

## **Learn Smart, not Hard**

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## Learn Smart, not Hard

### Topics

- o Letters and Words
- o Lumping Conditions
- o Riding the Escalator
- o Forwards, Backwards, and Sideways



**Letters and Words**

## Letters and Words 1

Medicines That Should Not Be Given to the Pregnant Woman

**QT: TALCS**

# Q

## Quinolones

- And, Not to the Patient Under Age 18 Years
  - Erosion of Joint Cartilage
- FDA Advisory to Adults: Stop Medication if Shoulder or Ankle Pain Occurs
  - Tendon Inflammation and Rupture Have Been Reported

# T

## Tetracyclines

- And, not to the Patient Under Age 8 Years
  - Interferes with Enamel and Bone Growth

That's the QT,

Now, the TALCS

**T**

Trimethoprim

- A Folic Acid Antagonist



# A

Angiotensin Converting Enzyme Inhibitors

Angiotensin Receptor Blockers

Accutane (Isotretinoin)

- Fetal Risks in All Stages of Pregnancy

# L

## Lithium

- Associated with Fetal Heart Anomalies
- Associated with Many Non-teratogenic Complications of Pregnancy

C

## Carbamazepine

- Used in Treatment of Epilepsy, Trigeminal Neuralgia, even Restless Legs Syndrome
- Associated with Neural Tube Defects
- Remember: Monitor the White Blood Count

# S

Sumatriptan

Statins

Spirolactone (and other mineralocorticoid receptor antagonists)

Remember the Letters:

QT : TALCS

## QT TALCS

- Q Quinolones
- T Tetracyclines
  
- T Trimethoprim
- A ACEIs, ARBs, Accutane
- L Lithium
- C Carbamazepine
- S Sumatriptan, Statins, Spironolactone

## Letters and Words 2

So Hard to Remember:

There Are **Anti-Mitochondrial** Antibodies

There are **Anti-Smooth Muscle** Antibodies

Which Antibodies Are Related to Autoimmune Hepatitis?

Which Antibodies Are Related to Primary Biliary Cirrhosis?

The Answer Lies in the “Letters”:

The Two “**M**s” Go with Two “**O**s”

Autoi**MM**une Hepatitis Links with Anti-Sm**OO**th antibodies

Primary Biliary Cirrhosis Links with Anti-mitochondrial antibodies



## Letters and Words 3

Remember the Letters

AC and DC

I Shall Convert This To Mort Diamond's

ACEY-DEUCEY RULE

## What Is the Acey-Deucey Rule?

In Paired Structures in the Body, Recurrent  
Involvement of One of the Pair Suggests a “Local” Disorder Whereas  
Involvement of Both Strongly Suggests a Systemic Disease

## Examples of the Acey-Deucey Rule

- Renal Colic
- Pneumonia
- Carpal Tunnel Syndrome

## Bilateral Carpal Tunnel Syndrome

Think:

- o Diabetes mellitus
- o Hypothyroidism
- o Rheumatoid arthritis
- o Acromegaly
- o Connective tissue disease
- o Pregnancy

**How About a Word?**

What Word Do You See?

**LITHIUM**

## I Do **Not** See Lithium

I See **“LITH”** ium

- “LITH” Makes Me Think of a Kidney Stone
- Now, You Know that Every Patient Who Takes Lithium Requires Serial BUN and Serum Creatinine Determinations
  - Every 2 to 3 Months for 1<sup>st</sup> 6 Months
  - Then, Every 6 to 12 Months

cont'd

## I Do Not See Lithium, cont'd

### I See "LITH"

- Now You Know that Kidney Disease Is the Major Adverse Effect of Long-Term Therapy
  - Nephrogenic Diabetes Insipidus
  - Chronic Kidney Disease

cont'd

## I Do Not See Lithium, cont'd

### I See Li“THI”ium

- THI Makes Me Think of Thyroid
  - Lithium Causes Hypothyroidism, Goiter, and Infrequently, Hyperthyroidism
- Now, You Know that Every Patient Who Takes Lithium Requires Serial Thyroid Function Tests

cont'd



## I Do Not See Lithium, cont'd

I See “Li“**THI**”um

- THI Makes Me Think of Thiazide Diuretics
  - Thiazides Increase Serum Lithium Levels

