



CRITICAL CARE IN THE AIR

Andrea Johnstone
Senior Mission Coordinator
New Zealand Air Ambulance Service



The highs and...
...medivacs of
cruising



The Cruise Industry



- ✈ Multi-billion dollar global industry
- ✈ Well and truly recovered from the Covid pandemic
- ✈ The industry has massive projected growth in the next 10 years
- ✈ Australia is the 4th largest cruise market in the world with 1.25 million passengers annually expected to cruise, 85% of them within Australian, New Zealand or South Pacific waters
- ✈ Cruising can be cheaper than living in aged, residential care

NZAAS



✈ At 2300 hrs on a Saturday night Mission Coordination at NZAAS received the request to medivac patient to Australia or New Zealand for a provisional diagnosis of Guillain-Barre Syndrome

✈ A quote for a primary evacuation off a cruise ship was requested

Activation




- **Mission Coordination into action....**



- ✈ At 1845 hrs on Sunday night, NZAAS were formally activated
- ✈ NZAAS was advised the ship would be in port at 0800 hrs on Tuesday morning
- ✈ Patient and support pax did not have appropriate visas to enter NZ

Patient X - PMHx



-  Patient had presented to the ship's medical centre 6 days prior for a migraine, which responded to treatment, but patient stayed in bed for two days
-  In the intervening four days, patient had gone ashore on day excursions but was feeling worse and had two falls - one resulting in a lip gash
-  Patient had no significant PMHx other than primary hypertension and an underactive thyroid for which she was on Candesartan 16mg/daily and Levothyroxine 75mg/daily

Patient X – PMHx continued



- Patient calls onboard ship's medical team reporting feeling unwell and unable to walk
- Patient moved to ship's medical centre by wheelchair. She is able to shuffle and weight bear with assistance
- Patient has a mild occipital headache, mainly behind the left eye and tolerable with oral paracetamol and dihydrocodeine PRN
- Slowly progressing worsening low limb weakness, more on the left than right side
- No vomiting, diarrhoea, incontinence or photophobia. But mild nausea
- Eating and drinking, but states patient is drinking 'lots of water'
- PEARL
- No known preceding viral illness
- Taking pain relief but to no effect
- Temp 36.8. BP 153/80. SpO2 90. RR17. 69 BPM



PATIENT ID:	NAME:	DATE OF BIRTH:	GENDER:	CABIN:
	X			8057/2
E S R MEASUREMENT		FEB 16, 2024	NORMAL RANGE	
Erythrocyte sedimentation rate:		14:04 UTC-11:00		
		70		

CRP	70mg/L (was 5mg/L on 10 Feb 2024)
	No more result(s)

LIVER PANEL	FEB 16, 2024 11:26 UTC-11:00	NORMAL RANGE
Albumin	4.1	3.3-5.5 g/dL
Alkaline phosphatase	192	42 - 141 u/l
Alanine aminotransferase	191	10-47 U/L
Amylase	35	14-97 U/L
Aspartate aminotransferase	136	11-38 U/L
Bilirubin	27	3 - 27 umol/l
Gamma glutamyl transferase	319	5-65 U/L
Protein	7.3	6.4-8.1 g/dL



FBC and Biochemistry panel were unremarkable

Outside the norm



- ✈ Not an inter-hospital transfer
- ✈ Timings to ensure we extracted patient during the ship's short time in Port
- ✈ Different agencies on island



The hospital ambulance was unauthorised to assist with a primary evacuation from the cruise ship, and the local Fire and Emergency Service would need to be engaged to assist

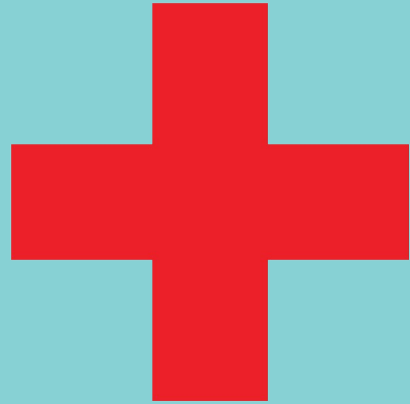



Approval was required from the top – The Commissioner of Fire and Emergency Services Authority



Authority was obtained – there was a small delay getting ambulance airside to collect our Flight team and equipment & then we didn't all fit – so an extra “ute” was provided






And then a last minute turn-around from accepting hospital – maybe they won't accept Patient X after all.





