National Institute for Health and Clinical Excellence

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NICE implementation uptake report: Laparoscopic surgery for colorectal cancer

NICE implementation uptake reports provide information on national trends and activity associated with recommendations in NICE guidance.

Overview

The percentage of colorectal resections performed laparoscopically in NHS hospitals in England is increasing. In 2008/09 there were 20,035 Finished Consultant Episodes recorded where the main operation was colorectal resection. Of these, 22% were performed using the laparoscopic approach. The level of uptake is higher than the future forecast made in the NICE cost impact analysis produced for this guidance which estimated 13% would be completed laparoscopically. Further analysis is required when data becomes available to determine if this trend continues.

Laparoscopic surgery for the treatment of colorectal cancer (Surgical procedures)

'Laparoscopic surgery for the treatment of colorectal cancer' NICE technology appraisal 105 (August 2006).

1 Guidance

‘Laparoscopic surgery for the treatment of colorectal cancer’ NICE technology appraisal 105 (August 2006) was developed using the multiple technology appraisal process. This guidance updates and replaces ‘colorectal cancer – laparoscopic surgery’ NICE technology appraisal 17 (December 2000). In the original appraisal, laparoscopic surgery was only recommended as part of a clinical trial.

NICE has also published a number of further technology appraisals relating to the use of medicines for colorectal cancer and the cancer service guidance, ‘Improving outcomes in colorectal cancer’ (June 2004). A clinical guideline on colorectal cancer is in development and is due to be published in July 2011.

2 Context

Colorectal cancer (cancer arising in the lining of the colon or rectum) is the third most common cancer in the UK. Almost 30,000 new cases were registered in England and Wales in 2002, representing over 12% of all new cancer cases. The incidence of colorectal cancer increases with age. In people between the ages of 45 and 49 years, the incidence is about 20 per 100,000. In those aged 75 and older, the annual incidence is over 300 cases per 100,000 men and over 200 cases per 100,000 women.

Complete surgical excision of the tumour is the only potential cure and is indicated in 70% to 80% of diagnosed individuals. The remaining 20% to 30% usually have disease that has advanced to the extent that surgical resection with curative intent is unlikely to be successful. Among those who undergo surgery, the majority have a good prognosis while about 30% will go on to develop advanced disease and metastases despite having apparently complete initial resection.

The current standard procedure for the surgical resection of primary colorectal tumours uses the open approach, which involves open laparotomy and removal of the tumour via the abdominal incision. Part or all of the large intestine is removed, depending on the site and extent of the tumour. This procedure is associated with significant postoperative pain and usually involves a long hospital stay. While techniques such as epidural analgesia can effectively control postoperative pain, associated complications may require high-dependency care.

Laparoscopic colorectal surgery involves inserting laparoscopic instruments through a number of ports in the abdominal wall to dissect tissues around the tumour. The tumour is usually removed through an abdominal incision, the length of which depends on the size of the tumour. Laparoscopically assisted surgery refers to laparoscopic surgery in which the incision is enlarged to complete the dissection before the tumour is removed.

3 Recommendations and uptake

3.1 Recommendations

***The following recommendations are taken from NICE technology appraisal 105, and uptake can be assessed using routinely collected NHS data*.**

1.1 Laparoscopic (including laparoscopically assisted) resection is recommended as an alternative to open resection for individuals with colorectal cancer in whom both laparoscopic and open surgery are considered suitable.

1.2 Laparoscopic colorectal surgery should be performed only by surgeons who have completed appropriate training in the technique and who perform this procedure often enough to maintain competence. The exact criteria to be used should be determined by the relevant national professional bodies. Cancer networks and constituent Trusts should

ensure that any local laparoscopic colorectal surgical practice meets these criteria as part of their clinical governance arrangements.

