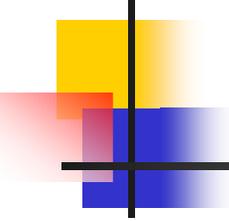


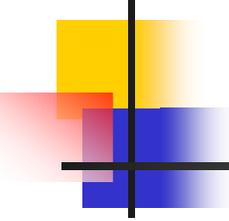
TRAUMA NUTRITION IN TIME OF WAR

Joanne Slyter, COL, SP
Langstuhl Regional Medical Center
Langstuhl, Germany



LEARNING OBJECTIVES

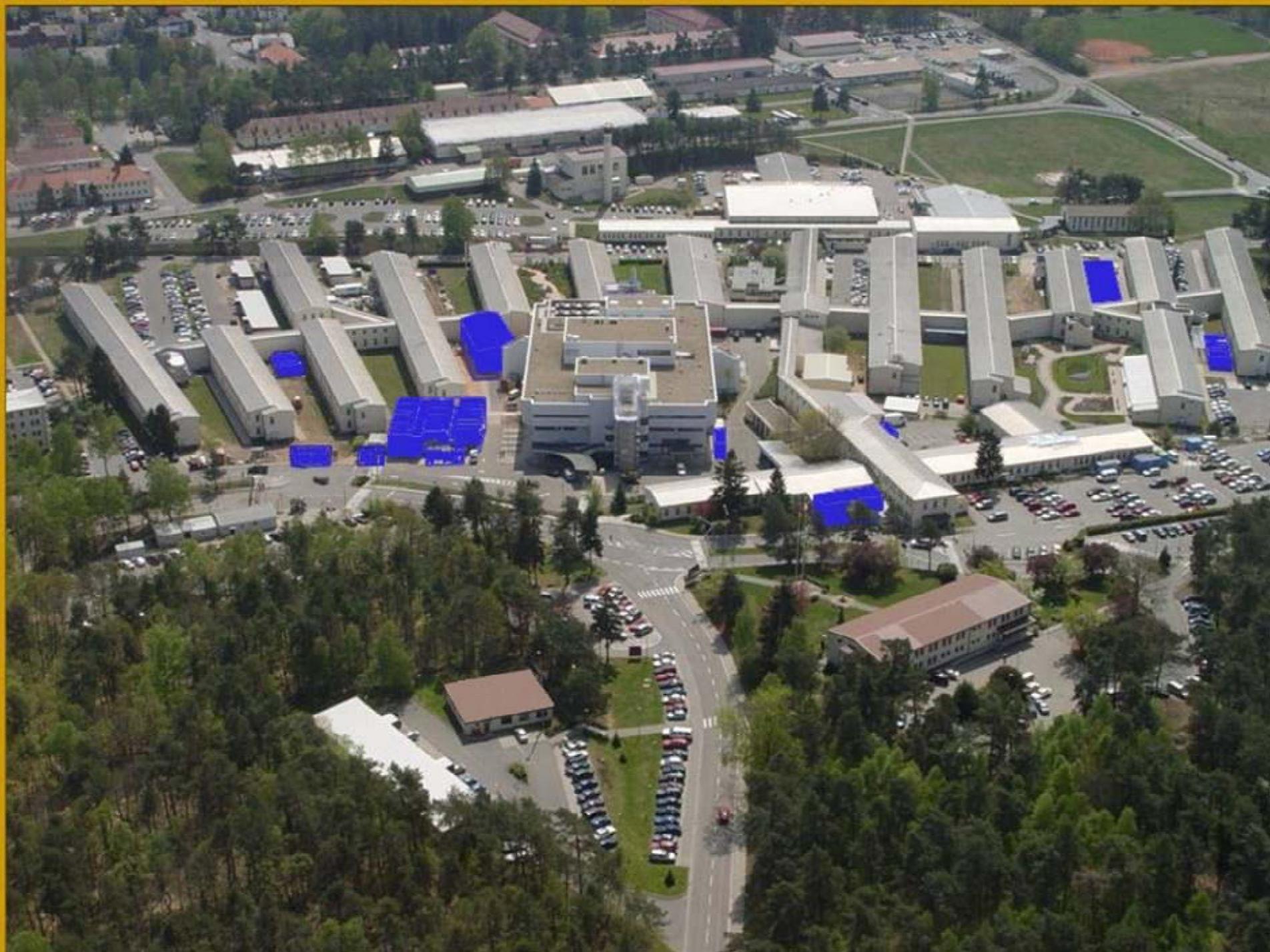
- Understand the nutrition challenges encountered with trauma war patients
- List the different type of nutrition trauma cases encountered



