Improving Outcomes In Colorectal Cancer: A Network's Experience Of Using Data To Benchmark Clinical Care Pathways

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NHS Mount Vernon Cancer Network

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Introduction

- Mount Vernon Cancer Network (MVCN) has a population of 1.4m residents. It encompasses NHS Hertfordshire, NHS Luton and the southern part of NHS Bedfordshire and Provider Trusts: East & North Hertfordshire NHS Trust, West Hertfordshire NHS Trust as well as Luton and Dunstable NHS Foundation Trust. MVCN has a strategic objective to improve survival rates in all common cancers
- The Colorectal Cancer Network Site Specific Group (NSSG) has worked with their local cancer registry, Eastern Cancer Registration and Information Centre (ECRIC), the National Cancer Intelligence Network (NCIN) and Roche Products Ltd to analyse colorectal cancer diagnoses and treatment patterns within the Network
- Using the data collated, this assessment is intended to benchmark and note key differences in colorectal cancer care provision

Methods

- Data have been collected from the ECRIC and the National Bowel Cancer Audit Report (NBCA)[1] to validate the MVCN colorectal cancer outcome and treatment variations between networks in the East of England (EoE)
- The NBCA project is a well-established repository, focusing mainly on surgical metrics. It allows clinical teams to review certain aspects of the colorectal patients' clinical care pathway
- The NSSG sought to extend their review of their pathways across aspects of surgery, radiotherapy and chemotherapy measures
- Latest data from ECRIC (2009–2010) were reviewed to understand trends in survival rates, staging, post-operative mortality and treatment variations
- These data were evaluated in line with the NBCA findings (2011)

Population

- Of the 7275 cases recorded by ECRIC between 2009 and 2010 for the EoE, 1486 were from the MVCN
  - This relates to a total of 799 and 687 patients for 2009 and 2010, respectively
- The NBCA 2011 includes a total of 520 patients from the MVCN for the reporting time period of 2009/10, which covers patients with a diagnosis date from 1 August 2009 to 31 July 2010

Recent changes in survival rates in the MVCN

- Changes in survival rates between 2007 and 2009 were reviewed to investigate trends over time (Figure 1)

