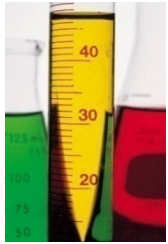
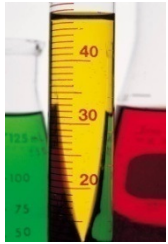


ID Look-Alikes: Fever

Ma. Rosario Z. Capeding, M.D.
Head, Dept. Microbiology
Research Institute for Tropical Medicine



S> S.D., 10 year old, female from Malate, sought consult for the first time at PGH due to fever



Case 1

History of Present Illness:

4 days prior to admission →

(+) moderate to high grade fever (Tmax 40⁰ C)

(+) headache

(+) body malaise

given Paracetamol which afforded temporary relief

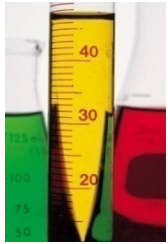
2 days prior to admission → still with high grade fever (Tmax 39⁰C)

(+) epigastric pain

(+) vomiting 3x, previously taken food

Consult done at local hospital → CBC → normal result

On day of admission → Above signs and symptoms persisted → PGH



Case 1

Review of Systems:

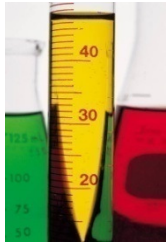
- (-) cough and colds
- (-) urinary and bowel changes
- (-) seizure
- (-) bleeding episodes

Past Medical History:

- (-) previously hospitalization
- (-) food and drug allergy

Family History:

- (+) hypertension- maternal uncle
- (+) bronchial asthma- father
- (-) DM, CA, PTB



Case 1

Birth and Maternal History:

- Born FT via SVD to a 24 year old G1P0 mother at Chinese General Hospital
- (+) PNC with private MD
- (+) fever x 1 episode at 7 months AOG → Paracetamol
- (-) feto-maternal complications

Immunization History:

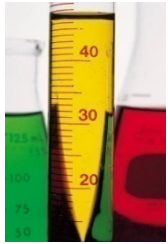
completed EPI

Nutritional History:

Purely breastfed x 2 months → milk formula
Presently, no food preference

Developmental History:

At par with age



Case 1

Personal/ Social History:

Father is a 39 year old factory worker

Mother is a 34 year old food server/ waitress

Physical Examination:

Awake, irritable, febrile, not in cardiorespiratory distress

Wt: 20 kgs BP: 90/60 CR: 120/min RR: 24 /min T: 38.1⁰ C

Pinkish conjunctiva, anicteric sclera, (-) TPC

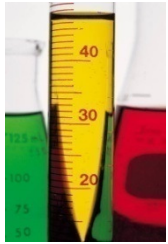
(-) neck vein engorgement, (-) CLAD

Equal chest expansion, clear breath sounds, no rales/wheezes

Adynamic precordium, tachycardic, no murmur

Slightly distended abdomen, NABS, soft, (+) direct tenderness at epigastric and periumbilical areas, LE = 7 cms BRSM

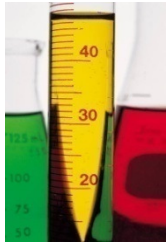
Full and equal pulses, (-) edema, (-) rashes



Differential Diagnosis

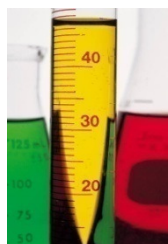
- Dengue
- Influenza
- Typhoid fever
- Leptospirosis
- Malaria
- Non-dengue flavivirus (Japanese Encephalitis, Chikungunya)

Dengue cases are misdiagnosed in 10-17% solely on clinical suspicion.



Medical History and PE

- Relevant hx
 - Family or neighborhood dengue
 - Wading/playing in contaminated areas
 - Visit to malaria endemic areas
- PE
 - Hydration status
 - Tourniquet test



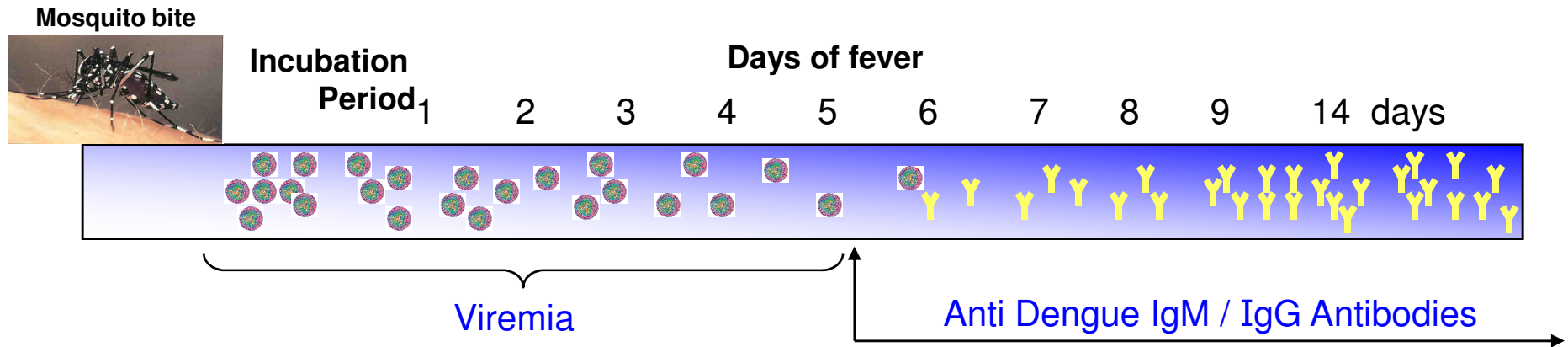
Major Manifestations of DHF vs DF

	DHF (n=206)		DF (n=98)	
	No.	%	No.	%
Fever	206	100	98	100
Hemorrhagic Manifestations				
Tourniquet test(+)	202	98.1	62	63.3
Petechiae	81	39.3	17	17.3
Hematemesis	63	30.9	6	6.1
Melena	61	29.6	4	4.1
Epistaxis	41	19.9	10	10.2
Gum bleeding	13	6.3	1	1.0

*S. Kalayanarook, et al
J Inf Dis 1997*

PIDSP 2011

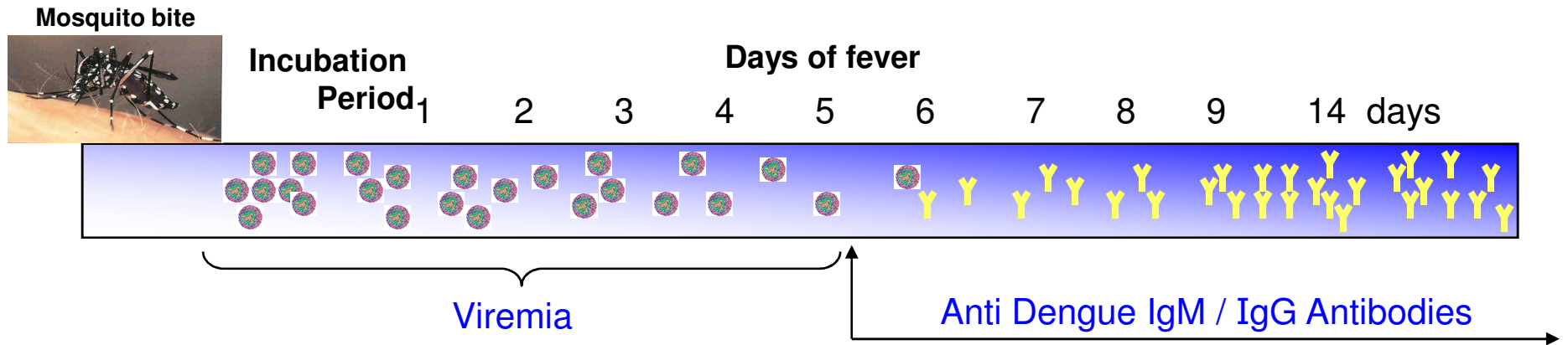
Diagnostic Goals



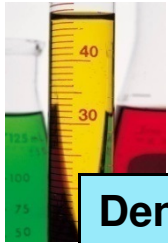
- Detection of dengue virus or its components
 - Measurement of dengue antibodies


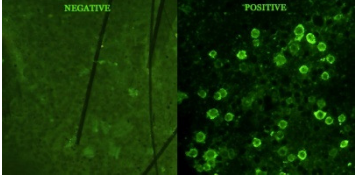

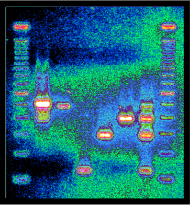
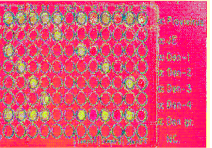
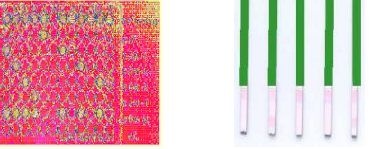
Timing of sample collection is essential to accurate diagnosis of dengue infection

