

# Becoming a forensic pathologist



Figure 1: Poor man: stabbed, shot, axed, poisoned. Some examples of unnatural death.



Figure 2: A body with an identification tag attached to the toe. Image: Linda Liebenberg

## The Locard principle

The scene of a crime, the perpetrator of the crime and the victim of the crime all leave traces of themselves on each other.

In Figure 3, it is clear that a motor vehicle's tyre hit and imprinted a mirror image of its markings during a collision.



Figure 3: A tyre imprint on the trouser leg of the victim of a road traffic accident. Image: Linda Liebenberg

**Linda Liebenberg** tells *QUEST* what it takes to become a forensic pathologist in South Africa.

I am a forensic pathologist. For a living, I examine dead people and come to conclusions as to the way they died. I assist the police and the courts in establishing whether somebody or something should be held accountable for the death of these persons.

Polite dinner conversation, for me, hiccups when a fellow diner puts forth the dreaded question: 'And what do you do?'

I venture, in a cowardly way: 'I am in the medical profession', hoping that it will stall the inevitable. It rarely does.

'Oh, so where do you practice?' – I can feel the 'I-need-to-ask-you-a-quick-question-about-my-medical-problem' coming up. Swallow and sigh.

'I am a forensic pathologist and I work at a mortuary.'

Count one, two, three ... and the reaction is there. Half my dinner companions are gagging on the meat they were so enjoying, the other half put down their cutlery in fascination, loaded with questions, 'so you cut up dead people for a living?'

Considering that death is the ultimate disease, it is understandable that medical doctors will go beyond treatment of living patients and fight the ultimate disease by examining deceased patients.

Death is not a nice topic at a social event, so I do try and avoid the job-specific question at dinner tables.

And no, I am not a vegetarian.

## Forensic pathology in South Africa

The Inquest Act of South Africa, Act 58 of 1959 is the major legislation instructing the performance of forensic post-mortem examinations.

### Forensic post mortem examination defined

**Forensic:** for the purpose of presenting evidence to a court of law

**Post:** after

**Mortem:** death

**Examination:** a process of answering questions by means of looking at, studying, and describing what was found.

**In a nutshell:** answering legal questions by examining a dead individual.

The Forensic Pathology Service falls under the Department of Health and deals with all cases of unnatural and unexplained deaths. Many of the unexplained death cases turn out to be due to natural causes, such as undiagnosed heart disease or an infection.

South Africa is burdened with a huge load of outright unnatural deaths due, for example, to road traffic accidents and homicides, to mention but two of the main culprits.

The number of unnatural deaths in South Africa in 2008: the National Injury Mortality Surveillance System (NIMSS) recorded the total as 36 795.

## What does a forensic pathologist do?

### Post-mortem examinations

Assisted by a Forensic Pathology Officer, the pathologist examines dead individuals to accurately establish their identity, the day of death and the cause of death.

We consider the body of the deceased to be a crime scene that we, as medical detectives, process in order to find and preserve evidence to present in future court evidence.

### External examination

This reveals tell-tale signs on clothing, such as blood spatter or gunshot soot.

The deceased's body may exhibit signs of a medical condition such as emaciation, indicating a severe disease like cancer or AIDS.

The body is examined from top to toe and special test samples can be taken to assist in a variety of ways: toxicological analysis, microbiology to identify infections, chemical analysis, anthropology, odontology – the list of possibilities is very long.

**Anthropology:** this is the scientific study of people from all periods of time and in all areas of the world.

**Odontology:** this is forensic dentistry, which is the examination and evaluation of dental evidence, which is then presented in court.

In the Western Cape two of the big mortuaries have Lodox X-ray

machines, which we use to do a full body X-ray. Other mortuaries have access to X-ray facilities at government hospitals. This assists hugely in many cases, as you can see in the X-ray in Figure 4. Now the pathologist has an idea of where to look for the bullets! These bullets will be retrieved and examined by ballistic experts to match them to the murder weapon.

### Internal examination

After the external examination, the internal examination is done by removing the chest and abdominal organs and the brain. Each organ is examined individually and weighed. Samples for microscopic and toxicological examination can be taken. DNA samples may assist in identifying the deceased and/or the murderer.

In some instances, a natural disease process is discovered, which means further criminal investigation is not necessary. The finding may be very important for the relatives of the deceased, to come to understand the death and maybe even have themselves tested for risk factors.

Apart from doing autopsies, forensic pathologists are kept busy in many ways:

- Going to scenes of death when requested by police investigators.
- Compilation of autopsy reports.
- Special investigations, for example microscopic examination of organ sections.
- Drafting medical opinions on cause of death for the court.
- Giving testimony in court.
- Advising relatives of the deceased of possible familial disease so that they can go for a check-up and preventive treatment.
- Teaching undergraduate and postgraduate medical students, lawyers and forensic pathology officers.
- Research.

