SUPERSIZE MY ICU.
IS BIGGER BETTER?

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Chesterfield Royal Hospital

COMPETING INTERESTS

- Work in a DGH
- Council of the ICS
- On FICM Small unit advisory group

OBJECTIVES

- Define ‘supersize’
- What do we mean by better
- Consider centralization of critical care
- Introduce the FICM small unit working party
- Draw some conclusions.

SIZE OF HOSPITAL

Remote versus Rural: smaller trusts

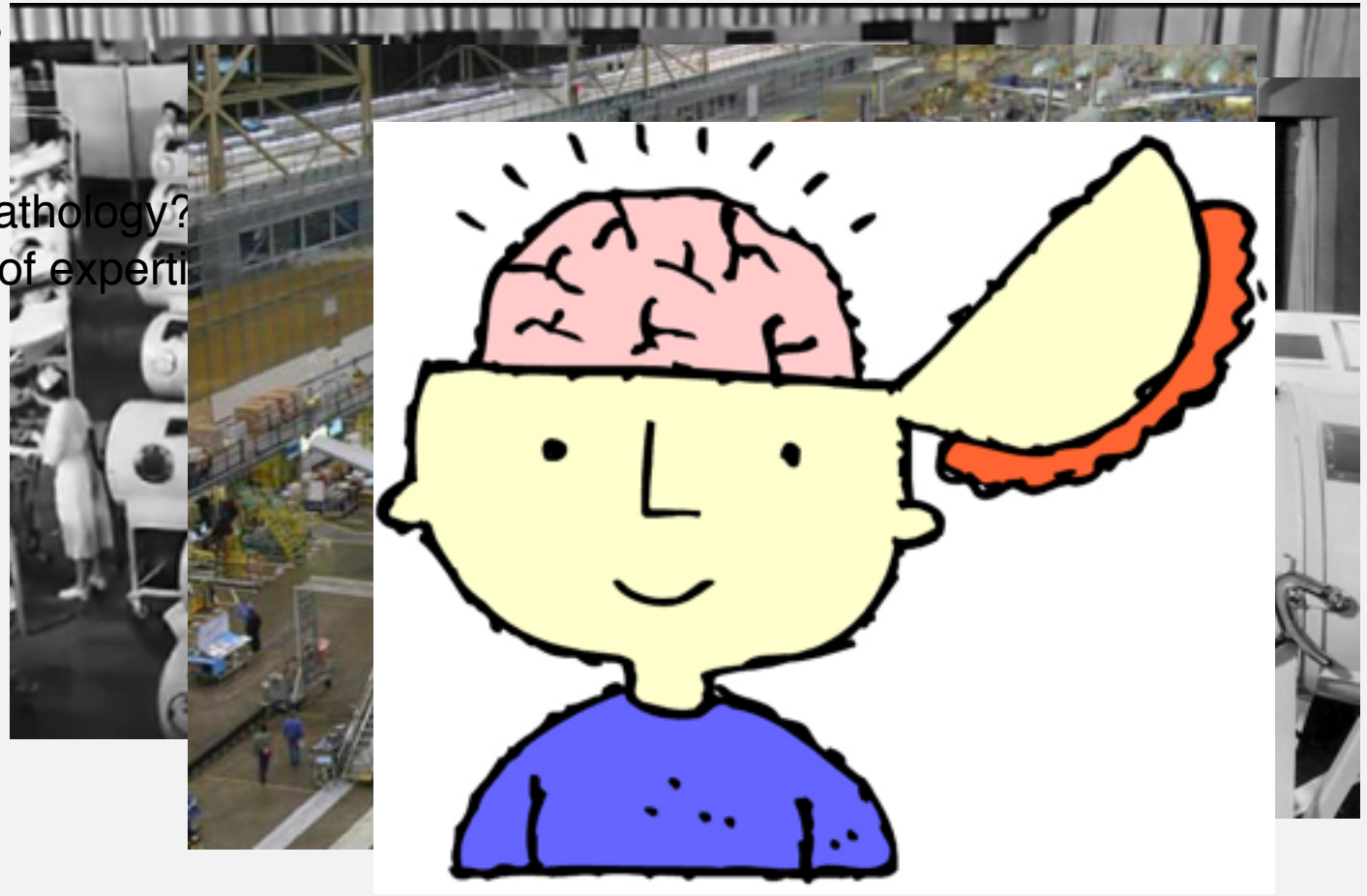
NHS England

Number of smaller trusts		19	23	33
Other providers	Classified by distance by road from next nearest acute provider with an A&E department	>30 km	20 km - 30 km	<20 km