Dengue Tests



- Virus (viral culture)
- Nucleic acid (PCR)
- NS1 Antigen (EIA/Rapid)
- Dengue IgM/IgG (EIA, Dot blot, Dipstick, Immunoblot, Immunochromatography)



Dengue tests	Time of collection after onset of sx	Time to results	Diagnosis of acute infection
Viral culture 	1-5 days	1-2 weeks 	Confirmed
PCF 	1-5 days	2-3 days 	Confirmed
NS1 Ag 	1-6 days	1-2 days	Confirmed
IgM / IgG 	After 5 days for acute sera; 7-14 days for convalescent sera	1-2 days/30 minutes	Probable/confirmed

Specimen: serum, plasma, whole blood, tissues

PIDSP 2011

Dengue serotypes in the Philippines (2008 to 2010)

TOTAL NO:	3,469
Dengue-1	15.5%
Dengue-2	21.1%
Dengue-3	56.9%
Dengue-4	5.8%

Regions I, II, III, IV-A, IV-B, V, CAR (n=688):

Dengue-1	4.2%
Dengue-2	8.3%
Dengue-3	16.7%
Dengue-4	2.5%

NCR (n=609):

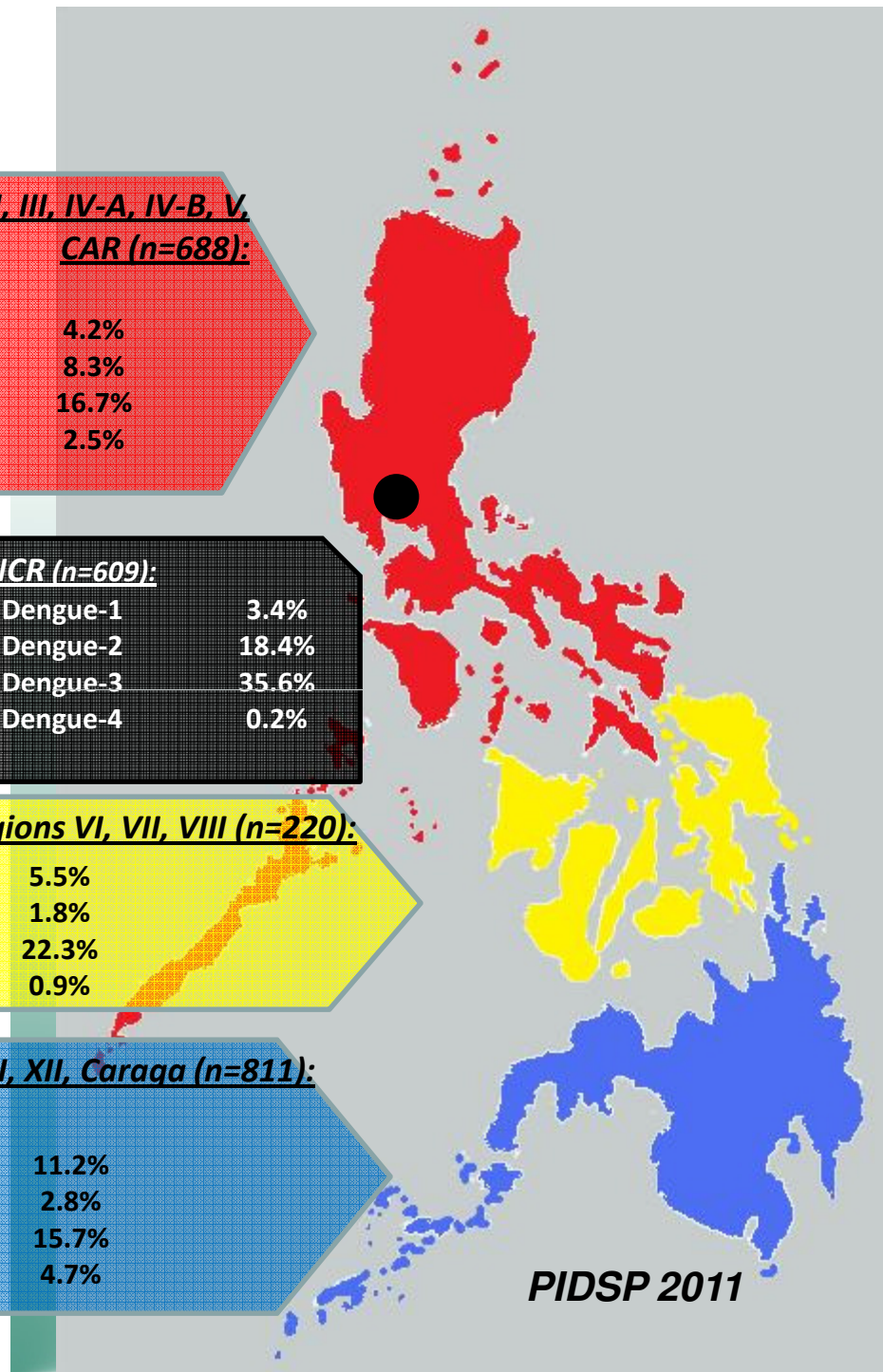
Dengue-1	3.4%
Dengue-2	18.4%
Dengue-3	35.6%
Dengue-4	0.2%

Regions VI, VII, VIII (n=220):

Dengue-1	5.5%
Dengue-2	1.8%
Dengue-3	22.3%
Dengue-4	0.9%

Regions IX, X, XI, XII, Caraga (n=811):

Dengue-1	11.2%
Dengue-2	2.8%
Dengue-3	15.7%
Dengue-4	4.7%



Management of Dengue

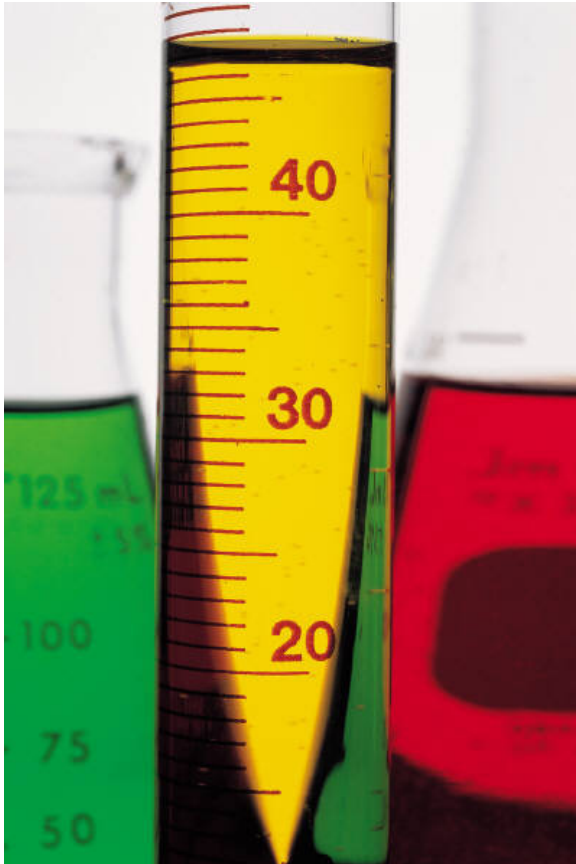
Diagnosis

- Dengue fever (WHO classification, 1997)
- Dengue with warning signs (WHO classification, 2009)
 - Abdominal pain and tenderness
 - Persistent vomiting
 - Hepatomegaly
 - Irritability (?)

Management

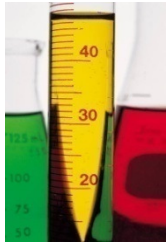
Group B – referred for in-hospital management as patient approach the critical phase (T 38.1 °C)

CBC, liver enzymes determination, isotonic solutions, monitor vital signs, reassess clinical status, lab parameters

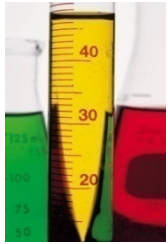


ID Look-Alikes: Fever

Josefina Cadorna – Carlos, M.D.
Associate Professor of Pediatrics
U E R M M M C I



S> G.M., 10 yr old, male, from Valenzuela, sought consult at PGH for the 1st time due to fever



Case 2

History of the Present Illness

1 week prior to admission → (+) on & off fever, T_{max} 38.5°C

(+) headache

(+) body malaise

(+) on & off epigastric pain

No consult done. Patient was given

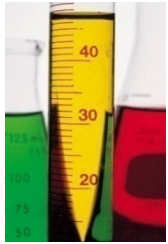
Paracetamol and Oresol.