### How do you become a forensic pathologist in South Africa?

This is a summary of qualifications and time required to become a forensic pathologist:

- matric/Grade 12/Umalusi with recommended subjects such as Life Science, Physical Science, Mathematics and English
- six years of medical school
- one year of internship under supervision

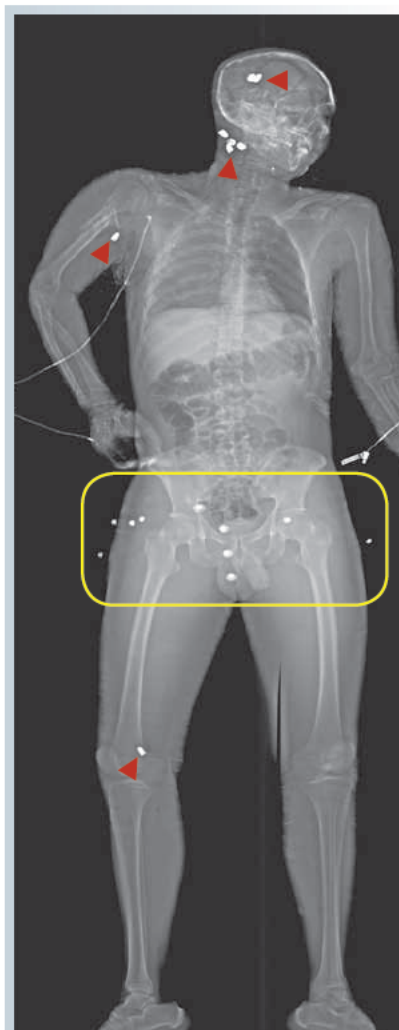


Figure 4: A full-body Lodox X-ray image in the case of multiple gunshots. Many of the white spots are bullets but some are metal press studs of the jeans the deceased is wearing. Red arrows indicate the bullets. The yellow rectangle encircles the press studs.

- two years of COSMOS (community service medical officer service)
- four years of registrar training at a medical school. □

*Linda Liebenberg is a medical doctor who specialised in Forensic Pathology. She is a Senior Forensic Pathologist for the Forensic Pathology Service, Department of Health and she does postmortems at the Salt River Forensic Pathology Laboratory (the medico-legal mortuary) in Cape Town. She is also a senior lecturer, Division of Forensic Medicine and Toxicology, Health Sciences Faculty of the University of Cape Town. Her research interests are fire-arm deaths and the legal outcomes of subsequent court procedures and the use of X-rays in forensic pathology.*

### Some helpful web sites:

<http://www.justice.gov.za/legislation/acts/1959-58.pdf>  
<http://www.sahealthinfo.org>  
<http://www.mrc.ac.za/>  
<http://www.unisa.ac.za/dept/ishs/index.html>

### Who helps the forensic pathologist at the mortuary?

The forensic pathology officer, who is trained on the job. These officers are not medically qualified, but are taught how to assist. They need a Grade 10, a valid driver's licence and the ability to work respectfully with living and dead people.



A laboratory assistant in protective gear while he works with formalin-fixed human tissue. Dangers of fume inhalation, eye splashes and skin contact must be kept in mind at all times. Personal protective gear is mandatory in our work. Image: University of Cape Town

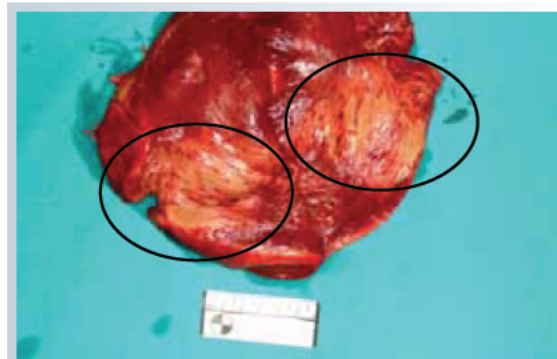


Figure 5: Heart attack, also called a myocardial infarction. The tan to yellow areas of the heart muscle are dead tissue, usually caused by blockage of the heart arteries. High blood cholesterol is a risk factor for myocardial infarction and the family of this person need to be tested and treated.

Image: Linda Liebenberg.



Figure 6: Creepy little helpers, maggots. These maggots found in a decomposed body can assist in establishing the date of death. Forensic entomology is another helpful discipline when it comes to forensic autopsies. The pathologist might not like the wriggly worms, but they have a role to play. Image: Wikimedia Commons.