



## MORNING REPORT 3/9

## MKSAP #1

- A 44-year-old man diagnosed with cryptogenic cirrhosis 2 years ago is hospitalized for a fractured left hip sustained after a car accident. He is asymptomatic except for pain in his hip. He has felt well recently and is currently on the liver transplant list. He smokes 1 pack of cigarettes daily and does not drink alcoholic beverages or use illicit drugs. Medications are spironolactone, 50 mg twice daily; lactulose, 30 mL twice daily; oral propranolol, 20 mg twice daily; and furosemide, 20 mg twice daily.



## MKSAP #1

- On examination, temp is 96.8 °F, HR is 72/min, RR is 18/min, and BP is 98/55 mm Hg. He is cachectic. There is scleral icterus. He has normal mentation, and no asterixis is noted. Cardiac examination reveals no murmurs or rubs, and his lungs are clear to auscultation. The abdomen is distended but nontender. There is 2+ peripheral edema and palmar erythema.



# MKSAP #1

<b>Laboratory Studies</b>	
Glucose	88 mg/dL (4.88 mmol/L)
Blood urea nitrogen	14 mg/dL (5 mmol/L)
Creatinine	0.9 mg/dL (79.58 $\mu$ mol/L)
Sodium	130 meq/L (130 mmol/L)
Potassium	3.3 meq/L (3.3 mmol/L)
Chloride	107 meq/L (107 mmol/L)
Bicarbonate	18 meq/L (18 mmol/L)
Albumin	2.6 g/dL (26 g/L)
Arterial blood gas studies (with the patient breathing room air):	
pH	7.48
Pco <sub>2</sub>	25 mm Hg
Po <sub>2</sub>	92 mm Hg



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pH	7.48
P <sub>CO</sub> <sub>2</sub>	25 mm Hg
P <sub>O</sub> <sub>2</sub>	92 mm Hg

- Which of the following is the most likely cause of this patient's acid–base disorder?
- A. Renal tubular acidosis
- B. Impaired hepatic conversion of lactate
- C. Lactulose-induced diarrhea
- D. Reduced acid buffering capacity of the blood
- E. Increased minute ventilation



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- What's the primary disorder?
  - Alkalosis
    - Resp or Metabolic?
- Is compensation appropriate?
  - Chronic Resp Alkalosis
  - Every 10mmHGg ↓ in pCO<sub>2</sub> should have a 4 mEq/L ↓ in HCO<sub>3</sub>



- A. Renal tubular acidosis
  - Ph was alkaline, doesn't fit
- B. Impaired hepatic conversion of lactate
  - ↓ clearance of lactate can lead to lactic acidosis, but would have AG
- C. Lactulose-induced diarrhea
  - Diarrhea would cause a metabolic acidosis
- D. Reduced acid buffering capacity of the blood
  - Cirrhosis is not associated with a decreased buffering capacity of the blood.
- E. Increased minute ventilation
  - Elevated levels of progestins in ESLD lead to stimulation of the respiratory drive



## MKSAP #2

- A 35-year-old man is diagnosed with HIV infection after he sought testing because of sexual exposure to another man approximately 5 years ago who he subsequently learned was HIV-infected. The patient is asymptomatic. Medical history is unremarkable, and he takes no medications.
- On physical examination, he appears healthy. Vital signs and general examination are normal. The liver and spleen are not enlarged.



## MKSAP #2

### Laboratory Studies

CD4 cell count	184/ $\mu$ L (0.184 $\times 10^9$ /L)
Plasma HIV RNA viral load	13,043 copies/mL
Serum aspartate aminotransferase	63 U/L
Serum alanine aminotransferase	85 U/L
Serum alkaline phosphatase	88 U/L
Serum total bilirubin	0.9 mg/dL (15.39 $\mu$ mol/L)
Antibodies to hepatitis C virus (anti-HCV)	Negative
Hepatitis B surface antigen (HBsAg)	Positive
Antibodies to hepatitis B core antigen (anti-HBc)	Positive
Antibodies to hepatitis B surface antigen (anti-HBs)	Negative