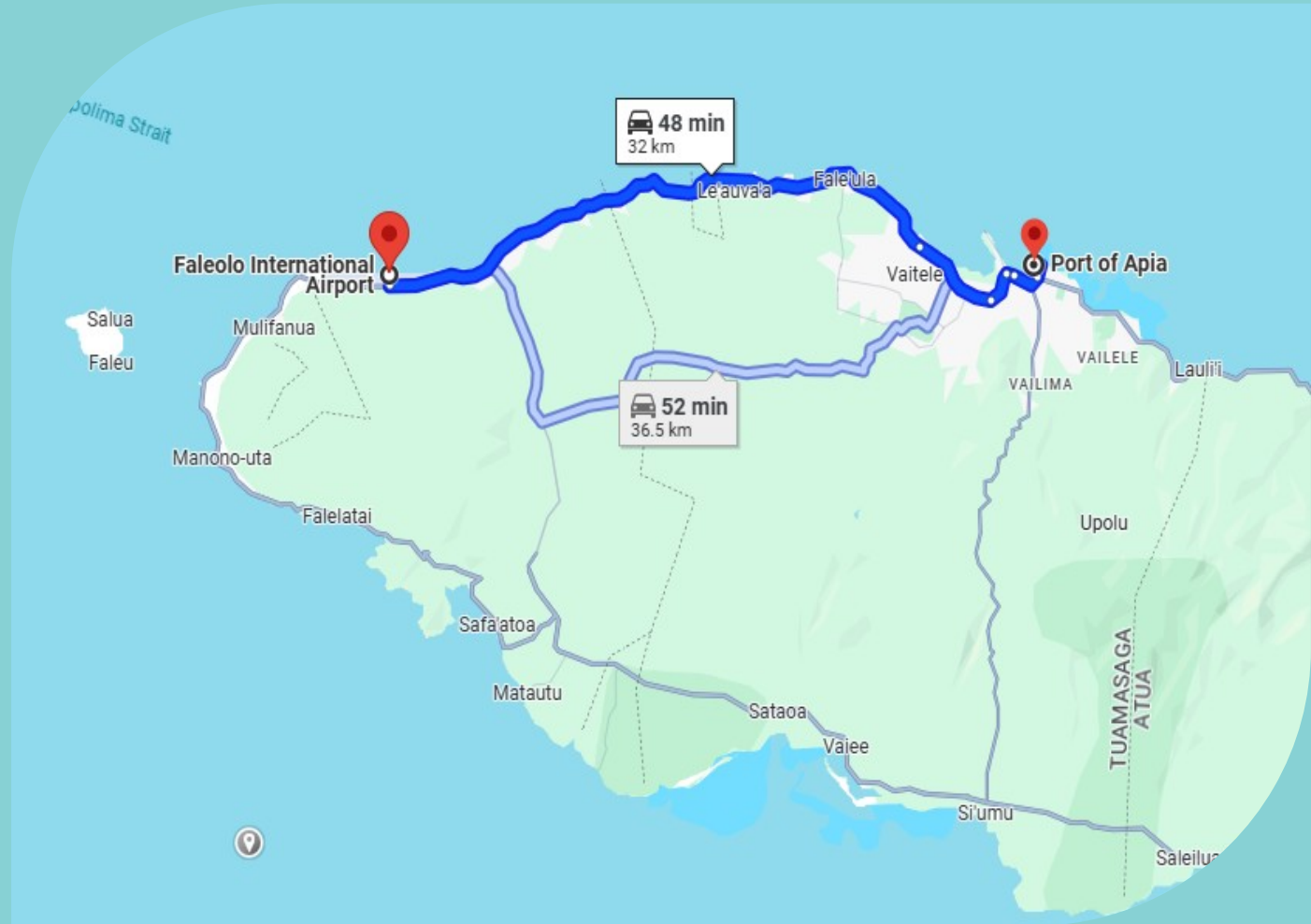
- 0653** All aboard, doors closed
- 0659** Engine start
- 0705** Wheels up – 3 hr 54 mins flight time
- 1059** Wheels down
- 1117** Ambo at airport but no-one can find it
- 1153** Hot and bothered crew, load all gear airside due to local authority forgetting to request airside access

Mission Coordination advises Port Authorities and Ship's doctor of our ETA





Island time - 48 mins airport to port



- 1234 Arrive to the Port and the “big waka” – as per our Flight Nurse
- 1239 Efficient boarding of our medical team to the ship





More issues...

We'd sent our "hungriest" Flight nurse and had concerns he would get diverted to the buffet on board.....



Onboard Medical Facility




Includes Xray capabilities, blood testing and inpatient facilities





1257 Patient is offloaded from the cruise ship and into ground ambulance for transfer back to the airport. A fire ute, takes the support pax

1344 Ground ambulance and ute arrive to airport. In the intervening hours, Mission Coordination has arranged for a smooth airside arrival to the aircraft, with appropriate airside approvals now obtained

1403 Aircraft loaded, patient settled

1423 Wheels up. 3 hr 50 min flight time

1809 Wheels down

1908 Patient arrives accepting hospital for ongoing care





Patient X



- ✈ Patient spent four days in the accepting New Zealand hospital
- ✈ Patient CT had revealed bilateral frontal and parietal lobe haemorrhages and went on to have an MRI brain, with nothing more significant found

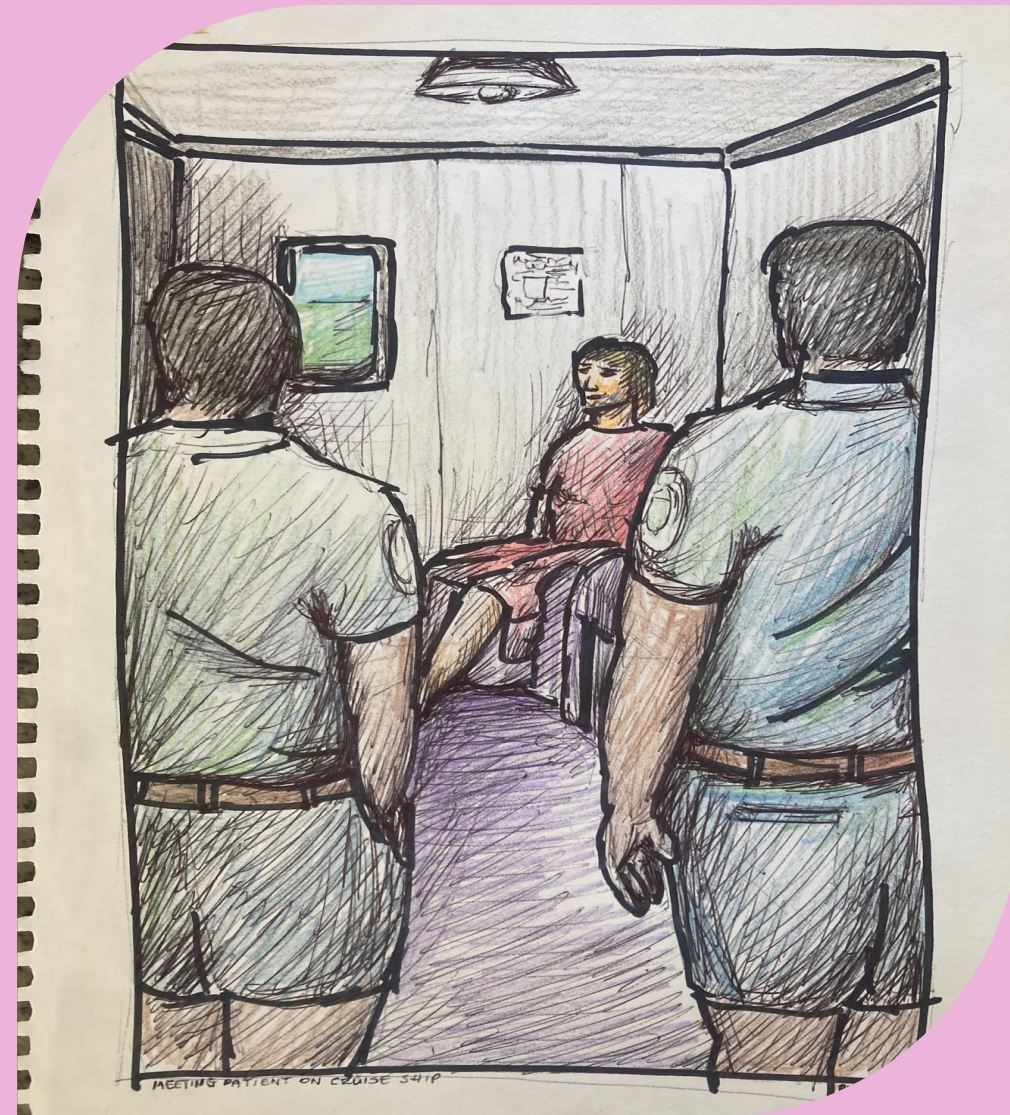
• Reversible Cerebral Vasoconstriction Syndrome

