

Supplemental Digital Appendix A

Sample Academic Half Day Lesson Plan

Although the following case was developed by Eric Warm for the Cincinnati AHD, the case illustrates a basic pedagogical structure which is used in some form in most AHD sessions at all three sites. Session facilitators prepare a real or imagined clinical case, with more or less complexity, as a teaching exercise with accompanying labs, imaging, and test results. Faculty prepare evaluation and management activities based on the case for residents to do in small work groups. Activities may include questions for residents to answer, test results to interpret, tables to complete that compare and contrast different conditions or treatments, etc. Residents often access reference material to accomplish the learning activities. Small group work is reviewed in the larger group with faculty guidance.

67 yo male with PMH of HTN, obesity, diabetes mellitus type II, and prostate cancer presents to ER with 2 day history of fever, shaking chills, right lower quadrant abdominal pain, nausea and vomiting.

PMH: Diabetes well-controlled with HA1c 7.0, HTN well controlled, Prostate Cancer diagnosed 2000 T4N1M0 s/p RT and chemo, stable PSA since, last measured 2 yrs ago
Meds - Metformin, Atorvastatin, Glyburide, Lisinopril, HCTZ, ASA

102.0, 111, 18, 142/62, 97% RA, Weight 220

GEN: Ill-appearing, and diaphoretic, but no resp distress. Dry mucous membranes.

Lungs CTAB, CV tachycardic, regular, no murmurs, flat neck veins

Abd: normal BS, soft, RLQ tenderness but no rebound or guarding, right CVA tenderness

Guiac negative, no apparent prostate nodules, enlargement or tenderness

Ext warm, no rashes, no edema, DP pulses 2+ bilaterally

Labs notable for: WBC 22- 80% N, 22% L, 5% B

Na 142, K 5.2, CO2 20, BUN 55, Creatinine 2.6, glucose 222. Albumin 3.6

UA- SG 1.025, +LE, + nitrate, 1-4 RBC, 10-20 WBC, 3+ bacteria, no casts, no protein

Liver function, CXR, EKG unremarkable

1. Which type of renal failure does this patient appear to have at this time? Name two exam findings that support this.
2. Bun / creatinine ratio can also be used to help determine the type of ARF, does this support your proposed type of ARF?
3. FENa can also help to determine the cause of ARF. In this case, are there any medications that might interfere with this calculation? What other calculation should we make in order to help us determine what kind of renal failure this patient is in?

4. The patient will be admitted to step down with severe sepsis, write the appropriate order for the given fields.

a. Fluids and the rate?

b. Nursing orders?

c. What meds from his home medication list will you continue and which would you hold?

Medication	Restart in acute renal failure?
Atorvastatin	
Aspirin	
Glyburide	
Metformin	
Lisinopril	
HCTZ	

5. You have held his glyburide, and want to put him on a basal bolus regimen. You calculate for a 100kg man with normal kidney function that his total daily dose of insulin should be $0.5 \text{ units/kg} \times 100 \text{ kg} = 50 \text{ units / day}$. Do you have to adjust the basal bolus regimen – and how do you do it?

Table 2.2 Renal impairment warranting cautious modification of total daily dose^a

Situation	Modification
Patient on insulin at home, no history of hypoglycemia, and stable CKD stage I and II (GFR >40 mL/min per BSA 1.73 m ²)	None: May use home TDD
CKD stage III (GFR 30–39 mL/min per BSA 1.73 m ²)	↓ home TDD by 30%
CKD stage IV (GFR 15–29 mL/min per BSA 1.73 m ²)	↓ home TDD by 50%
CKD stage V (GFR 15 mL/min per BSA 1.73 m ²) or ESRD or acute renal injury	↓ home TDD by 60%

BSA, body surface area; CKD, chronic kidney disease; ESRD, end-stage renal disease; GFR, glomerular filtration rate; TDD, total daily dose

^aThese recommendations are based on the algorithm developed by the Duke University Medical Center Glycemic Safety Committee

6. You are going to start antibiotics on this patient for a presumed UTI with sepsis. Which of the following have to be renally dosed- what is the adjustment and use your Epocrates or handheld tool. Which meds should not be used in treating pyelonephritis?

Antibiotics	Reduce dose by how much?
Ceftriaxone (1-2g IV Q24h)	
Ciprofloxacin (400mg IV q12h or 500mg po q12)	
Nitrofurantoin	
Moxifloxacin	
Trimethoprim / Sulfamethoxazole	

7. While you are putting in orders, RN pages you to tell you that bp has dropped to 80/40, and pulse has increased to 130. No urine output since coming up from the ED. What do you do?
8. Your medical student recalls reading something from his old Internal Medicine “RECALL” book about using low dose dopamine to help his kidney function. What do you think about that?
9. Your patient responds to fluid and by HD2, his fever, hypotension, and tachycardia has resolved. His BUN/ Creat improve to 35/1.9. His abdominal pain is still present and your attending wants to figure this out so he says, “get a CT scan”. How can we minimize his risk for Contrast Nephropathy?
10. We wrote orders for fluids, and he obtained his CT scan. You are called later that evening by the RN who says, “Mr. X has not had any urine output this shift” and he is complaining of worsening abdominal pain.

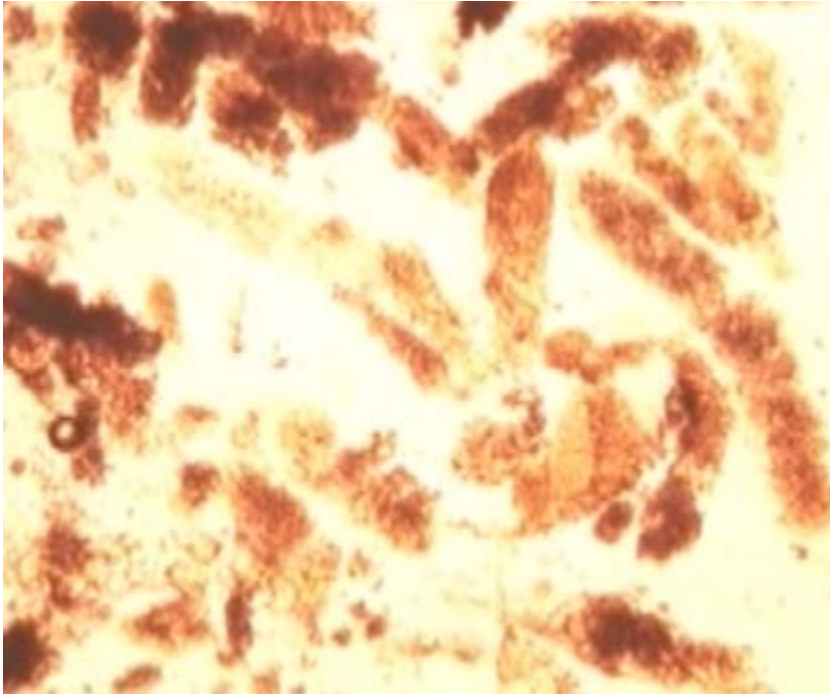
What do you ask the nurses to do while you get ready to come see him?

What is the differential for this lack of urine output?

11. He has received 2 additional liters of fluid and he is now on norepinephrine gtt. His renal panel is now this and his urine output over the past 8 hours in the MICU has been 60mL.

134 | 103 | 82 /
----- 194
5.1 | 19 | 3.4 \

His urinalysis shows this



What kind of renal failure is this patient most likely in?