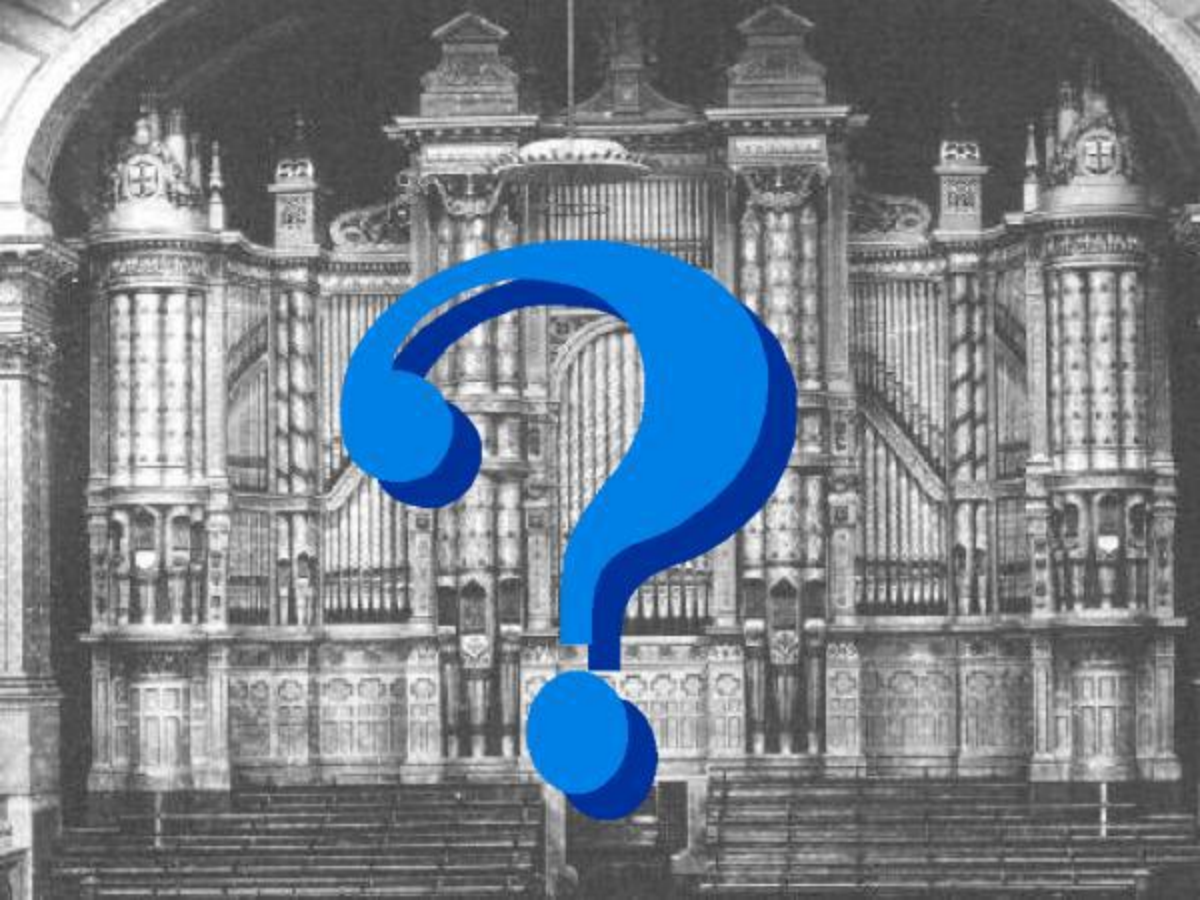


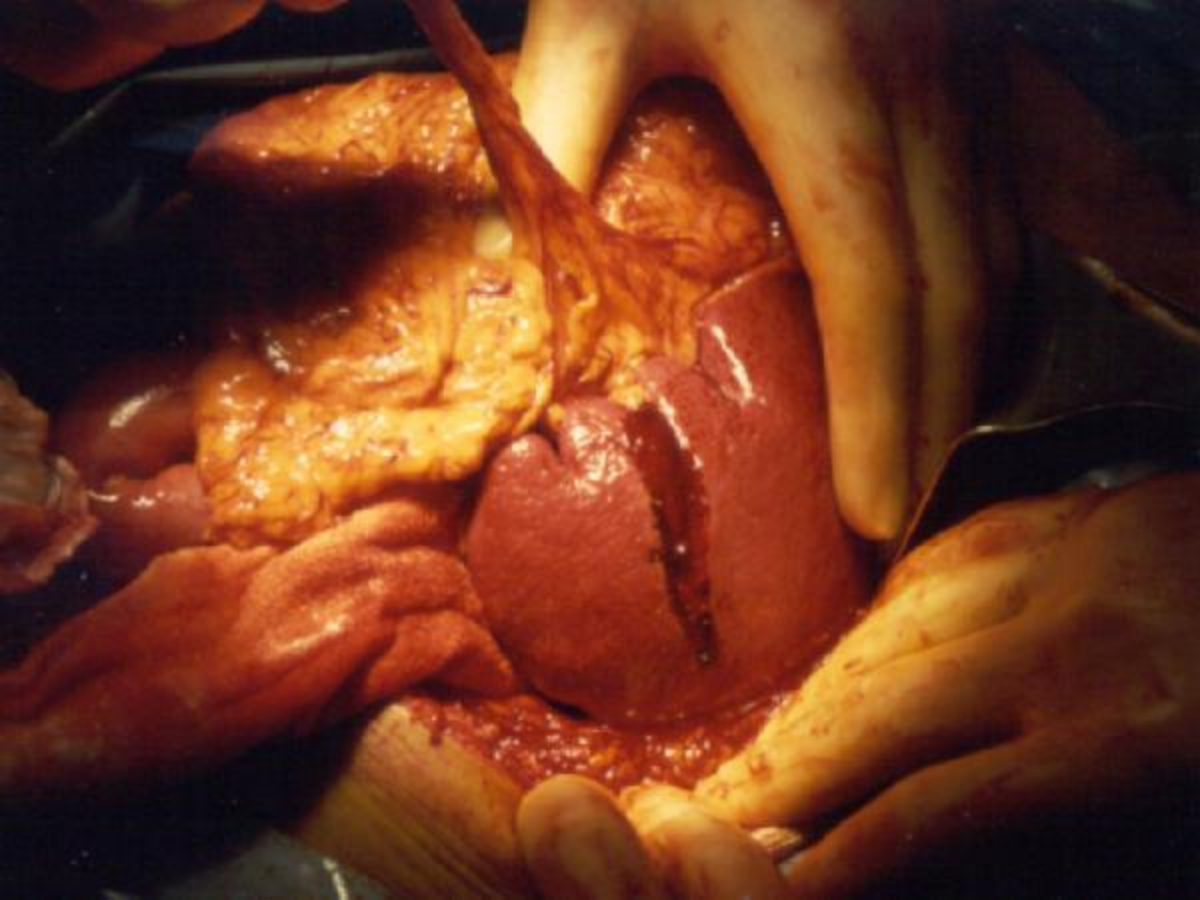


Solid Organ Injury

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Trauma Program Manager
Department of Trauma Surgery
The Alfred







