Dispelling Myths and correcting Mental Anchors

Dr Kevin U Chan

MBBS (Australia), Occupational Medicine (PG Dip, Singapore)

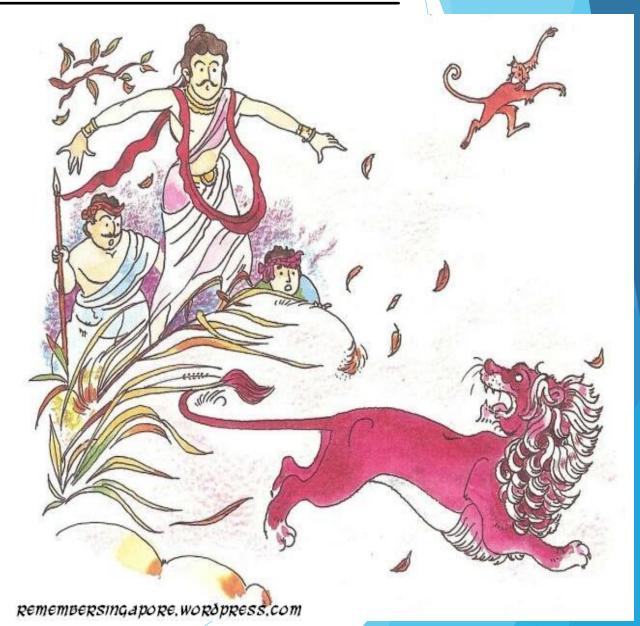
Diving & Hyperbaric Medicine – Level 2D (NOAA, Seattle, USA)

Diving & Hyperbaric Medicine (USA, UK, Australia)

Diving & Hyperbaric Medicine with Chamber Operations (Florida, USA)

Dispelling Myths and correcting Mental Anchors

- Sang Nila Utama, or Sri Tri Buana, was once the ruler of the Srivijaya Empire at Sumatra. According to legends, he went on an expedition in the late 13th century, and discovered an island with white sandy shore. After learning that the place was called *Temasik* (Temasek), Sang Nila Utama decided to cross the waters to reach this newly discovered land.
- However, a storm appeared out of nowhere and nearly capsized the boat. In a desperate attempt, Sang Nila Utama threw his crown into the turbulent waters. The weather and the sea immediately became calm, and the crew reached Teluk Belanga (present-day Telok Blangah) safely. As they landed, a strange beast was spotted from afar. Upon hearing that it was a lion, an auspicious symbol, Sang Nila Utama was overjoyed and decided to name the island Singapura, or Lion City.
- The discovery was said to have happened in around AD1297, and Sang Nila Utama went on to rule Singapura for 48 years before his death. His palace and burial ground was located on top of Bukit Larangan, or Forbidden Hill (present-day Fort Canning Hill)



Dispelling Myths and correcting Mental Anchors

Myth - definition (Oxford)

- a traditional story, especially one concerning the early history of a people or explaining a natural or social phenomenon, and typically involving supernatural beings or events.
- a widely held but false belief or idea.
 - "the belief that evening primrose oil helps to cure eczema is a myth, according to dermatologists"

Dispelling Myths and correcting Mental Anchors

Myths and Mental Anchors:

A. OPERATIONAL/ EVENT Centric

B. POST EVENT

Dispelling Myths and correcting Mental Anchors

A. OPERATIONAL/ EVENT Centric Myths and Mental Anchors

Fact or ???Facts????

- ► Ambulance takes all diving cases to Hyperbaric Facilities
- ► All Diving Cases/injuries go to hyperbaric facility and receive chamber treatment
- ► All Medical Hospital has hyperbaric facilities & hyperbaric trained doctors
- ► All Doctors know about Hyperbaric and Diving Medicine
- Diving Doctors in **Private sector** are able to admit/review Diving Accidents in Both **Private & Government Hospital**
- Occupational First Aid is enough to Treat Diving injuries and accidents
- ➤ Knowledge of Diving First Aid is for Divers only not Supervisors (as Supervisors don't Dive... lah)
- ▶ One tank of Oxygen is enough... no matter how big or small the tank is.