	Average distance by road from nearest acute tertiary centre (providing NHS highly specialised services)	83.5 km	38.6 km	20.8 km
Demand	Inpatient catchment population	236,050	256,300	236,900
	Proportion of catchment area urban (ONS)	56%	79%	92%
	Number of inpatient spells a year	54,111	59,044	64,477
	Average age of patients	53.0	50.4	48.8
	Deprivation of catchment population (ONS)	17.8	18.7	23.3

SIZE OF UNIT

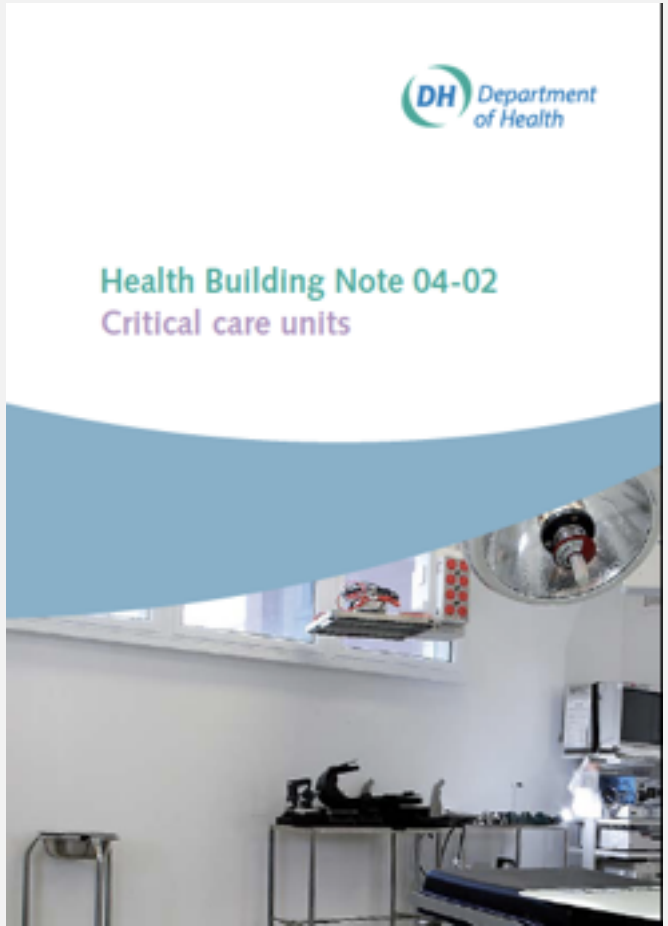
What do we mean by size?

- Floor area?
- Number of beds?
- Throughput of a given pathology?
- Access to or availability of experti



DOES SIZE MATTER?