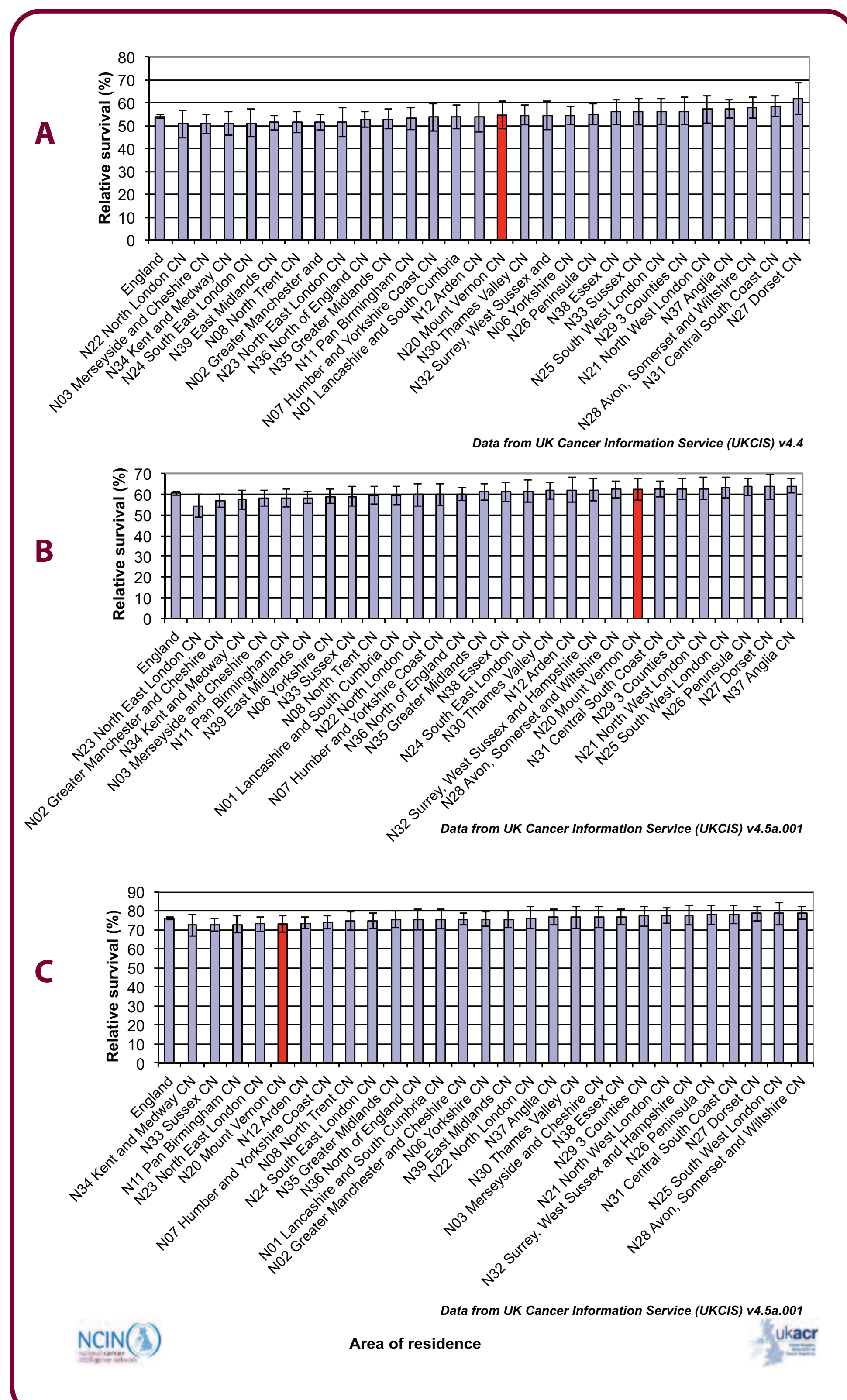

Figure 1. Colorectal cancer (ICD10: C18–20) by area of residence: (A) 5-year survival rates for those diagnosed 2003–2005; (B) 3-year survival rates for those diagnosed 2005–2007; (C) 1-year survival rates for those diagnosed 2007–2009

- Among cases diagnosed in 2003–2005, the MVCN 5-year survival rate was just above average for England
- Among cases diagnosed in 2005–2007, MVCN was just below the top quartile for 3-year survival
- For the latest national 1-year survival data (cases diagnosed in 2007–2009) MVCN was in the bottom quartile
- While there are no statistically significant differences, overall survival rates for the MVCN were consistently below the average for England

Diagnosis, staging, and treatment in the MVCN

- Compared with the rest of the EoE, MVCN had fewer Dukes stage A cases (Figure 2) and a higher proportion of cases where the stage was unknown (19.2%)
- The percentage of patients undergoing active treatment was similar across networks (MVCN: 84.1% vs Rest of EoE: 86.0%)
- The percentage of patients undergoing surgery was similar across Dukes stages
- MVCN had a higher rate of patients undergoing surgery recorded as unknown stage compared with the rest of the EoE
- The percentage of patients receiving chemotherapy was particularly lower for Dukes stage C cases in the MVCN compared with the rest of the EoE
- Fewer patients received rectal neoadjuvant radiotherapy in the MVCN (15.8%) compared with the rest of the EoE (21.1%)