Discharge

-  At discharge, patient was mobilising with the use of crutches and returned home to the Northern Hemisphere with instructions to maintain good control of her BP, but no other specific medical advice related to the Vasoconstriction syndrome.
-  Patient was advised to chase outstanding blood results and repeat her LFT's.

NZAAS assisting to bridge geographical and logistical barriers, to provide critical care in the air – from the sea

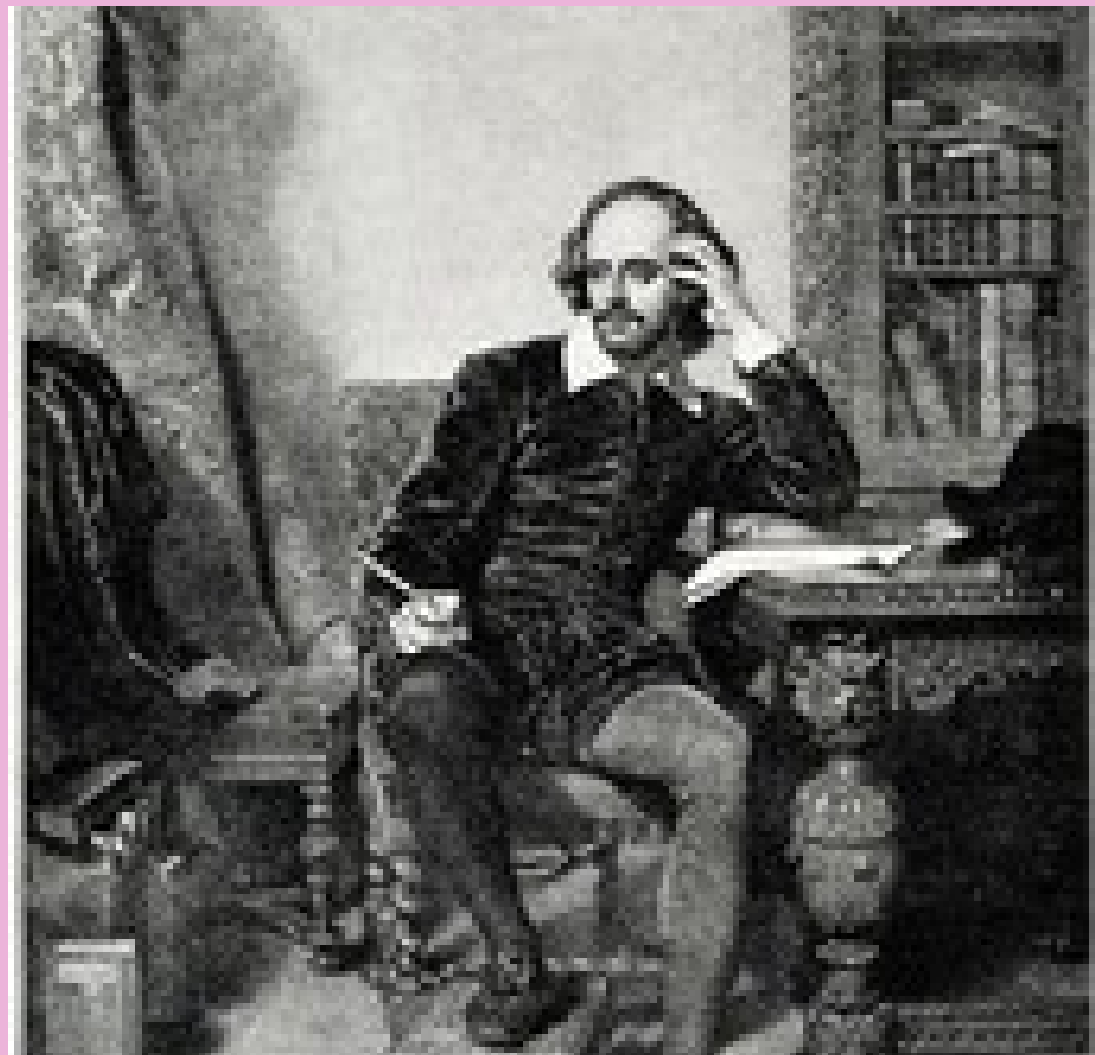
(sketch by our travelling Flight Nurse of his view on entering medical room, behind burly local ambulance staff)





To cruise or not to cruise... that is the question?

