

Epidemiology of a Mass-Gathering
Hybrid Event: Pennsic War 2012

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Introduction

- ◆ About the presentation
 - ◆ Welcome to Pennsic
 - ◆ Overview of operations
 - ◆ Study goals & design
 - ◆ Study findings
 - ◆ Conclusions
- ◆ Summary & Discussion





The Society for Creative Anachronism

"The SCA is an international organization dedicated to researching and re-creating the arts and skills of pre-17th-century Europe. Our "Known World" consists of 19 kingdoms, with over 30,000 members residing in countries around the world. Members, dressed in clothing of the Middle Ages and Renaissance, attend events which feature tournaments, royal courts, feasts, dancing, various classes & workshops, and more."

-front page of sca.org

Welcome to Pennsic!

- Held annually at Cooper Lake Campground 60 min north of Pittsburgh, PA

- 10-12,000 attendants annually

- 15 days, 4 major armored battles

- Heavy, rapier & youth combat events

- Pennsic University

- Revelry & Shopping





N Pennsylvania

Lake Erie

NEW YORK

PENNSYLVANIA

Harrisburg

NEW JERSEY

MARYLAND

WV

VA

DE

©1999 maps.com

0 25 50 mi

0 25 50 km

80°

78°

76°

42°

40°

Welcome to Pennsic!