(just to have a tick on the check list – how much 02 is enough 02???) www.femaglobal.com 24 Hrs Emergency Tel:(65) 9069 4307 www.flindersema.com

Dispelling Myths and correcting Mental Anchors

Case-1

Mr Allen, 24yo Commercial Diver

28th Nov 2021

- Working at depth of 7mtr
- Comms issues and was pulled up by Tender
- At surface vertigo, nausea, sinus pain, ear-Right pain
 Pain Right shoulder, Right Knee, Right elbow, Right neck area
 some rashes over the cubital fossa of the right arm
- Ambulance Called and admitted to Public / Government Hospital
- Reviewed by A&E Doctor
 - MRI brain unremarkable.
 - CXR- normal limits
- Admitted to WARD for further test and Investigation
- Was reviewed by Ward Doctor, Specialist

3rd Dec 2021

- > 6 Days Later was then transferred to the Hyperbaric Chamber for Treatment
 - TT6

Dispelling Myths and correcting Mental Anchors

Case-1

Mr Allen, 24yo Commercial Diver

28th Nov 2021

- Working at depth of 7mtr
- Comms issues and was pulled up by Tender
- At surface vertigo, nausea, sinus pain, ear-Right pain
 Pain Right shoulder, Right Knee, Right elbow, Right no
 area
 some rashes over the cubital fossa of the right arm
- Ambulance Called and admitted to Public / Gomment Hospital
- Reviewed by A&E Doctor
 - MRI brain unremarkable.
 - CXR- normal limits
- Admitted to WARD for further test and Investigation
- Was reviewed by War octor, Specialist

3rd Dec 2021

- ▶ 6 Days Later was then transferred to the Hyperbaric Chamber for Treatment
 - TT6

NOTE TIMING / DAYS

Dispelling Myths and correcting Mental Anchors

Case-2: Mr P.C, 40yo Commercial Diver, Air Dive

<u>20th Oct 2016 – Night Operations</u>

- Depth: 2 dives both to 24 meters,
- Topside miscalculated the resulting in diver exceeding bottom time of about 40mins
- ▶ Started Staged decompression but unable to continue as ran out of gas gas bank depleted
- Diver had symptoms-Gave himself 100% Oxygen
 - Tingling at the fingers tips only bilaterally
 - Lower Lumbar discomfort

0800am Called Diving Doctor

- Advice from Diving Doctor- 100% Oxygen
- Transport to Diving Medical Facility

<u>0900am Reviewed by Diving Doctor (Diving Medical Facility)</u>

- Neurological Examination
 - Tingling in fingers/hands with discomfort in the forearms of both upper limbs
 - Worsening Lower back pain with no pain radiating to the legs
 - Higher centers intact
 - Cranial Nerves intact no abnormality
 - Spinal- Tone/ Power/Reflexes/ Coordination Rhombers-ok, Flip flops- ok
 - Sensation Vibration, HOT/COLD/ Light TOuch ok bilaterally

0930am Recompression Treatment

TT6

Dispelling Myths and correcting Mental Anchors

Case-2: Mr P.C, 40yo Commercial Diver, Air Dive

20th Oct 2016 - Night Operations

- Depth: 2 dives both to 24 meters,
- Topside miscalculated the resulting in diver exceeding bottom time of about 40mins
- ▶ Started Staged decompression but unable to continue as ran out of gas gas bank depleted
- Diver had symptoms- Gave himself 100% Oxygen
 - Tingling at the fingers tips only bilaterally
 - Lower Lumbar discomfort

0800am Called Diving Doctor

- Advice from Diving Doctor- Oxygen
- Transport to Diving Medical Facility

0900am Reviewed by Diving Doctor (Diving Medical Facility)

- Neurological Examination
 - Tingling in fingers/hands with discomfort in the forearms ooth upper limbs
 - Worsening Lower back pain with no pain radiating to legs
 - Higher centers intact
 - Cranial Nerves intact no abnormality
 - Spinal- Tone/ Power/Reflexes/ Coordination Rhombers-ok, Flip flops-ok
 - Sensation Vibration, HOT/COLD/ Little TOuch ok bilaterally

0930am Recompression Treatment

NOTE TIMING

hours- minutes

Dispelling Myths and correcting Mental Anchors

Workflow for onsite diving accident

Hopefully

ACCIDENT / Diving Injury

Current Practical Procedure

- Most companies

Dive Injury First Aid Treatment
- Divers & Supervisors

Call Emergency Hotline (SCDF)