2 days PTA → still with fever T_{max} 40°C

(+) LBM, watery, 3 episodes/day, non-bloody, non-mucoid

(+) increase severity of epigastric pain

Persistence of symptoms prompted consult at PGH and was subsequently admitted.



Case 2

Review of Systems

(+) poor appetite
(+) nausea
(-) ear discharge

(+) lethargy
(-) epistaxis
(-) difficulty of breathing

(-) cough & colds
(-) chest pain

Past Medical History

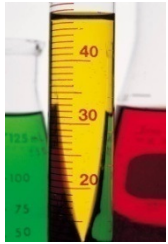
No previous hospitalization

Family History

No hereditary diseases noted

Birth/Maternal History

Patient was born full term to a then 33 year old G3P2 (2002) mother via SVD at a lying in clinic. Mother had regular prenatal check up c/o local health center. She took multivitamins and denied any maternal illness.



Case 2

Immunization History

(+) BCG (+) DPT3 (+) OPV3 (+) measles (+) Hepa B3

Nutritional History

Breastfed until 1 year of age. Mixed feeding with milk formula was started at 4 mos of age. Solid food was introduced at 6 mos of age.

At present, he consumes 3 meals and 2 snacks daily.

He is fond of eating street foods like “calamares”, “isaw” and fish balls during school break.

Developmental History

At par with age.

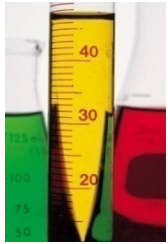
At present, he is a grade 4 pupil with average scholastic standing.

Personal/Social History

The patient is youngest of 3 siblings.

Father is 33 yr old accountant.

Mother is 43 yr old teacher.



Case 2

Physical Examination

Awake, lethargic, not in cardiopulmonary distress

Wt: 33 kgs

Ht: 130 cms

BP: 100/70

HR: 88/min

RR: 30/min

T: 39°C

(+) Sunken eyeballs, pink conjunctivae, anicteric sclera, (+) dental caries

(-) tonsillopharyngeal congestion, (+) cervical lymphadenopathy

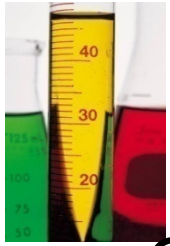
Adynamic precordium, distinct heart sounds, regular rate and rhythm, (-) murmur

Equal chest expansion, clear breath sounds, (-) rales/ wheeze

Abdomen soft, globular, normoactive bowel sounds, (+) diffuse tenderness on palpation,
liver edge: 5 cm below the right subcostal margin, splenic edge: 3 cm below the left
subcostal margin

Pink nailbeds, full pulses, (-) edema, (-) cyanosis

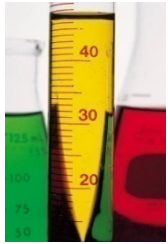
Normal external genitalia, Tanner stage 2



Salient features

- G.M., 10 year old, Male, Grade IV student, fond of eating street foods
- 1 wk PTA: low to moderate grade fever, headache, body malaise, on & off body malaise
- 2 days PTA: high grade fever, LBM, epigastric pain

Review of Systems: (+) poor appetite, (+) nausea
(+) lethargy



Salient features

- P.E. : highly febrile, lethargic, dehydrated,
 - : (+) cervical lymphadenopathy
 - : (+) abdominal tenderness
 - : (+) hepatosplenomegaly

TYPHOID FEVER

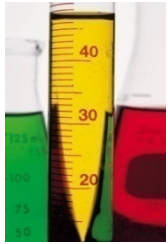
Weeks of illness	I	II	III	IV
	Small intestines Peyer's patches hyperaemic, swollen	necrosis → sloughing	ulcers hemorrhage perforation	healing
Incubation period: 10-12 days ↓ S. typhi ↓ Mouth ↓ GIT ↓ Peyer's patch ↓ Blood ↓ Gall bladder ↓ Intestines ↓ Peyer's patch	T°: slow, soft, dicrotic, prostration Diarrhea, constipation, abdominal distension bronchitis, epistaxis, WBC: 4,000-5,000 N: 40% L: 60% Blood culture: + Widal test: usually - O: - H: -	T°: BP Toxemia Delirium Pea-soup stools Typhoid tongue spleen rash → rose spots Stool culture: + O: + H: +	Typhoid state Stupor, delirium Muscle twitching Meningism 1-2 finger breathes below LCM Hemorrhage perforation WBC: ≥ 10,000 (N: 80%) urine culture: + O: +++ H: ++	Sequelae Cholecystitis Myocarditis Pericarditis O: ++ H: ++

Signs and symptoms in 422 patients with
blood culture confirmed typhoid fever.

Abucejo PE, Capeding MR, et al, GCGallares Mem Hosp,
Bohol, Phil; RITM, SEA JTropMed Pub Health, Sept 2001

Signs and symptoms	No. of patients (%)
Fever*	420 (99.5)
Chills	153 (36)
Headache *	162 (38)
Diarrhea*	104 (25)
Constipation	7 (2)
Anorexia *	108 (26)
Malaise *	100 (24)
Cough	99 (23)
Vomiting	88 (21)
Abdominal pain *	79 (19)
Hepatomegaly *	24 (6)
Gastrointestinal bleeding	11 (3)
Changes in sensorium	22 (5)
Rashes	4 (1)
Seizures	2 (0.5) *present in the case





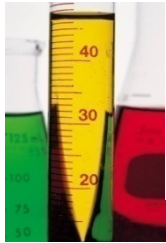
Admitting Diagnoses:

1. Typhoid fever (80%)
2. Pneumonia
3. Sepsis
4. Systemic viral infection
5. UTI
6. DHF
7. Acute gastroenteritis
8. Meningitis

Typhoid

**Table 23. COMPARATIVE Statistics, by Sociodemographic Category and Region
Typhoid, January - December, 2009
DOH, Philippines**

Category		Cases	% of Total	5-Year Median	%Change from 5-Year Median	Deaths	CFR (%)
Sex	Male	422	58.4	282	49.6	1	0.2
	Female	301	41.6	246	22.4	0	0.0
Age group (Years)	<1	10	1.4	4	150.0	0	0.0
	1 to 4	86	11.9	45	91.1	0	0.0
	5 to 14	247	34.2	173	42.8	0	0.0
	15 to 24	166	23.0	139	19.4	1	0.6
	25 to 39	116	16.0	112	3.6	0	0.0
	40 to 64	76	10.5	43	76.7	0	0.0
	65 & up	18	2.5	9	100.0	0	0.0
	Unknown	4	0.6	0	∞	0	0.0



