



UNIVERSITAS  
GADJAH MADA

# Forensic medicine role in management of a disaster

Yudha Nurhantari

Department Of Forensic Medicine

Faculty of Medicine, Public Health, and Nursing

Universitas Gadjah Mada



# Learning objectives

- Understand forensic medicine
- Understand disaster victim identification
- Understand clinical forensic in a disaster



# Forensic Medicine

- The branch of medicine dealing with the application of medical knowledge to establish facts in civil or criminal legal cases
- Dead body :
  - Cause of death
  - Post mortem interval
  - Mechanism of death
  - Identification of the body
- Mass disaster



- Clinical forensic :
  - Physical violence
  - Sexual violence
  - Domestic violence
  - Accident : traffic, work
  - poisoning

# Identification



- People die due to natural or unnatural death
- Unnatural death : disaster, transportation accident, criminals, accidents, etc
- Not all of the died people are known /identified → need identification
- Living person also needs identification



# The important of identification

1. Respect of death person for official, statistical, and legal purposes
2. Discharge legal claims and obligation in relation to property, estate, and debts.
3. To facilitate police enquiries into overtly criminal or suspicious deaths.

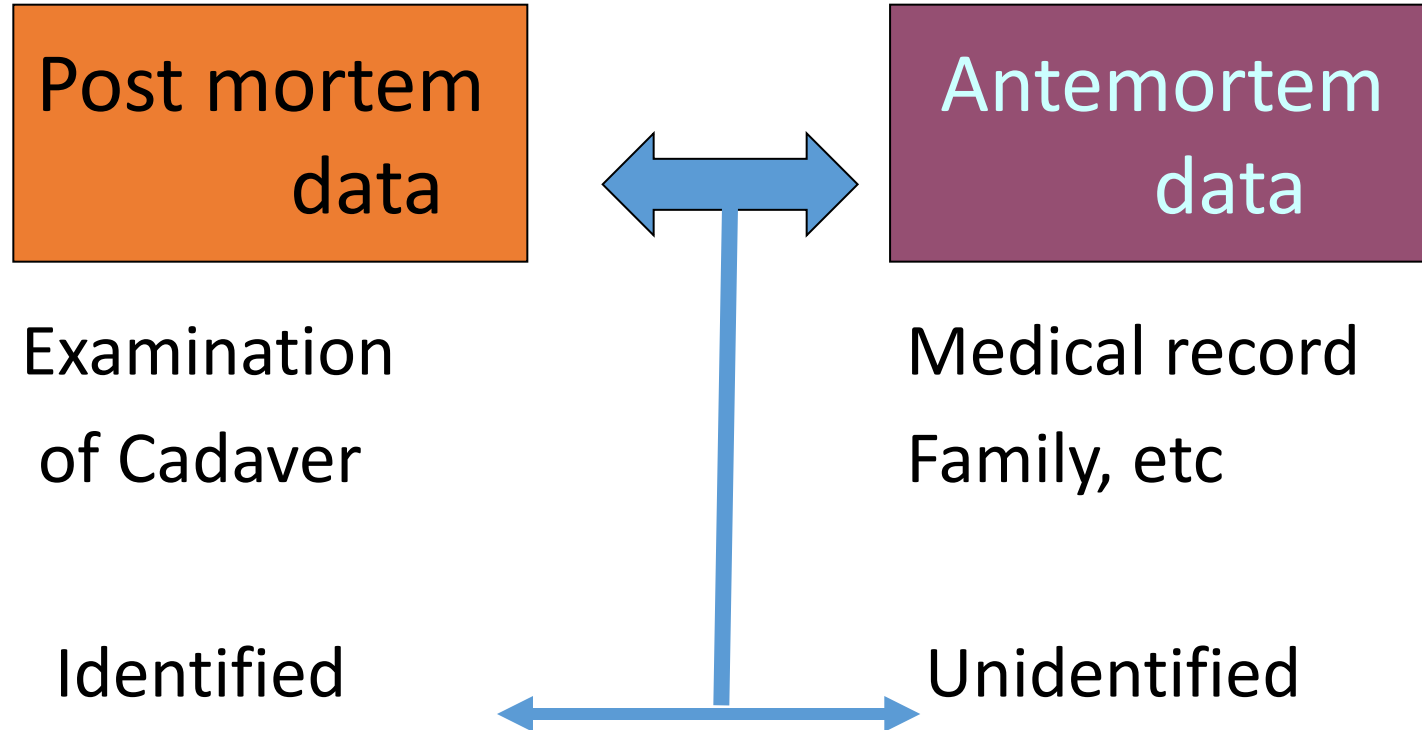


# Identification

- Comparison of the evidence with references
- Biological and non biological Evidences



# Dead body identification



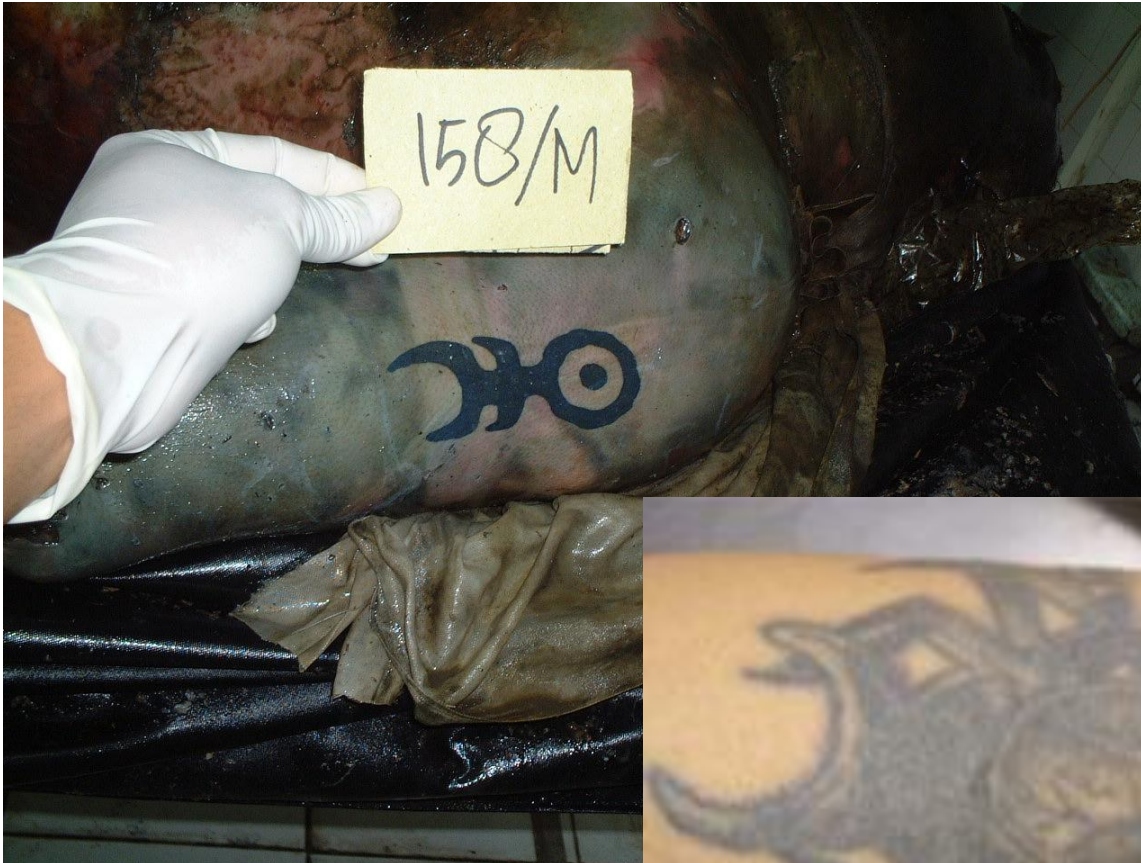




# Biological evidences

- **Characteristics for Identification :**

Facial appearance, Age, sex, Racial and ethnic characteristics, Posture , Skin color, Hair : color, structure Nevus pigmentosus, Tatto, Scar