SOLID ORGAN INJURY

The ALFRED Experience











Overview

- Quick look at AIS & ISS
- Review Alfred & Auckland Data
- Non-compliant patient
- Lessons learned

Trauma Registry

- Comprehensive trauma database
- Collects and codes trauma information
- Enables:
 - comparisons
 - monitoring of trauma care
 - describes the work you do

Injury Coding



Abbreviated Injury Score (AIS)

- Describe injury anatomically
- Standardize terminology
- Rank by severity
 - Based on probability of survival
 - Single specific injury

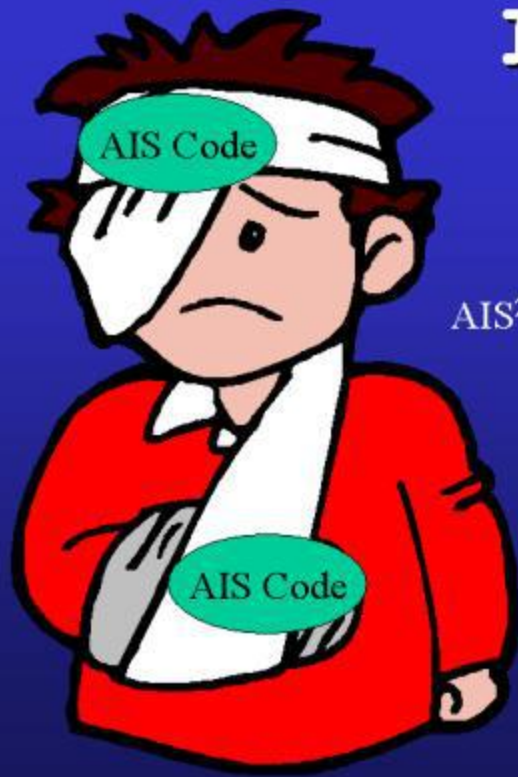
- Ordinal Scale

1	Minor
2	Moderate
3	Serious
4	Severe
5	Critical
6	Maximum

Injury Severity Score

- AIS
 - single injury mortality
- ISS
 - multiple injuries mortality
 - Square of the MAIS in 3 body regions
 - Range 1 - 75

ISS



$AIS^2 + AIS^2 = \text{Injury Severity Code}$

National Trauma Data Bank™ 2002, American College of Surgeons

ISS Group	Severity of Injury Description	Group Mortality	All Deaths
1-9	Minor or single system	1.02%	14.03%
10-15	Moderate	1.9%	4.28%
16-24	Severe	7.23%	15.77%
>24	Very severe	35.47%	65.92%



Traumatic Death

Top 3 Causes of Traumatic Death

- Head Trauma
- Chest Trauma
- Abdominal Trauma


Abdominal Trauma

13-15% of trauma deaths

Haemorrhage

sepsis & complications
(>48hours)



A map of Australia is shown in a light tan color against a dark blue background. A small red dot is located on the southeastern coast of Australia, near the border of New South Wales and Victoria. Centered over the map is the text "Serious abdominal injuries in ~ 15% of all trauma cases" in a bold, black, serif font.

**Serious abdominal
injuries in
~ 15% of all
trauma cases**

How common is SOI ?

Site	Episode	Pts	SOI
The Alfred	2002	130	170
Auckland	2001	54	60
SWAHS*	95-99	x	65.2

*5 yr report divided to give annual total

OZ & NZ data 12 months

1-2.5 pts/week

Trauma Registry Data

- Alfred 2002

- ISS >15 = 622

- Auckland 2001

- ISS > 15 =

The Alfred



2002

130 patients
170 SOI injuries

Auckland



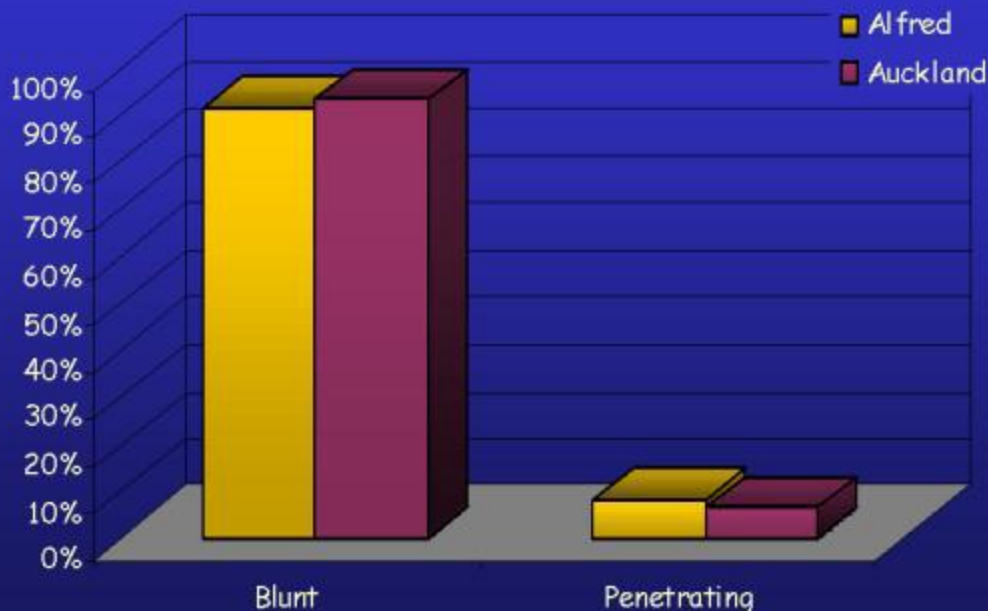
2001

46 patients
52 SOI injuries

Age / Gender

The Alfred 130 pts		Auckland 46 pts	
Male	67%	Male	78%
Av Age	38	Av Age	31
Female	33%	Female	22%
Av Age	38	Av Age	30

