

CLINICAL AUDIT DATA ON OUTCOMES- Alan Houston

Annual report 1987

This is a general document detailing the facilities and workload in the BCH and BRI from 1984-1987. There seem to be good data on the work done.

Mortality rates for the general groups are quoted but there is no comparison with any other data.

Annual report 1988

This is similar to the 1987 report, covering 1988 only. Again, there is no comparison with any other data.

Annual report 1989/1990

This is similar to the other two reports but includes comparison of the mortality rates for 1984-88 and 1989 with UK figures for 1988. This covers both infants and older subjects.

COMMENT

The audit data may be assumed to be correct but no statistical analysis is given.

Specific questions:

(i) Content and balance

The reports contain detailed information on patient numbers seen and undergoing investigation and treatment. The reports give an overview of the work undertaken and the patient groups. They seem quite detailed for the period during which it was obtained. They give a clear view of the work undertaken and its balance is appropriate.

In considering comments as in (iii) below it would have been ideal to have recorded the number of deaths in infants with congenital heart disease who did not undergo surgery. However, from attempting to do so I know it is quite difficult to obtain accurate information on this, even in the 1990s with computerisation of records.

(ii) Audit data and possible clinical concerns

Numbers of patients undergoing operation and mortality rates for 1984-89 are given with a statement of the UK figures.

There is no statistical assessment for comparison so it is not possible to draw firm conclusions from the data. However at that time I do not think that such statistical assessments were common practice and certainly not universal.

I do not have sufficient statistical skills to analyse this in detail.

However if the information is looked at simply the following is apparent:

	Numbers		Ratio numbers	Ratio deaths	No of BRI
	Bristol	UK	UK/Bristol	Bristol/UK	deaths
<u>Open heart surgery</u>					
Over 1 year:					
Simple	155	540	3.48	2.16	2
Moderate	302	860	2.8	0.95	22
Complex	96	242	2.5	1.43	25
Under 1 year:	143	708	4.95	1.71	46
<i>Total open</i>	<i>696</i>	<i>2350</i>	<i>2.39</i>	<i>1.3</i>	<i>95</i>
<u>Closed heart surgery</u>					
Over 1 year	252	604	2.39	1.2	6
Under 1 year	300	855	2.85	1.4	26
Total closed	552	1459	2.64	1.29	32
<i>Total</i>	<i>1248</i>	<i>3809</i>	<i>3.05</i>	<i>1.24</i>	<i>127</i>

There are more apparent deaths in Bristol in almost all groups.
The death ratio for open simple > 1 year can be excluded as only 2 deaths.
The highest mortality compared to UK is in open < 1 year.

The ratio of numbers should be about the same for all groups.
The ratio of numbers of open < 1 year (UK:Bristol) is very high - virtually twice the other groups - while ratio of numbers closed < 1 year is about the same as others. Bristol were performing relatively fewer open procedures on those < 1 year.

The high mortality ratio in open < 1 year has to be considered in relation to the fact that only about half as many were operated on in Bristol compared to the UK. There does not seem to be a commensurate increase in those operated upon open > 1 year so it does not seem they were left till older.
Why was this?

Given the information for open < 1 year with the high relative mortality and fewer numbers operated upon this group might be worthy of consideration as meriting further consideration and being a possible cause for concern.

The death ratio for other groups (except moderate open) seems to be consistently about 1.3 - again an indication of poorer outcome but proper statistical analysis might be necessary to draw a definite conclusion.

I do note that these figures were published and presumably available for review by others. I am not sure if Dr Piton, specialist in Community Medicine, received the 1989/90 report or only the one for 1987.

(iii) **Nature of the clinical concerns**

The main clinical concern, as expressed above, is the mortality in the open procedures < 1 year of age. However, the lower ratio of operations in this group needs to be explained.

It would be necessary to consider whether some infants were referred to another centre. And if so were they the less severely ill ones - with the worse ones who needed urgent treatment being referred to Bristol as they

were too ill to travel to another more distant centre. This might explain the higher Bristol mortality rate.

If all were referred and some not operated upon and dying, the mortality ratio becomes even higher than 1.7 and would likely be over 2.0. Double the national mortality would be a major concern, even without statistical analysis of the data.

(iv) What action would have been expected?

Related to the comments above it would be necessary to determine why fewer infants underwent open heart surgery. If it was related to referral patterns and only the more ill ones were sent to Bristol it might be that the results were acceptable.

It might be more simple to look at individual types of procedure / diagnoses to decide if specific conditions were under-represented or had a higher mortality. The numbers would be relatively small by some idea of possible explanations might be obtained. Subsequent action would depend on the information obtained from this exercise.

A high mortality rate in a specific operation / condition would then merit assessment as to the pre-operative, operative, or post-operative care.

Perhaps it would be considered that the data be discussed with a statistician with experience in medical matters.