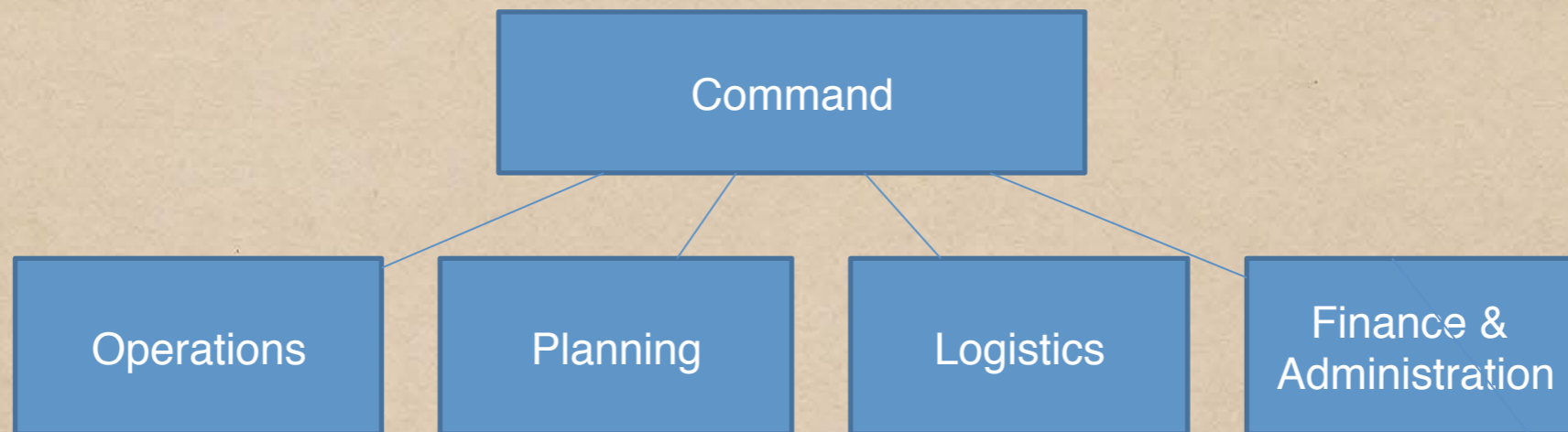






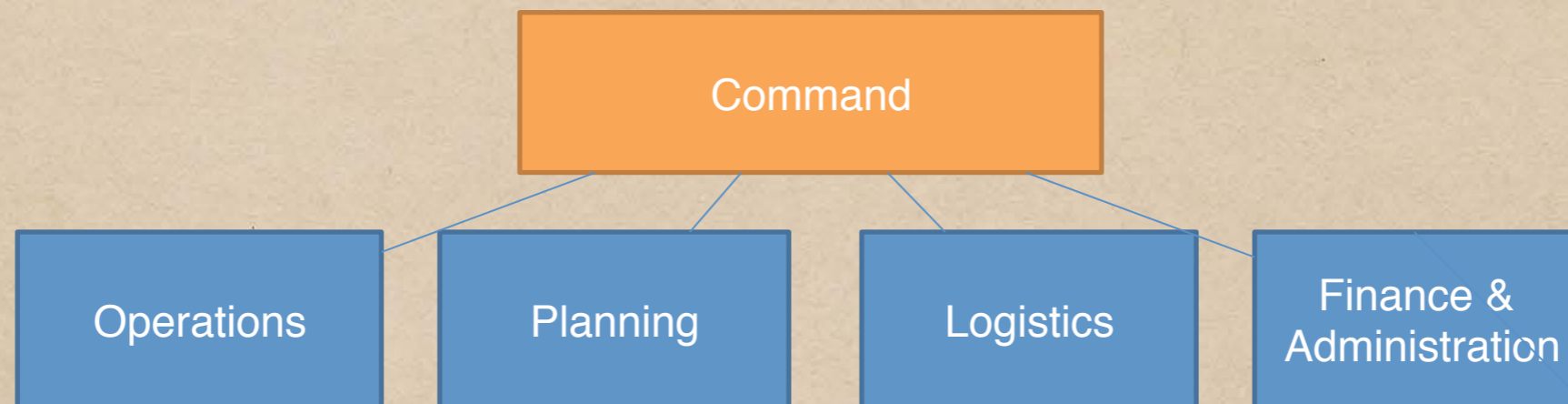


Overview of Operations



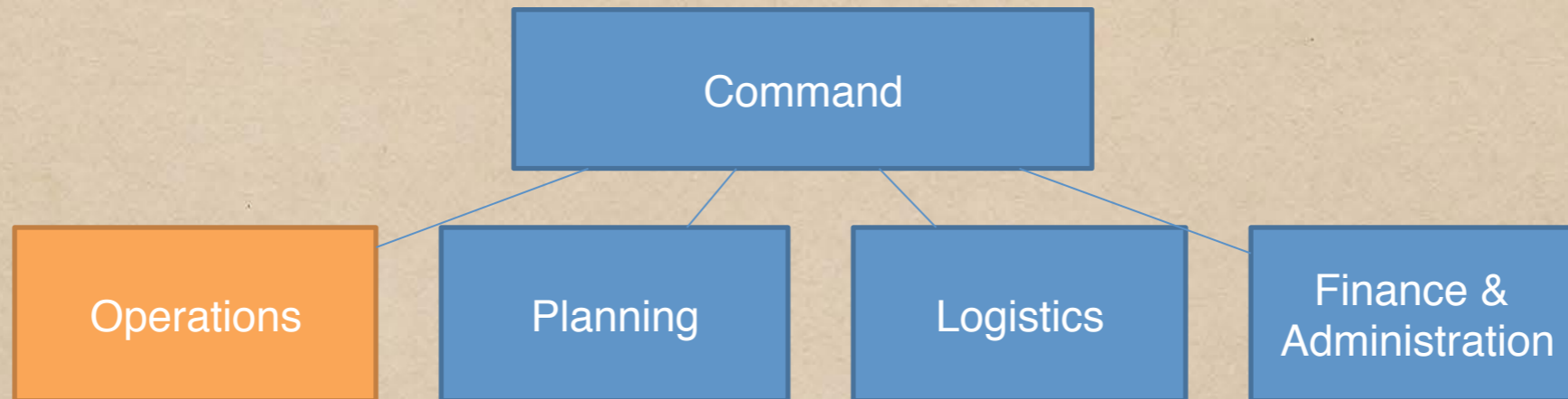
- Commonwealth of Pennsylvania requires EMS staffing due to large population. EMS coverage is provided by Northwest EMS, a mid-sized private EMS service.
- Emergency medicine residents from the Northwest EMS command facility, Allegheny General Hospital, provide value added services.

Overview of Operations



- One “District Chief” functions as the round-the-clock duty supervisor, handles daily operations and liaises with Pennsic Event Staff.
- During Battle Week additional leadership is required, some large battles require an EMS field coordinator.
- The Pennsic event is supported by the Northwest EMS management team.

Overview of Operations



Daylight hours staffing:

- * 1 Paramedic District Chief (Supervisor)
- * 2 Advanced Life Support Ambulance Crews
 - Advanced/Critical Care Paramedic
