

Trauma in Provincial New Zealand

Mark Sanders
General Surgeon
Whangarei Hospital

"Injury 2004"



Trauma in the Provinces

- What constitutes the ‘provinces’ or ‘rural NZ
- Features of the population
- Trauma mechanisms
- Workload
- Issues in rural trauma

Provincial New Zealand?

Provinces

“portion of an empire or state marked off for purposes of government or in some way historically distinct”

“unsophisticated, unpolished or narrow minded”



NZ population

- 53% New Zealand population ‘provincial’ or ‘rural’ districts
 - (23% ‘provincial’, 30% ‘rural’)
- ‘provincial/rural’ different things in different countries
- Different degrees of ‘rural’

Rural Population

Is it different from its
urban counterpart?

- Health?
- Employment?
- Education?
- Age demographics?
- Expectations?
- Wealth - individual?
- region?
- Culture?

Northland

- 146,000 3.7% NZ population
- 71,000 in Whangarei
- 25% under 15 years (22% NZ)
- 13% over 65 years (12% NZ)
- 27% post school qualification (32% NZ)

Northland cont'd

- Higher unemployment: 10.2% (7.5% NZ)
- Workforce: forestry & agriculture
- Higher single parent families
- Lower average income
- 25% Maori population
 - Increased co-morbid factors
 - Maori medicine
 - Whanau support



Seasonal fluctuations

- Increased tourists
 - local
 - overseas
- Increased demands (trauma) at certain times of the year
- High risk recreational activities - remoteness



Non-demographic factors

- Roads: Northland 6500kms
 - 41% sealed (70% NZ)
 - Winding
- Speed: mean open road speed - 96.3kph
(lowest in provincial NZ)
- Seatbelt usage: 90% (lowest in NZ)
94% in urban areas (99% AKL)

Other factors cont'd

- Alcohol: 19% of all MVA (14% NZ)
34% of serious/fatal

Major road safety issues in Northland

- Crashes on bends
- Alcohol & speed
- Roadside hazards

More exaggerated the more 'rural' get

- Far North - Higher speeding and alcohol use
 - Higher death and serious injury
- Isolation - time to detection
 - transport issues
- Most MVA happen on major highways

Northland Region
Reported fatal and serious injury crashes
1998-2002



Worst injury	local road	state highway
fatal	+	+
serious	*	*

local road

state highway

+

+

*

*

Impact on HealthCare

- Type, numbers and timing of trauma
- Number with associated co-morbidities
- Poorer social situations, increased demands on services
- Resource implications

