

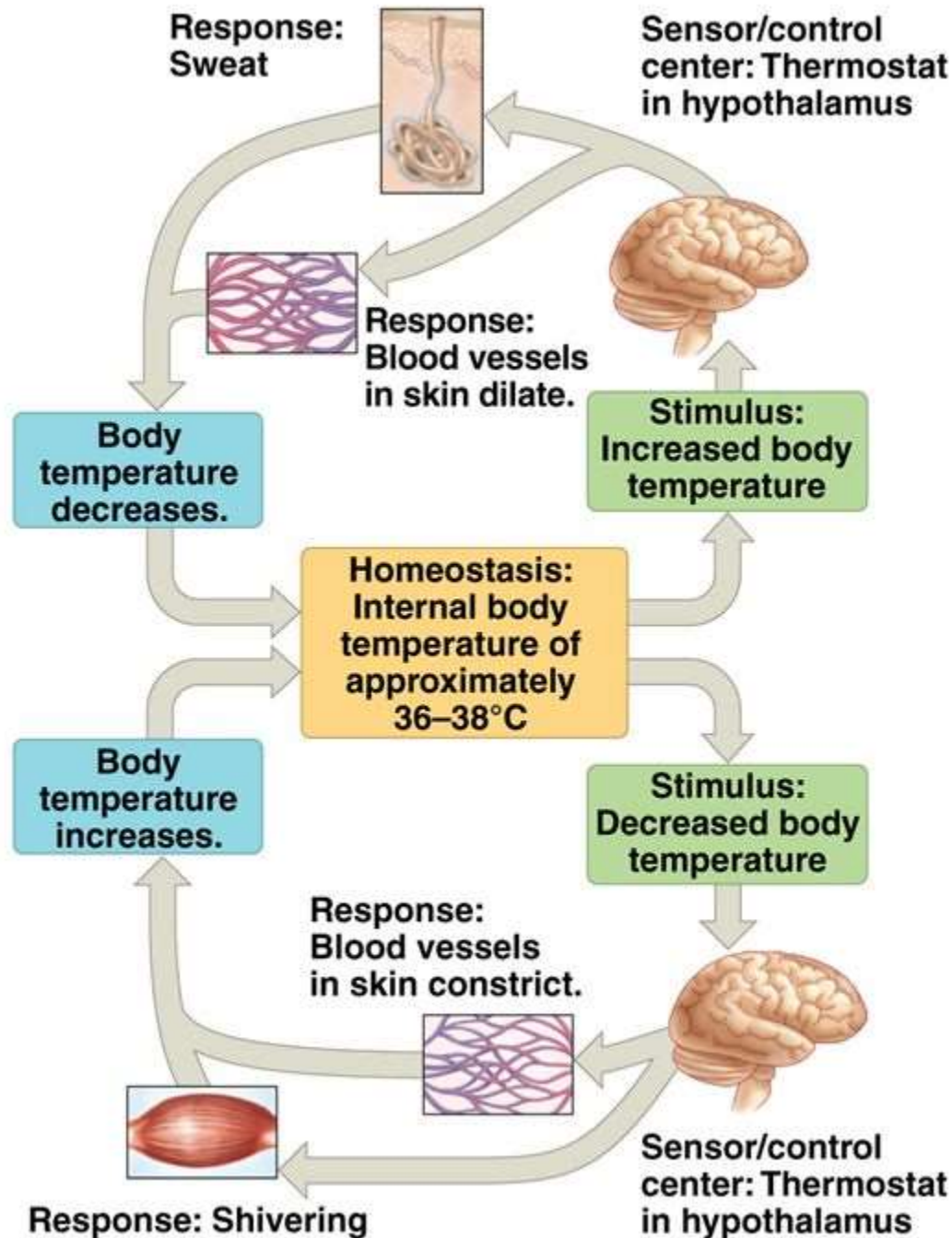
FEVER

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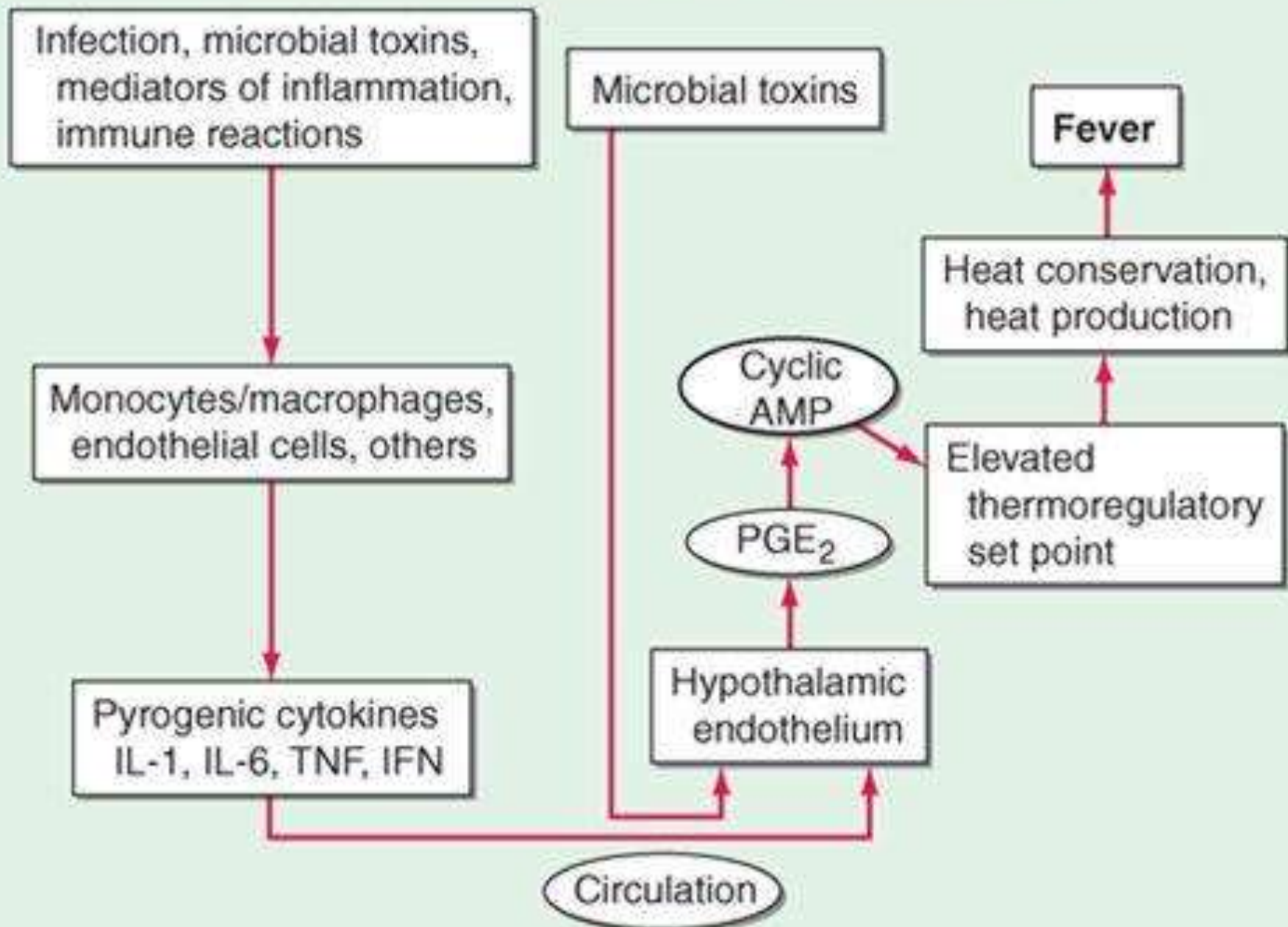
NORMAL BODY TEMPERATURE

- Normal oral temperature in morning is < 98.9 F in 99% of cases
- Normal oral temperature is < 99.9 F in 99% cases
- So definition of fever is AM temp > 98.9 F and PM temp > 99.9 F
- Physiological variation – increased morning temp (1F) in women after ovulation

The thermostatic function of the hypothalamus in human thermoregulation.



