Patient History:

Patient: Mr. John Smith

Age: 45

Sex: Male

Chief Complaint: Persistent cough and shortness of breath for the past 3 weeks.

Past Medical History: Hypertension controlled with medication, no known allergies.

Family History: Father had COPD, mother has asthma.

Social History: Smokes half a pack of cigarettes per day for the past 20 years, occasional alcohol consumption.

Medications: Amlodipine 5mg daily.

Physical Examination: BP: 140/90 mmHg, HR: 85 bpm, RR: 20/min, Temp: 98.6°F, O2 Sat: 95% on room air. Chest examination reveals wheezing bilaterally.

PICO (Patient, Intervention, Comparison, Outcome) Framework:

P (Patient/Problem): 45-year-old male with persistent cough and shortness of breath.

I (Intervention): Smoking cessation, bronchodilator therapy, and/or inhaled corticosteroids.

C (Comparison): Standard care without bronchodilator therapy or inhaled corticosteroids.

O (Outcome): Improvement in respiratory symptoms, lung function, and quality of life.

Differential Diagnosis: Chronic Obstructive Pulmonary Disease (COPD), Asthma, Bronchitis, Pneumonia, Heart Failure

PubMed Query for articles:

Query: ("Chronic Obstructive Pulmonary Disease" OR COPD OR Asthma OR Bronchitis OR Pneumonia OR "Heart Failure") AND (smoking cessation OR bronchodilator therapy OR "inhaled corticosteroids") AND (persistent cough OR "shortness of breath")

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**Patient-1**

A 30-year-old female presents with bloody discharge from her left breast that she has noticed intermittently for the past month. She denies any palpable breast mass, weight loss, fevers, or night sweats. She has no medical history or family history of breast cancer. The skin around the breast and areola are normal with no rashes or lesions. No breast mass is palpable, and there is no axillary lymphadenopathy. Ultrasound did not reveal any masses.

PICO (Patient, Intervention, Comparison, Outcome) Framework:

P: 30-year-old female with intermittent bloody discharge from her left breast for the past month, no palpable breast mass, no weight loss, no fevers, no night sweats, no medical history or family history of breast cancer, normal skin around the breast and areola with no rashes or lesions, no axillary lymphadenopathy, and no masses on ultrasound.

I: Diagnostic mammography or ductography.

C: Ultrasound alone.

O: Identification of underlying causes such as intraductal papilloma or other benign or malignant conditions.

Pubmed Query for articles:

"bloody nipple discharge"[Title/Abstract] AND ("mammography"[Title/Abstract] OR "ductography"[Title/Abstract]) AND "ultrasound"[Title/Abstract]

72 articles filtered from pubmed

Diagnosis- Intraductal papilloma

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**Patient-2**

A 65-year-old woman arrives to the ED complaining of chest pain. Her past medical history includes hypertension, atherosclerosis, and coronary artery disease. She underwent a coronary artery bypass graft (CABG) 3 weeks ago for three-vessel disease. She reports that her chest pain worsens with inspiration and lessens when leaning forward. A friction rub is heard on auscultation. ECG shows global ST elevation.

PICO (Patient, Intervention, Comparison, Outcome) Framework:

P (Patient/Problem): A 65-year-old woman with a history of hypertension, atherosclerosis, coronary artery disease, and recent coronary artery bypass graft (CABG) for three-vessel disease, presenting to the ED with chest pain that worsens with inspiration and alleviates when leaning forward, accompanied by a friction rub on auscultation and global ST elevation on ECG.

I (Intervention): Evaluation and management of suspected post-cardiac surgery pericarditis.

C (Comparison): Usual care or other differential diagnoses management like acute coronary syndrome management.

O (Outcome): Relief of chest pain, resolution of ECG changes, prevention of complications like constrictive pericarditis or cardiac tamponade, and improvement in overall patient's clinical status.

