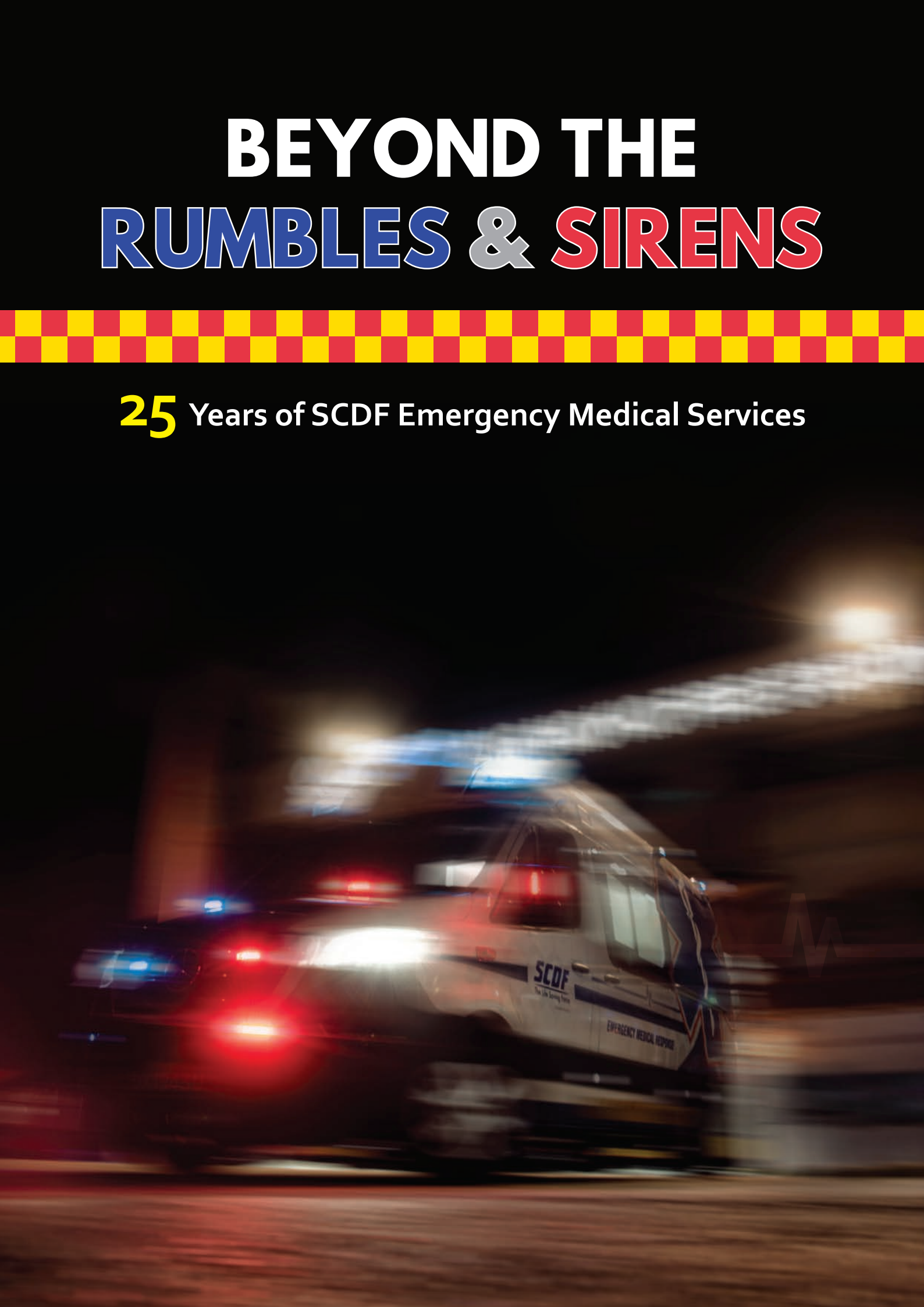
# BEYOND THE RUMBLES & SIRENS

25 Years of SCDF Emergency Medical Services



# BEYOND THE RUMBLES & SIRENS

25 Years of SCDF Emergency Medical Services

SCDF
The Life Saving Force
... for a safer Singapore

# CONTENTS

# COMMISSIONER'S MESSAGE

# COMMISSIONER'S MESSAGE

Prehospital emergency ambulance services have a rich history in Singapore dating back to the 1960s. Led then by registered nurses from the Ministry of Health and staffed by healthcare attendants and drivers, the emergency ambulance services played a critical role in responding to emergencies in Singapore.

1996 was the beginning of a new chapter in the provision of emergency ambulance services when SCDF launched the Paramedic Scheme. Gradually, paramedics would replace the registered nurses or ambulance officers as they were referred to back then. With the introduction of SCDF paramedics, full-time National Servicemen (NSF) serving as medics and senior ambulance medical orderlies driving the ambulances, this transformation ushered in a new era of Emergency Medical Services (EMS) as we know it today.

Our focus on three key drivers has kept SCDF's EMS current and relevant over the last 25 years and we believe, for the years ahead.

Firstly, our people, our strongest asset. The focus on our people has transformed SCDF's EMS by leaps and bounds where a highly trained paramedic, along with an Emergency Medical Technician (EMT) trained NSF and a regular fire-trained EMT driving the ambulance, forms each EMS crew in providing critical interventions to life threatening medical and trauma emergencies. Today, SCDF's EMS has grown into a modern, professional, effective and well-respected service providing the highest standards of pre-hospital medical care to the public. This growth and transformation over the last 25 years would not have been possible without the unwavering commitment, dedication and passion of our officers, both past and present.

Secondly, the emphasis on a realistic training curriculum coupled with skills upgrading and continuing training has ensured that our EMS personnel are updated with the latest knowledge and skills in prehospital emergency care. Our EMS crews are also trained to respond to highly dynamic and complex operations, such as a mass casualty incident and a chemical, biological, radiological (CBR) incident. More recently, SCDF launched the Paramedic Senior Officer (PSO) Scheme. The PSO underscores SCDF's continual efforts in transforming SCDF's EMS to meet the increasing EMS demands and to further enhance our professionalism in managing more complex frontline operations. PSOs will also be groomed as leaders to drive EMS education, research, as well as operational and clinical excellence within SCDF. This, coupled

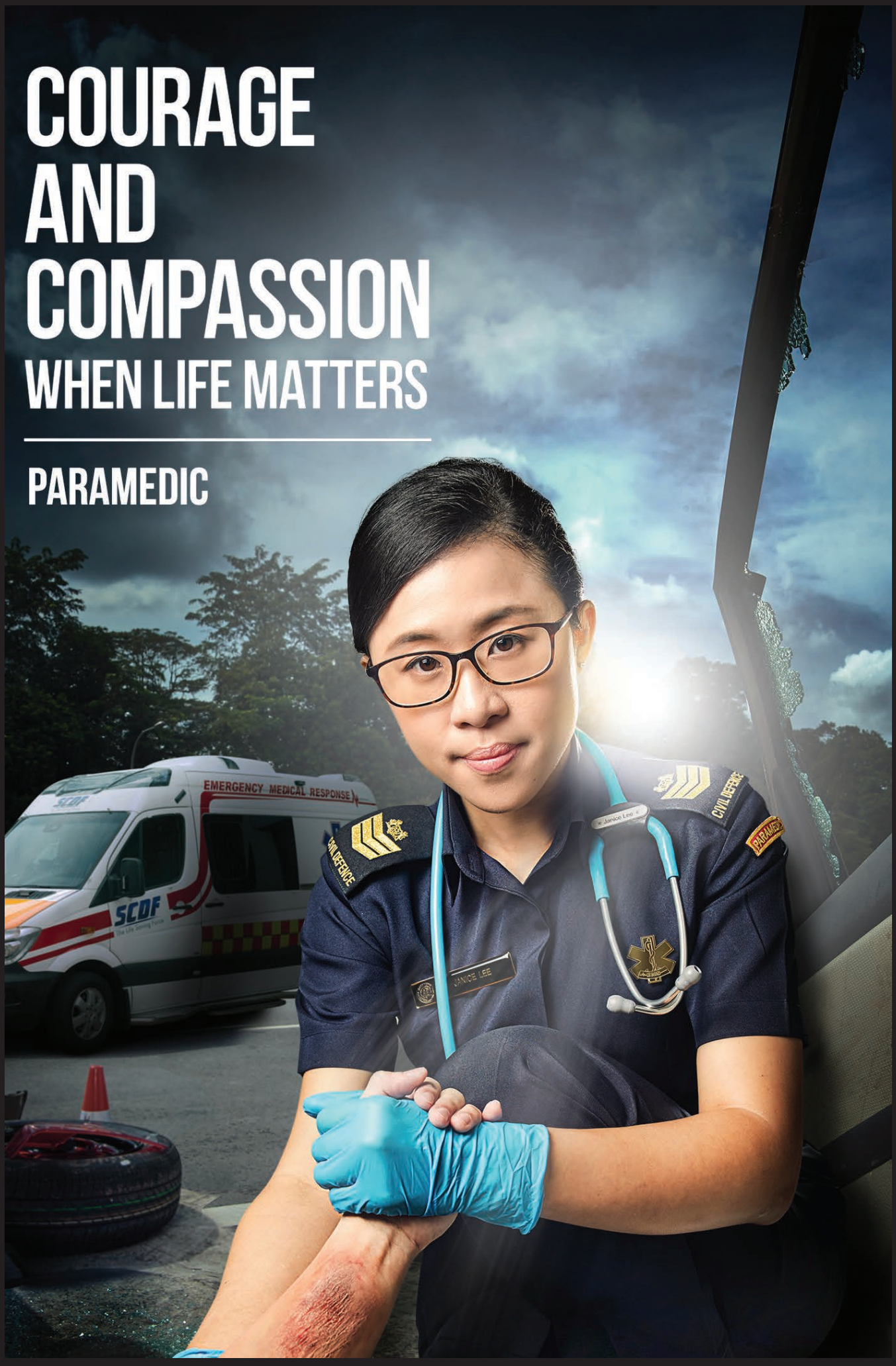
with the establishment of the SCDF's National EMS Training Centre at the Civil Defence Academy, will enable SCDF to be the leader in Paramedicine.

Thirdly, leveraging innovation and technological advances have been instrumental in shaping SCDF's EMS. For example, the present ambulance, in its seventh generation, reflects the innovative SCDF spirit. Besides new features such as the in-built self-decontaminating system, ergonomic interior design, and smart charging system using solar energy, SCDF's latest generation of ambulances symbolise an organisation that is modern and forward-looking. Another example is the Operational Medical Networks Informatics Integrator (OMNII). This system allows for real-time data-sharing between SCDF's Operations Centre, SCDF's EMS and hospital Emergency Departments (ED). With real-time onsite information about the patient being relayed by SCDF paramedics, the emergency physician and trauma surgeon at the ED can prepare a resuscitation plan before the patient arrives. This effectively reduces the "door-to-treatment" time and preserves the "golden hour" for better patient outcomes.

The past 25 years of EMS transformation have been significant and deserving of celebration. The title of this EMS Commemorative Publication, **Beyond the Rumbles and Sirens: 25 Years of SCDF Emergency Medical Services**, aptly captures the hard work, devotion and sacrifices of the EMS personnel. This publication chronicles the key milestones and how formidable challenges such as SARS and COVID-19 pandemics were overcome with hard work, grit, and perseverance. This publication also includes many heart-warming personal accounts by our EMS personnel that bring to life the values, aspirations and beliefs of our EMS personnel over the decades.

Going forward, strategic forward-thinking and the unwavering commitment of our EMS personnel will ensure that SCDF EMS is on firm footing to deal with new challenges such as that of an ageing population. I hope this commemorative publication specially put together by our paramedics, will inspire present and future generations of EMS to fly the SCDF flag high as we continue with our noble mission of protecting and saving lives and property for a safer Singapore.

**Eric Yap**
*Commissioner*
*Singapore Civil Defence Force*


COURAGE
AND
COMPASSION
WHEN LIFE MATTERS
PARAMEDIC
EMERGENCY MEDICAL RESPONSE
SCDF
JANICE LEE
CIVIL DEFENCE

# FOREWORD

This year marks the 25th anniversary of the Emergency Medical Services (EMS) within the Singapore Civil Defence Force (SCDF). It is thus fitting that we have this commemorative publication to chronicle the key milestones and development of the SCDF EMS over the decades. Since the launch of the Paramedic Scheme in 1996, the SCDF EMS has garnered numerous achievements and accolades in this transformative journey. From its humble beginnings with about 30 ambulances to serve the whole of Singapore in the 1990s, the SCDF EMS has transformed into a modern and highly professional service with an ambulance fleet that has more than tripled in numbers.

The SCDF ambulance is now led by a Paramedic crew leader and assisted by well-trained Emergency Medical Technicians (EMTs). The SCDF EMS is also equipped with the latest technologies that allow for a more comprehensive operational response to medical and trauma incidents. We certainly have a lot to be proud of.

While we have made significant progress since the inception of the EMS, training remains a cornerstone to ensure continued growth and development for both current and aspiring EMS personnel. To grow a community of highly skilled and caring service professionals, the SCDF EMS will need to constantly embrace upskilling and continuous learning, while not losing sight of our foremost mission – to care for our people and those we serve – in the pre-hospital emergency environment. This continual improvement to provide the best possible care can be achieved by fostering a culture of growth mindset and inculcating an attitude of lifelong learning among our EMS community.

In the course of producing this publication, our nation has entered the third year of its fight against the global COVID-19 coronavirus disease. Notwithstanding the adversity, it is gratifying to note that the EMS community has remained resilient and steadfast in its life-saving mission throughout the pandemic and never wavered in serving the community with the best possible care and compassion.

Like the passing of the baton in a relay race, so too are the stories and testimonies this publication passed on to the present generation of SCDF EMS personnel, and generations to come. Let it inspire us and renew within the fraternity the deep sense of conviction, courage and commitment as we strive on with our life-saving mission!

**Senior Assistant Commissioner**
**Yong Meng Wah**
*Director, Emergency Medical Services Department*
*Singapore Civil Defence Force*


SINGAPOR


# SCDF EMS MILESTONES

*FROM 1948 TILL 2022*

# SCDF EMS MILESTONES
## *FROM 1948 TILL 2021*

### 1948 to 1969

- Ambulance services were manned by Ambulance Officers from the Singapore Fire Brigade and Central Ambulance Services from Singapore General Hospital


***Ambulance from 1948 – 1959***
*Source: SCDF*


***The Volkswagen Transporter (1959) was the ambulance operated by the Singapore Fire Brigade***
*Source: SCDF*

## 1970 to 1979

### 1977

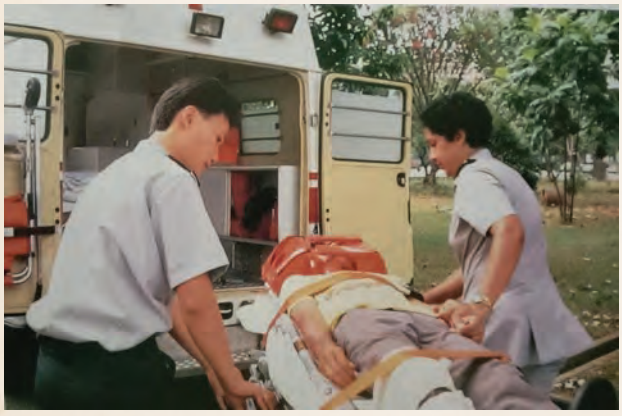
- Merger of ambulance services under the Singapore Fire Brigade and Central Ambulance Services
- 1st Generation of Ambulance implemented


***The Volkswagen Transporter (1959) was the ambulance operated by the Singapore General Hospital with nurses seconded from Ministry of Health as Ambulance Officers***
*Source: SCDF*

## 1980 to 1989

### 1980

- Singapore Fire Brigade was renamed as Singapore Fire Service
  - Emergency Ambulance Service operated under Singapore Fire Service
- 2nd Generation Ambulance implemented



***Ambulance Officers from Singapore Fire Service attending to a patient.***
*Source: SCDF*


***The Volkswagen LT31 (1984)***
*Source: SCDF*

## 1980 to 1989

### 15 March 1986

- Collapse of Lian Yak Building, which houses Hotel New World

***A human chain is formed by personnel from Singapore Civil Defence Force to rescue a casualty***
*Source: TNP, Straits Times*

### 1989

- **15 April 1989:** Ministry of Home Affairs merged Singapore Civil Defence Force and Singapore Fire Service to streamline rescue services
- Emergency Ambulance Service operated by Singapore Civil Defence Force
- 3rd Generation Ambulance implemented by Singapore Civil Defence Force
- Pilot program to train ambulance officers to operate Automated External Defibrillators (AED)


***The Mercedes Benz 2103350 was implemented in 1989***
*Source: SCDF*

***Ambulance officer responding with an AED***
*Source: SCDF*

## 1990 to 1999

**1992**

- Introduction of Fast Response Medics to assist and shorten response time to medical emergencies

**1996**

- **April to June 1996:** Three Paramedic Instructors received training at Paramedic Academy of Justice Institute of British Columbia (JIBC) at Vancouver, Canada
- **15 July 1996:** Collaboration by Singapore Civil Defence Force, School of Military Medicine and the Paramedic Academy of Justice Institute of British Columbia to introduce formal Paramedic Training in Singapore

***A pair of Fast Response Medics on motorcycle***
*Source: SCDF*

***Combined medical training between Singapore Armed Forces and SCDF's paramedic trainees***
*Source: SCDF*

## 1990 to 1999

**1997**

- Medical Advisory Committee was established to regulate pre – hospital protocols
- Fast Response Paramedic was introduced to replace the Fast Response Medic scheme

**1998**

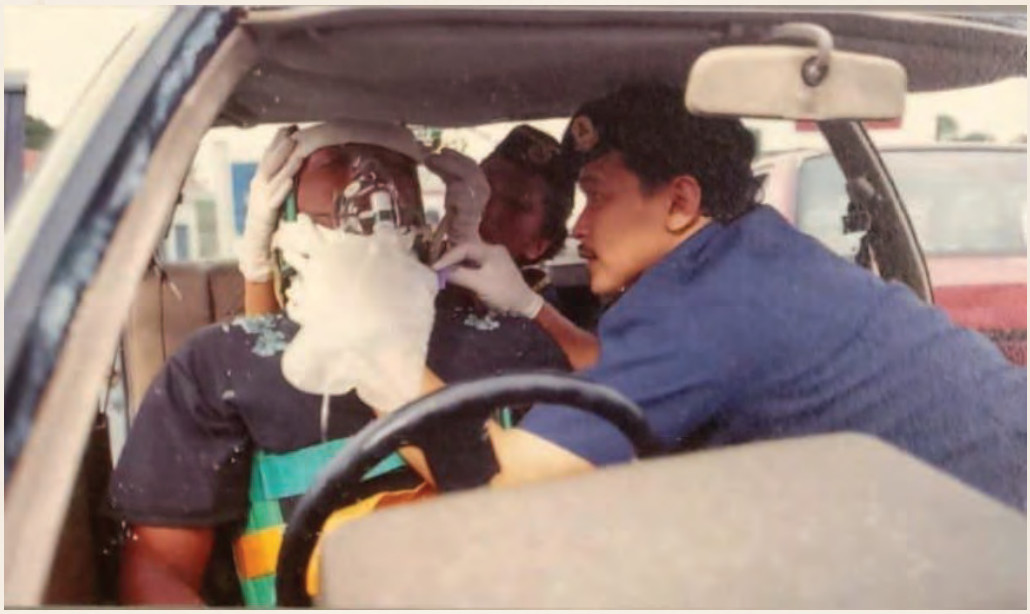
- First Chief Medical Officer Colonel (Dr) Tan Eng Hoe was appointed