EVENTS REQUIRED FOR FEVER INDUCTION



PATHOGENESIS

- PYROGENS
 - Exogenous
 - Enterotoxins
 - Superantigens
 - Endotoxins
 - Endogenous
 - IL-1
 - IL-6
 - TNF
 - IFN
- PGE 2
- cAMP



Types

- **Continuous**- above normal throughout the day, with fluctuation $<1^{\circ}$ F; e.g. viral fever
- **Remittent**- above normal throughout the day, with fluctuation $>1^{\circ}$ F; e.g. IE
- **Intermittent**- touches normal during the day; e.g. abscess, bacteremia, malaria
- **Relapsing**- short febrile episodes between day(s) of normal temperature; e.g. malaria, typhoid
- **Pel-Ebstein**- relapsing fever with bouts of fever lasting 3-10 days; e.g. Hodgkin's

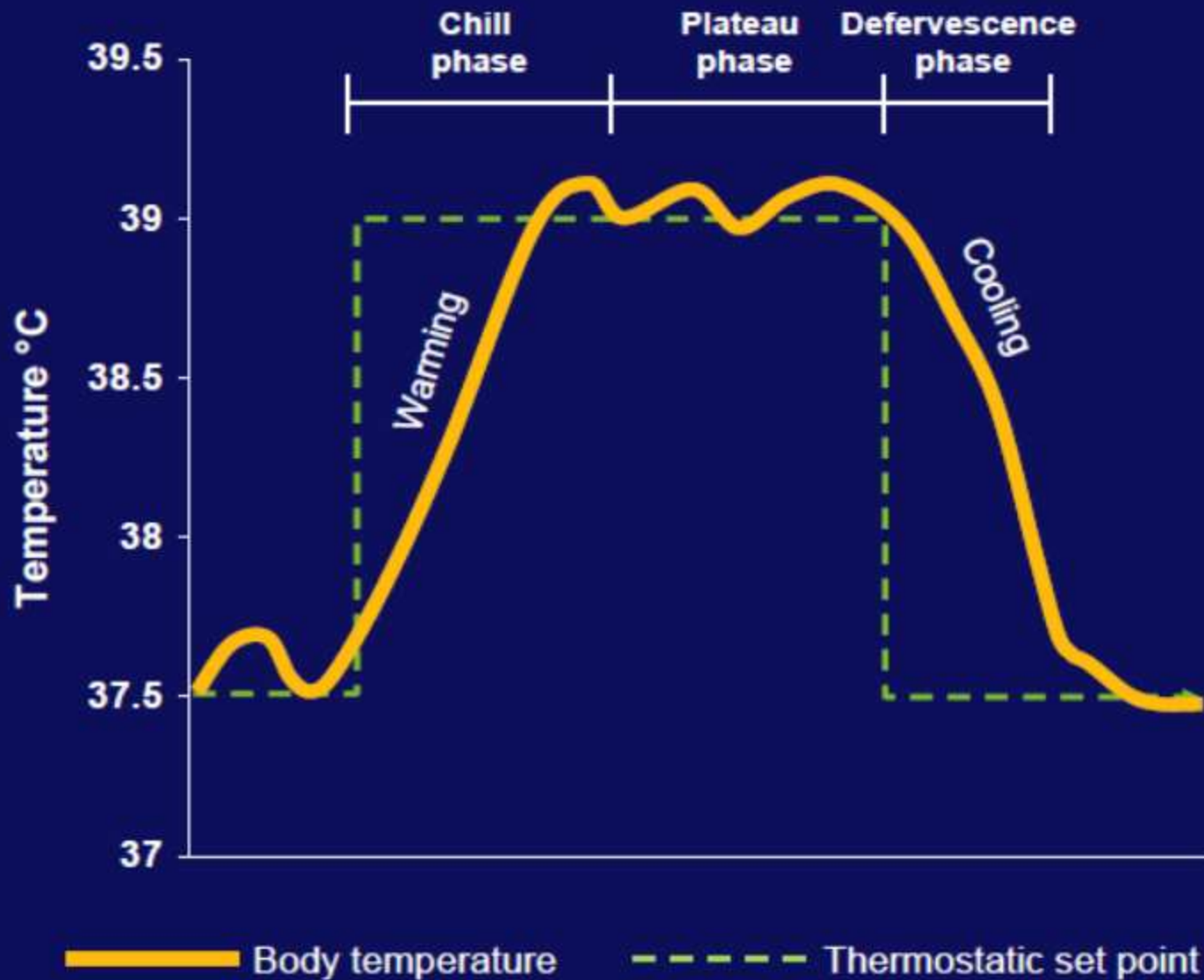
EFFECTS OF FEVER

- **BENEFICIAL**
 - Increase the immune function
 - Increased phagocytosis
 - Direct inhibition of growth of few micro organisms
- **DELETERIOUS**
 - Increased metabolism
 - Increased oxygen consumption
 - Increased stress on heart

PULSE RATE AND FEVER

- Normally with each deg Celsius rise in Temp the pulse rate increases by 10 beats
- Relative bradycardia- <5 beats/min
 - Typhoid
 - Brucellosis
 - Leptospirosis
- Relative tachycardia
 - Myocarditis
 - Rheumatic fever