SCDF Ambulance Activation/Despatch



Hospital ,+/- Admission (Nearest Govt Hospital)



Review by Emergency Department Doctors
Review by Ward Doctors
Review by Specialist

Photo is for illustration purposes only



Treatment in Diving Chamber

www.flindersema.com

CASE- 1

Case-1: Mr Allen, 24yo Diver

Not Too Sure if he was given Oxygen

But he was transported to the Hospital

Mr Allen was admitted for FULL Medical Work Up in Hospital

Mr Allen had a few consultations with the ward Dr / Specialist - MRI - all did not have any pathological finding

As in Mr Allen's Case-1- this was the last resort- after 6 days - when Doctors / Specialist could not find anything pathologically wrong with him

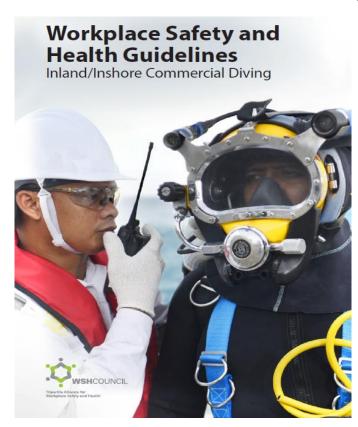
shutterstr.ck

Dispelling Myths and correcting Mental Anchors

Workflow for onsite diving accident

Practical Procedure

- Workplace Safety and Health Guidelines
 - Inland/inshore Commercial Diving





Hospital (Private)

CASE- 2

Case-2: Mr PC, 24yo Diver

100% Oxygen

Activation of Diving Emergency Hotline

Contacted Diving Doctor

- -Telemed Consult
- 100% Oxygen continue

Transport to Diving Medical Facility

Medical Examination by Diving Doctor

Dx: DCS

Treated - TT6 Almost Immediately

No Hospitalization Stay

Dispelling Myths and correcting Mental Anchors

Workflow for onsite diving accident

Practical Procedure

Workplace Safety and Health Guidelines Inland/inshore Commercial Diving

Onsite Management:

- Should a diver experience DCI, the diving supervisor should:
- a) Review the diver for:
- · Signs and symptoms of decompression illness.
- Presence of any other diving illness such as barotrauma.
- b) Ensure that the injured diver is provided with 100% surface oxygen immediately (if available), delivered in accordance with emergency diving first aid guidelines/protocols for either conscious or unconscious diver
- c) Contact the Appointed Hyperbaric and Diving Specialist/Physician immediately for medical assistance.
- d) Arrange to evacuate the injured diver to the nearest appropriate medical facility for urgent medical review by the appointed diving doctor and recompression treatment if necessary.
- The diving vessel which is in anchorage or outside port limits must head for the closest port such as Marina South Pier, West Coast Pier or Tanah Merah Ferry Terminal to transfer the injured diver to the appointed diving doctor.
- after review and as instructed by the appointed diving doctor.

e) If a deck decompression chamber is available, recompression treatment can be carried out Reference: Workplace Safety and Health Guidelines - Inland/inshore Commercial Diving - page 112

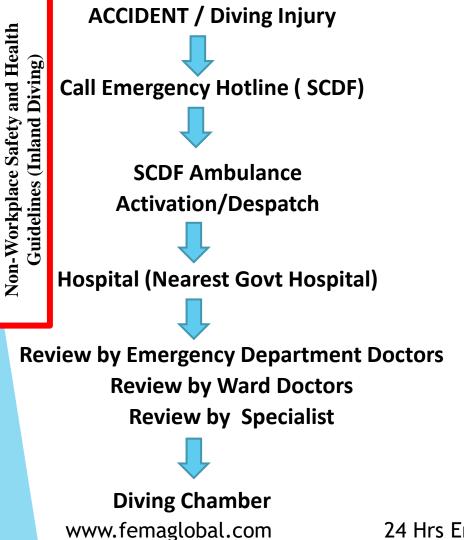
ACCIDENT / Diving Injury Dive Injury First Aid Treatment - Divers & Supervisors Call Diving Emergency Hotline (Diving Physician) **Appointed Diving Doctor** Advise, Teleconsultation, Emergency Management **Private Emergency Ambulance Activation/Despatch Diving Medical Facility Diving Chamber Hospital (Private)**

and Health Diving)