 - Primary Care Paramedic
- * 1 Primary Care Paramedic (Tent)
- * 2-4 Emergency Medicine Resident Physicians
- * 1-3 "Chirurgion" First Aid Volunteers



CURRENT DUTY
Cabrera - Team Lead
Phillip - Crew Chief
Hershey - Charge on Duty
- Charge on Duty

AFRO

- Antiemetics: ondansetron, promethazine

- Antihistamines: diphenhydramine, famotidine

- Benzodiazepines: diazepam, midazolam

Medications

- Bronchodilators: albuterol, ipratropium

- NSAIDs: ibuprofen, ketorolac

- Paralytics: succinylcholine, vecuronium

- Steroids: methylprednisolone, prednisone

- Naloxone

- Fentanyl

- Etomidate

- Dextrose

- Glucagon

- Nitroglycerin

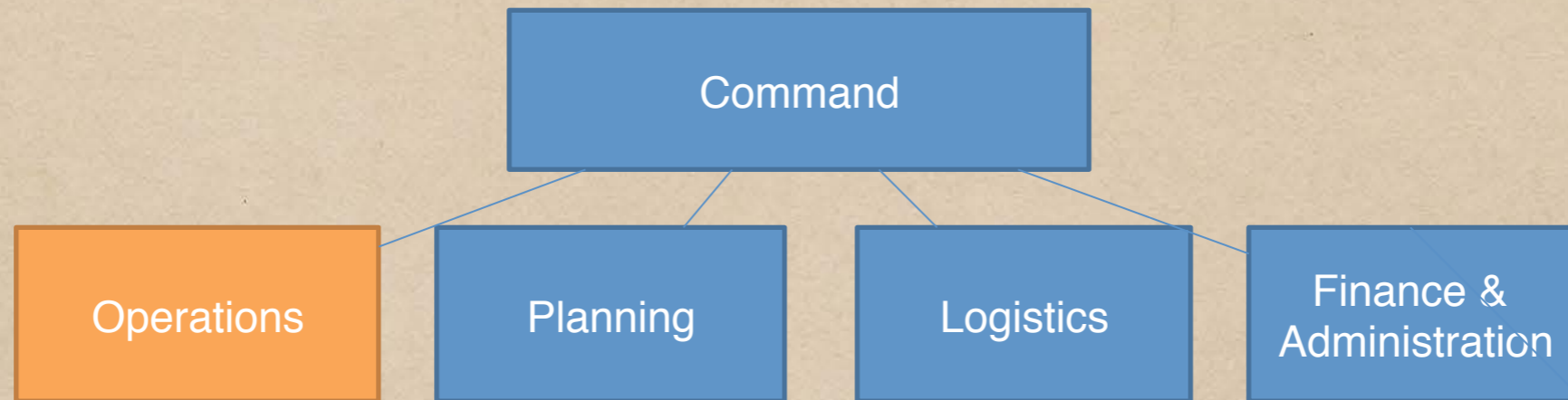
Capabilities

- ◆ Diagnostics
 - ◆ Vital signs, 12 Lead EKG, Pulse oximetry, Waveform capnography
- ◆ Interventions
 - ◆ BLS
 - ◆ ALS
 - ◆ I&D, suturing, tetanus updates, wound care, Rx writing (non-controlled substances), reduction of dislocations