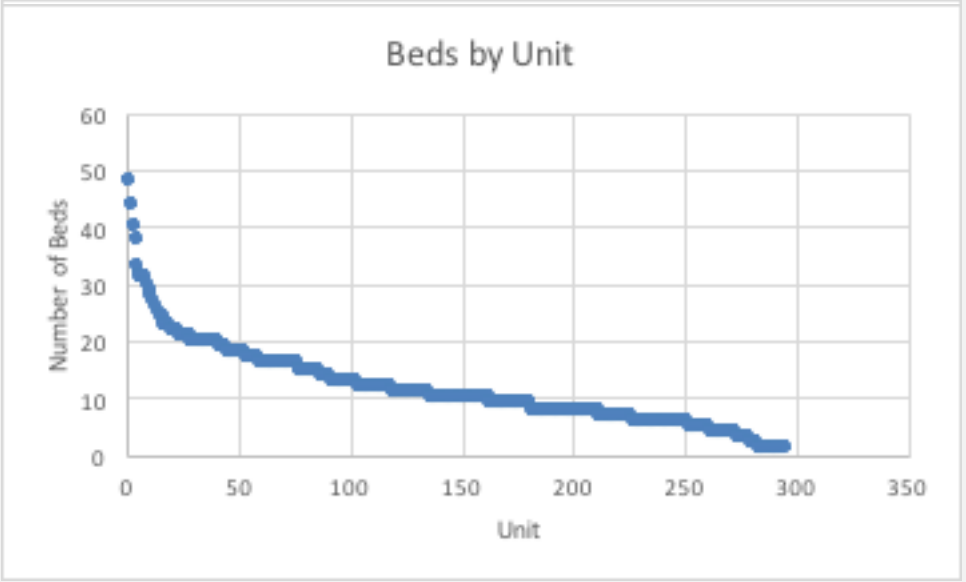
- Floor area



Bed occupancy and incidence of Methicillin-resistant Staphylococcus aureus infection in an intensive care unit A. J. Howie et al

