N. IRELAND Cancer Registry

Cancer Services Audit 1996 & 2001

Oesophagus and Stomach

Queen's University Belfast

CONTENTS

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OESOPHAGUS AND STOMACH

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FOREWORD

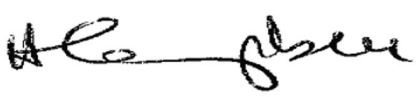
Cancer services in Northern Ireland have improved in recent years. Developments have spanned prevention, early detection and screening, diagnosis, management and palliative care. The Northern Ireland Cancer Registry has played an important role and made a vital contribution in monitoring this progress.

Since 1996 we have seen the establishment of five cancer units at Altnagelvin, Antrim, Belfast City, Craigavon, and Ulster Hospitals and a regional cancer centre at the Belfast City Hospital working closely with the Royal Group of Hospitals. The Cancer Units are now the main focus for the delivery of services for people with the more common cancers. In addition, some services for other less common cancers are provided from Cancer Units, in conjunction with the Cancer Centre, on a shared care basis.

These organisational changes have already made an impact on care as reflected in the words of one patient who said, "I feel it was very important that the local hospital clinicians realised they couldn't treat me and that I was referred to a specialist centre."

This report on oesophageal and stomach cancer is very welcome. It is the first in a series that will examine in detail the pathways of care for patients with cancer here. The reports provide a fascinating insight into how care has changed over the period. They will also facilitate the ongoing work of improving services and patient care.

This work marks a significant step in the evaluation of cancer care and confirms the great value of the Registry as a public health tool. I look forward to future reports in this series and regular five yearly snapshots of the changing process of cancer care.



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- Department of Health, Social Services & Public Safety (DHSSPS)
- Eastern Health and Social Services Board
- Northern Health and Social Services Board
- Regional Medical Audit Group
- Research and Development Office
- Southern Health and Social Services Board
- Western Health and Social Services Board

The quality of data in this project is a result of the work of the Registry Tumour Verification Officers especially Kate Donnelly and Rosemary Ward who meticulously extracted detailed information from clinical records for analysis and presentation in this report. The analysis of data was largely undertaken by Heather Kinnear, John Hughes, Deirdre Fitzpatrick and Pauline Monaghan. A special word of gratitude to the Medical Records staff of all the hospitals in Northern Ireland who in the course of the total project pulled an estimated 10,000 charts.

We are grateful to the clinicians who commented on the detail of data to be collected, its interpretation and final presentation.

The work of the N. Ireland Cancer Registry including the production of this Report is the result of the work of the team listed below:

Bernadette Anderson	Carmel Canning	Dr Denise Catney	Kate Donnelly
Patricia Donnelly	Deirdre Fitzpatrick	Colin Fox	Wendy Hamill
Helen Hanlon	John Hughes	Heather Kinnear	Susan McGookin
Dr Richard Middleton	Pauline Monaghan	Dr Liam Murray	Giulio Napolitano
Dr Lisa Ranaghan	Dr Jeffrey Robertson	Breige Torrans	Rosemary Ward

I wish also to record my thanks to the Management Group and Council of the Registry who guide that work.

This presentation, I feel, has been enhanced by the stories from patients who have walked the patient journey. A journey we have attempted to analyse and quantify with a view to identifying current practice so clinicians may be facilitated in improving care.

A Gavin
Director, NICR
2005

PATIENT STORY

"I noticed a little difficulty swallowing but, being a typical man, I ignored it until my wife forced me to go to the GP. The GP examined me and prescribed a drug but said he wanted me to have an endoscopy examination. Over the next week I wasn't getting much better and went to see my GP again, things were speeded up. I had the endoscopy and a biopsy was taken.

In the meanwhile I decided to go on holidays which we had pre booked. Every day there was something new that I couldn't swallow so that at the end I couldn't even swallow tea and was starting to lose weight but didn't realise it. I had no pain, I just couldn't swallow. While on holidays my GP, who had got my results, obtained my mobile phone number from my family and contacted me to come home immediately.

I was referred to the Royal Victoria Hospital and was admitted shortly afterwards. Various tests were done and I knew I needed surgery and hoped I wouldn't be sent home to wait for it. After the surgery I was in ICU for less than one day and every time I batted an eyelid there seemed to be a nurse there asking me if I was ok.

Things gradually improved while I was in hospital and a couple of days before I came home I surprised the orderly and ordered toast for breakfast. From then on I was able to eat something new every day.

Surgeons said they believed they had got everything but I could have a course of chemotherapy. I said if that was what was recommended then I would take it. The course involved several spells of one week in hospital and two weeks at home. At the start I was just nauseous and then I became extremely tired, so much so that I couldn't even walk from one room to another.

The help from the Macmillan nurse was great. She did many things including filling out one of those complicated government forms for me.

My District nurse was excellent. She insisted she could be contacted to check everything was ok even though she was off duty for the weekend.

I am grateful to my own doctor for picking it up and to the local hospital for referring me. I feel it was very important that the local hospital clinicians realised they couldn't treat me and that I was referred to a specialist centre.

When I was first diagnosed I was given leaflets in the local hospital but I wasn't very interested in them as I was overwhelmed with the diagnosis. Once I recovered I was well enough to go to a cancer support group and move later from that to a Patient Association meeting. I still attend this even though it is several years after my diagnosis because when I first attended, following surgery, it was very reassuring that there were members there who had recovered from surgery several years previously, which gave me hope."

SECTION I -
INTRODUCTION & BACKGROUND

This Report is one of a series which examines in detail the pathway of care for cancer patients in Northern Ireland. The sites selected represent the major cancers and the years 1996 and 2001 represent two points in time either side of the publication of the Campbell Report **"Cancer Services-Investing for the Future"[1].**

The Campbell Report resulted from the work of many clinicians, service planners and patients who worked together with the aim of improving cancer services in Northern Ireland. The Campbell Report recommended that:

1. The management of patients with cancer should be undertaken by appropriately trained, organ and disease specific medical specialists.
2. All patients with cancer should be managed by multidisciplinary, multiprofessional specialist cancer teams.
3. A Cancer Forum should be established involving all key interests in the delivery of cancer services.
4. Cancer units should, in conjunction with local GPs and other providers, develop an effective communication strategy.
5. Northern Ireland should have one cancer centre, which in addition to its regional role, should act as a cancer unit to its local catchment population of around half a million.
6. There should be four other cancer units, one in each Board area, each serving a population of around a quarter of a million.
7. Radiotherapy services, together with chemotherapy services, should be moved as soon as possible to the Belfast City hospital and become an integral part of the regional cancer centre.
8. Each cancer unit should develop a chemotherapy service. This service should be staffed by designated specialist nurses and pharmacists, and should be overseen by the non-surgical oncologist attached to the unit, with back-up from a haematologist.
9. There should be a minimum target of 13 consultants in non-surgical oncology for Northern Ireland by 2005.
10. Any new appointments of trained cancer specialists should be to cancer units or to the cancer centre.
11. Guidelines should be drawn up and agreed for the appropriate investigation and management of patients presenting to non-cancer unit hospitals who turn out to have cancer.
12. The cancer centre and cancer units should each develop a specialist multiprofessional palliative care team.
13. There should be a comprehensive review of palliative care services in Northern Ireland.
14. The Northern Ireland Cancer Registry should be adequately resourced.

These recommendations outlined the changes that were deemed necessary to improve cancer care.

PROJECT AIM

This Report aims to measure changes to care for patients with oesophageal and stomach cancer from a baseline in 1996, and to determine whether they are in keeping with the recommendations of the Campbell Report[1].

Subsequent to the publication of the Campbell Report[1] a subgroup in Northern Ireland produced the "**Oesophageal Cancer Regional Advisory Committee on Cancer Report"** in 2000[2]. This made 25 specific key recommendations in relation to oesophageal cancer which are summarised below:

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- Increase public and health care professional awareness of risk factors and symptoms.
- Multidisciplinary oesophageal team in each cancer unit.
- Preliminary staging completed within 2 weeks of attendance at cancer unit.
- Investigations as per agreed pathways.
- Entry into clinical trial, if appropriate.
- Patients for resection to have CT chest and abdomen, endoluminal ultrasound, bronchoscopy, where appropriate, and laparoscopy.
- Surgery within 2 weeks of decision.
- Timely communication to primary care and referring unit.
- Contact with specialist/palliative nurse specialist.
- The oesophageal cancer service should be developed on a regional basis and be managed as a single network of care that will ensure an efficient and consistent standard of care for all patients.
- There should be a single oesophageal cancer surgical service for the population, based at the cancer centre.
- Assessment of suitability for oesophageal resection should commence within one week of referral to the specialist oesophageal cancer surgical team and be completed within two weeks.
- Endoluminal (endoscopic) ultrasound should be performed by a limited number of appropriately trained upper gastrointestinal clinicians fully familiar with the techniques of performing the scan and procuring the appropriate biopsy material.
- The oesophageal cancer surgical service must have access to the appropriate pre and post-operative care, including access to intensive care and high dependency beds and the appropriate range of nursing skills for the management of post-operative thoracotomy patients.
- The oesophageal cancer surgical service must be open to scrutiny by participation and publication of audits of its activities.
- The oesophageal cancer surgical service must have an appropriately trained histopathologist as a core member of the team. This histopathologist must report to the standards of the Royal College of Pathologists minimum dataset, in a timely manner.
- Patients with oesophageal cancer must have access to a clinical oncologist opinion in the pre-operative or post-operative phase, as appropriate.

- The Primary Care Team should be made aware of the full range of palliative procedures for patients with oesophageal cancer.

  Full report available at www.dhsspsni.gov.uk/publications/2004/oesophageal-cancer-2000.pdf

It would be unrealistic to expect that by 2001 these recommendations would have been implemented, however, they are included here for completeness as is a summary of the recommendations of the NHS Executive's Report **"Improving Outcomes in upper Gastro-intestinal Cancers"**[3] published 2001, summarised below:

- Measures to reduce alcohol use, obesity and smoking and enhance intake of fresh fruit and vegetables to be encouraged.
- Oesophageal reflux and H Pylori infection to be treated.
- The diagnosis of gastric cancer should be suspected in all patients with recent onset "dyspepsia" over the age of 50 years.
- Rapid access gastroscopy is the investigation of choice with appropriate biopsy for those with risk symptoms.
- Written referral guidelines should be developed regarding referral of patients between hospitals.
- Diagnosis should be made by an experienced histopathologist and corroborated by a pathologist with a special interest in gastrointestinal disease.
- High grade dysplasia of the oesophagus should precipitate urgent repeat endoscopy and biopsy.
- Treatment should be the responsibility of specialist Oesophago-gastric cancer teams based in cancer units/centres serving populations of more than one million.
- Surgical resection should be considered for all patients with localised tumours who are fit enough to tolerate the procedure.
- Staging needs to be thorough and accurate for all patients.
- The spleen or pancreas should not be removed unless necessary.
- Subtotal gastrectomy should be used in preference to total gastrectomy whenever possible.
- Adjuvant chemotherapy should be discussed with patients where the risk of recurrence is relatively high.
- Adjuvant radiotherapy, with or without chemotherapy, should not be considered outside the context of large, well-designed, multi-centre randomised controlled trials (RCT's).
- Gastric ulcers should be followed up to healing with repeat biopsy.
- Palliative operations (including bypass) should be considered for patients whose cancer is too far advanced to be removed completely.
- Palliative chemotherapy, based on fluorouracil (5FU), should be considered for patients with advanced stomach cancer.
- Palliative care and specialist care should be available to all who need it and planned by the multidisciplinary team with direct involvement of the palliative care team.

It is recognised that for this audit the guidelines quoted above were published after the study period. A comprehensive discussion of the guidelines has also been published[4].

METHODS

Data collection

Registry tumour verification officers (TVO's) collected data by reviewing clinical notes. Data was then entered into an electronic proforma, which had been developed with the guidance of relevant clinicians; copy available at www.qub.ac.uk/nicr

Exclusions

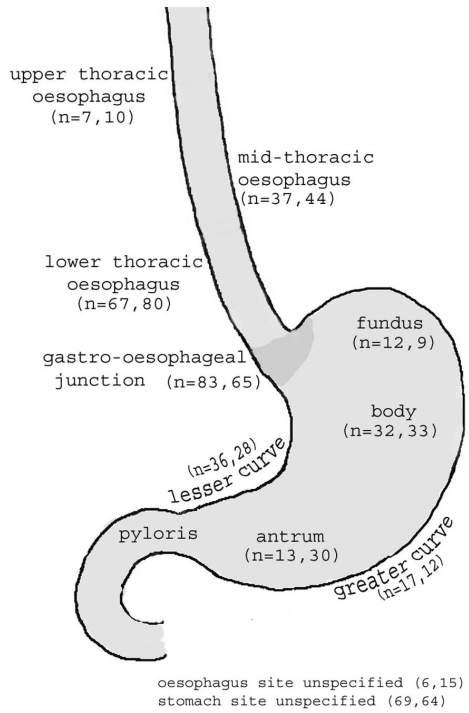
Patients were excluded if they resided outside Northern Ireland, if their records lacked sufficient information or if information was available only from a death certificate. After cleaning and validation, data analysis was carried out in SPSS. Statistics used to test for significance throughout the Report include Chi-square and one way Anova. The Kaplan-Meier method was used for survival analysis.

Classification

Section II of this Report relates to diagnosed oesophageal cancers while Section III relates to stomach cancers.

It is recognised there is a difficulty with the classification of tumours of the gastro-oesophageal junction[5]. Following consultation with the clinicians it was agreed that for the purposes of this audit Report gastro-oesophageal junction tumours should be included within the oesophageal site. (This explains differences in published NICR data for oesophagus and stomach cancer to the numbers reported here)[6].

The figure opposite shows the distribution of the tumours within the oesophagus and stomach, with figures in brackets indicating the incidence for each year (1996, 2001).