Pubmed Query for articles:

("postoperative pericarditis" OR "pericarditis post CABG") AND ("management" OR "treatment") AND ("ST elevation" OR "chest pain")

5 articles filtered from pubmed

Diagnosis- Acute pericarditis

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**Patient-3**

A 63-year-old woman with diabetes is recovering in the ICU after receiving a CABG for coronary artery disease. On the sixth postoperative day, she starts complaining of chest pain. Her temperature is 101.4 °F, blood pressure is 108/72 mmHg, and pulse is 125/min. On physical exam, there is drainage from her sternal wound, and there is a crunching sound heard with a stethoscope over the precordium during systole. The sternum feels somewhat unstable to palpation. Her laboratory examination is significant for an elevated white blood count (16.7 × 103/μL).

PICO (Patient, Intervention, Comparison, Outcome) Framework:

Patient: 63-year-old woman with diabetes, post-CABG

Intervention: Evaluation and management of postoperative complications

Comparison: Standard postoperative care

Outcome: Alleviation of chest pain, infection control, and sternum stabilization

Pubmed Query for articles:

(diabetes AND "Coronary Artery Bypass Graft" AND (mediastinitis OR "sternal wound infection" OR "postoperative complications"))

50 articles filtered from pubmed

Diagnosis- Acute mediastinitis

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**Patient-4**

A 50-year-old female has been recently diagnosed with primary hyperparathyroidism. She comes in to her doctor complaining of increased bone pain in her legs. She is found to have elevated serum calcium, alkaline phosphate, and PTH. Her doctor decides to order plain films of her lower extremities. The radiographs show very thin bones with a stress fracture and bowing of both femur bones. She also has characteristic cysts with a moth-eaten appearance.

PICO (Patient, Intervention, Comparison, Outcome) Framework:

Patient: 50-year-old female with primary hyperparathyroidism

Intervention: Parathyroidectomy

Comparison: Medical management

Outcome: Reduction in bone pain and deformities

Pubmed Query for articles:

(parathyroidectomy AND "medical management" AND "primary hyperparathyroidism" AND "bone pain" AND deformities AND "50-year-old female")

20 articles filtered from pubmed

Diagnosis- Osteitis fibrosa cystica

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**Patient-5**

A 4-year-old boy is brought to the ED by his parents for difficulty breathing. His mother reports that he developed nasal congestion and malaise 2 days ago, but over the past 12 h, he has had continuous low-pitched coughs. His temperature is 101 °F. On physical exam, he has pharyngeal erythema, cervical lymphadenopathy, and inspiratory stridor. Neck radiograph shows subglottic narrowing of the airway. He appears to be in respiratory distress and subsequently requires rapid sequence intubation.

PICO (Patient, Intervention, Comparison, Outcome) Framework:

Patient: A 4-year-old boy with respiratory distress, inspiratory stridor, and subglottic narrowing of the airway

Intervention: Rapid sequence intubation

Comparison: Other airway management techniques or supportive treatments

Outcome: Resolution of respiratory distress, stabilization of breathing

Pubmed Query for articles:

("rapid sequence intubation" OR "airway management" OR "supportive treatment") AND ("subglottic narrowing" OR "respiratory distress") AND "pediatric"

36 pubmed articles

Diagnosis- Laryngotracheobronchitis

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**Patient-6**

A 55-year-old woman is evaluated in the emergency department for a 2-day history of severe epigastric abdominal pain, nausea, and vomiting. In reviewing her past medical history, she states she was evaluated 6 months ago for mild, but similar intermittent abdominal pain and was lost to follow-up. She does not take any medications. She has 1-2 drinks of alcohol on social occasions. On physical examination, temperature is 99.2 °F, blood pressure is 132/82 mmHg, pulse is 101/min, and respirations are 20/min. There is epigastric tenderness and RUQ tenderness. Labs are drawn and shown below.