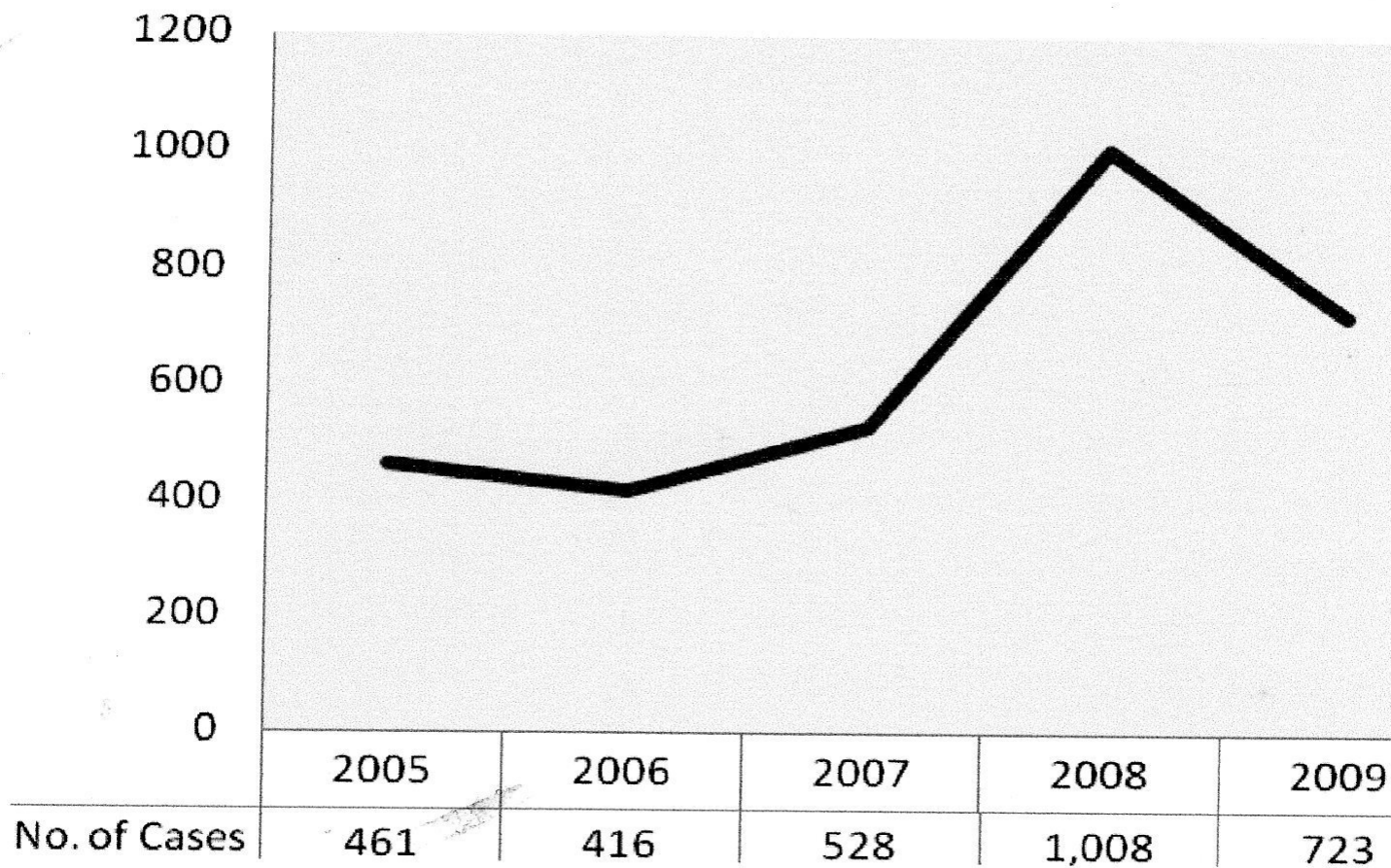
Typhoid

**Table 23. COMPARATIVE Statistics, by Sociodemographic Category and Region
Typhoid, January - December, 2009
DOH, Philippines**

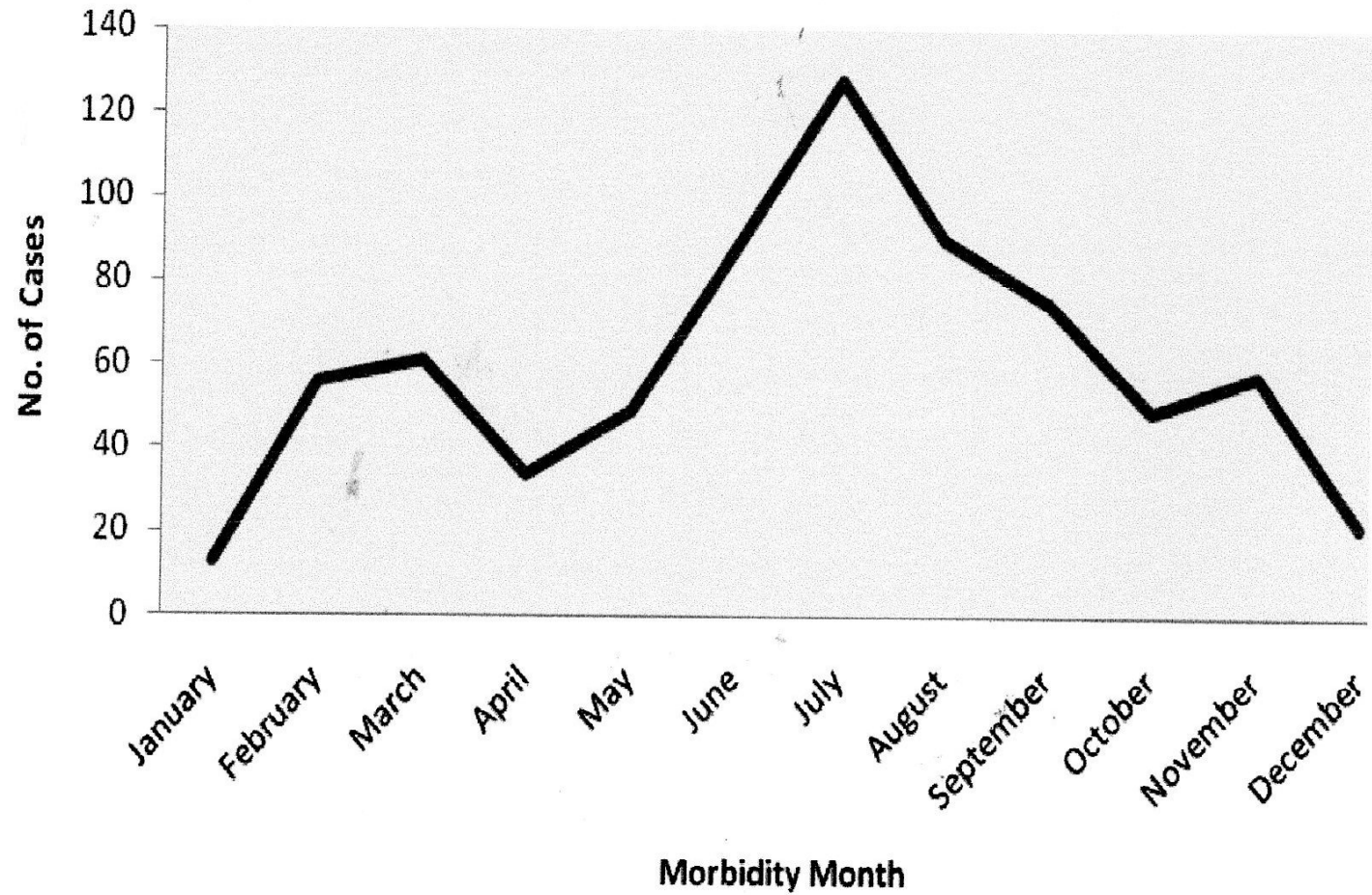
Region	Cases			Deaths			CFR
	1	2	3	4	5	6	7
1	66	9.1	2	3200.0	0	0.0	
2	69	9.5	6	1050.0	0	0.0	
3	12	1.7	3	300.0	0	0.0	
4A	4	0.6	62	-93.5	0	0.0	
4B	0	0.0	0	∞	0	∞	
5	75	10.4	24	212.5	0	0.0	
6	81	11.2	9	800.0	0	0.0	
7	298	41.2	57	422.8	0	0.0	
8	7	1.0	36	-80.6	0	0.0	
9	0	0.0	20	-100.0	0	∞	
10	55	7.6	0	∞	1	1.8	
11	0	0.0	21	-100.0	0	∞	
12	1	0.1	5	-80.0	0	0.0	
ARMM	0	0.0	4	-100.0	0	∞	
CAR	14	1.9	3	366.7	0	0.0	
CARAGA	1	0.1	1	0.0	0	∞	
NCR	40	5.5	119	-66.4	0	0.0	
Philippines	723	100.0	528	36.9	1	0.1	

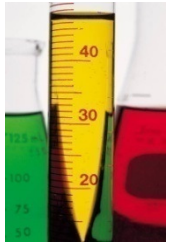
There were seven hundred twenty three confirmed Typhoid cases reported in 2009 nationwide. Majority (58.4%) of the cases were male. The age group with the highest (34.2%) number of cases is the 5 to 14 years age group. Majority (41.2%) of the cases were from Region 7. One died (CFR=0.1).

**Fig. 37. Distribution of Typhoid Cases by Year
Philippines, 2005-2009**



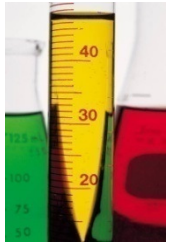
**Fig. 38. Distribution of Typhoid Cases by Morbidity Month
Philippines, January to December 2009**





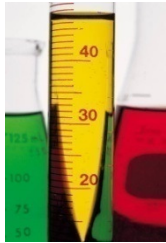
Differential Diagnoses:

- *Yersinia enterocolitica*
- Rickettsial infection (Scrub typhus)
- Malaria
- Leptospirosis
- TB



Diagnostic tests

- Blood culture (highest yield in the 1st week of illness)
- Stool culture ([+] in the 2nd-3rd week)
- Urine culture ([+] in the 2nd-3rd week but < than the stool culture yield)
- PCR : expensive, usually in research settings
- Rapid typhoid assays : detection of IgM/IgG for *Salmonella typhi*



Rapid typhoid assays



Typhiliza



Typhirapid

MEDTEK
www.medtek.com.ph

Confidence in **typhoid fever** diagnosis

TUBEX® TF
Rapid typhoid detection

- ▶ Early Detection of Typhoid Fever
- ▶ Unique Rapid IMBI™ Assay Principle
- ▶ Overall Sensitivity: 94%; Overall Specificity: 88%
- ▶ Accurate Results in 10 Minutes

