Scenarios taken from Friedman et al (1999): “Enhancement of Clinicians’ Diagnostic

Reasoning by Computer-Based Consultation”

Notes from the authors:

* Cases are from three medical centres
* Findings were removed to make the case more challenging.
* Rated difficulty: Average difficulty rating of three clinicians on a seven point scale (1-7). These differ somewhat from ‘actual empirical’ difficulty.

The following scenarios are adapted from these cases. The true underlying condition is found in the leftmost column. There are differences in the specialised test results available, as not all tests are relevant to all scenarios. Hence, for each case, all tests with available results are shown.

Personal Notes:

* The case numbers (eg #031) is for my own documentation of which scenario is being used from the wider bank of vignettes.
* There was some interpretation in combining certain distinct but related tests into one ‘test’ for the purposes of our study (eg Bone and Joint Radiographs, Urine Culture and Protein Electrophoresis).
* Scenarios are from the US, so terminology may require tweaking for a UK audience.
* All participants are shown presenting complaints to start with, all other information has to be requested within the stage (ie patient history, physical examination etc) they are in.

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| #181  Temporal Arteritis  Difficulty Rating: 5.17 | Presenting Complaint | - | 68 year old male presented with fever and arthralgias. |
| Patient History | History of Presenting Complaint | The patient was well until 4 weeks prior to admission when he  developed arthralgias in his wrists and shoulders. He also developed fatigue. He began taking ibuprofen, but developed abdominal pain and an upper gastrointestinal bleed. Oesophagoduodenogastroscopy showed several gastric ulcers. One week prior to admission, the arthralgias again worsened, and he developed fever. He denied joint swelling, rash, headache, chest pain, abdominal pain, or history of anemia. |
| Past Medical History | No prior illnesses or hospitalizations. |
| Medications | Ranitidine. |
| Allergies | None known |
| Family History | Noncontributory |
| Social History | He is divorced, and lives alone. He denied tobacco, alcohol, or illicit drug use. |
| Physical Examination | Take Pulse | 120 |
| Measure Blood Pressure | 110/60 mmHG |
| Assess Respiratory Rate | 20/min |
| Auscultate Lungs | Lungs are clear. |
| Auscultate the Heart | The heart had normal S1 and S2, no gallops, and no murmurs. |
| Assess Eyes | The conjunctivae were pale. The sclerae were anicteric. The pupils were equal, round, and reactive to light and accommodation. The fundi were normal. |
| Measure Temperature | 38.9 degrees celsius |
| Abdomen Examination | The abdomen was soft, without tenderness. There was no hepatosplenomegaly or masses. |
| Rectal Examination | Rectal examination was normal; the stool was guaiac negative. |
| Neck/Throat Examination | The oropharynx was benign. The neck was supple. There was no lymphadenopathy or thyromegaly. |
| Assess Head | Evidence of bitemporal wasting. Scalp feels tender. |
| Neurologic Exam Record | The neurologic exam including mental status, cranial nerves, strength and sensation was normal. |
| Assess Extremities | The extremities showed no joint swelling; there  was pain in the shoulders on abduction to 90 degrees. There was no cyanosis, clubbing, or oedema. |
| FBC & Biochemistry | FBC - Hb | 93 (Normal: 140-180 g/L) |
| FBC - Hct | 28.2 (Normal: 42-52%) |
| FBC - MCV | 73.9 (Normal: 84-99 fl) |
| FBC - WBC | 9.2 (Normal: 4.8-10.8 x 109/L) |
| FBC - Neut | 73 (Normal: 40-70%) |
| FBC – Lymph’s | 14 (Normal: 25-45%) |
| FBC – Platelet Count | 390 (Normal: 150-400 x 109/l) |
| Chemistries - Sodium | 139 (Normal: 135-149 mmol/l) |
| Chemistries - Potassium | 4.4 (Normal: 3.5-5.3 mmol/l) |
| Chemistries – Chloride (blood gas) | 101 (Normal: 98-108 mmol/l) |
| Chemistries - UREA | 14 (Normal: 6-20 mg/dl) |
| Chemistries - Creatinine | 1.0 (Normal: 0.5-1.5 mg/dl) |
| Chemistries - Glucose | 92 (Normal: 70-110 mg/dl) |
| Chemistries – Protein Total | 66 (Normal: 60-80 g/L) |
| Chemistries - Albumin | 22 (Normal: 36-500 g/L) |
| Chemistries – AST (SGOT) | 35 (Normal: 0-50 U/L) |
| Chemistries - ALP | 97 (Normal: 40-125 U/L) |
| Generalised Testing | Chest X-Ray | Normal heart and lungs |
| Urine Dipstick | No protein or blood; microscopic examination normal. |
| ECG | Sinus tachycardia, but was otherwise normal. |
| Abdominal CT Scan | Unremarkable |
| Arterial Blood Gas on Room Air (normal) | PH, Partial pressure of oxygen and CO2, bicarbonate, base excess, sodium/potassium etc |
| UREA and Electrolytes |  |
| CRP/Inflammation |  |
| Clotting Test |  |
| CBC |  |

