



# Irukandji Jellyfish and the Lungs

Ewan Grobbelaar & Jessica Stewart

# Acknowledgement of Traditional Custodians

*The Mackay Hospital and Health Service would like to acknowledge the Traditional Custodians of the land on which our organisation is located and where we conduct our business. We pay respects to Elders past, present and emerging.*

Mackay – Yuwi People | Bowen – Juru People | Cannonvale – Ngaro People | Collinsville – Birriah People | Clermont – Wangan Jagalingou People | Dysart – Barada Barna People | Glenden – Wiri People | Middlemount – Barada Barna People | Moranbah – Barada Barna People Proserpine – Gia People | Sarina – Yuwi People

**NO SWIMMING**

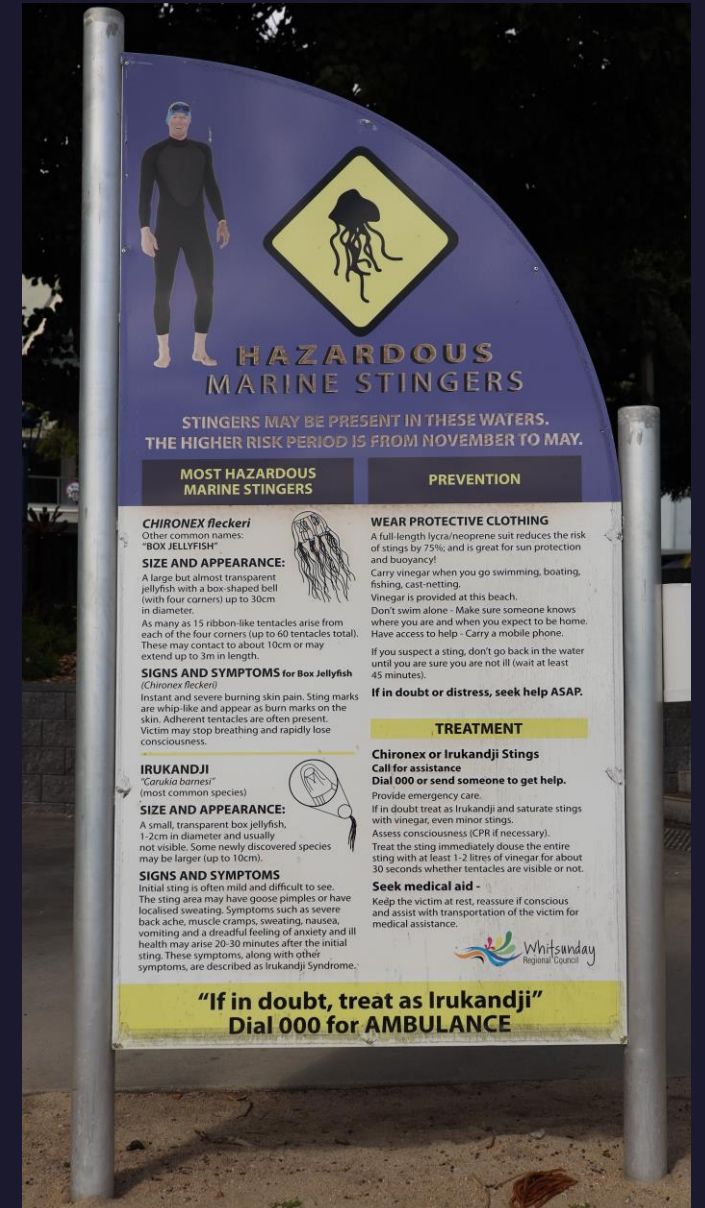
# Box Jellyfish

*Carukia Barnesi*

*Carukia shinju*, *Carybdea*  
*xaymacana*, *Malo*  
*maxima*, *Malo*  
*kingi*, *Alatina*  
*mordens*, *Gerongia*  
*rifkinae*, and *Morbakka*  
*fenneri* (“Morbakka”).



# Airlie Beach





are whip-like and appear as burn marks on the skin. Adherent tentacles are often present. Victim may stop breathing and rapidly lose consciousness.