SECTION II - OESOPHAGEAL CANCER

BACKGROUND

The two main histopathological types are squamous cell carcinoma (SCC) and adenocarcinoma (ACA). Squamous cell carcinoma occurs more frequently in the upper 2/3 of the oesophagus while ACA tends to involve the lower 1/3 and gastro-oesophageal junction. There has been a marked increase in the incidence of ACA internationally in the past two decades.

Oesophageal cancer is more common with increasing age. Half of all males in Northern Ireland with oesophageal cancer were aged 70 years or more, while half of all females were aged 73 years and over[6].

Recognised risk factors for oesophageal cancer include cigarette smoking, alcohol consumption, obesity, Barrett's oesophagus[7] and a diet lacking fresh fruit and vegetables. Patients with gastro-oesophageal reflux[8], including those with Barrett's oesophagus, are at a higher risk of developing ACA of the oesophagus. Barrett's oesophagus is a condition in which there is a change in the lining of the lower oesophagus. It is a risk factor for ACA but the precise relationship is not fully understood. Not all people with Barrett's oesophagus develop cancer but the majority of people with oesophageal ACA have Barrett's oesophagus. Cigarette smoking and alcohol act independently and synergistically to increase the risk of oesophageal cancer.

RESULTS

Study patients

Patients	Oesophagus		Gastro-oesophageal Junction		All Cases Combined	
	1996	2001	1996	2001	1996	2001
Total number of patients	125	153	84	67	209	220
Exclusions - Death Certificate only	3	1	0	0	3	1
Exclusions - Lack of Information	5	3	1	2	6	5
Total Exclusions	8	4	1	2	9	6
Total reported on - Male	72 (62%)	91 (61%)	59 (71%)	50 (77%)	131 (65%)	141 (66%)
Total reported on - Female	45 (38%)	58 (39%)	24 (29%)	15 (23%)	69 (35%)	73 (34%)
Total	117 (100%)	149 (100%)	83 (100%)	65 (100%)	200 (100%)	214 (100%)
Average age at diagnosis - Male	69	67	66	67	68	67
Average age at diagnosis - Female	73	72	64	73	70	72

- The majority of patients were male (66%).
- Only 5% of patients in 1996, and 6% in 2001 had a positive history of Barrett's oesophagus recorded in their notes.
- Where smoking history was recorded (95% patients), 36% of patients had never smoked, 32% were current smokers and 32% were ex-smokers.
- Where alcohol history was recorded (82% patients), 36% of patients had never taken alcohol, 57% were current drinkers and 7% were ex-drinkers.

Socio-economic status of oesophageal cancer patients

Deprivation Quintile	Number of Patients (%)	
	1996	2001
Quintile 5 (most deprived)	80 (40%)	89 (42%)
Quintile 4	33 (17%)	32 (15%)
Quintile 3	26 (13%)	33 (15%)
Quintile 2	32 (16%)	34 (16%)
Quintile 1 (least deprived)	29 (15%)	26 (12%)
Total Patients	200	214

- In the general population it is expected that 20% of all cases of disease would fall in each quintile, however our data indicates that 40% of patients resided in the most deprived areas, confirming the link with socio-economic deprivation.

Source of referral to specialist care

Source	Number of Patients (%)	
	1996	2001
GP	168 (84%)	173 (81%)
General Surgeon	8 (4%)	4 (2%)
Physician	13 (7%)	18 (8%)
A&E	2 (1%)	7 (3%)
Self Referral	3 (2%)	5 (2%)
Not Recorded	5 (3%)	4 (2%)
Other *	1 (<1%)	3 (1%)
Total Patients	200	214

One urologist referral in 1996. The 3 referrals in 2001 include 2 from ENT specialists and 1 private patient.

- The majority of patients (82%) were referred by their GP, of which approximately a quarter were medical or surgical emergencies.
- There was no evidence to suggest a difference in source of referral between 1996 and 2001.

Patients presenting within their own Board

Board of residence	Number of Patients (%)	
	1996	2001
NHSSB	37 (93%)	48 (86%)
EHSSB	95 (100%)	97 (99%)
SHSSB	39 (93%)	28 (90%)
WHSSB	23 (100%)	28 (97%)

- The majority of patients (95%) presented to hospitals within their Health Board of residence, this however, was less marked in 2001 compared with 1996.

Symptoms at presentation

Symptom	Number of Patients (%)	
	1996 *(n=200)*	2001 *(n=214)*
Dysphagia (Difficulty swallowing)	147 (74%)	153 (71%)
Odynophagia (Pain on swallowing)	25 (13%)	18 (8%)
Weight loss	120 (60%)	120 (56%)
Nausea & vomiting	70 (35%)	83 (39%)
Loss of appetite	70 (35%)	67 (31%)
Abdominal pain	68 (34%)	65 (30%)
Dyspepsia (Indigestion)	50 (25%)	61 (29%)
Anaemia*	13 (7%)	32 (15%)
Haematemesis/ melaena**	15 (8%)	27 (13%)
Lethargy	27 (14%)	27 (13%)
Pleural effusion	3 (2%)	5 (2%)

Anaemia is a low level of red blood cells
****Haematemesis is vomiting of blood, Melaena is altered blood in stools***
Where symptoms have been combined, care has been taken to ensure patients have only been counted once.

- Difficulty swallowing without pain was the most common presenting symptom.
- In 1996, 17% of patients had experienced difficulty or pain swallowing for more than 5 months compared to only 9% in 2001 (not shown). Although not statistically significant this may indicate a trend of earlier symptom reporting.

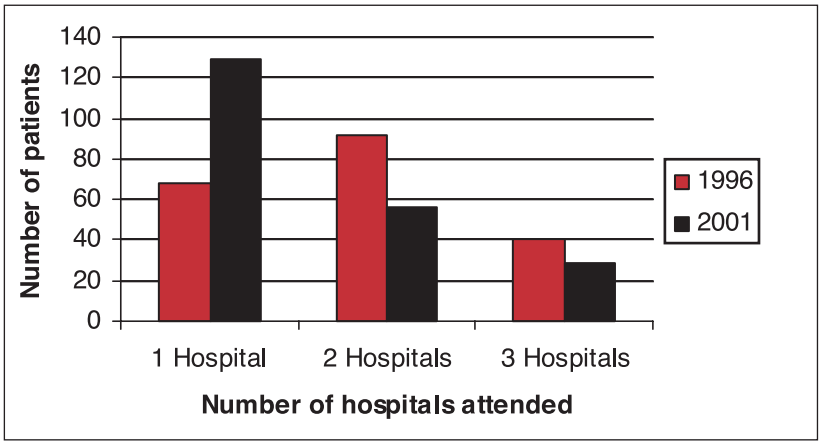
Hospital of presentation

Hospital	Number of Patients (%)			
	Including Emergencies		Excluding Emergencies	
	1996	2001	1996	2001
Royal Victoria (RVH)*	22 (11%)	30 (14%)	17 (11%)	24 (15%)
Ulster (UH)**	26 (13%)	30 (14%)	20 (13%)	19 (12%)
Craigavon Area (CAH)**	17 (9%)	19 (9%)	12 (8%)	15 (10%)
Antrim (ANT)**	13 (7%)	18 (8%)	8 (5%)	10 (6%)
Altnagelvin (AH)**	17 (9%)	15 (7%)	12 (8%)	10 (6%)
Belfast City (BCH)	20 (10%)	18 (8%)	18 (12%)	11 (7%)
Coleraine (COL)	4 (2%)	15 (7%)	3 (2%)	10 (6%)
Mater (MIH)	10 (5%)	13 (6%)	5 (3%)	9 (6%)
Lagan Valley (LVH)	8 (4%)	11 (5%)	5 (3%)	10 (6%)
Erne (ERN)	6 (3%)	10 (5%)	6 (4%)	9 (6%)
Whiteabbey (WHA)	19 (10%)	9 (4%)	17 (11%)	9 (6%)
South Tyrone (STH)	7 (4%)	8 (4%)	2 (1%)	8 (5%)
Mid Ulster (MUH)	1 (<1%)	7 (3%)	1 (<1%)	4 (3%)
Downe (DH)	4 (2%)	5 (2%)	2 (1%)	3 (2%)
Tyrone County (TCH)	1 (<1%)	3 (1%)	1 (<1%)	2 (1%)
Daisy Hill (DHH)	14 (7%)	2 (1%)	13 (8%)	2 (1%)
Ulster Independent Clinic (UIC)	1 (<1%)	1 (<1%)	1 (<1%)	1 (<1%)
Ards Community (AR)***	8 (4%)	0	8 (5%)	0
Banbridge (BBH)***	1 (<1%)	0	1 (<1%)	0
Bangor Community (BGR)***	1 (<1%)	0	1 (<1%)	0
Total Patients	200	214	153	156

Cancer Centre for oesophageal cancer ** Cancer Unit * Closed or designation changed between 1996 and 2001*

- 200 patients presented to 20 hospitals in 1996 and 214 patients presented to 17 hospitals in 2001. Excluding emergencies, the pattern was the same.

Number of hospitals attended



- Between 1996 and 2001 the number of hospitals attended by each patient decreased. This may indicate that by 2001 centralisation of cancer services was happening, with patients being more likely to be referred to a hospital that would deliver all their treatment.

Investigations (NOTE: Patients may have received more than one type of investigation)

Investigation	Number of Patients (%)			
	All Patients		Surgery Patients	
	1996 *(n=200)*	2001 *(n=214)*	1996 *(n=95)*	2001 *(n=76)*
Endoscopy	191 (96%)	208 (97%)	92 (97%)	75 (99%)
CT Chest /Abdomen	133 (67%)	173 (81%)	68 (72%)	71 (93%)
Barium Meal	144 (72%)	128 (60%)	76 (80%)	47 (62%)
USS Abdominal	72 (36%)	53 (25%)	35 (37%)	14 (18%)
Chest X-Ray	92 (46%)	93 (43%)	46 (48%)	24 (32%)
Bronchoscopy	55 (28%)	23 (11%)	34 (36%)	10 (13%)
Laparoscopy	6 (3%)	24 (11%)	0	3 (4%)

- Endoscopy was performed in almost all patients in each Health Board.
- Between 1996 and 2001 use of CT scanning increased, as did the use of laparoscopy, reflecting better initial staging assessments.
- There was a shift away from use of barium meal, transabdominal USS and bronchoscopy.

Investigations: Percentage of patients 79 years and under vs 80 years and over

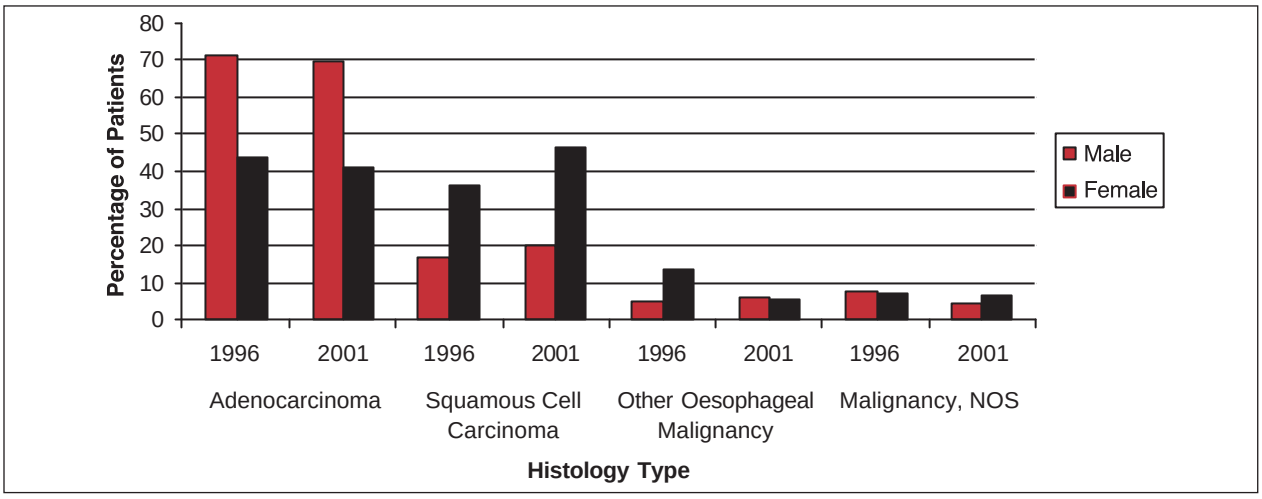
Investigation	79 years and under		80 years and over	
	1996 *(n=166)*	2001 *(n= 168)*	1996 *(n= 34)*	2001 *(n=46)*
Endoscopy	95%	98%	97%	96%
CT scan	72%	87%	38%	59%
Barium meal	73%	61%	68%	57%
USS Abdominal	40%	24%	18%	26%
Chest x-ray	49%	41%	29%	52%
Bronchoscopy	31%	13%	9%	4%
Laparoscopy	3%	13%	3%	7%

- Those 80 years and over were as likely as younger patients to have endoscopy, barium meal and USS abdominal. They were less likely to have a CT scan, bronchoscopy or laparoscopy.

HISTOPATHOLOGY

- A gender difference was apparent. In males, the histological proportions were ACA 70%, SCC 18%, while in females ACA and SCC occurred with equal frequency (42%).

Histopathology by gender



- Overall adenocarcinoma (ACA) was the most frequent histological sub-type (61%) followed by squamous cell carcinoma (SCC) (26%).
- There was an increase in SCC for both sexes between 1996 and 2001, this was however not significant.

STAGING (see Appendix)

- In 1996 stage was poorly recorded in the clinical notes (1%) but by 2001 this had improved (16%).
- When stage was not recorded and there was sufficient information available in the clinical notes, registry TVO's assigned a stage group (registry-assigned stage). The UICC TNM staging classification was applied[9].

