Routes to diagnosis of cancer

Cancer diagnosed in 2018-2020

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Northern Ireland Cancer Registry, 2024

About this report

Contents

This report includes information on the routes to a diagnosis of cancer (excluding non-melanoma skin cancer) during 2018-2020. The routes to diagnosis classification identifies the key event in the pathway that leads to a patient's diagnosis of cancer. Cancer incidence data is sourced from the Northern Ireland Cancer Registry (NICR), with linkage to multiple health datasets extracted from administrative data sources allowing the derivation of the classification.

Administrative data

Screening data for the project was provided courtesy of the bowel, breast and cervical screening programmes managed by the Public Health Agency, while outpatient data was provided by the Business Services Organisation. Access to data from the Cancer Patient Pathway System providing information on primary care referrals and the Patient Administration System which holds information on inpatient admissions was supplied by the five Health and Social Care Trusts. Cancer mortality data, used in the calculation of cancer survival, was provided courtesy of the General Register Office (NI) via the Department of Health.

We would like to thank all data providers for their assistance and support, without whom this report would not have been possible.

Reuse of information

Donnelly DW, Bennett D. Routes to diagnosis 2018-2020. Northern Ireland Cancer Registry; 2024. Available at: www.qub.ac.uk/research-centres/nicr

Further information

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The Northern Ireland Cancer Registry (NICR) uses data provided by patients and collected by the health service as part of their care and support.

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CONTENTS

SUMMARY

The routes to diagnosis project aims to provide an indication of the key event in each cancer patient's pathway that most directly led to their cancer diagnosis. Based upon cancers (excluding non-melanoma skin cancer) diagnosed in 2018-2020 patients were classified as shown in figure 1:

Summary figure 1: Route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2020

5.5% where the patient was referred from the national screening programmes.

33.2% where the patient had a GP referral with a red-flag to indicate suspected cancer.

23.2% where the patient presented as an emergency inpatient to hospital.

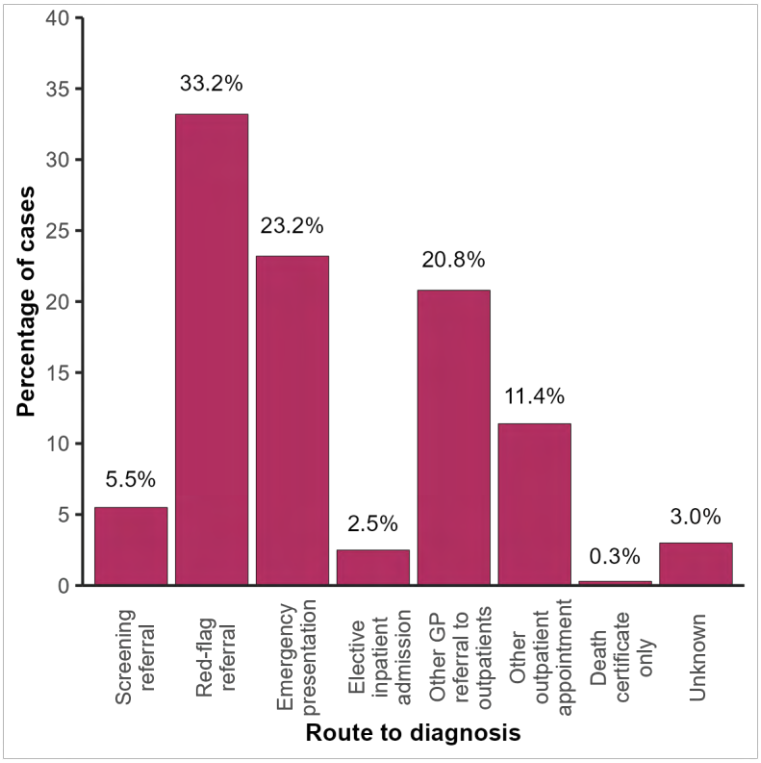
2.5% where the patient had an elective inpatient appointment with no earlier admission recorded.

20.8% where the patient had a GP referral to outpatients that was not a red flag referral.

11.4% where the patient had an outpatient appointment which was not a direct result of a GP referral.

0.3% where no data was available on the patient, except for reference to cancer on a death certificate.

3.0% where no data was available on the patient.