## IRUKANDJI

*"Carukia barnesi"*

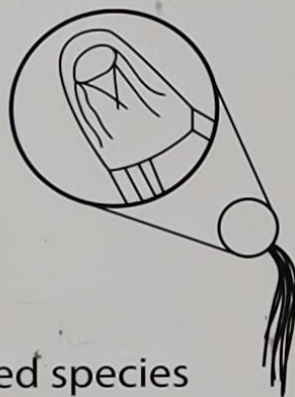
(most common species)

### SIZE AND APPEARANCE:

A small, transparent box jellyfish, 1-2cm in diameter and usually not visible. Some newly discovered species may be larger (up to 10cm).

### SIGNS AND SYMPTOMS

Initial sting is often mild and difficult to see. The sting area may have goose pimples or have localised sweating. Symptoms such as severe back ache, muscle cramps, sweating, nausea, vomiting and a dreadful feeling of anxiety and ill health may arise 20-30 minutes after the initial sting. These symptoms, along with other symptoms, are described as Irukandji Syndrome.



## TREATMENT

### Chironex or Irukandji Stings

**Call for assistance**

**Dial 000 or send someone to get help.**

Provide emergency care.

If in doubt treat as Irukandji and saturate stings with vinegar, even minor stings.

Assess consciousness (CPR if necessary).

Treat the sting immediately douse the entire sting with at least 1-2 litres of vinegar for about 30 seconds whether tentacles are visible or not.

### Seek medical aid -

Keep the victim at rest, reassure if conscious and assist with transportation of the victim for medical assistance.



**"If in doubt, treat as Irukandji"**  
**Dial 000 for AMBULANCE**



# FIRST AID FOR JELLYFISH STINGS



1 Reassure the casualty.



2 Pick off any remaining tentacles.



3 Remove any invisible tentacles with salt water.



Immerse the sting in hot water.



Cold compress can also relieve pain.



Call 000 if pain does not cease.



1 Remove the casualty from the water.



2 Call Triple Zero (000).



3 Follow DRSABCD.



Apply liberal quantities of vinegar.



Remove any remaining tentacles.



Reassure the casualty.



AUSTRALIAWIDE  
FIRST AID

# *Carukia Barnesi*

The species is named after the Scientist Jack Barnes.

Jack Barnes stung himself, his son and the local lifeguard to document the ongoing effects of this Jellyfish sting.



# Diagnostic definition

Proposed definition:

Recent contact with sea water

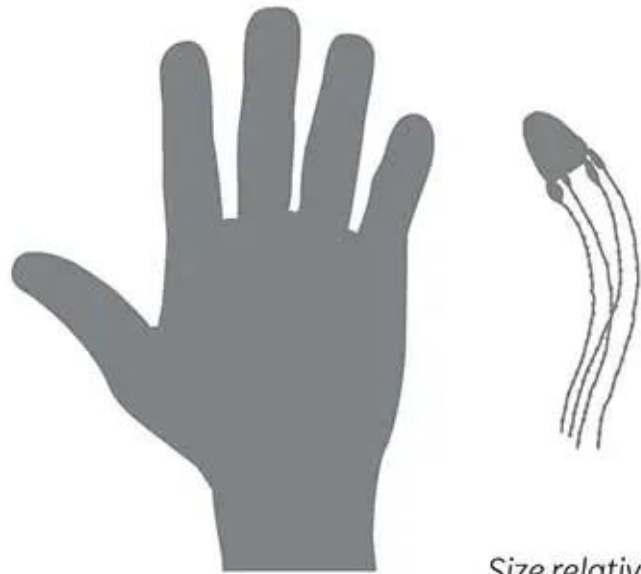
A delay of 5 to 60 mins between a relatively mild sting and the onset of constitutional symptoms,

One or more of the following symptoms:

- Pain
- Headache
- Nausea and vomiting
- Diaphoresis
- Shortness of breath
- +/- Troponin leak



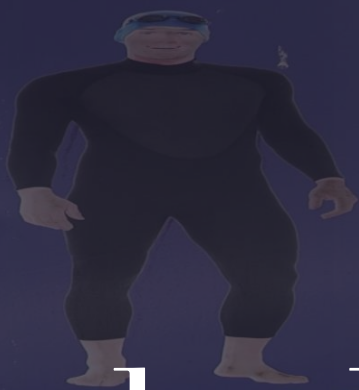
# Characteristics



*Size relative to human*

- Bell size ~20mm
- 4 tentacles, one from each corner
- Tentacles can grow from 6cm up to 50cm
- Nematocysts can be found on both bell and tentacles

# How do they sting?



## HAZARDOUS MARINE STINGERS

STINGERS MAY BE PRESENT IN THESE WATERS.  
THE HIGHER RISK PERIOD IS FROM NOVEMBER TO MAY.

