents 0-18years based on the knowledge, experience and premises current at the time of publication.