3.2 Estimated levels of uptake

The rate limiting factor for the uptake of this procedure is the number of surgeons capable of performing this laparoscopic procedure. Based on the NICE costing template it is estimated that in 2008/09 the proportion of all colorectal cancer resections performed laparoscopically will be between 6-12% (NICE costing template, 2006).

3.3 Actual level of uptake: Surgical procedures in England (at 2008/09)

This report provides information on surgical procedures for colorectal resections carried out in hospitals in England. The figures are obtained from the Hospital Episode Statistics (HES) national data warehouse which is maintained by the NHS Information Centre. The number of Finished Consultant Episodes (FCEs) for colorectal resections in England in 2008/2009 are shown in table one

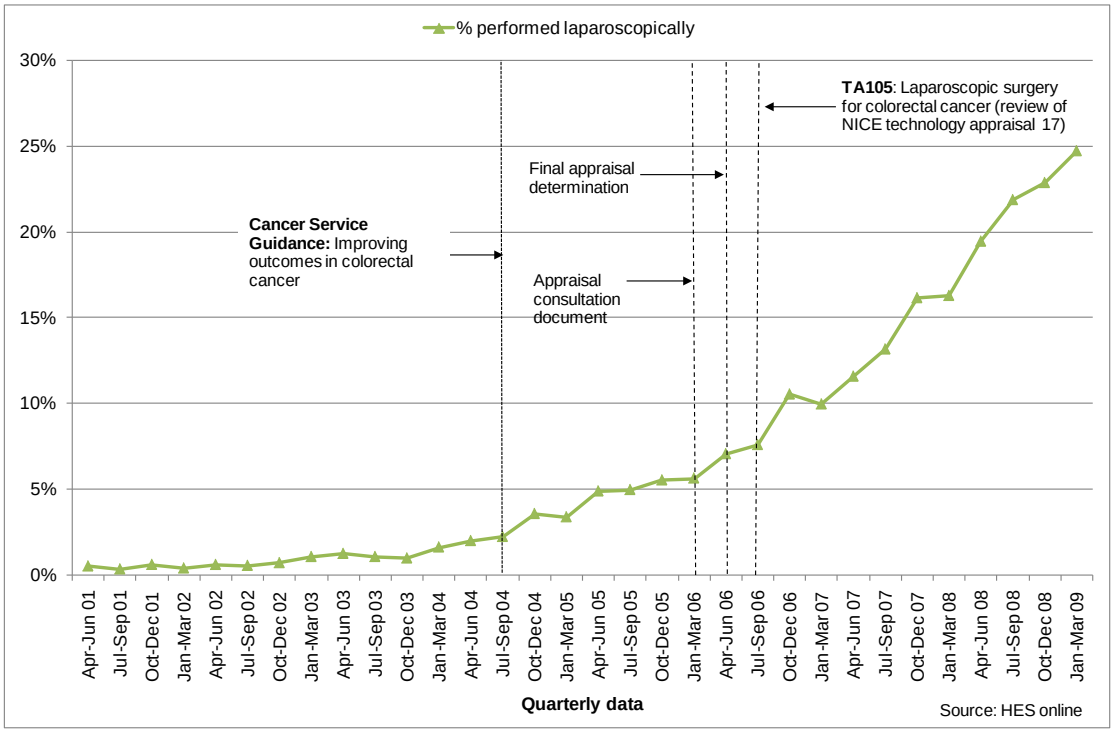
Table 1 Finished Consultant Episodes for colorectal resections and % with laparoscopic surgery in 2008/09

OPCS-4 Classification		Number of procedures	Number of procedures with laparoscopic surgery	% with laparoscopic surgery
H04	Total excision of colon and rectum	179	21	12%
H05	Total excision of colon	217	21	10%
H06	Extended excision of colon	1,506	214	14%
H07	Other excision of right hemicolon	5,894	1,474	25%
H08	Excision of transverse colon	137	16	12%
H09	Excision of left hemicolon	1,137	273	24%
H10	Excision of sigmoid colon	1,501	402	27%
H11	Other excision of colon	330	42	13%
H33	Excision of rectum	9,134	1,992	22%
		20,035	**4,455**	**22%**

Source: Hospital Episode Statistics (HES)

A total of 20,035 FCEs were recorded where the main operation code was a colorectal resection. Of these 22% were identified as being performed using a laparoscopic approach. The percentage of colorectal procedures being performed laparoscopically is increasing, as shown from the quarterly trend in figure one, following publication of the cancer service guideline in June 2004. The publication of NICE technology appraisal 105 appears to correspond with a further increase in the rate of uptake.