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| #32  Ulcerative Colitis  Rating: 3.5 | Presenting Complaint | - | 60 year old male presented with 3 week history of bloody diarrhea. |
| Patient History | History of Presenting Complaint | The patient has a history of hypertension, osteoarthritis and diverticulitis. He had been doing well until about three weeks prior to admission, when he developed loose, watery bowel movements and an associated crampy left lower quadrant abdominal pain. The bowel movements occurred about 4-5 times per day. Over the next two weeks, his pain improved markedly but the diarrhea persisted. Four days prior to admission, he noted blood in his bowel movements, as well as fevers to 39 degrees celsius, chills and sweats. He denied upper respiratory infections symptoms, headache, photophobia, stiff neck, cough,  dyspnea, rash, arthralgias or dysuria. He did note fatigue and a decrease in weight of 14 pounds relative to his baseline. |
| Past Medical History | Significant for diverticulitis: diagnosed first in 1968 after a  presentation with hematochezia, relatively asymptomatic recently, hypertension, osteoarthritis in his hands, and recurrent epistaxis. |
| Medications | Diltiazem and hydrochlorothiazide, neither started recently. |
| Allergies | None known |
| Family History | Negative for colonic disease |
| Social History | Unremarkable. |
| Physical Examination | Take Pulse | 78 |
| Measure Blood Pressure | 132/68 mmHG |
| Assess Respiratory Rate | 18/min |
| Auscultate Lungs | Lungs were clear to auscultation. |
| Auscultate the Heart | His cardiac rhythm was regular and no extra heart sounds or murmurs were appreciated. |
| Assess Eyes | Conjunctivae were pink. The pupils were equal, round, and reactive to light and accommodation. |
| Measure Temperature | 38.5 degrees celsius |
| Abdomen Examination | His abdominal examination revealed bowel sounds and mild tenderness to palpation over the left lower quadrant without rebound or guarding. No masses or organomegaly were present |
| Rectal Examination | Rectal examination was normal; the stool was grossly bloody. |
| Neck/Throat Examination | The neck was supple. |
| Assess Head | Evidence of bitemporal wasting. Scalp feels tender. |
| Neurologic Exam Record | Neurological function was unremarkable. |
| Assess Extremities | Unremarkable. |
| FBC & Biochemistry | FBC - Hb | 50 (Normal: 140-180 g/L) |
| FBC - Hct | 36.4 (Normal: 42-52%) |
| FBC - MCV | 55.4 (Normal: 84-99 fl) |
| FBC - WBC | 7.9 (Normal: 4.8-10.8 x 109/L) |
| FBC - Neut | 71 (Normal: 40-70%) |
| FBC – Lymph’s | 20 (Normal: 25-45%) |
| FBC – Platelet Count | 273 (Normal: 150-400 x 109/l) |
| Chemistries - Sodium | 133 (Normal: 135-149 mmol/l) |
| Chemistries - Potassium | 3.4 (Normal: 3.5-5.3 mmol/l) |
| Chemistries – Chloride (blood gas) | 92 (Normal: 98-108 mmol/l) |
| Chemistries - UREA | 15 (Normal: 6-20 mg/dl) |
| Chemistries - Creatinine | 1.0 (Normal: 0.5-1.5 mg/dl) |
| Chemistries - Glucose | 112 (Normal: 70-110 mg/dl) |
| Chemistries – Protein Total | 57 (Normal: 60-80 g/L) |
| Chemistries - Albumin | 31 (Normal: 36-50 g/L) |
| Chemistries – AST (SGOT) | 42 (Normal: 0-50 U/L) |
| Chemistries - ALP | 98 (Normal: 40-125 U/L) |
| Generalised Testing | Chest X-Ray | Chronic bilateral pleural scarring. Otherwise, unremarkable. |
| Urine Dipstick | Trace leukocytes in dipstick and occasional WBC on microscopic examination. |
| ECG | No irregularities |
| Abdominal CT Scan | No evidence for abscess. |
| Arterial Blood Gas on Room Air (normal) |  |
| UREA and Electrolytes |  |
| CRP/Inflammation |  |
| Clotting Test |  |
| CBC |  |