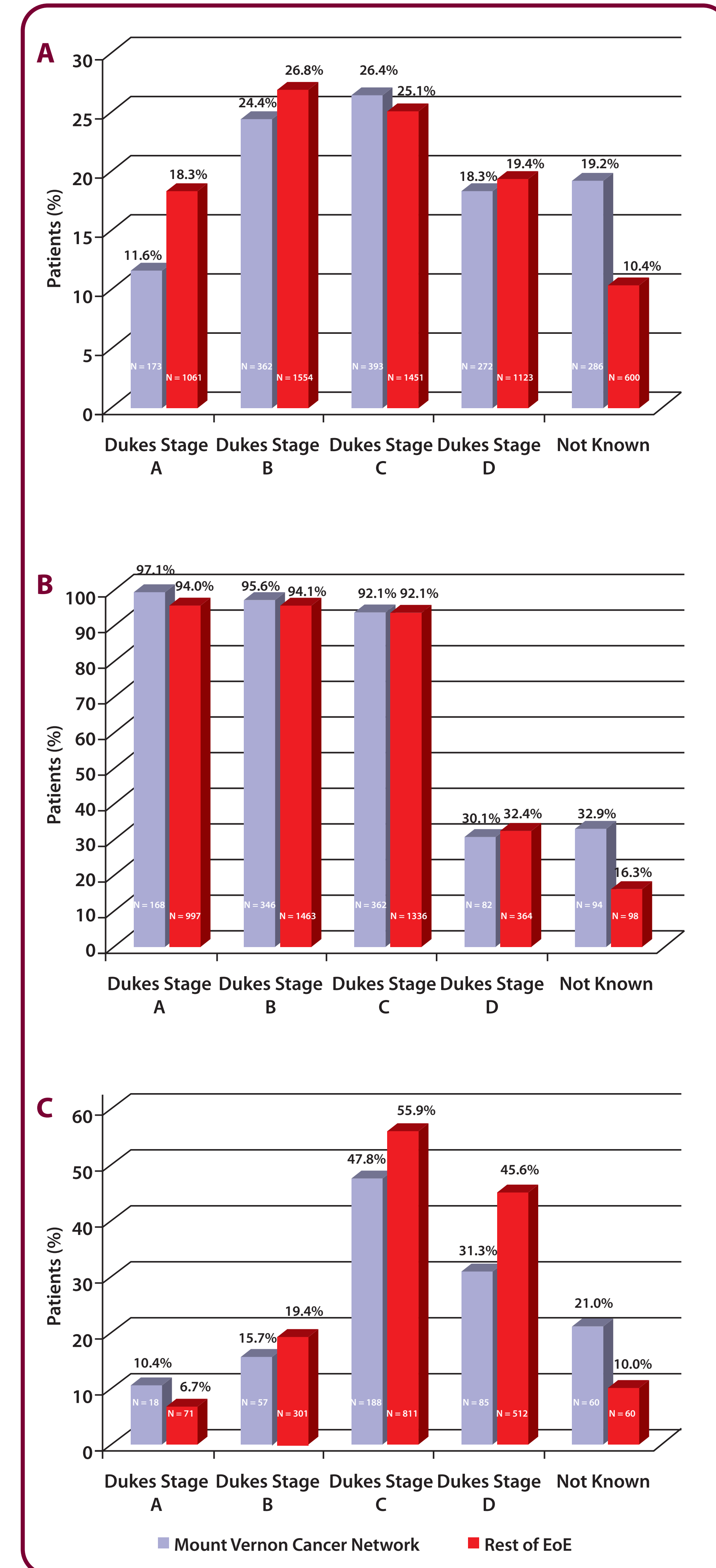

Figure 2. ECRIC data by Dukes stage: (A) percentage of cases; (B) percentage having surgery; (C) percentage receiving chemotherapy

Surgery and post-operative mortality

- Unadjusted post-operative mortality rates, for both the ECRIC registry data and the NBCA audit are highlighted in Figure 3
  - Post-operative mortality was higher in the MVCN compared with the rest of the EoE
  - Notably, the West Hertfordshire Hospitals NHS Trust (7.1%) appeared to have a high post-operative mortality rate compared with the other trusts (Luton & Dunstable Hospital Foundation Trust: 4.3%; East & North Hertfordshire NHS Trust: 4.9%) in the MVCN
- Adjusted post-operative mortality rates varied across the MVCN. The Luton & Dunstable Hospital Foundation Trust (8.7%) and West Hertfordshire Hospitals NHS Trust (6.7%) appeared to have considerably higher adjusted post-operative mortality rates than the East & North Hertfordshire NHS Trust (2.6%)
- Table 1 summarises the outcomes of patients undergoing major surgery, by cancer site. Overall, 30-day mortality was higher in those undergoing colon surgery compared with rectosigmoid and rectal surgery
- Urgency of operation markedly affects the post-operative mortality for colorectal cancer patients