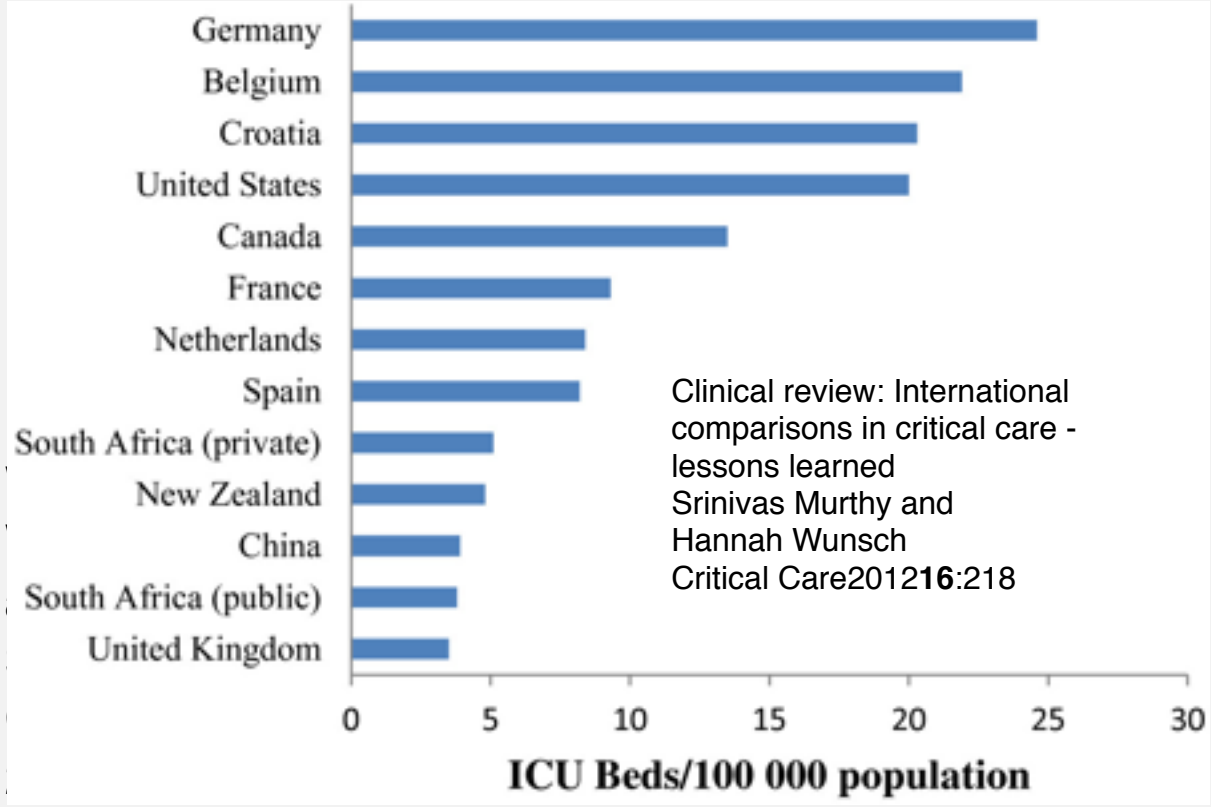
SIZE MATTERS – BED NUMBERS

- Number of beds
  - Administrative issues
    - Type of bed L2/L3 -
    - Separate vs combined units – Counting bed days
    - Mean apache scores



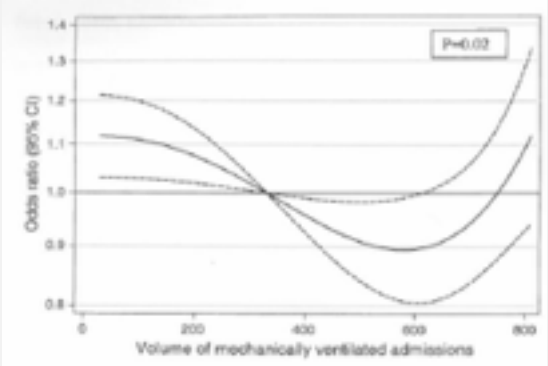
SIZE MATTERS BED NUMBERS

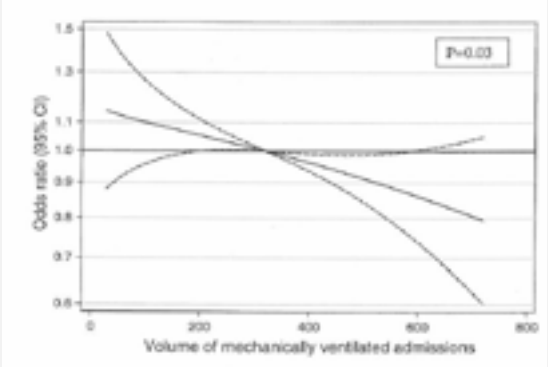
- International Comparisons
  - US vs UK: more patients but lower illness severity
  - Hospitalisation rates and mortality similar
  - 5.1% of deaths in UK in ICU vs 17% in US
  - Germany vs UK 3.3% ARF vs 20% in UK
  - ICU used for 31% Medical deaths in US vs 2% in UK



Clinical review: International comparisons in critical care - lessons learned
Srinivas Murthy and Hannah Wunsch
Critical Care2012**16**:218