***Fast Response Paramedic***
*Source: SCDF*

## 2000 to 2010

**2000**
- SCDF Emergency Ambulance Service was established fully staffed by SCDF paramedics after phasing out of the Ambulance Officer scheme

**2003**
- SARS Pandemic



***An SCDF Paramedic performing spinal immobilization on a casualty***
*Source: SCDF*

***SCDF EAS crew donning full Personal Protective Equipment during the SARS Pandemic***
*Source: SCDF*

## 2000 to 2010

**2004**
- 4th Generation Ambulance implemented
- Ops Lionheart mission to Aceh, Indonesia during Asian Tsunami Disaster

**2005**
- Ops Lionheart mission to Muzaffarabad, Pakistan, during the South Asian Earthquake

**2006**
- Lieutenant (LTA) Janice Oh being the first paramedic to become a Senior Fire and Rescue Officer


*The Mercedes Benz Sprinter, also known as the "Box Ambulance"*
*Source: SCDF*

*Lieutenant Colonel Janice Oh, first paramedic to become a senior fire and rescue officer*
*Source: SCDF*

## 2010 to 2020

**2008**
- Upgraded 4th Generation Ambulance

**2009**
- Lieutenant Colonel (Dr) Chiam Tut Fu appointed as Chief Medical Officer
- Private Ambulance Operators (Lentor Ambulance and UniStrong Technology Pte Ltd) contracted to SCDF to increase the fleet of ambulances

*Lentor Ambulance and UniStrong Technology Pte Ltd*

**2011**
- Lieutenant Colonel (Dr) Poon Beng Hoong appointed as Chief Medical Officer
- LUCAS2 Mechanical CPR was first introduced to improve uninterrupted compression on a cardiac arrest patient
- Ops Lionheart mission to Christchurch, New Zealand, during Christchurch Earthquake


***LUCAS 2 being utilized by paramedics***
*Source: SCDF*

## 2010 to 2020

**2012**
- Fire and Rescue Specialists (FRS) being trained as Emergency Medical Technicians (EMTs)
- FRS Firebikers equipped with an Automated External Defibrillator for response to cardiac arrest cases

**2013**
- Colonel (Dr) Ng Yih Yng appointed as Chief Medical Officer

**2014**
- Colonel Yazid Abdullah appointed as Director of Medical Department
- Implementation of 5th Generation Ambulance

***FRS Firebikers can now respond to medical emergencies such as cardiac arrests***
*Source: The Straits Times*


***The Mercedes Benz Sprinter 316CDI A***
*Source: SCDF*

**2015**

- Private Ambulance Operator (Hope Emergency Ambulance Services) contracted by SCDF to increase the fleet of ambulances
- **16 October 2015:** SAF and SCDF launched National Paramedic Training and Education roadmap, in collaboration with Institute of Technical Education, Nanyang Polytechnic, UniSim and JIBC
- Promulgation of SCDF's Vision of "A Nation of Lifesavers"
- Launch of myResponder Application
- Ops Lionheart mission to Kathmandu, Nepal during the Nepal Earthquake

***Hope Emergency Ambulance Services***
*Source: https://www.hopeambulance.com*

***SCDF's Vision 2025***
*Source: SCDF*

***myResponder Application***
*Source: SCDF*


***A Memorandum of Understanding was signed between SAF, SCDF, Nanyang Polytechnic, UniSIM and JIBC***
*Source: CMPB.GOV.SG*

## 2010 to 2020

**2017**

- Implementation of Fire Medical Vehicle
- EMS Tiered Response Framework was introduced


***Fire Medical Vehicle***
*Source: SCDF*

| CATEGORY OF CASES | EXAMPLES | RESPONSE |
|---|---|---|
| LIFE-THREATENING EMERGENCIES | Cardiac arrest, unconciousness, breathlessness, active seizure, major trauma and stroke. | Highest priority<br>Fastest response<br>Extra resources deployed |
| EMERGENCIES | Severe allergy, emergency labour, head injury, bone fracture, asthma, elderly with chronic medical conditions and sick children. | High priority<br>Fast response |
| MINOR EMERGENCIES | Cut with bleeding, accident with bruising, swelling, mild injury and persistent fever. | Lower priority<br>Slower response |
| NON-EMERGENCIES | Constipation, chronic cough, diarrhoea and skin rash. | Emergency medical assistance not required<br>Seek treatment at clinics or call 1777 for non-emergency ambulances |

***Tiered Response Framework***
*Source: SCDF*

**2017**

- SCDF Team finished runner-up at EMS Asia Simulation Competition at Davao City, Philippines
- SCDF Team emerged champions at Ferno Australia Paramedic Simulation Challenge, Gold Coast, Australia

**2018**

- Lieutenant Colonel (Dr) Shalini Arulanandam appointed as Chief Medical Officer
- Diploma (Conversion) in Paramedicine was introduced at Nanyang Polytechnic for SCDF paramedics
- Ops Lionheart mission to Attapeu Province, Laos PDR, from flooding due to dam collapse


***The SCDF team participated in EMS Asia Simulation Competition at Davao City, Philippines.***
*Source: The Straits Times*

# SCDF paramedics win global competition

Tan Tam Mei

They had practised at least 60 different accident scenarios but nothing could have prepared the team for what greeted them.

The accident scene at the beach was chaotic: A couple had been flung off a jet ski and the team had to gather as much information as they could from a fisherman who witnessed the incident.

While this was all part of a simulated exercise during the annual Ferno Australia Paramedic Simulation Challenge, held in the Gold Coast, the four-member team of Singapore Civil Defence Force (SCDF) paramedics quickly sprang into action.

They eventually beat five teams from around the region and emerged champions.

This is the third time an SCDF team has participated in the competition and the first time the force has taken first place.

"We were the only Asian team there and in some ways we felt we represented Singapore. So we reminded ourselves to stay focused and do our best," said the team leader, Warrant Officer (WO) Naomi Wee, 28. "This was, after all, similar to our daily job where there is the element of surprise and we have to respond quickly."

The chilly weather was an element the team – also made up of WO Zane Ang and Staff Sergeant Jason Kwek, both 29, and Lieutenant Noraini Kasbani, 48 – had to adapt to.

"It was colder than we expected so a day before the competition, we all went to buy thermal wear," said WO Wee.

The competition, held on Sept 21, took place in a tent in an open-air carpark that had been set up to look like a beach. In the accident scenario, the woman suffered a fractured arm and cut on her thigh, and had to be bandaged and given painkillers. The man was more severely wounded, with head injuries.

With the help of his teammates, WO Ang performed an endotracheal intubation procedure on the mannequin representing the man – placing a tube into the windpipe through the mouth to secure the patient's airway. The procedure was particularly challenging and while the team had practised it during training, they had never done it in real life.

WO Wee said the team initially felt daunted when they saw their competitors from countries like New Zealand and Australia.

"They were tall and big-sized, and we felt physically small. But we reminded ourselves of the people who had invested their time, knowledge and expertise to prepare us for the competition, and we didn't want to let them down," she said.

The four paramedics come from different fire stations and divisions across Singapore, and spent close to 70 hours while off-duty training for the contest. They hope that winning the trophy will bring a sense of pride to paramedics here.

Lt Noraini, who has been in the force for 20 years, said: "Hopefully, this will continue to remind the public that we are more than capable of caring for them and their loved ones in an emergency."

tammei@sph.com.sg

The winning SCDF team is made up of (from left) Warrant Officer Zane Ang, Warrant Officer Naomi Wee, Lieutenant Noraini Kasbani and Staff Sergeant Jason Kwek. They beat five teams in the competition held in Australia. ST PHOTO: KELVIN CHNG

***The SCDF team participated in Ferno Australia Paramedic Simulation Challange***
*Source: The Straits Times*

**2018**

- Implementation of 6th Generation Ambulance
- Introduction of High-Performance CPR


***6th Generation Ambulance with improved safety features and layout***
*Source: SCDF*

***Phase 2 of EMS Tiered Response was the introduction of High-Performance CPR***
*Source: SCDF*


*The ideal arrival sequence during activation of a cardiac arrest case. (Clockwise from top left): Fire Bike, EMT – enabled appliance and ambulance*
*Source: MHA*

The current four responders deployed to out-of-hospital cardiac arrests will be increased to eight – in ambulances, fire bikes, Red Rhino vehicles, fire engines or other fire medical vehicles. ST PHOTO: JASMINE CHOONG

## How high-performance CPR is carried out

**1st arrival: Fire bike**

An emergency medical technician (EMT) arrives at the scene on a fire bike to perform CPR and deploy an automated external defibrillator (AED) that will provide live feedback on the chest compression quality.

This ensures that the chest compressions are done to the ideal depth, at an appropriate rate and with controlled ventilation.

**2nd arrival: Either a fire engine, Red Rhino or fire medical vehicle**

Four more SCDF officers arrive. They include two firefighters who will take turns every two minutes to perform chest compressions, a fire and rescue specialist who will deliver oxygen and ventilation to the patient using a device, as well as an additional EMT who will operate the AED.

The purpose of this team is to provide basic life support to the patient.

**3rd arrival: Ambulance**

The team, comprising a paramedic and two more EMTs, arrives last to provide advanced treatment to the patient.

The paramedic, who is the overall team leader, will operate the ambulance defibrillator.

One of the EMTs will help to set up an IV drip and administer drugs to the patient, while the other EMT will prepare equipment and drugs for the treatment procedures.

*Newspaper Clipping on the introduction of High-Performance CPR by the SCDF*
*Source: The Straits Times*

## 2010 to 2020

**2019**

- Assistant Commissioner Yong Meng Wah appointed as Director of EMS Department
- The new and enhanced Medical Support Vehicle (MSV), built for mass casualty incidents, provides improved pre-hospital medical care. The MSV provides a clean environment for SCDF paramedics to perform on-site stabilisation and critical invasive medical treatments


***Medical Support Vehicle (MSV)***
*Source: TrigenAutomotive.com*

## 2020 till present

- SCDF prepared response to COVID-19 Pandemic
- Two Private Ambulance Operators to operate 30 SCDF Ambulances under the Government-Owned-Contractor-Operated (GOCO) Model

***An EMS personnel donning personal protective equipment for daily activations***
*Source: SCDF*

***LTC Janice Oh explaining to Mr Amrin Amin how EMS crew uses the decontamination equipment and personal protective equipment***
*Source: SCDF*


***EMS personnel from UniStrong Technology Pte Ltd and Lentor Ambulance donning the SCDF uniform***
*Source: Channel News Asia*

## 2020 till present

**2021**

- Start of vaccination exercises for Ministry of Home Affairs (MHA) personnel
- Warrant Officer (1) Mohamed Shafiee Bin Jamin was the first MHA healthcare frontliner to be vaccinated
- 7th Generation Ambulance with enhanced safety features, solar powered charging system and decontamination spray mist system was introduced


***WO1 Mohamed Shafiee first SCDF officer receiving his vaccination against COVID-19***
*Source: SCDF*


***7th Generation Ambulance***
*Source: SCDF*

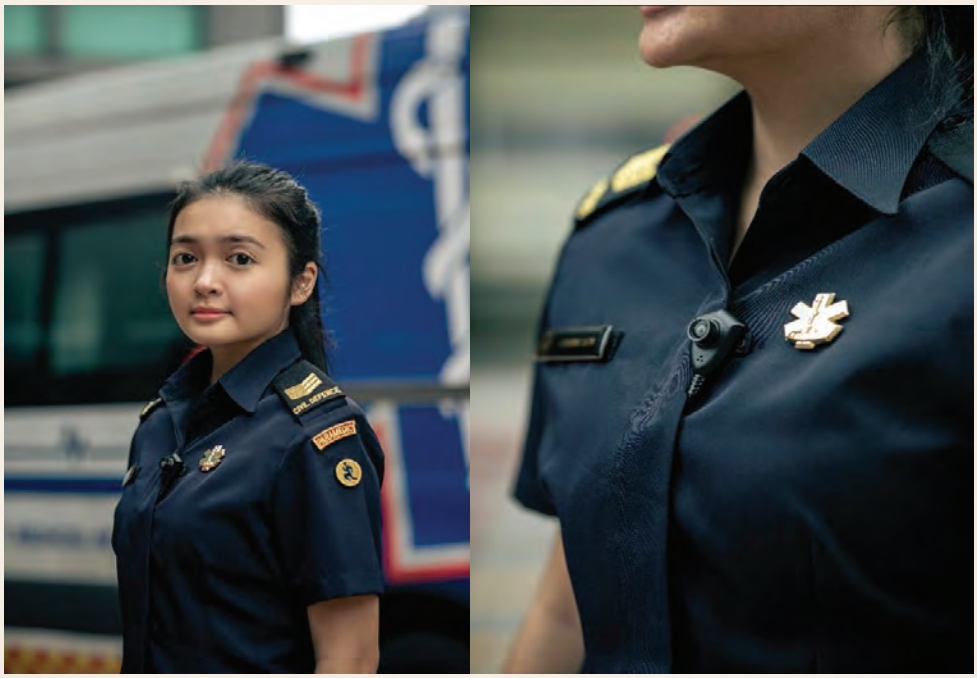
## 2020 till present

**2021**

- Operational Medical Networks Informatics Integrator (OMNII), a joint project between SCDF and Ministry of Health, with Defence Science and Technology Agency was introduced to enhance patient management
- **29 April 2021:** SCDF trialing exoskeleton suits that aim to reduce muscle strain and fatigue during operations
- **15 April 2022:** SCDF frontliners and enforcement officers to be equipped with Body-Worn Cameras


***A Paramedic using OMNII to share patient data in real time***
*Source: SCDF*

***Emergency Medical Services crew members loading a patient into an ambulance with the assistance of exoskeleton suit***
*Source: Channel News Asia*



***Paramedics will be equipped with Body-Worn Cameras to improve quality and effectiveness of EMS***
*Source: SCDF*

# SINGAPORE CIVIL DEFENCE FORCE
## EMERGENCY MEDICAL SERVICES DEPARTMENT

### DIRECTOR EMS

COL (Dr) Tan Eng Hoe
(1998 – 1 Feb 2009)

LTC (Dr) Chiam Tut Fu
(2 Feb 2009 – 31 Dec 2009)

LTC (Dr) Poon Beng Hoong
(3 May 2011 – 1 May 2012)

AC Yazid Abdullah
(1 Jul 2014 – 15 Jan 2019)

SAC Yong Meng Wah
(16 Jan 2019 - Present)

### CHIEF MEDICAL OFFICER

COL (Dr) Ng Yih Yng
(2 May 2012 – 1 Aug 2018)

COL (Dr) Shalini D/O Arulanandam
(2 Aug 2018 – 25 Jun 2021)

COL (Dr) Colin Tan Kaihui
(26 Jun 2021 – Present)

# ROLL OF HONOUR

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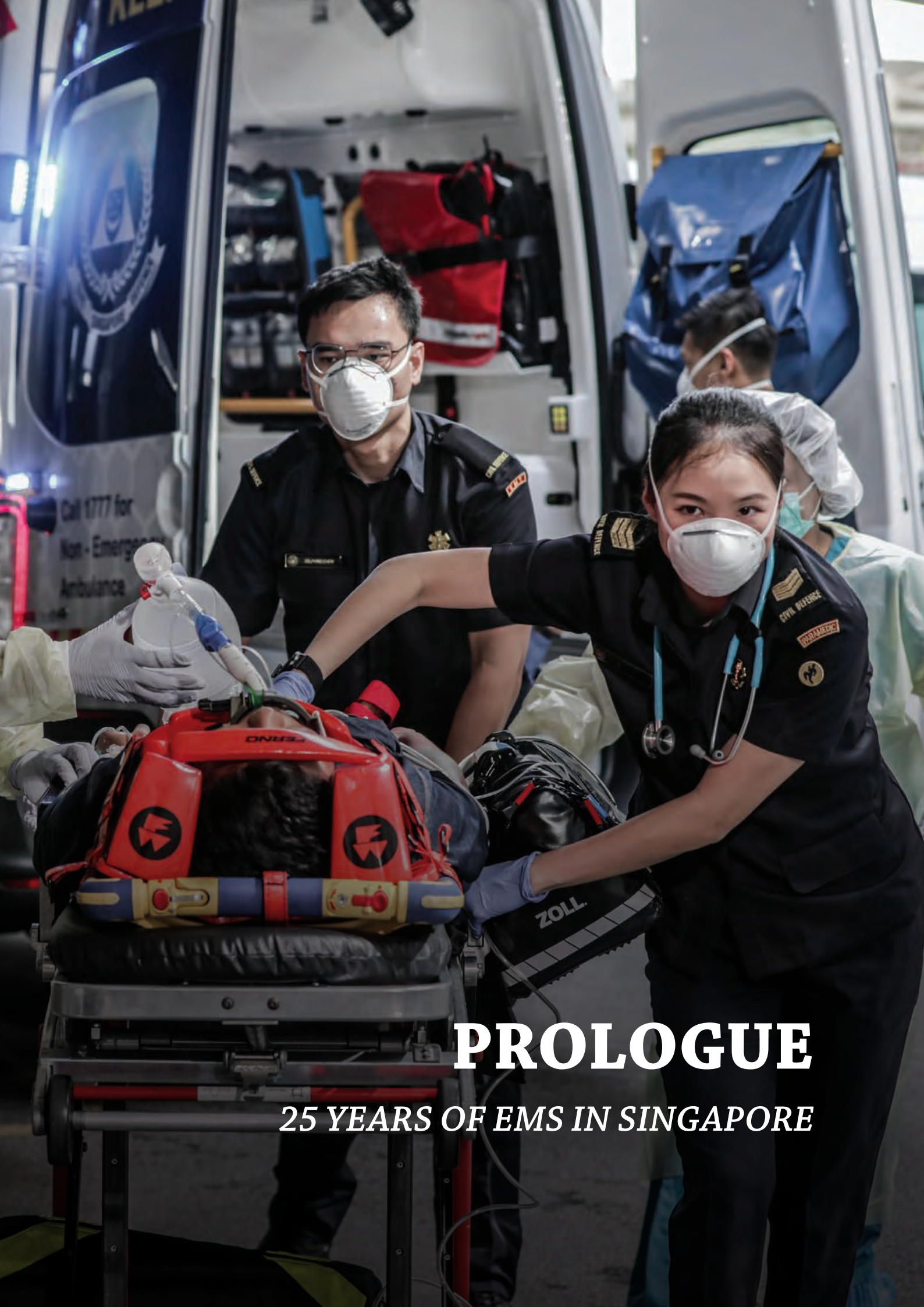
**** 1 Jan 2010 – 2 May 2011***

*EMS Department (then Medical Department) was covered by Senior Director (Emergency Services), AC Ang Tse Meng, and supported by retired COL (Dr) Tan Eng Hoe.*




# PROLOGUE

## *25 YEARS OF EMS IN SINGAPORE*

# PROLOGUE

*By WO2 Mohamed Shafiee bin Jamin, EMS Overall-in-charge, Tuas Fire Station*

## 25 YEARS OF EMS IN SINGAPORE

"*Sir, if you can hear me, please do not move your head*," instructed the paramedic trainee to the training manikin as he rushed to it, carrying his defibrillator and his medical equipment.

