

# Applied Practical Experience (APE) Project: Heat-related Illnesses

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# APE Overview

- My project topic focuses on the possible increase of heat-related illnesses as a result of the impact of climate change as described by the Climate Action Plan.
- Deliverables include:
  - A literature review
  - Infographic
- Activities include
  - Data collection
  - Data interpretation
  - Poster presentation at Emory University
- This is a work in progress

## Introduction

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- Climate change increases risks of heat-related illness (HRI), respiratory disease, vector-borne illness, and mental health impacts.

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- Focus: Risks, types, and prevention strategies for HRI.

# What Are Heat- Related Illnesses?

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- Result from impaired thermoregulation due to environmental heat.

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- High-risk groups: outdoor workers, athletes, military personnel.

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- Includes:

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- Heat stroke

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- Heat exhaustion

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- Heat syncope

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- Heat cramps

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- Heat edema

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- Exercise-associated hyponatremia (EAH)

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## Pathophysiology of HRI

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- Thermoregulation via hypothalamus (36–37°C core temperature).

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- Heat increases cutaneous blood flow → decreases organ perfusion.

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- May trigger:

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- Inflammatory response

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- Endothelial injury

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- Multisystem organ failure

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- Shock

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# Heat Stroke

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- Core temperature  $> 40^{\circ}\text{C}$  + neurological dysfunction.

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- Causes: exertion, high temperature, lack of AC.

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- Vulnerable: elderly, isolated individuals.

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- Treatment: Immediate cooling and organ support.

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- Emerging treatments: Pharmacologic and experimental (China-based).

# Heat Exhaustion

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- Signs: sweating, dizziness, cramps, nausea.

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- Moderate severity.

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- Risks: dehydration, alcohol, overdressing.

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- Treatment: Fluids with electrolytes, rest.

# Heat Syncope

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- Fainting due to heat, volume depletion.
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- Transient, fast recovery.
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- Risks: Dehydration, poor acclimatization.
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- Treatment: Supine position, fluids, cooling.

## Heat Cramps

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- Involuntary spasms in legs/abdomen.

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- Triggered by exertion, dehydration, low electrolytes.

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- Treatment: Rest, oral rehydration with electrolytes.

## Exercise- Associated Hyponatremia (EAH)

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- Serum sodium <135 mmol/L after prolonged exertion.
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- Caused by overconsumption of fluids.
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- Common in endurance athletes and military.
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- Mild: fluid restriction/sodium orally.
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- Severe: IV hypertonic saline.

# Prevention Strategies

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- Hydration with electrolytes.
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- Acclimatization to hot environments.
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- Early recognition of symptoms.
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- Avoid overexertion and overdressing.
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- Access to shade and cooling stations.

## Conclusion

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- Heat-related illnesses span a wide spectrum from mild to life-threatening.

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- Prevention and early intervention are critical.

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- Ongoing research into pharmacological treatments and risk prediction.



# References

References available upon request or see original document.