# Forensic Anthropology



UNIVERSITAS GADJAH MADA



Human/non human, Race, Sex, Age, Posture



# Forensic Odontology

- Every body has a characteristic of the teeth
- Use dentition by comparing am –pm data
- Comparison of dentition with bite marks
- Obtaining DNA to assist the identification of suspects



# 5.Fingerprints

- Long history, China 2000 yrs ago
- Friction ridge of skin → hills , valleys





# Blood typing

- Use multi systems:
  - ABO
  - Rh
  - Mn
  - Lewis
  - Duffy, etc





# DNA fingerprints

- DNA fingerprinting for forensic purposes was developed by Alec Jeffreys in 1985
- DNA is a powerful investigative tool
- no two people have the same DNA
- DNA evidence collected from a crime scene can be linked to a suspect or can eliminate a suspect from suspicion



# Disaster Victim Identification

- Problems
  1. Big number of victims
  2. Difficult transportation to the area
  3. Need coordination inter department





# Phase

1

**The scene of incidents**

2

**Collecting post mortem data**

3

**Collecting ante mortem data**

4

**Reconciliation**

# Work scheme

**Collecting victims and property**

## Phase 1

**Mapping**

**Area  
coordinate**

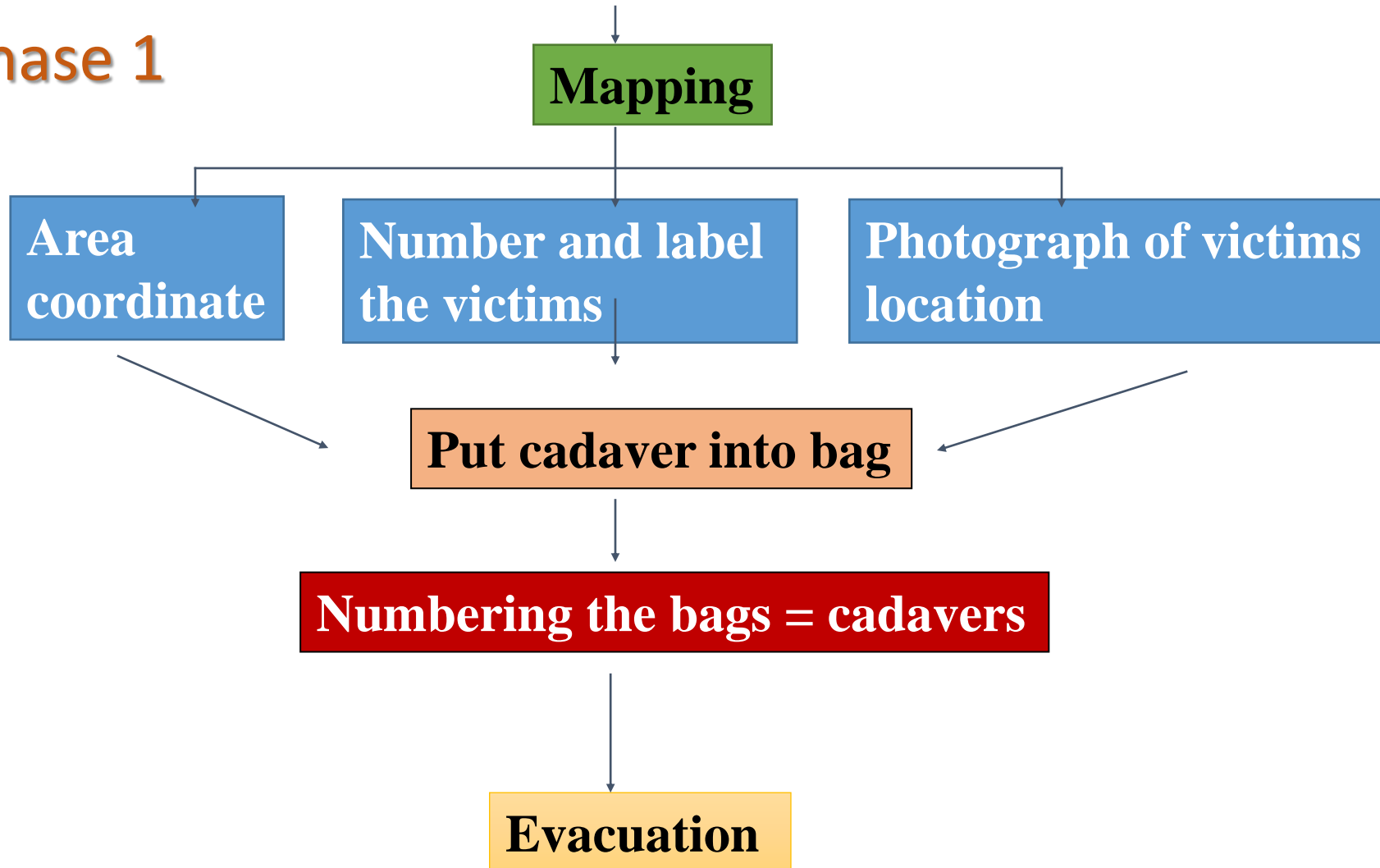
**Number and label  
the victims**

**Photograph of victims  
location**