These are the first patient assessment instructions that paramedic trainees echo out during their training course. Under the watchful eyes of their trainers, nothing will stand in their way to ensure that every trainee develops into a highly trained paramedic once they graduate. There have been numerous cohorts of paramedics graduating over the years, with even some from the pioneer batch who are still serving in SCDF today. Time has just flown by, and little did we realise that it has been 25 years since the paramedic scheme was started in SCDF.

### The Beginning

It all began when prehospital emergency ambulance services started. From the early 1960s till 1976, two ambulance services were in operation – the Central Ambulance Services, which was operated by the Singapore General Hospital and another ambulance service, operated by the Singapore Fire Brigade. The crews consisted of registered nurses, healthcare attendants and drivers, all of whom must respond within 25 minutes and provide 24 hours islandwide emergency response service. However, nurses from Central Ambulance Services would attend to most medical emergencies, whereas the Singapore Fire Brigade would only respond to accidents and casualties arising from fire and rescue incidents.

In 1977, both services merged into the Emergency Ambulance Service (EAS) under the Singapore Fire Service (SFS). EAS then was still operated by nurses, who were later known as ambulance officers.

Nearly a decade later, following the collapse of the Lian Yak Building on March 15, 1986, which housed Hotel New World, it was decided that there was a need to restructure the provision of emergency services. The Ministry of Home Affairs merged Singapore Civil Defence Force (SCDF) and Singapore Fire Service on 15th April 1989. This also marked the beginning of the Emergency Ambulance Service (EAS), with a fleet of 16 ambulances that were each staffed by a driver who was trained in basic first aid, an ambulance attendant who was trained in both basic first aid and Basic Cardiac Life Support (BCLS) and an ambulance officer who was trained in Basic Cardiac Life Support and midwifery.

"Our ambulances lacked equipment and had basic technology. We were equipped with only a few sets of medical equipment and some drugs, such as morphine (for traumatic and acute myocardial infarction cases) and Syntometrine (for maternity cases)," recalled Ms Jenny Chew, a retired ambulance officer.

She added, "Not all ambulances were equipped with defibrillators, which is an essential equipment for a person suffering a cardiac arrest. There were also regulations and protocols to follow. We were required to get the consent of the Emergency Physicians from the hospital's Emergency Department before we could administer any lifesaving drugs."

In late 1989, they started training all ambulance officers and firefighters to operate Automated External Defibrillators (AED) for better responses to cardiac arrest patients.

By 1993, the fleet increased from 16 to 20 ambulances, with all ambulances equipped with AEDs. The ambulances were also strategically placed across fire stations for a faster response time.

"Even though it was busy, our spirits never faltered. We treated each other like family and everyone took extra effort to care for one another. I remembered the "kampung spirit" burning in all of us. My children were the happiest when they came down to the fire station to play with my colleagues' children. Our passion moved us to save lives and this was also our way of life," said Ms Jenny Chew, as she remembered her fond memories in the fire station.

Mr Subandi Somo, who served as SCDF Head of Medical for almost 15 years prior to 1996, had laid the groundwork for the introduction of the Paramedic scheme in Singapore. He had recognized that there was a pressing need to train and develop SCDF's own pool of pre-hospital clinicians in response to the fast-changing healthcare landscape.

"One of the major challenges I faced in the early days of trying to develop a paramedic system was for our local population to be comfortable being attended to by male healthcare providers because for many years, we were used to being treated by female nurses and ambulance officers." shared Mr Subandi.

One of the first initiatives Mr. Subandi implemented to socialise the idea of male healthcare providers was the introduction of the Fast Response Medic in 1992 to support our ambulances and shorten the response times of responding to medical emergencies. The medic was often able to arrive prior to the arrival of the ambulance as he weaved through heavy traffic on his motorcycle. Hence, the public gradually began to be more accepting of our male officers rendering medical treatment.

On 16th July 1996, SCDF collaborated with the School of Military Medicine of the Singapore Armed Forces (SAF) and the Paramedic Academy of the Justice Institute of British Columbia (JIBC) in Canada to introduce a Paramedic scheme into Singapore. The scheme was officially launched by Mr Matthias Yao (Senior Parliamentary Secretary for Defence and National Development) and Associate Professor Ho Peng Kee (Senior Parliamentary Secretary for Law and Home Affairs).

Colonel (Dr) Tan Eng Hoe was also appointed as the SCDF's first Chief Medical Officer. As a past senior medical officer in the SAF, Dr Tan was heavily involved in the crafting of medical plans and policies for SAF personnel to ensure training relevancy.

"Being appointed as a Chief Medical Officer in SCDF, I realised that I must develop policies and plan for life-threatening incidents daily. My attention was solely devoted to the public and the community. To me, that was a big responsibility to shoulder," recalled Dr Tan.

## The Start of the Journey

There was a need to build a broader spectrum of prehospital care. The first step to achieving this vision was to improve the training curriculum. Hence, SCDF embarked on its mission to have paramedics in Singapore. SCDF personnel would be attached to the Paramedic Academy of Justice Institute of British Columbia (JIBC) and JIBC advisors would assist with standardising curriculum and training so that it would be recognised both locally and internationally.

"One of the challenges that we faced was if our paramedics were on par with the paramedics overseas. For example, paramedics overseas were able to give life-saving drugs and more medical skills and procedures," explained Dr Tan.

The adopted paramedic training program comprised three levels of training, which would take three years to complete. It consisted of basic first aid, medical knowledge, usage of AEDs and recognition of electrocardiogram (ECG) rhythms. The trainees were taught extensive lessons on anatomy, physiology and disease systems. They were also introduced protocols and emergency prehospital drugs for its administration on patients. Paramedic trainees would be deployed to fire stations for on-the-job skills training, having an ambulance officer as their preceptors, or a better term fondly used by paramedic trainees – mentors. Once they had completed all these training components, they would graduate as a paramedic.

The second step was self-sustenance – having Singaporeans paramedics. Recruitment posed a challenge. The concept of a paramedic was foreign to the community and there was no knowledge of what the career progression would be and what was to be expected of them when they signed up with SCDF.

"We faced a crunch in manpower. I distinctly remember that we employed Filipinos, Malaysians and if I recall correctly, we had a Vietnamese who was a doctor by qualification, joined us as a paramedic." recalled Dr Tan vividly.

SCDF needed to inform the members of the public that paramedics would be attending to emergency cases instead of hospital nurses. Progressively, there was a need to gain the public's trust that paramedics were better equipped and would provide more optimal prehospital care.

The last essential step to fulfilling the vision was to equip our ambulances with advanced medical equipment and better life saving drugs. Implementing medical protocols was also a necessary aspect of the progression. To better serve the community, new equipment

such as the Kendrick Extrication Device (KED), fracture immobilizers, and improved FERNO stretchers were introduced. New AEDs such as the Philips Heartstart and the Lifepak 12 series were also used for enhanced patient monitoring and ECG recognition. There was also a project piloted to incorporate technology during the late 1990s, such as the HEAL (Hospital and Emergency Ambulance) program, which was used to transfer data electronically in prehospital settings. For example, ECG transmission to hospitals for better care of patients who suffered from acute myocardial infarctions prior to arrival of SCDF ambulances at the emergency department.

The Medical Advisory Council (MAC), formed by emergency physicians, surgeons, and senior doctors, was established to govern and endorse protocols and medical procedures performed by SCDF paramedics to ensure that the highest quality and standards are delivered by the SCDF's Emergency Medical Services (EMS).

We also witnessed the roll out of multi-generational ambulances. From the early days where yellow Volkswagen Transporter ambulances were used, SCDF brought in larger Class 4 Mercedes Benz ambulances in 1996, which was still fondly remembered as the "Box Ambulance" by most of the ambulance personnel as it allowed more room for movement and more storage of medical equipment.

In 2000, the SCDF's EMS was fully established and operated by SCDF paramedics.

**Our First Challenge**

In March 2003, the Severe Acute Respiratory Syndrome (SARS) hit Singapore, devastatingly infecting 238 people and killing 33 people in Singapore altogether.

Working with the Ministry of Health (MOH), SCDF revised its approach to the outbreak. As diagnosing and confirming an individual of SARS required at least one week, EMS personnel were taught to be on high level of alert and to be always vigilant for every patient. Universal precautions had to be initiated for every patient attended to and it was mandatory to use complete Personal Protective Equipment (PPE) such as impervious gowns, N95 masks, eye goggles, headcovers and disposable gloves for every ambulance crew member.

SCDF also introduced special disposable bacterial and viral filter, which were fitted onto the bag-valve-mask for patients suspected of having SARS. Spacers for Metered-Dose Inhalers (MDIs) were also implemented to prevent asthmatics from inhaling any organism. EMS personnel were then only required to wear SCDF polo T-shirts instead of the uniforms to prevent heat and physical exhaustion from wearing PPEs.

MOH selected Tan Tock Seng Hospital (TTSH) as the designated hospital for all patients suspected of SARS. SCDF EMS ambulances conveying other patients would then be diverted to the remaining five hospitals. When transporting any patient, the air conditioner was to remain off and all windows kept open to improve ventilation within the ambulance. Upon handing over, the team would have to

disinfect the whole ambulance with antiseptic solution.

The Disease Outbreak Response System Condition (DORSCON) framework was then drafted and established in 2009 to guide the national responses of outbreaks based on four levels of severity (Green, Yellow, Orange, Red).

Besides attending to cases in the pandemic situations, paramedics can also be deployed to humanitarian relief missions or better known within SCDF as Operation (Ops) Lionheart. The Ops Lionheart contingent consisted of rescuers from the Disaster Assistance and Rescue Team (DART) along with frontline and Operationally Ready National Servicemen (ORNS). Paramedics are also deployed with the DART team to rescue and manage casualties during operations. They manage field hospitals in the disaster area for the people affected, take care of both the distressed and the contingent and are also entrusted to assist the medical officer in attending to the K9 unit's dogs. Deployments to disaster-hit countries like Asian Tsunami Disaster in Aceh and Christchurch, New Zealand earthquake often will yield once in a lifetime experiences that can be recollected proudly in years to come.

As the paramedic community grew, the expectations from the community towards the EMS grew as well. Cardiac arrests could happen without notice and conditions of a badly injured patient involved in a road traffic accident could deteriorate in a matter of seconds. Hence, there was a need to attain a faster response time. Paramedics who had specific qualified motorcycle licenses were selected to be Fast Response Paramedics (FRP). Instead of working in pairs like the FRMs from the early days, FRPs worked individually and carried along similar equipment to the ones in the ambulances. They were equipped with an AED and lifesaving drugs.

Paramedics are now at the forefront of prehospital care delivery and are crucial players in the healthcare industry. However, back then there was a need for a professional track for paramedic education. In 2008, the Institute of Technical Education (ITE) started a full-time higher Nitec 18 months Course in Paramedicine and Emergency Care. The ITE trainees are taught essential lifesaving skills such as patient assessment and management of various conditions in pre-hospital settings, such as heart attacks, breathing difficulties, cardiac arrest, and emergency childbirth. Once the ITE Trainees graduate from their course, those who are required to serve their National Service can be appointed as NSF - Paramedics which will be beneficial for patient's care. Once they have completed their 2 years of NS, they will return as Operationally Ready National Servicemen (ORNS) Paramedics and will be able to contribute further during their ORNS tenure.

Sergeant(1) Muhammad Imran Bin Ramle, NSF – Paramedic from Tuas Fire Station, who is currently serving his ORNS tenure, recalled the experiences he gained during his national service.

"Being an NSF – Paramedic enabled me to take up more responsibilities in the fire station such as conducting training for EMTs. With the constant guidance of my paramedics, I was able to practice my skills and build up my confidence to approach different types of patients," recalled SGT(1) Imran.

Sergeant(1) Imran was thankful of the training opportunities given by SCDF which enhanced his capabilities as a paramedic, "I underwent various leadership courses such as Outward Bound School Singapore, where I learnt the values of teamwork. To prepare us for real incidents, we were given the opportunity to go through confined space rescue and height rescue at Home Team Tactical Centre (HTTC) as part of our training."

In the meantime, SCDF saw a constant increase in "995" calls amid the aging population. There was then a need to improve and grow the fleet of ambulances and increase the number of paramedics. Since 2009, SCDF also contracted three additional private ambulance operators (PAO) – UniStrong Technology Pte Ltd, Lentor Ambulance Services and Hope Ambulance to supplement the current fleet of ambulances. Paramedics who graduated from ITE were also recruited. One of the commitments required of the PAO was that in terms of medical protocols, equipment and level of care, there should be no difference in their delivery. Thus, they will hone their prehospital medical skills to be on par with the level of SCDF paramedics.

## The Passion for Improving

After a decade, Colonel (Dr) Tan Eng Hoe retired as a SCDF CMO in 2011. The vacant spot in office was filled by Lieutenant Colonel (Dr) Chiam Tut Fu on 2nd Feb 2009, and then by COL (Dr) Poon Beng Hoong on 3rd May 2011. Dr Poon, who was previously a senior medical officer in SAF, felt that the cohort of paramedics were filled with passion.

"During interviews for potential paramedics, interviewees who wanted to join the force had a definite impression of what a paramedic was like. I was impressed with the level of energy that the paramedics portrayed, especially when doing things beyond their daily work," explained Dr Poon.

On 28th September 2011 Dr Poon witnessed the high quality of the casualty management when the EMS paramedics and the other ambulance crew worked closely together after a fire broke out at the Shell Oil Refinery on Pulau Bukom. "There were no severe casualties despite it being a big fire," Dr Poon cited.

Dr Poon continued, "The standards of paramedics have grown exponentially. They are now groomed with leadership qualities to pursue higher command responsibilities. A lot of work was required to make paramedicine a professional vocation – academia, ground training, leadership and command, research, and system development within SCDF."

In 2012, paramedics attending to Out-of-Hospital Cardiac Arrests (OHCA) started having more difficulty ensuring adequate and uninterrupted compressions. Furthermore, with the rising number of high-rise buildings in Singapore, it became more arduous for patients to be carried down the stairs. With increased fatigue, the quality of compressions could become inconsistent. To improve compression quality, SCDF EMS introduced the concept of mechanical cardiopulmonary resuscitation (CPR) using LUCAS 2 [1] for a better outcome.

A new scheme was introduced to have firefighting specialists cross-trained as Emergency Medical Technicians (EMT). Besides firefighting and rescue skills, they are also trained to administer CPR and first aid during emergencies. Fire bikers are also issued AEDs to assist EMS in the response for cardiac arrest cases only.

Class 3 ambulances were also introduced to replace the "Box Ambulances." The ambulances were re-designed to meet the international specification standards of ambulances. With smaller Class 3 ambulances, it can manoeuvre minor roads in a safer manner.

After a year in service as CMO, Dr Poon bid adieu to SCDF in May 2012 which paved the way for Colonel(Dr) Ng Yih Yng as the new SCDF CMO.

## The Expansion of EMS and the EMS Masterplan

It did not take long for Dr Ng to look for an impetus for change. For the past 10 years, the bystander CPR rate for cardiac arrest was stagnating at about 20%. As the response time for OHCA begins when the call taker receives the distress call, a new framework was introduced which included the development of a question template to improve the quality of calls. In this framework, 995 call takers would ask callers a series of questions to determine the severity of the patient's condition. This implementation was essential towards ensuring early access in the chain of survival for cardiac arrest patients. This improved the bystander CPR rate from 20% to 35% in the next two years, and 35% to 50% in the third year, with its value improving constantly.

"I began the implementation as a part of my routine before I started work. From around 7.30 am till 8.00 am, I would head down to the Operations Centre to meet all the four different rotas. I would sit down with the call takers and listen to the recordings of their calls and point out areas where they could be better," explained Dr Ng.

To improve the quality and standards of emergency medical advice to callers, nurses from MOH were seconded to SCDF Operations Centre. Dispatcher-Assisted Cardiopulmonary Resuscitation (DA-CPR) was also introduced to guide callers to perform CPR on cardiac arrest patients.

In 2013, SCDF embarked on Vision 2025: A Nation of Lifesavers. The first phase of this vision was to change how SCDF delivered emergency services to the community. The most effective way of lifesaving is for the person next to the victim to render immediate first aid such as CPR and there was a need to build a community of first responders. This brought about a tiered response framework where members of the public who were trained to administer first aid or CPR would be integrated into the SCDF's emergency response.

The Unit for Pre-Hospital Care (UPEC) was also established by Professor Marcus Ong Eng Hock on 1st February 2013. UPEC's mission is to assist in establishing best practices for

1 Lund University Cardiopulmonary Assist System (LUCAS) device provide mechanical chest compressions to patient in cardiac arrest.

SCDF EMS, providing clinical and operational oversight, collection of data, crafting laws and community engagement.

"Paramedics are a key pillar in our prehospital emergency care system in Singapore. I had the privilege to be involved in the birth and early stages of the paramedic profession as a young medical officer serving my national service at then School of Military Medicine 25 years ago," said Professor Marcus Ong.

He added," It has been great joy and satisfaction to see several generations of paramedics develop and blossom into the competent professionals they are today. UPEC and our Emergency Medicine community remain committed to partner our paramedic colleagues, to advance paramedicine, for the benefit of our patients, community and nation."

In 2015, the Save-a-Life initiative was implemented with the aim of increasing the number of publicly accessible AEDs. Subsequently, the myResponder application was also launched to allow users to locate the nearest AED and enable the public who are equipped with CPR or AED skills to respond to the incident. To ensure that CPR skills were being taught to the community, the DARE (Dispatcher-Assisted First Responder), funded by MOH and UPEC, was also initiated to strengthen responses to a cardiac arrest.

Dr Ng recalled that one of the key changes that was vital to how SCDF responded to medical emergencies, was cross-training the Fire and Rescue Specialists (FRS) as EMTs.

"When I first came, the firebiker response was very basic. They were just given an AED and were using a pocket mask for mouth-to-mouth resuscitation. We needed to relook at it holistically, whereby, why can't the fire biker be an EMT?" questioned Dr Ng.

Improving the competencies of our personnel was crucial in promoting the growth of EMS. To support the development of EMS, the SCDF had to phase out the Senior Ambulance Medical Orderly (SAMO) scheme. SAMOs were mainly helmed by senior firefighters and their skill sets were limited as they focused mainly on driving the ambulances. They had to be converted into fully trained EMTs in order to better support the paramedics and raise the level of care for patients. Under the ongoing plan of training Fire and Rescue Specialists as EMTs, it was essential to ensure all fire bikers were EMT trained. Fire bikers who used to be first aid and BCLS trained can now respond to cardiac arrests and other critical cases. Fire appliances have also been EMT-enabled to respond to medical emergencies.

A FRS from Paya Lebar Fire Station, Sergeant(3) Muhammad Shah Indra Bin Mokhtar recalled the day when he was selected for the EMT course.

"I remember being sceptical initially as I did not know what the expectations was as I had limited medical knowledge or background. However, after going through the course with my FRS cohort, it expanded my horizons, where I was able to understand better what our EMS counterparts faced daily. Being equipped with the additional medical knowledge, I would be able to assist and attend to someone in need," explained Sergeant(3) Shah Indra.