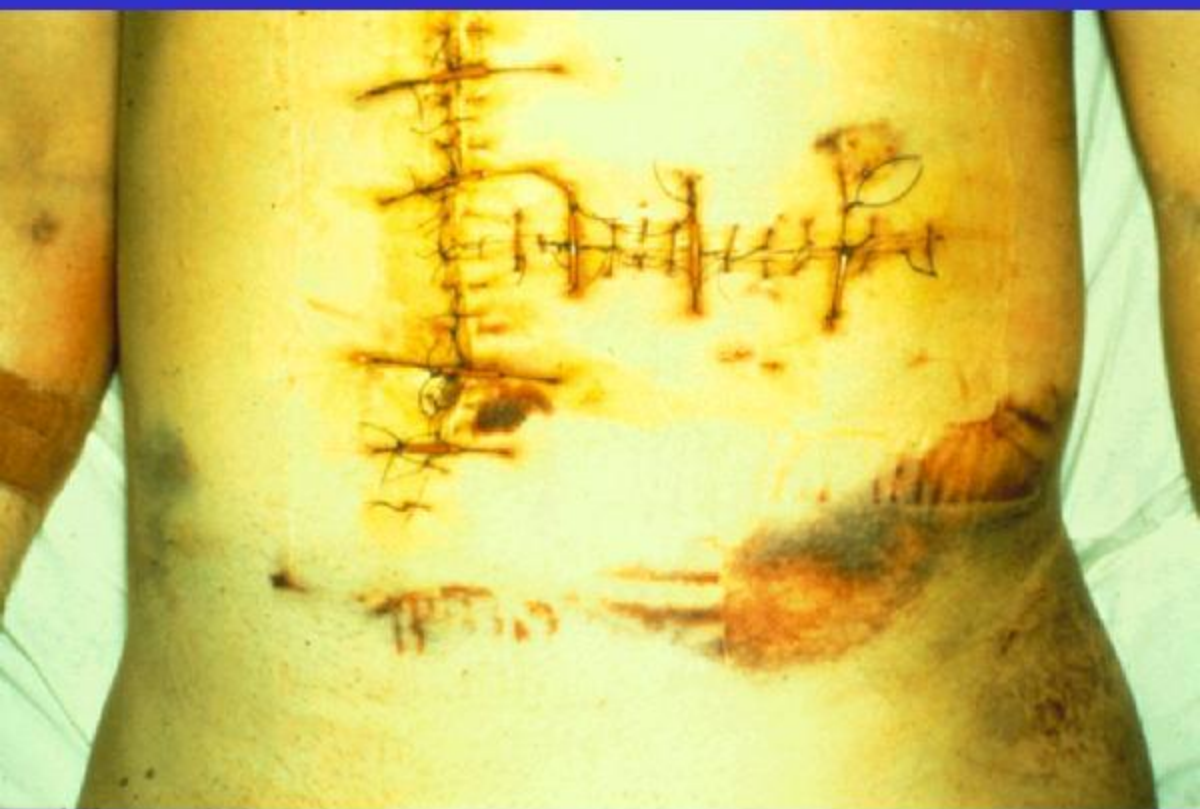
Mechanism of Injury



Injury Cause

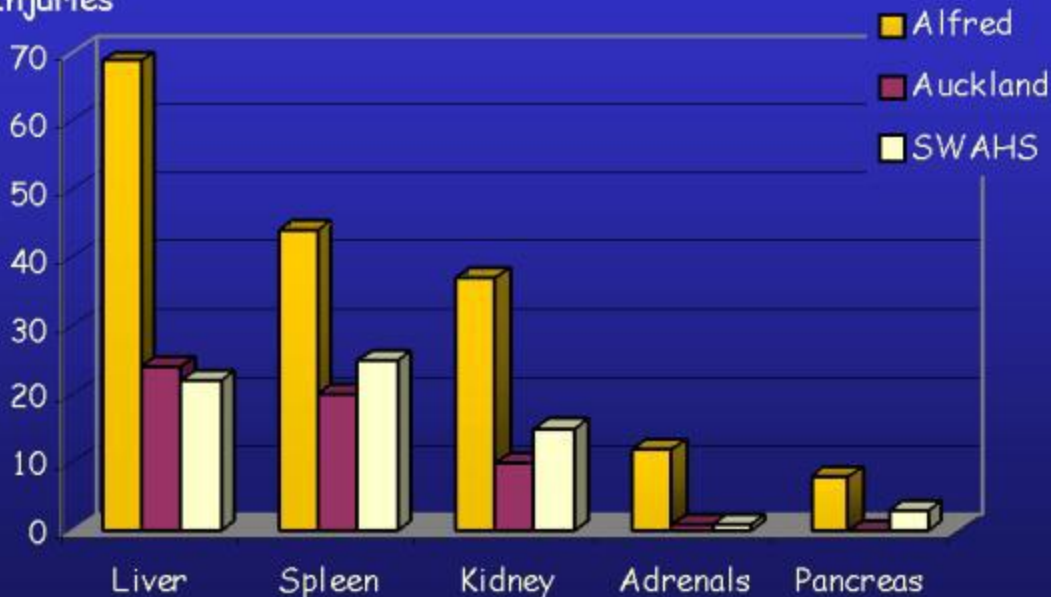






Frequency of Organ Injured

Injuries

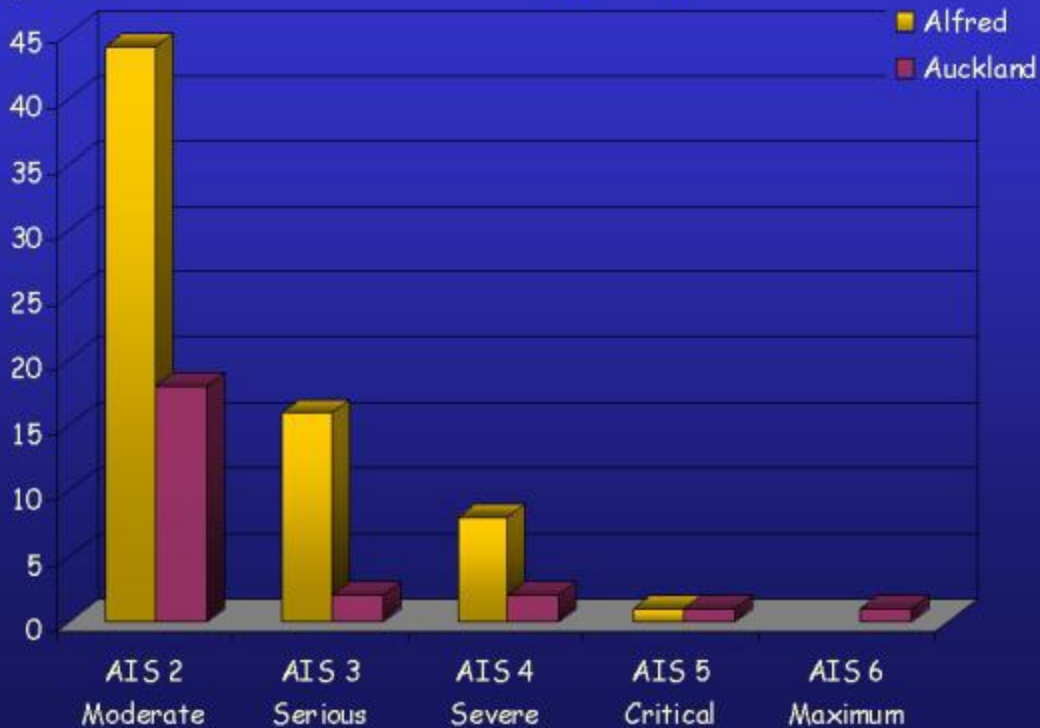


How badly injured ?