Overview of Operations



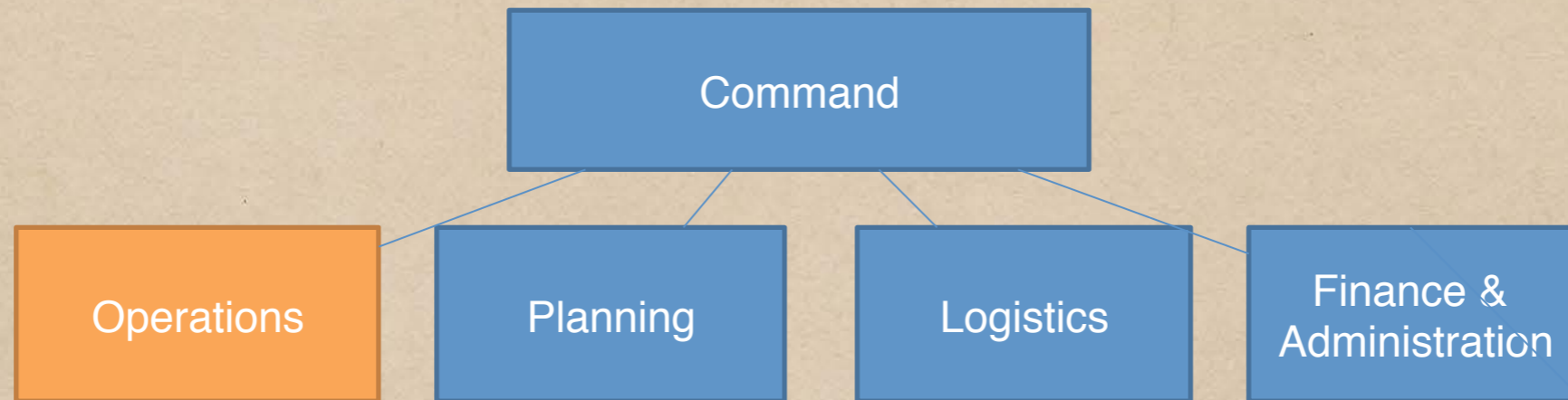
Overnight staffing:

- * 2 Advanced Life Support Ambulance Crews
 - ACP/CCP/District Chief
 - Primary Care Paramedic

Surge staffing:

- * Mutual aid from local EMS services
- * Off duty providers camping on site

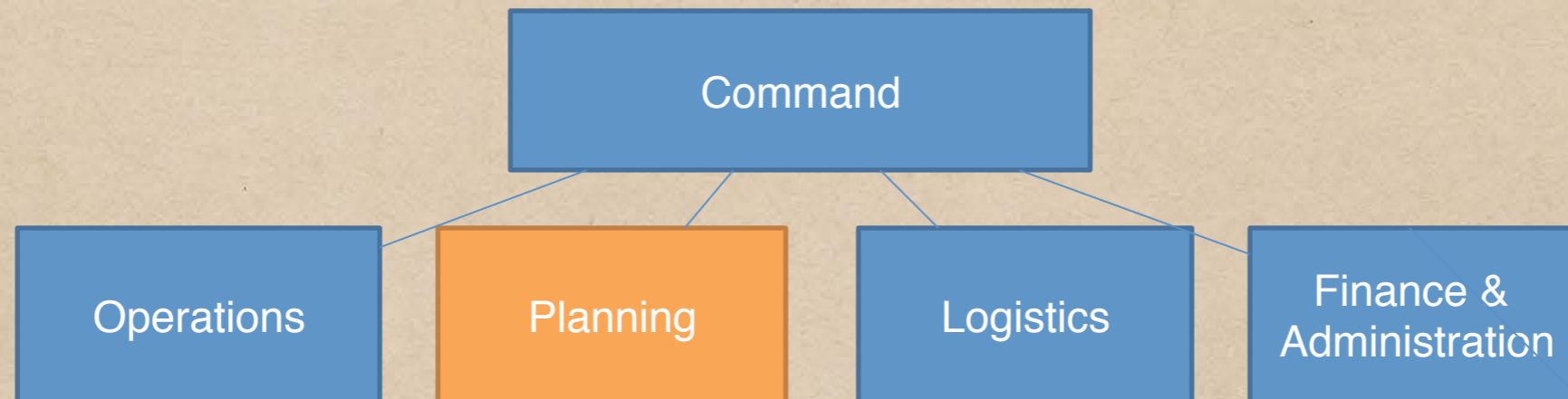
Overview of Operations



Battle Week staffing:

- * 1-2 Additional Advanced Life Support ambulance crews (including Mutual Aid Resources)
- * Variable Volunteer Fire Department (VFD) personnel
- * Variable additional providers from Northwest EMS
- * Variable Chirurgeon volunteers

Overview of Operations



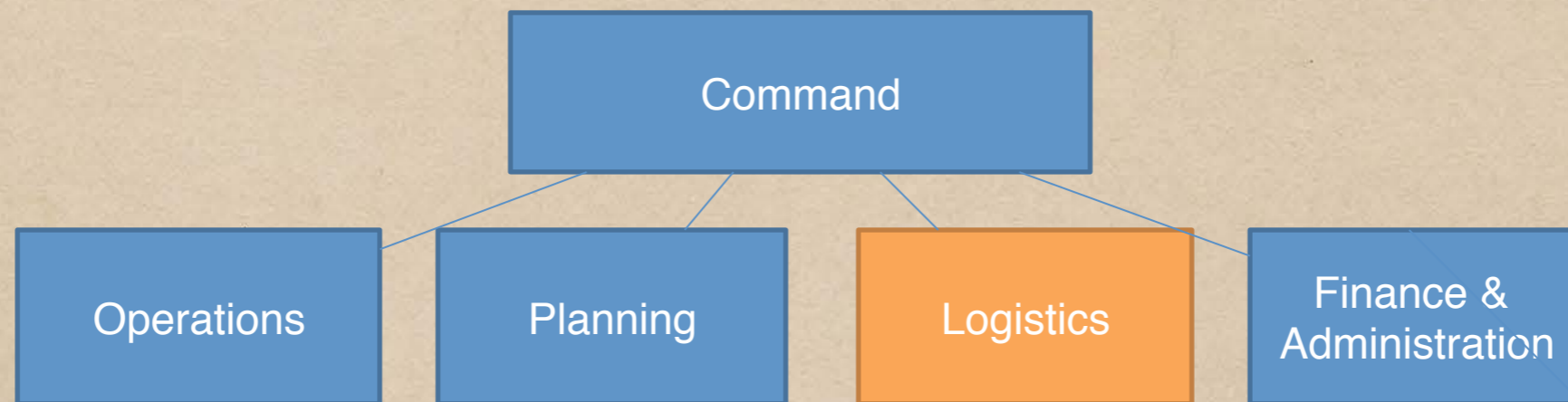
Hospitals

- Butler Memorial (Level II Trauma Center) 30-40 minutes via ground
- Pittsburgh area hospitals (Multiple tertiary care centers) approximately 1 hour via ground

