

Variation between the Dukes staging on the West Midlands Cancer Registration Database and the National Bowel Cancer Screening System

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Background

Cancer registry staging data are important for evaluating the success of the NHS Bowel Cancer Screening Programme, with a focus on timely and accurate data being laid out in the government's recent paper, *Improving Outcomes: A strategy for Cancer*. Accurate staging is essential to compare screen-detected and symptomatic cancers and to examine screening histories in order to improve the monitoring of outcomes. In this study Dukes staging for cases recorded on the Bowel Cancer Screening System (BCSS) was matched to the West Midlands cancer registration database (GRACE), to identify how many cases were present on the two databases and any variation in the stages recorded. The study aimed to rectify any genuine differences between the two databases and to examine the plausibility of exploiting one dataset to improve the completeness and timeliness of the other dataset, eradicating any missing gaps in staging.

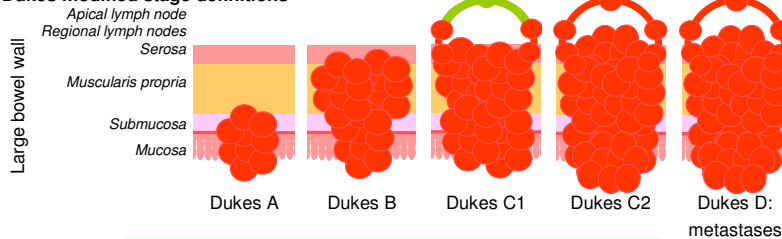
Method

- Screen detected colorectal cancers (C18-20) from the BCSS were matched to GRACE
- For 2006 to 2009 there were 475 cases on the BCSS, 468 of which were on GRACE
- No duplicate tumours were found, so all were matched by NHS number
- Staging on BCSS and GRACE was compared for each individual case
- BCSS records two stage fields: clinical Dukes stage which is a final pre-treatment stage and is not often completed, and the pathological Dukes stage which is a tumour's stage determined at pathology
- Figure 1.0 shows where in the patient pathway staging is recorded

Figure 1.0 Recording of staging in the patient pathway



Dukes modified stage definitions



Results

The cells coloured green in Table 2.0 show where Dukes stage fields are the same on both databases. Cells that are red show where values relating Dukes staging do not match, and white cells show where other values do not match.

Pathological BCSS Dukes vs Clinical BCSS Dukes

An initial match was done between the two Dukes stages on the BCSS. Table 1.0 shows the results.

Table 1.0 Internal BCSS Dukes matching

Stage	BCSS Clinical Dukes Stage						Total
	A	B	C1	C2	Blank	Total	
A	47	1				71	119
B	1	40				75	117
C1	1	4	36		2	63	106
C2	1			5		13	19
Blank	9	3	2		6	68	88
Not Matched	4		2			20	26
Total	63	48	40	5	8	311	475

This table shows the following:

- 128 of the cases have the same clinical and pathological Dukes stage
- 68 cases do not have either a clinical or pathological Dukes stage recorded
- There are 20 cases with a clinical Dukes stage that do not have a pathological Dukes stage. 6 of these are Dukes D cases and may represent late stage cancers that did not have surgical treatment. It is not clear why 14 Dukes A-C2 cases have only a clinical Dukes stage
- There are 223 cases with a pathological Dukes stage that do not have a clinical Dukes stage

Pathological BCSS Dukes vs GRACE Dukes

Following the internal match, the BCSS pathological stage was matched against the cancer registration database. The results can be seen in Table 2.0.

Stage	GRACE Dukes Stage								Total
	A	B	C1	C2	D	Polyps	Blank	Not Matched	
A	88	2				15	11	3	119
B	1	110				2	4		117
C1		1	94	1		2	8		106
C2	1		5	10	1		2		19
Blank	2	5	2	1	1	40	33	4	88
Not Matched	1		2	1		15	7		26
Total	93	118	103	13	2	74	65	7	475

Table 2.0 Pathological BCSS to GRACE matching

- BCSS and GRACE cases with staging match up well with 302 of the 315 staged cases matching (96%), representing 65% of the 475 cases in total
- 25 cases (6%) have staging on the BCSS but not on GRACE, excluding polyps
- 7 cases (1.5%) were not found on the cancer registry, but recorded as screen-detected
- Where both systems have a dukes stage, 13 cases (4%) do not have the same stage
- 126 cases were identified on the BCSS as polyp carcinomas, and 74 polyps recorded on GRACE. A full breakdown of these cases is given in Table 3.0.

Table 3.0 Polyp carcinoma matching

Stage	GRACE Dukes Stage						Total
	A	B	C1	C2	Polyps	Blank	
A	16				14	6	38
B	1	5			1		7
C1			3	2	2	1	8
Blank	2				40	6	50
Not Matched					22	1	23
Total	19	5	3	2	79	14	126

The BCSS records the majority of the 74 polyp cases as blank, not matched or stage A pathological staging. The Table 3.0 suggests stage matching is accurate for these cases, and that some of the polyp cancers may also be given a Dukes stage but not in large numbers.

- Unmatched cases were not confined to a specific year or screening centre
- The data will be improved by following up cases that are on the BCSS but not on GRACE and examining why staging for some cases is missing on one system but present on the other

Conclusion

A good match was found between the pathological Dukes stages recorded on the BCSS and those recorded by the WMCIU.

Work is being done to follow up the 7 screen-detected cancers that were not registered on GRACE. The main area of concern is the cases with pathological staging data on the BCSS that are not recorded on GRACE. Further work will be done to see why the stage is not present on GRACE if the case is registered, and to complete the staging information wherever possible. Of particular value will be clinical staging data for cases that did not have surgery.

Future work will evaluate whether staging data on the BCSS or on GRACE can be used to supplement the staging data on the other database, thereby improving the quality of staging data for both the registry and the screening programme. In this way a better quality of information can be used as a drive for improvements in the NHS Bowel Cancer Screening Programme and to set a strong foundation for research, audit, clinical management and quality assurance.