AST: 523 μ/L (normal 5–35 μ/L)

ALT: 622 μ/L (7–56 μ/L)

TBilli: 2.0 mg/dL (0.1–1.2 mg/dL)

Alkaline phosphatase: 450 μ/L (33–131 μ/L)

Amylase: 1300 μ/L (30–110 μ/L)

Lipase: 1000 μ/L (7–60 μ/L)

Patient: 55-year-old woman with severe epigastric abdominal pain, elevated liver enzymes, and pancreatic enzymes.

Intervention: Evaluation and management of underlying hepatic and pancreatic pathology.

Comparison: Previous mild intermittent abdominal pain without intervention.

Outcome: Diagnosis, alleviation of abdominal pain, normalization of liver and pancreatic enzymes.

Pubmed Query for articles:

("hepatic pathology" OR "pancreatic pathology" OR "abdominal pain" OR "liver enzymes" OR "pancreatic enzymes") AND ("evaluation" OR "management" OR "intervention") AND "woman"

100 pubmed articles

Diagnosis- Acute pancreatitis secondary to gallstones

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Patient-7

A 41-year-old man with alcoholism is admitted to the ICU with a diagnosis of acute pancreatitis. He has three Ranson’s criteria on admission and two more at 48 h. He requires aggressive fluid resuscitation to maintain his blood pressure in the first 24 h, but over the next 3 days, his blood pressure stabilizes. On the third day of admission, he develops tachypnea, tachycardia, and hypoxia with oxygen saturation to 89 %. Central venous pressure is 8 mmHg. The patient is placed on nasal cannula, but the oxygen saturation remains the same. His temperature is 98.9 °F, pulse is 104/min, and blood pressure is 129/73 mmHg. A chest X-ray is obtained and shows bilateral infiltrates. Labs are drawn and shown below. What is the most likely diagnosis?

AST: 75 μ/L (normal 5–35 μ/L)

ALT: 92 μ/L (7–56 μ/L)

WBC: 11 × 103/μL (normal 4.1–10.9 × 103/μL)

Arterial blood gas: pH 7.44, PaO2 66 mmHg, PaCO2 36 mmHg

PICO framework:

Patient: A 41-year-old man with alcoholism and acute pancreatitis

Intervention: Aggressive fluid resuscitation, monitoring, and subsequent management

Comparison: Standard care for acute pancreatitis without complications

Outcome: Diagnosis and management of new onset tachypnea, tachycardia, hypoxia, and bilateral infiltrates on chest X-ray

Pubmed Query for articles:

("alcoholism" AND "acute pancreatitis" AND "fluid resuscitation" AND ("tachypnea" OR "tachycardia" OR "hypoxia" OR "bilateral infiltrates") AND "male")

58 pubmed articles

Diagnosis- Adult respiratory distress syndrome (ARDS)

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Patient-8

A 45-year-old alcoholic male presents with fevers and right-hand pain. He cannot recall what happened but thinks he may have punched someone in the face in a bar fight two nights earlier. He has tried over-the-counter anti-inflammatory agents, but they have not helped decrease the pain. His temperature is 100.8°F, blood pressure is 132/88 mmHg, and pulse is 78/min. On physical exam, he has a skin break over his second phalanx-metacarpal region. He is holding his second finger in slight flexion. He has a sausage-shaped swelling of the finger, as well as flexor tendon sheath tenderness that extends the entire length of the tendon. His pain increases with passive motion of the finger.

Patient: A 45-year-old alcoholic male with a suspected hand injury from a bar fight.

Intervention: Treatment of hand injury possibly involving antibiotics, wound care, and/or surgical intervention.

Comparison: Over-the-counter anti-inflammatory agents.

Outcome: Reduction of pain, prevention of infection, and restoration of hand function.

