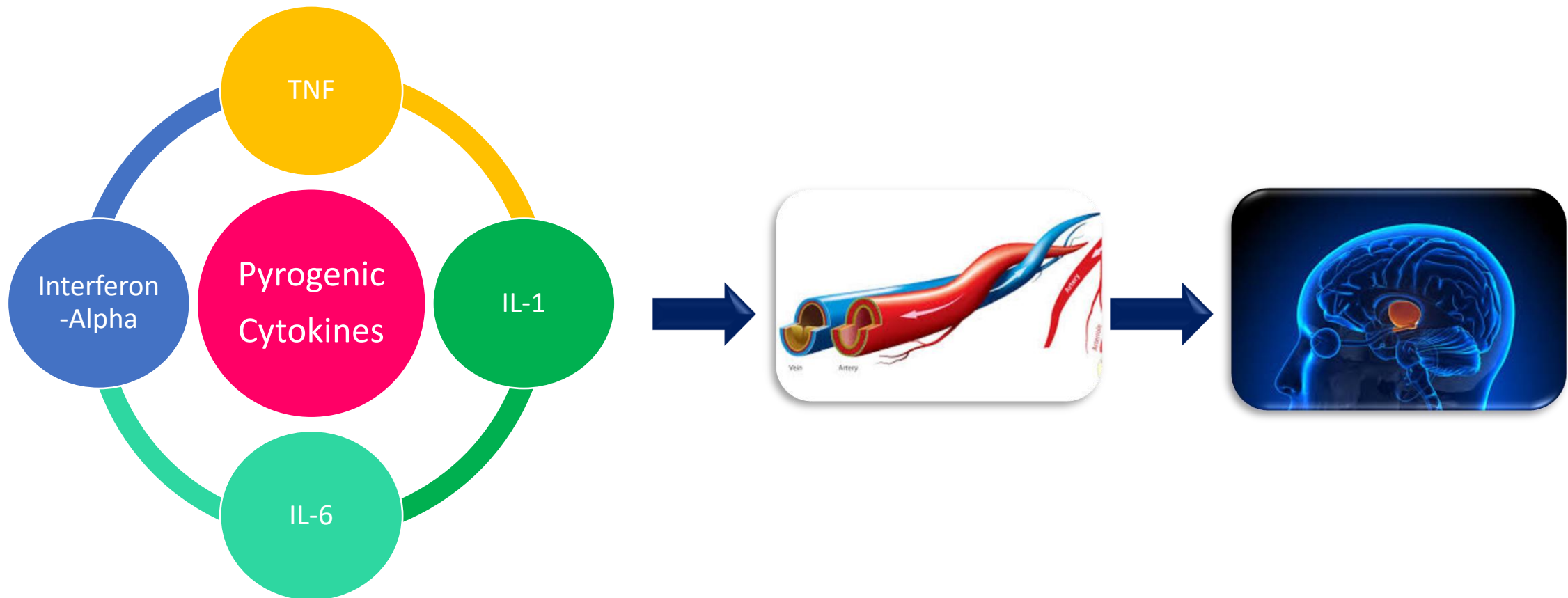


Pain & Fever Management in Children



Fever Pathogenesis

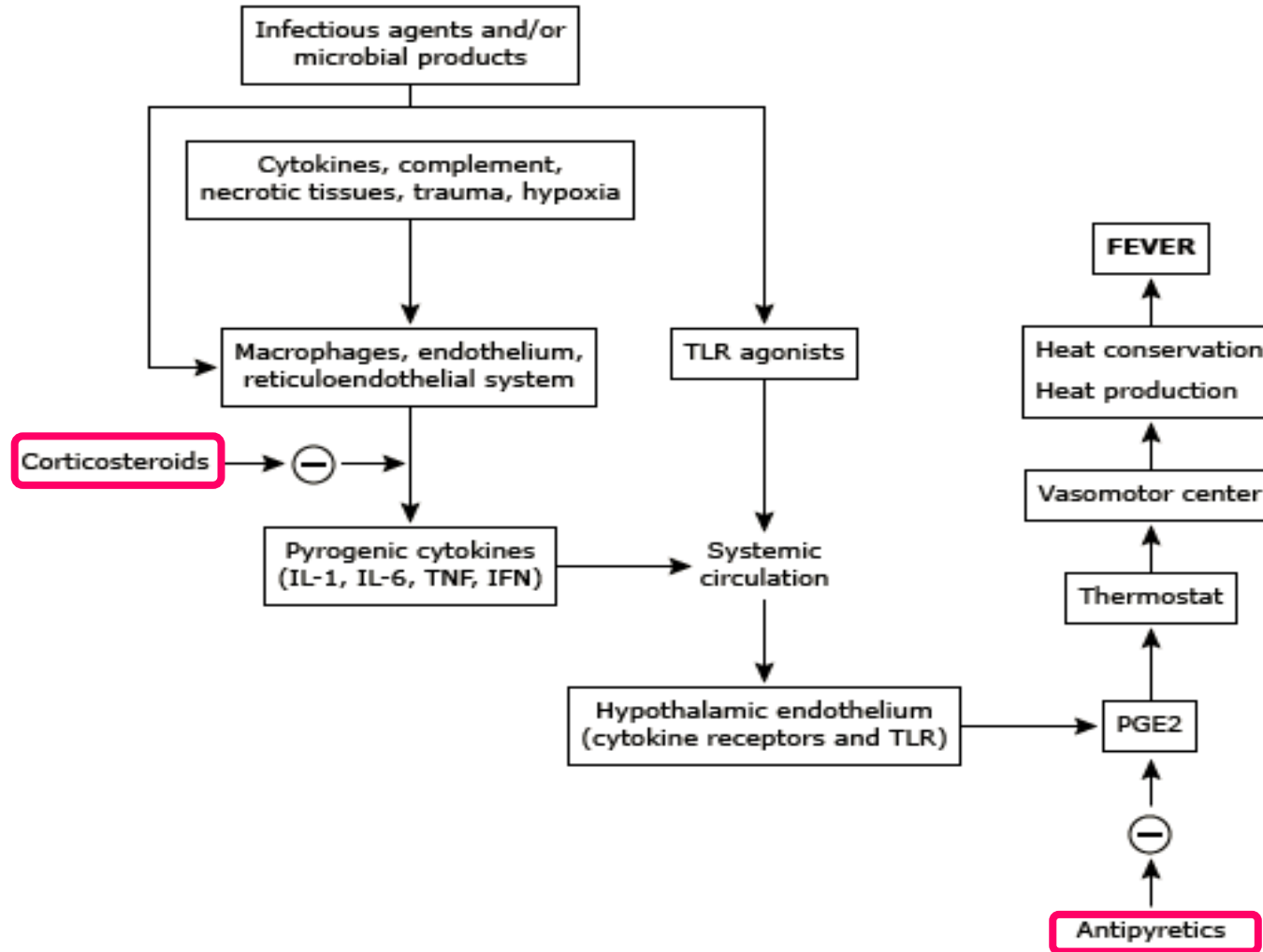
- Pyrogenic Cytokines induce increase in the synthesis of prostaglandins, especially prostaglandin E2 (PGE2)
- The induction of PGE2 in the brain raises the hypothalamic set-point for body temperature



Antipyretic agents treat fever by restoring the **thermoregulatory set-point to normal**


Antipyretics Action

- Corticosteroids reduce the peripheral synthesis of pyrogenic cytokines
- antipyretics reduce PGE2 levels in the brain



Fever Potential harms

Cytokines Related

- Pyrogenic cytokines increase the synthesis of acute-phase proteins by the liver
- Decrease serum iron and zinc levels
- Provoke leukocytosis
- Accelerate skeletal muscle proteolysis
- IL-1 also induces slow-wave sleep  somnolence frequently associated with febrile illnesses
- The increase in peripheral PGE2 may account for the myalgias and arthralgias

Fever Potential Circumstances

1- Makes patients uncomfortable (malaise, somnolence, agitation, etc.)