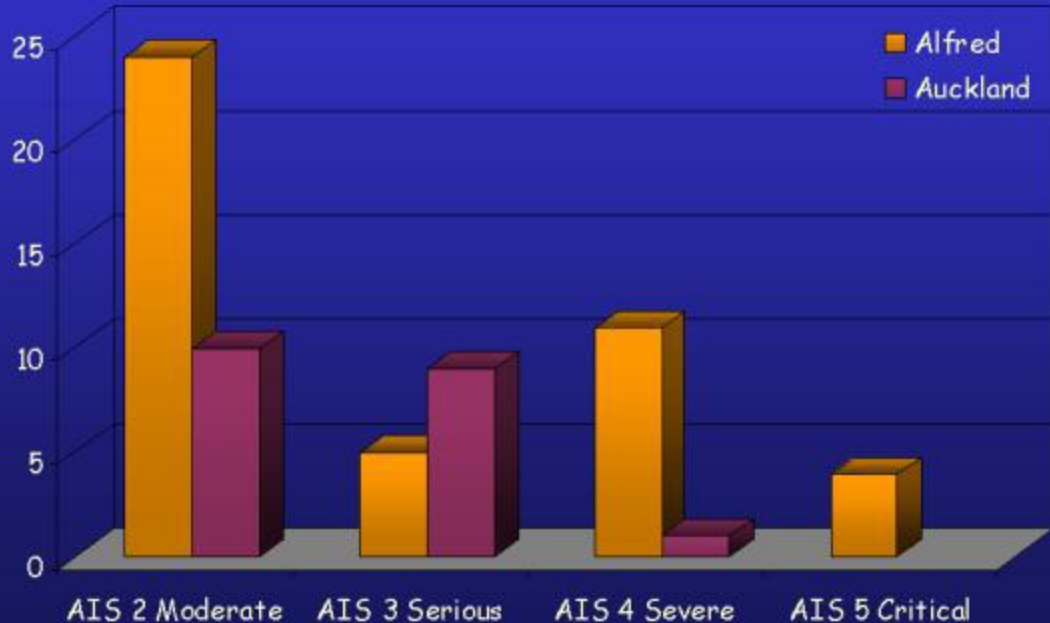
Liver Injury

Injuries

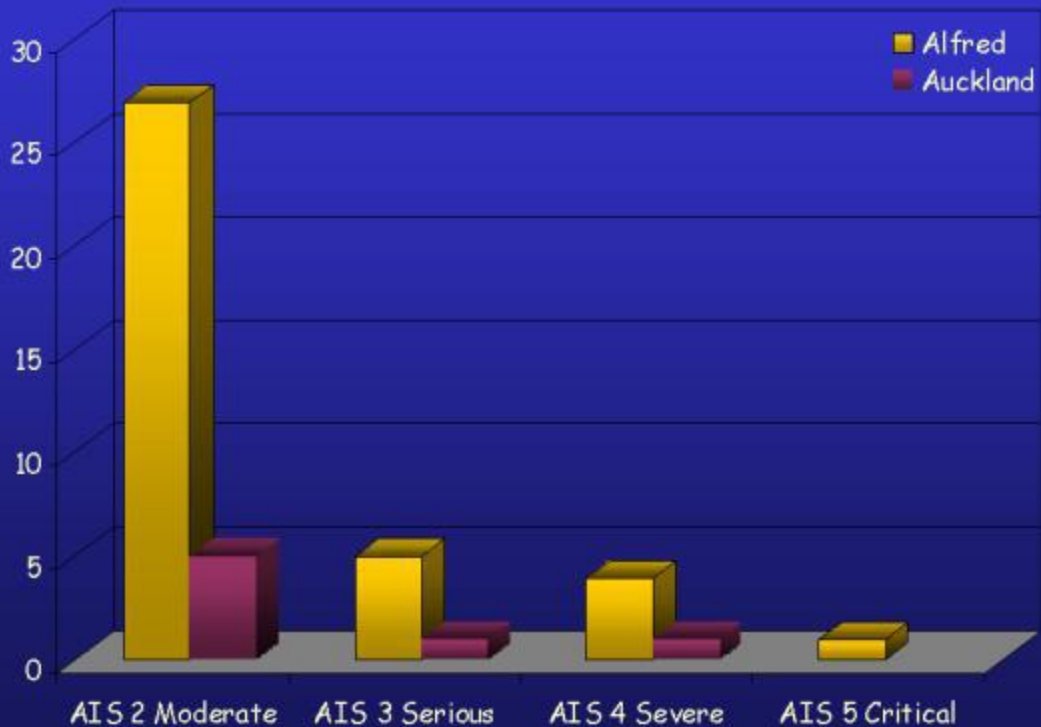


Spleen

Injuries



Kidney



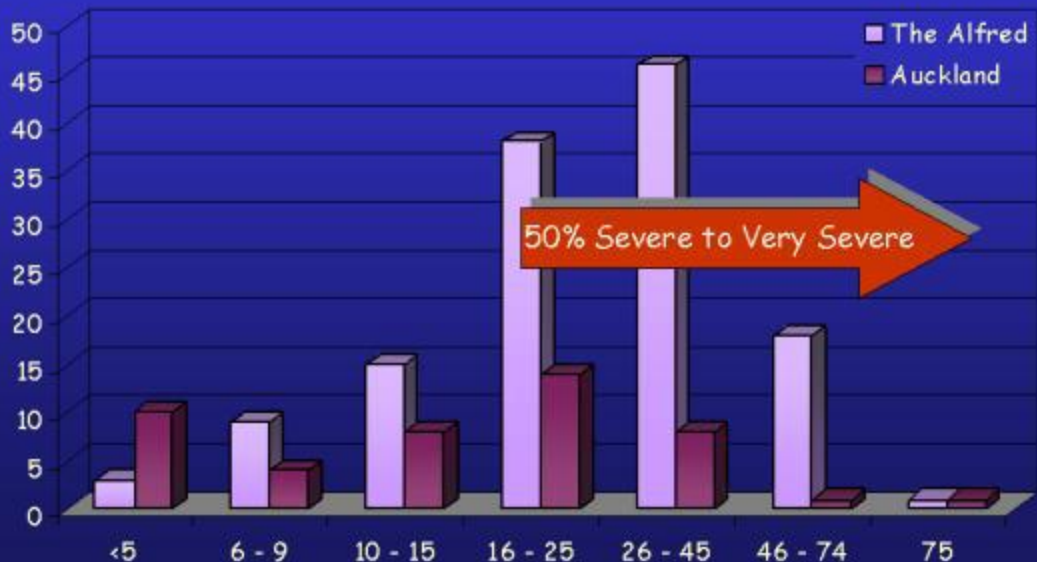
Pancreas

- Alfred
 - AIS 2 (moderate) 7
 - AIS 5 (critical) 1
- Auckland = 0

Adrenal

- Alfred
 - AIS 2 (moderate) 3
- Auckland = 1

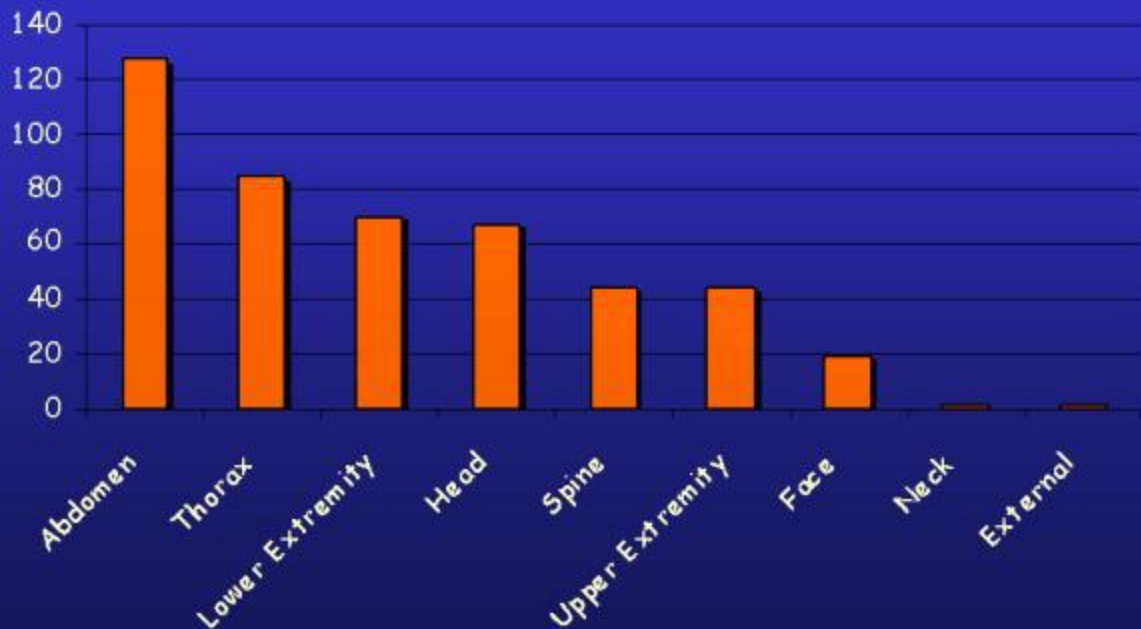
ISS bands Solid Organ Injury



Polytrauma

Frequency of other injuries

Alfred data



Isolated defined as *MAIS* ≥2

Alfred 8 / 130 pts

- kidney contusions 2
- Liver lacerations 3
- Splenic lacerations 3

Trauma Laparatomies

~6% of patients with SOI need laparotomy (DSTC, 2000, Knudson)

The Alfred 130 pts

57 Laparotomies

- Liver 13
- Spleen 22
- Kidney 3
- Pancreas 1
- Generic 27
- Other 26

Negative Lap 2

Auckland 46 pts

16 Laparotomies

- Liver 2
- Spleen 10
- Kidney 1
- Other 2

Negative Lap 1

Outcome

	Alfred	Auckland
• Dead	18/130	5/46
• Home	42	
• Rehab	62	
• Other Hospital	4	
• Other	2	
• Absconded / DOR	2	

When did they die ?

Alfred n=18

• < 24 hrs 31%

• > 24 hours 69%

So what do all these numbers mean

- High ISS
- Rarely isolated injury
- Infrequent
- Mostly treated conservatively

What does this mean for us ?

- Interventional competence
 - doctors
 - nurses
- decision making
- clinical management.



Fatal error...

Post Splenectomy care...

Overwhelming Post Splenectomy Sepsis (OPSI)

- In trauma
 - 58 times > than general population
- Long term sequelae

**"Guidelines *for* the prevention
and treatment of infection in
patients with absent or
dysfunctional spleen."**

*Working Party of the British Committee
for Standards in Haematology Clinical
Haematology Taskforce.*

BMJ 1996 312 430-4

Recommendations:

- Immunisations
- Antibiotic prophylaxis
- Travel Advice
- Education
 - *Including Medi alert disc/card
- The Alfred ID Department

Non-adherence to Guidelines Waghorn, 2001

- Not given correct advice
- Forgotten correct advice

Recommendation (Waghorn, 2001)

Asplenic Registry

- Implement policies
- Audit/ Compliance
- Regular reminders/updates

The Alfred
"Asplenic Patient Registry for the
Prevention of Sepsis"

- QI and Best Practice Submission to DHS
- Joint submission with Southern Health
- Unsuccessful → successful