Figure 1 percentage of colorectal resections performed laparoscopically



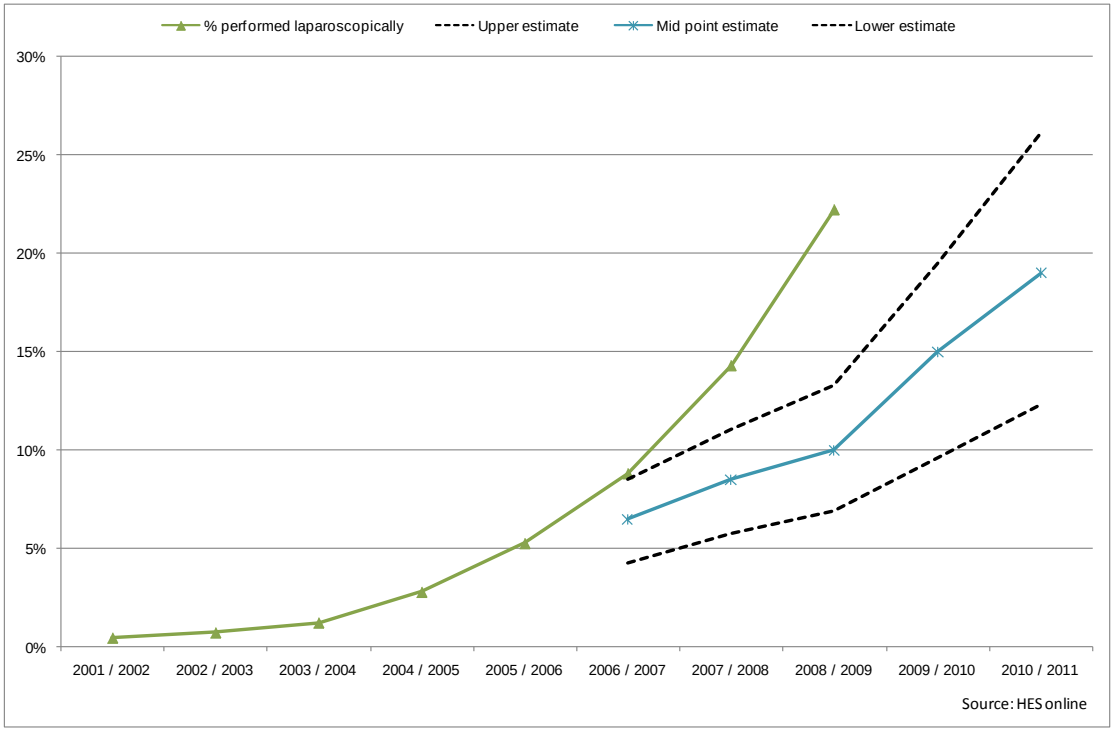
3.4 Uptake trajectory

NICE technology appraisal 105 recommends that laparoscopic surgery for colorectal cancer should be performed by surgeons who have completed appropriate training in the technique, and who perform this procedure often enough to maintain competence.

The main constraint in uptake is a recognised shortage of surgeons skilled in this technique. Another factor to take into account is patient choice. The NICE guidance recommends that the decision about which of the procedures (open or laparoscopic) is undertaken should be made after informed discussion between the patient and the surgeon.

The NICE costing template provides possible scenarios for future uptake depending on the number of trained surgeons. The future forecasts are shown in figure two alongside the actual uptake based on HES data from 2001/02 to 2008/09.