The answer – have a reliable aeromedical service at your disposal



CRITICAL CARE IN THE AIR

Cassidy Parker
Senior Mission Coordinator
New Zealand Air Ambulance Service



Coordinating a complex commercial retrieval:

A case study of retrieving a Kiwi sailor with life changing injuries in Panama

- Overview
- Logistics
- Language barrier and unfamiliar countries
- Evolving clinical condition
- How did the mission go?
- Conclusion





Overview

Patient background, injury
details and initial request for
assistance





Patient background:

Previously fit and active individual
Undertaking a worldwide sailing
journey



Incident details:

While visiting Panama, the patient
jumped into a swimming pool,
hitting his head, causing a severe
spinal injury



Support Network:

The patient's sister was in Panama,
assisting with local arrangements,
while a friend in NZ helped
coordinate support from afar



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Patient Condition

- ✈ Patient suffered a C6 spinal submersion injury while jumping into a swimming pool in Panama. He was admitted to ICU for a prolonged stay and survived ARDS, Cardiac arrest, immersion pneumonia and nosocomial pneumonia.
- ✈ Patient was submerged for roughly 6 minutes



Request for Assistance

NZAAS was contacted by the patient's family in mid-May 2023

Family Requests

Cost-Effective: Transfer would be funded with a combination of private and raised funds

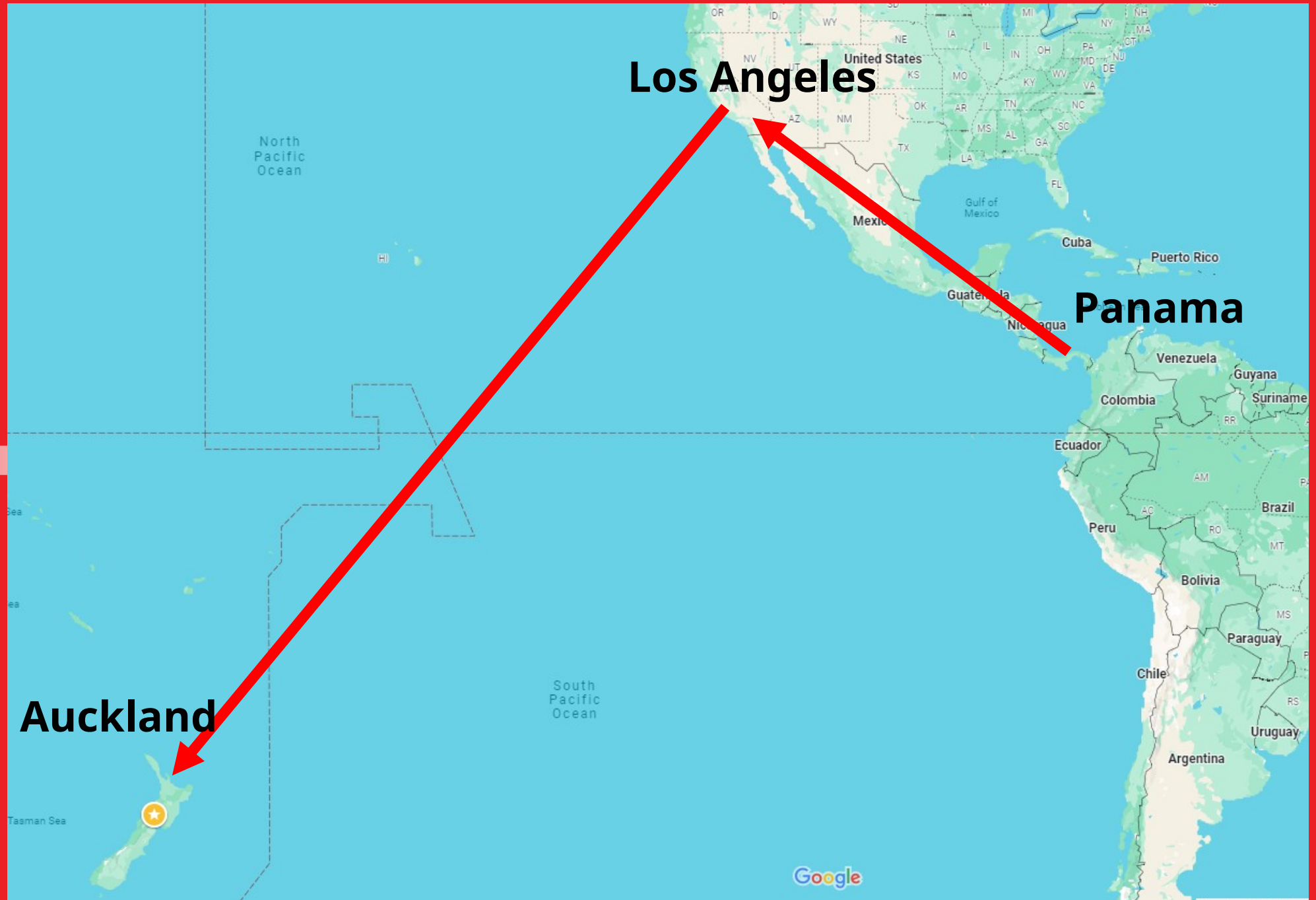
Safe: Most suited method to the patient's condition without compromising on safety