Incident Reporting:

Dispelling Myths and correcting Mental Anchors

Workflow for onsite diving accident



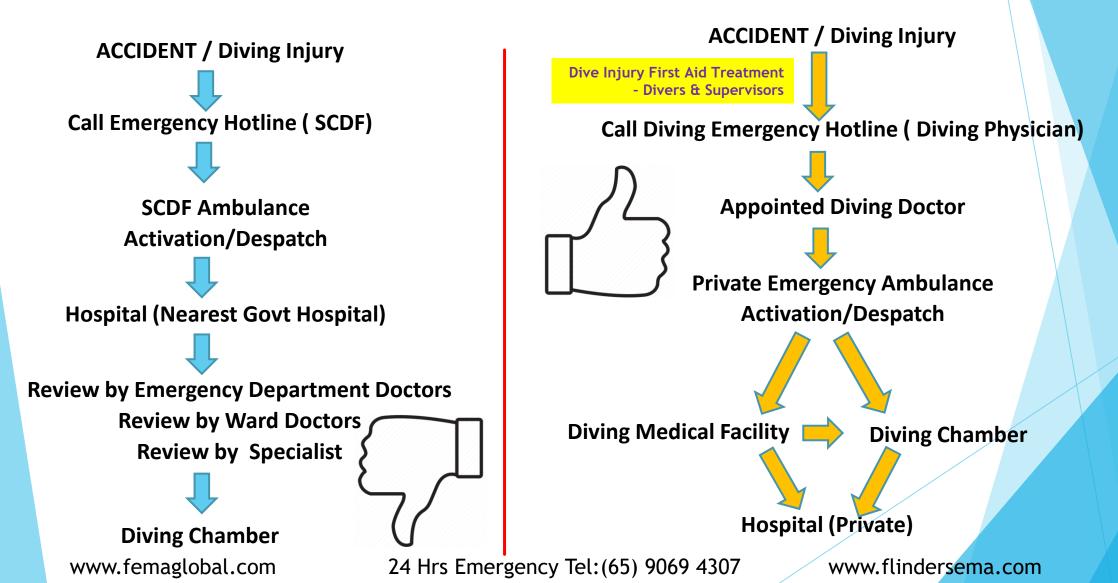


24 Hrs Emergency Tel:(65) 9069 4307

www.flindersema.com

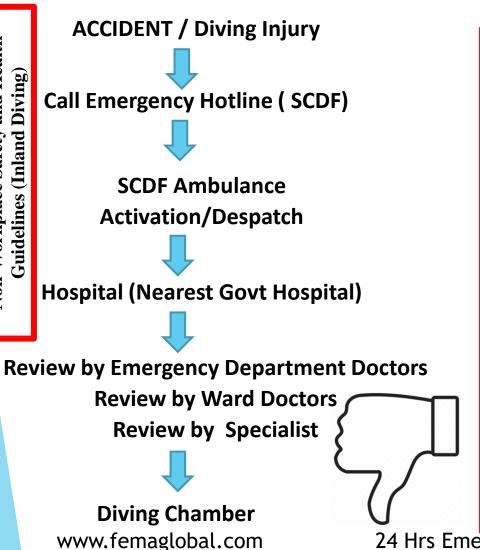
Dispelling Myths and correcting Mental Anchors