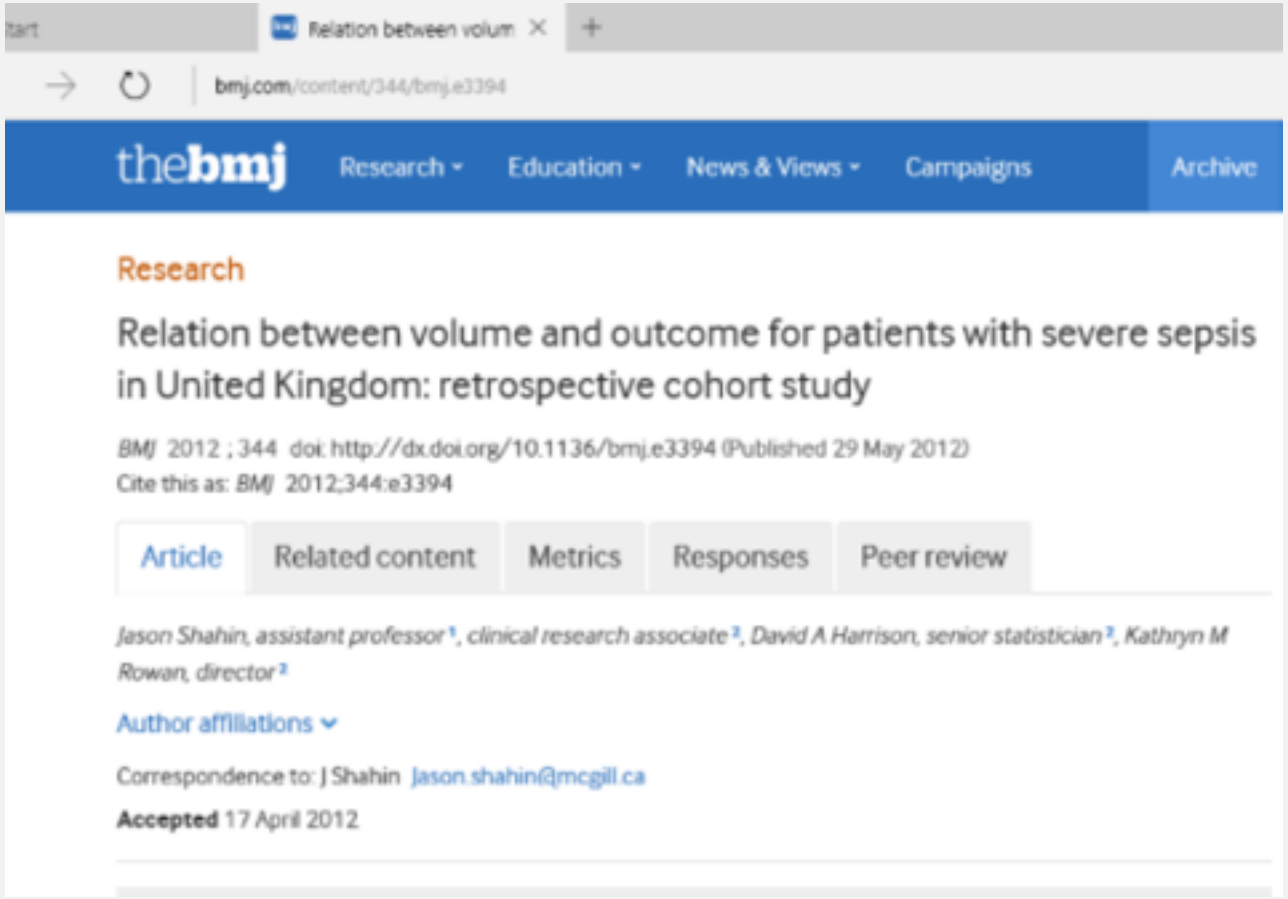
VOLUME – OUTCOME & VENTILATION

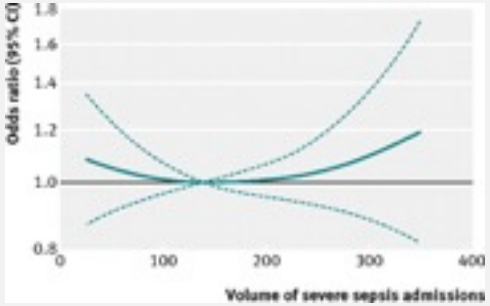




A volume–outcome relationship was demonstrated for mechanically ventilated admissions to adult, general critical care units in the UK. The relationship is sensitive to the modelling approach used

VOLUME – OUTCOME IN SEPSIS





Despite the potential benefits of centralisation, many drawbacks exist. Potential harm to patients during transport, the loss of medical skills in the regional hospitals, and the separation of patients from family and familiar clinicians are some of the problems that have been raised.

VOLUME – OUTCOME – EVERYTHING!

