Non-fatal injury indicators

What are the pros and con's of different approaches to measuring **serious** non-fatal injury?

Colin Cryer and Rolf Gedeborg

International Collaborative Effort on Injury Statistics, Swansea, Wales**, September 2010**

Program

- The session now
  - A 'basket' of ICD diagnoses
  - ICISS-based definitions
- Tomorrow (8:30 – 10:30 am)
  - Non-fatal indicators work
    - Facilitators Colin Cryer & Rolf Gedeborg

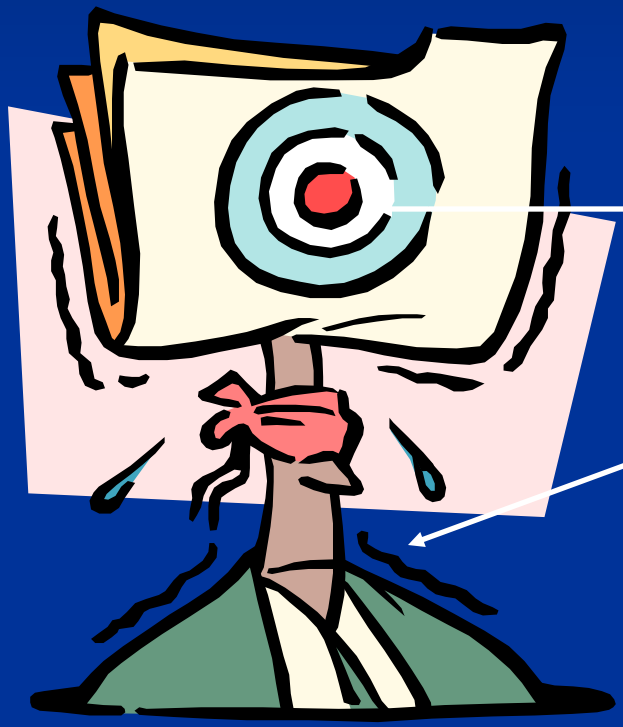
Aim

- To produce a draft specification of a serious non-fatal injury indicator for use in international comparisons.
  - Today's presentations feed into the discussion that will occur tomorrow - where we aim to agree a (partial) draft specification.

Main Issue

- Operational definition of serious non-fatal injury
- Two main themes
  - "A 'basket' of ICD diagnoses" vs "ICISS-based definitions"
    - At the heart of the debate.
- Talks between now and 10:00 aimed at informing that discussion tomorrow.

We want valid indicators - indicators that measure what they intend to measure



International comparison of serious non-fatal injury.

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Definition of serious non-fatal injury using a 'basket' of ICD diagnoses.

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Minimising health service effects in international comparisons.

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Potential biases in international comparisons - 1

- Serious non-fatal injury
- Source of data?
  - Hospital inpatient / discharge / separations data
    - Assumption:
      - Most ubiquitous source collected by countries?
      - Most accurate source w.r.t. diagnosis of injury and external cause.
- Major problem
  - Variations in place and time in who gets admitted to hospital.
    - Eg. health service provision and access.

Potential biases in international comparisons - 2

- Major problem
  - Variations in place and time in who gets admitted to hospital.
    - Eg. health service provision, policy and access.
      - Eg. head injury – hospital A has scanning facilities available in O/P so minor head injury not admitted vs hospital B has not so minor head injury routinely admitted for observation.
- Want to remove this health service effect
  - Option for operational definition
    - Injuries that have a high probability of admission (PrA)
    - Others?

Potential biases in international comparisons - 3

- Direct method
  - Estimate diagnosis-specific probabilities of admission (Prob of Admission project)
  - Select only those (for our operational definition) that have a high probability of admission.
- Alternative: ICISS-based method

Probability of admission (PrA) Project

- Thanks to collaborators
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Methods

- 6 countries involved
- Agreed protocol data supply
- Submitted
- Checked and analysed by IPRU

Probability of admission (PrA)
Results / Issues / Problems

- Summary of results on spreadsheet
- Small number of diagnoses show consistently high estimated PrA
  - Lower 95% CI for PrA $\geq$0.75
    - Fractured shaft and neck of femur
- Wide confidence intervals for many diagnoses
  - Diagnoses with potentially consistently high PrA – ie. Upper 95% CI $\geq$0.75
    - see over for list

- S052 – Ocular laceration and rupture with prolapse and loss of intraocular tissue.
- S063 – Focal brain injury
- S272 - Traumatic haemopneumothorax
- S360 – Injury of spleen
- S361 – Injury of liver and gall bladder
- S364 – Injury of small intestine

PrA Project - Issues

- ICD-10
  - Used only 4-character -> Lack of specificity
    - Can we infer high PrA ICD-10 diagnoses from ICD-9 results - Eg. open long bone fractures; brain haemorrhage / laceration
  - Use of only 1st diagnosis listed eg. for head injury
- Inconsistent results.
  - Surprising for certain diagnoses
    - Eg. traumatic subdural haemorrhage (v low PrA for 1country).
- Combining ICD-9 and ICD-10 results
  - Possible for some diags (eg. fractured neck & shaft of femur)
  - Less obvious for others

Conclusions

- In theory, using a 'basket' of diagnoses is a solution to reducing health service effects on international comparisons.
- Creating an operational definition of high PrA diagnoses requires some judgement.
- My proposed set includes
  - Fractured neck and shaft of femur
  - Those with UCL$\geq$0.75 for all available countries
  - Long bone open fractures
  - Brain laceration and haemorrhage
  - Spinal cord lesion
  - Intra-thoracic and intra-abdominal injury (excl. bladder & urethra)
- This is a starting point for discussion