The expansion of EMS also worked its way into the leadership of the EMS. Previously, a CMO will hold a second appointment as Director of the EMS Department. However, in 2014, Assistant Commissioner Yazid Abdullah was appointed as the Director for the EMS department while Colonel (Dr) Ng Yih Yng continued as CMO. With these appointments, the Director of the EMS department would focus on strategic planning while the CMO would focus on clinical issues and medical training.

"I had a conversation with SCDF Commissioner Eric Yap and took his guidance for the future of EMS. One of the key emphases for the expansion of EMS was to look into the strategic plans for EMS. We looked at our tiered response framework and the projected increase in ambulance calls. Thereafter, we saw the need to increase the current fleet of ambulances and subsequently worked with the MOH on the demands of our communities for the various age groups. This led to the first five years of the EMS masterplan from 2014 to 2018," recalled AC Yazid.

On 1st April 2019, the tiered response framework was officially launched. Firstly, ambulance calls would be differentiated via the severity of the patient's medical condition through telephone medical triaging and the speed of response by SCDF resources would depend on the severity of each call.

Secondly, the National Paramedic Training and Education Roadmap was launched by SAF and SCDF. A memorandum of understanding was also signed between 6 institutions, SAF, SCDF, ITE, JIBC, UniSIM[2], and Nanyang Polytechnic.

Lastly, another critical aspect of the master plan was staffing EMS paramedics to all fire stations, including the four different SCDF Division Headquarters (HQ) and SCDF HQ. This was essential to promote the growth structure of EMS beyond responding for calls. Supervisory positions for paramedics were allocated for various branches such as operational readiness, EMS training, and auditing.

Based on the annual population growth for the last 10 years, more SCDF ambulances were needed, and more manpower was needed to cater to the increased fleet of ambulances. To ensure sufficient manpower in the SCDF, SCDF worked alongside local institutions through career fairs and talks to increase the recruitment of paramedics. This is paramount given the increasing aging population in Singapore.

Amidst the execution of the EMS master plan, Colonel (Dr) Shalini Arulanandam, a medical officer with the Singapore Navy, took over the office of CMO in 2018.

"Everybody was super friendly. I felt very welcome. If you were to cut me, I would bleed blue," laughed Dr Shalini.

## EMS Progression Continues

"When we look at paramedicine overseas, countries like the United States and the United Kingdom have moved to require a basic degree to be a paramedic and there is also a local diploma for Nursing. We needed to be recognised as an allied health professional," rousted Dr Shalini.

2 Now known as Singapore University of Social Sciences (SUSS).

As part of the effort to allow paramedics to be recognised as allied health professionals, the full time Diploma in Paramedicine was introduced at Nanyang Polytechnic in 2019. With this course, paramedics could begin their career with better clinical knowledge and understanding. This enabled paramedics to advance further in their education.

SCDF also adopted an educational framework known as Continuing Education and Training (CET) for EMS. This required paramedics to obtain a minimum number of training points to qualify for recertification.

Another step towards career progression was developing a Paramedic Senior Officer track. Traditionally, every SCDF paramedic starts as a Paramedic Junior Officer and will progressively rise in ranks through the years. Now, eligible paramedics holding a relevant degree can be selected to undergo the Rota Commanders Course to become a senior paramedic officer. This will open more leadership pathways within EMS.

The next phase of the tiered response framework was the start of High-Performance CPR. From April 1, 2019, cardiac arrest cases included an additional deployment of a fire biker and an EMT-enabled appliance (a fire engine, a Red Rhino or a Fire Medical Vehicle.) The High-Performance CPR model allocates specific roles for everyone responding to the incident, enabling uninterrupted compressions during CPR and improving survival outcomes.

Class 3 Ambulances also underwent a significant upgrade. In 2018, the Mercedes Benz Sprinter 216 CDI A was introduced and had advanced safety features such as a collision warning system, lane-keeping assistance and a Rumbler[3] siren. It also featured advanced ergonomics for EMS crew to reach easily into compartments and cabinets containing medical equipment. In 2021, SCDF collaborated with the Home Team Science and Technology Agency to roll out the latest generation of ambulances which are now equipped with new capabilities such as a decontamination mist-spray system and an intelligent, solar-powered charging system. Importantly, the newest upgrade is the electronic pulley-controlled loading and unloading system for stretchers which enhances the safety to prevent an accidental drop.

To improve PAO capabilities, on 1st December 2020, SCDF transitioned to the new Government-Owned-Contractor-Operated (GOCO) model. This transition enables PAO EMS personnel to respond to more cases such as Mass Casualty Incidents (MCI), and threats such as Chemical, Biological, Radiological and Explosive (CBRE) incidents. To improve the quality of services rendered, they will operate with SCDF ambulances and don SCDF uniforms.

Since 15th April 2022, all SCDF paramedics were equipped with Body-Worn Cameras (BWC) to foster greater accountability and transparency in the interactions between EMS and patients. Data storage can subsequently be used for training purposes. The data storage is encrypted so only authorised personnel can access it for investigations or audit checks.



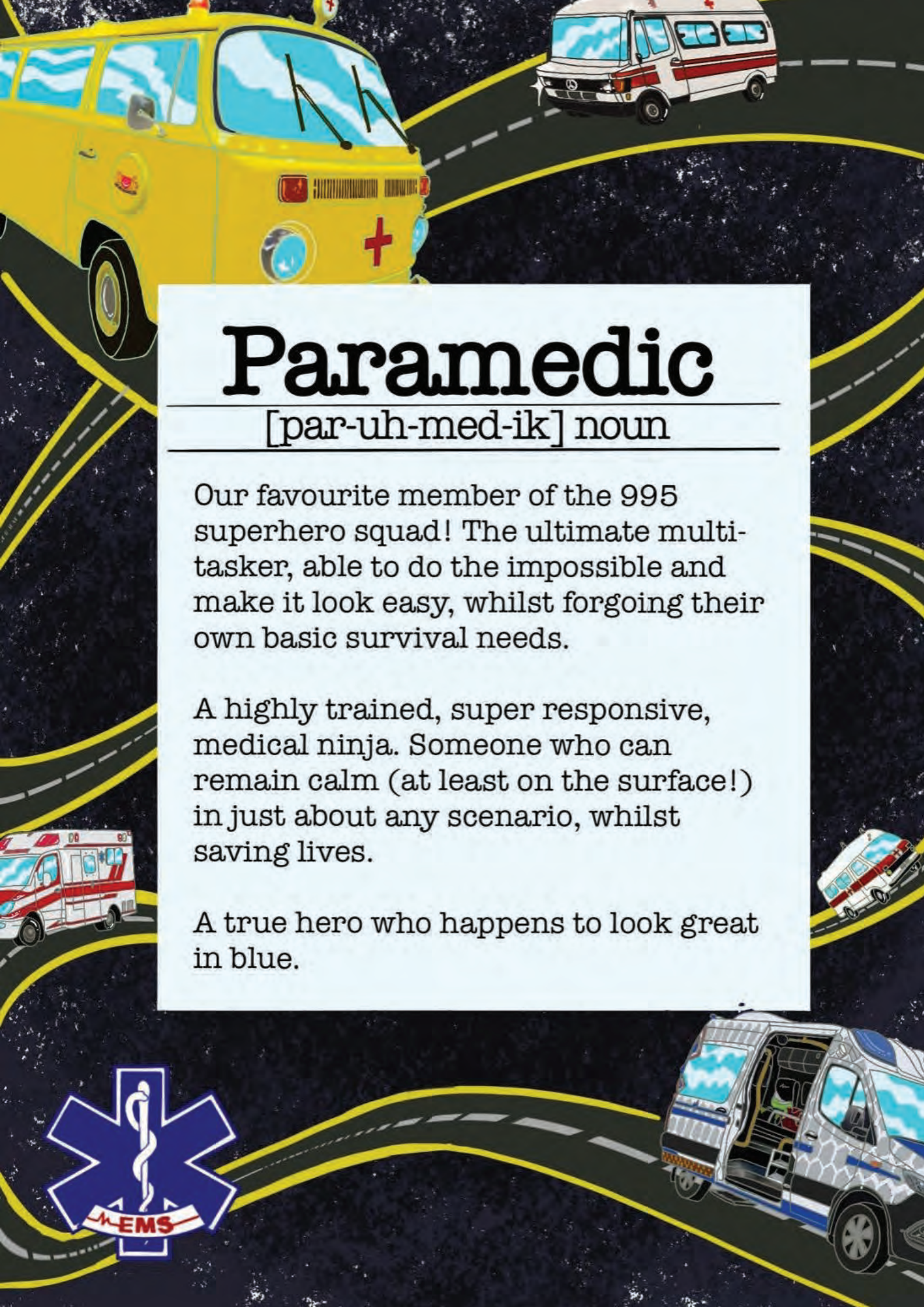
3 A Rumbler siren emits a pulsating, low frequency tone and sounds, designed to be heard by motorists. The sound penetrates hard surfaces like glass and doors more effectively than high-frequency tones, assisting to generate attention in a high-noise environment, for example, heavy road traffic conditions.

## Looking Towards the Future

SCDF's EMS has come a long way since the early days of prehospital care. Having encountered significant events such as the Hotel New World collapse and the outbreak of SARS, the EMS have persevered over the years. The strength of the health care system is no longer solely reliant on the number of hospitals and healthcare workers, but also on the strength of the EMS as well. Thus, the EMS would need to improve progressively to adapt to the ever-evolving landscape and population growth in Singapore.

As we commemorate 25 years of EMS in Singapore, we pay tribute to the achievements of the EMS over the years in the hope of inspiring our future EMS personnel. The stories are testaments of our EMS being ever ready to respond to the needs of our population any time they are needed, rain or shine.

"*A111, we are responding to……*"




# Paramedic

[par-uh-med-ik] noun

Our favourite member of the 995 superhero squad! The ultimate multi-tasker, able to do the impossible and make it look easy, whilst forgoing their own basic survival needs.

A highly trained, super responsive, medical ninja. Someone who can remain calm (at least on the surface!) in just about any scenario, whilst saving lives.

A true hero who happens to look great in blue.

*Source: The Straits Times*

# TRAGIC CAR CRASH

*By SGT(1) Muhammad Hidir Bin Sunario, Paramedic*

*Sergeant(1) Muhammad Hidir has been serving on the frontline as a paramedic since 2015 and has held various secondary appointments in Central Fire Station and Marina Bay Fire Station. However, this incident had affected him in many ways. It reaffirmed his conviction to become a paramedic – to provide care and comfort to those in need.*

**13 February 2021**

As I sipped my coffee and settled in to finish my work at Marina Bay Fire Station, the fire coding sounded, calling for fire appliances to respond to an incident along Tanjong Pagar Road, involving a motor vehicle fire. Looking out of the office window from my desk, I saw the fire crew donning their personal protective equipment and mounting their fire appliances to attend to the call.

"Looks like it's only a fire call!" CPL Ernest Chua Jie Yu, a Full-time National Serviceman (NSF) Emergency Medical Technician (EMT) from my crew, said with a sigh of relief.

"Yeah! Hopefully, it's another fire call with no casualty." I replied.

In a twist of fate, the ambulance coding then went off, activating our crew to the same location for a case of medical emergency.

"Aww! 30 minutes before the end of the shift! I have a Chinese New Year reunion lunch to attend!" Ernest exclaimed with slight exasperation.

"Oh well, duty calls! It could just be a minor case of fire or heat exhaustion. We will probably be back in good time!" I patted him on his back as I spoke.

When we arrived at the scene, we saw a private ambulance (PA) crew attending to a lady who was seated on the pavement opposite the shophouse where a wrecked vehicle was on fire. Firefighters who responded to the call were busy extinguishing the fire from the corner of the shophouse. After assessing the situation, I reckoned it was unsafe to approach the fire scene yet and we decided to help the PA crew to attend to their casualty instead. Despite the burns on the lady's face and body, she was frantically checking in on her friends, who were apparently trapped in the burning vehicle. The image of her burnt, panic-stricken face remains etched in my memory till today.

While we cooled the burns on her arms, I looked up at the paramedic from the PA quizzically and asked, "Isn't she the driver of the car?" The paramedic shook his head and explained that there were five people in the car and the lady got injured when she tried to open the car door for her friends to escape.

*"Are my friends still alive?"* the lady muttered. She appeared shocked. Her eyes were wide and misty as she stared at the flames.

Both the PA paramedic and I struggled to find the right words for her. To prevent further upsetting or traumatizing her, we quickly loaded her into the ambulance. She was in a critical condition as she had sustained substantial second and third degree burns. We knew that being emotionally upset would only aggravate the situation.

As I closed the back doors of the ambulance, a police officer ran towards us and informed us of a gentleman who complained of breathlessness. He was seated at the other side of the building, opposite the incident site.

"Ernest, grab the trauma and oxygen bags and follow the officer. I will radio in to request for an additional ambulance." I instructed.

The police had cordoned off the area and evacuated residents from the nearby shophouses. The vehicle fire had been extinguished. The firefighters then waved for me to quickly head over to check on the casualties in the burnt vehicle. Despite prior knowledge that there were five people trapped in the vehicle, it was still shocking to witness the severity of this accident. All five had lost their lives in the fire.

The SCDF Operations Centre informed me that an additional ambulance had been dispatched. I thanked them in response and had just taken a couple of deep breaths and mentally prepared myself to examine the casualties when Ernest came running from the opposite building.

"Ernest, what is the status of the patient?" I asked as I turned him to face me, to shield him from the burnt vehicle.

"Encik[1], I have assessed him. His vitals are stable, but he is distraught and crying. He is a friend of the people in the car. The family and their friends are seeking comfort in each other." Ernest reported.

As Ernest updated me on the situation, the other ambulance arrived.

"Ernest, stay with the casualty and let me know if there are any changes!" I told Ernest as I approached the arriving ambulance crew.

"Syed! I am so relieved to see you!" I told SGT Syed Muhammad Bin Syed Hamid, a paramedic from Central Fire Station who had just arrived.

We could barely make out how many people were in the car due to the severity of the fire and burn injuries.

The atmosphere during this incident was drastically different. Compared to the norm where there would be a lot of raised voices among the responders, it was solemn as the firefighters continued to douse the vehicle.

I had difficulties documenting their injuries.

As all the five persons in the case were pronounced dead at the scene, both Syed's and my crew were instructed to return. As we walked back to our ambulances, I met up with Ernest. He informed me that the male patient did not wish to go to hospital and that the case was taken over by the Police.

When we were back in the office, Ernest recounted, "The family members and friends kept asking me questions to which I had no answers. I could only direct them to the police officers."

"You did the right thing," I said, showing him the thumbs-up.

Ernest then continued, "This incident helped me to realise that there are a lot of responsibilities that come with being a NSF EMT in the SCDF – the public expects me to perform like a career officer with the same experience and mindset."

I concurred, "As long as we are in this uniform, we are part of the organisation. So understandably, they would approach us for answers."

Concerned about his mental wellbeing, I started to probe and asked him, "How are you feeling about this case?"

Ernest began, "Well, I felt the loss for the parents of the casualties – they have to deal with the void that their loved ones are no longer around. Losing your loved ones on Lunar New Year's Eve makes it worse. I cannot imagine how my parents would react if something like this was to happen to me. This case drives home a message that empathy is part of our role and reminds us that every patient has a family."

I smiled, "That was an insightful

1 This is a common term used to refer to male junior commissioned officers holding a rank of Warrant Officers, as a sign of respect for their seniority, experience, and knowledge.

observation! As our workload increases and our jobs get more stressful, it becomes easy for us to lose our empathy. I agree with you that this case serves as a good reminder to us all that it is important not to lose our way!"

On my way back home, I bumped into Syed and we went for breakfast at the nearby coffee shop.

"How are you feeling?" he queried with concern.

"I heard you telling Ernest that you needed to sit down."

"Well, at that moment, I had a tremendous sense of hopelessness and pain. I needed to sit down and have some personal time and space to work through my emotions. Even now, I can still see flashbacks in my head."

Syed also commented, "It is important to talk about it as it gives us an opportunity to express our emotions and feelings after experiencing such incidents. In this instance, seeking peer support would be helpful as they will understand and better appreciate the emotions that we are going through. Family support is equally important too."

"I concur with you. We also need to take care of our crews' mental health too. I am glad that Ernest wasn't too affected by the scene." I replied.

"How about your team? Do they need counselling?" I queried.

"My Commander Fire Station had arranged for a team from the Emergency Behavioural Science Unit (EBSC) to come down to the station to speak to us. Do you need him to arrange for them to visit your station?"

Syed quickly reassured me that his team was coping well, but he would continue to monitor them for any signs of distress and would advise them to seek counselling if needed.

*"The procedure of pronouncing death is simple, but the memory of the dead will stay with you, especially for a case like this."*

*- SGT(1) Muhammad Hidir Bin Sunario*

*Source: SCDF*

# MEDICAL HEIGHT RESCUE INCIDENT

*By LTA Su Chang Wee Brenden, Course Officer, Civil Defence Academy Paramedic*

*Lieutenant Brenden has served as a Paramedic in SCDF for 15 years. Throughout his service, he had attended to many types of medical and trauma incidents and served in various capacities including as EMS Officer-in-Charge at Yishun Fire Station before his recent posting to National EMS Training Centre as Course Officer in 2022. The following incident is one that is etched in his mind to this very day.*

**9 November 2013**

I recalled it was a cloudy afternoon, not a busy day. We had two calls before lunch and were on standby for any upcoming incident. Suddenly, my ambulance crew was activated. The incident text read: *"A crane operator having difficulty breathing."*

The location was a construction site for a Build-To-Order (BTO) project in Yishun. On the way to the location, the different possibilities of what we might encounter raced through my mind.

Perhaps this was a mobile or tower crane, or perhaps the patient happened to be in an office at the construction site, I thought.

Little did I expect the incident would require a complex rescue operation. We were told by workers around the area that the crane operator was in the cabin of the tower crane, and that he was unwell and had difficulty breathing. He communicated to his colleagues through a radio set and informed his supervisor that he was unable to climb down. It dawned on me that the only way I could access the patient and treat him was to climb up the crane ladder.

After a quick appreciation of the scene, I established that the crane operator's cabin was about 18-storeys in height, as I compared it to the neighbouring block of flats. Not long after, my Commander Fire Station (CFS), along with the personnel from the respective fire stations arrived to render assistance.

***Source: SCDF***

While the ground commander was on radio communicating with the crane operator, I could hear that he was unable to speak in complete sentences. From a medical perspective, it is an indication of respiratory distress. I knew the person was in a serious condition and we had to attend to him soonest possible.

My CFS decided that I should go up to provide the necessary medical assistance along with two firefighters, who would assist me with my medical equipment. I slung the trauma backpack, while the two firefighters carried the defibrillator and the oxygen bag. We then started our climb up the crane ladder. This was a continuous vertical climb up to about the fifteenth storey. From there, we would have to take the stairs up to reach the cabin.

We started the long climb with a great sense of urgency, afraid that the patient might go into respiratory arrest. With the equipment on us, we tried our best to climb as fast as we could.

Even though it got tougher as I climbed higher, I willed myself to keep going. I needed to pace myself, get to the top safely and be ready to attend to the patient upon arrival. I looked up and saw my firefighter colleagues with the medical equipment still going strong. I told myself that I need to keep up as the equipment would be of no use, if it reached the patient without my presence. I need to be there as my expertise and skills would be required to provide oxygen, check vital signs, use the cardiac monitor and administer medications.