Screening

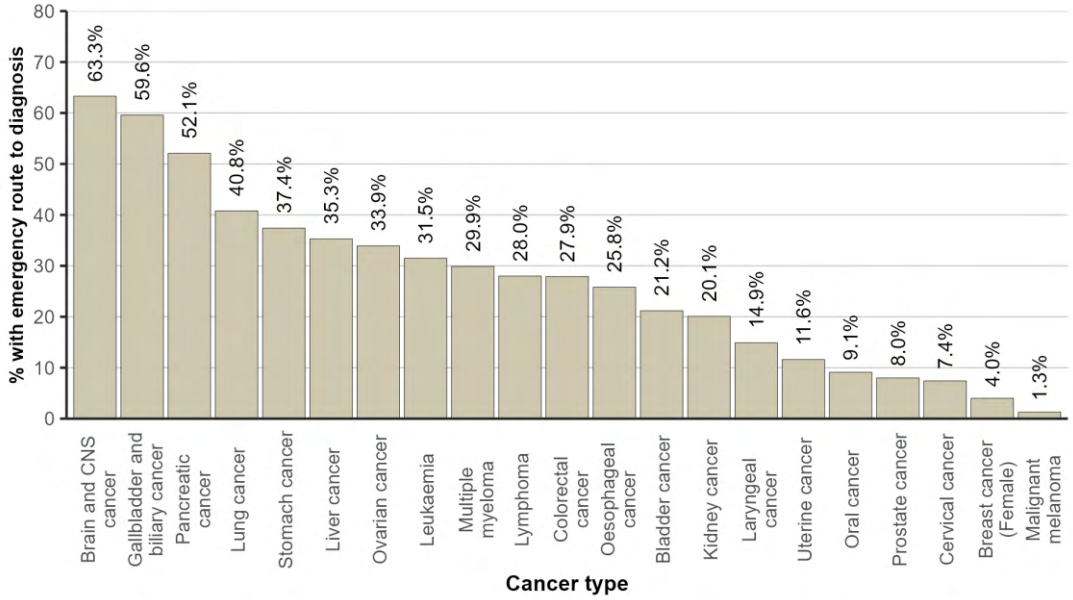
The screening route to diagnosis only applies to certain cancers and age groups. For these groups: 50.9% of female breast cancer patients aged 50 to 70, 42.6% of cervical cancer patients aged 25 to 64 and 21.4% of colorectal cancer patients aged 60 to 74 were diagnosed via the screening route.

Emergency admissions

For the four most common cancer types: 4.0% of female breast cancer patients, 40.8% of lung cancer patients, 8.0% of prostate cancer patients and 27.9% of colorectal cancer patients were diagnosed via the emergency presentation route.

Diagnosis following an emergency admission ranged from 63.3% for brain and central nervous system cancer patients and 59.6% for gallbladder and biliary cancer patients to 4.0% for female breast cancer patients and 1.3% for malignant melanoma patients.

Summary figure 2: Percentage of cases diagnosed in 2018-2020 with an emergency presentation route to diagnosis by cancer type

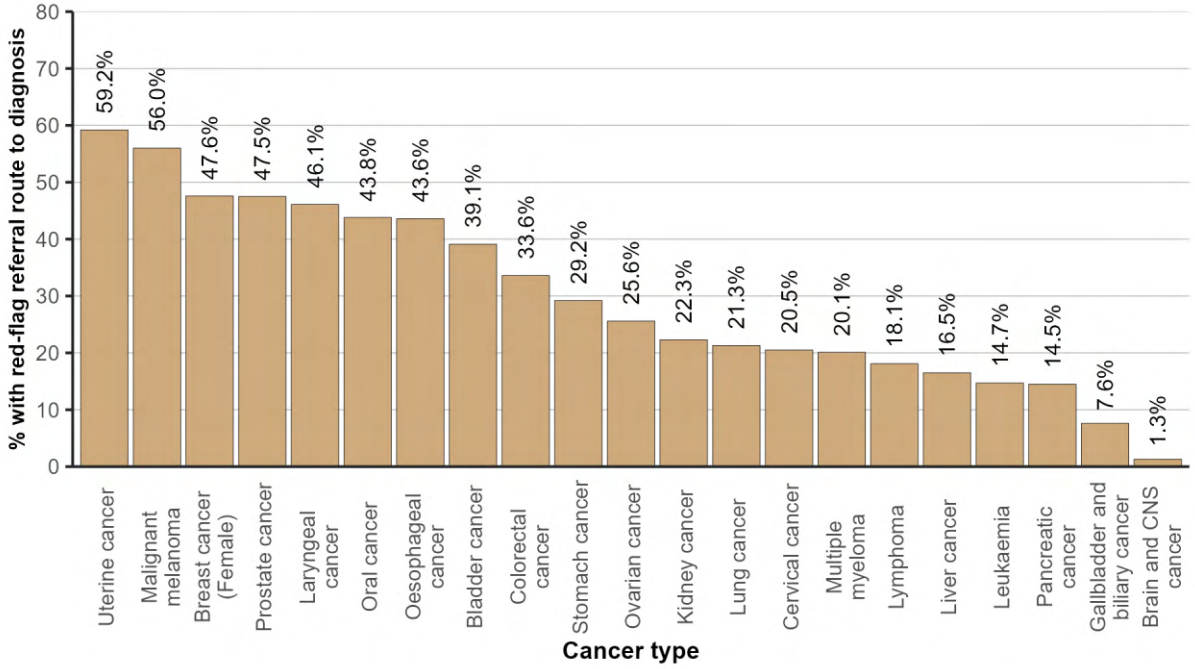


Red-flag referrals

For the four most common cancer types: 47.6% of female breast cancer patients, 21.3% of lung cancer patients, 47.5% of prostate cancer patients and 33.6% of colorectal cancer patients were diagnosed via the red-flag referral route.

Diagnosis following a red-flag referral ranged from 59.2% for uterine cancer patients and 56.0% for malignant melanoma patients to 7.6% for gallbladder and biliary cancer patients and 1.3% for brain and central nervous system cancer patients.