Time-Critical: Essential for patient to receive the necessary care in NZ



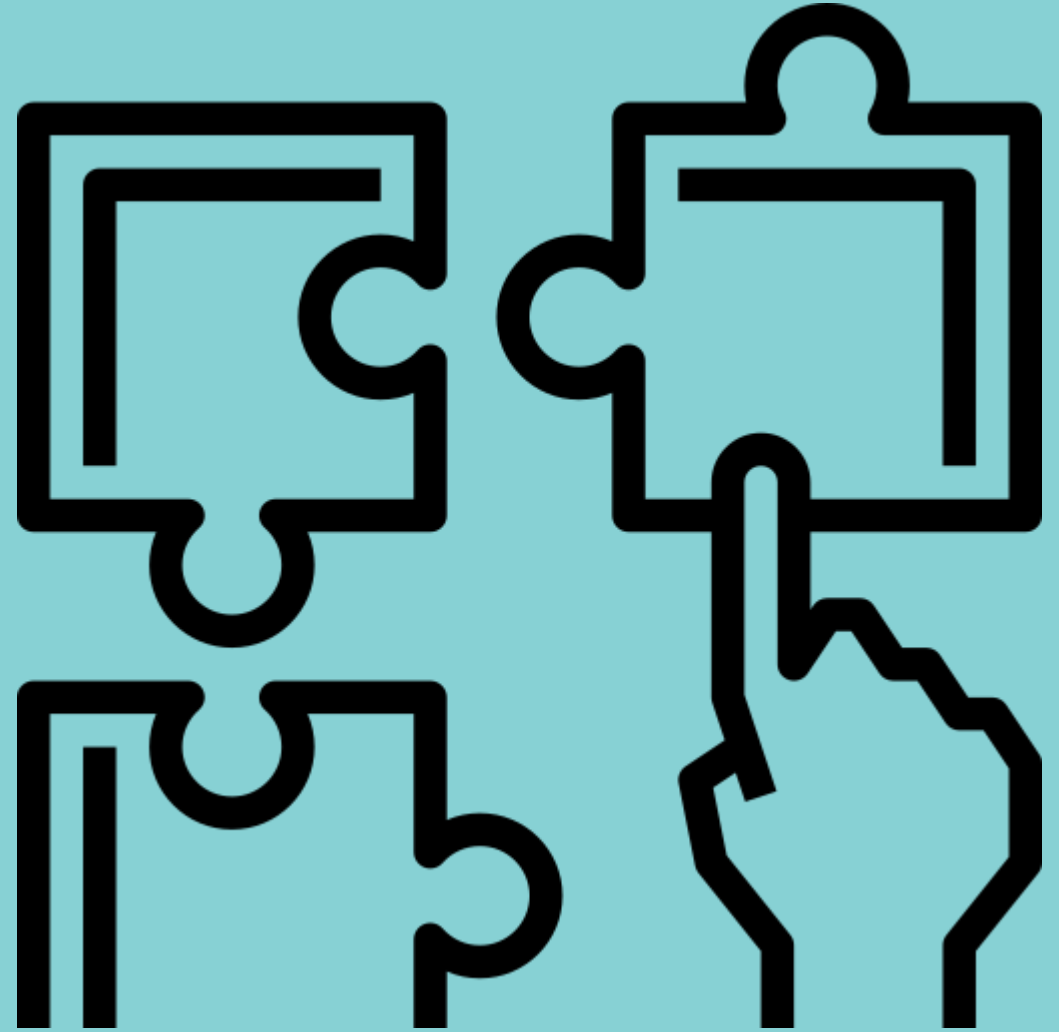


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Logistics



Planning methods:



Air Ambulance

High costs that the family could not fund

Revised Plan:

To keep costs down, we looked into a commercial stretcher

Challenge:

After extensive research, the coordination team were unable to find an airline operating in/out of South America offering a stretcher service



Alternative options explored

- ✈️ **Air Ambulance to Houston:**
Considered transferring the patient from Panama to Houston via Air Ambulance for a w2w handover to our team. This was our preferred option



- ✈️ **Funding:**
The cost of using an air ambulance for this segment was approx. \$50k - \$60k USD PLUS the stretcher for US to NZ journey.

Unfortunately the family could not come up with this money



Alternative Plan





- ✈️ The family knew of another case with a patient in a similar condition who flew Business Class.
- ✈️ They requested if waiting until the patient could sit upright for a Business Class flight would be a viable option
- ✈️ We could see the conundrum of the patient remaining in Panama and working out a solution to get him home



Revised plan






-  Business Class flight from Panama to the U.S., followed by a stretcher transfer to Auckland
-  After multiple clinical updates, our team estimated the patient would likely be ready for travel in approximately 3-4 weeks



Challenges: Business Class + Stretcher Combo



-  **Different Airlines:** The first leg (BC) and the second leg (stretcher) were with different airlines
-  **No Code Share:** The lack of code share, requiring a self transfer between flights
-  **Unfamiliar Airlines:** Our coordination team were unfamiliar with the South American airline involved, requiring additional time to investigate and ensure they could accommodate patient needs



Final Travel Plan: Business Class



Patient Recovery:

By early July, the patients condition had improved enough for him to travel Business Class for the entire journey



Cost effective solution:

Opting for Business Class was the most cost-effective and practical solution



Challenges Remain:

Travelling in Business Class would present some challenges and required in depth planning