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| #82  Miliary (Disseminated) TB  Rating: 5.67 | Presenting Complaint | - | 62 year old male admitted for fevers and generalised weakness. |
| Patient History | History of Presenting Complaint | Ten years prior to admission, the patient developed  pancytopenia. Evaluation included a bone marrow biopsy which revealed refractory anemia. The patient’s myelodysplastic syndrome remained indolent throughout the subsequent 10 years. Three months prior to admission the patient developed daily fevers (102-103o F; 39-39.5o C)  and fatigue. One month prior to admission the patient presented to an outside hospital for diagnostic evaluation. Examination revealed a temperature of 102.2oF (39o C), diffuse ecchymosis of the extremities, a right inguinal hernia, and a right axillary mass (3 cm in diameter, no fluctuance, slightly tender). |
| Past Medical History | Myelodysplastic syndrome, NIDDM (10 years, diet  controlled), hypertension (10 years). |
| Medications | G-CSF, verapamil, pericolace |
| Allergies | None known |
| Family History | Unremarkable. |
| Social History | Unremarkable. |
| Physical Examination | Take Pulse | 100 |
| Measure Blood Pressure | 150/70 mmHG |
| Assess Respiratory Rate | 18/min |
| Auscultate Lungs | Lungs exam revealed decreased breath sounds at right base with dullness to percussion, crackles 1/2 way up on right, egophony on right, crackles 1/4 way up on left. |
| Auscultate the Heart | Cardiovascular system was within normal limits. |
| Assess Eyes | The pupils were equal, round, and reactive to light and accommodation. |
| Measure Temperature | 39.0 degrees celsius |
| Abdomen Examination | Abdomen was distended, with tense ascites, a  right inguinal hernia (reducible), and normal bowel sounds. |
| Rectal Examination | Rectal exam was unremarkable. |
| Neck/Throat Examination | The neck was supple. |
| Assess Head | Evidence of bitemporal wasting. |
| Neurologic Exam Record | Within normal limits. |
| Assess Extremities | 1+ pedal edema, multiple ecchymoses of various sizes. |
| FBC & Biochemistry | FBC - Hb | 161 (Normal: 140-180 g/L) |
| FBC - Hct | 28 (Normal: 42-52%) |
| FBC - MCV | 87.1 (Normal: 84-99 fl) |
| FBC - WBC | 6.3 (Normal: 4.8-10.8 x 109/L) |
| FBC - Neut | 83 (Normal: 40-70%) |
| FBC – Lymph’s | 6 (Normal: 25-45%) |
| FBC – Platelet Count | 85 (Normal: 150-400 x 109/l) |
| Chemistries - Sodium | 129 (Normal: 135-149 mmol/l) |
| Chemistries - Potassium | 3.5 (Normal: 3.5-5.3 mmol/l) |
| Chemistries – Chloride (blood gas) | 90 (Normal: 98-108 mmol/l) |
| Chemistries - UREA | 27 (Normal: 6-20 mg/dl) |
| Chemistries - Creatinine | 1.7 (Normal: 0.5-1.5 mg/dl) |
| Chemistries - Glucose | 153 (Normal: 70-110 mg/dl) |
| Chemistries – Protein Total | 66 (Normal: 60-80 g/L) |
| Chemistries - Albumin | 29 (Normal: 36-50 g/L) |
| Chemistries – AST (SGOT) | 49 (Normal: 0-50 U/L) |
| Chemistries - ALP | 151 (Normal: 40-125 U/L) |
| Generalised Testing | Chest X-Ray | Large right pleural effusion, layers on decubitus view. |
| Urine Dipstick | 1.020, 5/0, 3-5 RBC, 0-3 WBC, no casts. |
| ECG | No irregularities |
| Abdominal CT Scan | Questionable ascites, otherwise unremarkable. |
| Arterial Blood Gas on Room Air (normal) | 7.47/32/72/95% |
| UREA and Electrolytes |  |
| CRP/Inflammation |  |
| Clotting Test |  |
| CBC |  |