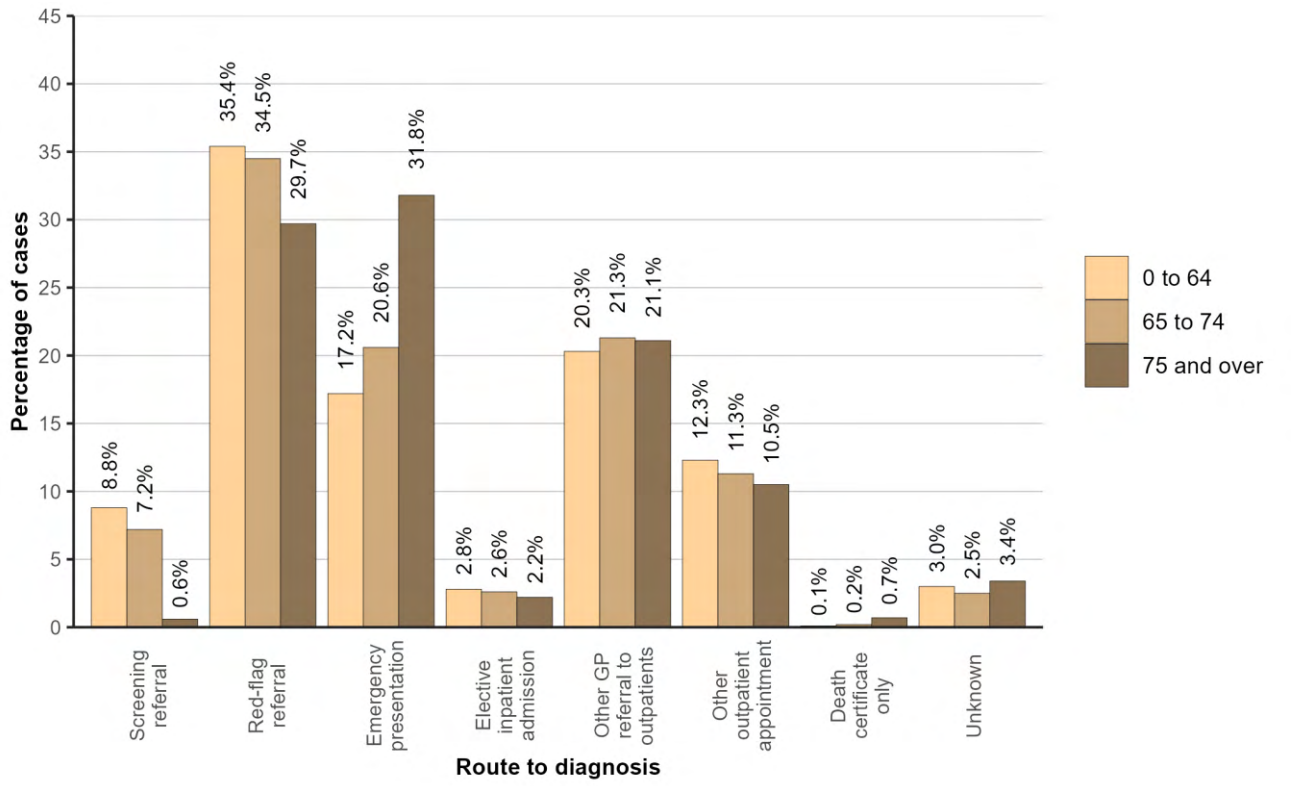
Summary figure 3: Percentage of cases diagnosed in 2018-2020 with a red-flag referral route to diagnosis by cancer type



Age at diagnosis

Route to diagnosis was associated with the patients age at diagnosis with the proportion of cases of cancer (ex NMSC) diagnosed via a red-flag referral 35.4% among patients aged 0 to 64 compared to 29.7% among patients aged 75 and over. The proportions diagnosed via an emergency presentation were 17.2% and 31.8% for patients aged 0 to 64 and 75 and over respectively, while a screening referral was the route taken by 8.8% of patients aged 0 to 64 and 0.6% of patients aged 75 and over.

Summary figure 4: Route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2020 by age group