Stage (recorded in notes or registry-assigned)

Stage	Number of Patients (%)			
	All Patients		Surgery Patients	
	1996	2001	1996	2001
I	12 (6%)	19 (9%)	9 (9%)	9 (12%)
II (A&B)	20 (10%)	17 (8%)	19 (20%)	16 (21%)
III	18 (9%)	23 (11%)	16 (17%)	21 (28%)
IV	32 (16%)	46 (21%)	13 (14%)	7 (9%)
Insufficient data for staging	118 (59%)	109 (51%)	38 (40%)	23 (30%)
Total Patients	200	214	95	76

- Overall, half of patients did not have sufficient information in their notes for a stage to be determined.
- For patients undergoing surgery however, the percentage of patients that were or could be staged increased from 60% to 70%.

Patients with insufficient data for staging

Board of residence	Number of Patients (%)	
	1996	2001
NHSSB	24 (60%)	26 (46%)
EHSSB	58 (61%)	47 (48%)
SHSSB	26 (62%)	13 (42%)
WHSSB	10 (43%)	23 (79%)
N. Ireland	118 (59%)	109 (51%)

- The percentage of patients for whom it was not possible to determine stage decreased between 1996 and 2001 in all Boards except the WHSSB.

Numbers of lymph nodes examined, resection patients only

Nodes	Number of Patients (%)	
	1996	2001
None	8 (14%)	8 (14%)
Under 5	13 (22%)	7 (12%)
5-9	22 (37%)	12 (20%)
10-14	11 (19%)	8 (14%)
15 or more	2 (3%)	16 (27%)
Not Recorded	3 (5%)	8 (14%)
Total Patients	59	59

- For patients undergoing resection there was a notable change in lymphadenectomy practice between 1996 and 2001, with a substantial (8-fold) increase in the number of patients having 15 or more nodes examined, reflecting improved intra-operative staging practices.

MULTIDISCIPLINARY TEAM MEETINGS

The effective management of oesophageal cancer patients requires input from a range of experts. Multidisciplinary team meetings (MDMs) involve a group of healthcare professionals meeting to discuss the diagnosis and treatment of patients. As there are a range of potential treatments, multidisciplinary discussions are of great importance. With respect to MDMs it should be noted that discussions among healthcare professionals, regarding the diagnosis and treatment of patients, may have taken place but may not have been in recognised MDM format.

Multidisciplinary Team Meetings recorded in the notes

MDM	Number of Patients (%)	
	1996	2001
Yes	2 (1%)	68 (32%)
No	198 (99%)	146 (68%)
Total Patients	200	214

- Recording in the clinical notes that a MDM had taken place improved substantially, however, by 2001 only a third of all patients had a record of being discussed at a MDM (36% for reseciton patients). It should be noted that patients may have been discussed at a MDM, yet this may not have been recorded in the clinical record.

SURGICAL PROCEDURES

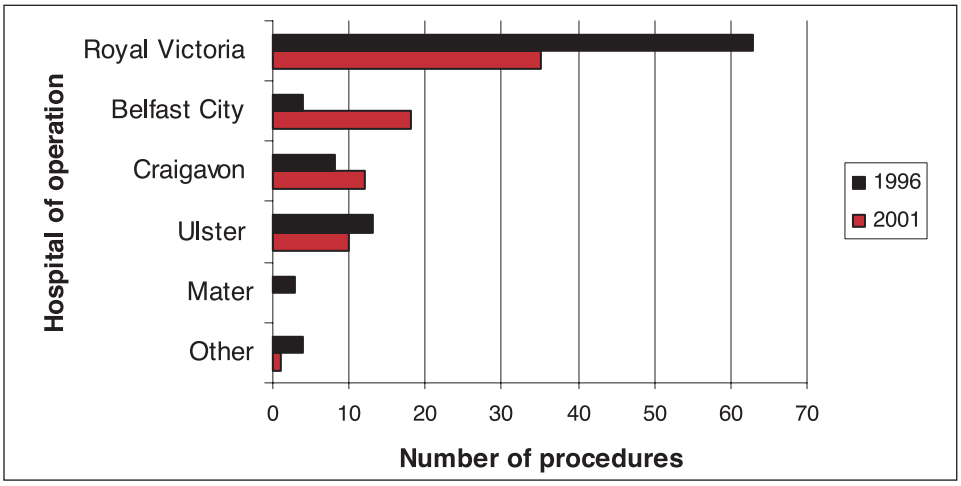
- Between 1996 and 2001 the percentage of patients undergoing surgery decreased from 48% to 36% which may reflect improved patient selection for radical intervention. This may be due to more accurate initial staging, evidenced by the increased use of CT scanning to identify the proportion of patients with metastatic disease in whom curative surgery is not possible.
- Surgery for oesophageal cancer took place in 7 hospitals in 1996 and 5 in 2001.

Oesophageal cancer operations carried out by hospital

Hospital	Number of Patients (%)							
	All Procedures		All Procedures Exc Emergencies		Resection Only		Resection Only Exc Emergencies	
	1996	2001	1996	2001	1996	2001	1996	2001
Royal Victoria	63 (66%)	35 (46%)	13 (68%)	6 (50%)	38 (64%)	24 (41%)	7 (64%)	5 (50%)
Belfast City	4 (4%)	18 (24%)	0	3 (25%)	4 (7%)	16 (27%)	0	3 (30%)
Craigavon	8 (8%)	12 (16%)	2 (11%)	1 (8%)	6 (10%)	10 (17%)	2 (18%)	0
Ulster	13 (14%)	10 (13%)	1 (5%)	2 (17%)	9 (15%)	8 (14%)	1 (9%)	2 (20%)
Mater	3 (3%)	0	2 (11%)	0	2 (3%)	0	1 (9%)	0
Other Hospitals*	4 (4%)	1 (1%)	1 (5%)	0	0	1 (2%)	0	0
Total Patients	95	76	19	12	59	59	11	10

**4 Hospitals in 1996 are Altnagelvin, Tyrone County with 2 not identified. In 2001 the hospital listed is Lagan Valley.*

Number of operations by hospital - 1996 & 2001



- The majority of oesophageal cancer operations in each year were performed in the Royal Victoria Hospital.
- More oesophageal operations were performed at Belfast City Hospital in 2001 compared with 1996.
- The majority of surgery was of curative intent (60% and 70% in 1996 and 2001 respectively) (not shown).

Frequency of oesophageal cancer operations by surgeon

Procedures	Number of Surgeons (% of procedures)			
	All Procedures		Resection Only	
	1996	2001	1996	2001
10 or more procedures	3 (69%)	5 (83%)	2 (56%)	2 (41%)
5-9 procedures	2 (17%)	2 (15%)	3 (37%)	4 (51%)
2-4 procedures	2 (6%)	0	0	1 (7%)
1 procedure	5 (5%)	2 (3%)	4 (7%)	1 (2%)
Surgeon name not available	2 (2%)	0	0	0
Total Named Surgeons	12	9	9	8
Total Procedures	95	76	59	59

- The number of surgeons performing oesophageal surgery (all procedures) decreased from 12 to 9 between 1996 and 2001.
- The number of surgeons performing more than 10 procedures (high case volume) increased from 3 to 5 with a decrease in number performing 4 or fewer procedures.
- By 2001, the percentage of surgical procedures carried out by a surgeon with a high case volume had risen from 69% in 1996 to 83%.
- These figures demonstrate that by 2001 the process of increasing specialisation in oesophageal cancer surgery, in compliance with the recommendations of the Campbell Report[1], had progressed.

Procedures performed by those surgeons performing 4 or fewer operations

Procedures	Number of Procedures	
	1996	2001
Laparotomy	6	0
Subtotal gastrectomy	1	0
Oesophagogastrectomy and anastomosis of oesophagus to jejunum (not elsewhere classified)	1	0
Other specified procedures	1	0
Unspecified: includes oesophagectomy	1	0
Unspecified: includes gastrectomy	1	0
Total excision of oesophagus	0	1
Total gastrectomy and excision of surrounding tissue	0	1
Total Procedures	11	2

- Of these procedures, 3 were emergencies in 1996 and 1 was an emergency in 2001.
- 8 surgeons, who had performed oesophageal surgery in 1996, were no longer doing so in 2001.
- 5 surgeons, not included in 1996, performed operations in 2001.
- 5 surgeons performed operations in both years.

Hospital of oncology* referral

Hospital	Number of Patients (%)	
	1996	2001
Belfast City	2 (4%)	38 (67%)
Belvoir Park	51 (94%)	14 (25%)
Craigavon Area	0	2 (4%)
Altnagelvin	0	1 (2%)
Hospital Not Recorded	1 (2%)	2 (4%)
Total Patients	54	57

Chemotherapy, radiotherapy or a combination of both.

- Approximately one quarter of patients had some oncology treatment.
- There was a marked shift towards referral to Belfast City Hospital for oncology services in keeping with the recommendations of the Campbell Report[1].

Percentage of patients by treatment by Health Board of residence

Treatment	NHSSB		EHSSB		SHSSB		WHSSB		All Patients	
	1996	2001	1996	2001	1996	2001	1996	2001	1996	2001
Chemo alone	3%	11%	2%	6%	5%	10%	4%	0	3%	7%
Radio alone	3%	0	15%	4%	10%	3%	4%	7%	10%	3%
Surgery alone	30%	16%	34%	26%	38%	42%	39%	21%	35%	25%
Chemo & Radio	0	4%	1%	5%	0	0	4%	17%	1%	6%
Chemo & Surgery	10%	13%	9%	6%	5%	3%	13%	14%	9%	8%
Radio & Surgery	5%	0	1%	2%	0	3%	4%	0	2%	1%
Chemo, Radio & Surgery	3%	2%	0	1%	7%	0	0	0	2%	1%
No treatment	48%	55%	38%	50%	36%	39%	30%	41%	39%	49%
Number of patients residing in Board	40	56	95	98	42	31	23	29	200	214

Chemo - Chemotherapy, Radio - Radiotherapy

- Overall use of chemotherapy (alone or as part of combined modality therapy) increased from 15% to 22% in 2001. This trend was not seen in the SHSSB.
- Use of radiotherapy (alone or as part of combined modality therapy) decreased from 15% to 11% in 2001.
- As previously noted between 1996 and 2001 the percentage of patients undergoing surgery decreased reflecting improved patient selection for radical intervention.
- 39% of patients in 1996 and 49% in 2001 had no record of having surgery, radiotherapy or chemotherapy.

Stage of patients who did not receive any treatment regime

Stage	Number of Patients (%)	
	1996	2001
Stage I	2 (3%)	7 (7%)
Stage IIA	1 (1%)	0
Stage III	0	1 (1%)
Stage IV	13 (17%)	30 (29%)
Insufficient data for staging	61 (79%)	66 (63%)
Total Patients	77	104

- Of the three patients, who were either Stage I or Stage IIA in 1996, two refused treatment and one patient was not suitable for treatment.
- Of the seven untreated patients who were Stage I in 2001, four were aged over 75 years, one died within six months of being diagnosed, one patient refused treatment and there was no additional information available on the other patient.

TIMELINES

Timelines were examined for the following categories; all patients, all patients excluding emergency admissions and patients aged under 60 years at the time of diagnosis.

Summary timeline for all patients

Time	Referral - First Seen at Hospital		First Seen - Diagnosis		Diagnosis - Surgery	
	1996	2001	1996	2001	1996	2001
Same day	65 (33%)	71 (33%)	34 (17%)	46 (21%)	7 (7%)	4 (5%)
1 - 14 days	56 (28%)	48 (22%)	93 (47%)	82 (38%)	10 (11%)	7 (9%)
15 - 42 days	54 (27%)	62 (29%)	40 (20%)	48 (22%)	26 (27%)	33 (43%)
43 - 84 days	15 (8%)	15 (7%)	16 (8%)	21 (10%)	31 (33%)	16 (21%)
More than 84 days	4 (2%)	7 (3%)	13 (7%)	12 (6%)	18 (19%)	16 (21%)
Not Recorded	6 (3%)	11 (5%)	4 (2%)	5 (2%)	3 (3%)	0
Total Patients	200	214	200	214	95	76

Including Emergencies:

- Between 1996 and 2001 the percentage of patients seen within 2 weeks of referral decreased slightly from 61% to 55%, as did the percentage having their diagnosis confirmed within 2 weeks of presentation to hospital (64% to 59%).
- In 2001 the percentage of patients having surgery within 42 days of diagnosis increased from 45% in 1996 to 57% in 2001.

Summary timeline for all patients excluding emergencies

Time	Referral - First Seen at Hospital		First Seen - Diagnosis		Diagnosis - Surgery	
	1996	2001	1996	2001	1996	2001
Same day	26 (17%)	22 (14%)	30 (20%)	40 (26%)	5 (7%)	4 (6%)
1 – 14 days	51 (33%)	43 (28%)	62 (41%)	45 (29%)	6 (8%)	5 (8%)
15 – 42 days	52 (34%)	60 (38%)	32 (21%)	36 (23%)	21 (28%)	26 (41%)
43 – 84 days	15 (10%)	14 (9%)	14 (9%)	18 (12%)	27 (36%)	16 (25%)
More than 84 days	4 (3%)	7 (4%)	11 (7%)	12 (8%)	16 (21%)	13 (20%)
Not Recorded	5 (3%)	10 (6%)	4 (3%)	5 (3%)	0	0
Total Patients	153	156	153	156	75	64

Excluding Emergencies:

- Between 1996 and 2001 the percentage of patients seen within 2 weeks of referral decreased from 50%

to 42%, as did the percentage having their diagnosis confirmed within 2 weeks of presentation to hospital (61% to 55%) The latter decrease may reflect the increasing pressure on endoscopy services.

- A faster time to surgery from diagnosis was observed for elective surgical procedures in 2001, with 55% of patients having surgery within 42 days of diagnosis compared to 43% in 1996.