components of fever

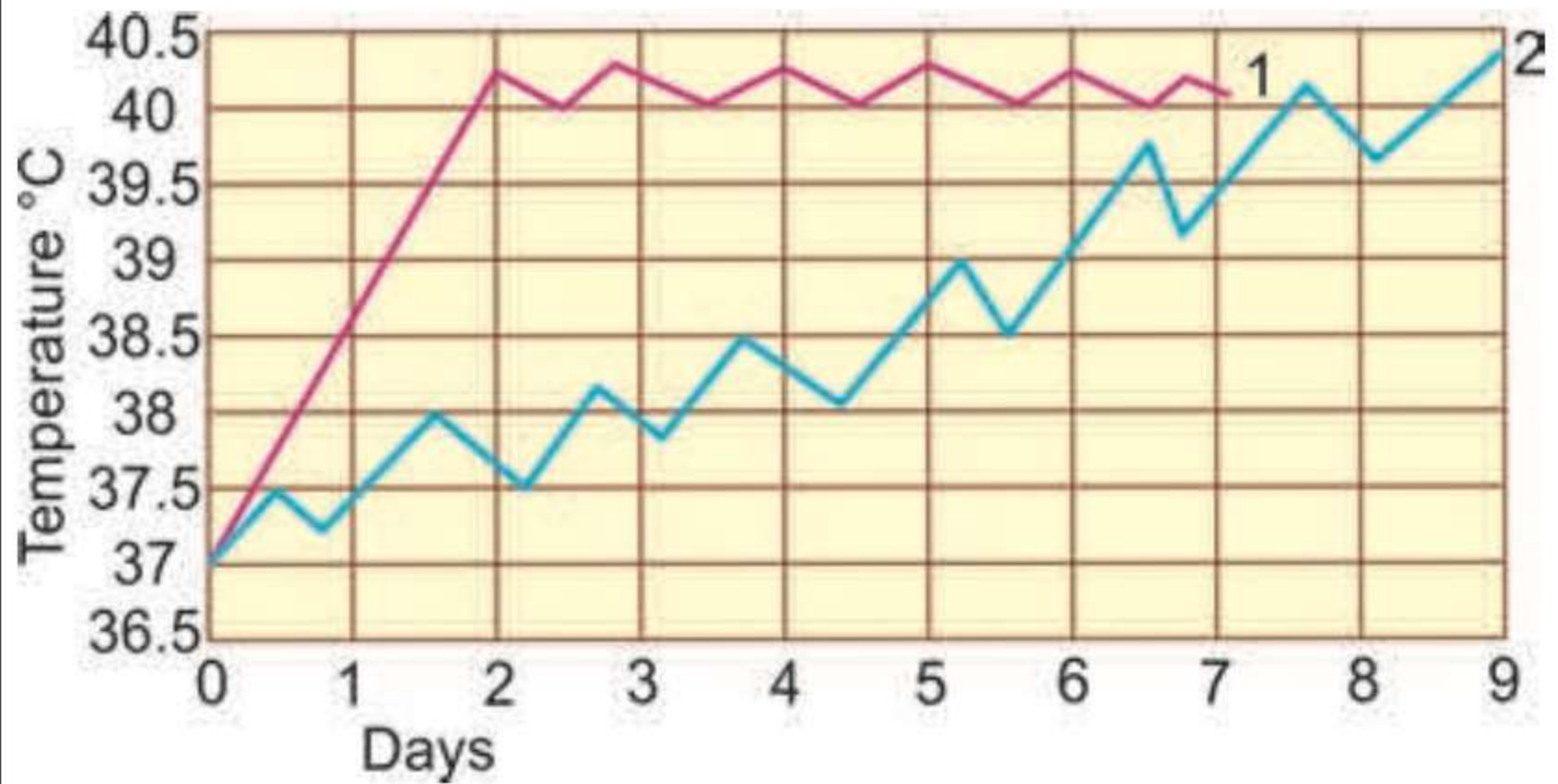


1-Onset of fever : (warming – chill phase)

Sudden rise : pneumonia,malaria,meningitis (associated with oral herpes simplex).



Gradual rise : typhoid fever (step-ladder) .



The pattern of rise of temperature (1) Abrupt rise (2) Step-ladder pattern

2-Main (pattern-plateau phase)

❖ **Continuous**: fever does not fluctuate more than 1°C during 24hrs, but at no time touches the normal.e.g.pneumonia, typhoid fever, urinary tract infection, brucellosis

❖ **Remittent** : daily fluctuations exceed 2°C but at no time touches the normal.

It is associated with viral upper respiratory tract, legionella, and mycoplasma infections

❖ **Intermittent** : fever reaches normal level

✓ Quotidian : Paroxysms of fever occur daily(P.Falciparum)

✓ Tertian : Paroxysms of fever on alternate days (P.Vivax,P.Ovale)

✓ Quartan :every 72 hrs (P.Malariae)

3-End of fever :

Crisis (sudden reduction){associated with sweating}

e.g. pneumonia

Lysis (gradual reduction)

e.g. Typhoid

CAUSES OF FEVER