If You Remember to Dissect LITHIUM into “LITH” and “THI”

You Will Never Forget that Lithium Makes You Think of the Kidney, Thyroid,  
and Thiazide Diuretics

Another Word

**MED1C**

**MEDicine Is the Number 1 Consideration      “MED1C”**

- For Every Symptom or Sign
- For Every Abnormal Laboratory Value
- For Every Abnormality in Imaging

## Every Patient

- “My Husband Has Cancer...But They Can’t Find It”
- The Canadian Nickel
- “You Must Have Viral Hepatitis but I Can’t Prove It”

Imprint This Upon Your Heart

In Every Patient

MED1C

**Another Word**

**Lumping**

## **The First Number 0.9**

**Shout It Out:**

**What Do You Think of When You See 0.9?**



# Lumping 1

Lumping By the Numbers

**The First Number: “0.9”**

- 0.9 Is Normal Saline
  - The Preferred Solution to Rapidly Increase Circulating Blood Volume

cont'd

## **The First Number: “0.9”**

Ankle-Brachial Index      In Diagnosis of Peripheral Arterial Disease

- Normal Value Is = or > Than 0.9
- Value < 0.9 Indicates Occlusive Arterial Disease

cont'd

## The First Number 0.9, cont'd

### Waist to Hip Fat Ratio

- Value  $> 0.9$  Is an Indicator of Insulin Resistance

\*

## **It's Close But Not 0.9**

**The Number: "1.1"**

The Patient Who Has Ascites

The Two Most Important Initial Considerations

- Is the Ascites Fluid Infected?
- Is the Ascites Fluid Caused by Portal Hypertension?

cont'd

## It's Close But Not 0.9

Therefore, the Initial Tests on Ascitic Fluid Include...

- Cell Count and Differential
  - A Neutrophile Count = or  $> 250/\text{mm}^3$  Is Indication to Start Antibiotic Therapy

(Of course, you will send fluid for culture and sensitivity)

cont'd

## It's Close, but Not 0.9

The Initial Tests on Ascitic Fluid Include...

- Serum to Ascites Albumin Gradient (SAAG)
  - Value 1.1 or > Is Indicative of Portal Hypertension

## **The Second Number “5”**

**Shout It Out:**

**What Do You Think of When You See “5”?**

## Lumping by the Numbers, cont'd

The Second Number: "5"

### Phosphodiesterase-5 Inhibitors

- Used in Treatment of Erectile Dysfunction
- Do Not Administer Nitrates Because of Dramatic Decrease in Blood Pressure \*



## The Second Number: “5”

### 5-Alpha Reductase Inhibitors

- For Treatment of Benign Prostatic Hyperplasia
- Action: Block Conversion of Testosterone to Dihydrotestosterone

## The Second Number: “5”

### 5-Hydroxyindoleacetic Acid (5-HIAA)

- Urinary 5-HIAA Is Initial Test in Diagnosis of Carcinoid Syndrome
- The Syndrome:  
Flushing, Diarrhea, and Wheezing

## The Second Number: “5”

### Factor V Leiden Mutation

- The Most Common Inherited Thrombophilia
- Major Clinical Manifestation Is Deep Vein Thrombosis with Pulmonary Embolism \*

cont'd

## The Second Number: “5”

### **Factor V Leiden Mutation,** cont'd

- Also a Risk Factor for Cerebral, Mesenteric, and Portal Vein Thrombosis
- Weak Association with Arterial Thrombosis

## The Third Number: “30”

### The Clue to Bilateral Renal Artery (BRA) Stenosis

- A 30% or Greater Increase in Serum Creatinine Level During Angiotensin Converting Enzyme Inhibitor (ACEI) Therapy Suggests BRA Stenosis
- Why 30% \*