FREE

Critical Care Medicine | October 2013

Relationship between Volume and Survival in Closed Intensive Care Units Is Weak and Apparent Only in Mechanically Ventilated Patients

Rafael Fernández, M.D., Ph.D.; Susana Altaba, M.D.; Lluis Cabre, M.D.; Victoria Lacueva, M.D.; Antonio Santos, M.D.; Jose-Felipe Solsona, M.D.; Jose-Manuel Añon, M.D.; Rosa-Maria Catalan, M.D.; Maria-Jose Gutierrez, M.D.; Ramon Fernandez-Cid, M.D.; Vicente Gomez-Tello, M.D.; Emilio Curiel, M.D.; Enrique Fernandez-Mondejar, M.D.; Joan-Carles Oliva

VOLUME OUTCOME - NECCN

SIZE MATTERS - VOLUME OUTCOME?

- Activity
  - How busy is my unit

Healthcare Quarterly, 12(Sp) August 2009: 8-14.doi:10.12927/hcq.2009.20961 **Effect of Ambient Workload in the Intensive Care Unit on Mortality and Time to Discharge Alive**
Scot A. Mountain,

SIZE MATTERS? - EXPERTISE

- Note the date
- 12 surgical procedures – from ‘open heart surgery’ to cholecystectomy,
- High numbers were 200 or more
- “these data support the value of regionalisation for certain operations”

The NEW ENGLAND JOURNAL of MEDICINE

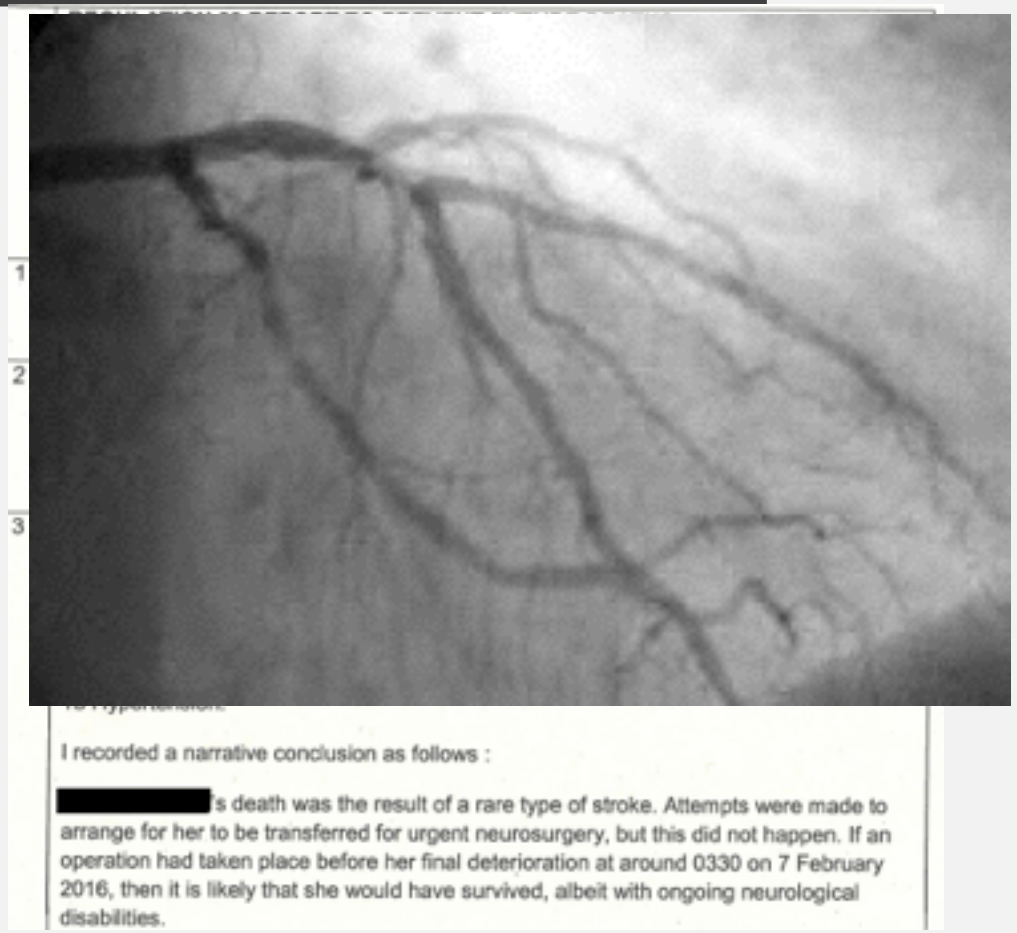
Should Operations Be Regionalized? — The Empirical Relation between Surgical Volume and Mortality

Harold S. Luft, Ph.D., John P. Bunker, M.D., and Alain C. Enthoven, Ph.D.