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graph TD; A[CAUSES OF FEVER] --> B[INFECTIONS]; A --> C[MALIGNANCIES]; A --> D[AUTOIMMUNE CONDITIONS-JOINT/CONNECTIVE TISSUE DISEASE]; A --> E[OTHERS];
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INFECTIONS

- Bacterial: Typhoid Fever, T.B. , brucellosis
- Pneumonia , pyelonephritis , meningitis
- Viral : Hepatitis A & B..
- Parasitic : Malaria
- Fungal

MALIGNANCIES

- Leukemia
- Lymphoma
- Hepatoma
- Nephroblastoma

AUTOIMMUNE CONDITIONS- JOINT/CONNECTIVE TISSUE DISEASE

- Rheumatoid arthritis
- Rheumatic fever
- Systemic lupus erythematosus
- Vasculitis

OTHERS

- Drug-induced fever
- Factitious fever

HISTORY

- Duration , Severity
- Documented?
- Chills, Rigors?
- Cough cold sore throat chest pain sputum?
- Nausea Vomiting pain abdomen diarrhoea?
- Dysuria, urinary reQUENCY
- Skin rash ? Which day of fever?
- Muscle aches, headache, diplopia
- Treatment – Tablets, Inj?
- Weight loss anorexia, cold night sweats
- Past h/o diabetes, HIV status intake of immunosuppressants