## The Fourth Number: “40” (or So)

### Sarcoidosis

- Onset of Cough and Bilateral Hilar Adenopathy
- 75% of Untreated Patients Have an Elevated Serum Level of Angiotensin Converting Enzyme (ACE)
- 40% Hypercalciuria
- 10% Hypercalcemia \*

## The Fourth Number: “40” (or So), cont'd

### Variant Angina

- Myocardial Ischemia at Rest, Typically, Awakening Patient During Early Morning Hours
- Pathophysiology: Coronary Artery Spasm
- Transmural, not Subendocardial Ischemia
- ST Segment Elevation During Myocardial Ischemia

\*

## The Fourth Number: 40 (or So)

### Primary Biliary Cirrhosis

- o Fatigue
- o Pruritis
- o Abnormal liver function tests
- o Anti-mitochondrial antibodies



## The Fourth Number: “40” (or So)

### Arterial Pulse Pressure

#### Increased Pulse Pressure

- High Cardiac Output States
  - Anemia, Fever
  - Hyperthyroidism
  - Arteriovenous Fistula

cont'd

## An Important Clinical Clue

Increased Pulse Pressure in Diagnosis of High Cardiac Output Heart Failure

- Patient Who Has Dyspnea, Pulmonary Crackles, Peripheral Edema, Gallop Rhythm

## The Fourth Number: “40” (or So), cont’d

### Increased Pulse Pressure

- Isolated Systolic Hypertension
- Aortic Valve Regurgitation

## Lumping the Conditions

### Catamenial

- Migraine
  - Frovatriptan 2.5 mg BID Starting 3 Days Before and Continuing for 6 Days (Am. Coll. Phys. 11/13)
- Epilepsy

cont'd

## Catamenial

- Panic Attacks
- Asthma
- Pneumothorax / Hemoptysis
  - Endometriosis

## Lumping the Conditions

### The “Erythemas”

#### Erythema Migrans

- In Lyme Disease
- Caused by *Borrellia bergdorderi*
- Noted 3 to 30 Days after Tick Bite

## Erythema Migrans

- Bell's Palsy Is Most Common Cranial Neuropathy in Lyme
  - Often Bilateral
- Other Cranial Nerve Palsy May Occur
- Cardiac: Atrioventricular Block

A Good Question:

What Diseases Are Most Likely to Cause Bilateral Bell's Palsy?



## Bilateral Bell's Palsy

- Lyme Disease
- Sarcoidosis
- Acute HIV infection
- Guillain-Barre syndrome
- Basilar meningitis

Another Good Question:

What Other Infectious Organisms Cause Bell's Palsy?

## Organisms Causing Bell's Palsy

- Herpes Simplex
  - Treated with Prednisone for 10 Days
- Herpes Zoster
  - Ramsay Hunt Syndrome: Vesicles in Auditory Canal and on Auricle
  - Treated with Anti-Viral Medicine, NOT Glucocorticoid

## Another “Erythema”

### Erythema Nodosum

- Painful, Purple Nodular Lesions in Pretibial Area
- Resolve Without Scarring in 2 to 8 Weeks
- Etiology
  - Infectious
  - Non-infectious

cont'd

## Erythema Nodosum

### Infectious Causes (Dominant Causes)

- Tuberculosis
- Streptococcal Infection
- Fungal Infection, esp., Histoplasmosis

# Erythema Nodosum

## Non-Infectious Causes (Dominant Causes)

- Crohn's Disease
- Sarcoidosis
- Medicines, particularly, Oral Contraceptives
- Pregnancy

## Another “Erythema”

### Erythema Multiforme

- Characterized by Target Lesions on the Skin
- Most Common Cause is Herpes Simplex

## Another “Erythema”

### Erythema Toxicum Neonatorum

- Present 2 to 48 Hours after Birth
- Maculopapular Rash that Progresses to Pustules
- Resolves Spontaneously



## Another “Erythema”

### Erythema Infectiosum (“Fifth” Disease)

- Caused by Parvovirus
- “Slapped Cheeks” Rash
- Self-Limited, Mild Illness
- Usually, No Treatment is Indicated