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| #83  Aortic Dissection  Rating: 5.17 | Presenting Complaint | - | 58 year old female presented with shortness of breath. |
| Patient History | History of Presenting Complaint | The patient had a history of hypertension and had had  three weeks of intermittent left sided chest pain. The pain radiated to the back and improved when she leaned forward. There was no change with exertion. Pains lasted for approximately one minute. She also complained of increasing shortness of breath over the previous month. She became dyspneic performing minimum household chores. She denied orthopnea, PND or lower extremity edema. She had an occasional nonproductive cough. She had been seen by a  local doctor prior to admission, found to be hypertensive and started on treatment. She complained of night sweats and fever over the previous week but had no weight loss. |
| Past Medical History | She had previous trauma to the right eye resulting in blindness. She had a total abdominal hysterectomy and bilateraloophorectomy in the 1970's. |
| Medications | Her medications on admission included verapamil 180 mg  p.o. q.d., benazepril 10 mg p.o. q.d. and furosemide 20 mg q.d. |
| Allergies | None known |
| Family History | Unremarkable |
| Social History | She smoked for ten years, but not any during the previous twenty  years. She drinks one beer every six months. She works in the home and lives with her  husband. |
| Physical Examination | Take Pulse | 90 |
| Measure Blood Pressure | 159/107 mmHG |
| Assess Respiratory Rate | 22/min |
| Auscultate Lungs | The lungs were clear to auscultation and percussion. |
| Auscultate the Heart | The first and second heart sounds were normal. There was an S4 and a II/VI systolic ejection murmur. |
| Assess Eyes | Her pupils were equally round and reactive to light. The TM's were normal. Her mucus membranes were moist. The right cornea was opacified. |
| Measure Temperature | 38.3 degrees celsius |
| Abdomen Examination | The abdomen was soft and non-tender with no masses, or organomegaly. |
| Rectal Examination | The stool was guaiac negative. The pulses were strong and equal bilaterally. |
| Neck/Throat Examination | There was no thyromegaly or adenopathy. Jugular venous pulsations were visible at 8 cm. |
| Assess Head | Evidence of bitemporal wasting. Scalp feels tender. |
| Neurologic Exam Record | Neurologic exam was normal. |
| Assess Extremities | No cyanosis or edema. |
| FBC & Biochemistry | FBC - Hb | 87 (Normal: 140-180 g/L) |
| FBC - Hct | 28 (Normal: 42-52%) |
| FBC - MCV | 76 (Normal: 84-99 fl) |
| FBC - WBC | 8.1 (Normal: 4.8-10.8 x 109/L) |
| FBC - Neut | 74 (Normal: 40-70%) |
| FBC – Lymph’s | 18 (Normal: 25-45%) |
| FBC – Platelet Count | 472 (Normal: 150-400 x 109/l) |
| Chemistries - Sodium | 142 (Normal: 135-149 mmol/l) |
| Chemistries - Potassium | 3.9 (Normal: 3.5-5.3 mmol/l) |
| Chemistries – Chloride (blood gas) | 99 (Normal: 98-108 mmol/l) |
| Chemistries - UREA | 17 (Normal: 6-20 mg/dl) |
| Chemistries - Creatinine | 1.2 (Normal: 0.5-1.5 mg/dl) |
| Chemistries - Glucose | 102 (Normal: 70-110 mg/dl) |
| Chemistries – Protein Total | 63 (Normal: 60-80 g/L) |
| Chemistries - Albumin | 31 (Normal: 36-50 g/L) |
| Chemistries – AST (SGOT) | 116 (Normal: 0-50 U/L) |
| Chemistries - ALP | 168 (Normal: 40-125 U/L) |
| Generalised Testing | Chest X-Ray | Globular cardiomegaly with small left pleural effusion and sub-segmental atelectasis or scarring in the right costophrenic angle. Loculated fissural fluid in the left mid lung zone. No overt congestive heart failure. |
| Urine Dipstick | Trace protein, no blood, 1+ nitrites. 3-7 WBC's, no RBC's, 10-15 squamous epithelial cells, and 3+ bacteria. |
| ECG | small Q waves in the inferior leads. No ST segment or T wave abnormalities. Voltage within normal limits. |
| Abdominal CT Scan | No evidence for abscess. |
| Arterial Blood Gas on Room Air (normal) |  |
| UREA and Electrolytes |  |
| CRP/Inflammation |  |
| Clotting Test |  |
| CBC |  |