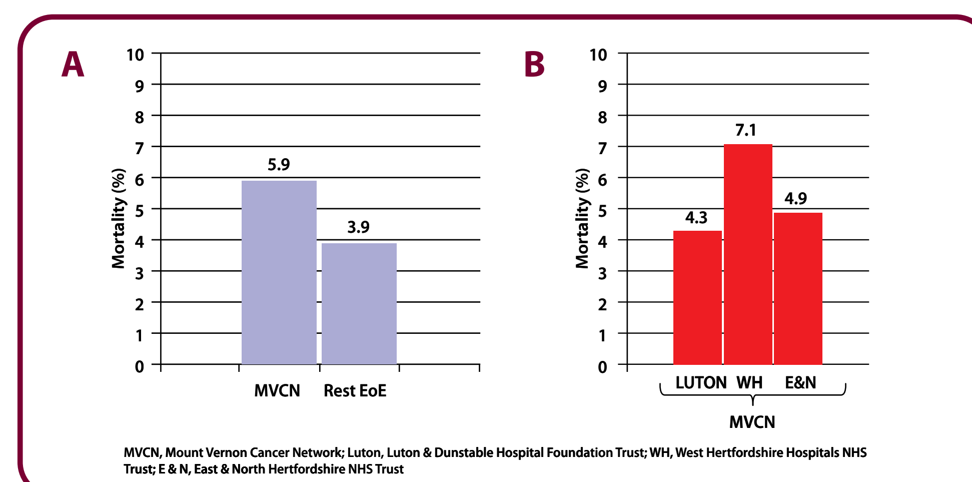

Figure 3. Observed 30-day mortality from (A) ECRIC data and (B) NBCA data

		Colon		Rectosigmoid		Rectal	
		Number	%	Number	%	Number	%
30-day mortality following major surgery	Yes	488	4.2	27	2.9	113	2.5
30-day mortality by urgency of operation	Elective	149/6372	2.3	8/610	1.3	79/3039	2.6
	Scheduled	51/1661	3.1	1/119	0.8	11/815	1.3
	Urgent	95/1490	6.4	6/94	6.4	12/316	3.8
	Emergency	159/1389	11.4	10/93	10.8	4/82	4.9
	Not recorded	34/623	5.5	2/26	7.7	7/214	3.3

Table 1. Outcomes of patients undergoing major surgery

Progress tracking

- MVCN has also developed a Colorectal 'Cancer Quilt' that reveals performance across geographical patches (Trust/Locality) and along pathway stages through the use of key performance indicators (Figure 4)
- The clear 'traffic light' presentation ensures that problem areas are visible at a glance

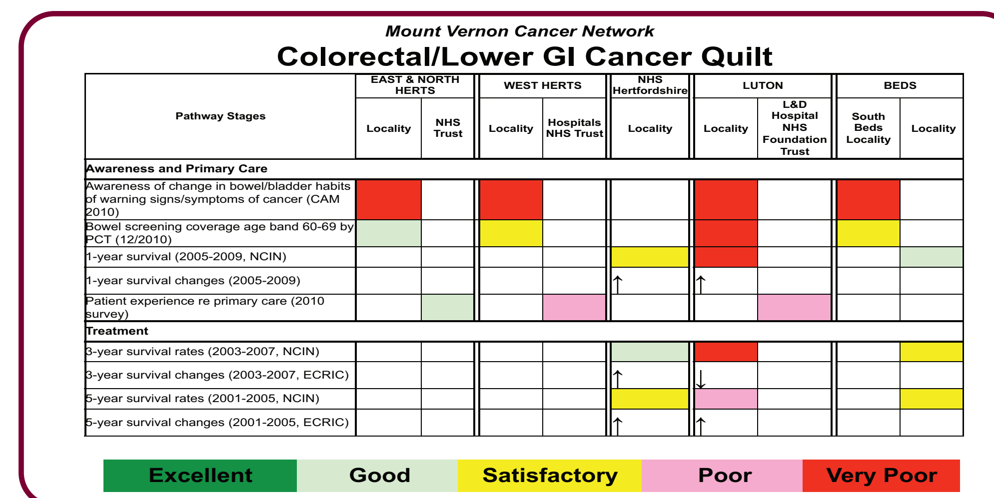

Figure 4. MVCN Colorectal Cancer Quilt

Conclusions

- This work by the NSSG provides a case study to indicate that the regular and systematic reviews of local and national information around staging, surgery, chemotherapy and radiotherapy are critical to benchmark the quality and outcomes from its services
- This focus on the use of data is intended to both improve collection and reporting
- This work has clearly identified the NSSG's areas of formal continual improvement (FCI), namely identifying the reasons for: low chemotherapy rates for patients with Duke stage C tumours; low rectal neoadjuvant radiotherapy rates and variation in the 30-day post-operative mortality rates within the network

Next steps

- The NSSG needs to focus future efforts on investigating:
  - Increased data collection for NBCA and ECRIC
  - Variation in 30-day postoperative mortality rates
  - Low chemotherapy rate for patients with Duke's stage C tumours
  - Low rectal neoadjuvant radiotherapy rates
- The NSSG will look to improve data collection by meeting the Cancer Outcomes and Service Data (COSD) requirements. The COSD will mandate data submission for all NHS providers from 1 January 2013, ensuring pathway metrics and outcome data, such as those discussed in this poster, can be collected and benchmarked

References
1. The National Bowel Cancer Audit, 2011. Available at: http://www.ic.nhs.uk/webfiles/Services/NCASP/audits%20and%20reports/Bowel_Cancer_Audit_Report_2011_interactive.pdf. Last accessed 5 June 2012.

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