MVA alone: \$94 million in Northland

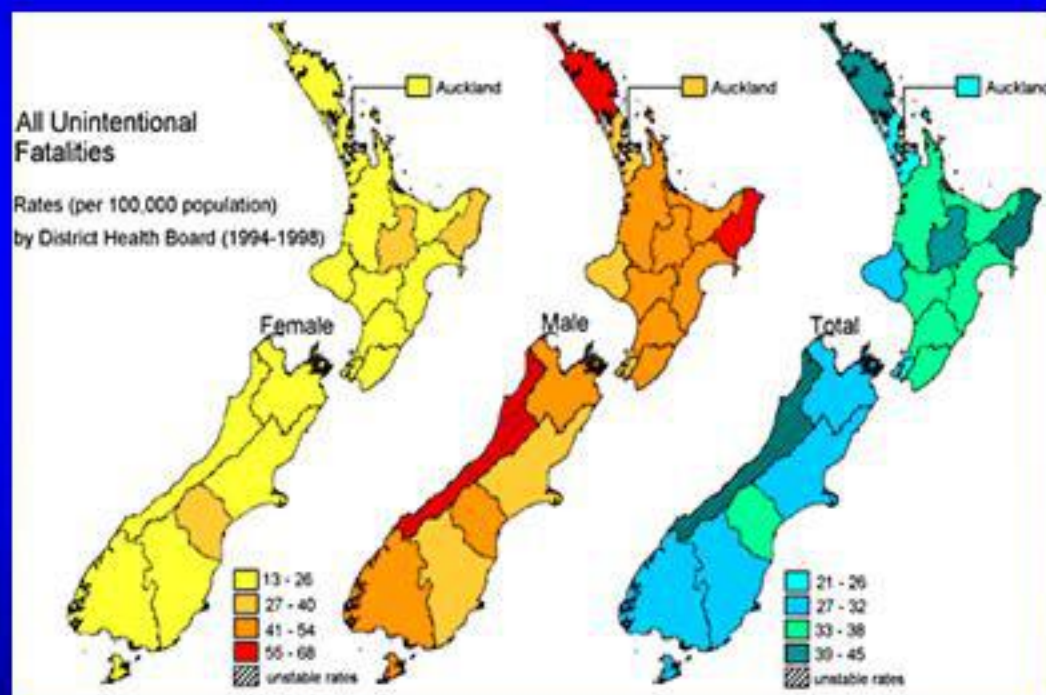
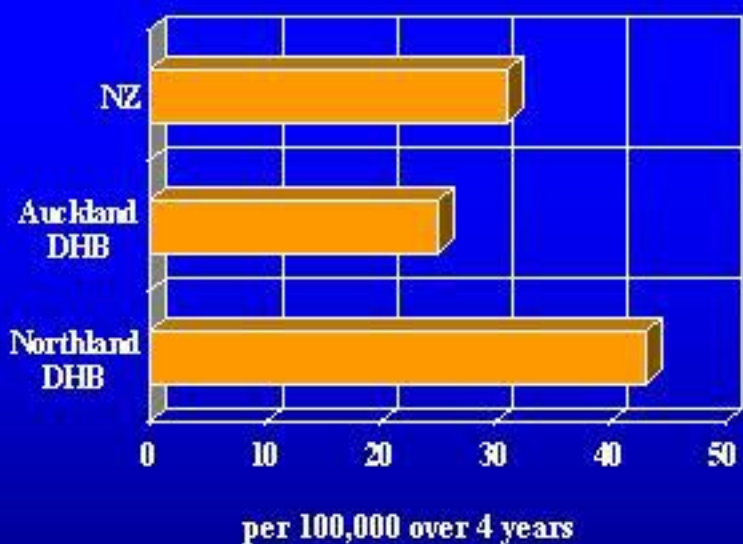
- ? Provinces less able to afford such costs



What about numbers?