Develop Tools

- Laminated cards
- Information sheets
- Medical alert
- Annual reminders / updates

This card belongs to a patient of Alfred Hospital who has a non-functioning or absent spleen. This puts them at risk of potentially life threatening infections. In order to reduce that risk the recommendations on the opposite side of this card should be followed.

Alfred Splenectomy Registry No. _____

Telephone contact: _____

1. Immunisation with pneumococcal, meningococcal, haemophilus influenzae type B and influenza vaccines
2. Oral antibiotics for life
3. Carry bracelets/wallet cards that alert medical and paramedical personnel
4. Consult LMO for any episode of infection and for vaccine updates
5. Keep a dose of antibiotics at home and take if medical review is not readily available
6. Should consult with doctor prior to visiting or working in malarial areas.

The non-compliant patient



The non-compliant pt

- Spoken to by consultant
- Address the issues
 - substance abuse
 - social issues
 - fear
 - personality disorders
- If they want to go we let them...
- Discharge education
- Early Consultant Psyche liaison

Cases

Case 22 yo Male

- M
 - Driver Morris Minor V telephone pole. Significant intrusion driver's side. Trapped 15 minutes
- I
 - CHI, # ribs & pelvis
- S
 - GCS 11, HR 168, RR 24, SBP 80/, SpO2 92%
- T
 - ETT, fluids, drugs

Arrival Alfred

- + 95 minutes
- HR 155, SBP 200/, CMV, GCS 3 SpO2 85%;
Temp 35.4
- Urgent laparotomy
 - Grade 4 splenic lac, involving hilum
 - splenectomy
 - epigastric hernia repair
- # ribs with HPtx, Rx ICC
- # L2,3 transverse process
- L knee ligamentous injury

Day 5

- Discharged at own risk against medical advice
- Represents day 10
 - fever - empyaema VATS
 - DOR
- Represents day 28
 - thorocotomy wound infection
 - Home

Summary

- SOI
 - 1 - 2 per week
- Clinical Practice & decision making
- Rarely isolated
 - careful with non-compliant patients

Thank you....



arrive
alive!
2002-2007

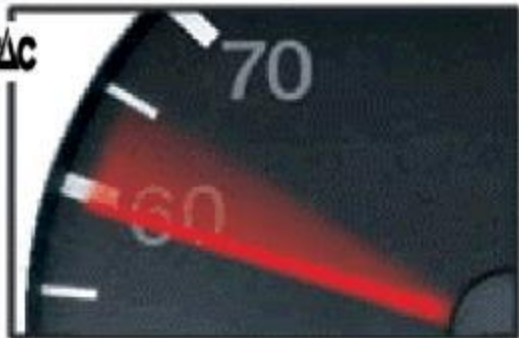
If you drink, then drive, you're a bloody idiot. TAC



Belt up, or suffer the pain. TAC

A 15 minute powernap could save your life. TAC

Make sure you're right to drive. TAC



A Case Study: "Wipe Off 5"