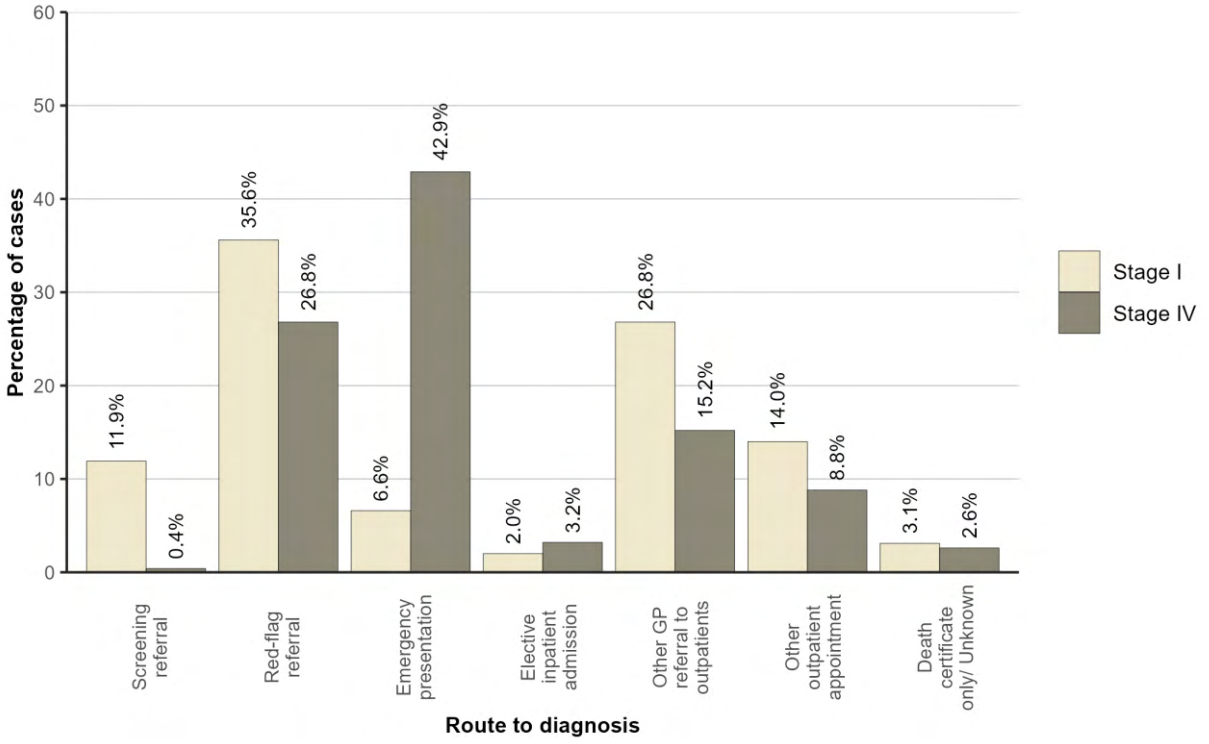
Stage at diagnosis

There was a strong relationship between route to diagnosis and stage at diagnosis with the proportion of cancer (ex NMSC) cases diagnosed via a red-flag referral 35.6% among stage I cancers compared to 26.8% among stage IV cancers. The proportions diagnosed via a screening referral were 11.9% and 0.4% for stage I and stage IV cancers respectively, while an emergency presentation was the route taken in 6.6% of cases diagnosed at stage I and 42.9% of cases diagnosed at stage IV.

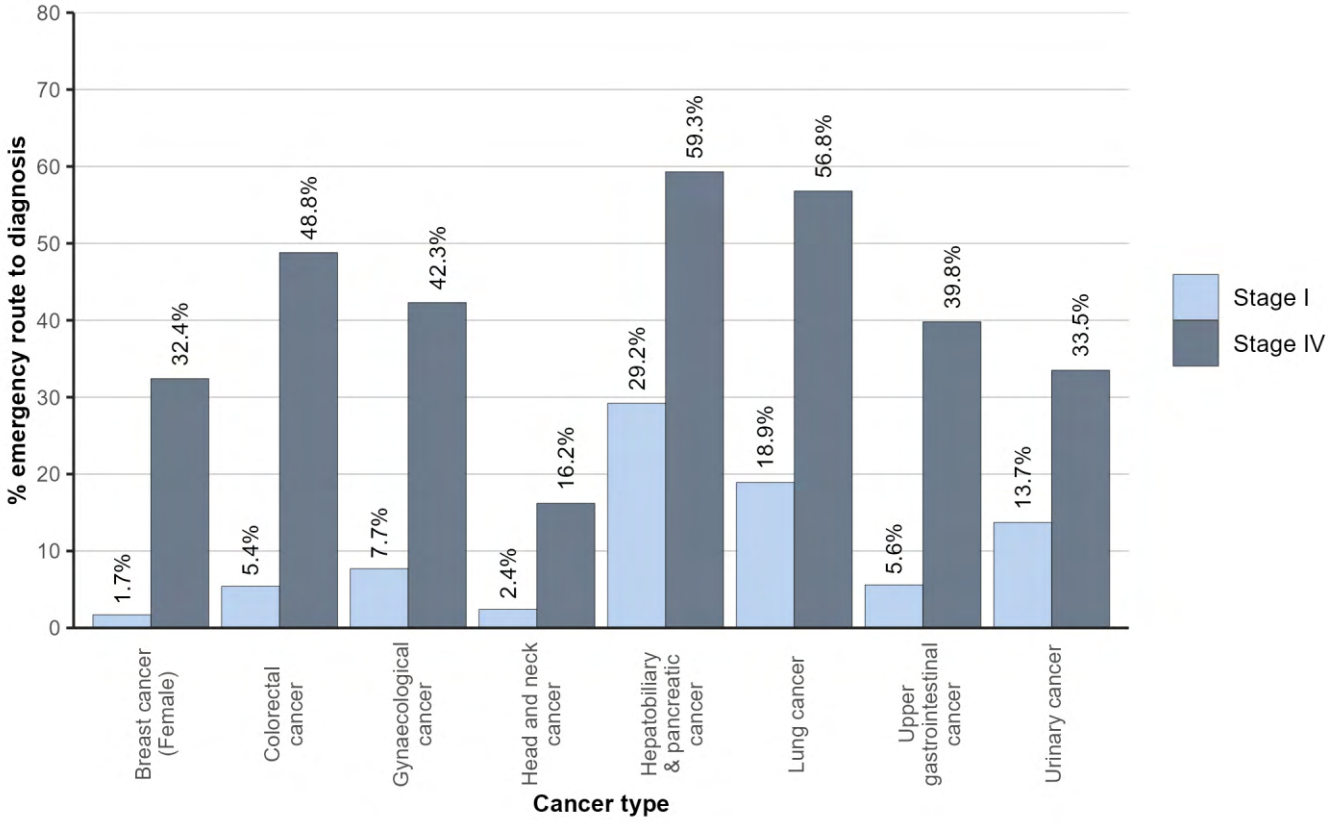
The large variation in emergency route to diagnosis by stage was apparent for most cancer types.