Summary timeline for all patients under 60 years

Time	Referral - First Seen at Hospital		First Seen - Diagnosis		Diagnosis - Surgery	
	1996	2001	1996	2001	1996	2001
Same	10 (26%)	17 (35%)	9 (23%)	9 (18%)	3 (12%)	1 (4%)
1 - 14 days	10 (26%)	8 (16%)	18 (46%)	15 (31%)	4 (16%)	3 (13%)
15 - 42 days	12 (31%)	16 (33%)	5 (13%)	14 (29%)	8 (32%)	7 (30%)
43 - 84 days	5 (13%)	3 (6%)	5 (13%)	5 (10%)	9 (36%)	4 (17%)
More than 84 days	0	1 (2%)	1 (3%)	4 (8%)	1 (4%)	8 (35%)
Not Recorded	2 (5%)	4 (8%)	1 (3%)	2 (4%)	0	0
Total Patients	39	49	39	49	25	23

- For younger patients, between 1996 and 2001 the percentage seen within two weeks of referral was similar.
- As for all patients, the percentage having their diagnosis confirmed within 2 weeks of presentation to hospital fell (69% to 49%). The latter decrease again may reflect the increasing pressure on endoscopy services.
- For patients under 60 years the percentage having surgery within 42 days decreased from 60% to 47%. This may reflect the use of other therapies prior to surgery (neoadjuvant therapy).

Information recorded in notes

Information	Number of Patients (%)	
	1996 *(n=200)*	2001 *(n=214)*
Diagnosis discussed with patient	135 (68%)	172 (80%)
Treatment plan discussed with patient	132 (66%)	176 (82%)
Written information given	2 (1%)	6 (3%)
Consultation taped	0	0
Referred to oncology centre	82 (41%)	99 (46%)
Management discussed with oncologist	94 (47%)	123 (57%)
Referred for counselling	37 (19%)	82 (38%)
Clinical trial discussed with patient	14 (7%)	16 (7%)
Clinical trial recorded in notes	13 (7%)	15 (7%)
Multidisciplinary team meeting	2 (1%)	68 (32%)
Treatment plan recorded	1 (1%)	57 (27%)

- Since 1996, recording of information in the clinical records has improved. They are more likely to contain a written treatment plan and evidence that the diagnosis and treatment plan has been discussed with the patient and that their management has been discussed with an oncologist and/or a record of oncology referral.
- Recording that a multidisciplinary team meeting had taken place improved.
- The number of patients referred to counselling doubled.
- Although the recording of treatment plans greatly improved they were available for only a quarter of patients.
- In both years, 7% of patients were entered into clinical trials.
- The provision of written information or recording of interviews was rarely recorded in notes.

FOLLOW-UP CARE DETAILS

This relates to information recorded in the discharge letter from hospital to GP.

(Patients may have had more than one referral)

After care

Aftercare	Number of Patients (%)	
	1996 *(n=200)*	2001 *(n=214)*
GP (General Practice)	173 (87%)	169 (79%)
Community nurse	48 (24%)	58 (27%)
Macmillan nurse	35 (18%)	73 (34%)
Hospice	34 (17%)	32 (15%)
Palliative care specialist	23 (12%)	62 (29%)
Psychologist	3 (2%)	0
Information on support groups education supplied	7 (4%)	2 (1%)
Dietician Referral	95 (48%)	119 (56%)
No onward referral recorded	16 (8%)	1 (<1%)

- Rates of referral to Macmillan nurses and Palliative care specialists doubled over the study period reflecting increased availability of these services.
- Referral to the Dietetic service improved, however only over half were referred in 2001.
- There was little difference in rates of referral for patients having resections compared to all patients.

Information recorded in discharge letter to General Practitioner

Information	Number of Patients (%)	
	1996 *(n=200)*	2001 *(n=214)*
Management Plan	188 (94%)	197 (92%)
Prognosis	85 (43%)	76 (36%)
Diagnosis discussed with patient	100 (50%)	123 (57%)
Diagnosis discussed with family	63 (33%)	85 (40%)

- A management plan was recorded in almost all letters to GPs.
- There was an improvement in the recording of discussions with patients and their family.

PATIENT OUTCOMES

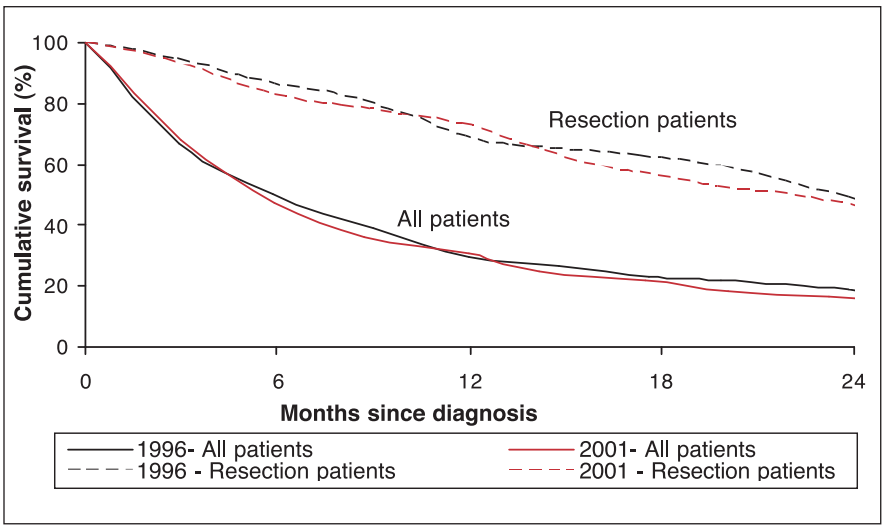
Survival analysis was performed on patients diagnosed in 1996 and 2001, with subgroup analysis for resection patients and non-resection patients for each year and for stage (both years combined).

Percentage of patients alive at various times after diagnosis

Time	Surgery Patients		Resection Patients		Non-Surgery Patients		All Patients	
	1996	2001	1996	2001	1996	2001	1996	2001
30 days	98%	100%	100%	100%	84%	83%	91%	89%
60 days	88%	97%	97%	98%	64%	69%	76%	79%
6 months	72%	80%	88%	85%	33%	30%	52%	48%
1 year	46%	66%	69%	75%	15%	12%	30%	31%
2 years	32%	38%	49%	49%	9%	5%	19%	16%
Total Patients	95	76	59	59	105	138	200	214

"I appreciated their up-front attitude. I wanted to know as much as possible but found it difficult to take it all in".

Oesophageal cancer: observed survival by year

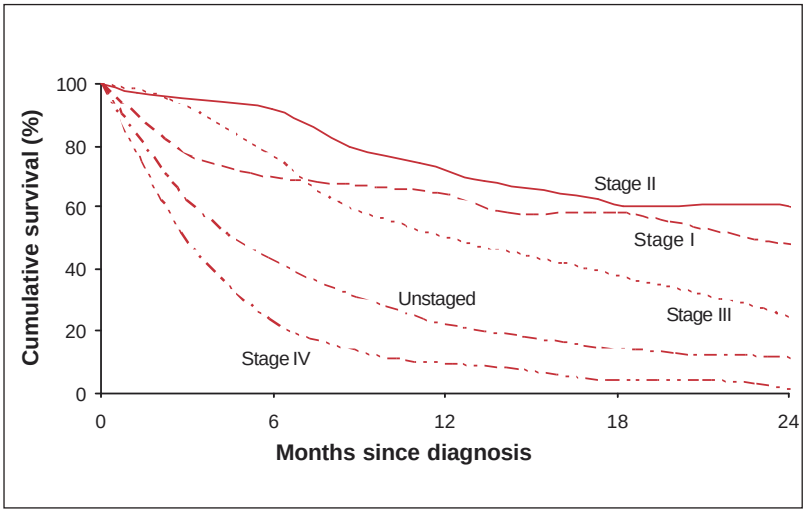


- There was no significant difference in observed survival for patients diagnosed in 1996 compared to 2001, with 2-year survival of 19% in 1996 and 16% in 2001.
- While the 2-year survival for resection patients overall was better than non surgery patients (49% vs 5%), there was no change in survival for resection patients 1996 compared with 2001.

Percentage of patients alive at various times after diagnosis by stage - 1996 & 2001 combined

Time	Stage I	Stage II	Stage III	Stage IV	Unstaged
30 days	94%	100%	100%	87%	87%
60 days	84%	97%	98%	68%	73%
6 months	71%	95%	78%	23%	43%
1 year	65%	74%	54%	10%	22%
2 years	48%	57%	27%	3%	11%
Total Patients	31	35	41	77	227

Oesophageal cancer: observed survival by stage



- As expected there was a highly significant survival difference for stage at diagnosis ($p<0.001$) with patients with earlier disease generally having better survival.
- Stage I categorised patients included some older patients who had minimal investigations and who may have had more extensive disease than detected. This would explain the poorer survival for Stage I patients compared with Stage II patients.

SECTION III -
STOMACH CANCER

BACKGROUND

Incidence rates vary widely throughout the world with the highest rates occurring in Korea and Japan at almost seven times that of the UK and ten times that of the USA[10]. Over the past few decades there has been a steady decrease in the age-adjusted incidence of stomach cancer internationally, however the workload associated with it has remained fairly constant due to our ageing population. The falling incidence suggests a major role for environmental factors in the causation of stomach cancer particularly changes in diet and food preservation[11]. Epidemiological studies in different populations show that the most consistent association is diet (salt, smoked and cured foods which contain nitroso compounds, nitrates and nitrites in preserved foods)[12].

Risk factors include Helicobacter Pylori infection, smoking and alcohol consumption[13]. An adequate intake of fresh fruit and vegetables lowers the risk of stomach cancer[14].

Gastric cancer is essentially a disease of older age with half the cases occurring over age 71 and 75 years, in males and females respectively[6]. Worldwide its incidence is strongly associated with socioeconomic deprivation.

RESULTS

Study patients

Patients	1996	2001
Total number of patients	196	199
Exclusions - Death Certificate only	12	5
Exclusions - Lack of information	5	18
Total Exclusions	17	23
Total reported - Male	98 (55%)	91 (52%)
Total reported - Female	81 (45%)	85 (48%)
Total	179 (100%)	176 (100%)
Average age at diagnosis - Male	71	72
Average age at diagnosis - Female	72	74
Median age at diagnosis - Male	71	75
Median age at diagnosis - Female	73	74

Data were available on 196 individuals in 1996 and 199 individuals in 2001. After exclusions, numbers included in the analysis were almost equal in both years.

- Just over half of patients were male.

- Where smoking history was recorded (90% patients), 26% of patients were current smokers, 33% were ex-smokers and a further 41% were non-smokers.
- Where alcohol history was recorded (77% patients), 47% were current drinkers, 4% were ex-drinkers and a further 49% were non-drinkers.

Socio-economic status of stomach cancer patients

Deprivation quintile	Number of Patients (%)	
	1996 *(n=179)*	2001 *(n=176)*
Quintile 5 (Most Deprived)	50 (28%)	43 (24%)
Quintile 4	29 (16%)	45 (26%)
Quintile 3	26 (15%)	39 (22%)
Quintile 2	40 (22%)	23 (13%)
Quintile 1 (Least Deprived)	30 (17%)	26 (15%)
Not Recorded	4 (2%)	0

- In the general population it is expected that 20% of all cases of disease would fall in each quintile. Our data show that there were more stomach cancer cases in deprived quintiles than expected ($p<0.05$), confirming the link with socio-economic deprivation.

Source of referral to specialist care

Source	Number of Patients (%)	
	1996	2001
GP	140 (78%)	142 (80%)
General Surgeon	2 (1%)	1 (1%)
Physician	11 (6%)	4 (2%)
A&E	8 (4%)	7 (4%)
Self Referral	5 (3%)	9 (5%)
Not Recorded	10 (6%)	5 (3%)
Other	3 (2%)	8 (5%)
Total Patients	179	176

- The majority of patients were referred by their GP, with over 40% presenting as a medical or surgical emergency.

Symptoms at presentation

Symptom	Number of Patients (%)	
	1996 *(n=179)*	2001 *(n=176)*
Nausea, vomiting & abdominal pain*	113 (63%)	131 (74%)
Nausea & vomiting	79 (44%)	91 (52%)
Abdominal pain only	87 (49%)	85 (48%)
Difficulty/pain swallowing*	29 (16%)	31 (18%)
Dysphagia (Difficulty swallowing)	29 (16%)	27 (15%)
Odynophagia (Pain swallowing)	6 (3%)	8 (5%)
Weight loss	89 (50%)	104 (59%)
Loss of appetite	68 (38%)	70 (40%)
Anaemia	55 (31%)	47 (27%)
Dyspepsia (Indigestion)	46 (26%)	56 (32%)
Lethargy	29 (16%)	44 (25%)
Haematemesis (Vomiting blood)	25 (14%)	17 (10%)
Melaena (Blood in stools)	19 (11%)	22 (13%)

Where symptoms have been combined care has been taken to ensure patients have only been counted once

- The common presenting symptoms are shown above. As expected there was no difference in symptomatology between 1996 and 2001.
- Over half of patients experienced weight loss for 2-5 months with 14% having a history of weight loss for more than 12 months (not shown).
- About half presented with nausea and vomiting. Of these 43% had a history of less than one month and 19% had a history of more than 12 months (not shown).

Patients presenting within their own Board

Board of residence	Number of Patients (%)	
	1996	2001
NHSSB	39 (85%)	34 (83%)
EHSSB	78 (98%)	78 (99%)
SHSSB	23 (92%)	23 (92%)
WHSSB	28 (97%)	30 (97%)

- As expected the majority of patients (93%) presented to hospitals within their Health Board of residence. This was consistent in all health boards in 1996 and 2001.

