



# **IDF Medical Corps**

# **Operation 'Cast Lead': Injury Characteristics and Clinical Lessons Learned**

**ATACCC 2009**

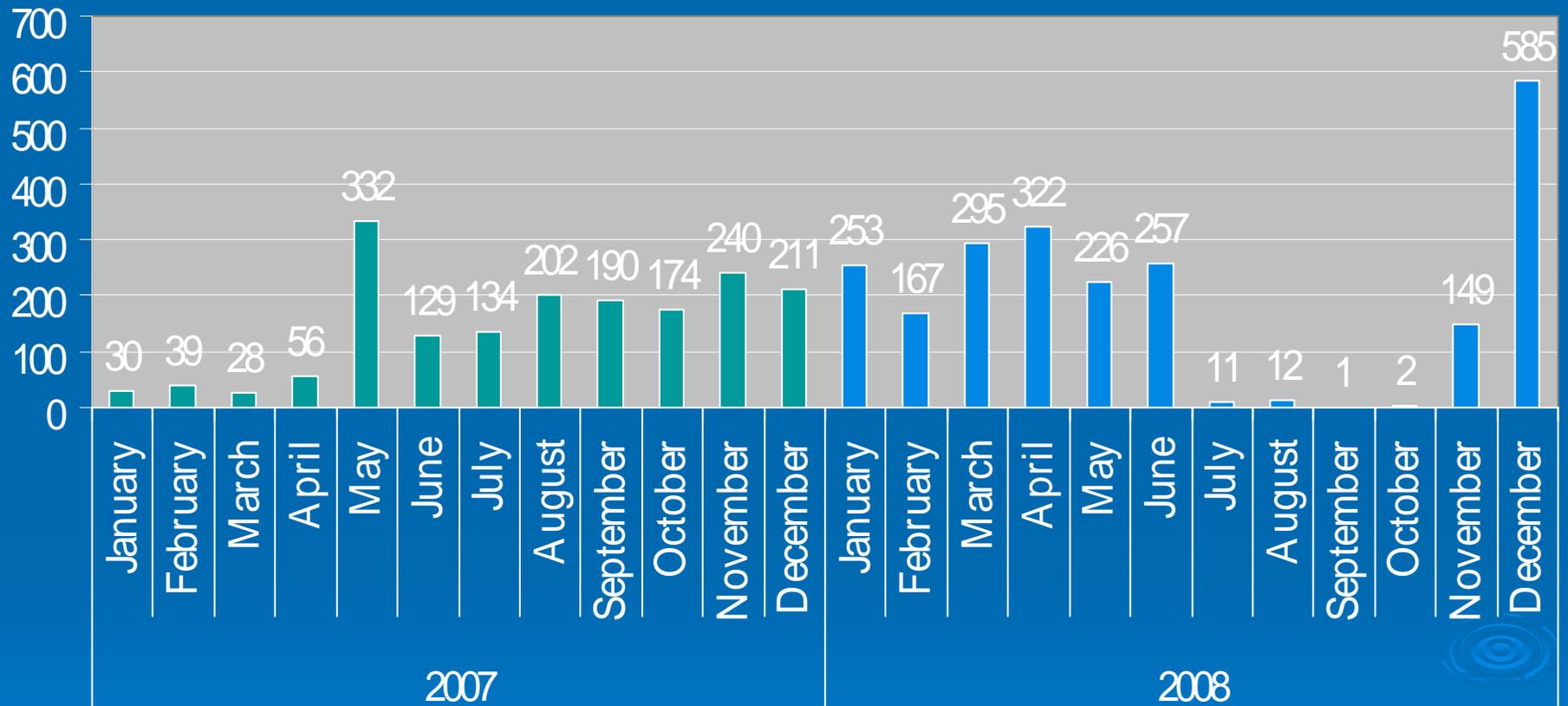
**BG Dr. Nachman Ash**

**Surgeon General**

Unclassified



# Background





(x) Number of Documented Hits

Dec. 27<sup>th</sup> – Jan. 19<sup>th</sup>





# Civilian Casualties



Total	Anxiety – Treatment center	Anxiety - Hospital	Mild	Moderate	Severe	Dead	
2274	1380	528	350	6	7	3	Total

- All casualties – injured outside safe zones
- Half – injured on the way to safe zones
- Missile splinters and mild blast injuries



