



Ministry of Health Malaysia  
Occupational and Environmental Health Sector

# Heatstroke

## Medical Perspectives

Forgotten Child in the Car Seminar  
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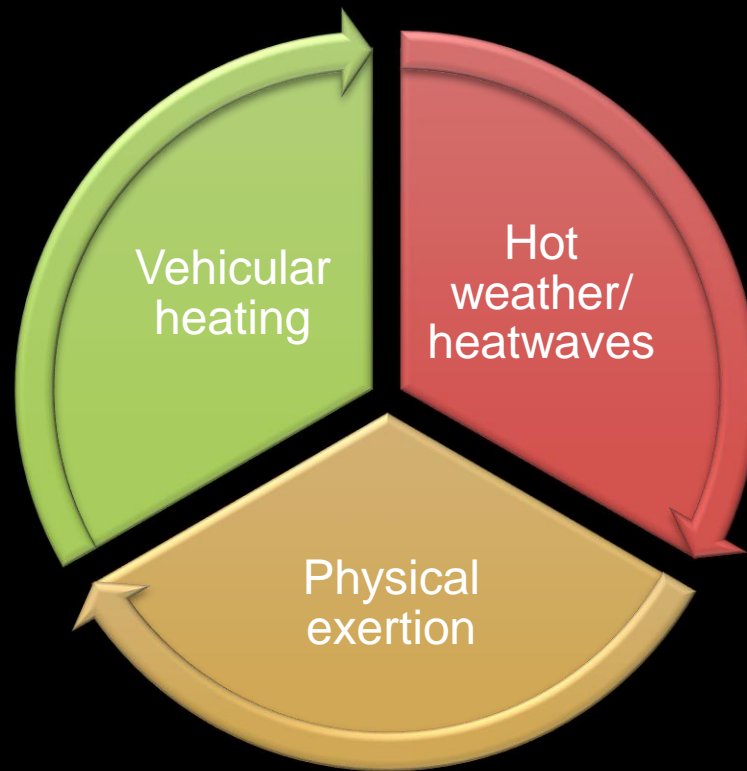
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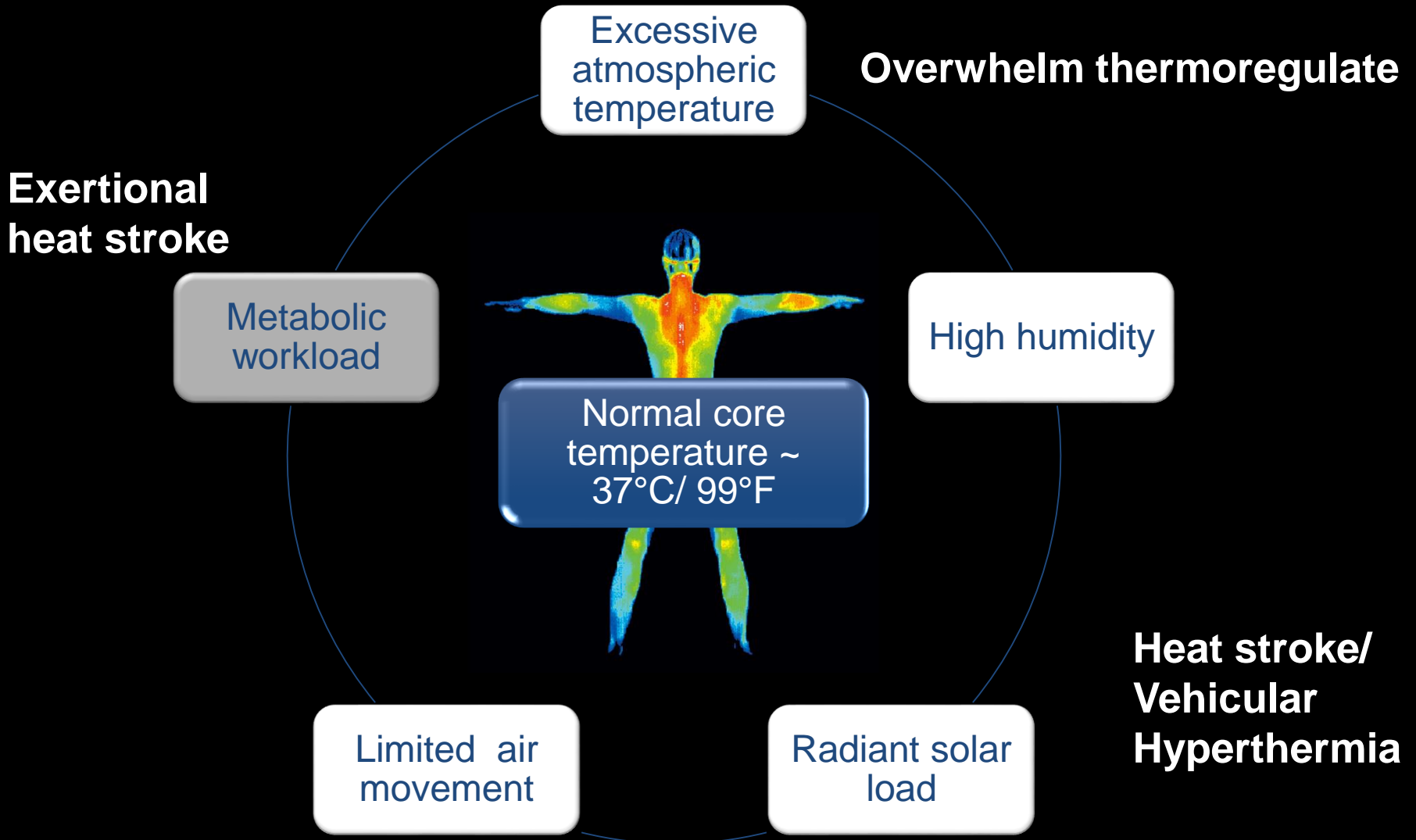
# Introduction