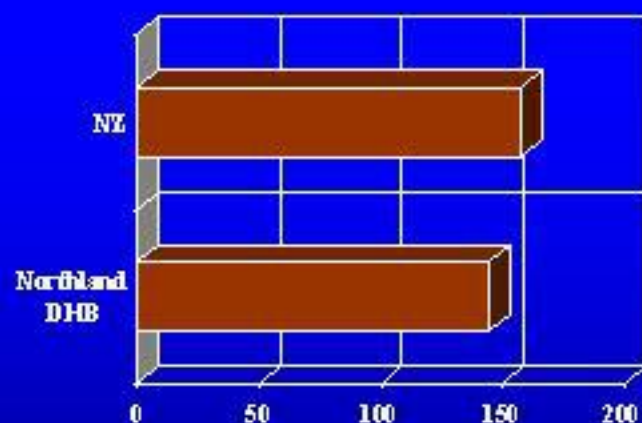
All Injuries

- Fatalities

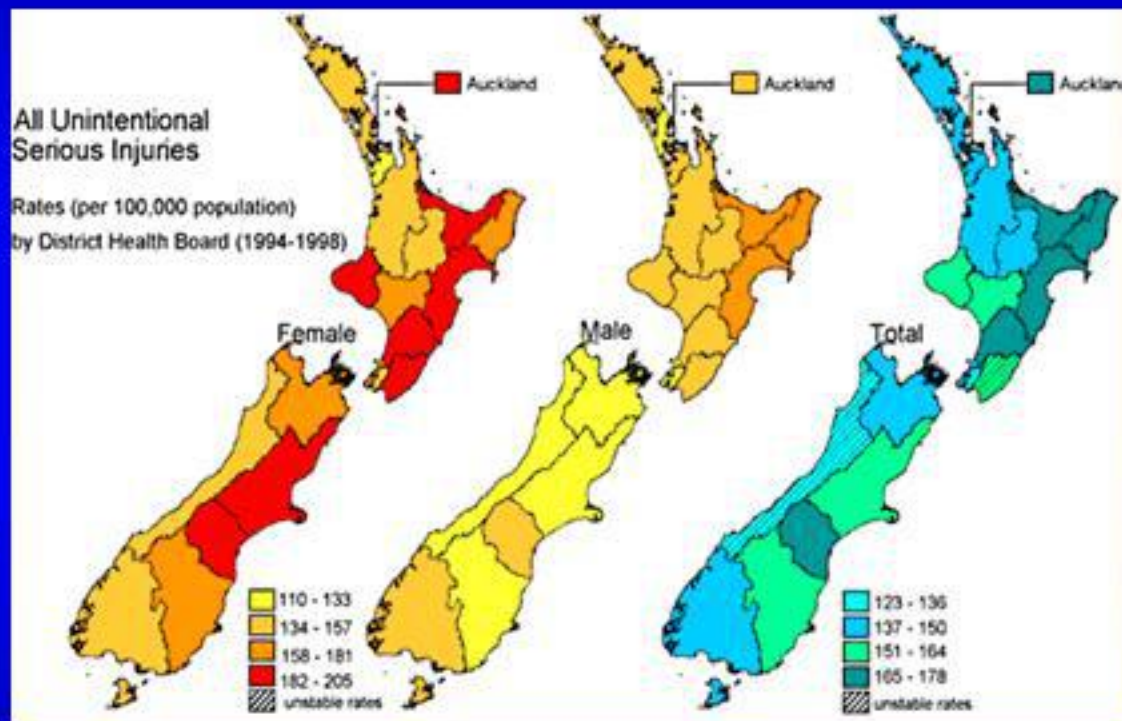


All injuries

- Serious injuries



Per 100,000 over 4 years



Mechanism of Trauma

Falls

- Proportionally less in provinces
- ? why

Burns

- Also less in provinces

Mechanism of Trauma

Motor Vehicle Accidents

- Higher proportion and largest overall subgroup especially in the provinces

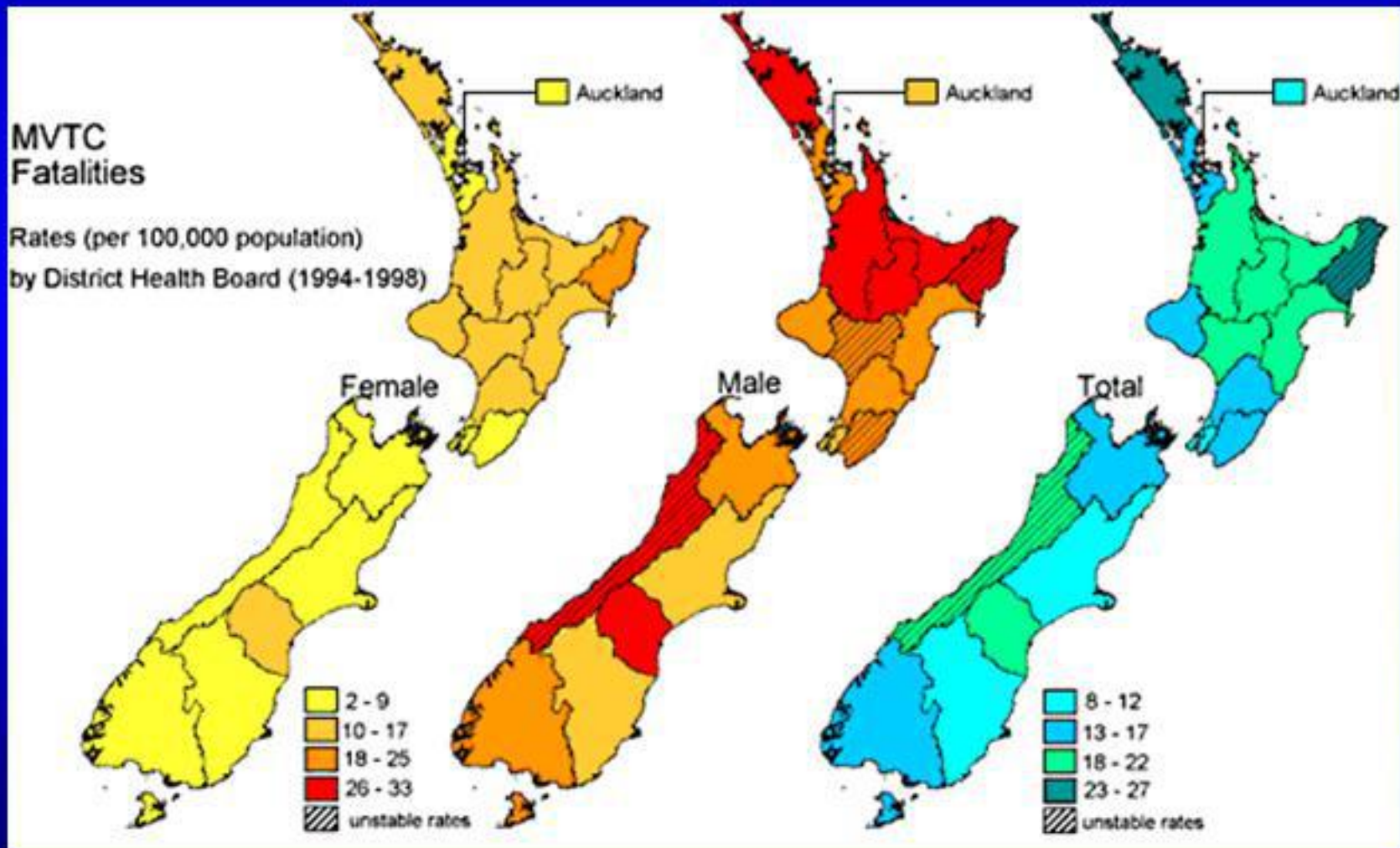
Northland: 35 deaths 2003

Provincial death rates higher than metro

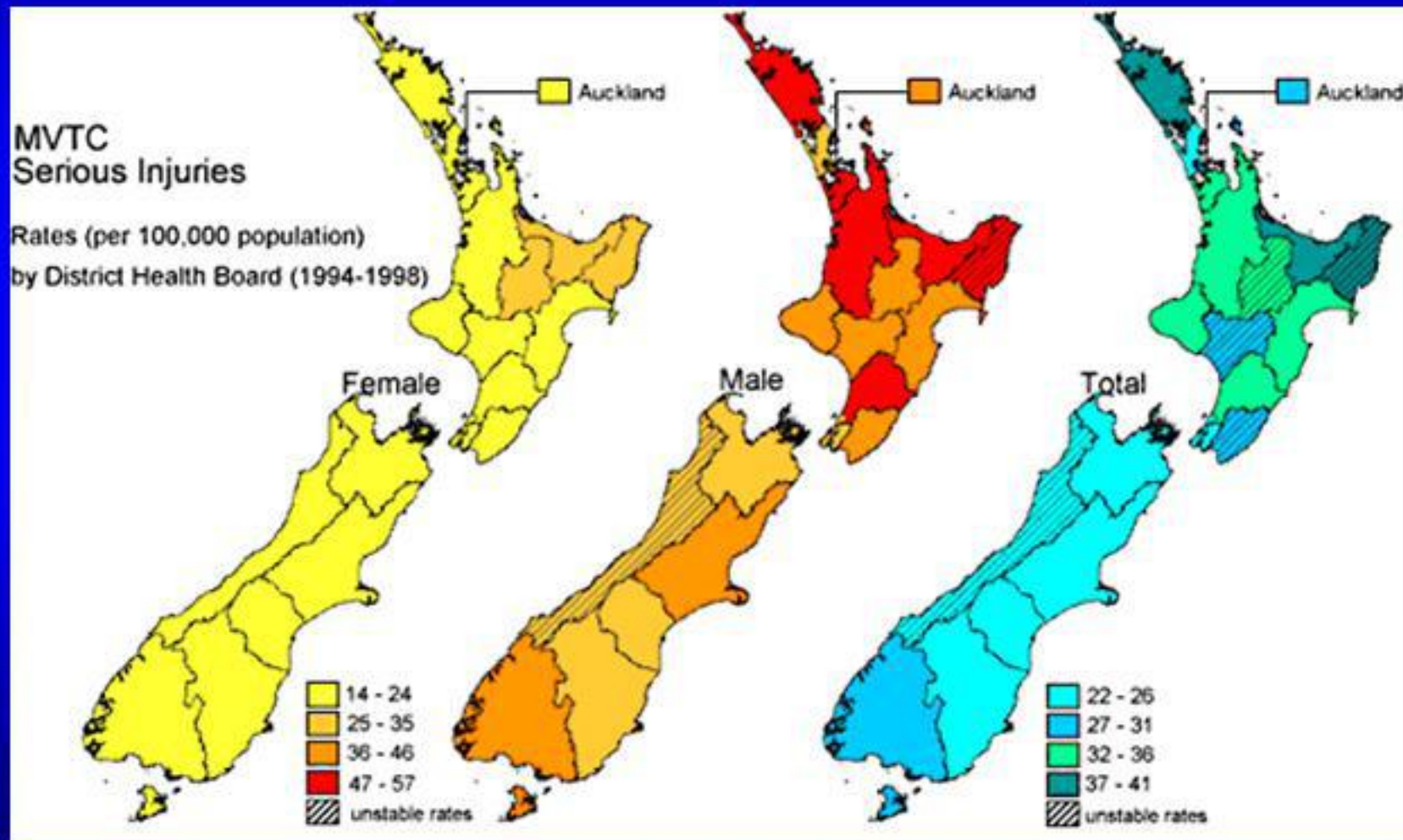
BOP > Cant > Southland

1:15 serious MVA resulted in death (1:50 Auckland city)

MVA - Fatalities



MVA - Serious



“Rural residents are 50% more likely to die from trauma than their urban peers”

Rural Trauma: The challenge for the next decade”