HISTORY

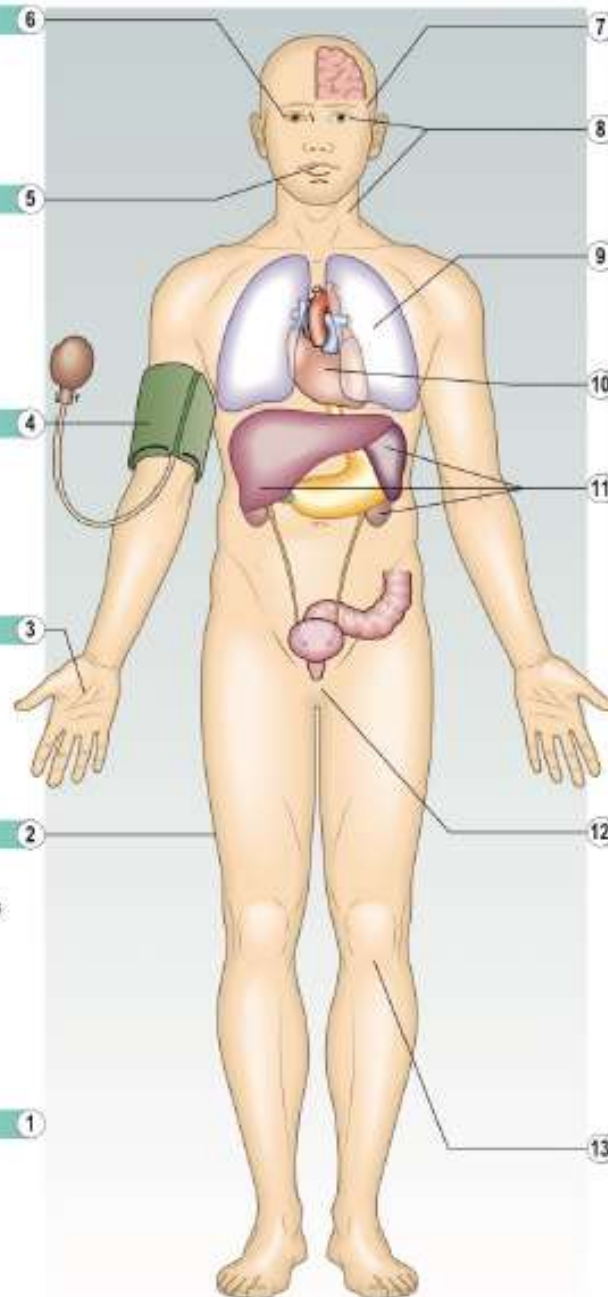
- Travel history
 - Going into the epidemic area of certain disease
 - North east
 - Village areas
 - Forests
- Social and Family history
 - Similar history in close contacts
 - TB
 - Sexual contact

EXAMINATION

- Vitals
- GPE – pallor LN skin rash Icterus oral cavity
- Systemic examination-
 - Resp system
 - CVS
 - CNS
 - Per Abdomen

EXAMINATION OF THE FEBRILE ADULT

- 6 Eyes**
- Conjunctival petechiae
 - Jaundice
 - Fundoscopy
 - choroidal tubercles
 - Roth's spots
- 5 Oropharynx**
- Tonsillar enlargement
 - Candidiasis
 - Palatal petechiae
- 4 Pulse and blood pressure**
- Bounding or 'thready' pulse
 - Tachycardia
 - Hypotension
- 3 Hands**
- Splinter haemorrhages
 - Janeway lesions
 - Clubbing
- 2 Skin**
- Rashes esp. petechial, purpuric
 - IV injection tracks
 - Prosthetic devices, e.g. central lines
 - Soft tissue infection
 - Tattoos
- 1 General observations**
- Altered mental state
 - Respiratory distress
 - Weight loss
 - Pallor



- 7 Head and neck**
- Lymphadenopathy
 - Abnormal tympanic membrane
- 8 Neurological**
- Neck stiffness
 - Photophobia
 - Focal signs
- 9 Chest**
- Tachypnoea
 - Bronchial breathing, crackles
 - Pleural effusion
- 10 Heart**
- New or changing murmurs
 - Pericardial friction rub
- 11 Abdomen**
- Hepatosplenomegaly
 - Ascites
 - Renal angle tenderness
 - Peritonism
 - Surgical scars, drains
- 12 Genitalia**
- Ulceration or discharge
 - Inguinal lymphadenopathy
 - Prostatic tenderness
 - Cervical motion tenderness
- 13 Musculoskeletal**
- Joint swelling and erythema
 - Local spinal tenderness
 - discitis, epidural abscess