LEARNING OUTCOMES

- Better awareness of the type of trauma nutrition cases seen from war, and the challenges.
- Better preparedness for treating trauma nutrition patients from war





LRMC Capabilities

Capability	Pre OEF/OIF 2001	OEF/ OIF 2004
ICU	6	20
Med/Surg	42	64
Psych	18	18
Maternal/Child	46	43
Totals	112	145
ORs	4	8
Clinics	50	50
DWMMC (Personnel)	0	77

Patient Totals (As of 17 August 04)

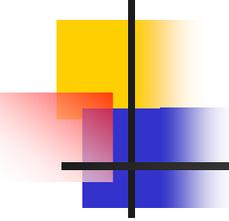


	OEF	OIF
Inpatients	697	4,195
Outpatients	1,976	10,596
TOTAL	2,673	14,791

Total Patients Treated = 17,464

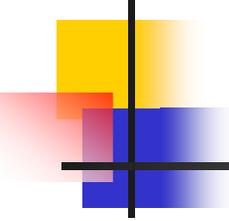


TYPE OF TRAUMA WAR INJURES



- Improvised Explosive Devices (IED) blasts resulting in burns, shrapnel wounds.
- Drownings
- Motor vehicle accidents (MVA)
- Gun Shot

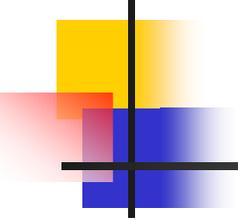




CASE STUDY

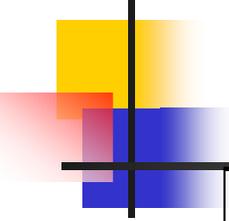
■ Subjective

- Sedated and intubated since admission, and presently in surgery. Unable to assess N/V, pain, diet history, etc.
- 3+LE/UE/facial edema
- Absent bowel sounds
- Small bowel functioning
- Plan to start TPN post-op according to primary RN. Surgeon advised by internal medicine to consider PEJ.



■ Objective

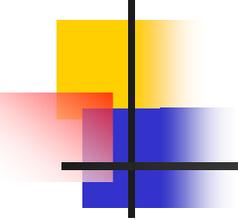
- 21 yo BM in IED blast 5 days earlier resulting in skull and neck FX, L2 spinal FX, pancreatic, spleen, and gastric injuries
- Weight: 198 lb(90kg)
- Ht: 72 in
- BMI: 26.9
- Diet: NPO



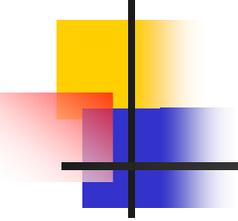
LAB

	Day 1	Day 2	Day 3	Day4
RBC	4.55	4.35	3.9	3.83
HGB	13.2	12.7	11.4	11.2
HCT	39.3	37.7	33.9	33.1
Glucose	138	147	144	137
Na	142	143	141	139
K	3.5	4.4	4.6	4.4
CA	7.5	7.4	7.3	7.5
Albumin	2.1	2.1	2.0	2.3
Alk Phos	83	83	82	87
T. Bili	1.3	1.3	1.1	1.0

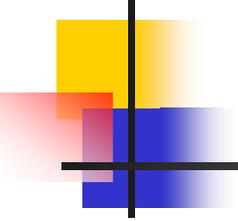
■ Medications

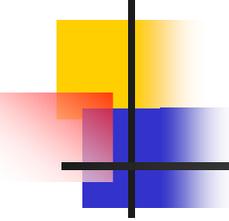
- 
- Solumedrol –increases glucose
 - Ranitidine
 - IVF LR 150ml/hr
 - Zantac
 - Pancrelysase
 - KCl
 - Meropenem
 - Fentanyl
 - Propofol
 - Vancomycin
 - Dopamine