Pubmed Query for articles:

("hand injury" OR "flexor tendon sheath tenderness" OR "infection" OR "sausage-shaped swelling") AND ("treatment" OR "antibiotics" OR "surgical intervention" OR "wound care") AND "alcoholic” AND male

100 pubmed articles

Diagnosis- Suppurative tenosynovitis due to Eikenella corrodens

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Patient-9

An 18-year-old soccer player presents to her doctor 2 days after getting kicked in the knee during her championship game. She reports hearing a snap immediately after the injury, but her knee looked normal. The next day, she had a swollen kneecap with progressive pain. On physical exam, she has medial joint line tenderness and effusion. Her doctor notices an audible snap occurring when extending the knee from a fully flexed position while applying tibial torsion

Patient: An 18-year-old soccer player with a knee injury from a kick during a game.

Intervention: Medical evaluation and treatment (which might include imaging, physical therapy, or surgical intervention).

Comparison: No intervention or delayed treatment.

Outcome: Reduction of pain, swelling, resolution of audible snap, and restoration of knee function.

Pubmed Query for articles:

("knee injury" OR "medial joint line tenderness" OR "audible snap" OR effusion) AND ("soccer player" OR athlete) AND ("medical evaluation" OR "treatment" OR "physical therapy" OR "surgical intervention") AND "18 year"

5 pubmed articles

Diagnosis- Meniscus tear

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Patient-10

A 17-year-old male comes to the emergency department for the third time over the last month due to pain in his right thigh above his knee that is particularly bothersome at night. He was previously diagnosed with growing pains. Now he has developed swelling above his right knee and states his pain is worse. On physical exam, there is a soft tissue mass that is tender to palpation. The skin overlying the mass is erythematous. An X-ray is obtained and shows a “sunburst” pattern in the distal femur.

Patient: A 17-year-old male with recurrent thigh pain, swelling above the knee, and a soft tissue mass with a "sunburst" pattern on X-ray of the distal femur.

Intervention: Further diagnostic evaluation as appropriate based on diagnosis.

Comparison: Previous diagnosis and management as growing pains.

Outcome: Accurate diagnosis, alleviation of pain, management of soft tissue mass, and resolution of symptoms.

Pubmed Query for articles:

("sunburst" pattern OR "soft tissue mass" OR "distal femur" OR "thigh pain") AND ("17-year-old male" OR adolescent) AND ("diagnostic evaluation" OR biopsy OR MRI OR surgery OR chemotherapy OR radiation)

100 pubmed articles

Diagnosis- Osteosarcoma

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Patient-11

A 12-day-old male born at 33 weeks becomes lethargic and hypothermic over the course of 24 h. He is not tolerating his formula feeds, has two episodes of bilious emesis, and has three episodes of bloody diarrhea. Physical exam reveals abdominal distention, visible loops of bowel, abdominal wall erythema, and absent bowel sounds.

Patient: A 12-day-old male, born prematurely at 33 weeks, presenting with lethargy, hypothermia, feeding intolerance, bilious emesis, bloody diarrhea, abdominal distention, visible loops of bowel, abdominal wall erythema, and absent bowel sounds.

Intervention: Urgent medical and possibly surgical intervention to diagnose and treat the underlying cause of his symptoms

Comparison: Standard care or observation.

Outcome: Improvement of symptoms, stabilization of the patient's condition, and prevention of complications.

Pubmed Query for articles:

("premature infant" OR "gastrointestinal symptoms" OR "bilious emesis" OR "bloody diarrhea" OR "abdominal distention") AND ("urgent medical intervention" OR "surgical intervention" OR "diagnosis" OR "treatment")

100 pubmed articles

Diagnosis- Necrotizing enterocolitis

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Patient-12

A 2-week-old infant delivered at 35 weeks gestation is brought to the pediatrician by his mother who reports that he has had a harsh, barking cough and makes a high-pitched whistling sound when he inhales. He has been feeding poorly but has not had a fever. The mother also says that the patient has bouts of blue discoloration around his lips, more frequently when he is lying on his back than on his stomach. Chest x-ray is normal.