Point of Injury

Platoon Care Point With ALS

Platoon Care Point

Battalion Aid Station

Border

Exchange Point

Rapid Evacuation

Trauma Center unclassified

MEDICAL CORPS HEADQUARTERS





Point of Injury

Platoon Care Point With ALS

Platoon Care Point

Battalion Aid Station

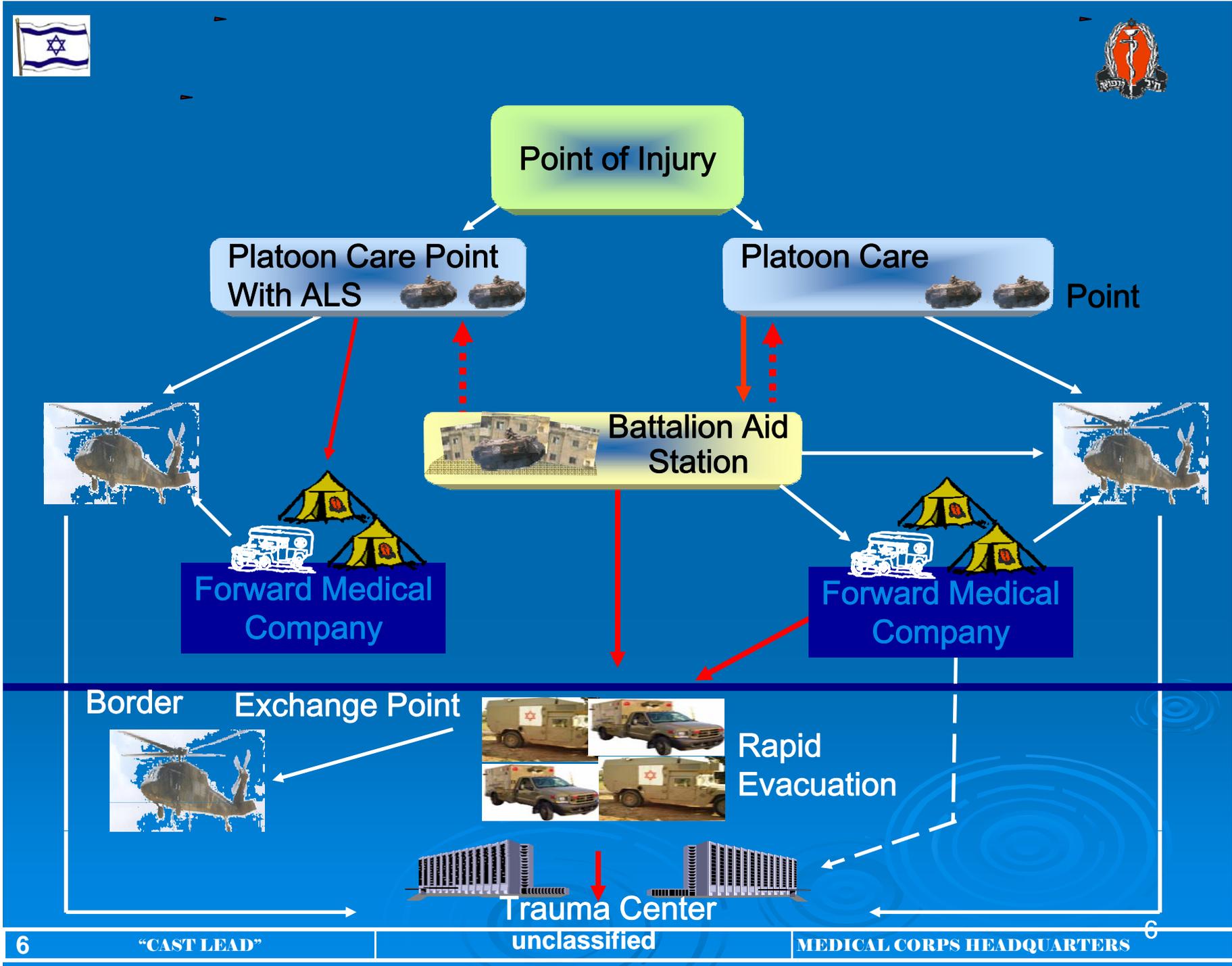
Forward Medical Company

Forward Medical Company

Border Exchange Point

Rapid Evacuation

Trauma Center





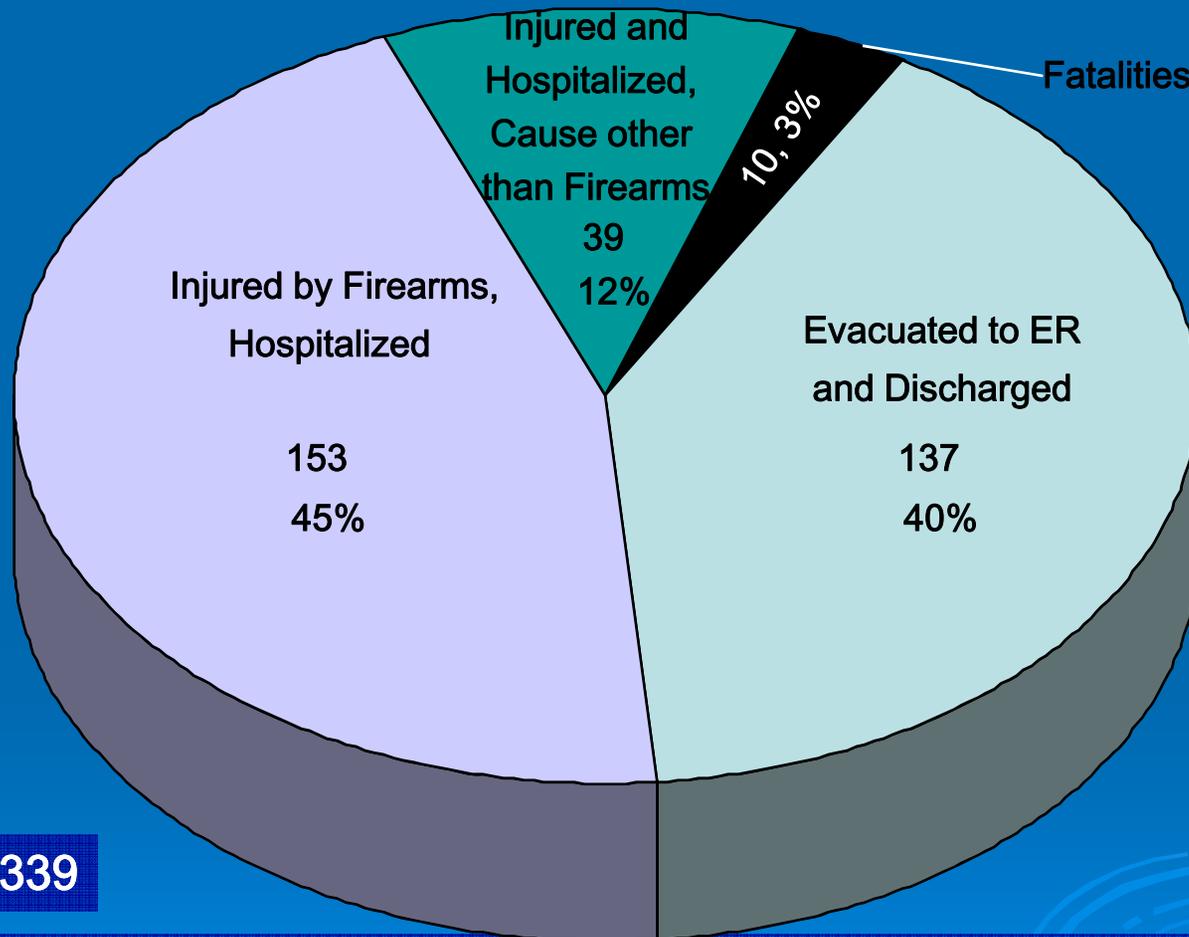
# Data Collection Methods



- A dedicated team of 7 physicians collected the information and analyzed it.
- Sources of information:
  - Casualties survey – questioning every injured soldier
  - Information collected from hospital medical records and medical staff
  - Questioned military medical teams
  - Operational details collected from operation room records
  - Military Medical Teams debriefing - Formal debriefing in cases of moderate casualties and up shortly after the operation.
  - Forensic Medical Records – PM examination
- Data collected included:
  - Type of injuries
  - Cause of injury
  - medical aid given in field (including procedures performed and equipment used)
  - evacuation time to any echelon
  - Medical treatment given in the hospital