TABLE 88-6 COMMON CLINICAL FINDINGS AND ASSOCIATED INFECTIONS

CLINICAL FINDINGS	INFECTIONS TO CONSIDER AFTER TROPICAL TRAVEL
Fever and rash	Dengue, chikungunya, rickettsial infections, enteric fever (skin lesions may be sparse or absent), acute HIV infection, measles, acute schistosomiasis
Fever and abdominal pain	Enteric fever, amebic liver abscess
Undifferentiated fever and normal or low white blood cell count	Dengue, malaria, rickettsial infection, enteric fever, chikungunya
Fever and hemorrhage	Viral hemorrhagic fevers (dengue and others), meningococemia, leptospirosis, rickettsial infections
Fever and eosinophilia	Acute schistosomiasis; drug hypersensitivity reaction; fascioliasis and other parasitic infections (rare)
Fever and pulmonary infiltrates	Common bacterial and viral pathogens; legionellosis, acute schistosomiasis, Q fever, melioidosis
Fever and altered mental status	Cerebral malaria, viral or bacterial meningoencephalitis, African trypanosomiasis
Mononucleosis syndrome	Epstein-Barr virus, cytomegalovirus, toxoplasmosis, acute HIV infection
Fever persisting >2 weeks	Malaria, enteric fever, Epstein-Barr virus, cytomegalovirus, toxoplasmosis, acute HIV, acute schistosomiasis, brucellosis, tuberculosis, Q fever, visceral leishmaniasis (rare)
Fever with onset >6 wk after travel	Vivax malaria, acute hepatitis (B, C, or E), tuberculosis, amebic liver abscess

Treatment of fever

Fever must be reduced using antipyretics (NSAIDs) in some groups of patients :

- 1- Patients with preexisting cardiac disease (IHD)
- 2- Patients with cerebrovascular disease
- 3- patient with preexisting pulmonary disease
- 4-Children with a history of seizure
- 5-Pregnants
- 6-Elderly.
- 7-Temp.>39

It is better to avoid aspirin in children to prevent Reye syndrome.

Pyrexia of unknown origin (PUO) = = Fever of Unknown origin (FUO)

- PUO (FUO) is defined as a temperature persistently above 38.0 °C for more than **3** weeks, without diagnosis despite initial investigation during **3** days of inpatient care or after **3** outpatient visits or more . (rule of 3)



HYPERPYREXIA

A fever of $>41.5^{\circ}\text{C}$ ($>106.7^{\circ}\text{F}$) is called hyperpyrexia. This extraordinarily high fever can develop in patients with severe infections but most commonly occurs in patients with central nervous system (CNS) hemorrhages.

HYPERTHERMIA

Hyperthermia is characterized by *an unchanged (normothermic) setting of the thermoregulatory center* in conjunction with an uncontrolled increase in body temperature that exceeds the body's ability to lose heat.

Causes of Hyperthermia Syndromes

➤ HEAT STROKE

Exercise in higher-than-normal heat and/or humidity

➤ DRUG-INDUCED HYPERTHERMIA

Anticholinergics, including antihistamines; antiparkinsonian drugs; diuretics; antipsychotics, anesthetics

➤ ENDOCRINOPATHY

- Thyrotoxicosis, pheochromocytoma

Hyperthermia Vs Fever

- 1-Daily temperature swings do not occur in patients with hyperthermia
- 2-hyperthermia can be rapidly fatal
- 3-characteristically does not respond to antipyretics
- 4-Hyperthermia is characterized by *an unchanged setting of the thermoregulatory center*
- 5-Hyperthermia is often diagnosed on the basis of the events immediately preceding the elevation of core temperature—e.g ., heat exposure or treatment with drugs that interfere with thermoregulation.
- 6-In patients with heat stroke syndromes and in those taking drugs that block sweating , the skin is hot but dry.

