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# Current Research in Emergency Medicine (CREM)

ISSN: 2832-5699

Volume 3, Issue 2, 2023

## Article Information

Received date : 21 May, 2023

Published date: 12 June, 2023

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DOI: 10.54026/CREM/1053

## Key Words

Chest Drains; Chest Injuries; Emergency Medical Services; Polytrauma; Haemorrhagic Shock

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Short Communication

# Training in Insertion of Chest Drain to Emergency Medical Services, Nurses and Junior Doctors in Pre-Hospital Conditions

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## Abstract

The aim of this paper is to ascertain whether training in insertion of chest drain given to nurses, Emergency Medical Professionals of Eastern Cape and Paramedics would reduce the time period of morbidity and mortality. Survival of patients due to insertion of chest drains in pre-hospital settings will definitely increase, and thus, reduce the number of deaths due to chest injuries.

## Introduction

I worked as a trauma surgeon and gender violence expert in a regional hospital in the township of Mdantsane, Eastern Cape, South Africa. Mdantsane is the second biggest township, Soweto being the first. Trauma is a major burden of disease in our hospital in Mdantsane. For more than thirty years, I worked in the Orthopaedic and Trauma sectors with my junior colleagues in day and night calls. Polytrauma, which includes chest injuries, was the greatest challenge as it is time consuming to insert a chest drain—sometimes on both sides—and rejuvenate patients with blood through one arm to compensate the loss of blood. Due to the delayed time interval by the Emergency Medical Services (EMS) in Eastern Cape, some patients were brought dead. It made us think that if the procedure of insertion of chest drain is done by the EMS on patients out of the hospital area along with a one litre Ringers Lactate bottle flowing in one arm with mask oxygen support, it will significantly reduce the mortality rate from chest injuries.

## Cause of Chest Injuries

- Motor Vehicle Accidents due to direct impact on the steering wheel
- Interpersonal Violence and Intimate Personal Violence by sharp and violent object
- Alcohol and drug-induced violence
- Gunshot injuries
- Fall of an elderly man/woman on the road and hit on the chest by a sharp object
- Cricket and Rugby Injuries
- Boxing Injuries

Time consumed for inserting the chest drain and post-insertion x-ray is usually more than one hour. Handing over the patient to the general surgeons takes more than one hour as there is a scarcity of medical doctors in the Department of Surgery. So, the total time consumed from the time of injury to a definitive treatment might be more than six hours. The cause of mortality in most such cases is due to Haemorrhagic Shock. [1]

## Reasons that Chest Drain Insertion is Not Being Taught

1. Nurses—both junior and senior—do not wish to learn, and sometimes, do not assist the surgeon.
2. Nurses and Paramedics do not wish to learn as they believe that they might get involved in medico-legal problems if the patient dies.
3. Emergency Medical Professionals of the Eastern Cape do not do it as they are not trained to do so.
4. Junior Interns and doctors do not do it as they have not done the Advanced Cardiac Life Support course and have not been trained by their senior colleagues and head of the department.
5. Continuous Training Courses are not possible as the Department of Health, Eastern Cape believes that they lack finance to give training or to recruit new Medical Officers. Thus, numerous medical doctors remain unemployed in spite of having the right training [2,3].

## Presentation at the Emergency Department

- Bleeding and red bruise marks on chest either front or back.
- Fast Breathing, Sweating, Bleeding from the chest both internal and external.
- Garrulous and Demented.
- Skin pinch time is more than two seconds.
- Needs Restraining.
- Chest drain tray prepared and then leaving the surgeon to do it all by himself.



- The gush of blood from the pleural space into the bottle and the rise and fall of the blood in the bottle makes us know that that the tube is in the right space.
- Suturing the tube at 4<sup>th</sup> Intercostal or the 5<sup>th</sup> intercostal facing the tube downwards and inserting the drain by blunt dissection.
- The rural areas that feed on to our hospital are more complicated as neither the nurses nor the EMS can insert a chest drain.

### Conclusion in South Africa to the Technique of Inserting Chest drain

1. Supervision - Countrywide training of nurses and EMS
2. Removal of Trochar from all chest drains. Nurses stationed in rural clinics without doctors and Emergency Medical Services must be our first aim. This must be shown to the Health Professions Council of South Africa and a rule must be implemented. The burden of trauma will come down considerably if such a course of action is taken in the positive direction.

**Conflicts of interest:** None

**Funding:** None

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