N Engl J Med 1979; 301:1364-1369 | December 20, 1979 | DOI: 10.1056/NEJM197912203012503

SIZE MATTERS – EXPERTISE?

- Specialisation
  - Cardiothoracic
    - PCI
    - Ecmo – Caesar/Swine Flu
  - Neurosurgery
    - Acceptance of responsibilities
  - Paediatrics
- Advice



I recorded a narrative conclusion as follows :

[redacted]'s death was the result of a rare type of stroke. Attempts were made to arrange for her to be transferred for urgent neurosurgery, but this did not happen. If an operation had taken place before her final deterioration at around 0330 on 7 February 2016, then it is likely that she would have survived, albeit with ongoing neurological disabilities.

DOES SIZE MATTER

- Floor area ✔
- Number of beds ✔/ ✘
- Volume/outcome (✔) /✘
- Access to expertise
  - Specialisation ✔
  - Advice ✘

WHAT DO WE MEAN BY ‘BETTER’?

- Better for whom?
  - Patient outcomes
    - Mortality
    - Morbidity
  - Relatives
  - The bureaucracy
    - Clinical - Standards
    - Finances – Achieving the professional standards at the lowest cost
  - The staff – maintaining skills

IS BIGGER BETTER FOR PATIENT OUTCOMES?

- Mortality
  - Ventilation / sepsis
- Direct icu admission from ED greater in US than UK – longer LOS and worse outcome
- Delayed admissions

Wunsch H, Angus DC, Harrison DA, Linde-Zwirble WT, Rowan KM: **Comparison of medical admissions to intensive care units in the United States and United kingdom.** Am J Respir Crit Care Med 2011, **183:** 1666-1673. 10.1164/rccm.201012-1961OC

IS BIGGER BETTER FOR RELATIVES?

- Little data
  - Quality of life, not quantity
  - Travel time
  - A good local death, or the perfect distant one?
  - ‘Holistice’ care

IS BIGGER BETTER FOR THE BUREAUCRACY?

- Clinical Standards
  - Tough fro the smaller unit to achieve
- Centralisation
  - Cost per patient lower in bigger unit.
  - But
    - Transport cost
    - Skills need to be maintained in a small unit

Direct Cost Care Unit Stay in Four
European C Standardized Costing
Methodolog
Siok Swan

IS BIGGER BETTER FOR THE STAFF?

- Medical
  - Covering OOH
- Nursing
  - Maintaining skills
- AHPs
  - Covering OOH

THE BIGGER THE BETTER?