- In Malaysia the climate is equatorial with hot, humid and rainy throughout the year
- Severe heatwaves in 2016 resulted in health impacts
  - Increased no. of heat related illness

Type situations can cause  
heath related illness



# Heat and health





# Vulnerable groups to heat

## Age group



- Older adults
- **Infants and young children**

## Existing health conditions



- People with chronic illnesses or who are physically impaired
- People taking certain medications that affect heat sensitivity

## Living condition



### Socially disadvantaged individuals

- Low income earners, homeless people, people living alone)

## Outdoor exposure



- Occupational exposures (e.g. farmers, construction workers)
- Transient population (tourist)
- Those who are physically active

# Infants and young children



**Children are not miniature adults**

# Infants and young children



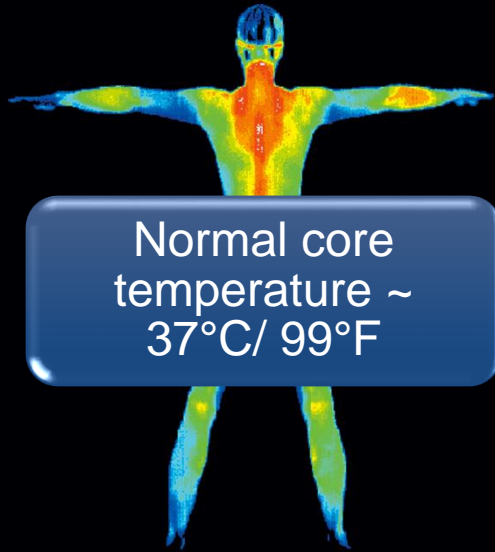
## Physiological characteristic

- Faster heat gain from the environment, if ambient  $T >$  skin  $T$  ( $>$ surface-area : body-weight)
- Inability to increase cardiac output
- Reduced sweating
- Increased body heat production during physical activity