# Number of casualties



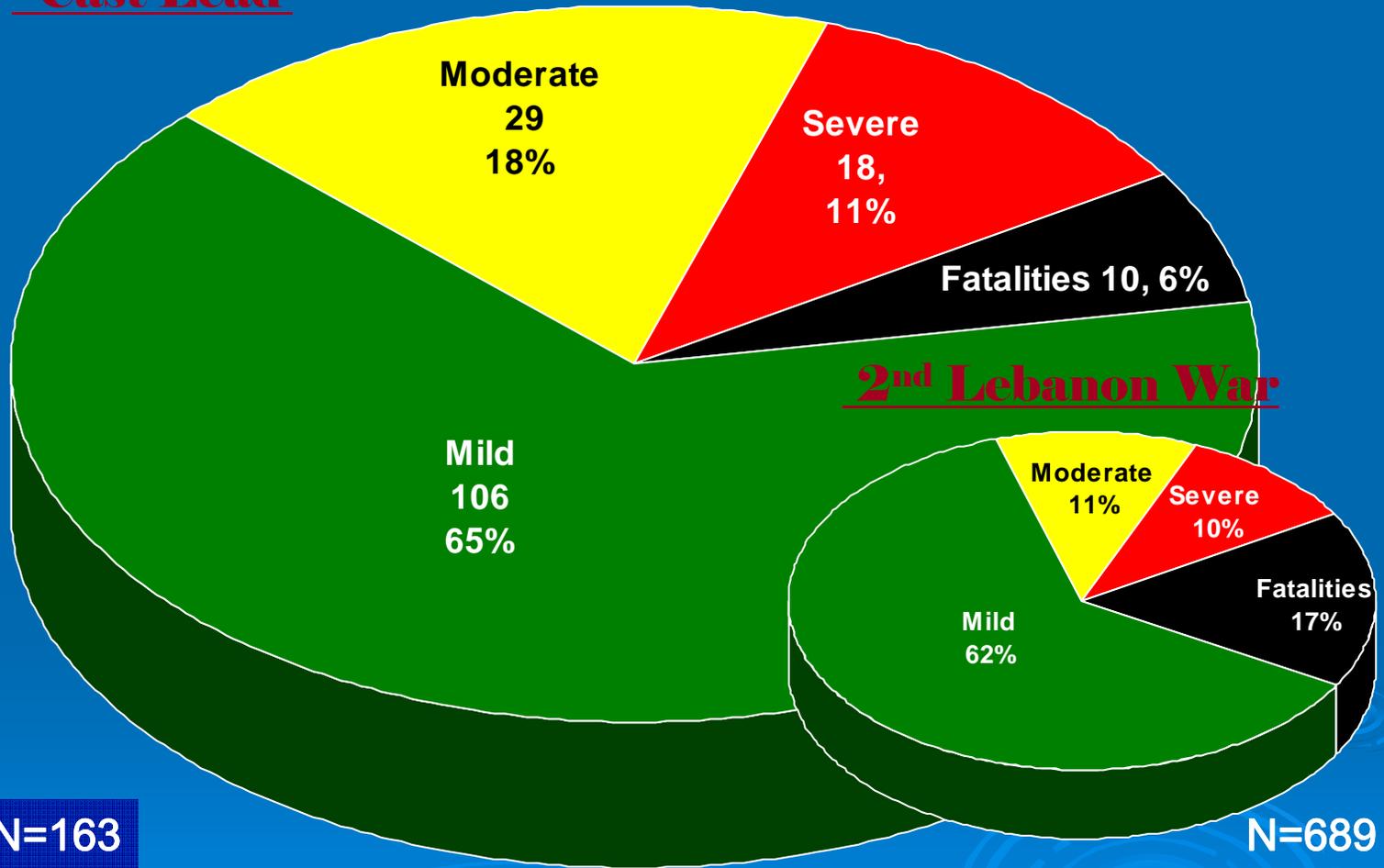
**N=339**

- Refers to casualties due to combat (inflicted by firearms), accidents, contusions and animals.
- Medical diseases and stress reactions not included.