TUBEX® TF
RAPID TYPHOID DETECTION

**REIMBURSABLE SA
PHILHEALTH**

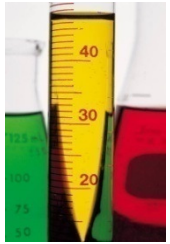
Medtek Trade & Technology, Inc. | 100 F. St. | 15th Floor | 15th Avenue | Pasig City | Philippines 1709 | Tel: +632 899 0007 | +632 899 0043 | +632 811 4408 | +632 812 5210 | Email: info@medtek.com.ph

**Comparison of Serological Test Kits for Dignosis of Typhoid
Fever in the Philippines, Kawano R., et al, Nat'l Ref. Lab, STD/AIDS Coop.
Central Lab, J Clin Microbiology, Jan 2007, p.246–247**

TABLE 2. Comparative performance of the four serological test kits^a

Test kit	Sensitivity % (95% CI)	Specificity % (95% CI)	PPV %	NPV %
TUBEX	94.7 (86.2–98.3)	80.4 (71.1–87.3)	78.0	95.3
SD Bioline				
IgM	69.0 (55.3–80.1)	79.3 (69.4–86.8)	67.8	80.2
IgG	70.7 (57.1–81.5)	76.1 (65.9–84.1)	65.1	80.5
Typhidot				
IgM	54.7 (42.8–66.1)	64.7 (54.6–73.7)	53.2	66.0
IgG	73.3 (61.7–82.6)	46.1 (36.3–56.2)	50.0	70.1
Mega				
IgM	90.7 (81.1–95.8)	49.0 (39.1–59.1)	56.7	87.7
IgG	96.0 (88.0–99.0)	39.2 (29.0–49.4)	53.7	93.0

^a For SD Bioline, the number of serotype Typhi culture-positive subjects examined was 58, and the number culture-negative subjects was 92; for all other tests, the number of culture-positive subjects was 75, and the number of culture-negative subjects was 102. PPV, positive predictive value; NPV, negative predictive value.



Treatment

- Chloramphenicol : 75 mg/kg/day in 4 div doses x 14 days
- Amoxicillin : 100 mg/kg/day in 3 div doses x 14 days
- Cotrimoxazole : 8 mg/kg/day
TMP:40mg/kg/d
in 2 div doses x 14 days

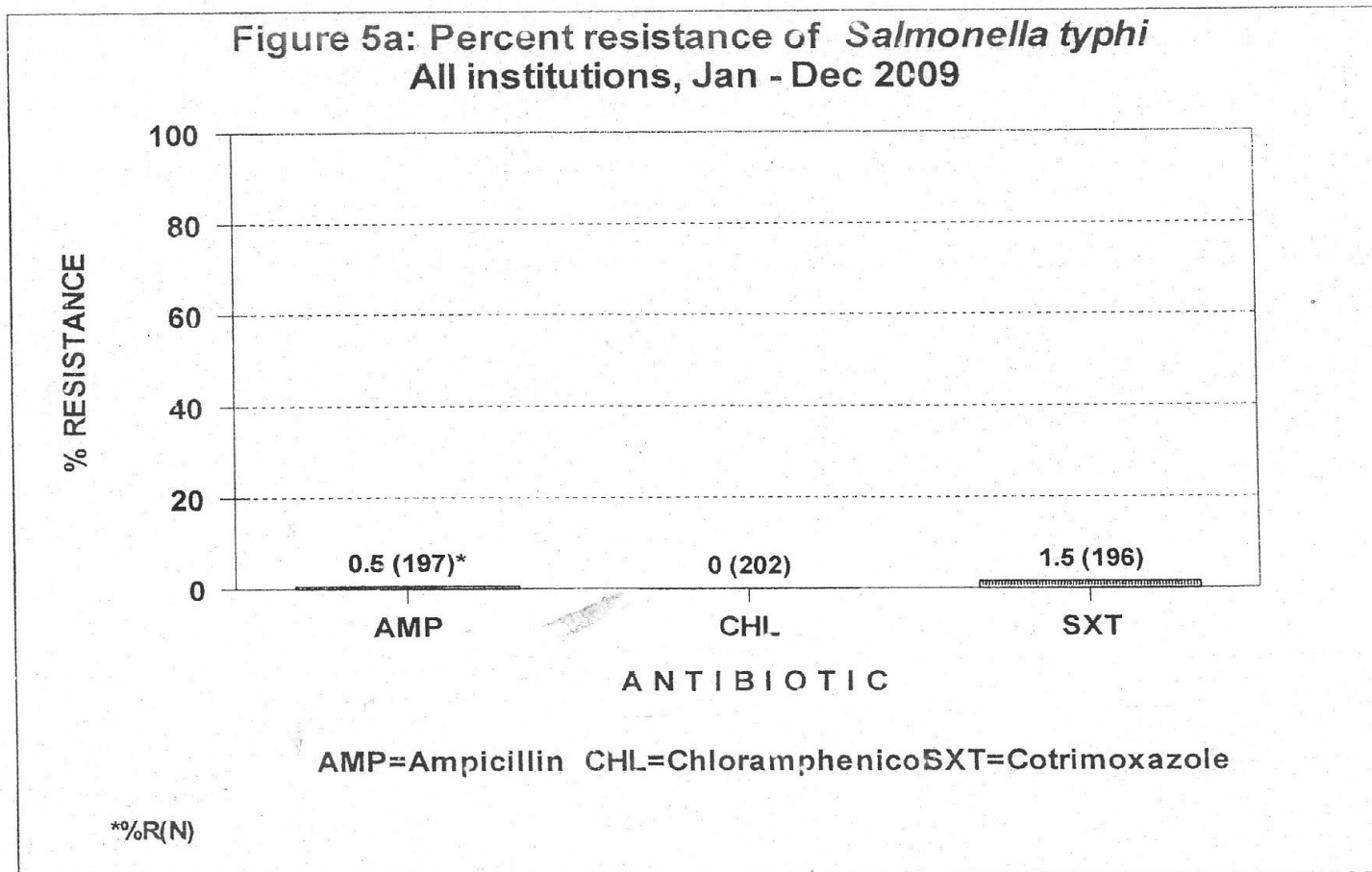
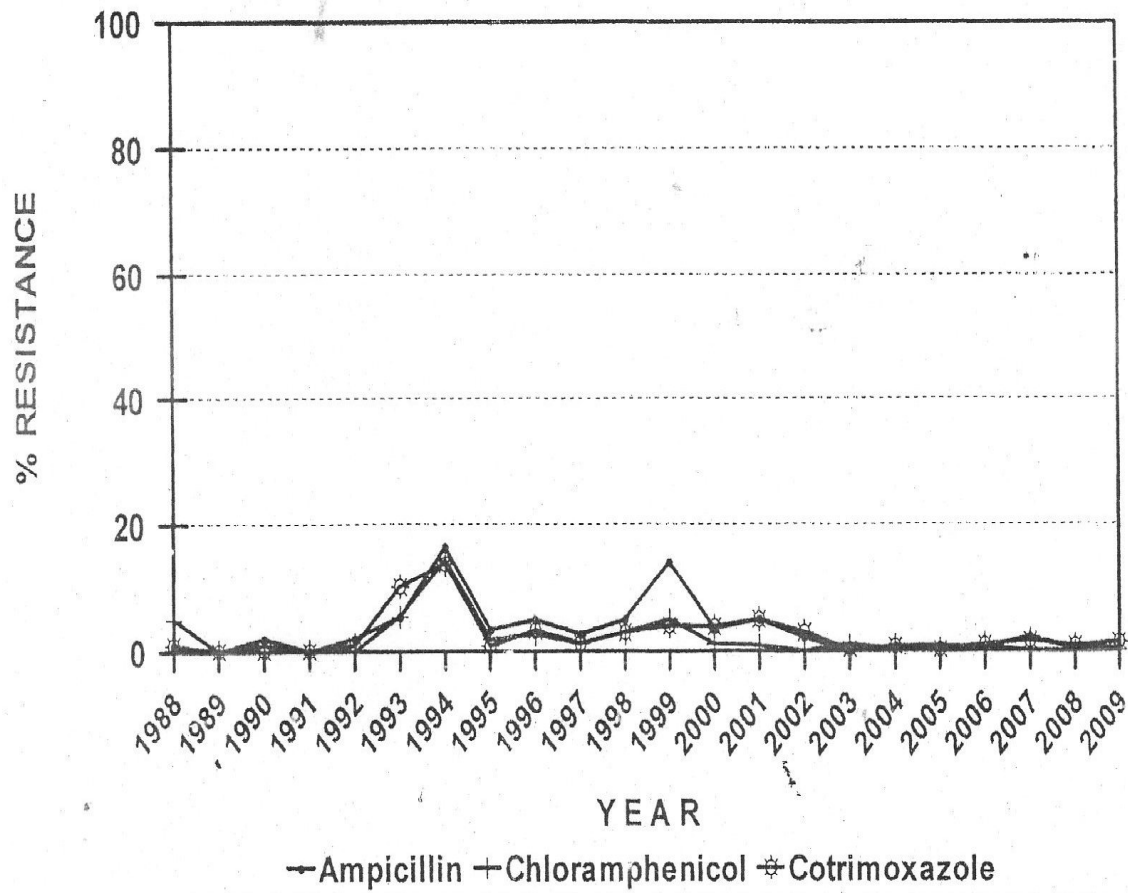
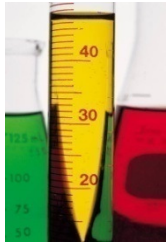