Figure 2 NICE trajectory for the percentage of colorectal resections performed laparoscopically



4 Conclusions

The percentage of colorectal resections performed laparoscopically in NHS hospitals in England is increasing. In 2008/09 there were 20,035 Finished Consultant Episodes recorded where the main operation was colorectal resection. Of these, 22% were performed using the laparoscopic approach. The level of uptake from 2006/07 is higher than the future forecast made in the NICE cost impact analysis produced for this guidance. In 2006/07 the midpoint estimate was 6%. Hospital Episode Statistics (HES) data shows that the actual percentage of procedures performed laparoscopically was 9%. By 2008/09, the mid point estimate was 10% and the actual 22%. It should be noted that some operations are started laparoscopically but completed by open resection. The data in this report reflects total resections started and finished laparoscopically.

5 Recommendations

Further analysis is required when data becomes available to determine if this trend continues. A review of this report will be considered when the guideline on colorectal cancer is published.

6 Further information and references

6.1 Related NICE guidance

For information about NICE guidance that has been issued, see the website (www.nice.org.uk).

- The clinical effectiveness and cost effectiveness of capecitabine and tegafur uracil for colorectal cancer. NICE technology appraisal 61 (2003). Available from: www.nice.org.uk/TA061
- Irinotecan, oxaliplatin and raltitrexed for advanced colorectal cancer (review of NICE technology appraisal 33). NICE technology appraisal. 93 (2005). Available from: www.nice.org.uk/TA093
- Capecitabine and oxaliplatin in the adjuvant treatment of stage III (Dukes' C) colon cancer. NICE technology appraisal. 100 (2006). Available from: www.nice.org.uk/TA100
- Improving outcomes in colorectal cancer. NICE cancer service guidance (June 2004). Available from: www.nice.org.uk/csgcc

6.2 Costing tools

Costing tools for the guidance are available on the NICE website http://www.nice.org.uk/costingTA105 including a local costing template and a costing report to estimate the savings and costs associated with implementation.

Appendix 1

Definitions used in this report

Hospital Episode Statistics (HES) are the national statistical data warehouse for England of the care provided by NHS hospitals and for NHS hospital patients treated elsewhere. HES are the data source for a wide range of healthcare analysis. It contains admitted patient care data from 1989 onwards.

The information in this uptake report comes from the HES Interrogation System which is an online version of the data. The NHS Information Centre maintains the system.

Finished Consultant Episode (FCE): The FCE is a period of admitted patient care under one consultant within one healthcare provider. The figures do not represent the number of patients, as a person may have more than one episode of care within the year.

Main operation: The main operation is the first recorded operation in the HES data set and is usually the most resource intensive procedure performed during the episode.

Secondary operation: As well as the main operative procedure, there are up to 19 secondary operation fields in Hospital Episode Statistics (HES) that show secondary or additional procedures performed on the patient during the episode of care.

Appendix 2

The following criteria were included in the HES analysis

1. Colorectal resections are defined where ICD-10 diagnosis codes C18, C19, and C20 appeared as the primary diagnosis and OPCS procedure codes H04-H11, H33 appeared as the main operation.

   C18 is malignant neoplasm of colon, C19 is malignant neoplasm of rectosigmoid junction and C20 is malignant neoplasm of rectum.
2. Laparoscopic surgery is identified where OPCS subsidiary classification code Y508, Y751, Y752, Y753, Y754, Y755, Y758 and Y759 appeared in any of the secondary procedure codes (see appendix 1 for further information).

ICD-10 (International Statistical Classification of Diseases and Related Health Problems, 10th Revision) – is used to classify diseases and other health problems recorded on many types of health records including hospital records.

OPCS-4 (Office of Population, Censuses and Surveys: Classification of Surgical Operations and Procedures, 4th Revision) - records details of any operations performed, e.g. hip replacement, inguinal hernia repair, colorectal resection.