Air and Ground Resources

- LifeFlight and STAT Medevac
- Slippery Rock EMS and NOGA EMS

Overview of Operations

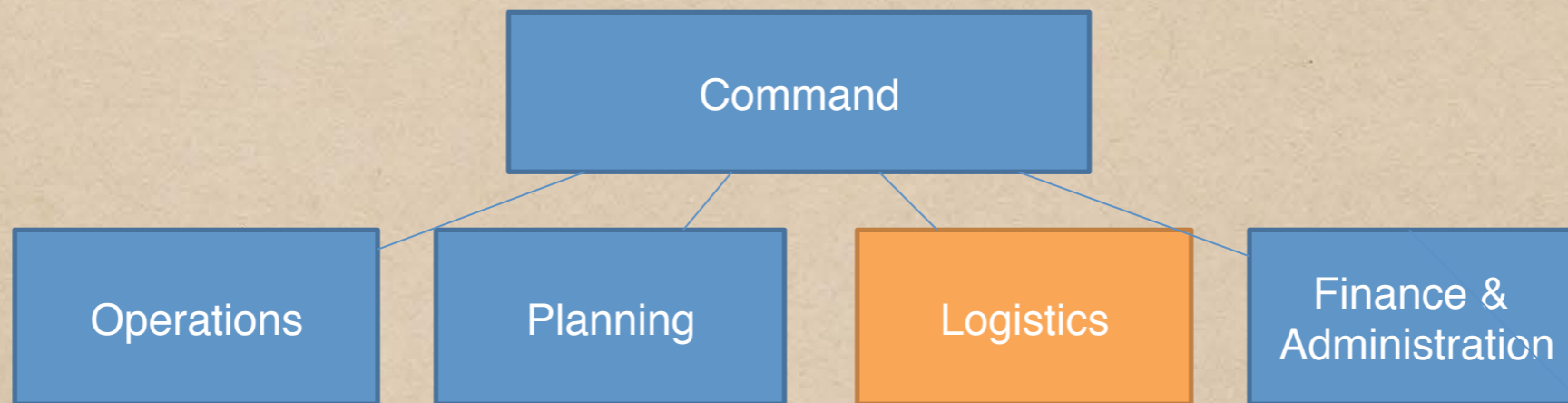


Facilities

- Canvas Walled Pole Building
 - Two “Critical Care” treatment areas
 - Four beds for minor/moderate illness
 - Open treatment area for patient assessment, wound repairs, etc.
- Air Conditioned Trailer
 - Overnight crew quarters
 - Office
 - Used conservatively for patient assessments



Overview of Operations

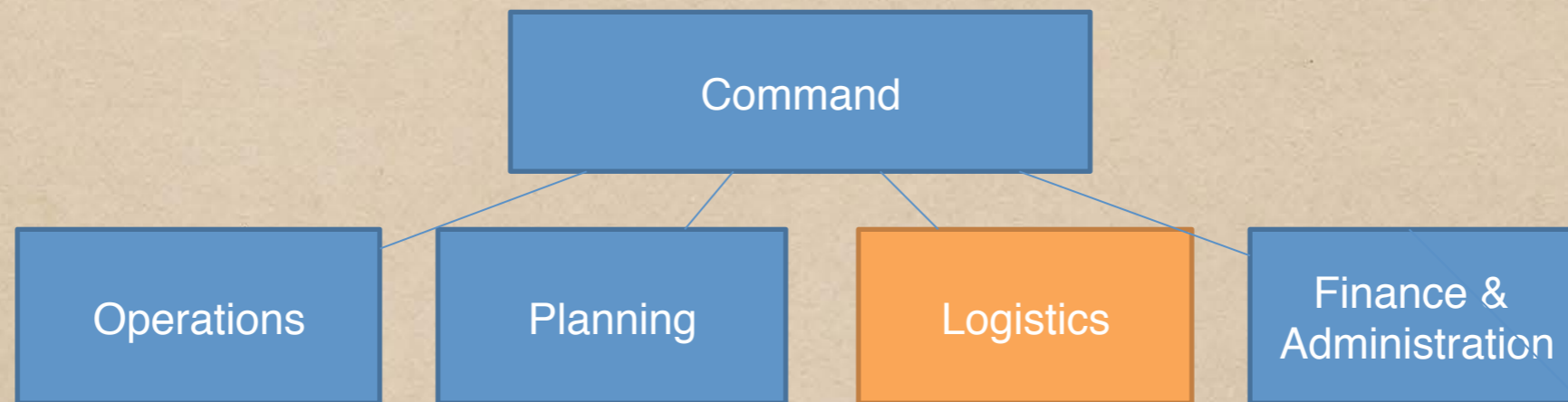


Transportation

- 2-4 ALS ambulances
- 1-2 "Mule" All Terrain Stretcher Carts
- 1 stretcher cart
- 2-3 golf carts



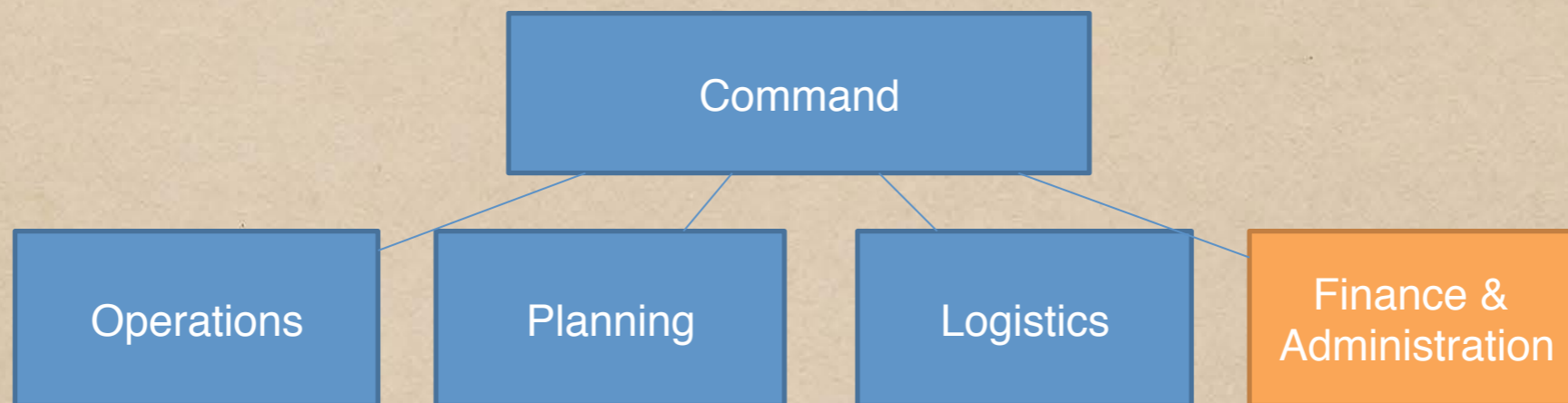
Overview of Operations



Communications

- *Butler County 911 via UHF Radio
- *Portable VHF radios
- *Nextel push-to-talk cell phones
- *Personal cell phones
- *12 Lead transmission capabilities
- *Foot messengers