### MOST HAZARDOUS MARINE STINGERS

#### **CHIRONEX fleckeri** Other common names: "BOX JELLYFISH"

##### **SIZE AND APPEARANCE:**

A large but almost transparent jellyfish with a box-shaped bell (with four corners) up to 30cm in diameter.

As many as 15 ribbon-like tentacles arise from each of the four corners (up to 60 tentacles total). These may contact to about 10cm or may extend up to 3m in length.

##### **SIGNS AND SYMPTOMS for Box Jellyfish** (*Chironex fleckeri*)

Instant and severe burning skin pain. Sting marks are whip-like and appear as burn marks on the skin. Adherent tentacles are often present. Victim may stop breathing and rapidly lose consciousness.

#### **IRUKANDJI** "Garukia barnesi" (most common species)

##### **SIZE AND APPEARANCE:**

A small, transparent box jellyfish, 1-2cm in diameter and usually not visible. Some newly discovered species may be larger (up to 10cm).

##### **SIGNS AND SYMPTOMS**

Initial sting is often mild and difficult to see. The sting area may have goose pimples or have localised sweating. Symptoms such as severe back ache, muscle cramps, sweating, nausea, vomiting and a dreadful feeling of anxiety and ill health may arise 20-30 minutes after the initial sting. These symptoms, along with other symptoms, are described as Irukandji Syndrome.



### PREVENTION

#### **WEAR PROTECTIVE CLOTHING**

A full-length lycra/neoprene suit reduces the risk of stings by 75%; and is great for sun protection and buoyancy!

Carry vinegar when you go swimming, boating, fishing, cast-netting.

Vinegar is provided at this beach.

Don't swim alone - Make sure someone knows where you are and when you expect to be home. Have access to help - Carry a mobile phone.

If you suspect a sting, don't go back in the water until you are sure you are not ill (wait at least 45 minutes).

**If in doubt or distress, seek help ASAP.**

### TREATMENT

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**Dial 000 or send someone to get help.**

Provide emergency care.

If in doubt treat as Irukandji and saturate stings with vinegar, even minor stings.

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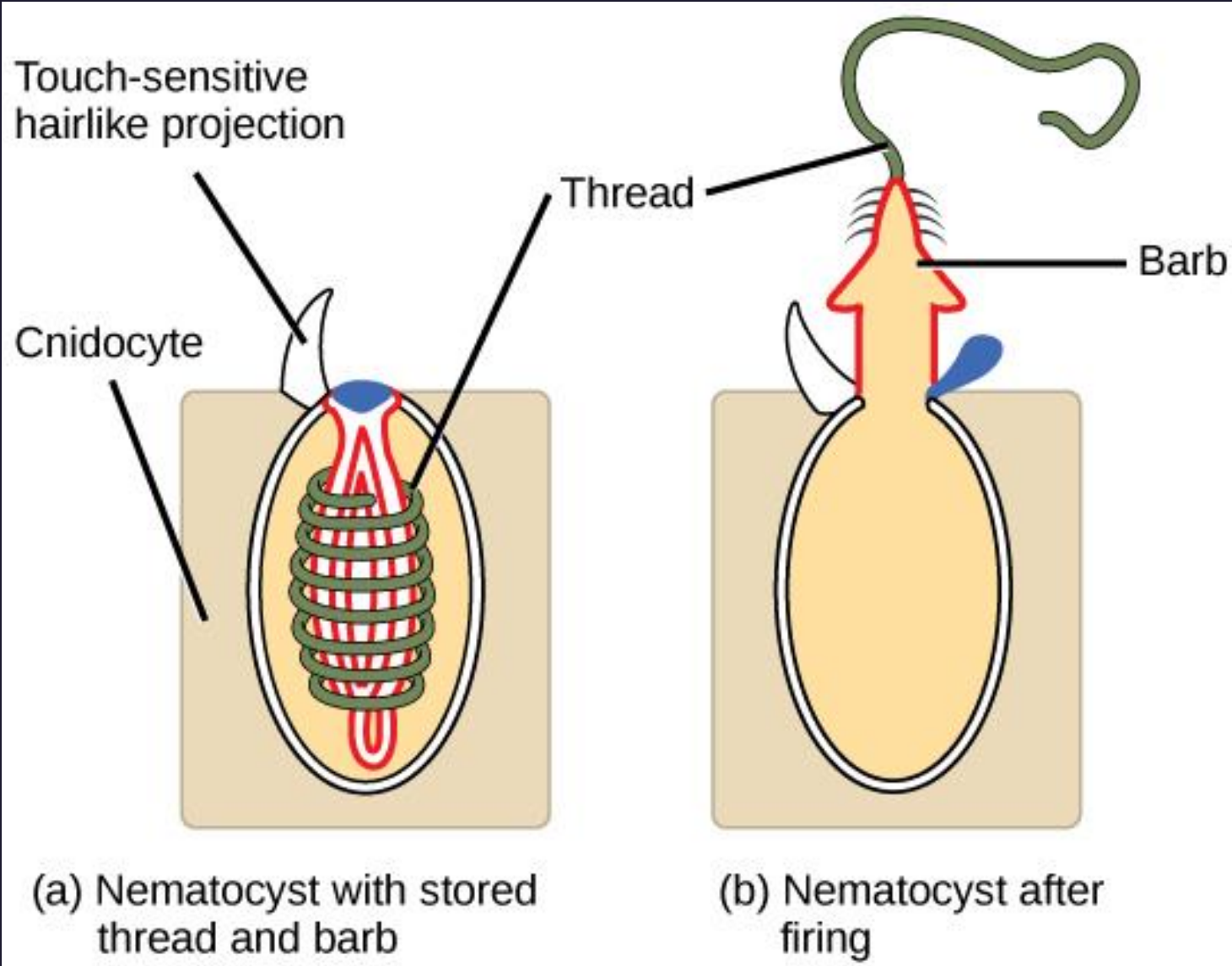
#### **Seek medical aid -**