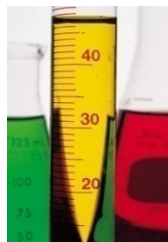
Figure 5b: Yearly resistance rates of *Salmonella typhi*
All institutions, Sep, 1988 - Dec 2009





Prevention:

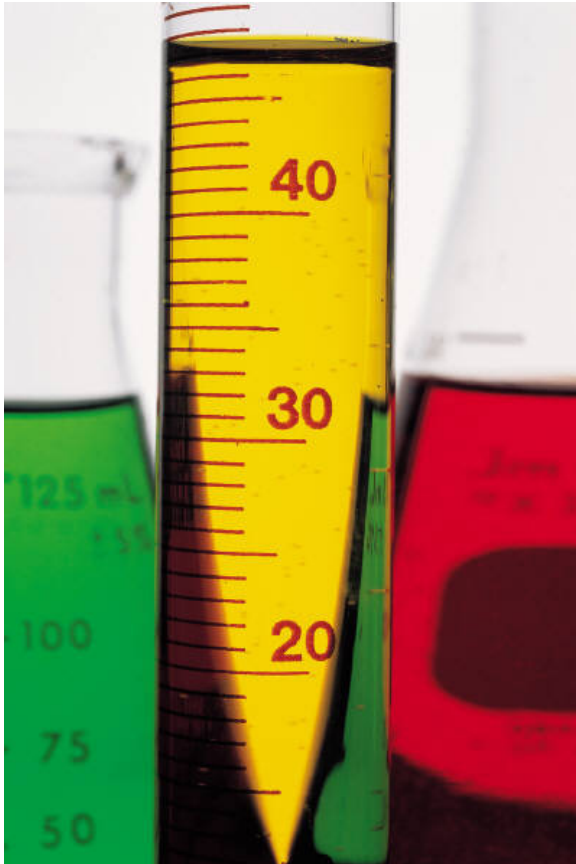
- Personal Hygiene & health education
- Safe, potable water supply
- Environmental sanitation
- Vaccination
- *** Oral typhoid vaccine] Efficacy
- *** Inactivated typhoid vaccine] 60-70%



Non-typhoidal fever(+) for typhidot IgM & IgM/IgG

Non-ty Fevers	Number	Percentage
UTI	3	4.3%
Hepatitis A	3	4.3%
ATP	1	2.2%
DFS/DHF	3	4.3%
URTI	4	8.7%
Pneumonia	1	2.2%
SVI	31	67.4%
Hep granuloma	1	2.2%

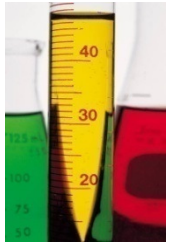
(?TB)



ID Look-Alikes: Fever and Jaundice

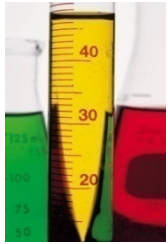
Anna Ong-Lim, MD

Section of Infectious and Tropical Disease in Pediatrics
College of Medicine - Philippine General Hospital
University of the Philippines Manila



Case 3

S>J.C., 10 year old, male, from Pangasinan, sought consult at PGH for the 1st time due to fever



History of Present Illness

5 days prior to admission→ Noted to have high grade, undocumented fever associated with chills, lethargy, malaise and severe headache.

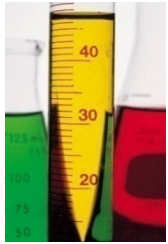
(+) nausea and vomiting

(+) generalized abdominal pain

(+) severe muscle pain, prominent in the lower extremities

→ The patient sought with a traditional healer and was given several herbal concoctions with no note of improvement

Persistence of symptoms prompted consult at PGH



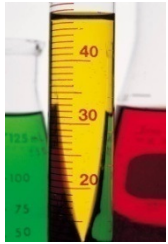
Case 3

Review of Systems:

- | | | |
|-------------------|------------------|-----------------------------|
| (-) seizure | (+) orbital pain | (+) photophobia |
| (-) eye discharge | (-) colds | (-) cough |
| (-) ear discharge | (-) epistaxis | (-) difficulty of breathing |
| (+) hematemesis | (-) hematochezia | (-) dysuria |

Past Medical History

- (-) history of trauma
- (-) history of previous hospitalizations
- (-) food/drug allergy



Family History

(-) DM, asthma, hypertension

(+) PTB – father, treated for 6 mos before the patient was born

(-) similar illness in the family

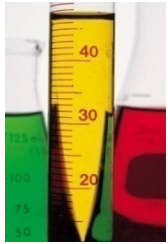
Birth & Maternal History

Patient was born full term to a then 22 yo G1P0 mother via SVD at home assisted by a traditional birth attendant.

Mother had no prenatal check up.

There was no note of maternal illness during pregnancy

The patient allegedly had good cry and activity at birth.



Case 3

Immunization History

(+) BCG

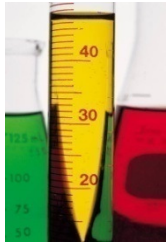
(-) DPT, OPV, Hepatitis B, measles

Nutritional History

The patient was breastfed until 2 yrs old

Solid food was introduced at 4 mos of age

At present, he consumes 3 meals/day, composed mainly of rice, fish and vegetables



Developmental History

At par with age

The patient is a grade 5 pupil at a local public elementary school with above average scholastic standing.

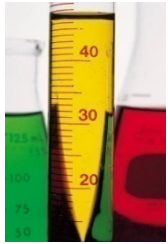
Personal/Social History

Patient is the eldest among 5 children.

Father is 35 year old farmer

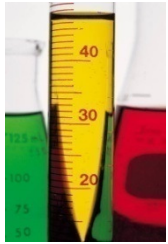
Mother is 33 year old laundrywoman

He usually helps his father in the fields before going to school.



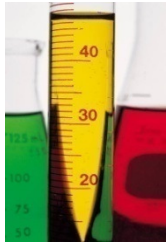
Salient Features

- 10/M from Pangasinan
- 5-day history of high-grade fever / chills
 - Systemic symptoms: lethargy, malaise, severe headache, nausea and vomiting
 - Also with orbital pain, photophobia, generalized abdominal pain, severe muscle pain at lower extremities
 - Noted to have hematemesis



Salient Features

- Physical exam: fever, lethargy
 - Palpable lymph nodes at cervical, axillary, inguinal areas
 - (+) conjunctival suffusion, icteric sclerae
 - Liver edge at 4 cm below right costal margin
- Grade 5 student, helps at farm before going to school



Fever and Jaundice

Bacteria

Atypical mycobacteria
Bacille Calmette-Guérin (BCG)
Bacillus cereus toxin
Bartonella henselae and Bartonella quintana
Brucella species
Listeria monocytogenes
Mycobacterium tuberculosis
Sepsis syndrome with cholestatic jaundice
Urinary tract infection in neonates

Spirochetes

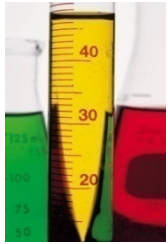
Leptospira species
Treponema pallidum

Rickettsiae

Coxiella burnetii (Q fever)

Parasites

Ascaris lumbricoides
Entamoeba histolytica
Plasmodium species
Toxoplasma gondii



Fever and Jaundice

Non-infectious

Autoimmune hepatitis

Reye syndrome

Hemophagocytic syndrome

Histiocytosis

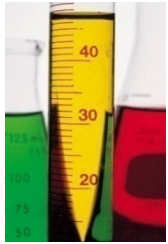
Lymphoma

Tumors

Sarcoidosis

Kawasaki Disease

Toxic shock syndrome



Fever and Jaundice

Primary hepatotropic viruses

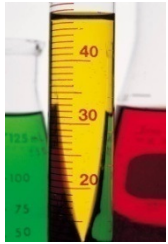
- Hepatitis A virus
- Hepatitis B virus
- Hepatitis C virus
- Hepatitis D virus
- Hepatitis E virus