# Injury severity

## 'Cast Lead'



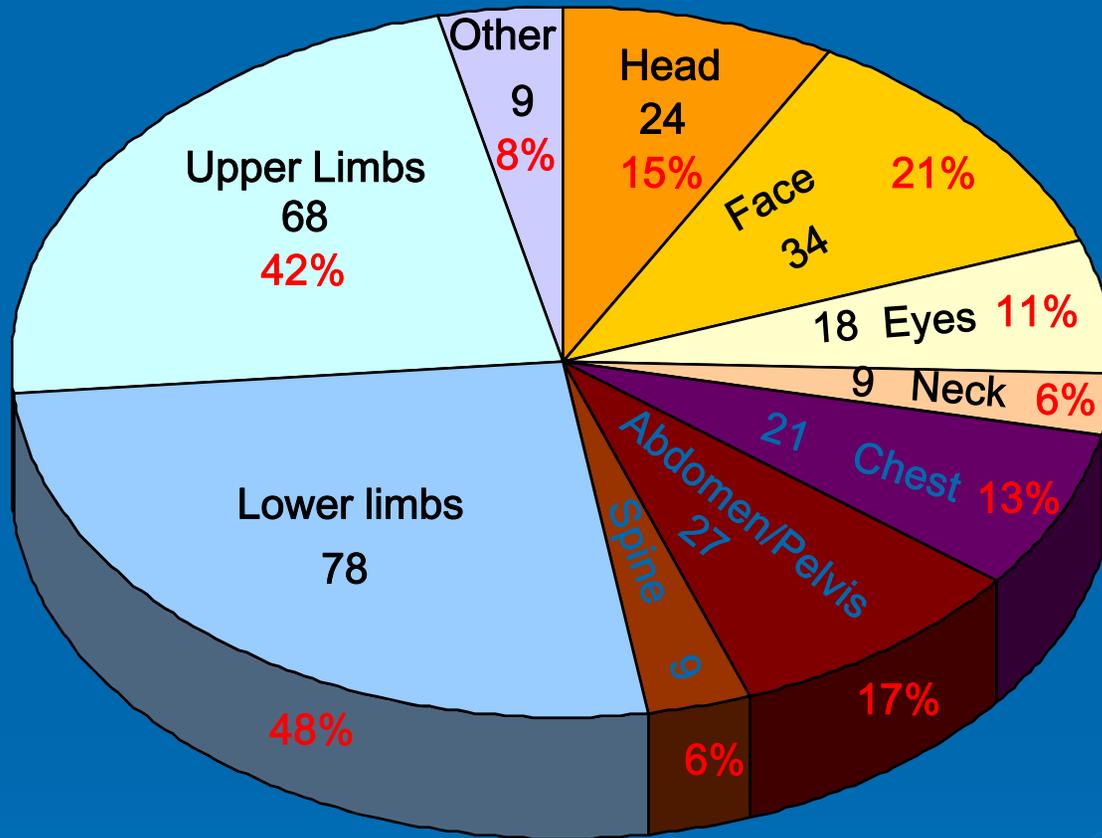
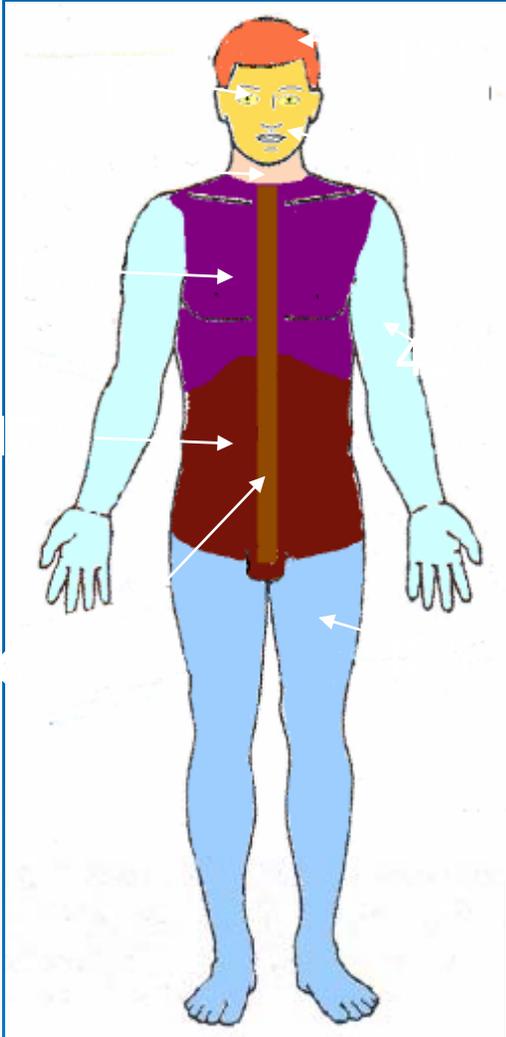
N=163

N=689

• Injury severity as determined in the ER



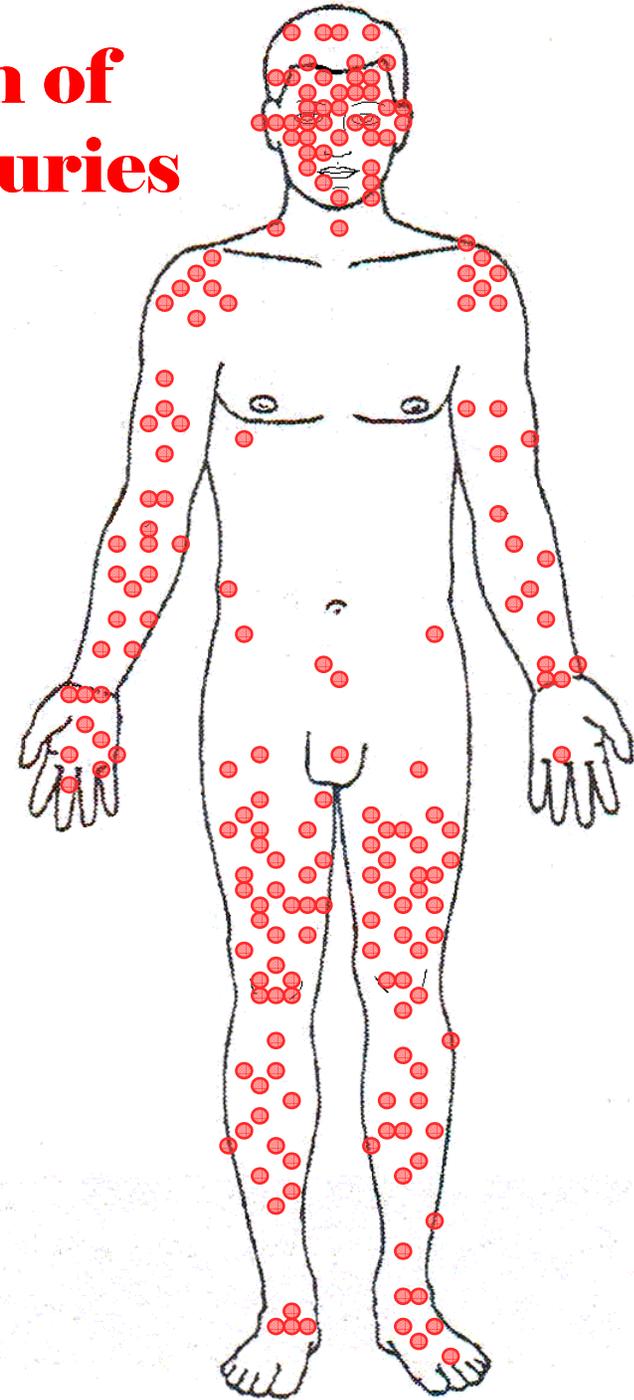
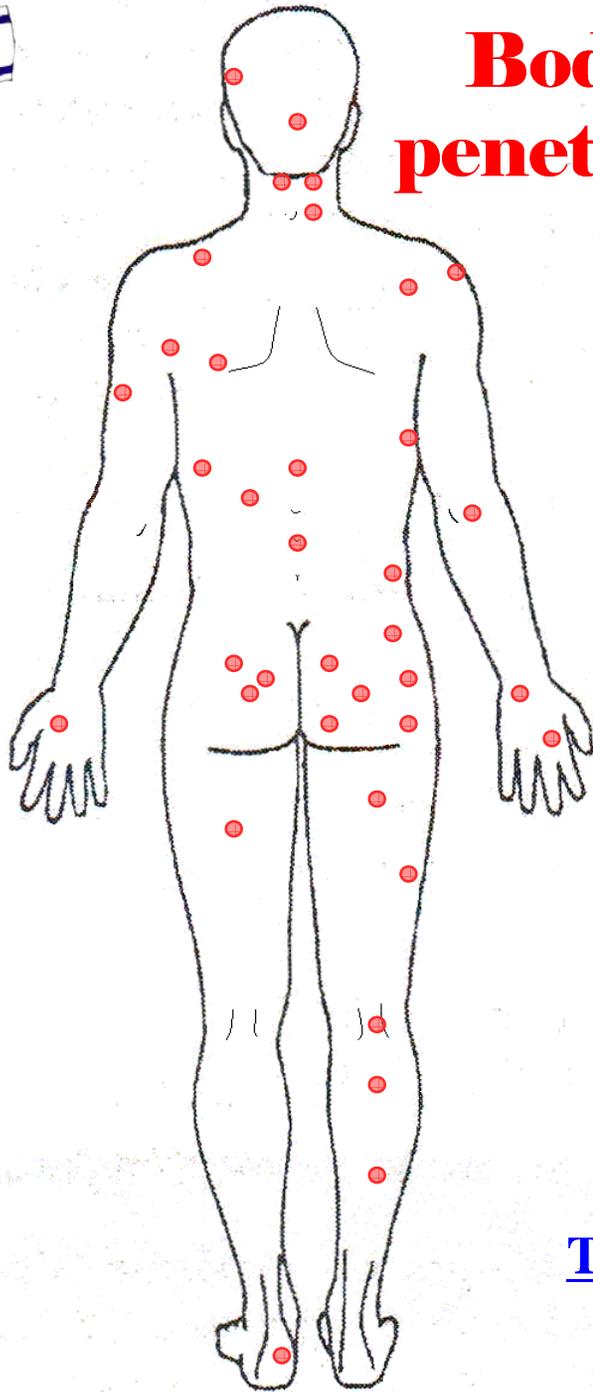
# Body Regions Injured