Keep the victim at rest, reassure if conscious and assist with transportation of the victim for medical assistance.



**"If in doubt, treat as Irukandji"**  
**Dial 000 for AMBULANCE**

# Nematocyst



- Stays coiled until activated
- Touch sensitive
- Projects the thread through the barb
- Delivers closest to the blood stream



# Video

- [Itsy Bitsy Adorable Death | Nat Geo Wild – YouTube](#)

# Envenomation Symptoms

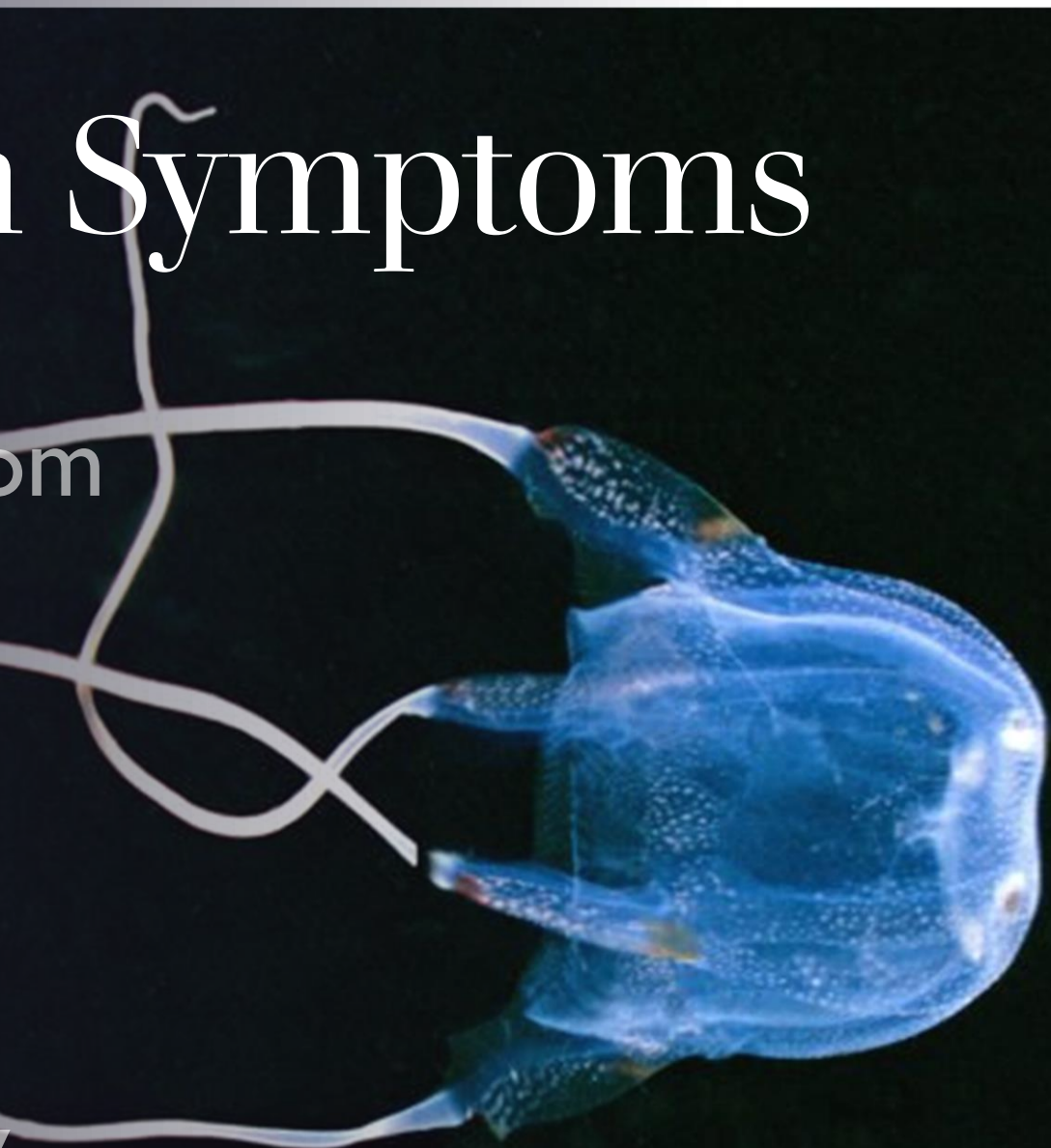
Sense of impending doom

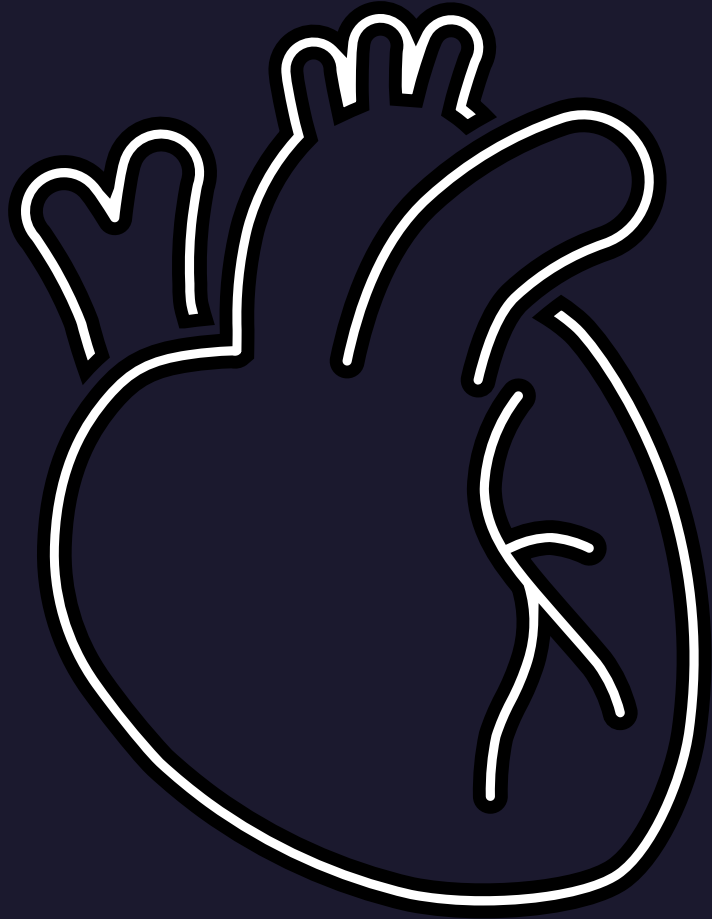
Diaphoresis

Wide-spread pain

Hypertension

All with a ~30min delay





# The venom

Contains a neural sodium channel activator

Release of catecholamines

Vasoconstriction

Causing hypertension and tachycardia



# Treatments

## PRE-HOSPITAL

- Removal of any residual tentacles
- Administration of vinegar to affected skin
- Heat packs

## HOSPITAL

- Opioid analgesia
- Glyceryl trinitrate
- Phentolamine
- Benzodiazepines
- Magnesium sulfate



# Investigations recommended

- Electrocardiogram
- Cardiac enzymes - Troponins
- Chemistry
- Blood count
- Liver enzymes
- Lipase
- Chest X-ray
- Bedside echocardiogram if acute heart failure is suspected
- CT imaging of the brain in cases of headache or acute encephalopathy

## Queensland Health Guidelines

### 3.4 Clinical Assessment

Assess Airway, Breathing and Circulation. Once established;

Obtain and document a full history including time of sting and first aid measures;

Q-ADDS/CEWT; Cardiac monitor and ECG  
Auscultate chest for wheezes or crackles.