DNA viruses

- Adenovirus
- Cytomegalovirus
- Epstein-Barr virus
- Erythrovirus (human parvovirus B-19)
- Herpes B virus
- Herpes simplex viruses 1, 2
- Human herpesviruses 6, 7, 8
- Varicella-zoster virus

RNA viruses

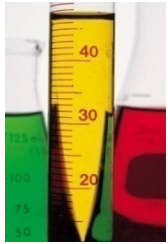
- Enteroviruses
- Hemorrhagic fever virus
- Human immunodeficiency virus
- Measles virus
- Rubella virus
- Syncytial giant-cell hepatitis



Differential Diagnosis: Fever and Jaundice

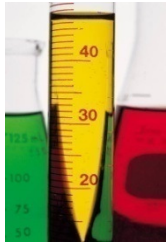
- Helpful to determine if jaundice is **pre-, intra- or post-hepatic**
- Pre-hepatic jaundice: HEMOLYSIS with low hemoglobin, reticulocytosis, elevated LDH and indirect bilirubin levels
 - Malaria, *C. perfringens*, *M. pneumoniae*
 - Patients with hematologic conditions (G6PD, paroxysmal nocturnal hemoglobinuria) may experience a hemolytic crisis during infection

Siegenthaler W. Differential diagnosis in internal medicine: from symptom to diagnosis. Theime. 2007, pp 145-146



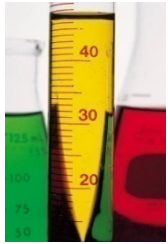
Differential Diagnosis: Fever and Jaundice

- Intra-hepatic Jaundice
 - Abnormal liver enzymes are noted, but hyperbilirubinemia is not very extensive
 - Due to a variety of pathogens
- Post-hepatic Jaundice
 - Presents with elevated direct bilirubin levels
 - Choledocholithiasis, pancreatitis
 - Can be accompanied by ascending infections due to *Enterobacteriaceae*, *Enterococci* and anaerobes
 - Parasites (*F. hepatica*, *Schistosoma*) are important in endemic areas



Uveitis

- Nonspecific term for inflammation of the uvea
 - Anterior uveitis: both iris and ciliary body are involved (iritidocyclitis)
 - Intermediate uveitis: inflammation in the region of the ciliary body and peripheral retina
 - Posterior uveitis: usually applies to combined inflammation of the retina and choroids → chorioretinitis
- Uveitis may result in **pain, conjunctival** or episcleral **hyperemia, photophobia**, lacrimation, and decreased vision
 - symptoms vary relative to the site and the aggressiveness of the inflammation



Causes of Infectious Uveitis

Viral

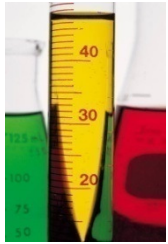
Herpes simplex
Varicella zoster virus
EBV
Enterovirus
Rubella virus
Mumps virus
Measles virus
SSPE
Creutzfeldt-Jakob Disease
HIV
CMV
Parvovirus
Hemorrhagic fever viruses
Human T-cell lymphotropic virus
Lymphochoriomeningitis Virus

Bacterial

Syphilis
Lyme disease
Leptospirosis
Tuberculosis
Leprosy
Brucella infection
Cat-scratch disease

Fungal

Histoplasmosis
Candidiasis
Aspergillosis
Coccidioidomycosis
Cryptococcosis
Sporotrichosis



Leptospirosis: Transmission

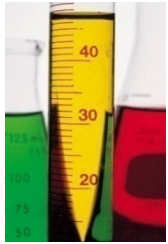
- Contact with blood, urine, tissues, or organs of infected animals
- Exposure to an environment contaminated by leptospire
 - Indirect transmission of leptospire from soil or water depends on environment favoring survival outside animal host → warm climate (25° C), moisture, pH values 6.2 - 8.0
 - Occupational exposure to cattle or swine or to water contaminated by rat urine is a risk factor
 - Number of cases acquired during outdoor recreation has increased
 - Dog has been incriminated as an important vector and reservoir

Signs and symptoms	
Fever	96.5
Jaundice	94.5
Myalgia	92.5
Headache	74.6
Vomiting	71.6
Dehydration	63.1
Chills	62.2
Calf pain	51.7
Diarrhea	42.3
Hepatomegaly	37.8
Anorexia	37.3
Oliguria	31.8
Tachypnea	32.3
Dyspnea	28.3
Crackles or rhonchi	22.9
Petechias	20.4
Arthralgias	19.9
Hemoptysis	13.4
Hematemesis	12.9
Conjunctival suffusion	11.9
Edema	11.4
Desorientation	9.4
Flapping	5.4
Constipation	4.9
Splenomegaly	2.9
Seizure	1.0

Daher EF et al. Clinical presentation of leptospirosis: a retrospective study of 201 patients in a metropolitan city of Brazil. *Braz J Infect Dis* 2010;14(1):3-10

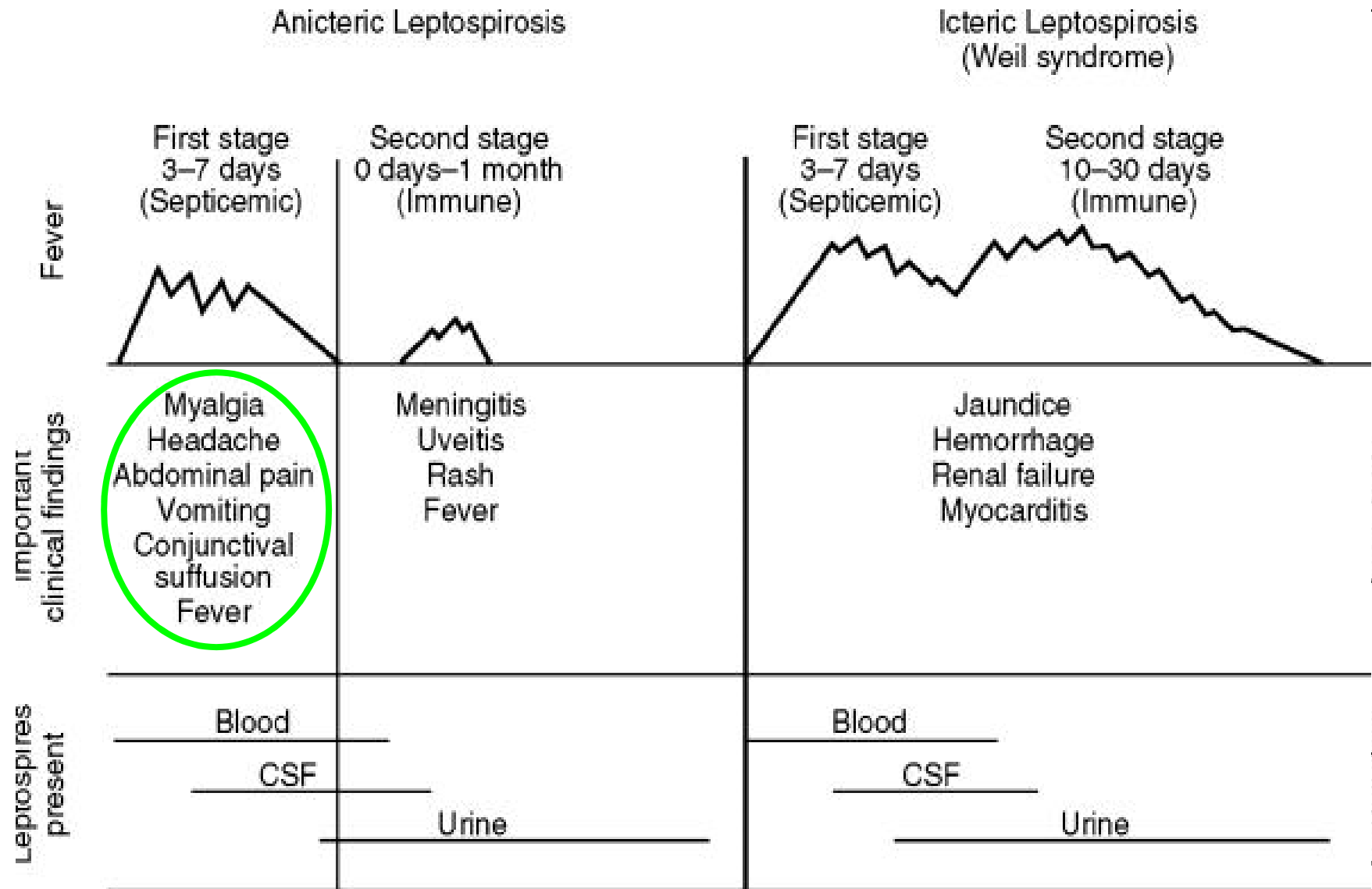
Table 2. Objective findings on admission