Reflecting back, I realised that I did not even have time to look down while climbing the ladder. I was thinking about what needed to be done for the crane operator. *"What if the patient is in cardiac arrest? How to handle that with two firefighters and myself in the confined cabin space? Is the oxygen going to be sufficient for me to work up there for a prolonged period? How can the patient be brought down safely?"* My focus was to get to the patient fast.


***Source: SCDF***

It took me about fifteen minutes to complete the ascent. Halfway through, I thought I heard someone mentioned that the patient had collapsed and that was when I quickened my pace. I travelled two steps at a time and rushed to get to the cabin. When I finally got to the top and stepped on the flat surface of the crane, I could feel the structure swaying in the wind. That was when it dawned on me that this was not a regular place to be doing medical calls as a paramedic. It was definitely a new challenge for me.

Once I reached the cabin, I saw the crane operator sitting on the operator's chair. The cabin was small, measuring about 1.5 meters by 1.5 meters and the operator was not able to move much. I was relieved that he was still responsive even though he looked weak.

As the crane cabin was a cube with glass panels on three sides, I approached the patient from the side door and treated him from that position. There was no other room to manoeuvre. The crane operator was happy to see us. Upon assessment, I suspected that he was having an asthma attack. He was diaphoretic, breathless, and using a lot of effort to breathe. I could see the excessive use of accessory muscles around his neck with each trying breath.

The initial minute of contact with the crane operator was memorable as I tried to communicate with him. I had just climbed up eighteen storeys and immediately attempted to talk with the breathless person. I tried to catch my own breath as I conversed with him. "Hi Sir…," I began as I took some breaths, "I'm here…," as I caught more breaths, "to help…," and yet more breaths "you." It was comical to reflect on this scene. I believed the crane operator felt the same as well. I assured him that we would be giving him the treatment he needed and would bring him down to safety.

As the patient had earlier mentioned his history of asthma and had felt unwell earlier in the day before coming to work, I heard him wheezing – a kind of sound usually made in

asthma attacks, when the lower airways in the chest are narrowed. After checking that his vital signs were normal except for his heart rate, I administered Ventolin to him through a mask with a nebuliser[1].

Now that the initial treatment was completed, the next challenge was to get him down. I assured the patient that there would be rescuers to bring him to safety. I told him to remain calm and to focus on his breathing so that the medication could take effect.

Soon, the Disaster Assistance and Rescue Team (DART) arrived. DART personnel are experts in this field and a complex rescue from such a great height is their forte. My CFS joined us on the crane platform to coordinate the rescue operation. The DART personnel and my CFS discussed several options on how to bring the casualty down. My faith in them came from my experience of working with them when I was involved in the 2011 "Operation Lionheart" humanitarian mission for the Christchurch earthquake, where I witnessed DART conducting complex rescue operations. I was certain that they would be able to do the same in this case as well.

Eventually, the decision was to place the patient on a stretcher, bring him over to the end of the crane's arm where he would be lowered in tandem with a DART personnel to the ground. The rescue stretcher is specially designed for such height operations as it enables the casualty to be enveloped and secured while being lowered. A rescuer can also be secured to the stretcher along with critical equipment needed to sustain a person's vital functions.

We worked together to transfer and secure the patient along with a portable oxygen tank onto the stretcher. As the crane operator was breathing much better, the nebuliser was changed to a normal oxygen face mask. I provided more assurance to the crane operator and assisted DART till they were ready to commence the lowering operation. The crane arm was not very wide and had a metal grill flooring where you could see all the way through to the ground. The chill it gave me when I looked down eighteen storeys sent shivers down my spine. A shot of reality hit me as I realised just how high we were and how dangerous this whole operation was.

As the operation entered its rescue phase, DART handled most of the work. The crane operator was medically stable then. When the time came to hoist him down, I remembered seeing the patient panic a little when the stretcher left the arm of the crane. We reassured and told him not to worry as there would be somebody with him throughout the rescue. This descent would be slow to keep everything under control. Since the patient was medically stable, there was no hurry to get him down quickly to avoid risking possible complications or danger.

I started to make my own way down as the patient was being lowered. Once the casualty was on the ground, I reassessed his condition. Besides looking shocked, he was doing quite well and was comfortable with the supplementary oxygen provided. I transferred him into the ambulance and conveyed him to the hospital.



1 The nebuliser converts the Ventolin solution into mist and allows it to be delivered into the patient's lower airways as he breathes in.

From this challenging incident, I realised the importance of maintaining good physical fitness and having highly competent medical skills. Both qualities allowed me to reach the casualty in this unique circumstance and provide him with timely life-saving treatment. Putting oneself in a risky environment to save lives, is part of the paramedic profession. I was thankful to have had a little bit of courage and training experience on Urban Search and Rescue (USAR), which helped me manage this incident. The myriad of realistic training scenarios we underwent at the Civil Defence Academy, Fire Stations and the Division and Force Level Exercises have equipped us with a strong sense of leadership and clinical competencies which can be applied when called upon to save lives.


***Source: Stomp***

# AN ACCIDENTAL TRAGEDY

*By SGT(3) Nur Hafizah Bte Abdul Aziz, Paramedic*

*Sergeant(3) Nur Hafizah is a paramedic with Central Fire Station. She has served the frontline since 2015. She is currently a Rota in-charge (IC) assisting the station OIC to oversee the operations and administrative matters for her rota. Being a seasoned paramedic and attached to one of the busiest fire stations, she has seen and managed her fair share of incidents involving multiple casualties. However, this incident stood out for her as she was tested on her decision-making, resource and scene management skills.*

**29 December 2019**

Just when I was about to sit down to log my medical cases into the system, the phone in the Cairnhill Fire Post rang, informing us of a dispatch to a nearby shopping mall for a motor vehicle accident. "There are two casualties at the scene," the dispatch officer said.

Once on board the ambulance, I glanced at the Advanced C3 Emergency System (ACES) terminal and read that that there were multiple calls from the public requesting help for the accident. My colleague who was from another ambulance crew was also dispatched to the same incident. While en route to the incident site, I mentally prepared myself to manage two

critically injured persons. As the ambulance went down Scotts Road, I looked towards the back of the cabin and raised my voice, in an attempt to be heard over the siren, "Remember to bring the cervical collar, scoop stretcher and head immobilizer when we arrive. There may be two casualties.", I reminded my Emergency Medical Technician (EMT).

As we turned into the road that led to the mall, I saw an elderly man running towards us from my side mirror. After we stopped, he started to bang on the side door of the ambulance, and point in the direction of a road. "Hey, do not go further! This is a one-way street. Come quickly, people are dying!" he exclaimed. My crew and I quickly disembarked, grabbed our equipment and ran with the man to the incident site.

Nothing could have prepared me for the sight – at least 50 people or more were crowding around the area. They were there to celebrate the arrival of New Year's Eve. Yet instead of a festive atmosphere, anger and frustration filled the air. When we tried to manoeuvre past them, we heard the crowd screaming that we were not needed and to go back.

As we approached the incident site, there was a vehicle with three people lying on the floor. The personnel from the Police Emergency Response Team (ERT) were also nearby. I did an appreciation of the situation and realised that there was another patient, behind the back of the car. As there were more than two patients, I requested for two additional ambulances.

I mentally blocked off the background noise and got straight to work. Two critically injured patients were in traumatic arrest and needed immediate life-saving interventions, while another two casualties were moderately injured, but also needed critical help. I instructed my EMT driver, "Faiz, start with Cardiopulmonary Resusitation (CPR) on the patient to your right!". Immediately after, I instructed my Full-time National Serviceman (NSF) EMT to start CPR on the other lady, while I prepared the defibrillator pads. "Do not stop CPR till I say so!"

My mind was racing. I only had a set of equipment to be shared among two patients. "How do I manage this?" The only way was to continue CPR until backup arrived. Thanks to all the training received, I was calm. As I was contemplating my next step, my colleague arrived. I apprised him of the situation and his crew quickly took over the CPR on one of the casualties. While my EMT driver and EMT managed the casualty in traumatic arrest, I moved on to manage the moderately injured casualties, applying bandages to stop the haemorrhaging. After I stabilised the casualties and loaded the patient who was in traumatic arrest onto the ambulance, I sent my NSF EMT with the patient to the hospital while I stayed at the incident site to await the additional ambulance.

Once the additional ambulance arrived, I met up with the other team and their leader, SGT(3) Syed Muhammad Bin Syed Hamid. They conveyed the other casualties in traumatic arrest to the hospital.

I saw a large crowd hovering around the bent railing. "I did not realise the scale of the incident until a few days later, when Syed shared some recordings of the scene that had gone viral." I shivered at the thought. I did not

realise that there were so many members of public watching till I saw the video on social media. Fortunately, the Police ERT managed to control the crowd.

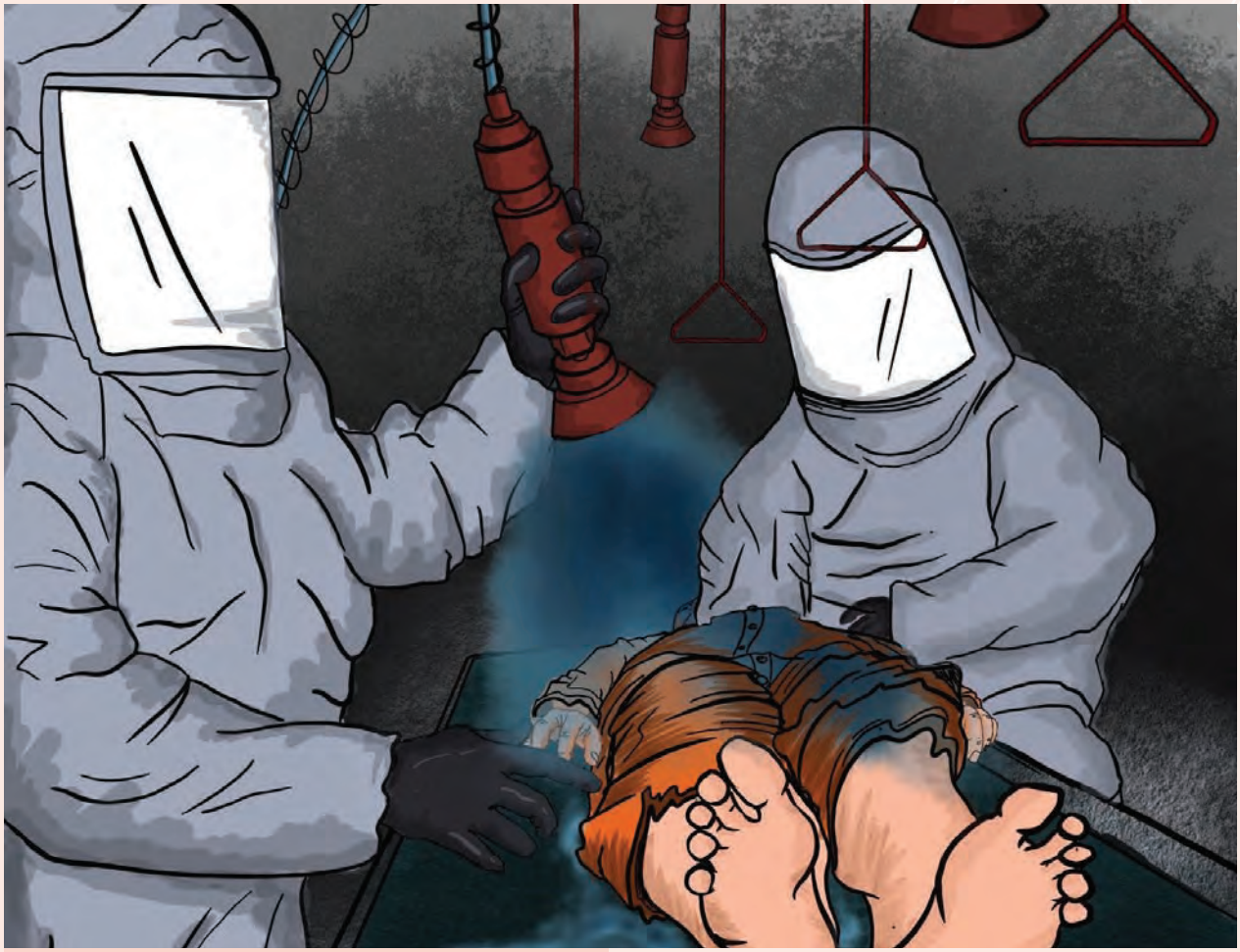
Back in the station, Syed and I sat down and reflected on the incident. "From my experience, this incident was serious since multiple people were calling to report the incident. Despite being mentally prepared to deal with an incident that required spinal management, the scene was complex as it had multiple casualties."

"Did you know I was reassured when I heard that you responded to the incident? I knew that I could rely on your experience to manage and control the situation if it were to get out of hand!" Syed replied with relief.

I knew that my top priority was to convey the casualty who was in traumatic arrest to the nearest MOH medical facility for advance care. We left after the first ambulance, handing over the care of the other patients to the next ambulance crew. I wondered if I could have done better.

"Do not have tunnel vision. When faced with a chaotic situation, we must know our roles and tasks. No matter how skilled and prepared you are, nothing can fully prepare you for an incident that is dynamic, evolving and complex. The most important thing is to do your best for your patient," advised SGT(3) Hafizah.

Syed then shared that a veteran paramedic used to say that no matter how skilled or prepared you are, dynamic and complex incidents will always be challenging and require you to quickly think out-of-the-box and respond with interventions in real time. The key to handling such a situation is to remain calm, composed and to fall back on all the training and medical skills acquired over the years. Always keep the patient as the central focus of your efforts and do the best for them.



*Source: SGT Irfan Nurhadi Bin Nasruddin*

# "FLOWER WATER" INCIDENT

*By Sergeant Nurul Atirah*

*Sergeant Nurul Atirah has over 5 years of experience working as a Paramedic in SCDF under the employment of Lentor Ambulance, a Private Ambulance Operator contracted under the SCDF's Government Owned, Company Operated (GOCO) model. The incident described below is one that etched in her mind as it happened when she was still a young paramedic in the service.*

**October 2019**

I remembered it was a quiet, normal nice day at Sengkang Fire Station. At 3pm, my crew and I were activated to a medical case. The call text included the caller's name and stated: "Someone drinking flower water." My crew and I were both intrigued and puzzled by what the caller was referring to. I assumed they were literally talking about water that had been submerged with flowers.

We tried to reach the caller twice on our way to the incident, but both calls went unanswered. That was when the thought crept into my mind that this could potentially be a more serious case compared to the norm

as it could mean that something frantic was going on at the scene, preventing them from answering our calls. Various thoughts raced through my mind on the different kinds of medical situations that might have happened at the scene.

Upon arrival, I was the first person to step out of the lift and I noticed a male person lying supine on the floor at the staircase landing nearby. He was not convulsing but he looked unconscious to me. I could also see that he was sweating profusely despite wearing just a T-shirt and long cotton pants.

As we attended to the unconscious person, a man approached and told us that he was the patient's brother. He mentioned that he found his brother this way and immediately called an ambulance. My medic and I began assessing his condition. He was foaming a fair bit at the mouth. After a short while, my medic started coughing and it made me wonder, "What was suddenly wrong with him?"

There was an unpleasant stinging odour present in the air which began to bother both my medic and me. Our driver was trying to gather the patient's history and ascertain the happenings prior to our arrival. The patient's brother shared that he left for a nearby shop to get more beer after they had drunk a few cans at the staircase landing. He also said that the patient was holding a small bottle of insecticide that had a picture of a flower. That bottle of insecticide was empty and the brother could not recall how much liquid was in the bottle.

The alcohol consumption, coupled with the suspicion of insecticide ingestion, further complicated the medical emergency. Strewn around the patient were a total of four cans of beer and the empty bottle of insecticide.

As the patient spewed thick white foam from his mouth, I got worried as this was the first time I had experienced a case like this – an unconscious patient who had consumed both alcohol and insecticide. I inserted an oropharyngeal airway (OPA) into his mouth and attached the electrocardiogram (ECG) leads. He was tachycardic and had a heart rate of about 120 to 130 beats per minute. His breathing was shallow and I was unable to obtain a good oxygen saturation ($SpO_2$) reading. I provided oxygen therapy through a non-rebreather mask. I was also unable to obtain an accurate blood pressure reading but i was glad to know that his blood sugar level was in the acceptable range. At this point, I just focused on doing what I could do to help the patient get better. I concentrated on his breathing and ensured he had a clear airway since he had foamed so much.

My medic was still coughing and told me that his throat was itching as well. Given the circumstances of the case and the medical issues arising from my medic, I had a hunch that something was not right. However, I was unable to put my finger on the problem and deduce what was happening at the scene. "Why was my crew affected in this way? Why was the patient in such a bad state?" I had no time to lose. I needed to quickly transfer the patient to the ambulance and bring him to the nearest hospital to prevent any further complications or deteriorations in his condition.

After talking to the patient's brother, we prepared our equipment for resuscitation and got the stretcher ready. Throughout the process, my medic and I were positioned near

the patient's head while my driver was sited near the patient's feet. This put him further from where the suspected odour was from – the patient was still spewing foam from his mouth. We transferred him onto the canvas stretcher, then to the main-cot stretcher and prepared to bring him into the lift.

As the patient was soaked, the ECG leads started to come off and we had to stick them back on the body again. We also had to put the patient in a sitting position for a short time when taking the lift down to the lobby on the first floor. That was when the situation worsened. While in the enclosed lift, the odour became stronger and worsened the effects of what had bothered us initially.

I had a hard time breathing while my medic was still coughing. Thoughts started running through my mind. "Should I consider upgrading my PPE? Change into an N95 mask which is available in the ambulance? Call someone for advice?" I brushed off those thoughts and focused on getting the patient to the hospital swiftly. I also asked my crew members what they thought about the situation. However, my medic was uncertain as well because this was his first time encountering an incident like this.

We turned the patient's head to the side to clear the foam so he could breathe better. When we reached the ambulance, I suctioned the patient's mouth to clear his airway.

In the ambulance, my medic successfully inserted an intravenous (IV) drip into the patient's arm, while I continued to apply suction to the patient's mouth. While doing so, the stinging odour that affected my breathing was getting stronger. This was likely since I was positioned near the patient's head. I opened all the windows in the ambulance for better ventilation. The patient now looked very pale. We continued trying to obtain his vital signs. Even though his heart rate remained the same, his breathing was shallow. We continued to suction as he was observed to be foaming profusely. We finally managed to get an $SpO_2$[1] reading but to our disappointment, the reading was low, which was not a good sign. His blood pressure finally became available but it was elevated. His pupils were both dilated and sluggish. Auscultation[2] of the chest revealed noisy crackling sounds in his breathing. I desperately tried to figure out what was happening.

A standby message was sent to the hospital to prepare to receive a case of an unconscious individual due to insecticide poisoning. I brought along the bottle of insecticide to the hospital as evidence. After my standby message, I received a call from the Singapore Civil Defence Force (SCDF) Operations Centre asking if this was an organophosphate poisoning case. Organophosphates are chemicals usually found in insecticides and pesticides which produce adverse effects on a person's nervous system upon exposure. These are the same type of chemicals that have been weaponized to produce nerve agents such as in the case in the Tokyo Subway Sarin Gas Attack in 1995. Although the term "organophosphate poisoning" sounded familiar, I could not recall the specifics of this type of poisoning. The



1 $SpO_2$, also known as oxygen saturation, is a measure of the amount of oxygen-carrying hemoglobin in the blood relative to the amount of hemoglobin not carrying oxygen.