Overview of Operations



Funding

*SCA Contract

*Transports

Documentation

*Clinic log

*EMSCcharts™ electronic medical records for all transports & ALS refusals

*Paper refusal forms for BLS & MD refusals

Study Goals & Design

- Pennsic is a unique event that combines vigorous full-contact combat activity, extended outdoor camping, and alcohol consumption
- Injury and illness patterns are different from mass gathering events of comparable size
- Profiling patient presentation patterns will better equip us to prepare for similar events
- Pennsic is a model of extra-hospital medicine provided primarily by paramedics

Study Goals & Design

- Source data
 - Electronic EMS charts
 - EMS refusal forms
 - Patient check-in log (at Chirurgeon Point)
- ALS patient data
 - Age, sex, chief complaint, interventions/diagnostics, disposition
- BLS patient data
 - Chief complaint, disposition

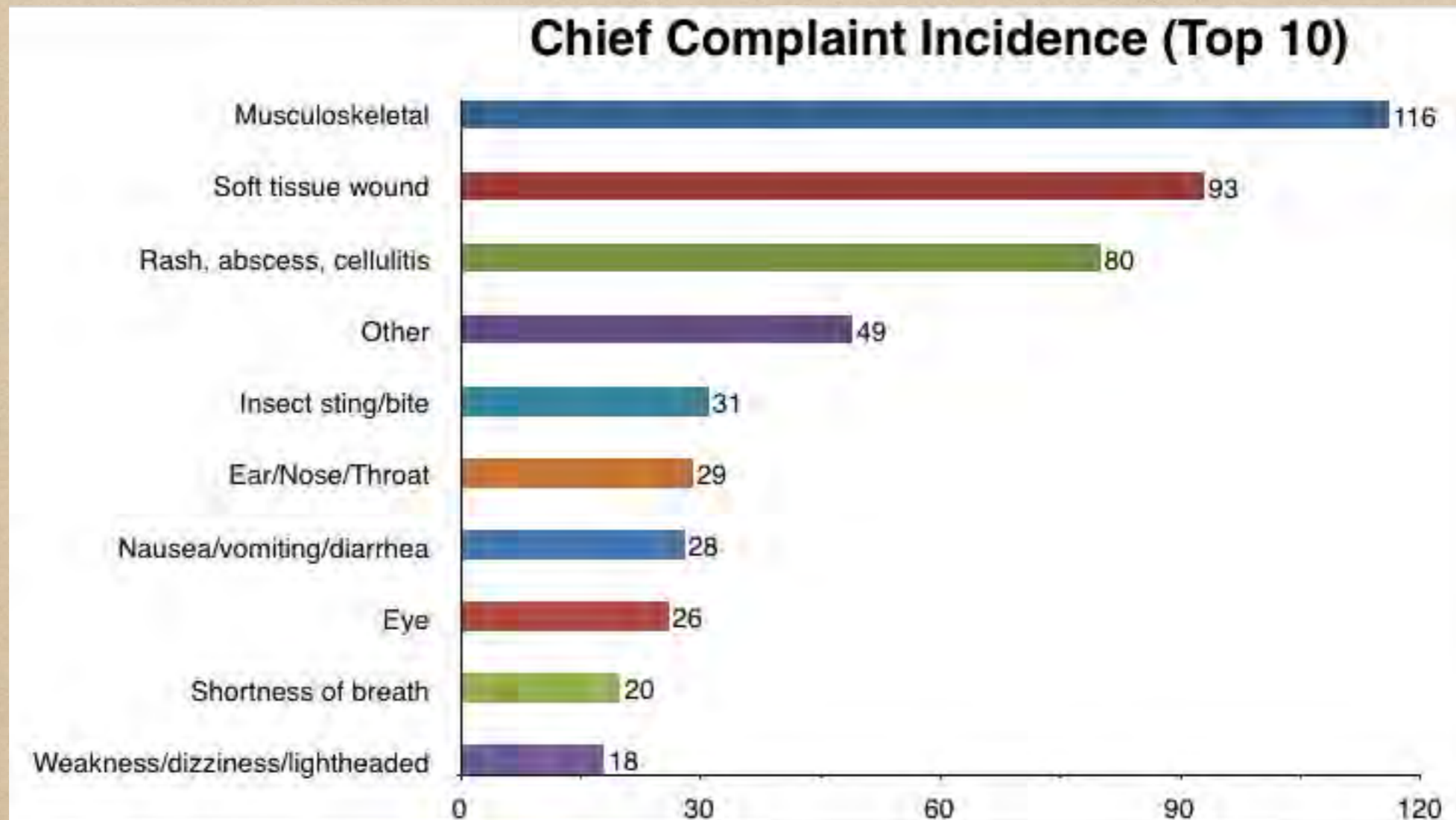


Study Findings

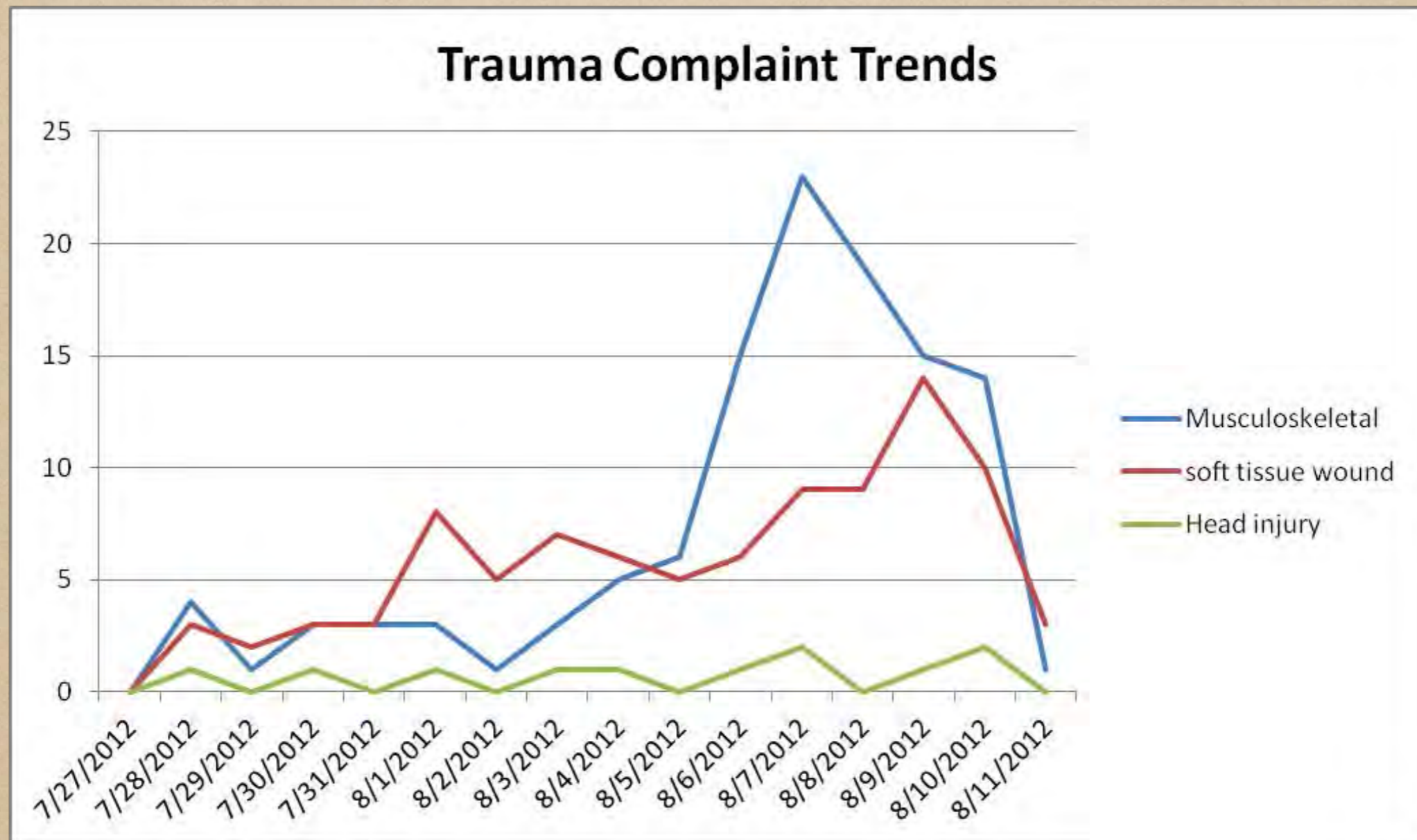
- Minimum age 12 months, max age 76, median 34 (n=151)
- 40% male, 60% female (n=155)
- Age unrecorded in 33 charts, sex unrecorded in 29