- 32.4% of stage IV female breast cancers were diagnosed via an emergency admission route compared to 1.7% of stage I cancers.
- 56.8% of stage IV lung cancers were diagnosed via an emergency admission route compared to 18.9% of stage I cancers.
- 48.8% of stage IV colorectal cancers were diagnosed via an emergency admission route compared to 5.4% of stage I cancers.

Summary figure 5: Route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2020 by stage at diagnosis



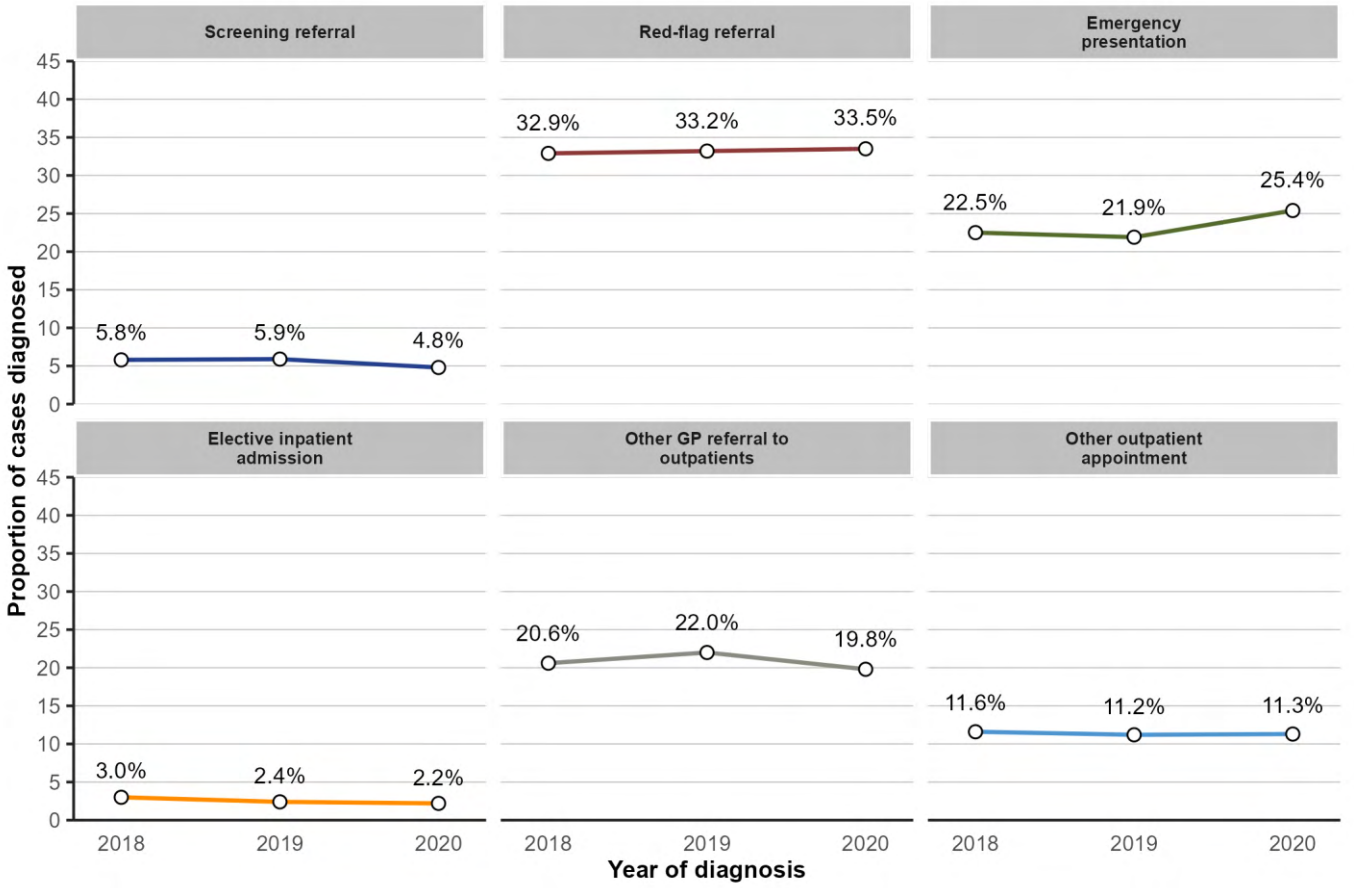
Summary figure 6: Percentage of cases with an emergency route to diagnosis for patients diagnosed in 2018-2020 by cancer type and stage at diagnosis



Trends over time

The proportion of cases diagnosed via a screening referral route decreased from 5.9% in 2018-19 to 4.8% in 2020, while presentation via a red-flag referral route increased from 33.1% to 33.5%. The proportion of cases diagnosed via an emergency presentation route increased from 22.2% in 2018-19 to 25.4% in 2020,

Summary figure 7: Trends in route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2020