Hospital of presentation

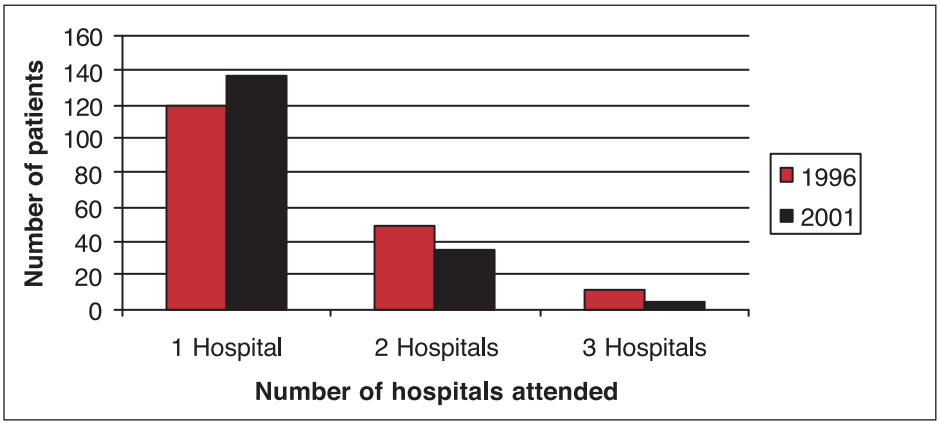
Hospital	Number of Patients (%)			
	Including Emergencies		Excluding Emergencies	
	1996	2001	1996	2001
Belfast City (BCH)*	21 (12%)	15 (9%)	15 (14%)	7 (8%)
Ulster (UH)**	13 (7%)	20 (11%)	5 (5%)	11 (13%)
Altnagelvin (AH)**	15 (8%)	19 (11%)	8 (7%)	9 (10%)
Craigavon Area (CAH)**	10 (6%)	17 (10%)	4 (4%)	9 (10%)
Antrim (ANT)**	18 (10%)	14 (8%)	11 (10%)	3 (3%)
Royal Victoria (RVH)	21 (12%)	23 (13%)	15 (14%)	10 (11%)
Mater (MIH)	10 (6%)	18 (10%)	7 (6%)	6 (7%)
Coleraine (COL)	5 (3%)	8 (5%)	4 (4%)	7 (8%)
Mid Ulster (MUH)	9 (5%)	7 (4%)	4 (4%)	5 (6%)
Tyrone County (TCH)	7 (4%)	6 (3%)	2 (2%)	4 (5%)
Whiteabbey (WHA)	5 (3%)	6 (3%)	5 (5%)	3 (3%)
Daisy Hill (DHH)	11 (6%)	6 (3%)	6 (6%)	4 (5%)
Erne (ERN)	7 (4%)	4 (2%)	6 (6%)	3 (3%)
Downe (DH)	5 (3%)	4 (2%)	3 (3%)	2 (2%)
Lagan Valley (LVH)	6 (3%)	3 (2%)	2 (2%)	0
Ulster Independent (UIC)****	0	2 (1%)	0	2 (2%)
South Tyrone (STH)	1 (<1%)	1 (<1%)	1 (1%)	1 (1%)
Armagh Community (ACH)***	1 (<1%)	0	1 (1%)	0
Ards Community (AR)***	9 (5%)	0	7 (6%)	0
Banbridge (BBH)***	1 (<1%)	0	0	0
Moyle (MLE)■■	1 (<1%)	0	0	0
Musgrave Park (MPH)***	1 (<1%)	0	0	0
North West Independent (NWC)****	1 (<1%)	0	0	0
Waveney (WAV)***	1 (<1%)	0	0	0
Not Recorded	0	3 (2%)	0	3 (3%)
Total Patients	179	176	106	89

Cancer centre **Cancer unit ***Changed to community health facility with no inpatient facilities by 2001 * The Ulster Independent Clinic and the North West Independent Clinic are private hospitals and are included as a couple of patients in 1996 and 2001 presented here ■■ Facility still had 2 palliative beds in 2001***

- 179 patients presented to 23 hospitals in 1996 (18 if emergencies are excluded) and 176 patients presented to 17 hospitals in 2001 (16 if emergencies are excluded).
- In 2001, 49% of patients presented to a Cancer Unit/Cancer Centre.

HOSPITALS ATTENDED

Number of Patients presenting at hospitals in 1996 & 2001



- Between 1996 and 2001 the number of hospitals attended by patients decreased. This may indicate that by 2001 centralisation of cancer services was happening, with patients being more likely to be referred to a hospital that would deliver all their treatment.

Investigations (NOTE: Patients may have received more than one type of investigation.)

Investigation	Number of Patients (%)			
	All Patients		Surgery Patients	
	1996 *(n=179)*	2001 *(n=176)*	1996 *(n=100)*	2001 *(n=95)*
Endoscopy	149 (83%)	160 (91%)	91 (91%)	85 (90%)
USS Abdominal	84 (47%)	77 (44%)	49 (49%)	32 (34%)
CT Chest/Abdomen	64 (36%)	115 (65%)	45 (45%)	64 (67%)
Barium Meal	86 (48%)	53 (30%)	58 (58%)	36 (38%)
Chest X-Ray	94 (53%)	87 (49%)	65 (65%)	57 (60%)
Laparoscopy	3 (2%)	6 (3%)	0	1 (1%)

- Between 1996 and 2001 use of CT scanning increased from 36% to 65% (all patients) and 45% to 67% (patients undergoing surgery).
- Use of laparoscopy also increased, reflecting improvement in initial staging assessments. There was a shift away from use of barium meal and transabdominal USS.

HISTOPATHOLOGY

Histopathological type

Type	Number of Patients (%)	
	1996	2001
Adenocarcinoma	135 (75%)	143 (81%)
Carcinoid, NOS *	11 (6%)	9 (5%)
Leiomyosarcoma, NOS *	1 (<1%)	1 (<1%)
Malignancy, NOS *	21 (12%)	21 (12%)
Small Cell Carcinoma	1 (<1%)	1 (<1%)
Stromal Tumour	0	1 (<1%)
Not Recorded	10 (6%)	0
Total Patients	179	176

** NOS = Not Otherwise Specified*

- As expected the majority of gastric cancers were adenocarcinomas.
- In 2001 all cases of stomach cancer were histologically confirmed.

STAGING (see Appendix)

When stage was not recorded and there was sufficient information available in the clinical notes, registry TVO's were able to assign a stage group (registry-assigned stage). The UICC TNM staging classification was applied[9].

Stage (recorded in notes or registry-assigned)

Stage	Number of Patients (%)			
	All Patients		Surgery Patients	
	1996	2001	1996	2001
IA	16 (9%)	4 (2%)	13 (13%)	4 (4%)
IB	7 (4%)	15 (9%)	7 (7%)	12 (13%)
II	15 (8%)	9 (5%)	15 (15%)	9 (10%
III (A & B)	13 (7%)	22 (13%)	13 (13%)	22 (23%)
IV	44 (25%)	59 (33%)	28 (28%)	27 (28%)
Insufficient data for staging	84 (47%)	67 (38%)	24 (24%)	21 (22%)
Total Patients	179	176	100	95

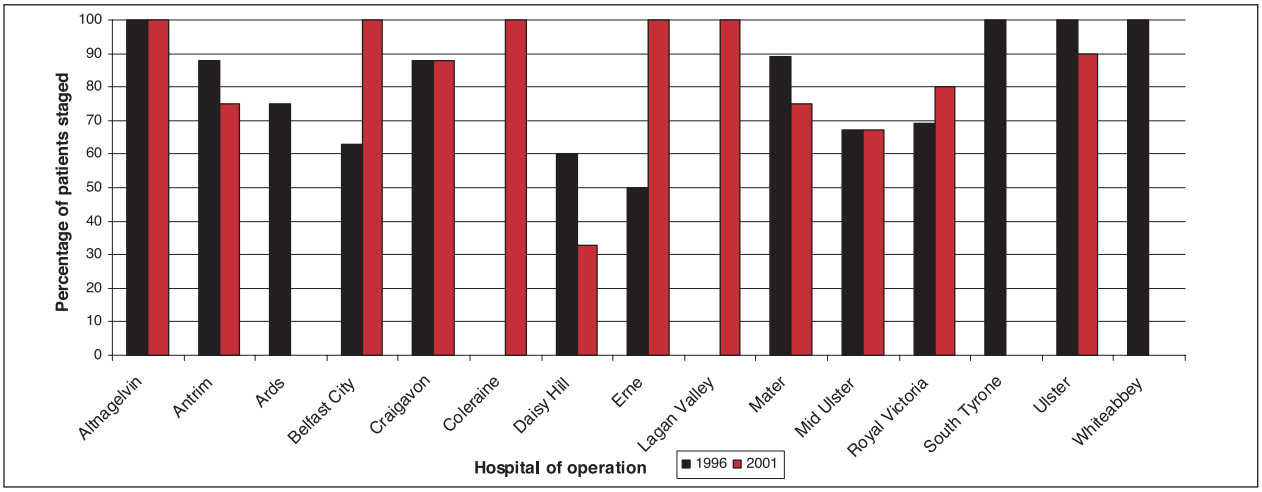
- In 1996 stage was not recorded in the clinical notes, but by 2001 this had improved so 19% of records had stage recorded.
- Overall it was not possible to assign stage in almost half of cases in 1996. By 2001 there was an improvement in the information available in the notes from which stage could be derived, yet by 2001 only two thirds could be staged.

Patients with insufficient data for staging

Area of Residence	Number of Patients (%)	
	1996	2001
NHSSB	20 (43%)	20 (49%)
EHSSB	34 (43%)	25 (32%)
SHSSB	14 (56%)	12 (48%)
WHSSB	16 (55%)	10 (32%)
N. Ireland	84 (47%)	67 (38%)

- The improvement in the percentage of patients that were or could be staged was seen in all Boards except the NHSSB.

Patients staged in each year as a percentage of total patients having surgery in each hospital



- A variation was seen in staging practices between hospitals.

NODAL INVOLVEMENT

Number of lymph nodes examined, surgery patients only

Nodes	Number of Patients (%)	
	1996	2001
None	20 (20%)	13 (14%)
1-5	20 (20%)	12 (13%)
6 - 9	18 (18%)	14 (15%)
10 - 14	11 (11%)	10 (10%)
15 or more	0	22 (23%)
Not Recorded	31 (31%)	24 (25%)
Total Patients	100	95

- By 2001 lymphadenectomy practice improved considerably, with 23% of patients having 15 or more nodes examined and 33% having 10 or more nodes examined, in keeping with current recommendations[4].
- Examination of 15 or more nodes occurred by 2001 in all patients treated at Coleraine Hospital and at each of the cancer units and the cancer centre including the Royal Victoria Hospital.

MULTIDISCIPLINARY TEAM MEETINGS

The effective management of stomach cancer patients requires input from a range of experts. Multidisciplinary team meetings (MDMs) involve a group of healthcare professionals meeting to discuss the diagnosis and treatment of patients. As there are a range of potential treatments that could be carried out, multidisciplinary discussions are of great importance. With respect to MDMs it should be noted that discussions among healthcare professionals, regarding the diagnosis and treatment of patients, may have taken place but may not have been in recognised MDM format.

Multidisciplinary Team Meetings recorded in the notes

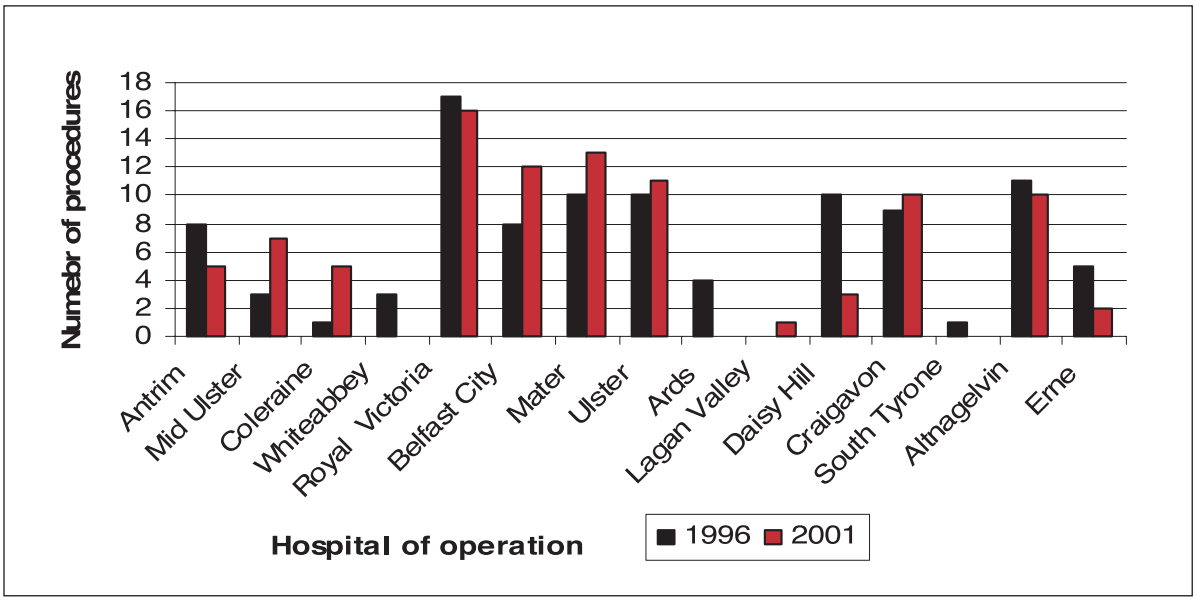
MDM	Number of Patients (%)	
	1996	2001
Yes	4 (2%)	28 (16%)
No	175 (98%)	148 (84%)
Total Patients	179	176

- Recording in the clinical notes that discussion at a MDM had taken place improved from 2% in 1996 to 16% in 2001 (3% to 15% for surgery only patients). It should be noted that some patients may have been discussed at a MDM, yet this may not have been recorded in the clinical record.
- In 1996 a record of MDM's having taken place was found in the clinical notes from 3 hospitals (Craigavon, Royal Victoria and Ulster) and by 2001 this had improved with the notes from 5 additional hospitals (Altnagelvin, Belfast City, Belvoir Park, South Tyrone & Tyrone County) containing evidence of MDM's taking place.