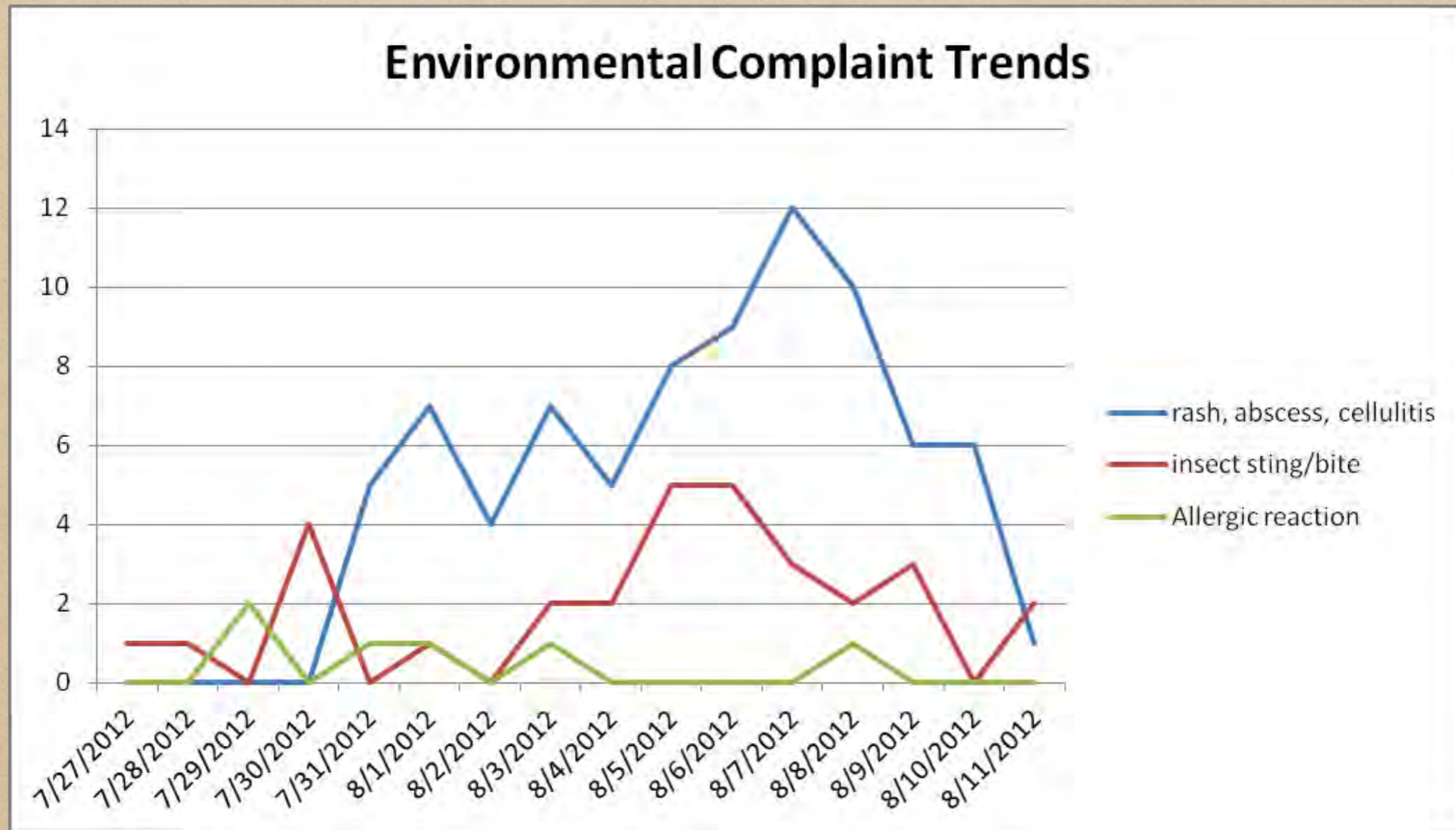
Study Findings



Study Findings

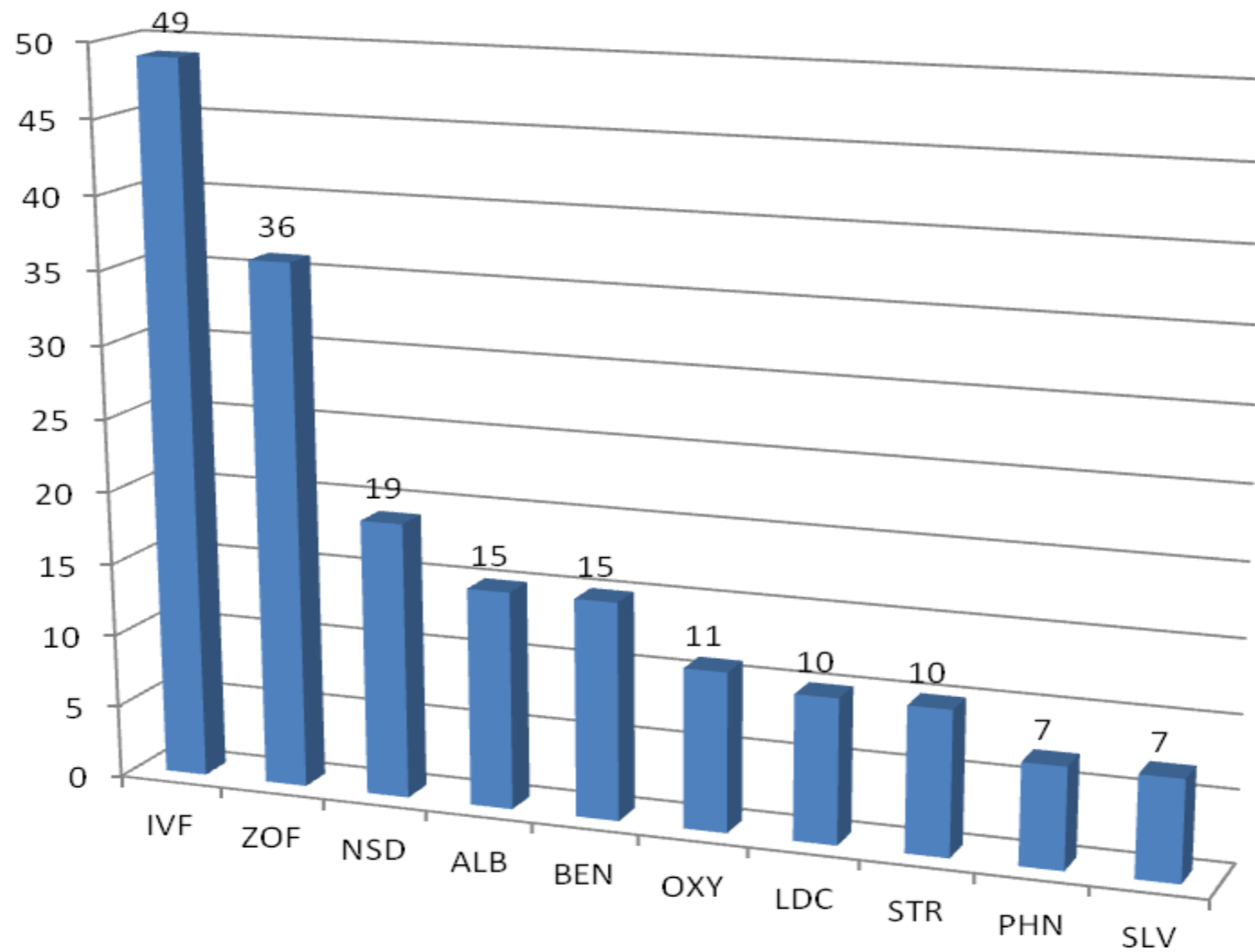


Study Findings



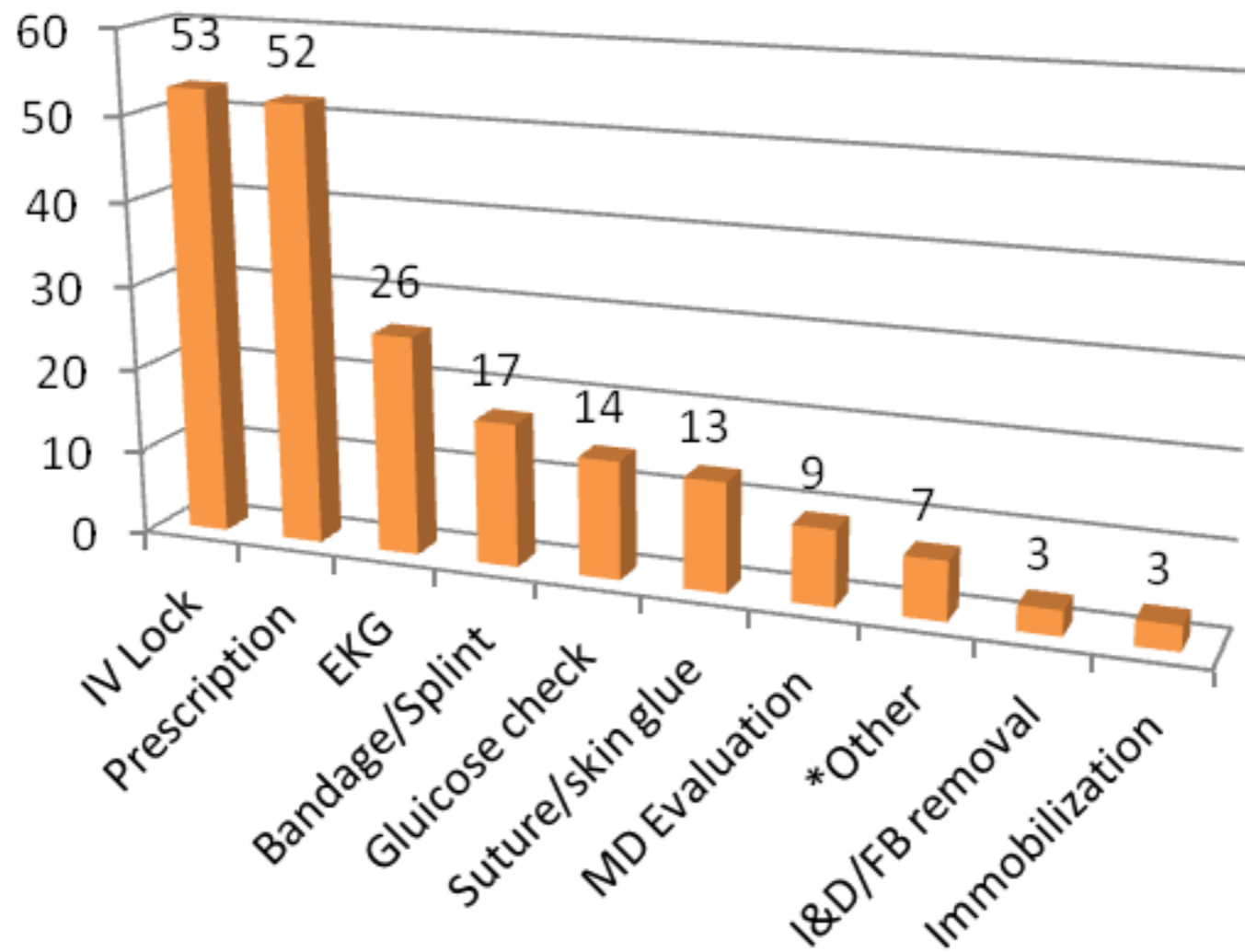
Study Findings

ALS Medication Utilization



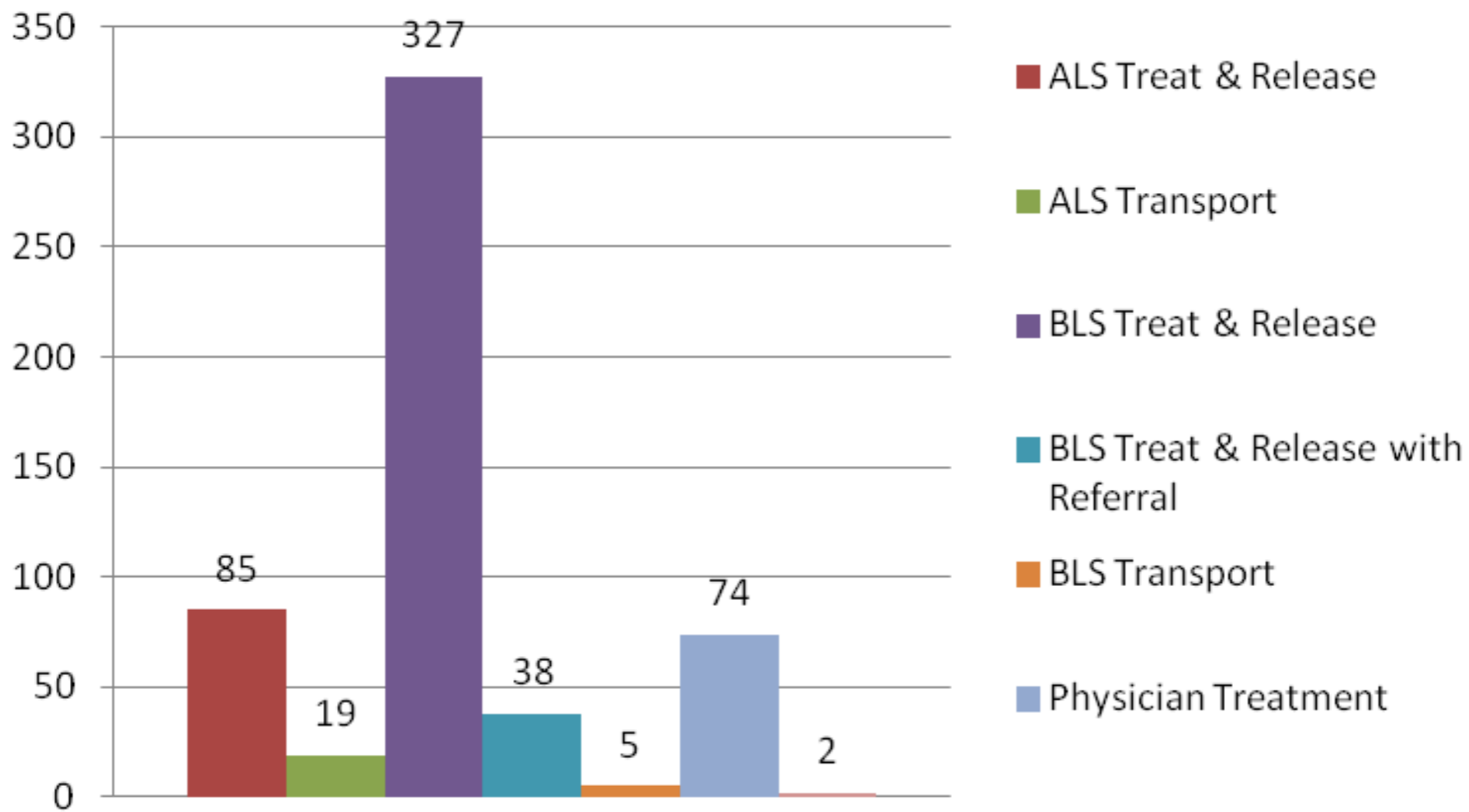
Study Findings

Intervention Frequency (ALS pts)



Study Findings

Patient Disposition for Event (n=550)



Conclusions

- Patient illness/injury patterns were predominantly traumatic and environmental
- Dehydration-related complaints required the greatest amount of interventions
- Incidence of patient transports for the event were less than the average for Western PA
 - 0.5 per 1000 persons

Study Limitations

- Limited supervision of data gathering
- No uniform documentation standard for BLS patients
- Battlefield treat-and-release
- No data-sharing agreement with other ambulance services

Summary and Discussion

- This is a work in progress
- Future improvements
 - Continued vigilance in ensuring documentation
 - Streamline patient flow
 - Involve Chirurgeons in registration and triage
 - Obtain day-to-day census data
 - Distinguish combat from non-combat injuries
 - Collect campsite information for disease monitoring

Questions?



H O B B I E S

Because Golf Is For Sissies.