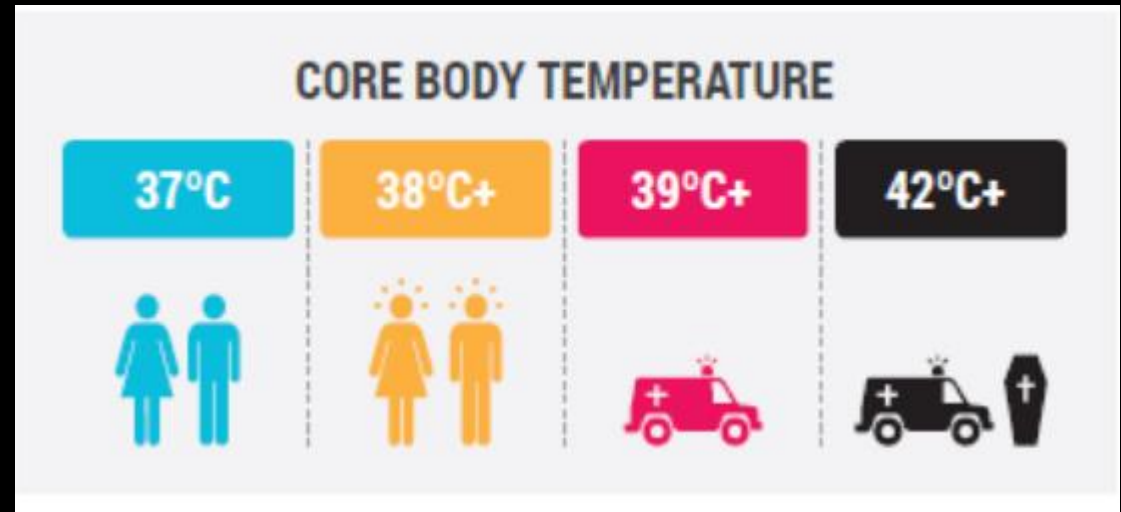
## Behavioural characteristic

- Do not understand danger
- Dependence on caregiver to recognize heat impacts and take recommended actions

# Heat Related Illness



Normal core  
temperature ~  
37°C/ 99°F



Heat related illness is a medical emergency

70%

High  
mortality

heat stroke

100%

Appropriate  
treatment  
starts without  
delay

Survival rates



# Heat related illness

A group of disorder



## Minor

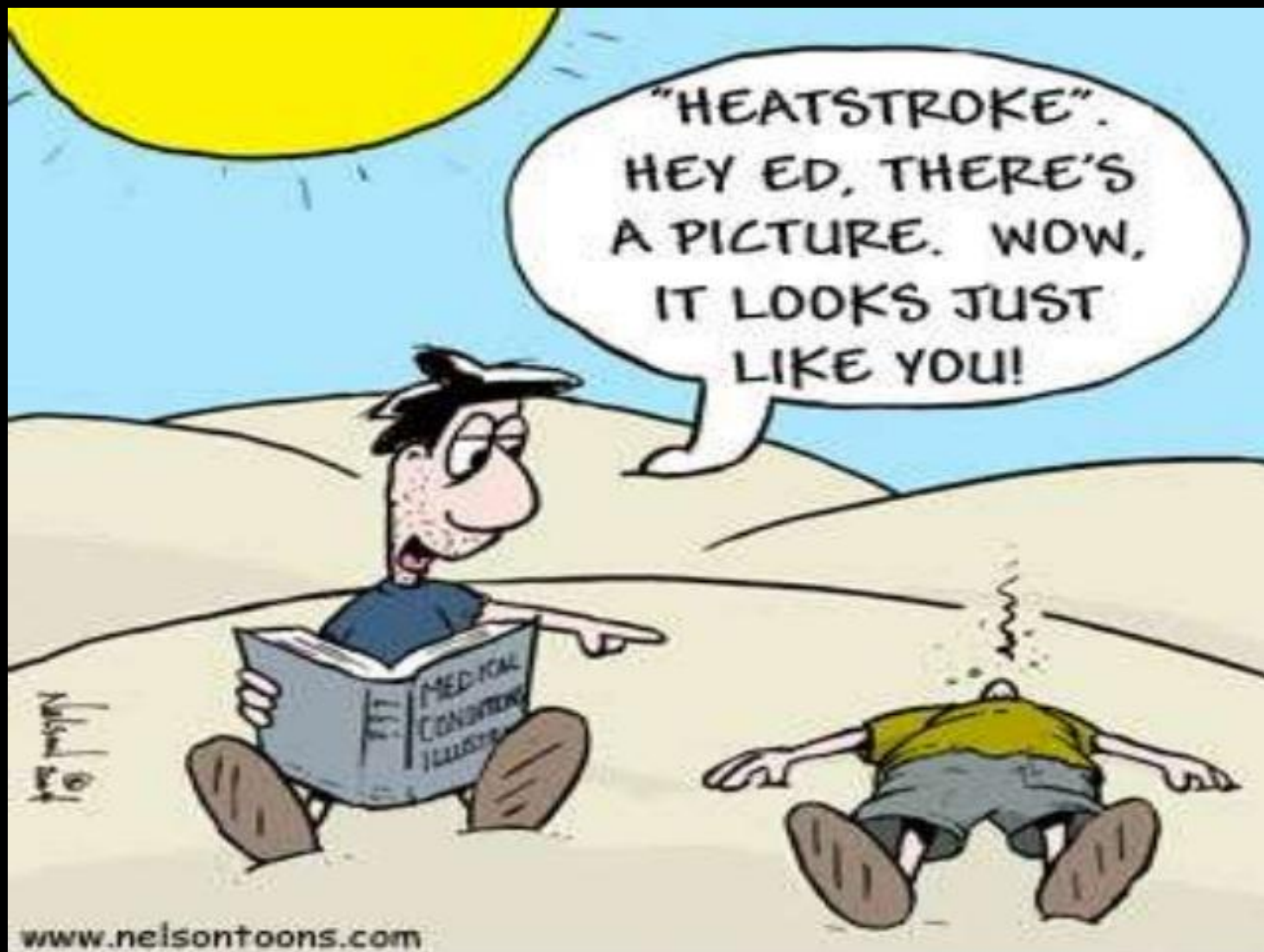
- Prickly heat
- Heat syncope
- Heat cramps
- Heat exhaustion