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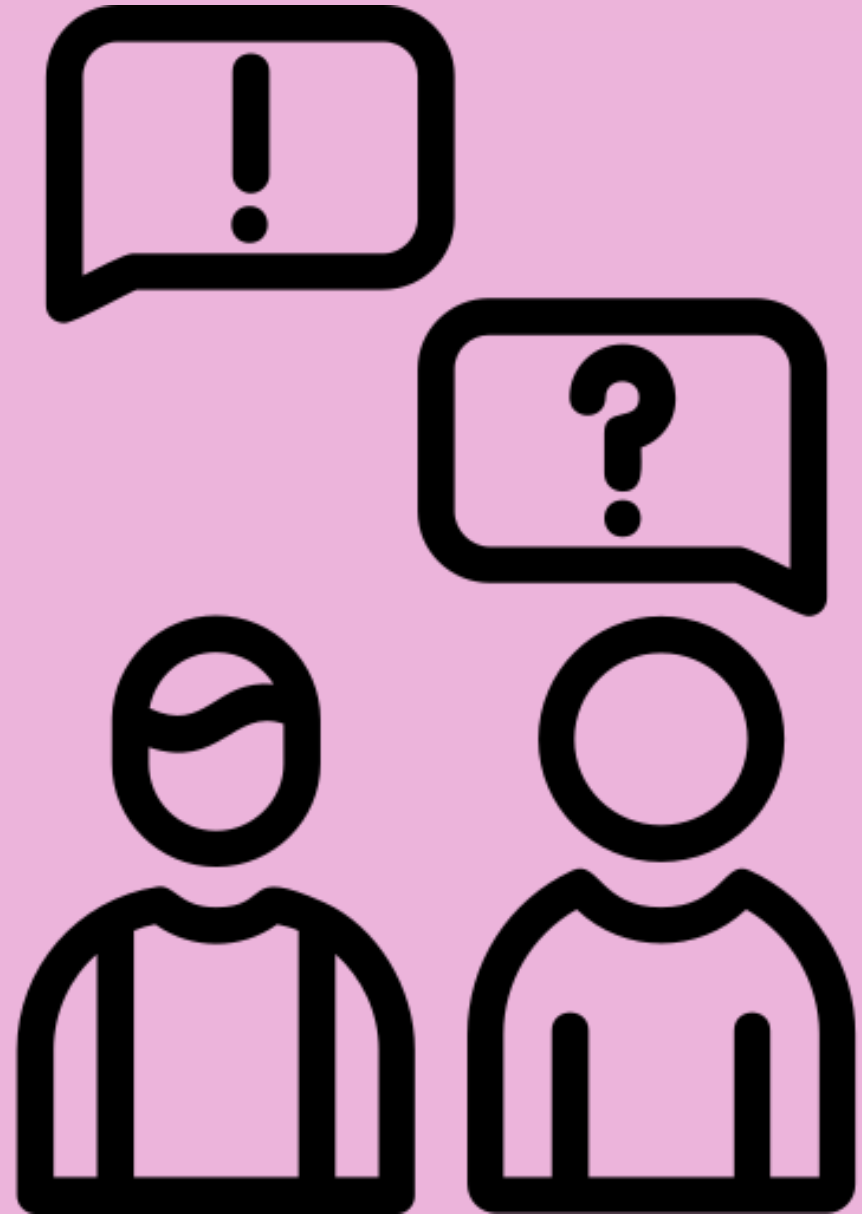
Final Preparations



-  **MEDA Approval:**
MEDA approved for Air NZ flight from the U.S to New Zealand
-  **Panama to U.S. Flight:**
No MEDA clearance required for this leg. Clinical team carried FTF letter
-  **Battery Issues:**
Unable to advise the South American Airline of carrying lithium batteries and they had a limit of 2 batteries per person.



Language Barriers and Unfamiliar Countries



Initial Communication Challenges



Language Barrier:

The family struggled to get a medical report from the hospital. Only 1x doctor could speak English



Delayed Response:

After 6 days, we finally received a clinical summary from the hospital



Incomplete Report:

The summary was in broken English and hard to interpret



Further communication issues



Delays:

It took 9 days to establish contact with the hospital for the next update



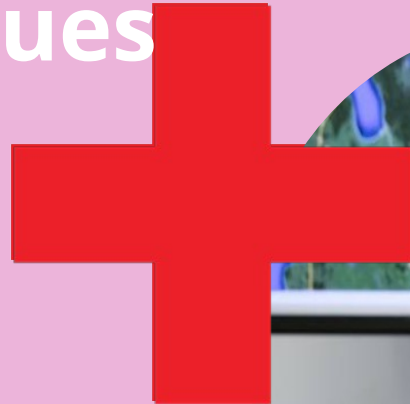
Communication Struggles:

Our team faced issues with unanswered calls and misdirection to the wrong personnel



Assistance from the sister:

After struggling to get in touch with the doctors, we reached out to the sister in Panama to help arrange and direct calls with the doctor



Hospital Access Challenges



Escorted Entry:

The medical team couldn't enter the hospital freely; they had to use Google Translate to communicate with staff and gain access



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Limited Visiting Hours:

Once inside, the team faced long lines outside the ward to see the treating doctor due to the hospitals restricted visiting hours