- 299 wounds in 163 wounded (firearms, hospitalized)
- Average number of wounds per wounded – 1.8
- Percentage is out of total number of casualties (therefore >100)



# Body location of penetrating injuries



The shield effect

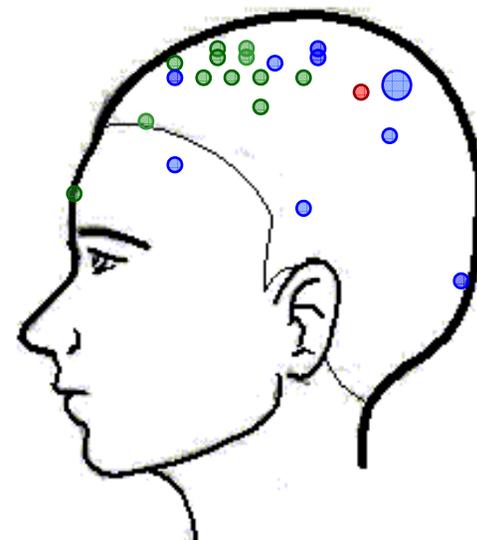
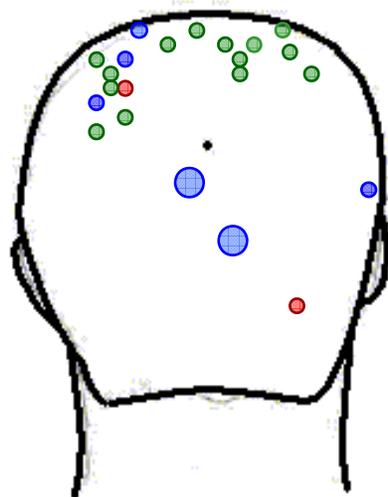
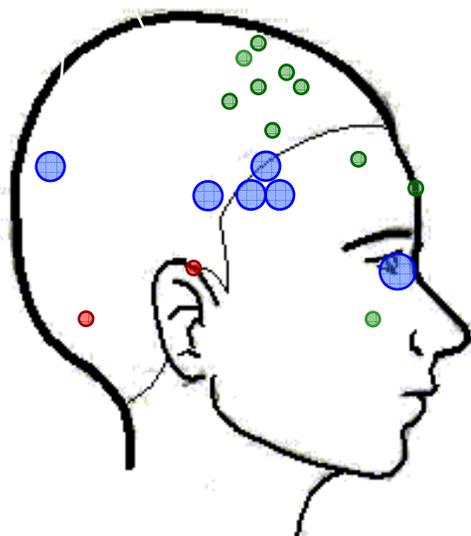