## MKSAP #2

- Which of the following is the most appropriate antiretroviral therapy at this time?
- A. Delay treatment until the patient becomes symptomatic
- B. Delay treatment until the patient's HIV RNA viral load exceeds 100,000 copies/mL
- C. Begin treatment with zidovudine, didanosine, and nelfinavir
- D. Begin treatment with lamivudine, efavirenz, and tenofovir

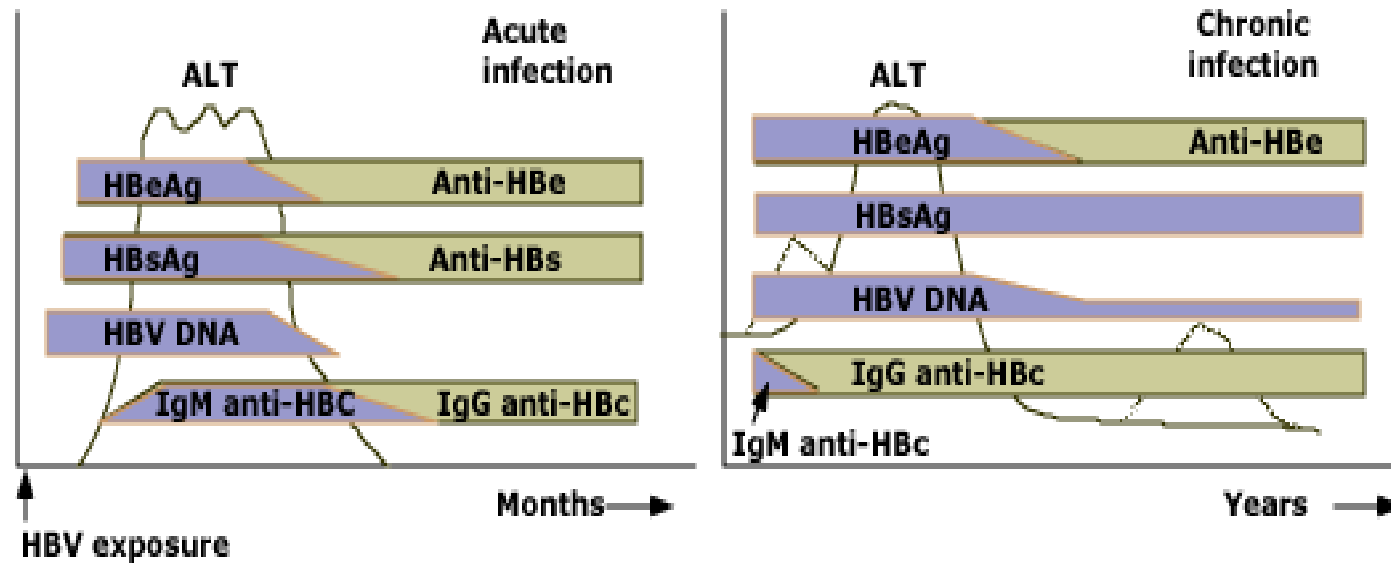


- A. Delay treatment until the patient becomes symptomatic
  - CD4 < 200, should start HAART regardless if symptomatic
- B. Delay treatment until the patient's HIV RNA viral load exceeds 100,000 copies/mL
  - CD4 < 200, should start HAART regardless if viral load > 100,000
- C Begin treatment with zidovudine, didanosine, and nelfinavir
  - Appropriate regimen, but no activity for HBV
- D. Begin treatment with lamivudine, efavirenz, and tenofovir
  - Lamivudine and tenofovir active against HBV



# REMEMBER THE HBV GRAPHS?

## Serologic responses to HBV infection



# When to Start Antiretroviral Therapy?

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The optimal time to start antiretroviral therapy (ART) for human immunodeficiency virus (HIV)-infected individuals remains uncertain. Although current ART regimens are effective in suppressing viremia and enhancing immune function and are increasingly convenient and well tolerated, ongoing concerns remain about adherence, drug-related toxicities, drug resistance, and cost. Although few clinical trials results are currently available to inform the question of when to start ART, large clinical cohorts clearly have demonstrated the benefits of earlier initiation of ART for reducing both HIV-related and non-HIV-related clinical events. Additional data suggest that the strategy of earlier initiation of ART is cost-effective and efficient. Consequently, many antiretroviral guidelines from around the world now recommend routine initiation of ART when the CD4 cell count decreases to  $<350$  cells/ $\mu$ L or at higher CD4 cell counts for certain subgroups of HIV-infected individuals, such as pregnant and/or breast-feeding women and persons with HIV-related nephropathy or hepatitis virus coinfection. Additional cohort and clinical trials data are needed.