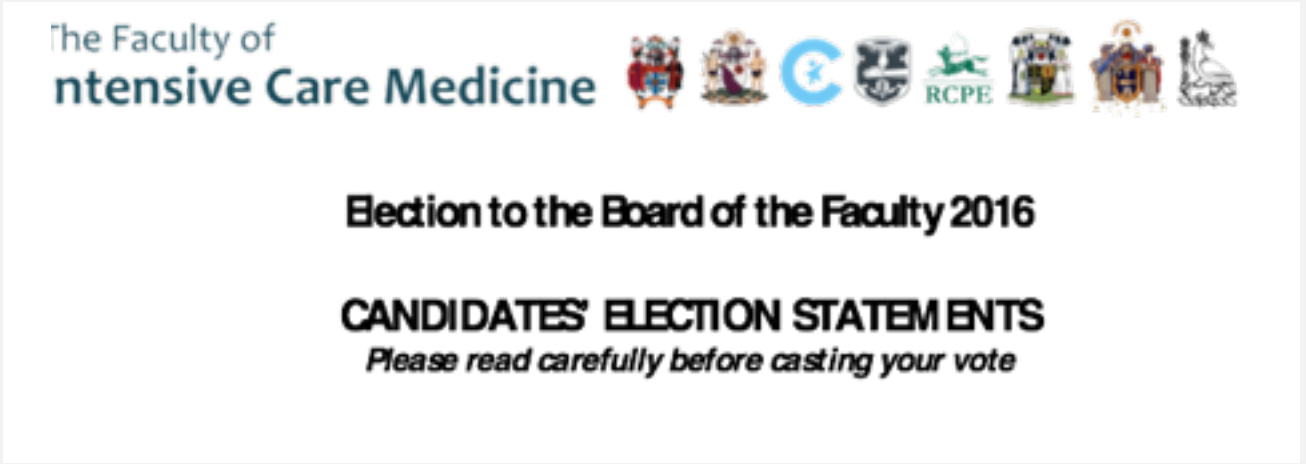
- Better for whom?
  - Patient outcomes
    - Mortality / Morbidity✘
    - Specialist areas ✔
    - Relatives ✘
  - The bureaucracy
    - Clinical – Standards ✔/ ✘
    - Finances – Achieving the professional standards at the lowest cost ✔
  - The staff – maintaining skills ✔/ ✘

SIZE MATERS > CENTRALISATION

- Centralisers
  - More beds – more cost effective, easier to attract & retain staff / educate staff / better outcomes / maintain rotas
- My view
  - Not born out by
    - Bed argument
    - Volume outcome
    - Holistic concerns
  - Specialist services should be centralised, ventilation is not a specialised service.

THE RISK FOR THE SMALLER ICU

- Not having a voice
  - FICM
  - ICS
  - NETWORKS
  - CRG
- Make your voice heard.



Year	Total	DGH	Teaching	% DGH Candidates
2013	23	6	17	26
2016	18	3	15	16

FICM SMALLER UNITS ADVISORY GROUP

- Set up in response to publication of the Core Standards / GPICS documents
- Chair - on FICM board
- Make up
  - Bangor/Whitehaven/Shetland/Northern Ireland/Lewisham
- Focus of discussions
  - Connect with smaller units
  - Audit of GPICS looking for areas that may be problematic for smaller units
  - Strategy and solutions
  - Liaison with other committees

- Outputs

FICM SMALLER UNITS ADVISORY GROUP

			Shetland
1.1.1	Care Con Inte Med	.	A consultant anaesthetist with at least training grade experience in critical care is available at all times.

FICM SUAG comments

The size and location of the hospital are not compatible with all core standards. The care model is therefore adjusted to ensure safe care given the resources available. Medical input is at consultant level. Consultants need to be widely skilled, as both paediatric and adult patients will need to be cared for. Patients requiring prolonged care are usually transferred to the mainland and while in critical care are cared for a consultant on site. Network advice from Aberdeen is readily available and prolonged level 3 care on site is not undertaken.

The ICU lead clinician is actively involved with providing safe systems within the hospital for critically ill patients. Appropriately skilled personnel are available in a timely fashion to deal with patients, and a plan in place to increase staffing if required.

Overall this service appears to provide an effective use of available resource to provide care to the critically ill patient.

Suggested points:

1. Ensure continuation of close links with networked larger unit, and consider whether telemedicine may contribute to care in the future.
2. It is important given the small numbers and remote location that CPD for all staff to maintain up to date.

Chris Thorpe
Chair, FICM Smaller Units Advisory Group

CONCLUSIONS – IS BIGGER BETTER?

- Supersize?
  - Lets make sure all our units are the right size
  - Utilize expertise from specialist centres – transfer when necessary
  - Accept that some very small units may struggle and other options should be considered
- Is Bigger better?
  - Recognise that the best outcome may be not necessarily be ‘survival’
    - a ‘good’ death near home may be preferable
- Ensure that political representation encompasses all flavours of critical care units

QUESTIONS

- https://blog.ics.ac.uk/