# Helmet Protection Analysis



Bullet

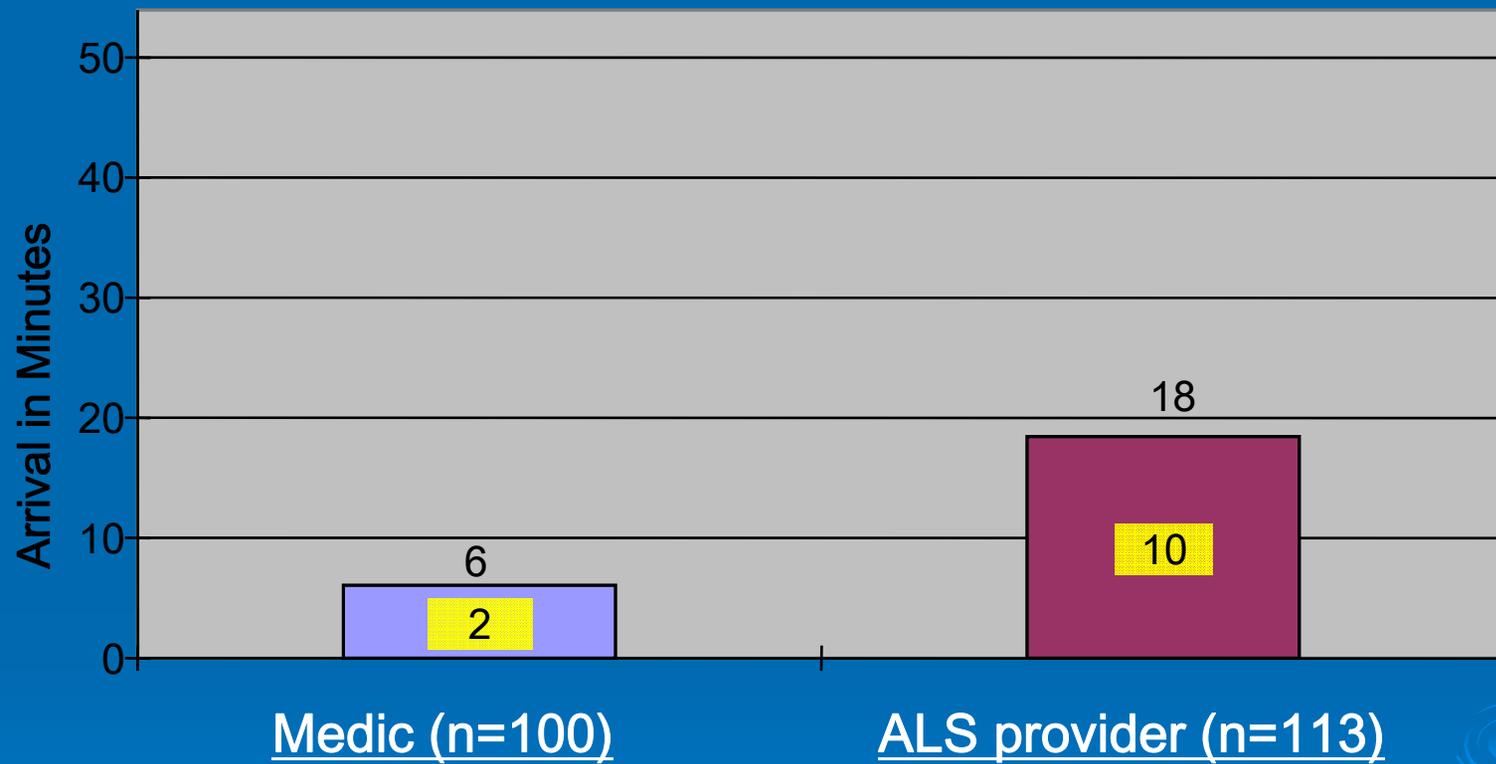
Shrapnel



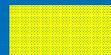
Blue – With Helmet  
Green - No Helmet  
Red - Unknown



