FEVER IN THE ADULT PATIENT

EPIDEMIOLOGY:

- Chief complaint in 6% of all adult ED visits (20-40% in paediatric populations)
- More serious in elderly populations (>65, 70-90% hospitalisation rates and much higher mortality rates)

PATHOPHYSIOLOGY:

- Body temperature normally controlled within narrow range by PREOPTIC AREA OF HYPOTHALAMUS
- Fever different to HYPERTHERMIA → inability of the body to dissipate heat (most temp >41C due to hyperthermia)
- Anterior hypothalamus directly senses temperature→controls temp by combination of vasomotor changes
- Fever may be produced by PYROGENS:
    - Endogenous = cytokines → IL-1, IL-6, TNF, interferon →induce production of PROSTAGLANDIN E2 → TARGET of antipyretics
    - Exogenous = bacterior and viral products → induce fever by stimulating release of endogenous pyrogens
- Age, malnutrition and chronic disease may also blunt the febrile response
- BENEFITS OF FEVER:
    - Increases chemotaxis
    - Decreases microbial replication
    - Improves lymphocyte function
- COSTS OF FEVER TO HOST:
    - Increased oxygen consumption
    - Increased metabolic demands
    - Increased protein breakdown
    - Increased gluconeogenesis
        - Older people have less reserve
- Initial step is RESETTING THERMOSTAT →normal temp but patient feels "CHILLS"
    - Then develops fever but feels euthermic
    - Set point reduced to normal and patient feels hot

CAUSES OF FEVER:

INFECTIOUS:

- RESPIRATORY:
    - Critical diagnoses:
        - Bacterial pneumonia with respiratory failure
    - Emergent:
        - Bacterial pneumonia
        - PTA

        - Retropharyngeal abscess
        - Epiglottitis
    - Non-emergent:
        - OM
        - Sinusitis
        - Pharyngitis
        - Bronchitis
        - Influenza
        - TB
- CARDIOVASCULAR:
    - Endocarditis
    - Pericarditis
- GIT:
    - Critical diagnoses:
        - PERITONITIS
    - Emergent:
        - Appendicitis
        - Cholecystitis
        - Diverticulitis
        - Intra-abdominal abscess
    - Non-emergent:
        - Colitis/enteritis
- GENITOURINARY:
    - Emergent:
        - Pyelonephritis
        - TOA
        - PID
    - Non-emergent:
        - Cystitis
        - Epididymitis
        - Prostatitis
- NEUROLOGIC:
    - Critical:
        - Meningitis
        - Cavernous sinus thrombosis
    - Emergent:
        - Encephalitis
        - Brain abscess
- SKIN/SOFT TISSUE:
    - Emergent:
        - Cellulitis
        - Infected ulcer
        - Soft tissue abscess
- SYSTEMIC:
    - Critical:
        - Sepsis/septic shock

        - Meningococcaemia

NON-INFECTIOUS:

- CRITICAL DIAGNOSES:
    - AMI
    - PE
    - ICH
    - CVA
    - Neuroleptic malignant syndrome
    - Thyroid storm
    - Acute adrenal insufficiency
    - Transufusion reaction
    - APO
- EMERGENT:
    - CCF
    - Dehydration
    - Recent seizure
    - Sickle cell disease
    - Transplant rejection
    - Pancreatitis
    - DVT
- NON-EMERGENT:
    - Drug fever
    - Malignancy
    - Gout
    - Sarcoid/Crohns

<u>HISTORY/EXAMINATION:</u>

HISTORY:

- LOCALISING SYMPTOMS:
    - Dysuria/cough etc
- Recent travel to exotic/remote locations
- Presence of indwelling devices (heart valves, portacath etc)
- Consider MRSA in:
    - Military
    - Contact sports
    - Prisoners
    - Skin infections in close family member
- Functional decline important in elderly:
    - Falls
    - Change in cognitive status
    - New incontinence
- Atypical symptoms common in elderly
    - Anorexia
    - Weight loss

    - Decreased activity
    - Nausea
    - Recurrent falls

PHYSICAL EXAMINATION:

- Rectal temp most accurate (often 0.7-1C higher)
- Tachycardia in fever:
    - 10/min higher per 0.55C elevation of temp
    - Watch for bradycardia (Lyme, rheumatic fever, endocarditis, pericarditis)
- RR in fever:
    - 2-4 breaths/min per degree
    - More significant tachypnoea heralds respiratory infection or acidosis from sepsis
- Other findings as directed by history
    - Abdominal exam may be deceptively benign in elderly, diabetics, immunosuppressed
    - Always remember to look for skin issues/decubitus ulcers

ANCILLARY TESTS:

- UA and CXR always in elderly
- WBC lacks sensitivity and specificity
- Gram stains of appropriate specimens (inc swabs of soft tissue infections)
- OUTPATIENT BLOOD CULTURES SHOULD NOT BE DONE
- CSF if indicated (head CT prior if focal neurologic findings or if embolic source suspected)

MANAGEMENT/DISPOSITION:

- Early empiric antibiotics indicated in most emergent/critical cases
    - Choice of antibiotics based on likely cause and concomitant conditions (eg renal failure, neutropenia)
- Most localised bacterial infections can be treated with outpatient oral antibiotics in the young and otherwise well
- Older patients, concurrent chronic illnesses, neutropenic patients → inpatient stay and empiric IV antibiotics