## Another “Erythema”

### Erythema Marginatum

- Occurs Early in Acute Rheumatic Fever (ARF), Usually in Patients Who Have Carditis
- A “Major Criterion” in Diagnosis of ARF
- Pink, Non-Pruritic Ring or Crescent Rash with Central Clearing

## Lumping the Conditions

- o Aspiration Pneumonia
- o Tricuspid Valve Endocarditis
- o Staphylococcal Pneumonia
- o Pseudomonas Pneumonia
- o Klebsiella Pneumonia

## Lung Abscess

- Anaerobic Bacteria \*
- Staph. aureus
- Influenza
- Ventilator, other hosp. equip.
- DM, ROH abuse, Cancer

## Lumping the Conditions

### Unequal Blood Pressure in Arms

- Subclavian Steal
- Dissection of the Aorta (~20%)
- Takayasu Arteritis

cont'd

## Unequal Blood Pressure in Arms, cont'd

- Giant Cell Arteritis
- Coarctation of the Aorta
  - Small Percentage of Cases

## Escalator Questions

Which of the following is a risk factor for dissection of the aorta?

Multiple Correct Answers

## Risk Factors for Dissection of the Aorta

- Systemic Hypertension
- Ehler Danlos Syndrome
- Cocaine
- Giant Cell Arteritis

cont'd

## Risk Factors for Dissection of the Aorta, cont'd

- Marfan Syndrome\*
- Bicuspid Aortic Valve\*
- \*Particularly, During Pregnancy



## *Up the Escalator in Difficulty*

A 77-year-old man with chronic hypertension has the acute onset of severe tearing anterior chest pain. Presence of which of the following signs is most suggestive of dissection of the aorta?

## Dissection of Aorta: Signs

**Two correct answers:**

Unequal Blood Pressure in the Arms

New Murmur of Aortic Regurgitation

## Up the Escalator

A 77-year-old man with chronic hypertension has the acute onset of severe tearing anterior chest pain. Thirty minutes later blood pressure 70/40 mm Hg, pulse 136/min. Jugular venous pressure is increased. Auscultation of the lungs is normal and heart sounds are distant. Which of the following is the most likely diagnosis?

## Pericardial Tamponade

### *Up the Escalator in Difficulty*

A 77-year-old man with chronic hypertension has the acute onset of severe tearing anterior chest pain. Thirty minutes later blood pressure is 70/40 mm Hg and pulse 136/min. Jugular venous pressure is increased. Auscultation of the lungs is normal and heart sounds are distant. Which of the following signs is most likely to be noted?

Paradoxical Pulse

### *Up the Escalator in Difficulty*

A 77-year-old man with chronic hypertension has the acute onset of severe tearing anterior chest pain. Thirty minutes later blood pressure is 70/40 mm Hg and pulse 136/min. Jugular venous pressure is increased. Auscultation of the lungs is normal and heart sounds are distant. Which of the following is the preferred initial diagnostic test?

# Echocardiography



### *The Escalator Has Reached the Top*

A 77-year-old man with chronic hypertension has the acute onset of severe tearing anterior chest pain. Thirty minutes later blood pressure is 70/40 mm Hg and pulse 136/min. Jugular venous pressure is increased. Auscultation of the lungs is normal and heart sounds are distant. Which of the following is the abnormality most likely be noted on echocardiography?

Diastolic Collapse of the Right Ventricle

Learn Smart, not Hard

Learn Forwards, Backwards...

and Sideways

## Learn Forwards, Backwards, and Sideways 1

A 81-year-old man has systolic heart failure. In addition to a loop diuretic and beta adrenergic blocker which class of medicine should be prescribed?

Angiotensin Converting Enzyme Inhibitor (ACEI)

This Is Learning “Forwards”

A 62-year-old man who has diabetes mellitus now has proteinuria. Which of the following classes of medicines should be prescribed?