# Time of Arrival of caregivers

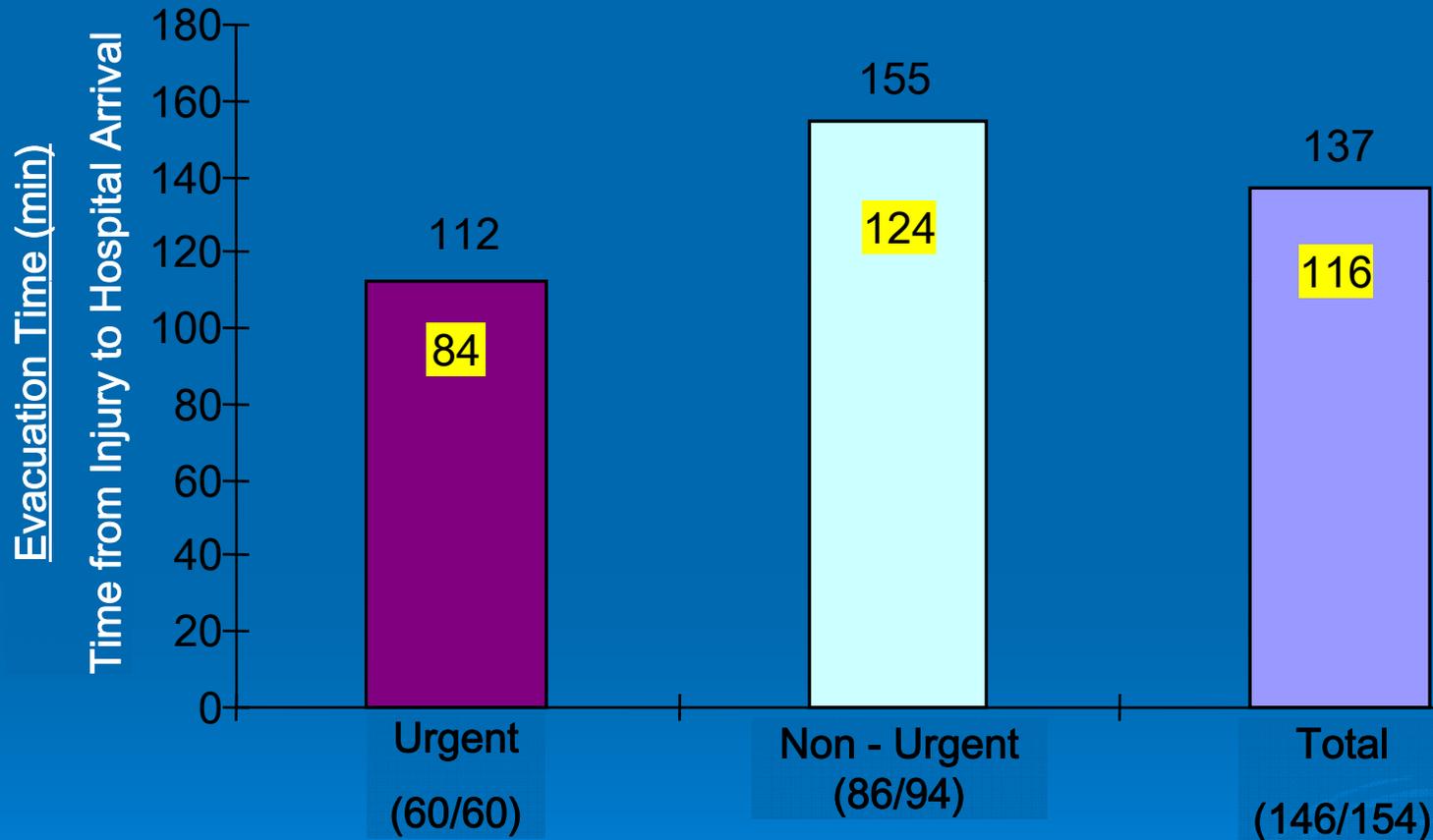


•Median



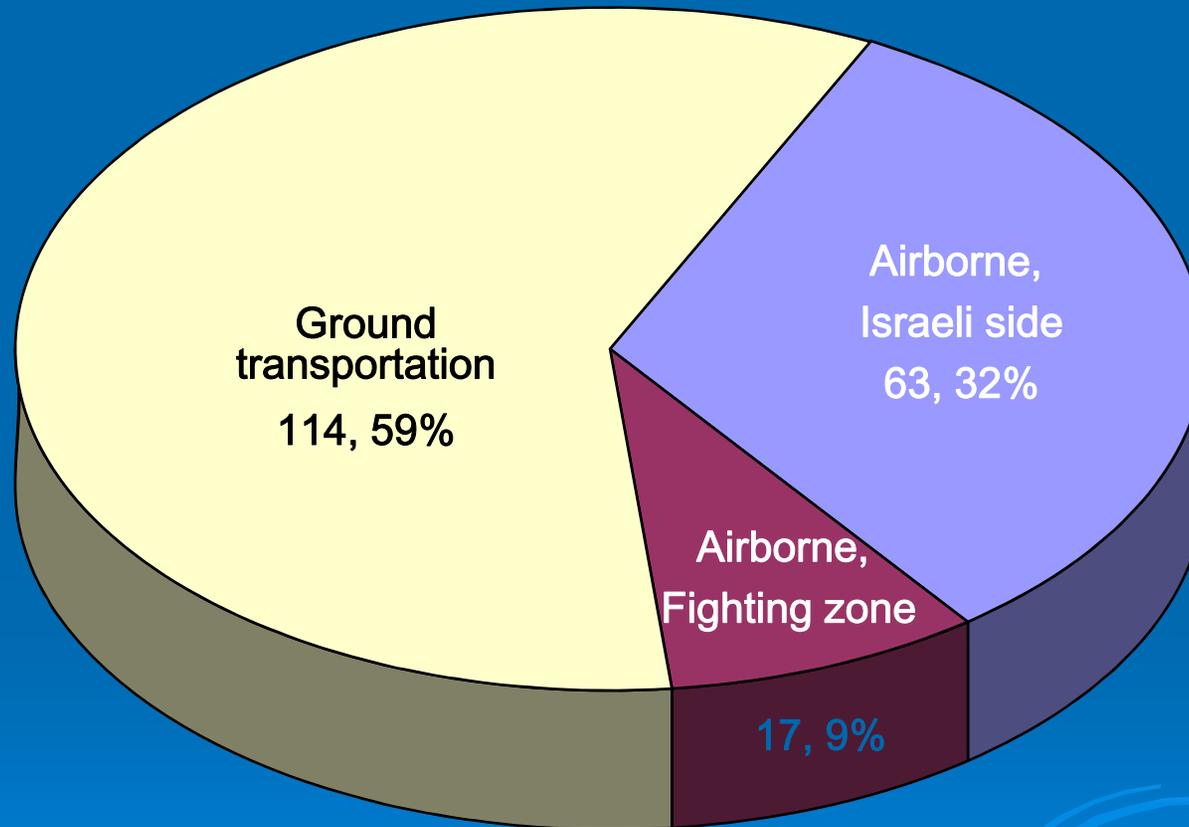


# Evacuation Time by Urgency





# Means of Evacuation

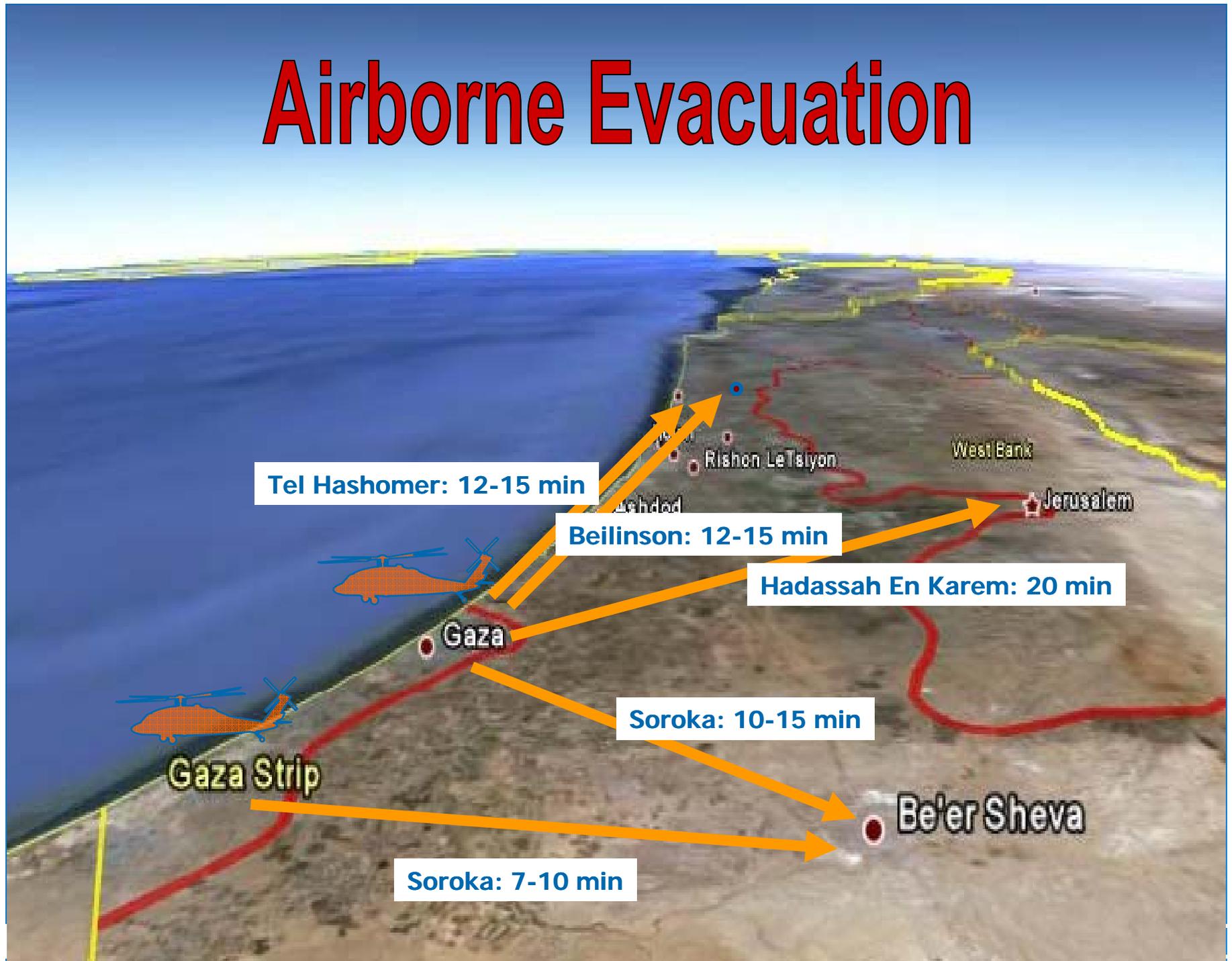


N=194

17 firearms casualties were evacuated from within the Gaza strip in 6 helicopter sorties

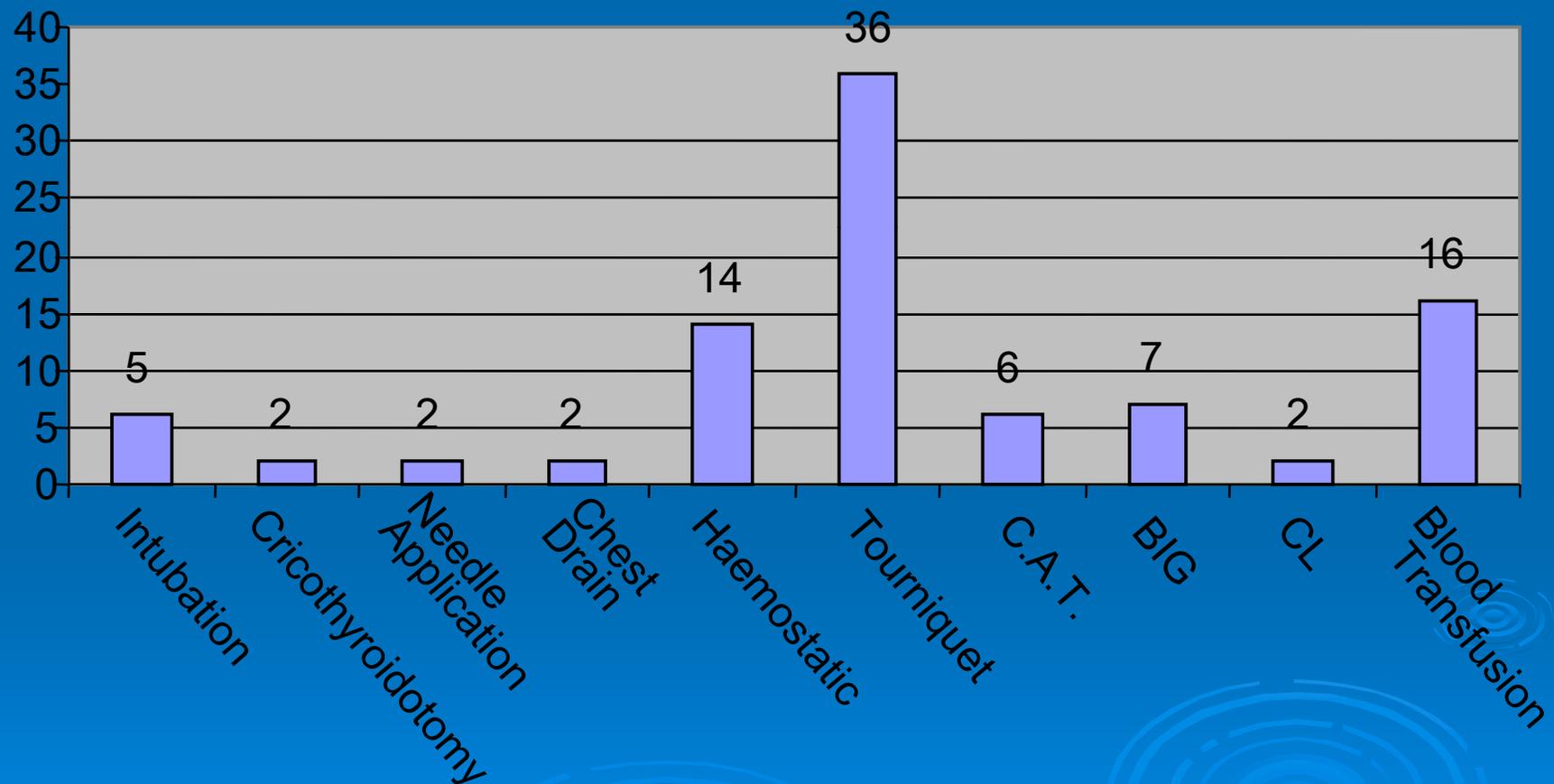
3 other non-firearms casualties were airborne-evacuated from within Gaza

# Airborne Evacuation





# Documented Medical Procedures





# The Main Components for Goal Success

- Preparation and training
- Cooperation
- professional medical teams
- Safe evacuation routes
- Total responsibility of commanders to the evacuation task
- Integration of the “light” evacuation means to our evacuation ‘tool-box’
- Aerial evacuation





# The 'Infantry Porter'





# Clinical lessons learned



- ❖ Tourniquets – improve training: indications, efficacy, observations
- ❖ Haemostatic dressings – good experience
- ❖ Blood transfusion – indications
- ❖ Personal protection gear
- ❖ Preventing hypothermia
- ❖ Pain treatment – good experience with automatic MO inj.
- ❖ Casualties classification as urgent or non-urgent



Thank you