## Major

- Heat stroke





# Heat related illness

## Heat cramp

- Painful, involuntary, spasmodic contractions of skeletal muscle (calves, thighs and shoulder)
- Occur in individuals sweating profusely and only drinking water or hypotonic solutions
- Limited duration
- Limited to certain muscle group

## Heat exhaustion

- Headache, Nausea, Vomiting
- Malaise, Dizziness
- Muscle cramps
- Temperature less than 40 °C or normal
- May progress to heat stroke if fails to improve with treatment
- No Central Nervous System (CNS) involvement

## Heat Stroke

- Core body temperature greater than 40 °C
- Signs of Central Nervous System dysfunction (Confusion, Delirium, Ataxia, Seizures)
- Coma
- Other late clinical findings that can occur (Anhidrosis, Coagulopathy, Multiple organ failure)

# Symptoms in child

The symptoms are the same in adults  
- less specific symptoms/ signs

Feeling unwell/ sick

Easily irritable

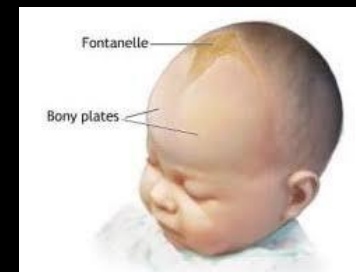
Floppy and sleepy

Refused orally/ loss  
of appetite

Dehydration – less  
urinary output, dry  
skin

Excessive sweating  
and pale, clammy  
skin

Fast breathing or  
pulse





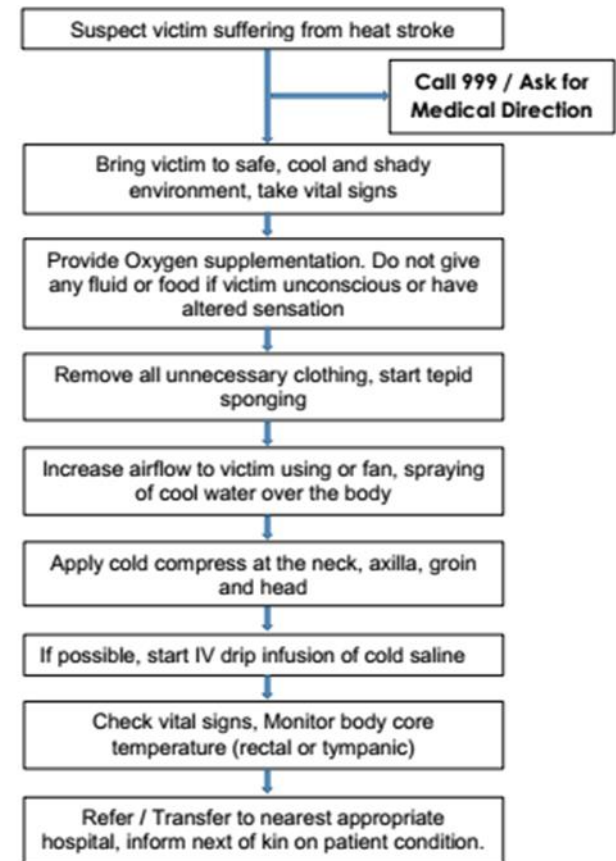
# Action to be taken

Heatstroke is a medical emergency and continues to be one of the leading causes of preventable death