Hospital Discharge and Billing Issues

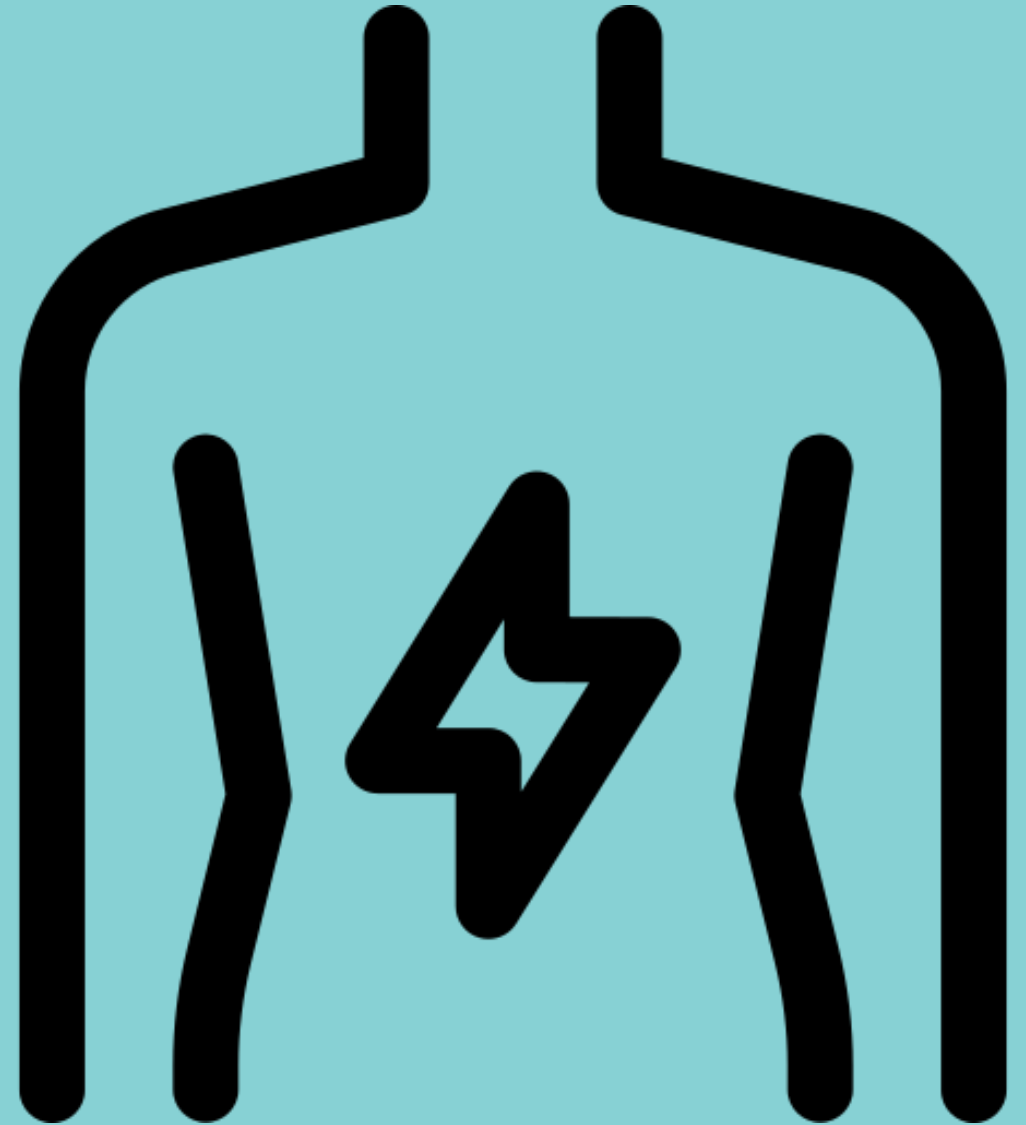


-  **Hospital Protocol:**
Required full payment when discharged for the patient to be released, but would only provide the bill on that day
-  **Payment Uncertainty:**
The family were unsure how much money to transfer in Panama Dollars
-  **Administrative Frustration:**
While doctors and nurses were helpful, the hospital's administrative procedures made it difficult to plan for payment






**Evolving
Clinical
Condition**

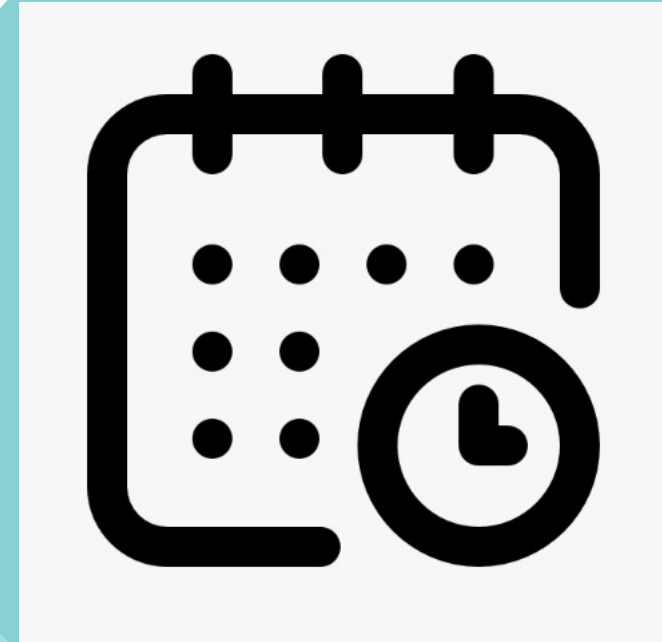


Hospital Stay in Panama



 **4 Months in Hospital:**
The patient spent four months in hospital in Panama, with several severe complications

-  **During his stay in hospital:**
- Survived cardiac arrest
 - Contracted pneumonia three times
 - Was placed in a medically-induced coma for three weeks
 - Developed bedsores



Optimistic Progress



Initial Recovery:

Almost a month after the family contacted us, the patient could sit upright for 2 hours at a time, indicating a better clinical outlook



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Setback:

Unfortunately, a few days after receiving this positive news, the patient contracted pneumonia again, requiring him to go back on the ventilator




Ongoing Challenges



 Doctors in Panama advised that the patient would not be ready to fly for a couple more months.

Frequent pneumonia made his condition unpredictable and unsuitable for immediate travel

 As of mid-June, the patient was still in the ICU in Panama, with pneumonia episodes, slowing down transport back to NZ



Recovery Steps Forward



Improvement:

Despite multiple setbacks, the patient began showing signs of improvement.



Moved to Ward:

After 3 months in ICU, the patient was moved to a ward.



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Challenges



Ready for travel:

Once the patient was moved to the ward and after receiving clinical updates, our team established he could be appropriate for travel in Business Class



Disagreement:

The hospital in Panama initially did not agree with releasing the patient for travel, despite our team's evaluation



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Transfer Details on the Day

After 4 months, the patient's journey home began

- Flight Details:
 - Departed Panama for Los Angeles
 - Flew from Los Angeles to Auckland
- Airport Procedures:
 - Wheelchair in the airport
 - Aisle chair with the use of specialised equipment to get to the Business Class seat
- Comfort and Arrival:
 - Patient made comfortable in the lounge during transit
 - Smooth transfer in Auckland via highlift to NZAAS Patient Transport Service
 - Final handover to Middlemore Hospital