2- Increased cardiopulmonary demand due to :

- Increased metabolic rate
- Increased oxygen consumption
- Increased carbon dioxide production

3- Febrile seizures

- Seizure threshold is low in infants and could be affected by certain medications , dehydration and electrolyte imbalance especially hyponatremia
- The increase in body temperature in terms of fever, could provoke febrile seizures in children

Potential benefits of treating fever with antipyretics agents

- Decrease in invisible liquid loss water loss
- Decrease the risk of dehydration
- Analgesic effects
- Decrease children malaise and agitation



Antipyretic guidance & information

- Antipyretic medications should be administered according to weight, rather than age
- The duration of administration of antipyretic therapy depends upon the child's response; the end-point is the child's fever relief
- with either **Acetaminophen** or **Ibuprofen**, a response should be seen within 60 minutes; the response peaks in 3 to 4 hours

Antipyretic Treatment in Young Children with Fever

Acetaminophen; Dosage & Administration

- Oral acetaminophen is being suggested because of its long track record of safety at therapeutic doses
- Acetaminophen generally is not recommended for infants younger than 3 months of age
- When administered in appropriate doses, acetaminophen is remarkably free of side effects

Dose :

- 10 to 15 mg/kg per dose (maximum dose 1 g) orally every 4 to 6 hours (with no more than 5 doses in a 24-hour period) with a maximum daily dose of 75 mg/kg per day up to 4 g/day)
 - Loading dose (eg, an initial dose of 30 mg/kg) of acetaminophen is not recommended for routine clinical care due to increasing the risk of dosing confusion
-
- **Onset of action: 30 to 60 minutes**
 - **T max : 3 to 4 hours**
 - **Duration of action: 4 to 6 hours**

Ibuprofen

- Ibuprofen is suggested initially when the antipyretic and anti-inflammatory activity are desired
- Dosage: 10 mg/kg per dose QID (maximum dose 600 mg); maximum daily dose : 40 mg/kg up to 2.4 g/day
- Duration of action: 6 to 8 hours
- **T max (decline in temperature of 1 to 2°C): 3 to 4 hours**
- Adverse effects of ibuprofen may include gastritis and gastrointestinal bleeding , but (it is usually safe)
- When administered in appropriate doses and taken with food, ibuprofen usually is safe

Ibuprofen Contraindications

Hypersensitivity to ibuprofen (e.g. anaphylactic reactions, serious skin reactions) or any component of the formulation:

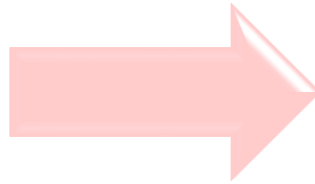
- History of asthma
- Urticaria
- Aspirin-exacerbated respiratory disease (**AERD**) known as Samter's triad (asthma, sinus disease with recurrent nasal polyps, and sensitivity to aspirin and other NSAIDs)

Alternating Ibuprofen and Acetaminophen in the treatment of Children

Alternating Antipyretic

Acetaminophen is generally used because of its long track record of safety at the therapeutic doses

Combined fever treatment with acetaminophen and ibuprofen may increase the possibility of inaccurate dosing*



If the temperature remains elevated and the child's discomfort is not improved 3 to 4 hours after administration of acetaminophen or ibuprofen, some experts would suggest switching from acetaminophen to ibuprofen or vice versa.

*Reference: The American Academy of Pediatrics (AAP)

Children Advalgin



- **Ingredients:** Ibuprofen 100mg/5ml
- **Indication:** Persistent Fever, Teething pain, Headache, Earache, Body ache, Cold related pain, Sore throat, Post immunization pyrexia, Rheumatoid arthritis and Joint pain
- **Flavor:** Tutti Frutti

Age	3-6 M	6-12 M	1-3 Y	4-6 Y	7-9 Y	10-12 Y
weight	5-7.6 kg	7.7-9 kg	10-16 kg	17-20 kg	21-30 kg	31-40 kg
Dose	2.5 ml	2.5 ml	5 ml	7.5 ml	10 ml	15 ml

Children Corizan Pain & Fever Suspension



- **Ingredients:** Acetaminophen 120mg/5ml Suspension
- **Indication:**
Fever, Teething pain, Headache, Earache, Body ache, Cold related pain, Sore throat
- **Flavor:** Tutti Frutti

Age	1-2 Y	2-4 Y	4-6 Y	6-8 Y
weight	8-12 kg	12-16 kg	16-20 kg	20-25 kg
Dose	5-7.5 ml	7.5-10 ml	10-12.5 ml	12.5-15 ml

Dr. Abidi Solutions for Pain & Fever Management

Ch. Advalgin Sus.



Ch. Corizan Pain & Fever Sus.



Thank you