Appendix 3

Change to OPCS4 coding for laparoscopic surgery via abdominal cavity

A new version of OPCS codes was developed by NHS Connecting for Health to reflect changing clinical practice and this was implemented in April 2006 - this new version is called OPCS4.3. All existing codes will remain. When using HES, care should therefore be taken when looking at procedures and interventions, in particular when using groups of codes as new codes and interventions have been introduced. More information on the change in classification of operations is available from: www.connectingforhealth.nhs.uk. Note that further developments have been made to the OPCS codes used in 2007-08 and quarterly 2007-08 data uses OPCS4.4.

List of OPCS4 codes for laparoscopic surgery relating to colorectal resections

OPCS 4.2	OPCS 4.3	OPCS 4.4	Description
Y50.8	Y50.8	Y50.8	Other specified approach through abdominal cavity
Y50.8	Y75.1	Y75.1	Laparoscopically assisted approach to abdominal cavity
Y50.8	Y75.2	Y75.2	Laparoscopic approach to abdominal cavity NEC
Y50.8	Y75.3	Y75.3	Robotic minimal access approach to abdominal cavity
Y50.8	Y75.4	Y75.4	Hand assisted minimal access approach to abdominal cavity
Y50.8	Y75.5	Y75.5	Laparoscopic ultrasonic approach to abdominal cavity
Y50.8	Y75.8	Y75.8	Other specified minimal access to abdominal cavity
Y50.8	Y75.9	Y75.9	Unspecified minimal access to abdominal cavity

Appendix 4

Uptake trajectory (upper and lower estimate)

This trajectory is adapted from a model provided in the NICE costing impact analysis produced to support implementation of this guidance. The model is based on 19,000 annual finished consultant episodes in England where the main operation was a colorectal resection.

Upper estimate

Surgeons trained each year	30
Increase in training capacity per year	5
Lap resections per experienced surgeon per year	40
Lap resections per inexperienced surgeon per year	20
Years before trained surgeons become experienced	2

	2006/07	**2007/08**	**2008/09**	**2009/10**	**2010/11**
Finished consultant episodes where the main operation was a colorectal resection Source: based on HES data for : 2006/2007, 2007/2008 and 2008/2009	19,000	19,000	20,000	20,000	20,000
Experienced surgeons performing laps	45	45	45	75	105
Recently trained surgeons performing laps	-	30	65	75	90
Total laps by experienced surgeons	1,800	1,800	1,800	3,000	4,200
Total laps by inexperienced surgeons	-	600	1,300	1,500	1,800
Total resections performed laparoscopically	1,620	2,100	2,660	3,900	5,220
TRAJECTORY (proportion of all resections performed laparoscopically)	8.53%	11.05%	13.30%	19.50%	26.10%
ACTUAL	**8.82%**	**14.31%**	**22.24%**	**-**	**-**

Lower estimate

Surgeons trained each year	30
Increase in training capacity per year	0
Lap resections per experienced surgeon per year	20
Lap resections per inexperienced surgeon per year	12
Years before trained surgeons become experienced	2

	2006/07	**2007/08**	**2008/09**	**2009/10**	**2010/11**
Finished consultant episodes where the main operation was a colorectal resection Source: based on HES data for: 2006/2007, 2007/2008 and 2008/2009	19,000	19,000	20,000	20,000	20,000
Experienced surgeons performing laps	45	45	45	75	105
Recently trained surgeons performing laps	-	30	60	60	60
Total laps by experienced surgeons	900	900	900	1,500	2,100
Total laps by inexperienced surgeons	-	360	720	720	720
Total resections performed laparoscopically	810	1,098	1,386	1,926	2,466
TRAJECTORY (proportion of all resections performed laparoscopically)	4.26%	5.78%	6.93%	9.63%	12.33%
ACTUAL	**8.82%**	**14.31%**	**22.24%**	-	-