SURGICAL PROCEDURES

- In 1996, 100 surgical operations (laparoscopy excluded) were carried out in 14 hospitals, while in 2001, 95 operations were performed in 12 hospitals.
- For residents of the Northern Board there was a shift in the main hospital of treatment from Antrim to Mid Ulster.
- For patients residing in the Eastern Board, fewer main hospitals performed surgery in 2001.
- Within the Southern Board there was a major shift from Daisy Hill to Craigavon Hospital.
- In the Western Board most operations took place in Altnagelvin in both years.

Number of operations by hospital - 1996 & 2001



CENTRE WORKLOAD

- More operations were performed in the Royal Victoria than any other hospital and the numbers were similar in both years.
- Between 1996 and 2001 the number of operations performed at Belfast City increased from 8 to 12 (50%), while smaller increases (11%) were seen in two of the cancer units Craigavon and Ulster Hospitals. In Altnagelvin the numbers were similar in each year, while in Antrim the number decreased from 8 to 5 operations.
- About two thirds of operations (67%) were performed in the cancer centre or cancer units in 2001. This however had changed little since 1996 (63%).
- The Mater, Mid Ulster, Lagan Valley and Coleraine are four non-cancer unit hospitals where workload increased between 1996 and 2001.
- The Association of Upper Gastrointestinal Surgeons of Great Britain and Ireland (AUGIS) 2002[15] reported that Centres in the UK performing more than 10 stomach cancer procedures per year all had mortality rates below 8% at one year. Only Altnagelvin, Belfast City, Royal Victoria, Craigavon, the Mater and Ulster hospitals achieved the AUGIS recommended level in 2001 of 10 or more stomach cancer operations.

Percentage of patients in each Board who receive operations in their own Health Board

Board of residence	1996	2001
NHSSB	68%	57%
EHSSB	94%	89%
SHSSB	100%	92%
WHSSB	83%	71%

- The majority of patients received surgery within their local Health Board in both years although more patients were operated on outside their Board of Residence in 2001. If a patient was not operated on in their own board of residence, the operation was likely to have taken place in the Eastern Board.

Treatment

Treatment	Number of Patients (%)	
	1996	2001
Chemotherapy alone	11 (6%)	16 (9%)
Radiotherapy alone	2 (1%)	3 (2%)
Surgery alone	92 (51%)	82 (47%)
Combination Chemo & Radio	0	0
Combination Chemo & Surgery	6 (3%)	10 (6%)
Combination Radio & Surgery	1 (<1%)	2 (1%)
Combination Chemo, Radio & Surgery	1 (<1%)	1 (<1%)
None of the above treatments	60 (33%)	58 (33%)
Not Recorded	6 (3%)	4 (2%)
Total Patients	179	176

Chemo - Chemotherapy, Radio - Radiotherapy

- Overall use of chemotherapy increased from 10% to 15% in 2001. This trend was also seen for radiotherapy.
- By 2001 there was a small increase in the number of patients having combined modality therapy (surgery & chemotherapy).
- A third of patients did not have surgery, chemotherapy or radiotherapy, which most likely reflects a significant proportion of patients presenting with advanced disease.

Stage of patients who did not receive any treatment

Stage	1996	2001
Stage I	3 (5%)	4 (7%)
Stage IV	10 (17%)	19 (33%)
Unstaged	47 (78%)	35 (60%)
Total Patients	60	58

- The 3 patients who had Stage I disease in 1996 were aged over 80 years at the time of diagnosis.
- Of the 4 patients with Stage I disease in 2001, two were over 80 years at the time of diagnosis, one had a carcinoid tumour* and the other died shortly after admission to hospital.

***Carcinoid tumours are a rare type of tumour and often grow much slower than other types. They are uncommon and it may be several years before any symptoms appear and the tumour is diagnosed.**

Frequency of stomach cancer operations carried out by surgeon

Procedures	Number of Surgeons (% of procedures)			
	Including Emergencies		Excluding Emergencies	
	1996	2001	1996	2001
6 or more procedures	3 (21%)	6 (53%)	0	2 (27%)
2-5 procedures	22 (69%)	10 (40%)	23 (84%)	9 (60%)
1 procedure	10 (10%)	7 (7%)	7 (16%)	7 (13%)
Total surgeons	35	23	30	18
Total procedures	100	95	63	52

- The number of surgeons performing surgery (all procedures) decreased by a third from 35 to 23.
- The number of surgeons performing more than 6 procedures (high case volume) doubled with a decrease in number performing 2-5 procedures.
- By 2001 the percentage of surgical procedures carried out by a surgeon with high case volume had risen from 21% in 1996 to 53%.
- These figures demonstrate some progress in the process of increasing centralisation in cancer surgery in the region.
- However in contrast, between 1996 and 2001 the number of surgeons with low case volume (one procedure per year) had not decreased, with 7 performing 13% of procedures including total and partial gastrectomy.
- 21 surgeons, who had performed surgery for stomach cancer in 1996 were no longer doing so in 2001.
- 7 surgeons, who were not included in 1996, performed operations in 2001.
- 11 surgeons performed operations in both years.

TIMELINES

Timelines were examined for the following categories: all patients, all patients excluding emergency presentations and also for all patients aged under 60 years at the time of diagnosis.

Summary timeline for all patients

Time	Referral - First Seen at Hospital		First Seen - Diagnosis		Diagnosis - Surgery	
	1996	2001	1996	2001	1996	2001
Same Day	83 (46%)	89 (50%)	26 (15%)	28 (16%)	27 (27%)	14 (15%)
1 - 14 Days	32 (18%)	31 (18%)	74 (41%)	85 (48%)	34 (34%)	27 (28%)
15 - 42 Days	30 (17%)	24 (14%)	38 (21%)	35 (20%)	33 (33%)	35 (37%)
43 - 84 Days	12 (7%)	14 (8%)	12 (7%)	10 (6%)	4 (4%)	10 (11%)
More than 84 Days	11 (6%)	6 (3%)	20 (11%)	12 (7%)	1 (1%)	3 (3%)
Minus Values*	0	0	0	0	1 (1%)	5 (5%)
Not Recorded	11 (6%)	12 (7%)	9 (5%)	6 (3%)	0	1 (1%)
Total Patients	179	176	179	176	100	95

** Diagnosis was made following surgery*

- Between 1996 and 2001 the percentage of patients seen within two weeks of referral increased slightly from 64% to 68%, as did the percentage having their diagnosis confirmed within two weeks of presentation to hospital (56% to 64%).
- The percentage of patients having surgery (all procedures) within 42 days from diagnosis decreased from 94% in 1996 to 80% in 2001. This may be due to the use of neoadjuvant therapy and/or the notable high percentage of same day surgery in 1996, reflecting a higher rate of emergency presentations.

Summary timeline for all patients excluding emergencies

Time	Referral - First Seen at Hospital		First Seen - Diagnosis		Diagnosis - Surgery	
	1996	2001	1996	2001	1996	2001
Same Day	15 (14%)	15 (17%)	19 (18%)	24 (27%)	14 (22%)	8 (15%)
1 – 14 Days	36 (34%)	21 (24%)	33 (31%)	22 (25%)	18 (28%)	12 (23%)
15 – 42 Days	29 (28%)	23 (26%)	25 (24%)	23 (26%)	26 (41%)	20 (38%)
43 – 84 Days	11 (10%)	14 (16%)	11 (10%)	5 (5%)	3 (5%)	7 (14%)
More than 84 Days	2 (2%)	6 (6%)	6 (6%)	8 (9%)	1 (2%)	3 (6%)
Minus Values*	0	0	0	0	1 (2%)	2 (4%)
Not Recorded	13 (12%)	10 (11%)	12 (11%)	7 (8%)	0	0
Total Patients	106	89	106	89	63	52

** Diagnosis was made following surgery*

EXCLUDING EMERGENCIES

- Between 1996 and 2001 the percentage of patients seen within 2 weeks of referral decreased slightly from 48% to 41%, while the percentage having their diagnosis confirmed within 2 weeks of presentation to hospital was similar (49% and 52%).
- As for all surgery, in 2001 the percentage of patients having their elective surgery within 42 days from diagnosis decreased from 92% in 1996 to 77% in 2001. This again may be due to the use of neoadjuvant chemotherapy.

Summary timeline for all patients under 60 years

Time	Referral - First Seen at Hospital		First Seen - Diagnosis		Diagnosis - Surgery	
	1996	2001	1996	2001	1996	2001
Same Day	10 (42%)	13 (57%)	6 (25%)	4 (17%)	4 (23%)	4 (22%)
1 – 14 Days	8 (33%)	3 (13%)	10 (42%)	9 (39%)	4 (23%)	8 (44%)
15 – 42 Days	2 (8%)	4 (18%)	6 (25%)	6 (26%)	8 (47%)	3 (16%)
43 – 84 Days	3 (13%)	1 (4%)	1 (4%)	2 (9%)	1 (7%)	1 (6%)
More than 84 Days	1 (4%)	1 (4%)	0	2 (9%)	0	1 (6%)
Minus Values*	0	0	0	0	0	1 (6%)
Not Recorded	0	1 (4%)	1 (4%)	0	0	0
Total Patients	24	23	24	23	17	18

**** Diagnosis was made following surgery***

PATIENTS UNDER 60 YEARS

- Almost three quarters of patients under 60 years in both 1996 and 2001 were seen within 2 weeks of referral.
- Between half and two thirds of patients in both years had their diagnosis confirmed within 2 weeks of presentation.
- Under half of patients in 1996 and two thirds of patients in 2001 had surgery within 2 weeks of diagnosis.

  These results do not differ significantly from those for all patients.

FOLLOW-UP CARE DETAILS

This relates to information recorded in the discharge letter from hospital to GP.

(Patients may have had more than one referral)

After care

Aftercare	Number of Patients (%)	
	1996 *(n=179)*	2001 *(n=176)*
GP (General Practitioner)	125 (70%)	112 (64%)
Community nurse	25 (14%)	31 (18%)
Macmillan nurse	17 (10%)	58 (33%)
Hospice	20 (11%)	21 (12%)
Marie Curie nurse	1 (1%)	4 (2%)
Palliative care specialist	10 (6%)	42 (24%)
Psychologist referral	2 (1%)	1 (1%)
Info on support groups/education supplied	1 (1%)	1 (1%)
Dietician referral	45 (25%)	81 (46%)
No onward referral recorded	7 (39%)	4 (23%)

- There were increases in referral to Palliative care specialists and Macmillan nurses reflecting increased availability of these services.
- Referrals to Hospices remained steady at around 11% while referral to the Dietetic service almost doubled between 1996 and 2001.

"The help from the Macmillan nurse was great. She did many things including filling out one of those complicated government forms for me".

Information recorded in notes

Information	Number of Patients (%)	
	1996 *(n=179)*	*2001 (n=176)*
Diagnosis discussed with patient	108 (60%)	133 (76%)
Treatment plan discussed with patient	108 (60%)	128 (73%)
Written information given	1 (<1%)	3 (2%)
Consultation taped	0	0
Referred to oncology centre	23 (13%)	67 (38%)
Management discussed with oncologist	35 (20%)	83 (47%)
Referred for counselling	25 (14%)	56 (32%)
Clinical trial discussed with patient	6 (3%)	13 (7%)
Clinical trial recorded in notes	3 (2%)	8 (5%)
Multidisciplinary team meeting	4 (2%)	28 (16%)
Treatment plan recorded	3 (2%)	29 (17%)

- Since 1996 recording of information in the clinical records has improved. They are more likely to contain a treatment plan and evidence that the diagnosis and treatment plan has been discussed with the patient and that their management has been discussed with an oncologist and/or a record of oncology referral. Recording that a multidisciplinary team meeting had taken place improved as did recording of referral for counselling.
- The recording of discussion regarding clinical trials and/or entry into them improved with about 5% entered into clinical trial in 2001.
- The provision of written information or recording of interviews was rarely recorded in notes.

Information in GP letter

Information	Number of Patients (%)	
	1996 *(n=179)*	2001 *(n=176)*
Management plan	142 (79%)	140 (80%)
Prognosis	69 (39%)	62 (35%)
Diagnosis discussed with patient	87 (49%)	88 (50%)
Diagnosis discussed with family	68 (38%)	56 (32%)

- Management plans were included in 80% of letters to GPs.
- Overall, information to the GP has not improved from 1996 to 2001.

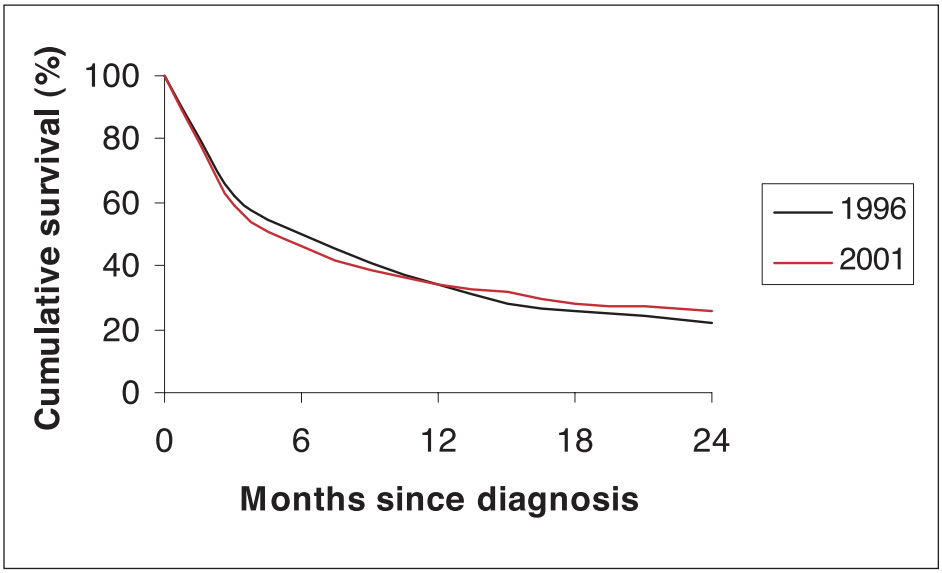
PATIENT OUTCOMES

Survival analysis was performed on patients diagnosed in 1996 and 2001 with subgroup analysis for surgery and non-surgery patients and for stage.