Magnesium observation chart to record MgSO<sub>4</sub> rate, Reflex score and pain score (Rural sites)


Document size, site and features of sting.



# Treatments not recommended



## BOX JELLYFISH ANTIVENOM

- Studies the efficacy of this for Irukandji syndrome has been tested and studies suggest it is not effective.
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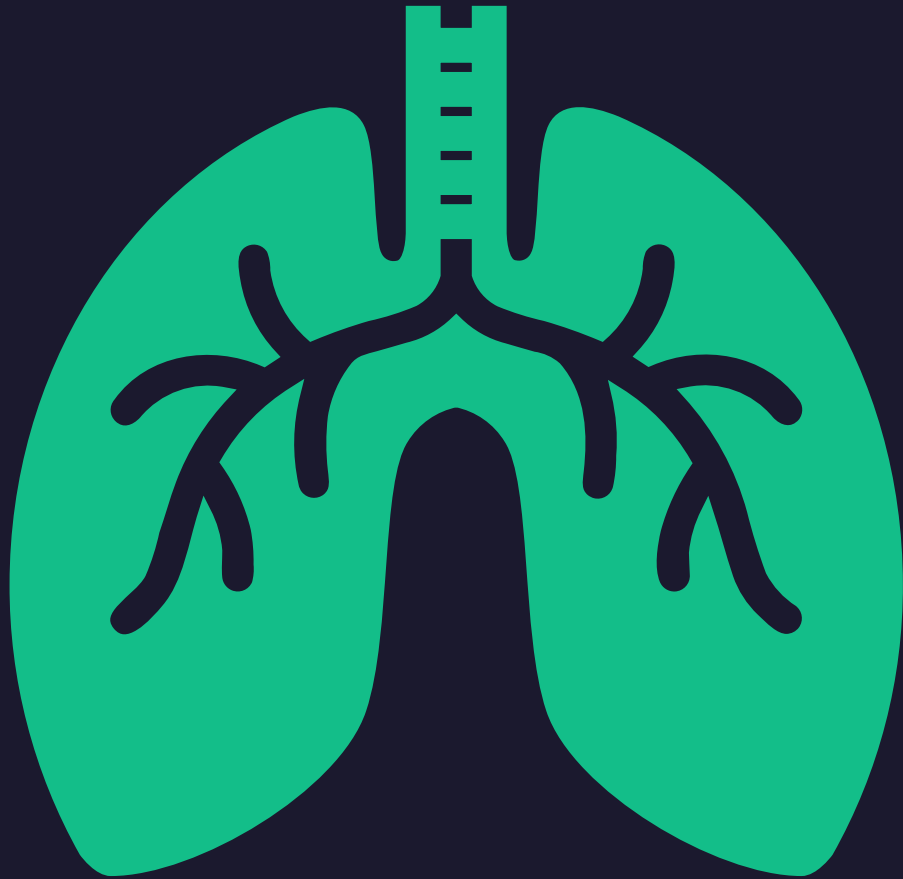
## URINE

- This can stimulate further nematocyst discharge.

## BETA-BLOCKERS

- Whilst their use for hypertension is noted, in the case of Irukandji syndrome, BB pose a risk of causing significant hypotension.





# Respiratory distress

The common side effects we see are:

- Coughing
- Chest tightness
- Acute shortness of breath

# Respiratory complications

- Pulmonary oedema
- ARDS
- Longer hospital stay
- Mechanical ventilation



# Death via Irukandji Syndrome

- There have been 2 deaths recorded due to Irukandji Syndrome in Australia.
- Both deaths were a result of intracranial haemorrhage, secondary to Irukandji sting induced hypertension.







# Conclusion

Further research is needed

The mechanisms of the venom on the lungs directly needs further study

Prompt medical treatment should be sought for assumed Irukandji Jellyfish stings

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# Questions?

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