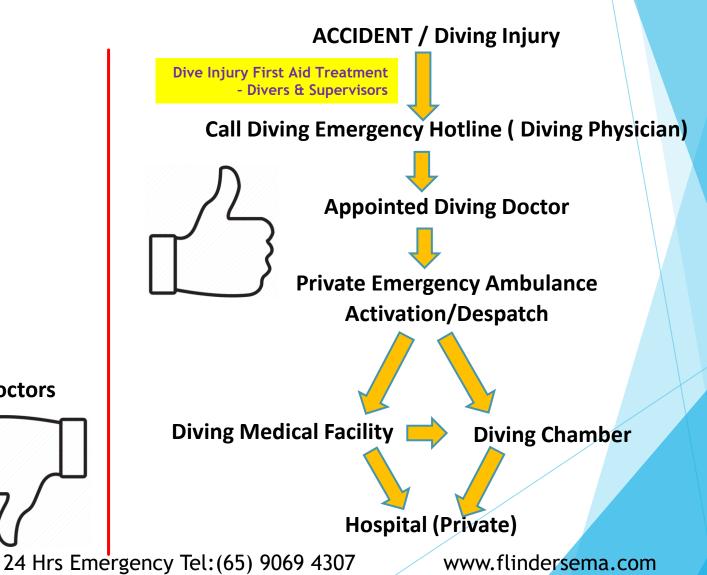
Work flow for onsite diving accident



Dispelling Myths and correcting Mental Anchors

Work flow for onsite diving accident





Dispelling Myths and correcting Mental Anchors

A. OPERATIONAL/ EVENT Centric Myths and Mental Anchors Fact ????:

- ► Ambulance takes all diving cases to Hyperbaric Facilities
- ► All Diving Cases/injuries go to hyperbaric facility and receive chamber treatment
- ► All Medical Hospital has hyperbaric facilities & hyperbaric trained doctors
- ► All Doctors know about Hyperbaric and Diving Medicine
- Diving Doctors in **Private sector** are able to admit/review Diving Accidents in Both **Private & Government Hospital**
- ▶ Occupational First Aid is enough to Treat Diving injuries and accidents
- ► Knowledge of Diving First Aid is for Divers only not Supervisors (as Supervisors don't Dive… lah)
- One tank of Oxygen is enough... no matter how big or small the tank is. (just to have a tick on the check list *how much 02 is enough 02???*)

Dispelling Myths and correcting Mental Anchors

- Diving First Aid vs Occupational First Aid
- ▶ Who makes up the DIVE TEAM
 - Divers
 - Supervisors
- Oxygen- how much is enough

Dispelling Myths and correcting Mental Anchors

Occupational First Aid

Management of Injury based on Body Systems:

- Circulatory System
- Respiratory System
- Muscular Skeletal System
- Nervous System

Practical Aspects:

- CPR / EAR performance
- AED use

Occupational First Aid Topics (OFA)

COUR	SE TOPICS	
	LESSON 1	PRINCIPLES AND PRACTICE OF FIRST AID & Management of Medical Emergencies
	LESSON 2	THE RESPIRATORY SYSTEM and causes of breathing difficulties including choking
•	LESSON 3	The CIRCULATORY SYSTEM , shock, bleeding, management of wounds, eye injuries and CPR
•	LESSON 4	THE MUSCULOSKELETAL SYSTEM, Fractures and Soft Tissue Injuries, Handling and Transportation of the Injured, Management of Bites and Stings
	LESSON 5	THE NERVOUS SYSTEM, Unconscious Casualty, Burn Injuries and Heat Disorders
	LESSON 6	AUTOMATED EXTERNAL DEFIBRILLATOR
•	LESSON 7	SAFETY TOPICS of First Aid Requirements in Workplaces, Chemicals in Workplaces, Occupational Safety & Accident Prevention

Reference: Singapore Red Cross Academy - website

Dispelling Myths and correcting Mental Anchors

Diving First Aid

Management of Injury from the *Interaction of Gas Laws on Body Systems*:

Gas Laws

- Boyles Law
- Daltons Law
- Charles Law
- Gay Lussac's Law etc

Body Systems

- Cardiovascular System
- Respiratory System
- Muscular Skeletal System
- Nervous System

Dispelling Myths and correcting Mental Anchors

Diving First Aid

- 1) Recognition of the various types of Diving Injury / Accidents
 - Clinical Signs and Symptoms Barotrauma, DCI/DCS, Saltwater Aspiration, CO & CO2
 Toxicity etc
 - Management of the various diving injuries/accidents
- 2) Oxygen
 - ❖ 100% Oxygen with CPR, EAR, AED
 - Efficacy of Delivery
 - > BVM with PEEP attachment for Drowning victims
 - Gudels, LMA, Chin Lift, Jaw Thrust
 - Needle Chest Decompression
 - Onsite Management of worsening of diving injury in Diver & its Treatment en-route to Pier
- 3) Fluids
 - Ensure adequate fluids for hydration
 - Oral Fluids
 - > IV Fluids

Some Pointers

www.femaglobal.com

24 Hrs Emergency Tel:(65) 9069 4307

www.flindersema.com

Dispelling Myths and correcting Mental Anchors

Diving First Aid

- 1) Recognition of the various types of Diving Injury / Accidents
 - Diving Supervisors