■ Assessment

- 
- NPO for 120 hour – somatic, and visceral protein breakdown
 - Glucose affected by steroid
 - Lack of nutrition and multiple trauma affecting albumin
 - Albumin affecting edema
 - Estimated nutritional needs
 - 3534 kcal (BEE + 10% for activity x1.6 for multiple trauma)
 - 135-180 gm protein (1.5-2gm/kg BW)
 - 3150 ml fluid (35ml/kg BW)

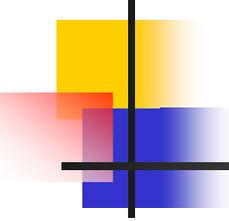
Feeding considerations

- 
- NG:
 - 3+LE/UE/Facial edema
 - Absent bowel sounds
 - Extensive gastric wounds
 - TPN:
 - Small bowel function
 - No gut integrity and concern for infection
 - PEJ
 - Provides minimal stimulation of pancreas
 - Small risk of vomiting and aspiration of feeds
 - Feedings can continue while CCAT to CONUS



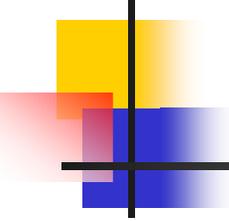
Limited Formulas

- Ensure Plus
- Optimental
- Jevity
- Promote
- Carnation Instant Breakfast
- ProMod
- Polycose



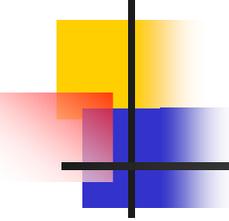
Nutrition risk factors

- NPO >120 hours
- Multiple trauma, surgery
- Low albumin
- Steroid medication
- Facial trauma/edema affecting insertion of NGT or NJT



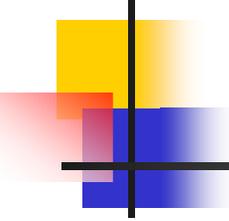
Recommendation

- PEJ as first choice of feeding due to active small bowel
- Ensure Plus 98ml/hr to start at 20ml and progress as show good tolerance; ProMod 2 scoops tid mixed with fluid and added bolus to tube.
- TPN if unable to tolerate enteral feeding



Physician Decision

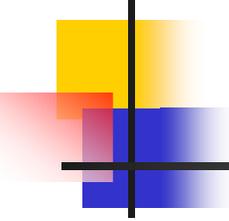
- NGT (Promote 20ml/hr) – patient continues to have absent bowel sounds and small amount of drainage to tube. Residuals not yet checked. This is Day 2 (6 days after injury)
- Can't do Nasoenteric because "tube curled up in stomach"
- PEJ not inserted because patient had laporatomy scar and didn't want to add an extra "hole to the GI"
- Will start TPN if patient has high residual



Conclusion

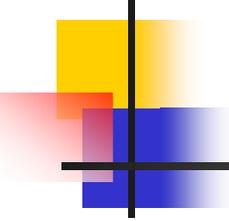
Feeding stopped midnight of Day 3 because CCAT out next day.

Patient will go for approximately 36-48 hours without nutrition depending on how fast nutrition intervention starts once arrive in CONUS



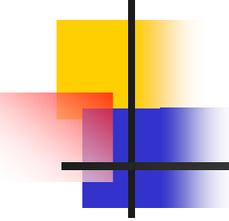
CHALLENGES

- Trauma patients generally arrive downrange without any form of nutrition.
- No tube in place to start feedings immediately on arrival
- 90 day turnover of physicians. All have own idea of nutrition
 - Surgeons don't believe in inserting tubes unless appears patient to be NPO for 7 days after surgery (most patients already on day 3 of injury when arrive)
 - Comfort measure – no gastric distention with TPN



CHALLENGES

- CCAT will not allow continuation of TPN and NTG – breakage of glass, and concern for vomit and aspiration. Stop feedings at midnight. Will allow PEG, PEJ on flight.
- Limited formulas
- Limited labs. Takes 1 week to get result of prealbumin.
- Triage – admit 34 patients/day. Up 213% from 2001.



MEETING CHALLENGE

- Building a protocol.
 - Presently in discussion between Dietitian and Internal Medicine.
 - Gathering data, to get better buy-in with surgeons