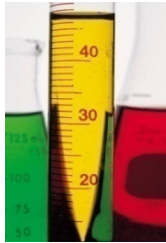
Objective finding	No.	%
Conjunctival suffusion	82	99
Jaundice	51	1
Fever	82	99
Tenderness in the abdomen	22	26.5
Calf tenderness	72	87
Tachycardia	18	22
Anemia	2	2.4
Hepatomegaly	2	2.4
Epistaxis	1	1.2
Melena	1	1.2
Hemoptysis	3	3.6



- Typically, disease presents in four broad clinical categories:
 1. Mild, influenza-like illness
 2. Weil's syndrome characterized by jaundice, renal failure, hemorrhage and myocarditis with arrhythmia
 3. Meningitis / meningoencephalitis
 4. Pulmonary hemorrhage with respiratory failure
- Clinical diagnosis is difficult because of the varied and non-specific presentation.
 - Confusion with other diseases, e.g. dengue and other hemorrhagic fevers → particularly common in the tropics

Clinical Course of Leptospirosis





Clinical Scoring System: Faine's Criteria

Part A. CLINICAL

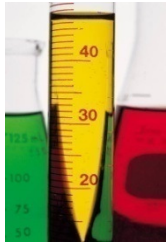
Headache	2
Fever	2
T>39C	2
Conjunctival suffusion	4
Meningism	4
Muscle pain	4
Conjunctival suffusion	4
Meningism	} 10
Muscle pain	
Jaundice	
Albuminuria or	
Nitrogen Retention	1

Part B. EPIDEMIOLOGY

Contact with animals at home, work, leisure or travel, OR contact with possibly contaminated water	10
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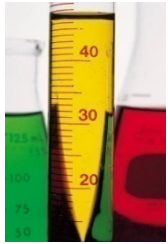
Part C. LABORATORY

Isolation of leptospire in culture: CERTAIN	
Positive serology: endemic	
Single (+), low titer	2
Single (+), high titer	10
Paired sera, rising titer	25
Positive serology: non-endemic	
Single (+), low titer	5
Single (+), high titer	15
Paired sera, rising titer	25



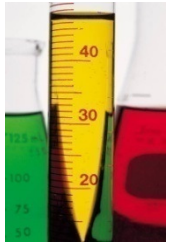
Clinical Scoring System: Faine's Criteria

- Presumptive diagnosis of leptospirosis
 - Part A OR Part A and PART B ≥ 26
 - Part A, B, C (Total) ≥ 25
- Score between 20-25 suggests that leptospirosis is **POSSIBLE** but **UNCONFIRMED**



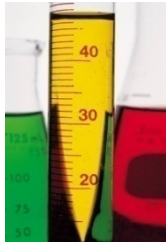
Laboratory Diagnosis

- Antibody detection
 - MAT is usually positive 10–12 days after the appearance of the first clinical symptoms and signs
 - Seroconversion may sometimes occur as early as 5–7 days after the onset of the disease
 - Antibody response may be delayed with prior antibiotic therapy
- Blood, urine or tissue cultures
- Demonstration of the presence of leptospire in tissues using fluorescent-labelled antibodies
- Polymerase chain reaction (PCR)



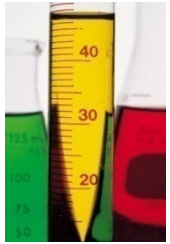
Treatment

- One-week treatment course should be given early in the course of disease if a diagnosis of leptospirosis is suspected
 - Parenteral aqueous penicillin G, 6-8 million U/m²/day in six divided doses
 - Tetracycline, 10-20 mg/kg/day IV
 - Tetracycline, 25-50 mg/kg/day PO



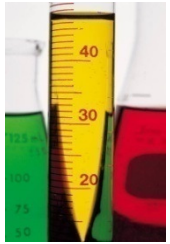
Treatment

- Dehydration, cardiovascular collapse, and acute renal failure may necessitate prompt and specific treatment
 - Acute renal failure prevented by ensuring adequate renal perfusion and appropriate fluid administration early in the course of disease, when prerenal azotemia and shock may be seen
 - If prerenal azotemia is suspected, diuresis should be attempted promptly with administration of a fluid or colloid load designed to expand extracellular volume and replace extracellular fluid deficits
 - In patients who do not respond, acute tubular necrosis may be suspected → fluid restriction
 - If azotemia is severe or prolonged → peritoneal dialysis or hemodialysis



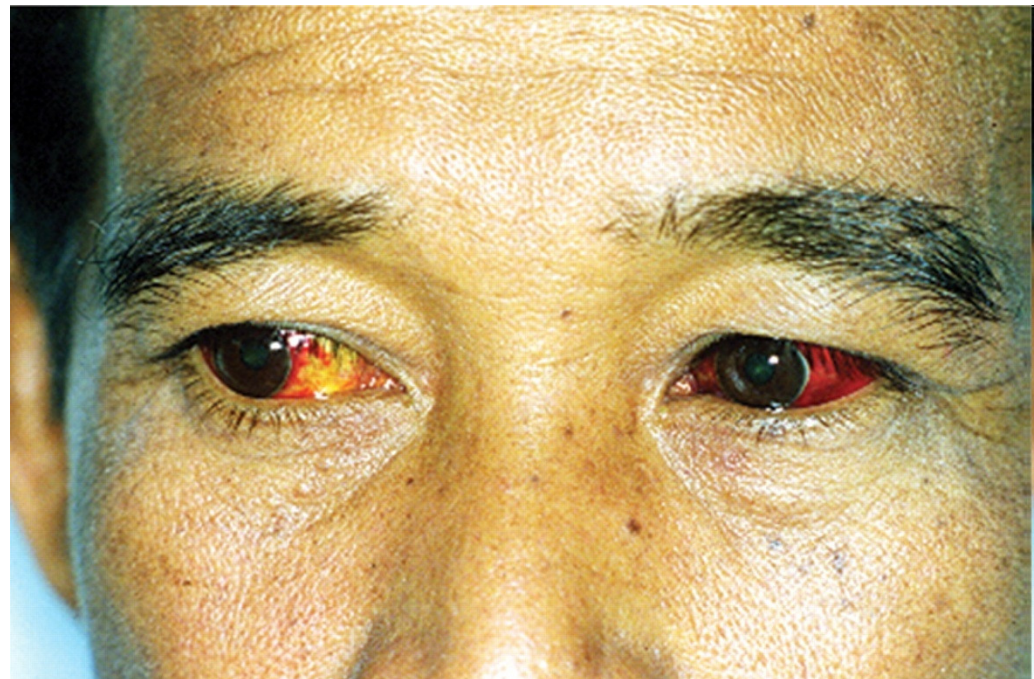
Ophthalmologic signs and symptoms

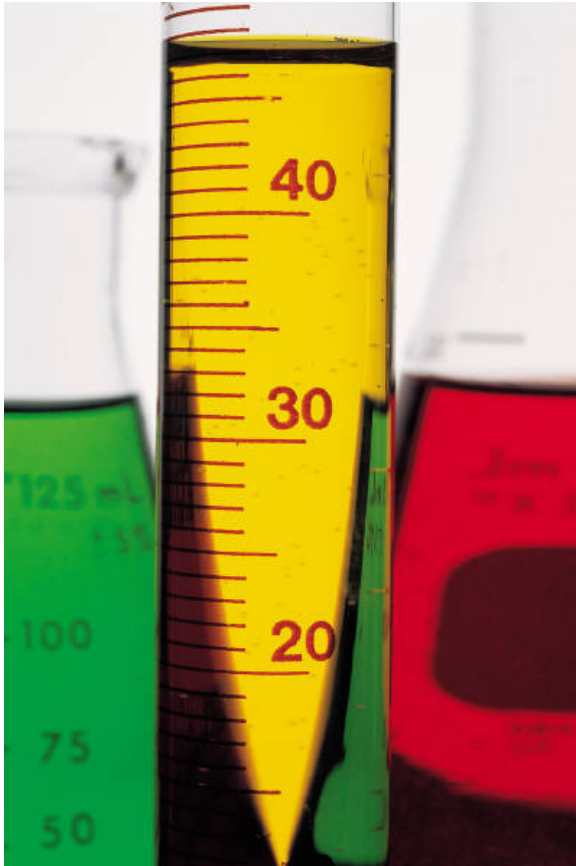
- Orbital pain
 - Can be caused by acute glaucoma or posterior scleritis
- Photophobia
 - Usually associated with more severe ocular surface disease or intraocular inflammation such as iridocyclitis



Conjunctival Suffusion

- Helpful diagnostic clue, appears 2-3 days after fever onset, affects bulbar conjunctiva
- No pus, serous secretions, matting of eyelids





Thank You!