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**Table 2. Guidelines for initiation of antiretroviral therapy.**

Guideline	AIDS and/or symptomatic HIV disease	Asymptomatic, by CD4 cell count		
		<200 Cells/ $\mu$ L	200–350 Cells/ $\mu$ L	350–500 Cells/ $\mu$ L
US Department of Health and Human Services, 2008 [7]	Yes	Yes	Yes	Consider
International AIDS Society–USA, 2008 [30]	Yes	Yes	Yes	Consider
British HIV Association, 2008 [31]	Yes <sup>a</sup>	Yes	Yes	Clinical trial
European AIDS Clinical Society, 2007 [32]	Yes	Yes	Yes	Consider
World Health Organization, 2006 [31]	Yes <sup>a</sup>	Yes	Consider	No

<sup>a</sup> Except for patients who also have tuberculosis.



**Table 3. Recommendations for early initiation of antiretroviral therapy (ART) for specific groups.**

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Demographic and clinical characteristics of patients recommended to receive early initiation<sup>a</sup> of ART

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US Department of Health and Human Services guidelines, 2008 [7]

Pregnancy

HIV-associated nephropathy

→ HBV coinfection that requires treatment

International AIDS Society–USA Panel [30]

Plasma HIV load, >100,000 copies/mL

Rapid decrease in CD4 cell count (>100 cells/ $\mu$ L per year)

High risk of cardiovascular disease

Active HBV or HCV coinfection

HIV-associated nephropathy

British HIV Association guidelines, 2008 [31]

Low CD4 percentage

HBV coinfection that requires treatment

HCV infection, when HCV treatment is deferred

European AIDS Clinical Society, 2007 [32]

Plasma HIV load, >100,000 copies/mL

CD4 decrease >50–100 copies/ $\mu$ L per year

Age, >55 years

HCV coinfection

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## MKSAP #3

- A 56-year-old man has a 3- to 4-month history of recurrent episodes of nausea, vomiting, and constipation. The patient has lost 9 kg (20 lb) over the past 6 months. He has been hospitalized several times during this period for presumed small bowel obstruction, which always resolved spontaneously. Exploratory laparoscopy after an episode of vomiting was unremarkable; no adhesions or lesions were noted. The patient is otherwise well and takes no medications. He has a 30-pack-year smoking history.



## MKSAP #3

- Physical examination is unremarkable. A small bowel follow-through radiographic series demonstrates dilatation of the bowel without obstruction. Upper endoscopy and colonoscopy are normal. A chest radiograph shows a 9-mm spiculated nodule in the left upper pulmonary lobe.



## MKSAP #3

- Which of the following is the most likely diagnosis?
- A. Small bowel lymphoma
- B. Systemic sclerosis (scleroderma)
- C. A paraneoplastic syndrome
- D. Amyloidosis



## MKSAP #3

- A. Small bowel lymphoma
  - Would have seen pathology on small bowel follow thru
- B. Systemic sclerosis (scleroderma)
  - Can cause myopathic d/o affecting the pacemaker cells
- C. A paraneoplastic syndrome
  - Symptoms of obstruction, but negative imaging suggesting psuedo obstruction
  - Abnormal small bowel pacemaker cells
- D. Amyloidosis
  - Can cause myopathic d/o affecting the pacemaker cells



## WHO IS THIS GUY?

- A. L. J. Henderson
- B. K. A. Hasselbalch
- C. James Watson
- D. Francis Crick
- E. Fred Kahl...the younger years



$$\text{pH} = \text{pK}_a + \log \frac{[\text{base}]}{[\text{acid}]}$$



Ulcer with granulomatous tissue at the base  
and raised, heaped up margins



# CASE PRESENTATION