Angiotensin Converting Enzyme Inhibitor (ACEI)

This Is Learning “Forwards”

## Now, Let Us Learn “Backwards”

Name All the Conditions for Which an ACEI Should Be Prescribed

- Chronic Kidney Disease with Proteinuria
- Systolic Heart Failure
- ST Segment Elevation Myocardial Infarction (STEMI)

cont'd

Name All the Conditions for Which an ACEI Should Be Prescribed, cont'd

- Hypertension
- Isolated Systolic Hypertension

Now, Let Us Learn “Sideways”

## Learning “Sideways”

What Are Adverse Effects of ACEIs?

- Cough
- Hyperkalemia
- Hypoglycemia in Patient Who Takes Insulin
- Congenital Anomalies in Infant of Pregnant Woman

cont'd



## Adverse Effects of ACEIs, cont'd

- Angioneurotic Edema (AE)
  - Swelling of Lips, Face, Tongue, and Upper Airways
  - How Long Does It Take for AE to Occur after Onset of ACEI Therapy?

## How Long Does it Take for AE to Occur?

- Answer: One Day to One Year
- Remember, in the Elderly Patient AE May Be Manifest only as Diffuse Abdominal Pain and Diarrhea
  - Caused by Edema of Intestinal Mucosa

- An Important Clinical Point
  - ACEI-Related Angioneurotic Edema Is Not Associated with Urticaria or Itching
  - Why Not?

## ACEI-Related Angioedema

- Is Bradykinin-Mediated, Not Mast Cell Mediated
- Bradykinin Causes the Increased Vascular Permeability Swelling
- Since Mast Cells Are not Involved the Patient Does Not Have Urticaria or Itching

## Mast Cell-Mediated AE

- In Contrast, Mast Cell-Mediated AE Is Associated with Urticaria and Itching
- Mast Cells Release Inflammatory Mediators Including Histamine, Heparin, Leukotriene C4 and Prostaglandin D2

## Mast Cell-Mediated AE

- Examples Include
  - Foods
  - Insect Stings
  - Latex
  - Drugs
  - Radiocontrast Agents

## Learn Forwards, Backwards, and Sideways 2

A 33-year-old man has a rash in the groin area characterized by macerated plaques with erythematous satellite lesions. Which of the following is the most appropriate initial diagnostic test?

Potassium Hydroxide (KOH) Preparation

## Learning “Forwards”

A 22-year-old man has a rash on his trunk. Tinea versicolor is suspected. Which of the following is the most appropriate diagnostic test?

Potassium Hydroxide Preparation



## Now, Let Us Learn “Backwards”

Name all the conditions for which a potassium hydroxide preparation should be performed.

- All the “Tineas”
  - Capitis
  - Cruris
  - Pedis
  - Versicolor

cont'd

## Potassium Hydroxide Preparation

- Candidiasis
- Bacterial Vaginosis
  - The “Whiff” Test

## Learn Forwards, Backwards, and Sideways 3

A 32-year-old woman wishes to become pregnant.  
Which of the following supplements should be taken in  
an effort to reduce the risk of neural tube defect?

Folic Acid

## Again, Learning “Forwards”

A 57-year-old man who suffers from chronic alcohol abuse has a macrocytic megaloblastic anemia. The serum methylmalonic acid level is normal. Which of the following should be prescribed?

Folic Acid

## Now, Let Us Go “Backwards”

Name all the conditions for which folate should be prescribed.

- Pregnancy or the Woman who Wishes to Become Pregnant
- Alcohol Abuse
- Methotrexate Therapy

cont'd

## Folate Supplement, cont'd

- Sulfasalazine Therapy
- Chronic Hemolytic Anemia
  - Sickle Cell Disease (SCD)

All Patients Who Have SCD Should Take Daily Folate

## Now, Let Us Go “Sideways”

A 4-year-old boy who has sickle cell disease has the acute onset of right upper quadrant abdominal pain, nausea, and vomiting. Examination shows right upper quadrant tenderness with guarding. Which of the following is the most likely diagnosis?

- Acute cholecystitis

70% of SCD Patients Have Bilirubin Gallstones

## Pardon the Divagation

What Gastrointestinal Disease Is Associated with a High Incidence of Bilirubin Gallstones?