Rapid reduction of the core body temperature

## Management Workflow of Suspected Heat Stroke Victims



# Health Info



- Tips when driving with children during hot weather
  - Avoid direct sun exposure
    - Use shades on your car windows to protect your child from the sun
  - Well Hydrate
    - Give your child plenty of water to drink during car trips
  - Dress your child in light colored, cool, comfortable, loose-fitting clothing
  - Drive with running air conditioner
  - Do not leave your children unattended in a vehicle



# Health Info

## CUACA PANAS

— Nasihat kepada orang ramai —

Cuaca panas memberi tekanan fizikal kepada tubuh manusia. Kesan terhadap kesihatan boleh jadi dari tahap sederhana (*mild*) kepada yang boleh menyebabkan maut contohnya akibat strok haba. Risiko bertambah jika mereka memakai pakaian yang tebal dan ketat yang menghalang haba keluar daripada penyejatan/pengeringan peluh. Keadaan yang terlalu teruk boleh menyebabkan dehidrasi (kekeringan), kekeliruan dan tidak sedarkan diri (koma).



**Kumpulan yang lebih berisiko menjadi mangsa cuaca panas:**

1. Mereka yang terbalut dengan kegiatan aktiviti fizikal di luar seperti buruh, peladang, ahli sukan, tentera, polis dan lain-lain
2. Orang dewasa (berumur 40 tahun ke atas mempunyai risiko 10 kali ganda berbanding dengan mereka yang lebih muda)
3. Penghidap penyakit darah tinggi, jantung, kencing manis dan penyakit kelenjar tiroid
4. Kanak-kanak berumur 5 tahun ke bawah
5. Penghidap penyakit sistem pernafasan



**Antara gejala cuaca panas melampau adalah:**

Sakit kepala    Keletihan    Lemah tumpuan    Pening    Lemah otot-otot atau kekejangan    Mual dan muntah

**Cara mencegah atau mengurangkan kesan terhadap kesihatan akibat cuaca panas melampau:**

1. Minum air kosong dengan banyak tanpa mengira tahap aktiviti fizikal yang anda lakukan. Jangan tunggu sehingga anda dahaga.
2. Minum minuman isotonik kerana ia boleh menggantikan garam dan mineral yang hilang semasa berpeluh.
3. Berada di dalam rumah/bangunan.
4. Hadkan aktiviti luar.
5. Kerap berehat.
6. Mandi atau gunakan kipas angin untuk menyejukkan tubuh badan anda.
7. Pakai pakaian yang ringan, berwarna terang dan longgar.
8. Pakai topi atau payung yang besar.
9. Elakkan minum minuman yang mengandungi kafein, alkohol, atau kandungan gula yang tinggi.
10. Elakkan membiarkan seseorang di dalam kereta yang tertutup.
11. Elakkan bersenam dalam cuaca panas.

**Jika anda mempunyai tanda-tanda masalah berkaitan dengan suhu panas, ingat tip-tip di bawah:**

- Keluar dari kawasan yang panas
- Tanggalkan pakaian yang ketat
- Letakkan kain yang basah dan sejuk pada badan
- Cuncuk kipas untuk sejukkan badan
- Minum air setiap 15 minit
- Dapatkan bantuan jika keadaan tidak dapat dikawal



## TANDA - TANDA AWAL STROK HABA

1

Kerap sakit kepala

2

Mudah hilang fokus

3

Lidah menjadi bengkak

4

Suhu badan melebihi 39°C

Strok haba atau dikenali sebagai 'Heat Stroke' berlaku apabila sistem tubuh badan tidak dapat mengawal secara normal. Badan akan mengalami kenaikan suhu mendadak selain turut mengalami kegagalan berpeluh. Suhu badan individu yang mengalami strok haba selalunya akan naik sehingga 41°C atau lebih dalam masa 10 hingga 15 minit. Malah, strok haba sekiranya tidak dikawal boleh menyebabkan kematian atau hilang keupayaan kekal.

5

Nadi berdenyut laju

9

Kulit kering dan kemerah-merahan

8

Badan tidak berpeluh

7

Badan lesu dan kerap pengsan

6

Tekanan darah rendah

**Sekiranya anda mengalami tanda-tanda ini, anda disarankan berjumpa doktor bagi mendapatkan rawatan**

# Conclusion

- Infant and young children are vulnerable to heat due to their physiological and behavioural characteristics
- Vehicular hyperthermia is preventable ~ parents/ care giver should never leave their children in unattended vehicle
- Heat related illness is a group of disorder
- In case of vehicular heating exposure, immediate first aid/ rapid cooling and transport patient to the nearest health facility





*Thank  
You*