Patient: A 2-week-old infant delivered at 35 weeks gestation presenting with a harsh, barking cough, high-pitched whistling sound during inhalation, poor feeding, and bouts of blue discoloration around the lips.

Intervention: Further diagnostic evaluations and medical or surgical management.

Comparison: Standard care or observation.

Outcome: Resolution of symptoms and prevention of cyanotic episodes.

Pubmed Query for articles:

("2-week-old infant" OR "preterm infant" OR "35 weeks gestation") AND ("barking cough" OR "whistling sound" OR "cyanosis") AND ("diagnostic evaluations" OR "medical management" OR "surgical management")

11 pubmed articles

Diagnosis- Tracheomalacia

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Patient-13

A 25-year-old female lifeguard presents to her doctor to discuss a new 10 mm skin lesion that she found on her right forearm that has been growing over the last month. The lesion has a heterogeneous dark blue color, is symmetric, and has been growing vertically.

Patient: A 25-year-old female lifeguard with a new 10 mm skin lesion on her right forearm.

Intervention: Diagnostic evaluation and possible medical or surgical management.

Comparison: No intervention or waiting.

Outcome: Accurate diagnosis, effective management, and prevention of potential complications related to the skin lesion.

Pubmed Query for articles:

("skin lesion" OR "dermatoscopic examination" OR biopsy) AND ("medical management" OR "surgical management") AND ("lifeguard" OR "sun exposure") AND "female"

8 pubmed articles

Diagnosis- Melanoma

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Patient-14

A 50-year-old field worker arrives to a free clinic to discuss a “sore” on his lower lip. He has had no trauma to the face. He reports that he first noticed the “sore” 6 months ago, and it has slowly gotten bigger. On physical exam, he has an ulcerated 1 cm nodule on his lower lip. There are no telangiectasias present.

Patient: A 50-year-old field worker with a progressively enlarging, ulcerated 1 cm nodule on his lower lip noticed over 6 months.

Intervention: Diagnostic evaluation (e.g., biopsy) and possible medical or surgical management.

Comparison: No intervention or delayed intervention.

Outcome: Accurate diagnosis, effective management, and resolution or stabilization of the lip lesion.

Pubmed Query:

("ulcerated nodule" OR "lip lesion" OR biopsy) AND ("medical management" OR "surgical management") AND "Adult"

100 pubmed articles

Diagnosis- Squamous cell carcinoma

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Patient-15

A 30-year-old unrestrained driver is brought in by paramedics after a high-speed MVC. In the ED, his heart rate is 110/min, blood pressure is 104/75 mmHg and decreases to 92/68 mmHg during inspiration. His tachycardia and hypotension persist despite aggressive fluid resuscitation. He appears pale, and his neck veins are distended. He has multiple bruises on his chest and abdomen. His chest x-ray is unremarkable

Patient: 30-year-old unrestrained driver in high-speed MVC.

Intervention: Further diagnostic evaluations and medical or surgical management.

Comparison: Aggressive fluid resuscitation alone.

Outcome: Stabilization of vital signs and management of injuries.

Pubmed Query:

("motor vehicle collision" OR MVC) AND ("diagnostic evaluations" OR "medical management" OR "surgical management")

19 Pubmed articles

Diagnosis- Cardiac tamponade

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Patient-16

A 62-year-old male presents to the physician with pain in his buttocks that comes on during his evening walks with his wife, forcing him to stop and rest. He also confides in you that he has been having difficulty maintaining an erection leading to marital problems. Physical exam is significant for absent femoral and distal pulses.

Patient: 62-year-old male with buttock pain, erectile difficulty, and absent peripheral pulses.

Intervention: Diagnostic evaluations and management for suspected peripheral arterial disease.

Comparison: No intervention.

Outcome: Symptom alleviation and pulse restoration.

Pubmed Query:

("buttock pain" OR "absent peripheral pulses") AND ("diagnostic evaluations" OR "management")

35 Pubmed articles

Diagnosis- Leriche syndrome