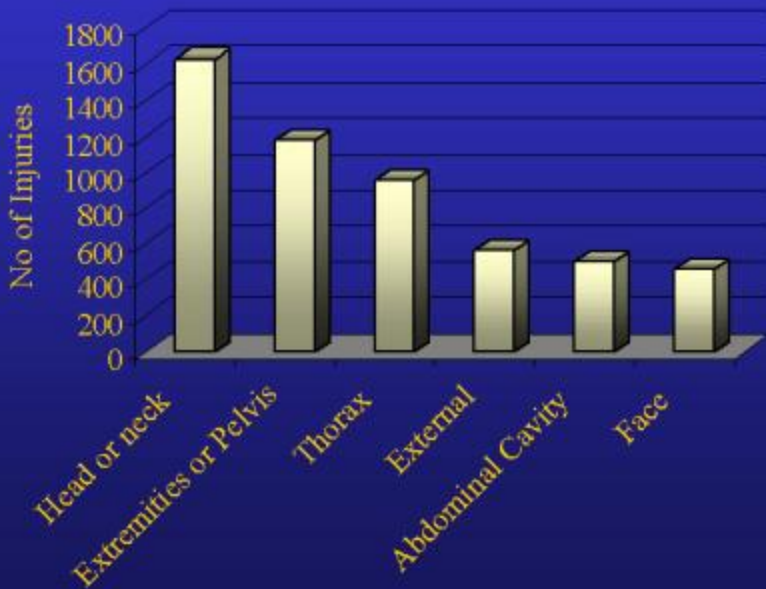
Our Roads, Our Lives

Take a break, fatigue kills. TAC

Additonal slides

Major Trauma

Frequency of Injury Body Region



The ALFRED Trauma Registry

- Collect data concurrently with in patient episode
- Data collected by Trauma Registry Nurses
- Real time reporting
- Trauma data is used by clinical faculty
 - clinical care
 - clinical audit

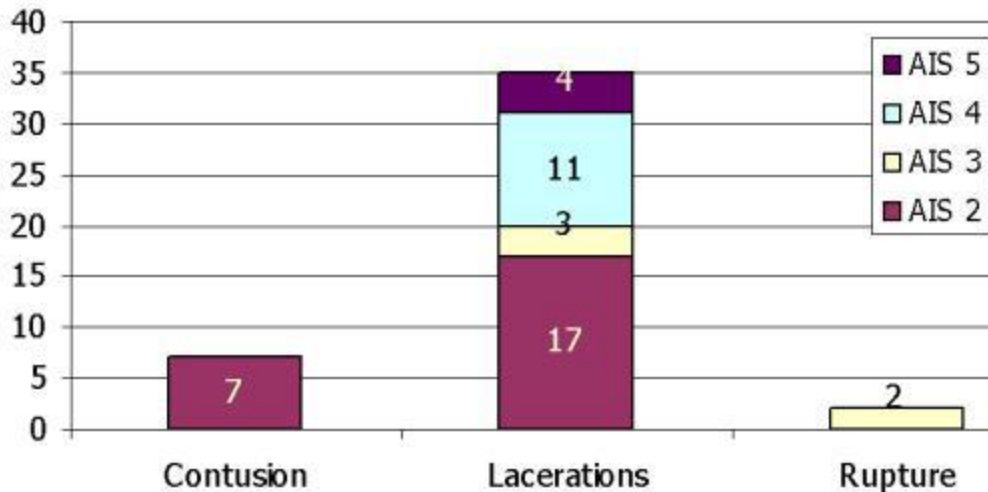
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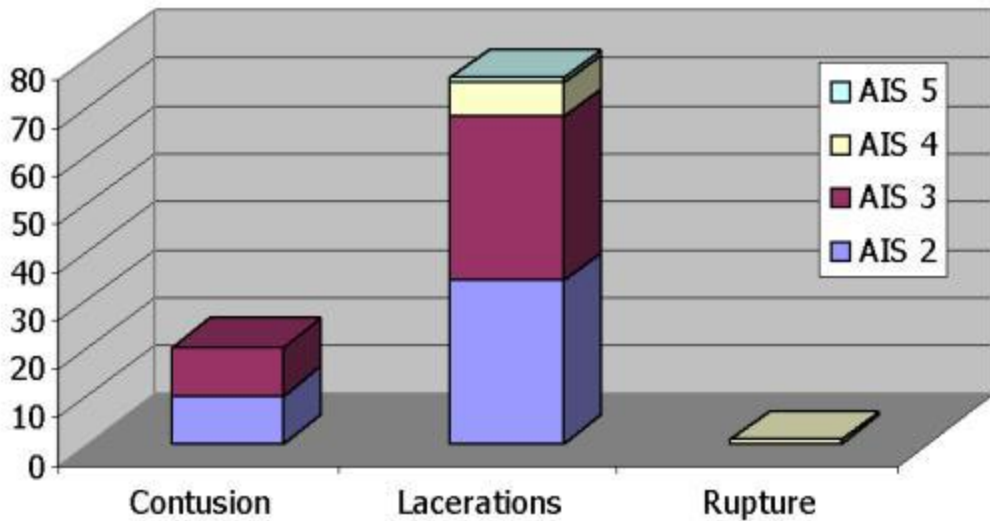
Abdominal Trauma

- 13-15% of trauma deaths
 - haemorrhage
 - sepsis & complications (>48hours)
- In Australia serious abdominal injuries in ~ 15% of all trauma cases

Splenic Injuries



Liver Injuries



Isolated v non-isolated SOI

isolated defined as MAIS ≥ 2

- 130 patients had 1163 coded injuries
 - ratio 8.9 injuries per patient
- 130 had 247 abdominal injuries
 - 91 had 201 a thoracic injuries
 - 70 had 151 a head injuries
 - 35 had 65 face injuries
 - 2 had 2 neck injuries
 - 43 had 121 spinal injuries
 - 53 had 103 upper extremity
 - 77 had 240 lower extremity injuries
 - 33 had unspecified minor external injuries

Trauma Registry Data

1/1/02 - 31/12/02

- Total number of patients with abdominal injuries = 272 (ISS 23.5, range 1-75); (27 deaths in this group; SMR 9.9%)
- Total number of patients with solid organ injury = 130
- Total number of abdominal injuries in this group = 234
- Total SOI in this group = 170
- 57 had Laparotomies
 - 92 abdominal procedures at Laparotomy