 HSE personnel Clinical Signs and Symptoms – Barotrauma, DCI/DCS, Saltwater Aspiration, CO & CO2 Toxicity etc
 - Management of the various diving injuries/accidents
- 2) Oxygen
 - ❖ 100% Oxygen with CPR, EAR, AED
 - Efficacy of Delivery
 - BVM with PEEP attachment for Drowning victims
 - Gudels, LMA, Chin Lift, Jaw Thrust
 - Needle Chest Decompression
 - Onsite Management of worsening of diving injury in Diver & its Treatment en-route to Pier
- 3) Fluids
 - Ensure adequate fluids for hydration
 - Oral Fluids
 - > IV Fluids

HOW MUCH 02 IS ENOUGH ??

Tank size matters?

- Tank numbers ?? 1 tank enough? • Volume of oxygen in the tank matters?



Who needs to get Trained

Dispelling Myths and correcting Mental Anchors



A Singapore Government Agency Website





Workplace safety and health > Work accident report... >



About us

B. POST EVENT Myths & Mental Anchors:

- Only the large incidents must be reported
- A near miss does not require reporting
- If I Keep Quiet **No BODY** will know

From the MOM Website:

Work-related accidents, workplace accidents, Dangerous Occurrences and Occupational Diseases must be reported to MOM

Work-related accidents: what and when to report

Work-related accidents, workplace accidents, Dangerous Occurrences and Occupational Diseases must be reported to MOM. The reporting requirements differ depending on the type of accident. If there is doubt after you have completed investigations, please report.

At a glance

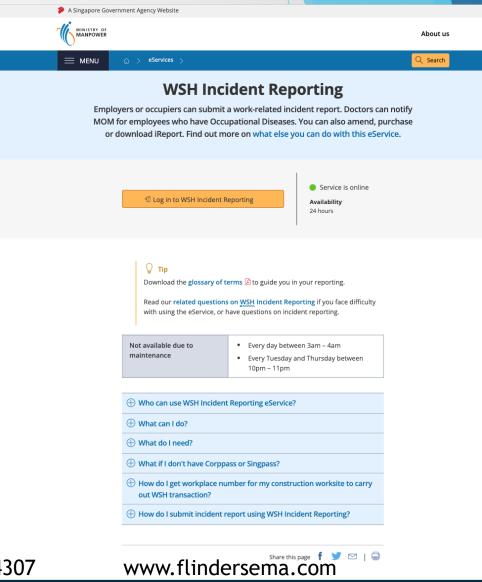
Who should report	Employer, workplace occupier or doctor, depending on the type of accident.
When to report	Within 10 days of an accident or diagnosis.
Relevant legislation	 Workplace Safety and Health (Incident Reporting) Regulations ☑ Work Injury Compensation Regulations ☑

- · As an employer, if you don't report an accident, it is an offence and you'll be fined up to \$5,000 for the first time.
- For second or subsequent offences, you'll be fined up to \$10,000, jailed up to 6 months, or both.

Dispelling Myths and correcting Mental Anchors

- **MOM** iReporting
 - See MOM website
- Who can Report
 - You can use WSH Incident Reporting eService if you are one of the following:
 - Employer
 - Occupier
 - Insurer
 - Treating doctor
 - Injured employee
 - Injured employee's next-of-kin
 - Injured employee's legal representative

https://www.mom.gov.sg/eservices/services/wsh-incident-reporting#how-do-i-file-ireport-using-wsh-incident-reporting





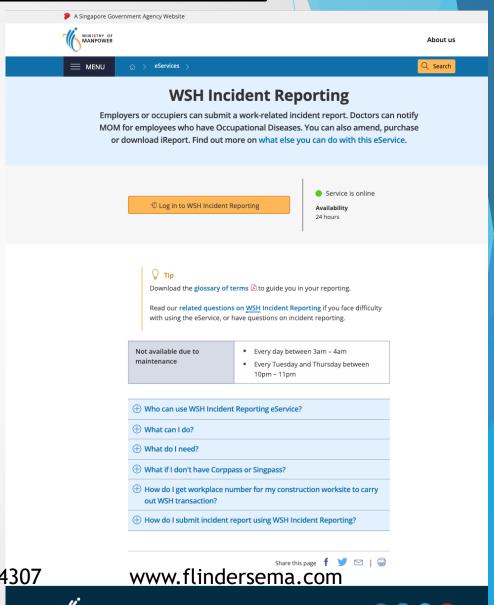




Dispelling Myths and correcting Mental Anchors

- Occupiers don't need to report for accidents involving employees of other companies but should inform the employer of the injured employee to file an incident report.
- Occupiers must report for fatal accidents involving member of public, student or a selfemployed person.