Percentage of patients alive at various times after diagnosis

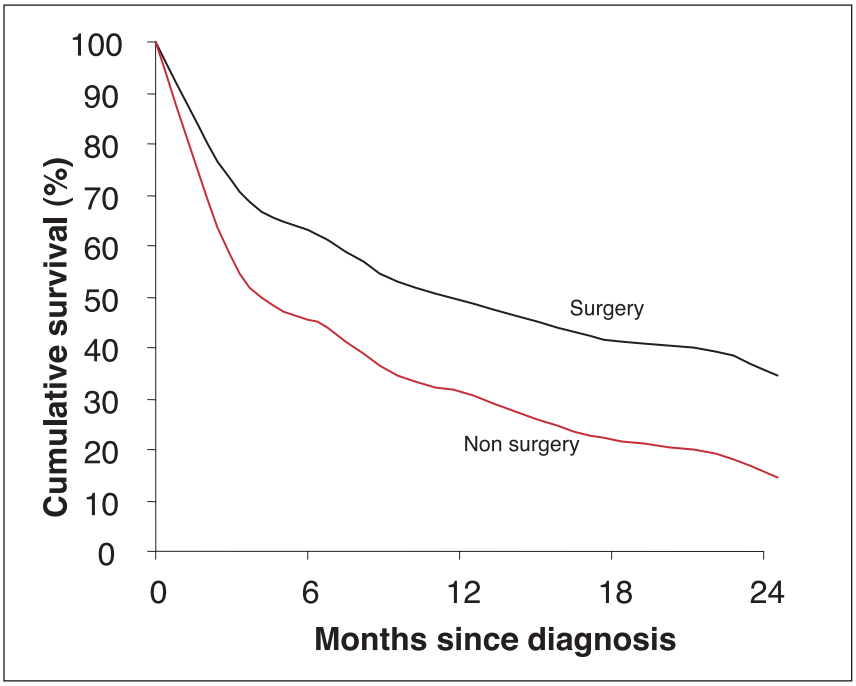
Time	Surgery only patients		Non-Surgery patients		All patients	
	1996	2001	1996	2001	1996	2001
30 days	88%	86%	65%	67%	79%	77%
60 days	79%	81%	55%	50%	69%	66%
6 months	65%	60%	30%	30%	50%	46%
1 year	50%	48%	12%	18%	33%	32%
2 years	34%	38%	5%	12%	22%	25%
Total patients	100	95	79	81	179	176

Stomach cancer: observed survival by year (all patients)



- Survival from stomach cancer is poor.
- There was no significant difference in observed survival between 1996 and 2001, for the group 'all patients' with 2-year survival of 22% and 25% respectively or for those having surgery (34%, 38%).

Stomach cancer: observed survival for surgery vs non-surgery patients (both years combined)

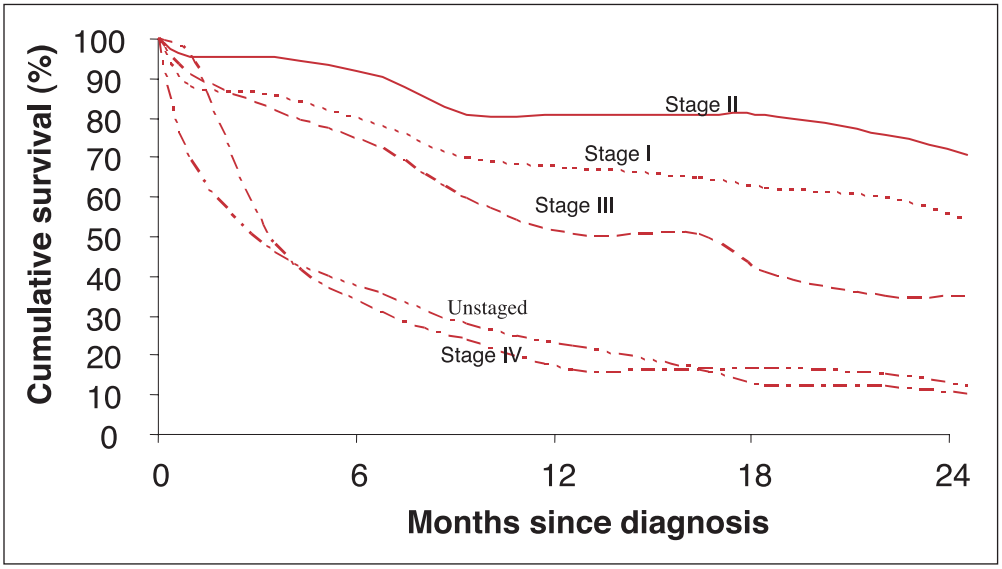


- There was a highly significant difference in survival between patients who had surgery and those who did not ($p<0.001$) when both years are combined, with 36% survival at 2 years for surgery patients compared to 9% for non-surgery patients. This reflects patient selection for surgical intervention.

Percentage of patients alive at various times after diagnosis by Stage (both years combined - all patients)

Time	Stage I	Stage II	Stage III	Stage IV	Unstaged
30 days	86%	96%	90%	78%	68%
60 days	84%	95%	87%	63%	56%
6 months	79%	93%	75%	31%	37%
1 year	68%	81%	53%	17%	22%
2 years	57%	67%	33%	10%	13%
Total Patients	43	24	35	102	151

Stomach cancer: observed survival by stage



- As expected there was a highly significant survival difference for stage at diagnosis ($p<0.001$), with earlier stage generally having better survival.
- Stage I categorised patients included some older patients who had minimal investigations and who may have had more extensive disease than detected. This could explain the poorer survival for Stage I patients compared with Stage II patients.

"I still attend support group meetings... it was very reassuring that there were members there who had recovered from surgery several years previously, which gave me hope."

SECTION IV -
OESOPHAGEAL CANCER SUMMARY

PRESENTATION

- Difficulty swallowing without pain was the most common presenting symptom.
- Over 80% of patients were referred by their GPs, of whom approximately one quarter were surgical or medical emergencies.
- 200 patients presented to 20 hospitals in 1996 and 214 patients presented to 17 hospitals in 2001.
- Most patients presented to hospitals in their Health Board of residence; this however, was less marked in 2001 compared to 1996.
- Between 1996 and 2001 the number of hospitals attended by each patient decreased. This may indicate that by 2001 centralisation of cancer services was happening, with patients being more likely to be referred to a hospital that would deliver all their treatment.

HISTOLOGY

- Overall adenocarcinoma was the most frequent histological subtype (61%).
- There was a higher proportion of squamous cell carcinomas in females than in males (42% vs 18%).

INVESTIGATIONS AND STAGING

- Endoscopy was performed in more than 96% of patients in both years.
- Between 1996 and 2001 use of CT scanning increased as did the use of laparoscopy, reflecting better initial staging assessments. There was a shift away from use of barium meal, transabdominal USS and bronchoscopy.
- Those 80 years and over were as likely as younger patients to have endoscopy, barium meal and USS abdominal. They were less likely to have an CT scan, bronchoscopy or laparoscopy.
- For patients undergoing resection there was a notable improvement in lymphadenectomy practice between 1996 and 2001, with a substantial (8-fold) increase in the number of patients having 15 or more nodes examined, reflecting improved intra-operative staging practices.
- In 1996 stage was poorly recorded in the clinical notes (1%) but by 2001 this had improved (16%).
- Overall, half of patients in 2001 did not have sufficient information in their notes for a stage to be determined.
- By 2001, 70% of surgery patients had sufficient information in their notes for a stage to be determined.
- There was a considerable increase in the percentage of Western Board patients unstaged between 1996 (43%) and 2001 (79%).

RECORDING OF MULTIDISCIPLINARY TEAM MEETINGS

Recording in the clinical notes that a MDM had taken place improved substantially, however only a third of patients notes contained such a record.

SURGERY AND ONCOLOGY

- Surgery for oesophageal cancer took place in 7 hospitals in 1996 and 5 in 2001.
- The number of surgeons performing oesophageal cancer surgery (all procedures) decreased from 12 to 9 between 996 and 2001.
- The majority of oesophageal cancer operations in each year were performed in the Royal Victoria Hospital.
- More oesophageal cancer operations were performed at Belfast City Hospital in 2001 (18) compared with 1996 (4) with a corresponding decrease in the number performed at the Royal Victoria Hospital between 1996 and 2001.
- Between 1996 and 2001 the percentage of patients undergoing surgery decreased from 48% to 36% which may reflect improved patient selection for radical intervention. This may be due to more accurate initial staging, evidenced by the increased use of CT scanning to identify the proportion of patients with metastatic disease in whom curative surgery is not possible.
- The number of surgeons performing more than 10 procedures (high case volume) increased from 3 to 5 with a decrease in number performing 4 or less procedures.
- The majority of surgical procedures that took place in both years were of curative intent (60% in 1996, 70% in 2001).
- About a quarter of patients had some oncology treatment.
- 39% of patients in 1996 and 49% in 2001 had no record of having surgery, radiotherapy or chemotherapy.
- Use of chemotherapy in patients increased from 15% to 22% by 2001.
- In both years, 7% of patients were entered into clinical trial.

TIMELINES

- Between 1996 and 2001 the percentage of patients seen within 2 weeks of referral decreased slightly from 61% to 55%, as did the percentage having their diagnosis confirmed within 2 weeks of presentation to hospital (64% to 59%).
- In 2001, a faster time to surgery was observed for all patients and patients undergoing elective surgical procedures, with 55% of patients having surgery within 42 days compared to 43% in 1996.

ONWARD REFERRAL

- Rates of referral to Macmillan nurses and Palliative Care Specialists doubled over the study period.
- Referral to the Dietetic service improved but only over half were referred in 2001.
- There was little difference in rates of referral for patients having resections compared to all patients.

COMMUNICATION

- The number of patients referred to counselling doubled.
- There was more recording in the notes about discussion of diagnosis and treatment plans with patients in 2001 compared with 1996, yet treatment plan information was available for only a quarter of patients by 2001.
- A management plan was included in almost all letters to GPs.
- Recording of discussion with patients and their families improved.

OUTCOMES

- Survival from oesophageal cancer (all patients) was poor, with 2-year observed survival of 19% and 16% in 1996 and 2001 respectively, with no significant difference between the years.
- There was a highly significant survival advantage for patients undergoing resection compared with non-surgery patients (49% vs 5% at 2-years, $p<0.001$).
- As expected patients with earlier stage disease had better survival.

SECTION V -
STOMACH CANCER SUMMARY

PRESENTATION

- 179 patients presented to 23 hospitals in 1996 (18 if emergencies are excluded) and 176 patients presented to 17 hospitals in 2001 (16 if emergencies are excluded).
- In 2001, 49% of patients presented to a Cancer Unit/Cancer Centre.
- About 80% of patients were referred by their GP, with over 40% presenting as medical or surgical emergencies.
- The majority of patients (93%) presented to hospitals within their health board of residence, this was consistent in both years.
- Between 1996 and 2001 the number of hospitals attended by each patient decreased. This may indicate that by 2001 centralisation of cancer services was happening, with patients being more likely to be referred to a hospital that would deliver all their treatment.

RISK FACTORS AND HISTOLOGY

- Recorded levels of H Pylori were higher in 2001 (11%) than in 1996 (6%).
- In 2001 all cases of stomach cancer were histologically confirmed.
- The majority of gastric cancers were adenocarcinomas (80%).

INVESTIGATIONS AND STAGING

- Endoscopy was performed in 83% and 91% of patients in 1996 and 2001 respectively.
- Between 1996 and 2001 use of CT scanning increased from 36% to 65% (all patients) and 45% to 67% (patients undergoing surgery) as did performance of laparoscopy reflecting improvement in initial staging assessments. There was a shift away from use of barium meal and transabdominal USS.
- By 2001 lymphadenectomy practice improved considerably with 23% of patients having 15 or more nodes examined, 33% having 10 or more nodes examined, in keeping with current recommendations[4].
- Examination of 15 or more nodes occurred by 2001 in all patients treated at Coleraine Hospital and at all cancer units and the cancer centre.
- While improved since 1996, by 2001, over a third of patients did not have sufficient information in their notes to allow staging.
- In 1996 stage was not recorded in the clinical notes but by 2001 this had improved so 19% of records had stage recorded.
- Overall it was not possible to assign stage in almost half of cases in 1996. By 2001 there was an improvement in the information available in the notes from which stage could be derived, yet by 2001 only two thirds could be staged.
- The improvement in the percentage of patients that were or could be staged was seen in all boards except the NHSSB.

RECORDING OF MULTIDISCIPLINARY TEAM MEETINGS

- Recording in the clinical notes that discussion at a MDM had taken place improved, however by 2001 only 16% of patients notes contained such a record.