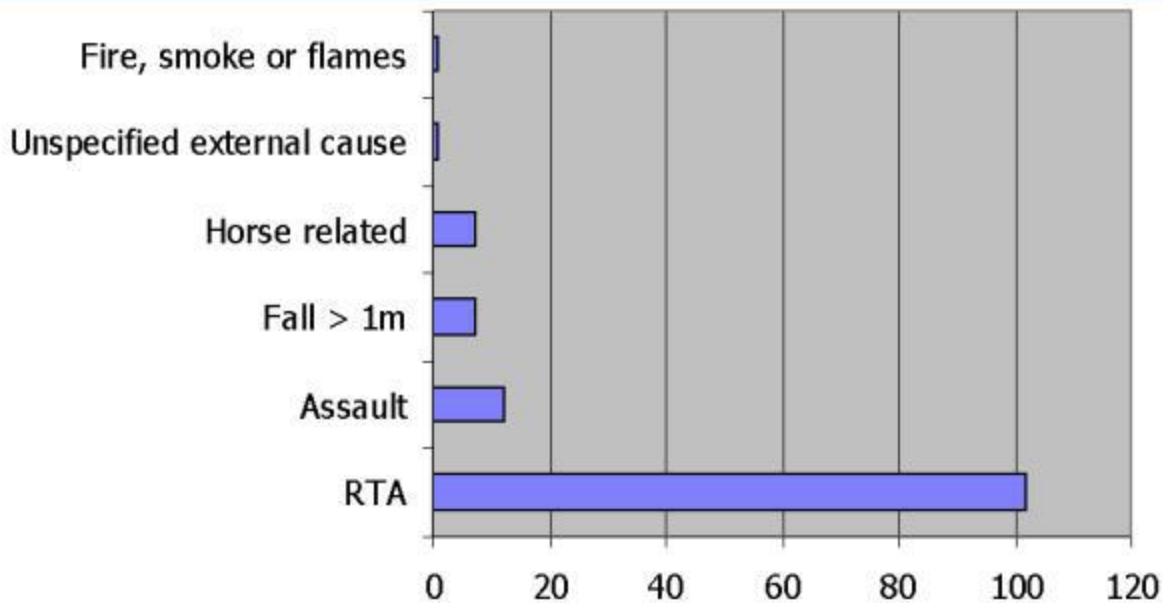
Mechanism of Injury

- Blunt

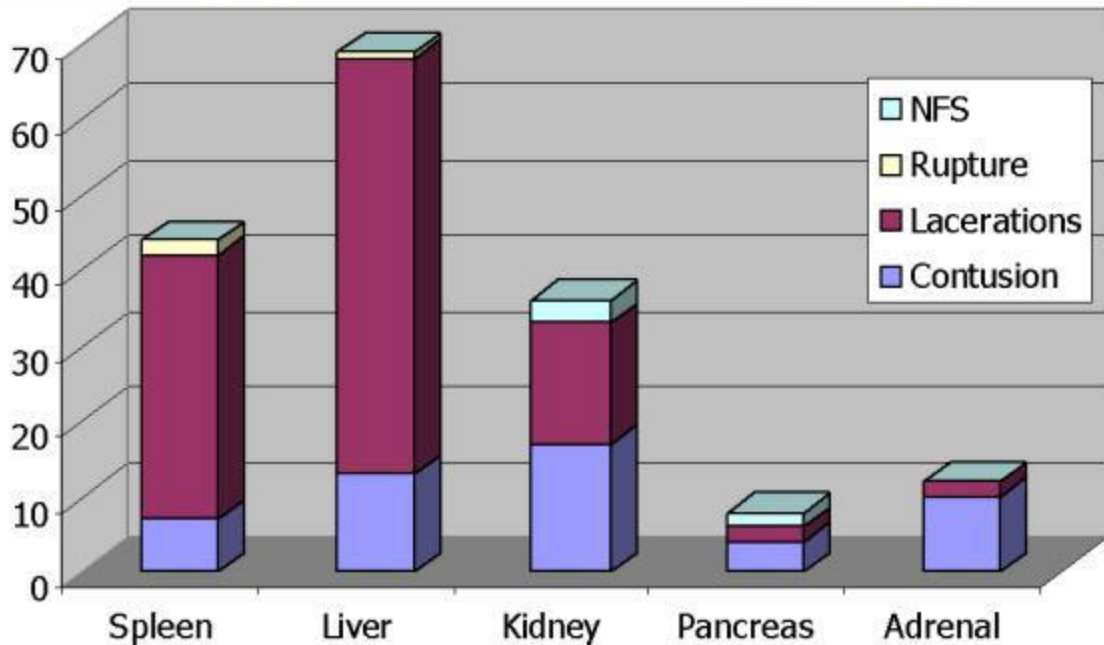
 - 91% (90%)

- Penetrating

 - 9% (5.5%)