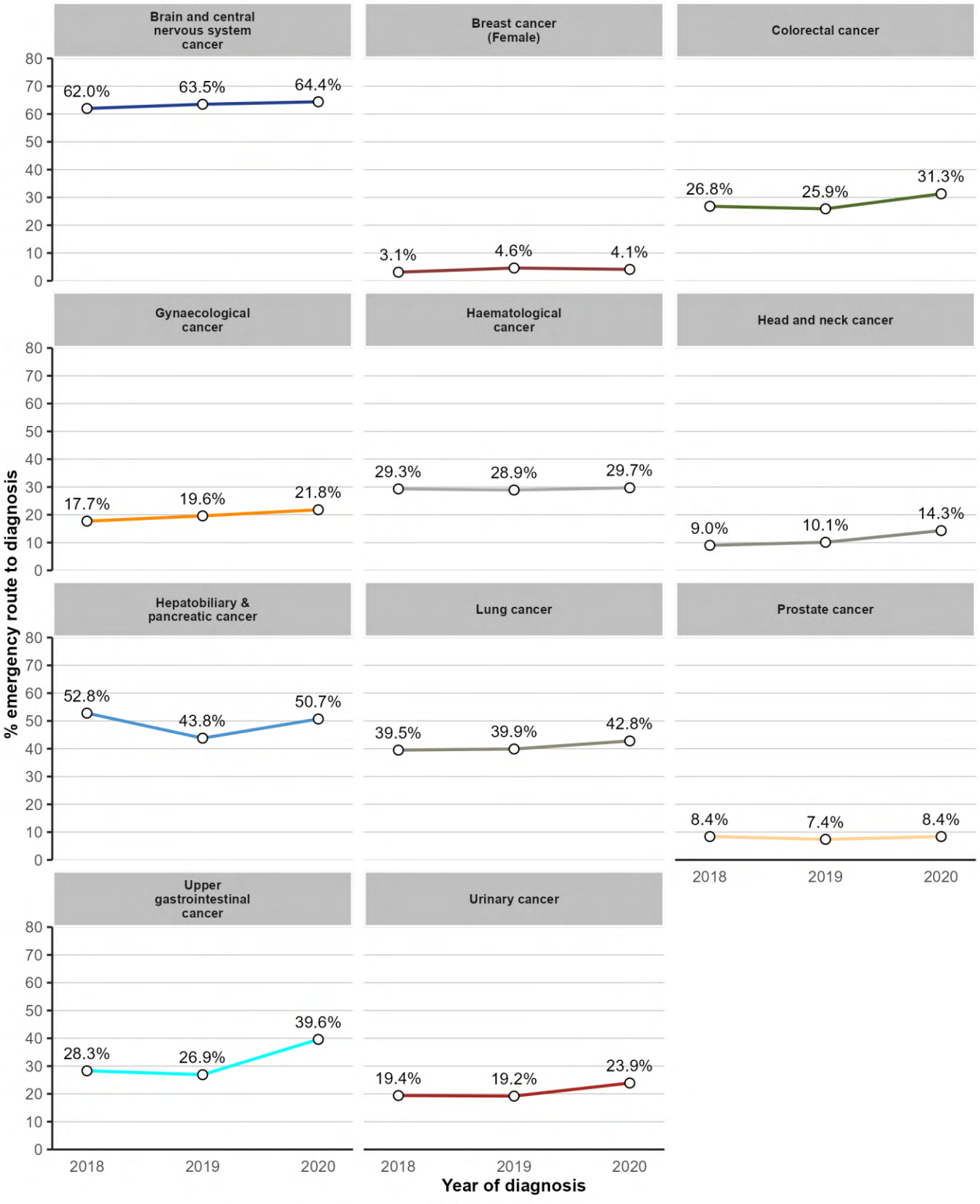


The distribution of cases diagnosed by route to diagnosis varied over time for specific cancer types. Those demonstrating significant changes between 2018-2019 and 2020 were female breast cancer, colorectal cancer, hepatobiliary & pancreatic cancer, lung cancer, upper gastrointestinal cancer and urinary cancer.

For those demonstrating significant changes between 2018-2019 and 2020 the proportion with an emergency presentation route:

- increased for female breast cancer from 3.9% in 2018-19 to 4.1% in 2020.
- increased for colorectal cancer from 26.3% in 2018-19 to 31.3% in 2020.
- increased for hepatobiliary & pancreatic cancer from 48.3% in 2018-19 to 50.7% in 2020.
- increased for lung cancer from 39.7% in 2018-19 to 42.8% in 2020.
- increased for upper gastrointestinal cancer from 27.5% in 2018-19 to 39.6% in 2020.
- increased for urinary cancer from 19.3% in 2018-19 to 23.9% in 2020.