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| #91  Guillain-Barre Syndrome  Rating: 3.33 | Presenting Complaint | - | 67 year old male presented with weakness of the arms and legs for 24 hours. |
| Patient History | History of Presenting Complaint | He was in his usual state of good health until the day prior to  admission, when he noted weakness and stiffness of his arms and legs. When he awoke the day of admission, he found he could not sit up or move his arms or legs. He denied headache, visual disturbances, difficulty swallowing, pain in his extremities, or difficulty urinating. He denied any recent viral illnesses or immunizations. No family members or friends had similar complaints. |
| Past Medical History | No prior illnesses or hospitalisations. |
| Medications | None |
| Allergies | None known |
| Family History | Noncontributory |
| Social History | He is married and lives with his wife. He denied use of tobacco, alcohol, or illicit drugs. |
| Physical Examination | Take Pulse | 60 |
| Measure Blood Pressure | 140/90 mmHG |
| Assess Respiratory Rate | 16/min |
| Auscultate Lungs | Lungs were clear to auscultation. |
| Auscultate the Heart | Cardiac examination revealed normal heart sounds, without gallops or murmurs |
| Assess Eyes | The conjunctivae were pink. The sclerae were anicteric. The pupils were equal, round, and reactive to light and accommodation. |
| Measure Temperature | 38.5 degrees celsius |
| Abdomen Examination | The abdomen was soft, with normoactive bowel sounds. There was no tenderness, hepatosplenomegaly, or masses. |
| Rectal Examination | Rectal examination was normal |
| Neck/Throat Examination | The oropharynx was benign. The neck was supple. There was no lymphadenopathy or thyromegaly. |
| Assess Head | The head was normocephalic and atraumatic. Cranial nerves II  through XII were intact. |
| Neurologic Exam Record | Neurologic examination revealed that he was alert and oriented to person, place, and time |
| Assess Extremities | The extremities showed no cyanosis, clubbing, or edema; peripheral pulses were normal. |
| FBC & Biochemistry | FBC - Hb | 116 (Normal: 140-180 g/L) |
| FBC - Hct | 34.8 (Normal: 42-52%) |
| FBC - MCV | 93 (Normal: 84-99 fl) |
| FBC - WBC | 8.4 (Normal: 4.8-10.8 x 109/L) |
| FBC - Neut | 54 (Normal: 40-70%) |
| FBC – Lymph’s | 29 (Normal: 25-45%) |
| FBC – Platelet Count | 298 (Normal: 150-400 x 109/l) |
| Chemistries - Sodium | 141 (Normal: 135-149 mmol/l) |
| Chemistries - Potassium | 4.4 (Normal: 3.5-5.3 mmol/l) |
| Chemistries – Chloride (blood gas) | 100 (Normal: 98-108 mmol/l) |
| Chemistries - UREA | 14 (Normal: 6-20 mg/dl) |
| Chemistries - Creatinine | 1.0 (Normal: 0.5-1.5 mg/dl) |
| Chemistries - Glucose | 76 (Normal: 70-110 mg/dl) |
| Chemistries – Protein Total | 72 (Normal: 60-80 g/L) |
| Chemistries - Albumin | 41 (Normal: 36-50 g/L) |
| Chemistries – AST (SGOT) | 28 (Normal: 0-50 U/L) |
| Chemistries - ALP | 64 (Normal: 40-125 U/L) |
| Generalised Testing | Chest X-Ray |  |
| Urine Dipstick |  |
| ECG |  |
| Abdominal CT Scan |  |
| Arterial Blood Gas on Room Air (normal) |  |
| UREA and Electrolytes |  |
| CRP/Inflammation |  |
| Clotting Test |  |
| CBC |  |