2 The action of listening to sounds from the heart, lungs, or other organs, typically with a stethoscope, as a part of medical diagnosis.

officer from the Operations Centre told me to read out the contents from the bottle of insecticide. Thereafter, I was told that they would inform the hospital to be prepared for this case.

At the hospital, my driver went to the back of the ambulance and opened the doors. A doctor and two nurses were ready to receive our patient. As this case was suspected to involve poisoning, possibly due to organophosphates, the patient had to undergo decontamination before being brought inside the hospital.

The patient was then brought to an area with sprinklers specially built to decontaminate mass casualties affected by chemical, biological or radiological substances. These areas were located just outside the hospital's Emergency Department (ED). My crew and I were told to wait outside the ED area. That was when my medic told me he did not feel well and that his eyes were tearing. In addition to my breathing difficulties, I started to cough as well. I also felt nauseous and giddy. I approached one of the nurses for assistance. After informing about our symptoms, she said that we had DUMBBELLS syndrome, a mnemonic for Diarrhoea, Urination, Miosis, Bronchorrhea, Bronchospasms, Emesis, Lacrimation, Laxation and Sweating. These were signs and symptoms of a possible exposure to specific chemicals or nerve agents. Shortly after my driver parked the ambulance and joined us, he started to experience the same symptoms too. He teared and complained of breathlessness. He tried washing his face but the symptoms persisted.

The hospital staff in hazmat suits proceeded to decontaminate the patient and subsequently assisted us with the same decontamination process. I felt particularly responsible for my crew as all became unwell after responding to this case.

As my medic was experiencing more severe symptoms, he was decontaminated first, followed by my driver and then myself. We removed all our clothing for disposal as they were all contaminated. My medic was given an antidote (Atropine) in the form of an autoinjector on his thigh. He had the most severe symptoms among us. That was my first time I saw someone being administered an actual autoinjector because previously, we had only done this using training autoinjectors during drills. After undergoing about ten minutes of decontamination, we were brought to the treatment area within the hospital.

We were all concerned about our health. We were given nausea medication, had IV drips inserted into our arms and were also kept overnight in the hospital. A doctor told us that we were affected by the organophosphate from the bottle of insecticide. Apart from breathing difficulties due to exposure, our conditions were stable. Later, I started to reflect on the day's happenings. I thought that I ought to have known more on how to better protect the crew even as we were trying to save the patient. My superiors visited us. Everyone was glad that we were only slightly ill after the incident. We were told not to worry about our belongings, which would be collected from the hospital and kept safe.

Back in the fire station, equipment that still had traces of contaminants were quickly replaced. Some colleagues that were working the night shift also came to work earlier to assist in the cleaning exercise.

We gave our statements to the police for investigation. I was worried as I did not have the opportunity to inform my parents because my phone and other belongings had been taken away for decontamination. It was only later that I managed to speak to my father. Initially, he did not understand what had happened, and only managed to get a much better idea after visiting me. My parents understood the nature of my work and were just glad that we were fine in the end.

Having spent the night in the hospital, I had more time to reflect on the day's happenings. I now have more knowledge about organophosphate poisoning and its effects, as well as the precautions that would be needed for my crew if such an incident were to reoccur. This is of utmost importance as we would need to function at the safest level possible while attending to any casualty. Given the circumstances, I am indeed thankful that my crew and I were only slightly affected. Had we become casualties ourselves, more resources would have to be dispatched to attend to three new patients – us. I was thankful that was not the case.

Nowadays, when I hear of any case of poisoning, the memory flows back and I start to think about how I can do what is best for my patient while ensuring crew safety. One must always be prepared to respond to the best of our ability as the situation evolves. Paramedics have a heavy responsibility. We must make tough calls and hard decisions based on what we think is the best course of action at the scene. We must also ensure the safety and wellbeing of our crew all the time. This is something that I take very seriously and would always keep in mind.

***Source: The New Paper***

# A TWIST OF FATE

*By WO2 Hazlina Binte Ja'afar,*
*EMS Operations Specialist*

*Warrant Officer (2) Hazlina has served as a frontline paramedic since 2003 and attended multiple road traffic accidents with complex situations. However, the following incident was one that left an impact in her till this day.*

**1 April 2011**

Staff Sergeant Edward Ting, also known as Ed, was an enthusiastic and hardworking trainee who wanted to get as much operational experience as possible in preparation to lead an ambulance crew. I remember this day vividly as I was also in my 10th week of pregnancy and was glad that Ed was around to assist me in responding to emergencies

An announcement blared across the engine bay. We were activated. It was a case of *'Rescue-Road Traffic Accident'*. Our team responded to the case at the junction of Shenton Way and Cross Street.

# Collision traps pregnant woman between seats

## *Lamborghini and taxi collide. SCDF rescuers take about an hour to free woman*

REPORT: **ZAIHAN MOHAMED YUSOF**
zaihan@sph.com.sg

IT was a race against time.

A woman passenger was trapped between the rear and front seats of a taxi following a collision with a sports car – a Lamborghini – at the junction of Shenton Way and Cross Street early yesterday morning.

The passenger is eight months pregnant.

So the Singapore Civil Defence Force (SCDF) rescuers had to work as quickly as possible but carefully.

Wielding hydraulic spreader-cutters, they removed two doors on the left side of the Comfort taxi, a door panel and the front passenger seat.

About an hour later, the woman, 35, who had complained of some pain in her spine during the rescue, was free.

"She was conscious during the rescue and paramedics were closely monitoring her condition," said an SCDF spokesman.

"We always have to be extra careful when dealing with this type of rescue operation."

The SCDF had received a call about the accident just after midnight.

Two fire engines, an ambulance and a support vehicle, along with Dart (Disaster Assistance and Rescue Team) were deployed.

By then, a crowd of more than 100 onlookers had gathered to watch.

### Loud crash

Mr Kelvin Thien, who had been eating at Lau Pa Sat which was about 20m away from the accident site, said: "The crash sounded like something big had fallen from a height. Naturally, I thought that the loud 'bang' had come from the nearby construction site."

Mr Thien, a 25-year-old construction consultant, realised what had happened only when he heard somebody shout "accident, accident".

He went to the scene and saw the damaged Lamborghini and taxi.

Engine oil and what seemed like radiator fluid covered the road surface near the vehicles.

The impact of the collision had caused the front of the sports car to cave in. The taxi suffered damage too.

At least three other cars, parked along the roadside, were also damaged.

Said Mr Thien, who had posted photographs of the accident on citizen-journalism website Stomp: "Before rescuers arrived, we saw the taxi driver trying to open his door by himself.

"The door was jammed. So he continued to kick at the door for about five minutes before he was able to break free."

The taxi driver appeared calm as he got out of the vehicle. But his attention appeared to be focused on the back of the taxi.

Added Mr Thien: "As he was kicking his door, he appeared to be talking to somebody behind him."

As the conditions were dark, he and many of the onlookers had no clue about the injured pregnant passenger trapped in the taxi.

"There was nothing anybody could do, not even the taxi driver, except to wait for the SCDF. The passenger doors could not be opened," said Mr Thien.

Meanwhile, the driver of the silver Lamborghini, a man, believed to be in his 30s, and his female passenger, appeared uninjured.

### Damaged

After the accident, the woman in the sports car approached the damaged taxi, which was about 20m away.

She briefly spoke to the taxi driver before returning to the damaged Lamborghini.

The taxi driver was injured, said Ms Tammy Tan, group corporate communications officer at ComfortDelGro.

Said Ms Tan: "Both our driver and the lady passenger were injured as a result of the accident.

"The left rear side of the taxi sustained damage.

"The driver, whose back was injured, immediately called the police and made attempts to help the passenger out but to no avail."

She added that "the company and the driver have since visited the passenger in the hospital".

Police confirmed that there were three other stationary vehicles involved in the collision. Investigations are underway but no arrests have been made.

The injured woman was taken to Singapore General Hospital, and the taxi driver to Changi General Hospital, said a police spokesman.

*Source: The New Paper*

***Source: The New Paper***

Upon our arrival, we saw that a crowd had formed around the area - they had streamed over from the nearby hawker centre. There were at least 17 emergency response specialists at scene - all of them ensuring that the rescue work was safely and smoothly executed.

We sprang into action at once. I evaluated the scene to determine the best access to the casualty. Ed, on the other hand, was eager to take on the challenge.

*"Ed, I want you to see how bad the situation is. Fikri (who was my medic), help me retrieve the extrication device after you load out the stretcher. I will get the trauma bag and defibrillator."*

I trailed behind Ed. SGT(3) John, a Fire and Rescue Specialist (FRS) Section Commander, who was first to arrive at the scene, briefed me on what had happened as we walked over to the wrecked taxi. A sports car had crashed into the taxi and a passenger was trapped. No one was injured except for the passenger. As I placed the trauma bag and defibrillator beside the wrecked vehicle, Ed said, *"Ma'am, I think you'd better handle this. I will help you out instead."*

I peered into the taxi.The casualty was a female in her early thirties. She was wedged between the front and rear seat and was immobile due to the impact of the crash.

"Hi, ma'am. I'm here to help you. Can you hear me?" I called out to the lady.

"Yes."

"What is your name?"

"Valerie (Not her real name) ..."

"Okay, Valerie. I am going to examine you. Let me know if you feel any pain anywhere, okay?"

I started to check for any injury, especially those that might not have been visible. As it was past midnight, the accident area was dimly lit. I was examining her body when I felt a bump around her abdomen.

"Valerie… Are you pregnant?"

"Yes, I am due next week," came the reply. I felt a sudden rush of adrenaline.

Rescuing casualties from trapped vehicles was nothing new to me. But rescuing a pregnant lady trapped in a vehicle posed another level of challenge.

"Valerie, do you feel any contraction right now? Do you feel any discharge?"

"No. Actually, I can't feel anything."

My mind was racing with all the possible interventions that we might need to administer at any moment. Her nerves were probably affected by the impact of the crash. We had to be extra careful when moving her out of the vehicle to prevent further aggravation to her spine because she was already showing signs of paralysis. I assured Valerie that we would do our best to rescue her. Finally, with the help from everyone at the scene, we extricated her from the vehicle within an hour.

Valerie was wheeled into the ambulance and was thoroughly examined. I was thankful that she did not sustain any visible injury or deformity. I could still remember the look of anxiety on Valerie's face – that worry she had for her baby.

As Valerie's vitals were stable, we decided to send her to the nearest hospital with gynaecologists.

Once we heard the thumping sound coming from the doppler[1], our entire crew let out a sigh of relief. It was a greater relief for the mother-to-be as the baby's heartbeat was still strong!

***Source: The New Paper***

1 A fetal Doppler is a test that uses sound waves to check the baby's heartbeat.

Valerie was received by the emergency trauma team and given immediate attention. To ensure the survival of both mother and child, Valerie had to undergo a caesarean operation. Her husband looked distraught as he waited at the hospital. I left the hospital with a heavy heart.

Two weeks later, I saw a news article on the accident while having lunch. I was no longer in frontline operations and this incident made me realise just how vulnerable we can be, especially when we are pregnant. Nevertheless, my conviction to help those in need has not waned. Rather, I now get to aid those in distress and provide assurance via phone as a 995-emergency call-operator.

As a specialist in the Operations Centre, the experiences gained as a frontliner truly aids in providing valuable insights as we continue to serve those in need and concurrently providing the support to our responders.

***Source: The New Paper***

***Source: Straits Times***

# GUNSHOT INCIDENT AT SHANGRI-LA

*By LTA Wong Muhammad Nasir,*
*EMS Operations Readiness Officer,*
*Marine Division*

*Lieutenant Wong Muhammad Nasir is an experienced paramedic who has been serving SCDF as a paramedic since 2006. He worked at Alexandra Fire Station for most of his career and was appointed an Emergency Medical Services (EMS) Overall-in-charge (OIC). In 2021, LTA Wong Md Nasir was appointed as an EMS Operations Officer for the Marine Division, formulating and effecting the EMS marine response plans. The following is his personal account of the incident at Shangri-La – an encounter that he would never forget.*

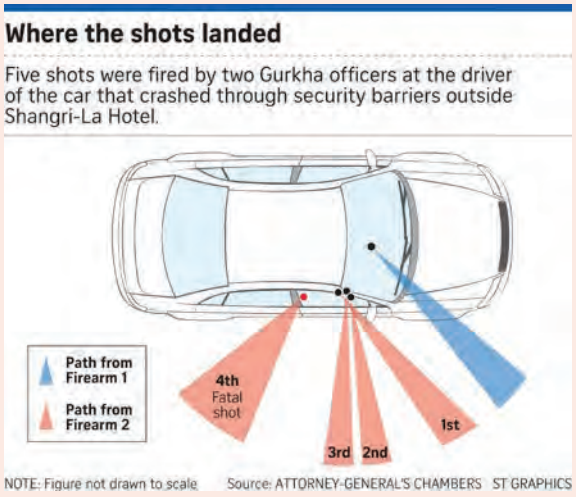
**31 May 2015**

It was a Saturday evening and I was bracing myself for a busy night. The IISS Asia Security Summit was going on and dedicated ambulance crews were deployed to the event. We had to cover their duties for daily operations. Thankfully, it was nearly 3am and I had only attended to two calls. My colleagues, Staff Sergeant (SSG) Abdul Hamid bin Gamsani, an Emergency Medical Technician (EMT), and Corporal (CPL) Kareem Habib, a Full-time National Serviceman (NSF) EMT, were in the office with me while I was completing some administrative work. Little did I know that I would experience one of the most intriguing calls in my career within the next few hours.


***Source: Straits Times***

Just before 4am, the ambulance coding blared across the station. I jumped to my feet and dashed to the ambulance bay. My EMT already had the call sheet in his hand and I checked the display terminal for details of the case. It stated that medical assistance was needed at the Shangri-La Hotel. I called the operations centre who informed me that the onsite crews were for the dedicated standby and that this was an incident that had happened at the surrounding premises.

Upon arrival, I noticed that the entire area was under increased security. I was greeted by the staff there and permitted to stop at the lobby while they ascertained the location of the emergency. As I waited for further instructions, a police officer came up to me and informed me that medical assistance was required at the road leading to the hotel. We promptly proceeded to the location and were flagged down by police officers. They pointed towards a car that had gone off the road and onto the grass patch. I noticed the car had collided into a tree. My crew and I alighted and made our way speedily to the vehicle with our equipment. Things then took a surprising turn as another police officer cautioned us not to approach the car as there was a possibility of an active threat. We were taken aback. I realised that this was no ordinary road traffic accident. I quickly directed my crew to retreat to the ambulance while police officers were sweeping the area around the car to ensure scene safety. Many thoughts raced through my mind. I considered all the possible scenarios that could unfold and mentally prepared myself. Eventually, the all-clear signal to approach the vehicle was given.




***Source: Straits Times***

I approached the car from the passenger side and saw a bullet hole in the windscreen. This was my first gunshot incident. As instructed by the police, I was the only person allowed to enter the car and assess the patient. There was shattered glass everywhere. The driver was pronounced dead at the scene.

I was informed that there was another casualty who had been in the car and now needed medical attention at a separate location. I packed my equipment and quickly made my way to the hotel lobby where he was located. He was seated with both hands cuffed behind him. There was blood on his back and he was groaning in pain. As I examined him, I noticed that his arm was fractured. The police officer immediately secured the handcuff onto the stretcher and I proceeded to treat the casualty's injured arm.

I could not help but think about this case when I returned to the fire station. Despite having been trained to manage gunshot wounds, I could not recognise it immediately due to the rarity of such cases in Singapore.

From this incident alone, I gained experience working with our Home Team partners from the Singapore Police Force (SPF) and the Gurkha contingent, as well as the hospital staff to ensure the continuity of care for the casualties from the scene to the hospital. I am proud to be part of the response team that day as it was not something that all paramedics would usually encounter. This peculiar experience would truly stand out as an unforgettable one for me.

*Source: SCDF*

# LITTLE INDIA RIOT – THE UNTOLD SCENE

*WO1 Nurhidayah Binte Bujang,*
*EMS Operations Specialist*

*Warrant Officer(1) Nurhidayah started out as a frontline Paramedic Specialist in 1999 and had rendered assistance to a fair share of emergency situations. This is her account of the event that unfolded in the evening of 8 December 2013.*

**8 December 2013**

I was in the ambulance on my night shift when I was activated to a "Motor Vehicle Accident" case. I informed my crew to be mentally prepared as we could be expecting multiple casualties as a second ambulance was already dispatched to the scene. To our surprise, there was nothing in sight when we arrived.

*"ALPHA-1 to Control, we have investigated the area, there is no sign of case! Any update, over?" I asked Operations Centre through the MATRA[1].*

There was no response.

1 A handheld device that receives and transmits radio signals, allowing two-way communication in specific channels at different radio frequencies.

We scoured the area again while waiting for a response. Just then, we heard over the radio transmission that an ambulance was being surrounded by a crowd behaving very aggressively. There seemed to be a commotion over the transmitter which sounded like bottles being thrown, broken windows and audible murmurs that said, "...make ALPHA..." and "... fire appliance at scene..." This meant that the assistance of an additional ambulance and fire appliances were required at the incident site.

*"Ah! Fire appliance! Nick, change the other MATRA to the Fire Management Channel, quick!"*

Eager to know what was going on in the Fire Management Channel, I tasked my medic to try to get more details from the communication between the responding fire appliance and Operations Centre. Our attempt was quickly interrupted.

*"Control to ALPHA-1, kindly proceed to updated location – Hampshire Road towards Race Course Road."*

*"Roger, Control. ALPHA-1 proceeding to updated location."*

Two additional ambulances were also dispatched to the same location. As we may be dispatched to a possible road traffic accident, it was a race against time for all dispatched ambulances to get there and render the much-needed medical assistance.

We were almost reaching the new location when a Traffic Police officer diverted us to a smaller road that they had cordoned off. While driving through a small junction, we noticed another ambulance in front of us and followed it. Moments later, about 30 metres ahead of us, an ambulance was stalled right in

***Source: SCDF***


***Source: SCDF***



the middle of the lane with two policemen and a medic beside it. They were waving frantically to catch our attention.

As the situation looked dire, we made a turn towards the stationary ambulance to investigate. Before I could assess the situation, the medic and policemen dashed towards us and stopped me from alighting.

*"Don't come out from your ambulance no matter what happens! We'll bring the casualties to you," instructed the police officer.*

I was stunned. Then the police officer continued,

*"How many people can you take in?"*

*"Well, we're a four-person crew. We can accept another three more," I said.*

Wasting no time, three casualties from the stranded ambulance were transferred into our ambulance. I noticed that the medic was fully geared with rescue helmet and safety vest. I was upset by the sight of the ambulance – shattered windows, broken windshield, dents and scratches all over it. It was as though the ambulance was involved in a traffic accident. We were still oblivious to the scale of the situation despite hearing mentions of 'riot' in our MATRA.

Before departing, the same medic related to us what had happened. He seemed shaken from the riot, yet managed to assure me that the casualties were in stable condition, except for one who had died.

I then realised that there were about 10 people in the ambulance seeking refuge from the riot. This was the first arriving ambulance to the accident site and the crew were attending to the deceased when they were attacked by the mob. Luckily, they managed to seek refuge in a small lane a distance away from the epicentre of the riot.