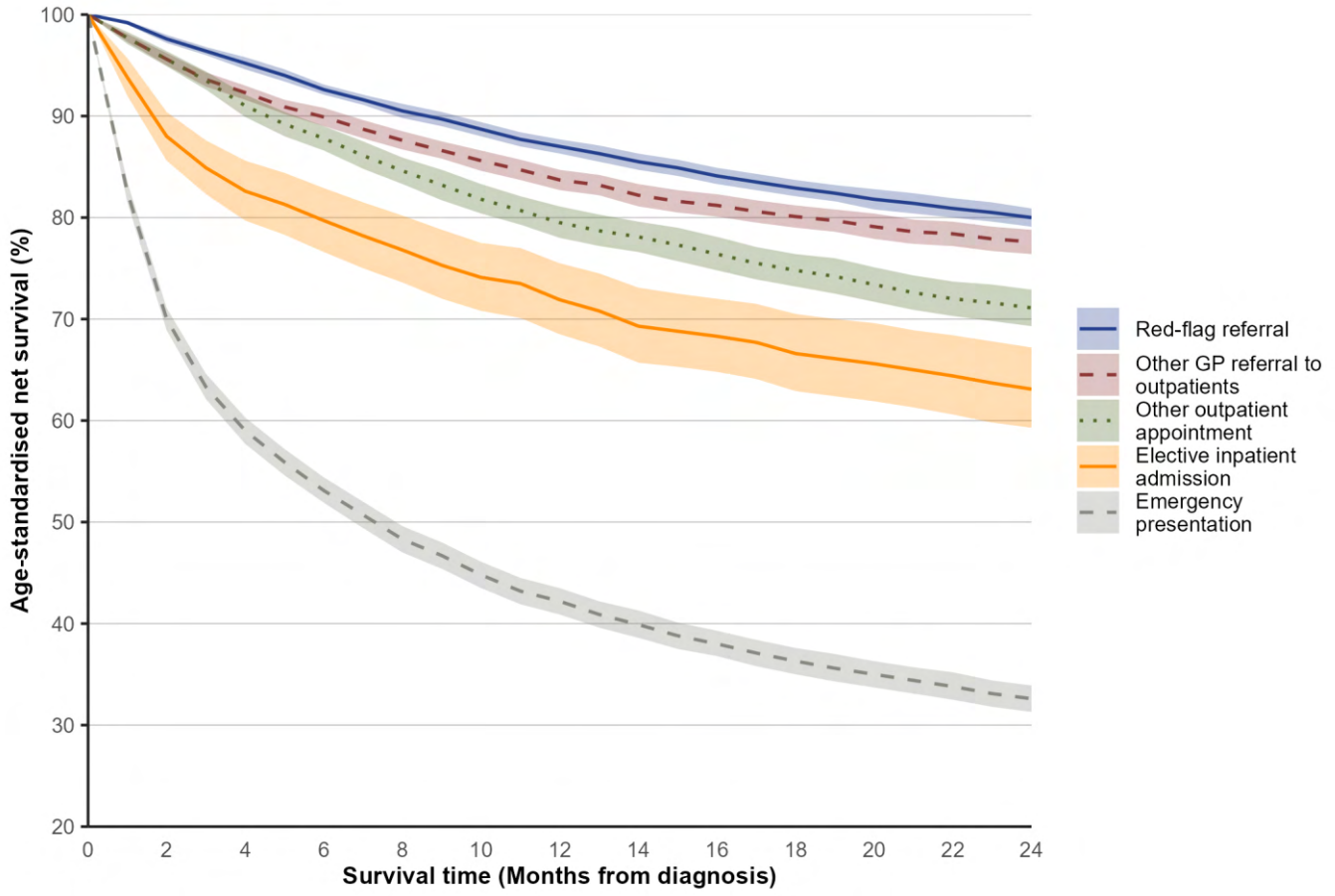
Summary figure 8: Trends in percentage of cases with an emergency route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2020


Brain and central nervous system cancer
62.0%
63.5%
64.4%
Breast cancer (Female)
3.1%
4.6%
4.1%
Colorectal cancer
26.8%
25.9%
31.3%
Gynaecological cancer
17.7%
19.6%
21.8%
Haematological cancer
29.3%
28.9%
29.7%
Head and neck cancer
9.0%
10.1%
14.3%
Hepatobiliary & pancreatic cancer
52.8%
43.8%
50.7%
Lung cancer
39.5%
39.9%
42.8%
Prostate cancer
8.4%
7.4%
8.4%
Upper gastrointestinal cancer
28.3%
26.9%
39.6%
Urinary cancer
19.4%
19.2%
23.9%
% emergency route to diagnosis
0
10
20
30
40
50
60
70
80
2018
2019
2020
Year of diagnosis

Survival

During 2018-2020 one-year age-standardised net survival from cancer (ex NMSC) ranged from 42.2% for those diagnosed via an emergency presentation route to 87.0% for those diagnosed via a red-flag referral route. Two years from diagnosis age-standardised net survival ranged from 32.6% for those diagnosed via an emergency presentation route to 80.0% for those diagnosed via a red-flag referral route.

Summary figure 9: Age-standardised net survival by route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2020



01: INTRODUCTION

In March 2022 the Department of Health launched a new Cancer Strategy for Northern Ireland [1] which set the direction for cancer services for the 10 years between 2022 and 2032. Action 5 of this strategy aims to:

> **Establish routes to diagnosis reporting and analysis on a regular basis to monitor changes to help improve diagnostic pathways and outcomes for patients**

In 2023 the Northern Ireland Cancer Registry (NICR) was funded by the Department of Health to develop a routes to diagnosis project with the aim of providing an indication of the key event in each cancer patient's pathway that most directly led to their cancer diagnosis. Initially piloted in Northern Ireland in 2020 using data from 2012-2016 [2], which was in turn based upon a project which has been running in England since 2012 [3,4], this exercise classifies every case of cancer registered in NI as having one of the following eight **Routes to Diagnosis.**

Screening referral

Patient was referred to inpatient or outpatient services from national cancer screening programmes.