**Put cadaver into bag**

**Numbering the bags = cadavers**

**Evacuation**



## **II. Post Mortem Unit**

### **1. Collecting pm data:**

**1. Photographs**

**2. Medical examination**

**3. Fingerprinting**

**4. Ro**

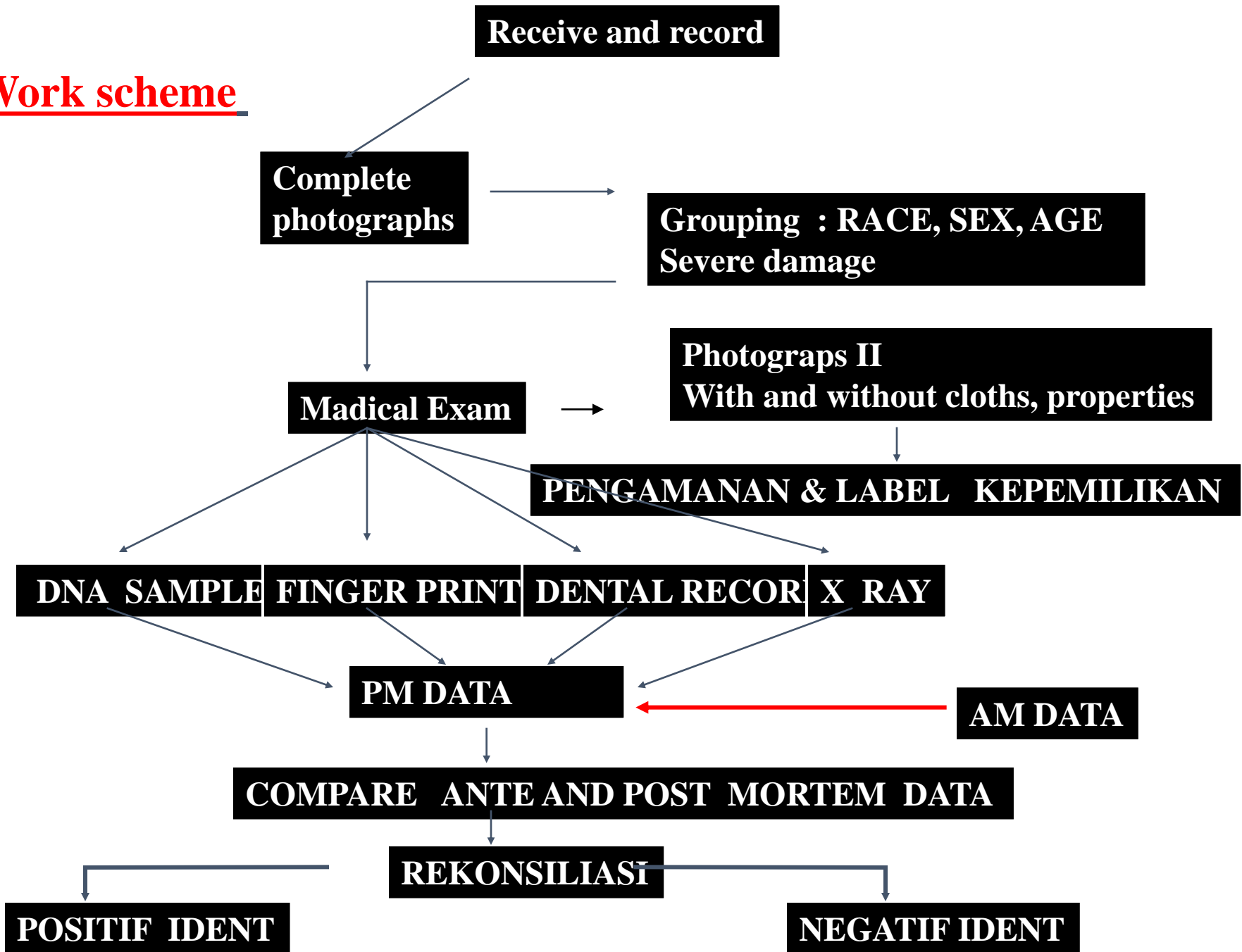
**5. Odontology forensic**

**6. Biological Sampling /DNA**

### **2. Preventing post mortem changes**

.

Work scheme



# III. Ante Mortem Unit

1. Collecting ANTE MORTEM DATA → family
2. Data analysis
3. Resume

# IV. Comparison-Reconciliation

**Identification process, with the team of experts**

**A. Forensic pathologist**

**B. Dentist**

**C. Fingerprints**

**D. Recognize the property**

**E. Photographer**



# Clinical forensic in a disaster

- Children and women → vulnerable of violence
- Physical & sexual violence, human trafficking
- Role of Forensic medicine :
  - Provide the evidence of trauma
  - Provide the evidence of sexual activity



# trauma

- Physical : blunt, sharp, thermal, electric
- Chemical : acidic–alkaline substance
- ballistic



# Wound classification



- Abrasion: disruption of the outer layer of the skin.
- Bruise: an area of haemorrhage beneath the skin.
- Laceration: splitting or tearing of tissues secondary to blunt trauma.
- Incision: a cutting type of injury with (usually) clear, regular margins.
- Stab: a wound of greater depth than length, produced by a sharp object.









# Sexual violence



- a term covering a wide range of activities, including rape/forced sex, indecent assault and sexually obsessive behaviour
- aware of the legal definitions of sexual violence within their own jurisdiction → the age of consent and marriage.

# Definition (Jewkes et al,2002)



- “any sexual act, attempt to obtain a sexual act, unwanted sexual comments or advances, or acts to traffic women’s sexuality, using coercion, threats of harm or physical force, by any person regardless of relationship to the victim”.



# False agreement to sexual activity:

- threats of physical violence,
  - threats of withholding benefits (such as a promotion at work or a good grade),
  - psychological pressure or blackmail
- unable to give consent: a mental disability incapacitated due to the effects of alcohol and/or drugs,



# Men as victims of sexual violence

- Men most commonly experience sexual violence in the form of :
  - receptive anal intercourse;
  - forced masturbation of the perpetrator;
  - receptive oral sex;
  - forced masturbation of the victim.





# Assessment and examination

- obtaining informed consent
- A medical history
- a “top-to-toe” physical examination
- a detailed genito-anal examination
- recording and classifying injuries
- collection of indicated medical specimens for diagnostic purposes



- The evidence sexual violence:
  - signs of coitus : hymen, ejaculate
  - signs of violence : injuries
  - estimation of age : teeth, anthropology
  - marriage competence



**THANK YOU**