*"ALPHA-1 to Control. ALPHA 1 enroute to Hotel 4 conveying three casualties, over."*

*"Roger, ALPHA-1."*

We made our way to Tan Tock Seng Hospital with all three casualties in stable condition. One casualty was repeating the same phrase, *"we were attacked"*. She tried to tell us what had happened, but we could not comprehend what she was trying to say. About half an hour later, a damaged ambulance arrived at the same hospital with the deceased and other casualties. Sergeant (SGT) Nurul Elfiyana Bte Badrulhisham, who was the private ambulance operator (PAO) from Unistrong Technology paramedic-in-charge, came up to me looking listless and exhausted. She told me that we had conveyed a bystander, a bus driver, and his assistant. Even one of our ambulance was set on fire at the incident site. We were thankful to have safely conveyed the casualties to the hospital.

As emergency responders, it is second nature for us to spring into action to save lives without hesitation. At times, we may not realise the full extent and gravity of the incident until much later, sometimes after we have conveyed the casualties to the hospital.

*"Guys, just stop whatever that you are doing. Its okay,"* I told the sombre crew at the hospital's ambulance parking bay.

They dropped whatever they were doing.

There was silence.


*Source: Straits Times*



# MANAGING A MASS CASUALTY INCIDENT AT JOO KOON MRT STATION

*By SSG Elly Suhaila Binte Haji Sawal, Senior Operations Centre Specialist*

*Staff Sergeant Elly has served as a paramedic from 1999 to 2019. She held various appointments in Clementi Fire Station and Jurong Fire Station before being posted to SCDF Operations Centre in 2019 where she continues to play a critical role in the Emergency Medical Services. As an experienced paramedic, she has dealt with numerous multiple casualty incidents. However, this incident was particularly memorable to her as it was her first time assuming the role of the medical overall-in-charge (OIC) for a mass casualty incident.*

**15 November 2017**

My first call of the day was to proceed to a case of medical emergency at a Mass Rapid Transit (MRT) station. I thought it was just a usual case of medical emergency at the station. However, enroute to the location, I realised that I was the second ambulance activated to the same incident. I thought of reasons as to why a second ambulance was required as it was uncommon. I told my crew to be prepared for the worst. My Emergency Medical Technician (EMT) asked me if we should bring the mass casualty bag. Based on my experience, I replied that there was no need to bring the kit.

On arrival, we parked inside the bus interchange. To reach the incident site, we pushed our stretcher and carried our equipment from the interchange to the MRT station. We exited from the shopping mall where the bus interchange was located, took the lift and crossed the bridge to reach the MRT station. That took us some time to reach the incident site.

When we arrived at the MRT control station, all seemed normal. I asked a staff from the MRT Passenger Service Centre where the patient was. She shared with me that my crew was the second one activated. The first ambulance crew had been attending to someone. She then directed us to the staff room.

Before I could proceed to the staff room, I saw firefighters running towards the MRT platform. One of them informed me that there were more casualties on the platform. Without hesitation, I asked my EMT driver to go to the staff room and link up with the first arriving paramedic while my NSF EMT and I followed the firefighter to the platform to make an assessment of the situation.

At the platform, I surveyed the surroundings. Both trains were still operational on the tracks and there were a few groups of people seated at different areas. The entire situation looked normal. I approached some MRT staff and asked them whether anyone was injured. They pointed to two groups of people and mentioned that they were the casualties.

The MRT staff assisted to cordon the area to help us better identify the injured persons. Subsequently, I triaged the casualties by categorising them into those who were ambulatory and those who were not. My crew assessed the casualties while I proceeded to the staff room to take over the first arriving paramedic. She stated that there were a few casualties who required immediate medical attention. Since I was uncertain of the numbers of casualties on the platform, I activated additional resources based on the casualty numbers in the staff room.

By then, my Commander Fire Station (CFS) had arrived with additional firefighters. I shared with my CFS that the best approach was to bring all the casualties from the platform to the staff room in batches. This way, the members of public would not be alarmed since the staff room was an enclosed area. Once I affirmed that there were 28 casualties with minor injuries, I activated the low acuity ambulances with help from my CFS.

I was grateful that the Division Paramedic and her team from 4$^{th}$ Division Headquarters had come down to assist me in managing the mass casualty incident.

After all the casualties were brought to the staff room, I thought to myself, "The number of casualties is huge." Despite having experienced treating multiple casualties, this was the first time I assumed the role of an Overall-in-Charge (OIC). I told myself to stay calm as I need to delegate and instruct other ambulance crews to transport the casualties to their respective ambulances.

There was only one wheelchair and a few ambulance stretchers. Constrained with limited casualty transportation devices, we could only transport casualties one at a time. I instructed

***Source: Straits Times***

one firefighter to lead those who were ambulatory to the ambulances in an orderly manner. I ensured that proper treatment was rendered and also coordinated with the Operations Centre on which hospital the paramedics should be conveying the casualties to by dividing the patient load equally among the respective hospitals.

As my CFS was the point of contact for the police, the affected stakeholders, and the media, I was able to fully focus on overseeing the on-site medical response. When he saw that I felt overwhelmed, he offered words of reassurance and instructed the firefighters to assist me. He even helped me to liaise with the Operations Centre by activating the additional resources required.

I had a lot of assistance and support from my CFS, the firefighters, the ambulance crews and the Division paramedic team. The paramedics who responded to this incident cooperated and worked well with me. Much like how the presence of the Division paramedic boosted my confidence and helped maintain my composure, I believed that junior paramedics who responded to this incident would feel the same when they see their senior paramedics staying calm and composed as well.


*Source: The New Paper*

# CARDIAC ARREST RESCUE WITH THE CHIEF MEDICAL OFFICER

*By WO1 Abdul Hakim Bin Kamalzaman, Emergency Medical Technician*

*Warrant Officer(1) Abdul Hakim Bin Kamalzaman has been in the Singapore Civil Defence Force (SCDF) for almost a decade and was one of the first few Fire and Rescue Specialists selected to be trained as an Emergency Medical Technician (EMT). Although the vocation was a relatively new one, he took on the responsibility in his stride. WO1 Abdul Hakim also represented 2nd SCDF Division HQ as the only EMT among Paramedics in the Society for Emergency Medicine in Singapore (SEMS) Simulation Wars Competition in 2016 and was selected to represent SCDF in Taiwan for the Asia EMS Skills Demonstration & Conference in 2015.*

**15 December 2013**

Everyone would remember their first encounter of a road traffic accident on the job and their first emergency call on the case of an acute coronary syndrome. I certainly remembered the call that happened on the morning of 15 December 2013

"Today will be just another Sunday in office," I snickered to myself as I parked my motorcycle at Changi Fire Station.

As I entered the paramedic office, I was greeted by my colleagues who were resting after a busy night shift. Saturday nights would always be the busiest and I could see the bliss on their faces as the incoming crew and I prepared to take over the shift.

*"Morning Hakim! Today you are my EMT for A221, right?"* said a familiar voice in the office. It was First Warrant Officer (WO1)

Arrianna Bte Isa, a senior paramedic in Changi Fire Station. As someone who had attended multiple courses to improve myself as an EMT, I enjoyed learning from her experiences and institutional knowledge.

I was always eager to start my shift with WO1 Arianna, alongside Lance Corporal (LCP) Muhammad Shah bin Salim, an EMT who was serving his National Service. LCP Shah usually reported early at the station and prioritised routine checks of the ambulance to ensure that the equipment was properly maintained and available. He was a fine example of a dedicated EMT on duty.

Being adaptable may be a great attribute for any Emergency Medical Services personnel to have, but having good team dynamics always makes the day better. It was a quiet morning, until the medical call came in.

*"A221, A221 turn out to East Coast Park for a case of medical cardiac arrest,"* the speaker announced with urgency.

A cardiac arrest incident at this time was not extraordinary as statistics showed that most cardiac arrests occurred in the morning. We boarded the ambulance and waited for the fire station's shutter door to be fully opened.

"Let's go, first call of the day!" I proclaimed as I turned on the beacon lights and siren. As an EMT, we are not only ambulance drivers equipped with core medical skills and knowledge. The safety of the ambulance crew and the casualty is also our responsibility.

WO1 Arrianna contacted the person who dialed 995 to gather as much information as she could. Time was of the essence. Thankfully, the weekend traffic was clear, and we swiftly arrived at the incident location.

The beach at East Coast Park was a long coastal area which made the search for the victim a challenging one. We arrived at Changi Coast Walk, a dead end to the park with no entrance and tried to locate the victim.

Moments later, a few cyclists informed us about the location of the cardiac arrest victim. He was 300 metres away. I parked the ambulance as WO1 Arrianna and LCP Shah took the lifesaving equipment and hurried towards the victim. I searched for another entrance to park the ambulance to ensure that the victim would be transported quickly and easily into the vehicle later.

WO1 Arrianna and LCP Shah noticed a crowd of cyclists and joggers surrounding the victim lying on the bicycle track. Someone had commenced Cardiopulmonary Resuscitation (CPR) on the patient. As they got closer, they were surprised at what they saw.

Meantime, I was searching for an alternate entrance into the park when I caught sight of a locked gate. With the help of a cyclist, we broke the padlock and I drove the ambulance into the park. Upon arrival at the scene, WO1 Arrianna and LCP Shah were performing CPR together with a familiar person. It was COL (Dr) Ng Yih Yng, our then Chief Medical Officer (CMO). We were astonished to see our boss performing CPR with his wife and a few bystanders assisting him.

Apparently, our CMO was cycling at the park with his family when they noticed a

Reports by JASMINE LIM
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**A man's heart had stopped and people were trying desperately to save him. Some took turns applying cardiopulmonary resuscitation (CPR).**

Eventually, someone checked and said there was a pulse, so they stopped giving him CPR.

A crowd had gathered around 8am on Dec 15, after a man collapsed near the end of the East Coast Park connector. But the man was far from safe.

Meanwhile, Dr Ng Yih Yng, 39, was cycling with his wife, manager Ho Whei Chern, 37, and his two daughters, Freya, 11 and Hana, nine, at a 21km cycling event for Habitat for Humanity Singapore. It is a non-profit organisation that builds affordable homes overseas for the less fortunate.

The family stopped for a water break at the halfway mark at the end of the East Coast Park connector.

When Dr Ng and his family turned back to continue cycling, he noticed a group of people standing around someone on the ground. A passer-by told him a man in his 50s had collapsed while cycling with friends.

Said Dr Ng, who is also the chief medical officer of the Singapore Civil Defence Force (SCDF): "The man had slow gasping breathing and was lying on his side."

There were six people helping the man, including two Caucasian men and three Republic of Singapore Air Force personnel. They had been doing CPR, but stopped because they thought he had a pulse.

Dr Ng said: "I checked him again and I realised that he did not have a pulse. He had agonal breathing, which was the breath of a dying man."

When he saw that, he told the group that they needed to continue CPR.

**CALLED FOR HELP**

Dr Ng called for an ambulance at 8.55am.

Three or four of them took turns doing CPR for around 10 to 15 minutes while waiting for an ambulance to arrive. Dr Ng performed mouth-to-mouth resuscitation on the man.

And there was yet another twist.

The SCDF sent an ambulance, but its ambulance crew had a problem when they arrived just minutes after the call.

The man was about 300m from the nearest carpark and the ambulance crew realised their vehicle could not get into the East Coast Park connector network.

Paramedic staff sergeant (SSG) Arrianna Isa, 31, and medic lance corporal Muhammad Shah Salim, 21, took whatever equipment they needed out of the ambulance and emergency medical technician sergeant Abdul Hakim Kamalzaman, 24, drove the ambulance to find a way inside.

SSG Arrianna said: "My thought was just to get to the patient first. We had no choice, we had to run in."

SSG Arrianna and Lance Cpl Shah jogged with a defibrillator, an oxygen tank, a mechanical CPR device and a stretcher, weighing around 60 kg, all the way to the victim.

"I was just worried whether we would reach there in time. Time was crucial for the patient," SSG Arrianna said.

When the team reached the scene in about 10 minutes, they were surprised to find their boss, Dr Ng, performing CPR on the patient. Although shocked, they quickly got back on track, focusing on saving the man.

**BRIEFING**

Dr Ng briefed them on what happened and they worked together to put the man on a canvas sheet and set up the mechanical CPR machine when they felt no pulse.

They shocked him once with the defibrillator to get a pulse, but there was no effect. The man regained his pulse after they tried again.

Still unconscious, he was rushed to the intensive care unit in Changi General Hospital after the ambulance managed to find a way in to the park connector.

The New Paper understands that he is still recovering in hospital.

**Spotting cardiac arrest**

Cardiac arrest is where the heart stops beating. It happens without warning and can lead to death within minutes.

1 **NO RESPONSE**
Person is unconscious and unresponsive to sound or touch.

2 **NO BREATH**
Person is not breathing or is gasping for air. No pulse can be felt.

3 **NO WARMTH**
Skin turns pale, grey and feels cold to the touch.

4 **GET HELP**
Call 995, try to find an automated external defibrillator and begin CPR immediately.

**TEAMWORK:** (Front from left) Lieutenant-Colonel Dr Ng Yih Yng and staff sergeant Arrianna Isa. (Back from left) Lance corporal Muhammad Shah Salim and sergeant Abdul Hakim Kamalzaman.

THE PHOTO: SAVIN FOO

***Source: The New Paper***



group of bystanders surrounding a man who had collapsed. Instinctively, he attended to the cardiac arrest victim who was without a pulse. He began CPR at once before we arrived at the scene to assist the situation.

We were perspiring under the hot sun while resuscitating the victim. I was amazed at how WO1 Arrianna was able to work under pressure with many bystanders, including our boss, watching us. At that time, it felt as though we were being audited for our performance.

"Guys stand clear! Shockable rhythm!" WO1 Arrianna firmly instructed and she pushed the shock button hoping that the shock would revive the victim.

There was no pulse.

"Guys continue CPR! Hakim prepare the LUCAS![1]" Arrianna instructed. Working hand in hand, Arrianna had Dr Ng to attempt an intravenous line to administer resuscitative drugs to the patient.

After two minutes of mechanical compression, "Shockable rhythm again! Stand clear everybody," instructed WO1 Arrianna once more. We resumed CPR and after two minutes of chest compression, she checked the pulse again.

This time, there was a pulse! We breathed a sigh of relief.

A few days later, we were informed that the patient had survived and was recovering well in the hospital. I felt proud of myself and my team, to be able to save a life. As I now recall the days back when I was an EMT at Changi Fire Station, I firmly believe that basic lifesaving skills are of paramount importance during an emergency, and nobody is as near as the bystander who happens to be next to the victim.

1 Lund University Cardiopulmonary Assist System (LUCAS) device provide mechanical chest compressions to patients in cardiac arrest


***Source: Straits Times***

# A MASS CASUALTY INCIDENT AT AYER RAJAH EXPRESSWAY TOWARDS TUAS

*LTA Nurhisyamuddin Bin Hatbar, Paramedic*

*Lieutenant Nurhisyamuddin is a paramedic who has served at the frontlines since 2006. He has been a Fast Response Paramedic, Ambulance Paramedic as well as an Emergency Medical Services (EMS) Overall-in-charge (OIC) at Tuas Fire Station. He is not a stranger to incidents involving mass casualties. The following story is one that has stuck with him till this day.*

**19 December 2016**

I arrived at the paramedic office at Tuas fire station with my breakfast in hand. The crew members from the night shift were already prepared to head home for a good day's rest and it was my turn to conduct my routine check on the ambulance. Working with me that day was Sergeant (3) Muhammad Sharum bin Mohd Suradi, the FRS-EMT and Lance Corporal (LCP) Ulfath Farhan s/o Haja Nazumdeen, an Emergency Medical Technician (EMT) who was a Full-time National Service (NSF) personnel. We were familiar with one another, having worked together for more than a year. We were hoping for a peaceful and quiet day that morning. Just after the morning roll call, at 8.09am, the ambulance coding sounded off at the station.

"A421, turn out to AYE Tuas, case of Road Traffic Accident." the mechanical voice of the dispatch system blared through the station's public address system. I jumped into the front seat and checked the display terminal for incoming messages while SGT(3) Sharum started the ambulance, awaiting my instructions. The display showed that there was a traffic jam along the road towards the incident site and that there were multiple calls coming in on the incident from the same location.

My instincts warned me that something serious had happened. I tried in vain to contact the caller to retrieve more information. Turning to my crew, I told them to prepare for the worst as I quickly donned my luminous vest and we hurried to the incident location. The traffic came to a standstill at about 500 metres from the accident. I could see from afar that the accident had occurred at the underpass area. I instructed SGT(3) Sharum to use the shoulder lane to get as close as we could to the accident site.

We halted a few metres away from the first damaged vehicle, which was facing in the opposite direction of the traffic. I surveyed the scene and tried to make sense of the situation. To my surprise, one of the doors was opened and a middle-aged man was seated in the driver's seat, legs crossed with a cigarette in hand. Another younger man was standing beside him and they both looked fine. Just then, I saw something that remained etched in my mind till today.

About 200 metres away from where I was in the underpass, there was a trail of wreckage and casualties. There was a fallen motorcycle about 50 metres away and two people were lying on the ground calling for help. A severely damaged black car was nearby and a man was trapped in it. Another 50 metres away from them was another badly damaged black car and a private bus. My mind was racing as I instructed the medic to check on the casualties while I called the Operations Centre for backup.

"A421 engaged in a case of multiple casualties with 1 person trapped, requesting for rescue appliances and two additional ambulances."

While waiting for the reinforcement, we noticed a lady seated at the side of the pavement beside one of the damaged cars. She was in tears and refused our aid, insisting that we examined her husband who was trapped in the car instead. We found him but unfortunately, had to pronounce him dead at the scene. Turning to the lady, I told her that we could not save her husband. She broke down. It was heart wrenching to break the news to her that her husband did not make it.