Rogers *et al.* J of Trauma. 1999; 47(4): 802-821

However:

“hospital volume (& by extension rurality) did not affect survival after injury”

i.e. rural care no worse than/as good as urban

Death rate 1⁰ attributable to gaining fast access to hospital care.



House Prices



What actually turns up?

- ED: 21437 2003/2004
- Trauma related 5815
- Admitted 1547 (40% #s alone)
- 31 transferred straight to 3⁰ centre

Whangarei Base Hospital

- 225 beds
- 5 General Surgeons
(4 FTEs)
- 5 Orthopaedic



- Kaitaia Hospital
- Rawene, BOI & Dargaville



WBH - services

General Surgery

- No vascular on site
- No neurosurgery
- Limited Paediatric
- Limited Plastic
- Everything else!
- 2 trainees

Orthopaedic

- Complex pelvic #s transferred

Radiology

- CT & MRI
- Very limited intervention

WBH - services

ICU

- 3/4 ventilated or 5/6 HDU
- ‘Intensivists’

ED

- 2 consultants
- 3 ‘seniors’ / MOSS
- 0/1 trainees

Proximity to Auckland

- 180 km
- 2 hours driving
- 35 mins flight time





What are the issues?

“Thoughts”

- Some proven
- Some hypothetical
- Some ? irrelevant
- Some controversial



Based on Northland but nationwide
‘provincial’ issues

Pre-hospital issues

- Remoteness of some accidents
 - poor cellphone coverage
 - tend to be forestry / agricultural / MVA
 - hypothermia becomes an issue
- Time taken to recover patient
- Transport issues

Pre-hospital cont'd

- “Scoop & Run” less of an option
- ? more at the scene
- ? more Paramedics on rural ambulances
- Helicopter recovery
 - 313 flights per year
 - recovery & transfers
 - ~ 150 trauma