SURGERY AND ONCOLOGY

- The number of surgeons performing surgery (all procedures) decreased by a third from 35 to 23.
- The number of surgeons performing more than 6 procedures (high case volume) doubled with a decrease in number performing 2-5 procedures (55%). By 2001 the percentage of surgical procedures carried out by a surgeon with high case volume had risen from 21% in 1996 to 53%, indicating some progress in the process of increasing specialisation in cancer surgery.
- However in contrast, between 1996 and 2001 the number of surgeons with low case volume (1 procedure per year) had not decreased, with 7 performing 13% of procedures including total and partial gastrectomy.
- More operations were performed in the Royal Victoria than any other hospital and the numbers were similar in both years.
- About two thirds of operations (67%) were performed in the cancer centre or cancer units in 2001. This however had changed little since 1996 (63%).
- In 2001 Altnagelvin, Belfast City, Royal Victoria, Craigavon, Mater and Ulster hospitals achieved the AUGIS recommended level of 10 or more operations per year.
- In the Southern Board there was a shift in the main hospital of treatment from Daisy Hill to Craigavon.
- 2001 saw an increase in the number of patients receiving chemotherapy to 9%.
- A third of patients did not have surgery, chemotherapy or radiotherapy.
- Overall use of chemotherapy increased from 10% to 15% in 2001. This trend was also seen for radiotherapy.
- The number of patients entered into clinical trials was low but doubled to 5% by 2001.

TIMELINES

- Between 1996 and 2001 the percentage of patients seen within 2 weeks of referral increased slightly from 64% to 68%, as did the percentage having their diagnosis confirmed within 2 weeks of presentation to hospital (56% to 64%).
- In 2001 the percentage of patients having their surgery (all procedures) within 42 days from diagnosis decreased from 94% in 1996 to 80% in 2001. This difference may be explained by the high percentage of same day surgery in 1996, reflecting a higher rate of emergency presentations.

ONWARD REFERRAL

- By 2001 rates of referral to Macmillan and Palliative Care Specialists more than trebled to 33% and 24% respectively.
- Referral to the dietetic service almost doubled between 1996 and 2001 to 46%.
- The number of patients referred to counselling more than doubled to 32%.

COMMUNICATION

- There was more discussion of diagnosis and treatment plans with patients recorded in the notes in 2001 compared with 1996.
- The recording of treatment plans also greatly improved yet was available for only a fifth of patients in 2001.
- Management plans were included in 80% of letters to GPs.
- Overall information to the GP had not improved between 1996 and 2001.

OUTCOMES

- Survival from stomach cancer was poor and similar for both years.
- Patients with earlier stage disease had better survival.
- As expected there was overall better survival in both years for patients selected for surgery compared with those not having surgery ($p<0.001$).
- About half of patients who had surgery in 2001 were alive one year after diagnosis and one third at two

CONCLUSION AND KEY ISSUES

BY 2001, THE FOLLOWING IMPROVEMENTS WERE APPARENT:

- Better initial and intra-operative staging for oesophageal and stomach cancer.
- The process of centralisation of oesophageal cancer surgery had progressed.
- Increasing surgical specialisation was evident for oesophageal and stomach cancer.
- Recording of MDM discussion, treatment plan, stage and discussion of diagnosis with the patient had improved, but further improvement is necessary in this area.

KEY ISSUES

- Some patients had serious symptoms for over one year. This points to the need to raise awareness of symptoms among the population.
- The high rate of emergency presentations pose challenges for service providers.
- There is a need to improve recording of stage related information.
- Discussion of patients and the recording of such at multidisciplinary team meetings needs to be improved. This will need additional resources.
- The number of operators and hospitals treating stomach cancer is too high. There needs to be more specialisation.
- Palliative care is the main service for a third of oesophageal and stomach cancer patients whose disease is not ammenable to radical therapy.
- Figures demonstrate that by 2001 the process of specialisation in oesophageal cancer surgery had progressed but services for oesophageal cancer should become more centralised.

REFERENCES

1 Campbell Report. '*Cancer Services - Investing for the Future*'. Department of Health and Social Services, 1996.

2 Regional Advisory Committee on Cancer (RACC). '*Report of Oesophageal Cancer*' Department of Health, Social Services and Public Safety, 2000.

3 NHS Improving Outcomes. '*Guidance on Commissioning Cancer Services - Improving Outcomes in Upper Gastro-intestinal Cancers - The Research Evidence*'. NHS Executive, 2001.

4 Allum WH, Griffin SM, Watson A, Colin-Jones D on behalf Association of Upper Gastrointestinal surgeons of Great Britain and Ireland, the British Society of Gastroenterology and the British Association of Surgical Oncology. *'Guidelines for the management of oesophageal and gastric cancer'*. Gut 2002; 50 (Suppl V) V1- V23.

5 Forman. '*Counting Cancers at the Junction - a problem of routine statistics*'. European Journal of Gastroenterology and Hepatology, 2002;14:99-101

6 Fitzpatrick D, Gavin A, Middleton R, Catney D. '*Cancer in Northern Ireland 1993-2001: A Comprehensive Report*'. N. Ireland Cancer Registry, Belfast, 2004.

7 Bartlesman et al. *'Barrett's oesophagus'*. European Journal of Cancer Prevention 1992;1:323-325.

8 Lagergren et al. '*The role of tobacco, snuff and alcohol use in the aetiology of cancer of the oesophagus and gastric cardia*'. Nutrition and Cancer 2000;38(2):186-191.

9 Sobin L.H ., Wittekin, Ch. *'UICC TNM Classification of Malignant Tumours'*. 6thth Edition, New York: Wiley-Liss, 2002.

10 http://www-depiarc.fr/globocan/globocan.html.GLOBOCAN2000. '*Cancer Incidence, Mortality and Prevalence Worldwide*' (2000 estimates), 2001.

11 Cancer Research UK. '*CancerStats Stomach Cancer - UK*'. September 2003.

12 Jossens, JV & Geboers, J. '*Nutrition and gastric cancer*'. Nutrition and Cancer: 1981;2:250-261.

13 Peek RM, Blaser MJ. '*Helicobacter Pylori and Gastrointestinal Tract Adenocarcinomas*'. National Review Cancer 2001;2(1)28-37.

14 Palli, D. '*Gastric Carcinogenesis dietary factors*'. European Journal of Gastroenterology and Hepatology 1994;6:1076-7082.

15 The Association of Upper Gastrointestinal Surgeons of Great Britain and Ireland (AUGIS) Database Report, 2002.

16 Japanese Gastric Cancer Association (JGCA). *'Japanese Classification of Gastric Carcinoma'*. 2nd English edition. Gastric Cancer 1998; 1: 10-24.

17 Hundahl SA, Phillips JL, Menck HR. *'The National Cancer Database report on survival of US gastric carcinoma patients treated with gastrectomy'*. Cancer. 2000; 88: 921-932.

APPENDIX

STAGING OF OESOPHAGEAL AND STOMACH CANCER.

Accurate clinical staging is essential for the planning of appropriate treatment and for comparison of the outcomes of such treatment (surgical and non-surgical). It is best achieved by a combination of techniques including physical examination, imaging, endoscopy, biopsy and laboratory findings. Endoscopic ultrasound (EU) is used to assess depth of tumour invasion as it can delineate the component layers of the oesophageal and gastric wall, while spiral CT of thorax and abdomen can predict the presence or absence of metastatic disease. Adjuncts to staging such as magnetic resonance imaging (MRI), broncoscopy, laparoscopy and transabdominal ultrasound may be indicated.

Pathological staging combines this data, acquired clinically, with subsequent histological examination of the surgically resected specimen which includes evaluation of the total number of regional lymph nodes removed and the number containing metastatic tumour.

The TNM classification of oesophageal and gastric carcinomas[9] is widely used (Table 1) although other classifications are also in use[16].

Table 1

	TNM classification of oesophageal and gastric carcinoma		
		Oesophagus	Stomach
Tumour	T1	invades lamina propria or submucosa	invades lamina propria or submucosa
	T2	invades muscularis propria	
	T2a		invades muscularis propria
	T2b		invades subserosa
	T3	invades adventitia	invades serosa (visceral peritoneum) without invasion of other structures
	T4	invades adjacent structures	invades adjacent structures
Nodes	N0	no regional lymph nodes involved	no regional lymph nodes involved
	N1	regional nodes involved	1-6 nodes involved
	N2		7-15 nodes involved
	N3		> 15 nodes
Metastases	M0	no distant metastases	no distant metastases
	M1	distant metastases	distant metastases
		lower thoracic oesophagus	
	M1a	metastases in coeliac nodes	
	M1b	other distant metastases	
		Mid thoracic oesophagus	
	M1a	not applicable	
	M1b	non-regional nodes ± distant	
		metastases	
		Upper thoracic oesophagus	
	M1a	metastases in cervical nodes	
	M1b	other distant metastases	
		cervical oesophagus	
	M1	distant metastases	

At diagnosis an alphanumeric TNM profile is derived eg, T2N1M0 which describes the extent of the primary tumour (T), the absence or presence of regional lymph node metastases (N), and the absence or presence of distant metastases (M). When it is not possible to allocate a T, N or M category the suffix (X) is used to indicate that this factor is unknown.

In order to facilitate survival analysis the derived TNM profile is condensed into a stage group category (Table 2a & 2b).

Table 2a

Stage group	Oesophagus		
	T	N	M
I	T1	N0	M0
IIA	T2	N0	M0
	T3	N0	M0
IIB	T1	N1	M0
	T2	N1	M0
III	T3	N1	M0
	T4	any N	M0
IV	any T	any N	M1
IVA	any T	any N	M1a
IVB	any T	any N	M1b

Table 2b

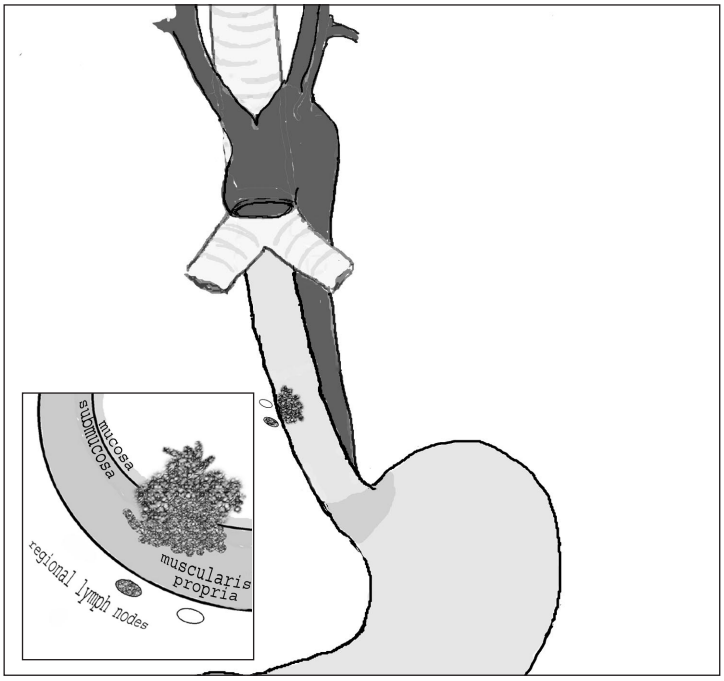
Stage group	Stomach		
	T	N	M
IA	T1	N0	M0
IB	T1	N1	M0
	T2a	N0	M0
	T2b	N0	M0
II	T1	N2	M0
	T2a	N1	M0
	T2b	N1	M0
	T3	N0	M0
IIIA	T2a	N2	M0
	T2b	N2	M0
	T3	N1	M0
	T4	N0	M0
IIIB	T3	N2	M0
IV	T4	N1-N3	M0
	T1-T3	N3	M0
	any T	any N	M1

STAGING EXAMPLES

Oesophagus

- Tumour in lower 1/3 of oesophagus (Figure 1).
- Invasion into muscularis propria therefore T=T2 (insert figure 1).
- 1 node has histologically verified metastases therefore N=N1.
- Clinically/radiologically no evidence of distant metastases therefore M=M0.
- TNM profile = T2N1M0.
- Stage group = IIB.

Figure 1

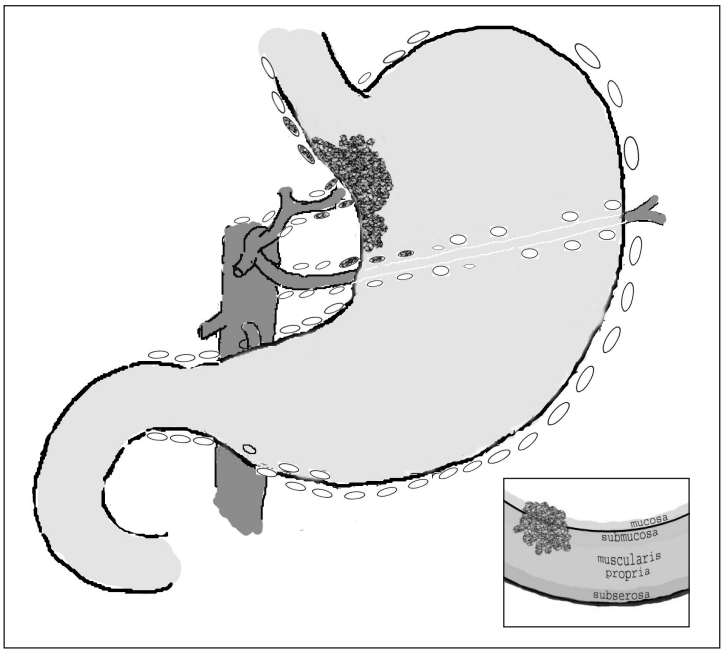


Stomach

Gastric tumour along lesser curve extending to cardia (figure 2)

- Histology shows invasion into muscularis propria therefore T=T2a (insert, Figure 2).
- 8 nodes have verified metastases therefore N=N2.
- Clinically/radiologically no evidence of distant metastases therefore M=M0
- TNM profile = T2aN2M0.
- Stage group = IIIA.
- This patient's survival prospect is 20% at 5 years if a gastrectomy is performed[17].

Figure 2



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