## Crohn's Disease

## Back to SCD and Going “Sideways”

A 16-year-old man has sickle cell disease. He is at greatest risk to develop bacteremia from which of the following bacteria?

## Sickle Cell Disease and Bacteremia

### Encapsulated Bacteria

- Str. Pneumoniae
- H. influenzae type b
- N. meningitidis

WHY?

- Patients with SCD Infarct the Spleen
- The Spleen Has 2 Important Roles in Preventing Infection
  - Filtering Bacteria
  - Produces Immunoglobulin M (IgM)

- This Is why Prophylactic Penicillin V Is Given to All Children who Have SCD Until at Least 5 years of Age

## Still Going “Sideways” on SCD

- Remember that Boys and Men Who Have SCD Have Increased Incidence of Priapism
- Treated with Aspiration of Blood from Corpus Cavernosum Followed by Instillation of Adrenergic Agonist (often phenylephrine)

## Learn Forwards, Backwards, and Sideways 4

### Learning “Forwards”

A 33-year-old woman has trichomonas vaginalis. Which of the following is the preferred initial therapy?

- Metronidazole

## Still Going “Forwards”

An 18-year-old man has diarrhea 10 days after drinking stream water during a camping trip. Giardiasis is diagnosed. Which of the following is the preferred initial therapy?

Metronidazole



## **Now, Let Us Learn “Backwards”**

Name All the Conditions for Which Metronidazole Is Prescribed?

## Metronidazole Is Prescribed for the Following:

- Anaerobic Bacterial Infections
  - All the Clostridia  
(difficile, perfringens, botulinum, tetani)
  - Bacteroides
  - Porphyromonas

cont'd

## Learning “Backwards”

Metronidazole Is Prescribed for the Following: cont'd

- Fusobacterium
- Helicobacter pylori (microaerophilic)
- Gardnerella

## Metronidazole Is Prescribed for the Following:

- Anaerobic Protozoan Infections
  - *Trichomonas vaginalis*
  - *Giardia lamblia*
  - *Entamoeba histolytica*
  - *Balantidium coli*

cont'd

## Metronidazole Is Prescribed for the Following:

And...

- Metronidazole is used topically in rosacea

## Now, Let Us Learn “Sideways”

Metronidazole therapy is to be initiated in a 34-year-old woman in treatment of Giardiasis. Which of the following is proper counseling for the patient?

## Learning “Sideways”

- Avoid Alcohol While Taking the Medication and for 4 Days Afterwards
- Urine May Turn Orange-Red
  - This is not blood in the urine

## **Learn Forwards, Backwards, and Sideways 5**

A 57-year-old woman has a 2 month history of forgetfulness and cold intolerance. Blood pressure 154/96 mm Hg, pulse 66, reg. Examination shows pallid coarse skin, periorbital edema, and slow relaxation of deep tendon reflexes. Which of the following is the preferred initial diagnostic test?

Serum thyroid stimulating hormone level



## Learning Forwards

A 34-year-old woman has a 1 month history of anxiety, heat intolerance, and 5 pound weight loss despite an excellent appetite. Blood pressure 160/60 mm Hg, pulse 112/min. Examination shows fine tremor and lid lag. Which of the following is the preferred initial diagnostic test?

Serum thyroid stimulating hormone level

Now, Let Us Go “Backwards”

Name All the Clinical Conditions for Which a Serum Thyroid Stimulating  
Hormone Level Is an Appropriate Test

## Indications for a Serum TSH Level

- To Diagnose Hypothyroidism
- To Diagnose Hyperthyroidism
- To Determine the Therapeutic Dose of Thyroxine in Patient Treated for Hypothyroidism

cont'd

## Indications for a Serum TSH Level, cont'd

- Differentiate Primary from Secondary Hypothyroidism
- Patient Taking Lithium or Amiodarone
- Patient Who Received Radioactive Iodine

## Remember

Serially, Check the TSH Level in Patients Who Have:

- o Down Syndrome
- o Celiac Disease
- o Type 1 Diabetes Mellitus