Hospital issues

- Trauma team - ED, ICU Gen surg
 - personnel availability

- Lack of a 24 hour ED senior

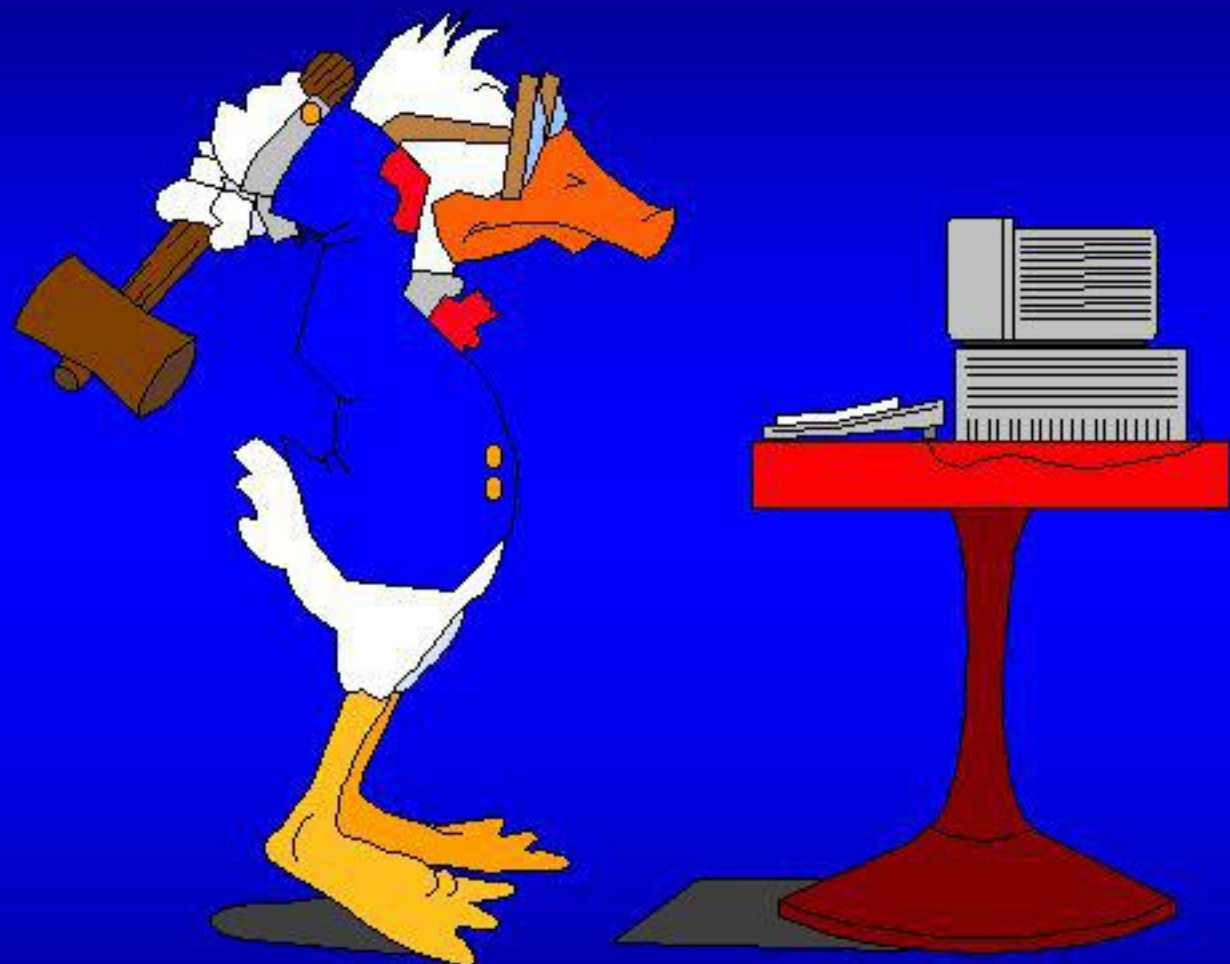
Imaging

- No angiography & therapeutics
 - ? unnecessary operations
- CT scan availability
- Teleradiology - reliable link. Definite role

Telemedicine

- Significant role for provinces
- Rationalise and prioritise transfers
- Reduces discrepancies & ? improve outcome
- Digital pictures - from scene, between hospitals
- Clinical meetings - keep current

Telemed J E Health. 2003;9(1):3-11 & 2000;6(3):297-302



..... provided of course it works!

Transfer of patients

- Tyranny of distance
“just close enough” vs. “a little too far”
- How & when
- Bed availability

Surgical issues

- Lack of all sub-branches makes for the “occasional specialist”
- Overall lower numbers reduces experience but ? made up for by increased on-call
- Lack of one ‘trauma service’ where expertise can be concentrated
- Is being a true General Surgeon an advantage?

Surgical issues cont'd

- See trauma as a subspecialty in itself. Have one surgeon in the unit with an interest?
- Maintenance of skills / updates
 - “Injury” conferences. DSTC courses
- Relationship with 3⁰ centres
- More junior Registrars, ? less able to cope with major trauma
- Audit - money for dedicated database

Other Specialties

- ICU / anaesthetics
- Ward staff - trauma often scattered through the wards - dedicated ward
- Theatre staff - lack of experience with infrequently used equipment - regular updates/DSTC

Does trauma pattern matter?

- Vehicle safety issues may reduce experience
- With the higher frequency of certain types of trauma in the provinces vs. urban areas, is it a different disease?
- If so would that impact on training?

Training for 'rural' trauma

- Australasian system very good
- Generalist overall approach
 - confident & competent for non body region specific trauma
- Trauma receives a status = other sub-specialties

Summary

- Looked at some of the population and geographical issues
- Idea of the make up of provincial trauma
- Hopefully raised some interesting thoughts about the medical issues involved