https://www.mom.gov.sg/eservices/services/wsh-incident-reporting#how-do-i-file-ireport-using-wsh-incident-reporting



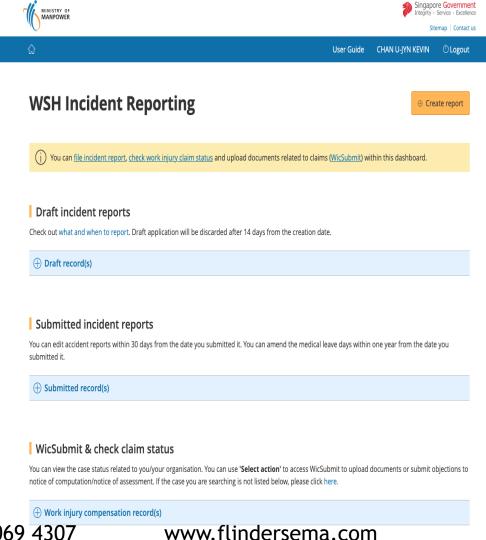




Dispelling Myths and correcting Mental Anchors

- Incident reports from the Company can be uploaded
- Medical Reports from the Appointed Diving Doctor can also be uploaded

https://www.mom.gov.sg/eservices/services/wsh-incident-reporting#how-do-i-file-ireport-using-wsh-incident-reporting



www.femaglobal.com

24 Hrs Emergency Tel:(65) 9069 4307

Dispelling Myths and correcting Mental Anchors

Post incident Reporting

Usually MOM will:

- Interview the Diver
- Review the Medical Report
- Discuss with an Appropriate Diving & Hyperbaric Physician

Outcome:

- Review of Data to see what when wrong
- How to prevent subsequent injuries
- Issues could be due to
 - Diver
 - Diving Supervisor
 - Diving Procedures
 - Environmental
 - Medical
 - Training- diving, First Aid etc

Other (case dependent)



Trust me its NOT a BOY's CLUB

Myths & Mental Anchors

Its not always the Company's Fault

Dispelling Myths and correcting Mental Anchors

Sang Nila Utama

Folklore - passed down from history

It is important to note that we should look at how we have done things from **before** and until **now**.

We need to know the old methods of doing things (in the Diving Industry) their values (good or bad), their strenghts, their inefficiencies and their dangers.

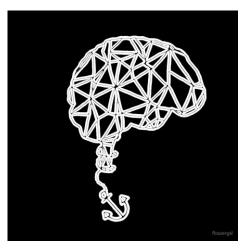
With this knowledge we should change and adapt our Company Systems, Diving Training, First Aid Training for Divers, Medical Management for **Treatment Divers and Diving Injury Prevention**

https://remembersingapore.org/2012/06/29/singapore-legends-and-myths/

Dispelling Myths and correcting Mental Anchors

Know the Myth and adapt to Reality

Mental Anchors OUT, Dynamic Positioning IN





https://www.redbubble.com/people/flowerysl/works/2347 9305-youre-the-anchor-that-i-tied-to-my-brain

https://www.kongsberg.com/maritime/products/positioning-and-manoeuvring/dynamic-positioning/

Thank you

Dr Kevin U Chan

MBBS (Australia), Diploma Occupational Medicine (Singapore)
Designated Aviation Examiner (CAAS, Singapore)
Aeromedical Transport Physician (USA, UK)
Diving, Hyperbaric Offshore Physician Level2D(USA, UK, Australia)
Member of UHMS, SPUMS, IBUM, IMCA, OGUK, AMPA

Flinders EMA Pte Ltd

10, Sinaran Drive, #09-32, Novena Medical Center, Sq2Singapore 307506 Tel:(65) 6854 3720, Fax:(65) 6854 3770, Emergency:(65) 9069 4307

In Association with FEMA Clinic & Surgery