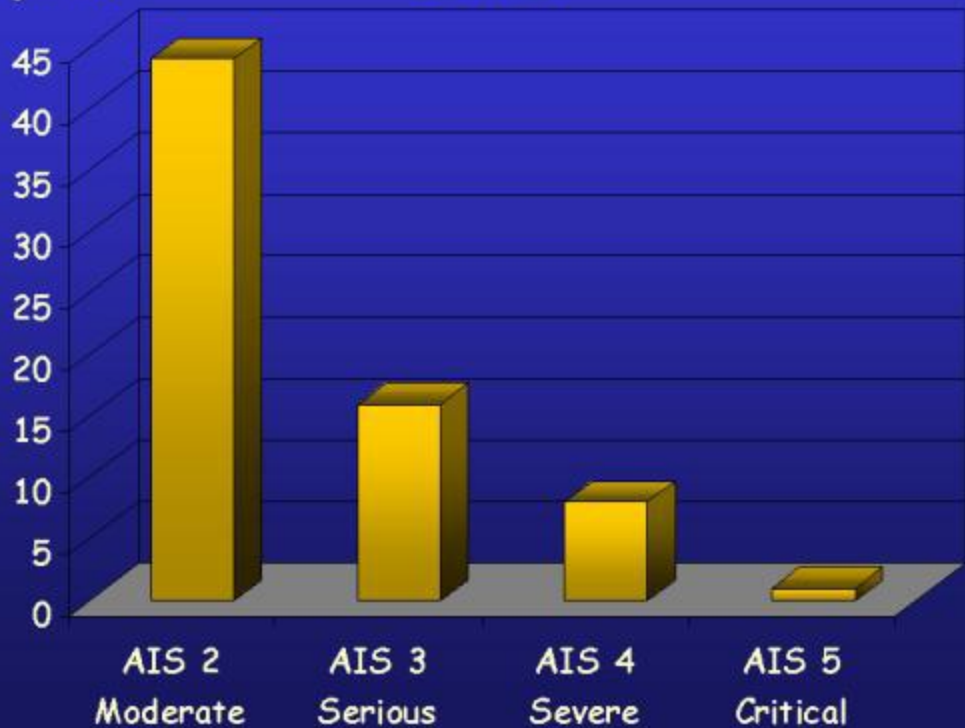


Type of Injury



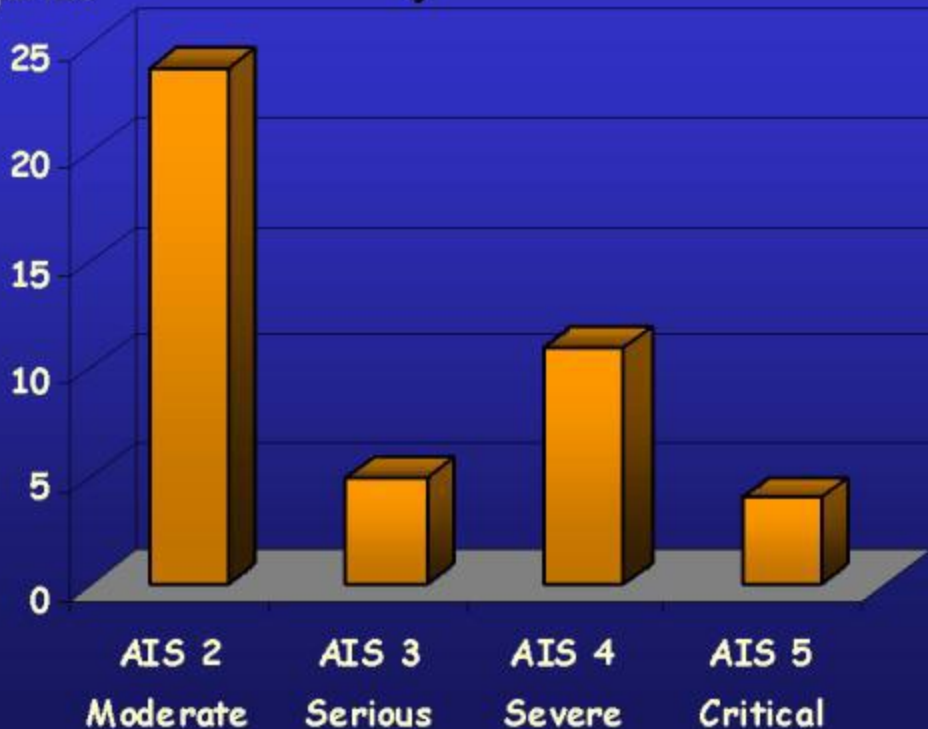
Liver

Injuries

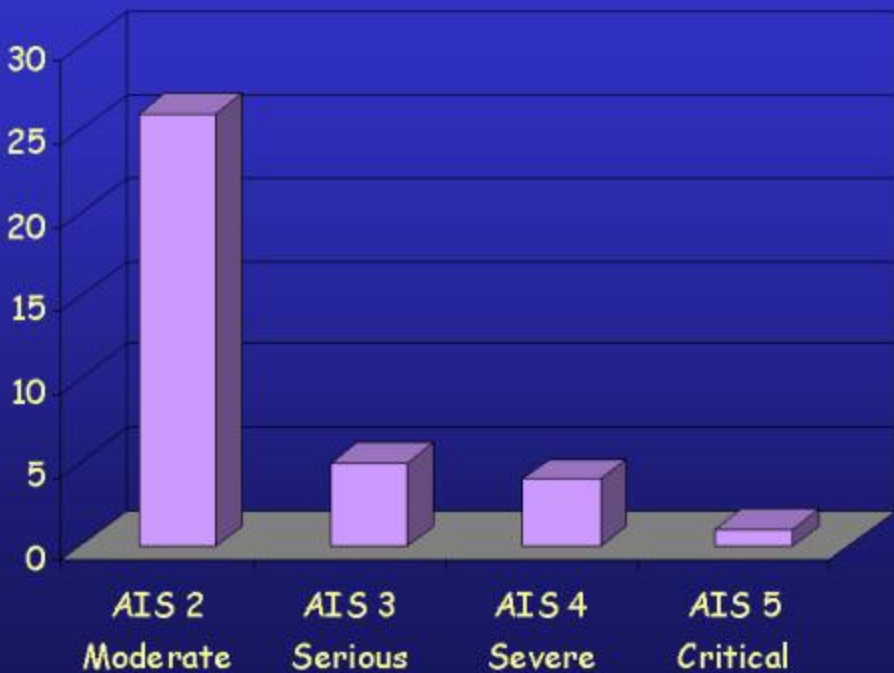


Spleen

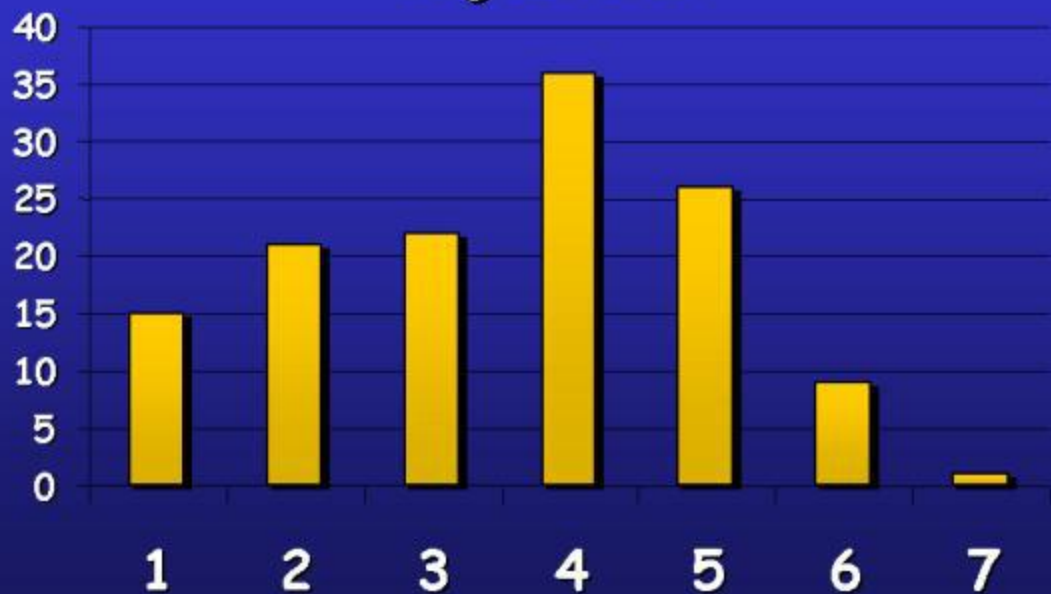
Injuries



Kidney



Frequency of body regions injured



Trauma Laparatomies on pts with SOI

~6% of patients with SOI need laparotomy (DSTC, 2000, Knudson)

- Liver "50140" 13
- Spleen "50120" 22 (2 splenorraphies)
- Kidney "50130" 3
- Pancreas "50170" 1 (Whipples)
- Generic Lap "50100" 27
- Other lops were for Hollow viscus
- vessel / diaphragm repair
- 2 -ve laparotomies done in this time
 - free gas/fluid
 - +ve FAST, suspicious CT

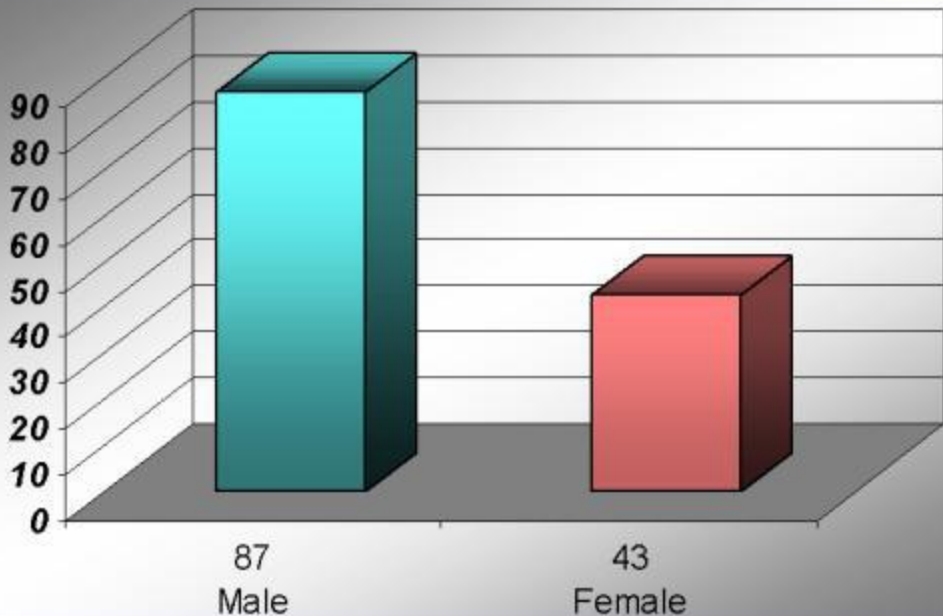
Patient Educaiton

In hopsital

Patient Education Discharge

Breakdown n=130

All av Age 38 (14-84)



Follow-up