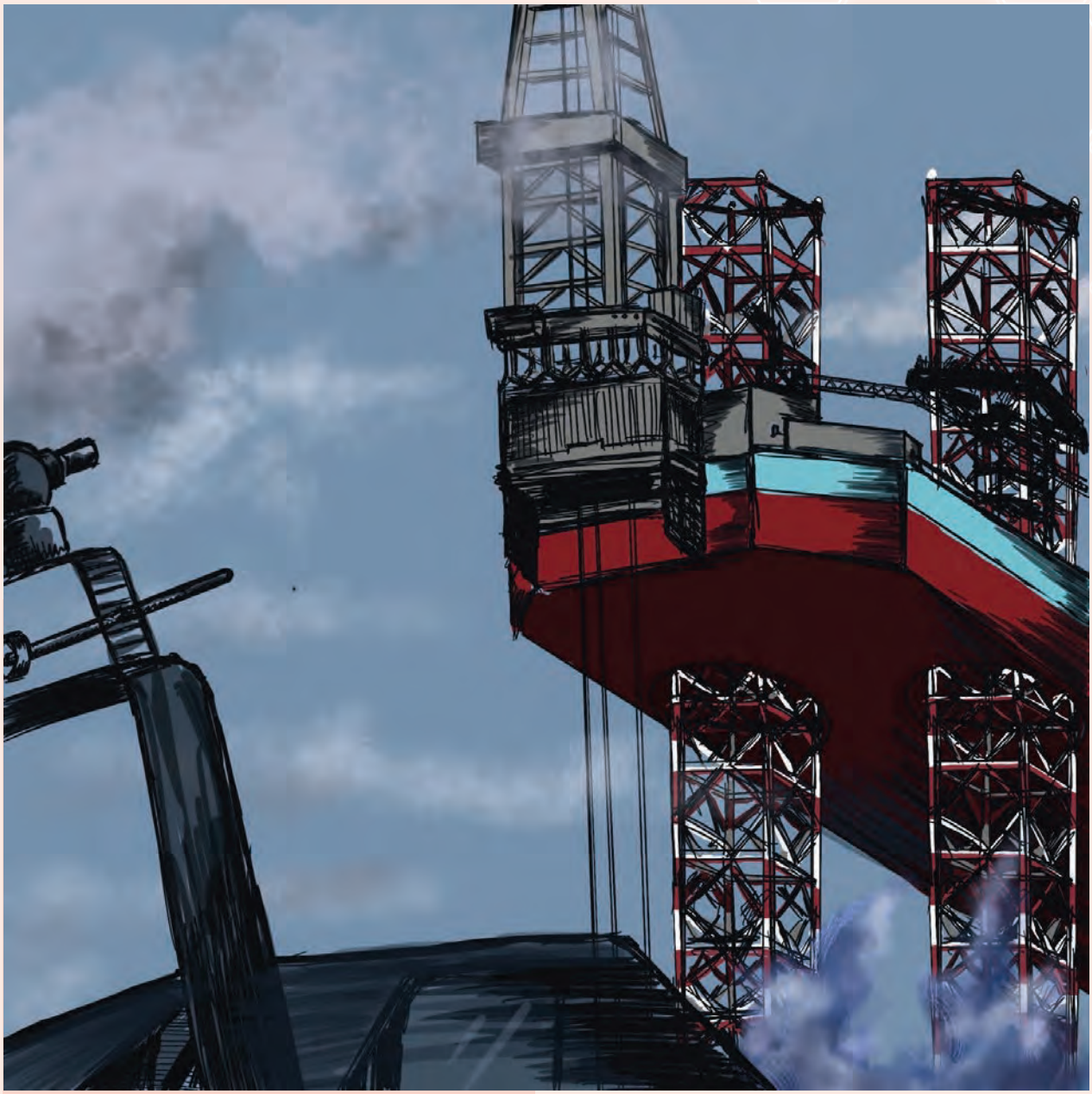
I advised that she needed medical treatment because she was injured. We put a cervical collar around her neck to protect her spine and I tasked LCP Farhan to accompany her as she waited for additional help to arrive. I then attended to the two other casualties.

By this time, a sizable crowd had gathered around us. I asked a few bystanders for help to hold the heads of the casualties to prevent any further spinal injuries. One bystander voluntarily helped apply first aid to stop the bleeding of a severely injured motorcycle rider. The pillion passenger had a swollen left leg – possibly a fracture. I had to set up an intravenous line to maintain her blood pressure.

***Source: Straits Times***

In about 10 minutes later, five ambulances, a fire engine and a fire biker arrived on site. The trapped body was extricated promptly, and the injured persons were conveyed to the hospital. The whole incident lasted for about an hour. It felt like eternity to me and I was completely drained from managing this incident.

When my crew and I were talking about this incident back at the fire station, we were thankful that we had handled the incident calmly and professionally with the resources that were available at that time. Death and injuries are common encounters in our line of work, but breaking sad news to a loved one is something that will never be easy to do. We were immensely grateful for the helpful bystanders who stepped forward to help. These swift acts of kindness made a whole world of difference to the casualties and the overall situation.



*Source: SGT Irfan Nurhadi Bin Nasruddin*

# OIL RIG RESCUE

*By WO2 Sharifah Muslimah Lili Bte Ahmad Nassir, 2nd Div Paramedic Specialist*

*Warrant Officer (2) Sharifah Muslimah has been a paramedic for almost 20 years. She has attended to various medical emergencies and trauma incidents and with that wealth of experience, there is no incident too tough to handle. However, one incident has left an indelible mark on her and it is still freshly etched in her mind till this day.*

**1 April 2009**

I started the day with a light breakfast before leaving home for my day shift at Tuas Fire Station. The familiar sounds of firefighters doing their morning drills with much gusto and pride greeted me as I parked my motorcycle at the fire station.

"Another day in the office." I thought to myself, as I donned my neatly pressed uniform for my morning roll call.

I called out to my crew, two Emergency Medical Technicians (EMT) who were serving their Full-time National Service (NSF), Corporal (CPL) Ryan Timothy Wijeyekoon Joseph and Lance Corporal (LCP) Tan Zhaorong, to conduct the routine check on the ambulances and medical equipment. This is one of the most important daily routines. An ambulance check must be meticulously performed to avoid any malfunction of equipment or compromised sterility of our medical items. To us, it is a matter of life and death.

*"Morning Sharifah! Have you eaten?"*, said an enthusiastic a voice.

I looked up and it was SGT Zahari Bin Osman, my ever-dependable FRS-EMT, with a smile on his face. He was cleaning the ambulance. SGT Zahari has been with SCDF for many years. He is one of my mentors whom I look to for guidance. His years of experience as a firefighter are always useful in times of need.

It was business as usual. None of us were prepared for what we were about to encounter that morning, until we heard the ambulance coding loudly across the fire station.

"A421, A421 ambulance call to Pioneer Place. Respond to a case of rescue," the speaker sounded.

My team immediately jumped into the ambulance and hurried to the incident location.

I contacted the caller and was surprised it was an officer from the Police Coast Guard (PCG). With anxiety in his voice, the officer recounted the incident. I listened attentively, making sense of as much information as I could. After the call, I inhaled deeply and turned to my crew.

"Guys, we are going offshore to an oil rig." This would be my first incident off the island of Singapore – my first oil rig rescue. We were excited and nervous at the same time.

Upon our arrival at the PCG Gul Regional Base, we were greeted with the blinding afternoon sun and warm breeze of the sea. A PCG officer came forward and told us what happened.

A man in his sixties, one of the many workers on the oil rig, had sustained a major fracture on one of his legs.

"One of the crew member is giving first aid to the worker. I think it will be quite difficult to bring him to shore," said the PCG officer.

"It will take at least two to three hours to reach the berth and they do not have much medical equipment, that's why they activated SCDF," continued the PCG officer.

I nodded.

I had to decide who should come with me to the oil rig. Without delay, I told SGT Zahari, to stay at the pier because I needed him to be my eyes and ears on the mainland.

Looking over at my EMTs, I said, "Both of you, follow me. We do this together as a team and bring this casualty to safety."

We boarded the PCG speedboat with our medical equipment, donned the life vest and sat down as we sped out to the open sea.

The oil rig was colossal! With the strong winds and choppy sea, it was hard to imagine how challenging it was to board the oil rig.

Upon arrival at the foot of the oil rig, we prepared our equipment with the assistance of a PCG officer. We proceed to climb up the rope ladder to get to the top of the tower where the casualty was. After 15 minutes of arduous climbing, we reached the casualty who was fortunately attended to by the oil rig supervisor.

The casualty had an open fracture and his right shin was bleeding. We stabilised his lower limbs and his neck to prevent further aggravation to his injury and protected his spinal cord. Despite the fatigue, we gave our best to ensure the casualty's safety during the rescue.

On an ordinary day, we could simply load a casualty on the ambulance and convey him or her to the hospital. Today was challenging. We were on a five-storey high oil rig, strong winds were blowing across our faces and we were surrounded by the open sea below. The only way down was the rope ladder.

"Should I activate my fire and rescue counterparts?" I asked myself. It would take another twenty more minutes for more help to arrive.

Time was running out because the longer we wait, the higher the chance that the casualty might lose his limb. With additional help, the casualty could be transported safely. It was a tough decision to make.

I scanned the site as I searched desperately for a solution. Everyone on that platform with me was waiting for my instructions. I had to decide fast and do what was best for the casualty.

"Ma'am, just tell us what to do. My crew will assist you in any way possible." the supervisor assured me.

I picked up my courage and calmly acknowledged the supervisor, "We have to improvise. I need to use your perforated stretcher and I need your men to hoist the casualty down to the PCG boat."

Immediately, the oil rig supervisor and his men sprang into action. I went back to the casualty and reassured him that he would be brought safely to the hospital in the shortest time possible.

"I trust you," said the casualty as he gave me a thumbs-up.

With access to the ropes, I told the oil rig supervisor to have his men secured the casualty onto the stretcher. The workers did it with utmost efficiency and I was impressed! Our next challenge was to hoist the casualty down the oil rig. Some of his workers were then stationed on the first deck as we had to bring the casualty down to safety using ropes carefully tied on all ends of the stretcher.

"It will be okay, trust us." the supervisor reassured me.

We eventually made the careful descent with the casualty and he was safely transported to the ambulance waiting at the mainland. It was a huge relief for me knowing that I had made the right decision at the most crucial moment of the rescue.

"Let's get you to the hospital," I said to the patient.

As I reflected on this incident, I realised that what was taught in school may make us a paramedic, but the critical decisions at crunch time and the real-life experiences are what shape us to be a better lifesaver. I was once fearful of making the wrong decision, then I realised that courage is not about the absence of fear, but the decision to do what is necessary in spite of fear.


***Source: CNA***

# PANDEMIC EXPERIENCES (FROM SARS TO COVID-19)

*By WO1 Mohamed Hasnon Bin Mohamed Ramdan*

*Warrant Officer (1) Mohamed Hasnon has served as a Paramedic for 24 years. He has vast experience attending to many varieties of medical and trauma incidents in more than two decades of service. This story is about his experience in handling EMS cases during a pandemic, from SARS in late 2002 till the present COVID-19 situation.*

**25 February 2003**

We were not prepared for this. Neither were we even familiar with the term 'pandemic'. We may have come across this in books but have never experienced it until a new disease called SARS (Severe Acute Respiratory Syndrome) emerged in late 2002. I was posted to the newly opened Sengkang Fire Station that year. I had no idea how much impact this new virus would have on our population and the healthcare system.

My colleagues and I were clueless about SARS and its severity before it hit our shores. The next thing we knew, we had to don our Personal Protective Equipment (PPE) such

*Source: CNA*


*Source: SCDF*



as N95 masks, goggles, protective gowns, and headgears as well as shoe covers when we responded to emergencies. It was a hard lesson for us to get used to the dangers of this novel and fast-spreading coronavirus. SARS is transmissible by touch and through droplets especially when an infected person coughs or sneezes. Before SARS, our EMS crew were typically wary of rare cases involving tuberculosis or meningitis. Now, we had to be on a constant high alert for every emergency call that we attend to!

## Donning the PPE

The first few weeks when we began donning the enhanced PPE was not easy to get used to. We were perspiring profusely underneath our PPE while performing our duties in the warm and humid tropical climate. This added to the challenge of our daily work. Besides, we had to get used to wearing goggles and that restricted our peripheral vision. Upon arrival at the scene, we would check on each other's PPE to ensure non exposure to the virus.


***Source: CNA***

After every emergency call, our uniform would be soaked in perspiration.

Interacting with the casualties with our PPE on was a challenge. We had to speak louder to be heard over the N95 face mask and reassure the members of the public of their safety. The standard of medical care to casualties must be upheld, despite the new procedure. After a few weeks, the EMS Polo T-Shirt was introduced to replace the uniforms. It was well received as they were much more comfortable in our warm and humid tropical climate.

Tragically, some healthcare professionals succumbed to SARS. We had to be especially vigilant in the precautions we took to prevent contracting SARS and we were also concerned about unintentionally infecting our loved ones.

The technology was not so advanced then. It was a manually intensive process involving personal written records for contact tracing.

I recalled there was an old lady who had all the symptoms (cough, sore throat and breathing difficulty) of a suspected SARS positive patient. She had also recently travelled to a country affected by the SARS outbreak.

Her family strongly objected to her being sent to Tan Tock Seng Hospital (designated hospital for suspected SARS cases) because it was far from their home and they also thought that the elderly woman would be easily infected there. They finally agreed after much assurance, convincing and persuasion by the team.

A few days later, the Medical Department in SCDF Headquarters informed me that the case I had conveyed was SARS positive. Our team had to monitor our health for the next week, declaring our temperatures twice daily. We resumed our duties after a week of uncertainty and anxieties over our condition.

SARS had taught us many new lessons about our response capabilities. We must evolve to meet new and unknown threats.

We have acquired the knowledge and lessons learnt from SARS to shape our response to a range of other threats (Avian-flu, Swine-flu and Ebola were some examples). Over the years, we have improved our PPE, pandemic supply chains, develop new procedures and protocols to effectively tackle cases involving infectious disease at the frontline. Nonetheless, time and speed are always of the essence when attending to emergencies.

A few years ago, I was reporting for my night shift when my colleagues told me about a care facility that had called for ambulances a few times throughout the day for cases of diarrhoea and vomiting. At first, I did not think too much of it. About thirty minutes into the shift, we were activated to respond to this same facility and the dispatch sheet indicated a similar case of diarrhoea and vomiting. I suspected something was not right and all kinds of thoughts ran through my mind.

"Could it be a mass food poisoning, a viral or bacterial outbreak or perhaps even something more sinister such as a HAZMAT incident involving dangerous chemicals or gases?" I told myself. " Be ready for this!"

Upon arrival, the nurse on duty greeted me and with her, a 60-year-old male resident who was complaining about having diarrhoea and vomiting for the past two days. While probing for more information about the elderly man, the nurse informed me that she needed to call for more ambulances as there were other patients to be conveyed to the hospital.

"You need more ambulances? OK wait a minute...please explain to me what exactly is happening?" I asked the nurse.

"We have been calling for SCDF ambulance many times today, Sir.", she replied.

"It's all the same type of case... they have diarrhoea and vomiting....some of them since last night.", she explained.

Right now, I have 10 patients in total. All need to go hospital", she exclaimed to me, sounding quite alarmed.

Having heard her, I suspected that there could be a viral or bacterial outbreak among the residents. I instructed my crew to put on our PPE before coming into further contact with the patients. We began to triage the patients and called the SCDF Operations Centre for additional ambulances. We informed the receiving hospital on patients who would be arriving with the same symptoms. Thankfully, all 10 patients were safely conveyed to hospital and the crew was well after the incident. The health authorities were alerted and measures were taken to contain the outbreak at the facility.

Years later, the COVID-19 pandemic would hit the shores of Singapore. More than 2 years on today, this virus is still evolving and it has already infected over 517 million people around the world while some 6.2 million have lost their lives (Source: WHO, May 2022). The impact of the virus has kept healthcare workers busy to the point of fatigue as they deal with the fallout of the pandemic as well as new strains that are constantly evolving.

Likewise, our EMS system is affected by the pandemic. SCDF had rolled out a range of measures to aid the nation in its fight against this new and invisible enemy. These


***Source: CNA***



include our latest 7th Generation ambulance with its built-in decontamination system, the latest decontamination machines for our older fleet of ambulances and even engaging decontamination specialists during periods of extensively high call-loads. This has reduced the time needed for decontamination and enabled our ambulances to be back on the road much sooner after each call. More ambulances have also been put on standby to keep up with the surge in emergency calls.

In partnership with MOH, the hospitals for COVID-19 cases were also increased to include all government hospitals. Logistically, we were much more prepared and ready than when SARS first appeared. Our bodies became acclimatised to wearing and working in PPE as a result of regular training. We became proficient in donning and doffing them off safely without risking cross-contamination. When the time came to put this to the test, we were able to switch to a pandemic response mode of working quite easily in 2020 when the COVID-19 virus relentlessly swept through our shores.

Unlike the days during the SARS outbreak, we now have advanced technology and the social media to assist the announcement of official information about COVID-19 nationwide. The public is thus well-informed on how to combat the virus.

It has been a long fight, but I am heartened to see our EMS crew rising to the occasion in the time of need. I am also deeply touched by the many tributes and well-wishes from our patients and members of the public who have shown their appreciation for our efforts in fighting this pandemic. This is the reason why we continue doing what we do, for our country, our home and our loved ones.


# EPILOGUE

# EPILOGUE

If one has ever wondered just how much a metropolitan prehospital landscape can change over the years, they need look no further than the 25th anniversary of the SCDF Emergency Medical Services (EMS). The EMS system has evolved over the years and there are now many opportunities for EMS personnel to be better trained and equipped to perform at their highest level of competency.

SCDF EMS has come a long way since its inception. It now has developed a progressive career and skills development model that equips paramedics with a Diploma in Paramedicine right at the onset of their active service. Advanced Diploma programs are also offered to senior and experienced paramedics to pursue their interests in more advanced and specialised clinical skills and in the field of research. An online Degree in Paramedicine is also offered to high-performing officers who are keen to enhance their prehospital knowledge and imbibe themselves in the efficient management of a pre-hospital system.

The National EMS Training Centre (NETC) which will be ready in 2023, is also a game-changer as EMS personnel will be trained to be prepared for various challenges in the course of their duties. NETC is at the forefront of EMS training and will be leveraging new technology for realistic patient-simulation and scenario-based learning to enhance clinical and leadership skills. In partnership with SCDF divisions and fire stations, NETC will also serve as the main hub of a decentralised training regime that offers new capabilities to the frontline units. These capabilities include the conduct of training via a gaming concept that is both skills-based and team-based, as well as in proficiency testing. Furthermore, NETC will serve as the national accreditor for EMS training in Singapore that stipulates the standards, training methodologies and competency-based certifications.

A database of Paramedics has also been established and this paves the way for paramedicine to be formally recognised as an Allied Health profession. It is envisaged that establishing a register will raise the professionalism of the paramedic cadre and it carries with it the legal obligation for paramedic practitioners to maintain their skills to provide the best possible prehospital care for the public.

Technologies have also been harnessed to allow EMS practitioners to better perform their duties, improve patient outcomes and reduce administrative load. It is a key-enabler that has transformed EMS and patient care by allowing the prehospital system to be digitally connected to the wider healthcare landscape of Singapore.

As a case in point, innovative solutions such as the SMART Ambulance enabled by the SCDF's Operational Medical Networks Informatics Integrator (OMNII) system links EMS practitioners and their patients directly to the receiving hospitals by transmitting the medical condition of patients in real-time, prior to the patient's arrival at the hospital. According to Dr Lee Heow Yong, Director of the Health Services Group of the Hospital Services Division of MOH, OMNII enhances the close working relationship and coordination between SCDF and MOH as it builds on the nation's drive towards a more patient-centric approach to healthcare.

Dr Lee also added that as a close and strong partner of MOH in managing patients requiring pre-hospital emergency care, the SCDF had also closely collaborated with MOH in managing the COVID-19 pandemic by supporting with the conveyance of COVID-positive patients to hospitals, improving capacity management at Emergency Departments through the diversion of ambulances to alternative receiving hospitals and reducing caseloads at Emergency Departments by sending COVID-positive patients directly to MOH COVID Treatment Facilities.

Effort is also underway to enhance patient care through the introduction of the SMART Autonomous Stretcher that can capture a patient's vital signs via embedded sensors and electrodes, and then relay this information to OMNII. The stretcher is fully powered and reduces the strain of loading or unloading the patient into the ambulance.

With relentless focus on putting in place the right systems and processes enabled by technology and innovation, as well as continually building up the competency of our personnel, it is envisioned that SCDF EMS will achieve its aspiration as a leading EMS, both locally and in the region.

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