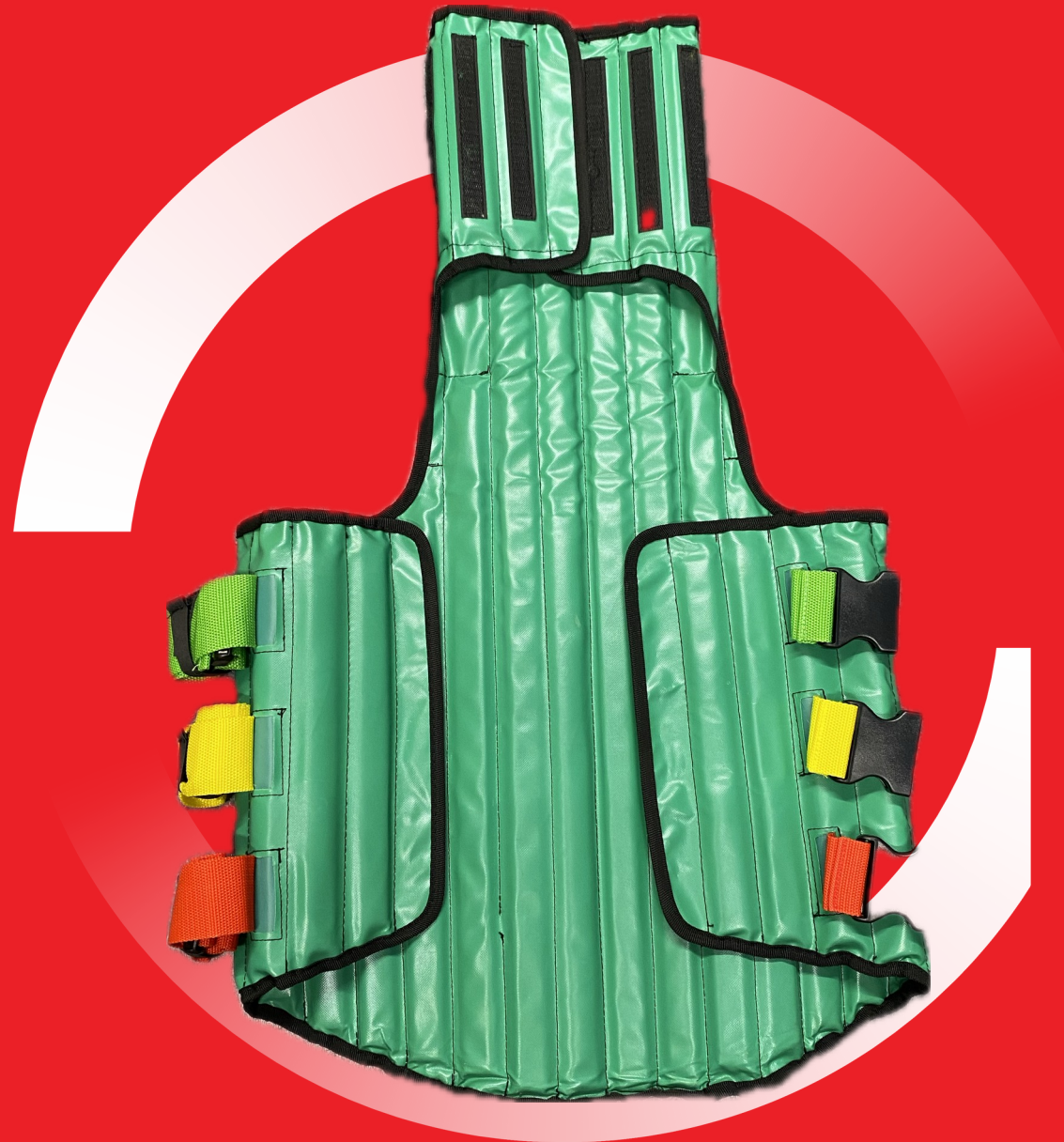


Transfer Details on the Day



Our Doctor and Nurse accompanied the patient, providing:

- Continuous care and support
- Utilised specialised equipment to move the patient throughout the journey such as an extraction device and banana board
- The extraction device was also used to provide back / neck support in the wheelchair
- Pre purchased a specialised Roho overlay and seat cushion for the journey



Where is the patient



After returning to New Zealand, the patient can now move both arms, talk and eat. However there is still no movement in hands, legs or feet



Plans for further treatment:

The patient's family have planned to take him to an overseas hospital for specialised stem cell treatment not available in New Zealand



Stem Cell Treatment in Thailand:

The patient travelled to Bangkok in mid-February for stem cell treatment, with the assistance of his carer and friends



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Mission Coordinators – Summary

Critical Care in the Air:

Our priority was to ensure a safe and appropriate transfer for this patient

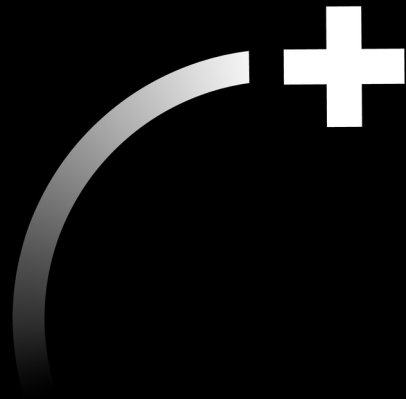
Financial Constraints:

- Coordinators faced challenges due to the privately funded nature of the mission
- The need to balance safety with what the client could afford was a key factor
- Ideal option if the patient had full insurance cover would have been an air ambulance and stretcher combo

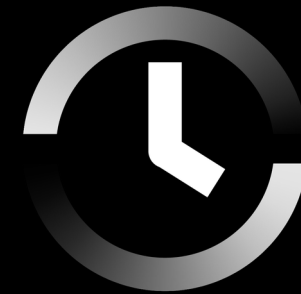


Written consent to present these two cases today, has been obtained by NZAAS, and our thanks go out to the patients for this.

20 flights
per week

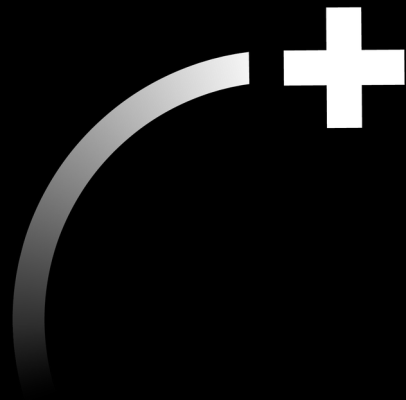


Wheels up in
1 hour



Thank you!

20 flights
per week



Wheels up in
1 hour