Red-flag referral

Patient had a GP referral to hospital, with a red-flag to indicate suspected cancer as a result of presenting with cancer related symptoms.

Emergency presentation

Patient presented as an emergency inpatient to hospital, either as a self-referral or as a result of a GP or outpatient appointment.

Elective inpatient admission

Patient had an elective inpatient appointment where no earlier admission or referral was recorded.

Other GP referral to outpatients

Patient had a routine or urgent GP referral to outpatients that was not a red flag referral.

Other outpatient appointment

Patient had an outpatient appointment which was not directly a result of a GP referral (e.g. an internal referral or a referral from an external body such as a private hospital or charity).

Death certificate only

No data was available on the patient, except for a reference to cancer on their death certificate.

Unknown

No data available on patient.

The data required to assign this classification comes from several sources. The core data on cancer patients diagnosed from 2018-2020 is collected by the Northern Ireland Cancer Registry. This data is

linked to hospital episode data (both inpatient and outpatient) from the Patient Administration System (PAS), referral data from the Cancer Patient Pathway System (CaPPS) and data supplied by the three cancer screening programmes in NI (bowel, breast and cervix).

The translation of this wealth of data into a single route to diagnosis is based upon the algorithm developed by the National Cancer Registration and Analysis Service in England [3,4]. This process works by initially assigning an endpoint based upon the hospital episode that occurred closest to diagnosis, and then working backwards to the event most likely to be the main referral source with certain key events, such as screening, given priority over others.

Results are presented as both an average number of cases per year and as proportions of the total number of cases diagnosed. A range of cancer types are considered, and results are broken down by a range of demographic and cancer characteristics. Where possible comparisons are made to the previous NI study and with the latest available data from England, while survival up to two years from diagnosis is also presented. These results are a tangible step in meeting Action 5 of the new Cancer Strategy by providing a comprehensive report on the pathway patients take to a diagnosis of cancer in Northern Ireland. It is hoped the results will not only be useful to policy makers, but will also provide the foundation for future development and research into this area.

The report authors would like to thank the various organisations who provided data from this report, in particular the five Health and Social Care Trusts, Business Service Organisation and the three cancer screening programmes managed by the Public Health Agency (PHA). We would also like to thank the Department of Health who funded this project and Dr. Finian Bannon (QUB) for comments on the report.

02: Methodology

2.1: Cancer Registration

The Northern Ireland Cancer Registry (NICR) is part of Queen's University, Belfast and is funded by the Public Health Agency to collate information on all new diagnoses of cancer in Northern Ireland (NI). It was first established in 1994 and uses an automated computer system with multiple information sources from across the Health and Social Care (HSC) Service in NI to provide detailed information on cancer incidence from 1993 onwards.

The NICR acquires notifications of possible cancer and pre-malignant conditions within the NI population from three main sources:

- Pathology reports from the four pathology laboratories in NI (Belfast, Altnagelvin, Antrim and Craigavon);
- Hospital admissions and discharges recorded in the Patient Administration System (PAS) and supplied by the five Health and Social Care Trusts (HSCT); and
- Death registrations from the General Registrar Office (GRO), which are received via the Department of Health (DoH).

These data sources are combined electronically, with automatic routines applied that cross check key details and resolve multiple notifications. However, considerable manual work is also required to ensure that key data items (e.g. date of diagnosis, cancer type) are coded to international cancer registration standards and that the final data is as complete and as accurate as possible.

As part of this process, a major focus of the registry's operation is on the verification of any registration which comes from a single hospital admission, a single pathology report or a single death certificate. For these registrations trained Cancer Intelligence Officers (CIOs) examine general practitioners' (GPs) notes for patients who have died from cancer, hospital records for cases identified without histopathology or cytology confirmation, pathology reports where there is conflicting information or other possible errors, and other health care systems such as the Regional Information System for Oncology & Haematology (RISOH) in order to further check the accuracy of any coding, ensure that no duplicate registrations are present and to separate primary cancers from secondary and recurrent disease.

Date of diagnosis

One of the primary data items recorded as part of the cancer registration process is the date of cancer diagnosis. NICR base the collection of this data item on recommendations from the European Network of Cancer Registries [5], which states that where possible the date of diagnosis should be the date of first histological or cytological confirmation of the malignancy. Given that this process can involve various stages, the date is chosen according to the following priority:

1. Date when the biopsy was taken;
2. Date of receipt of the sample by the pathologist;

3. Date of the pathology report.

In the scenario where the cancer is not diagnosed pathologically then the date of admission to hospital as a result of this malignancy is used as the date of diagnosis. If no information is available other than the fact that the patient has died as a result of cancer then date of death is used as the date of diagnosis, and the registration is flagged as being death certificate only (DCO).

Cancer coding

Cancer type is coded using the tenth revision of the International Classification of Diseases (ICD10) [6]. The ICD10 codes used to classify cancer are C00-C97, with non-melanoma skin cancer (ICD10 code C44) excluded from the overall cancer count as it is easily treated, rarely fatal and as such does not always involve treatment in a hospital setting making a route to diagnosis difficult to assign. The ICD10 codes used to classify each type of cancer are listed in below.

Table 2.1: Classification of cancer type based upon ICD10 code

Cancer type	ICD10 code	Cancer type	ICD10 code
Colorectal	C18-C20	**Gynaecological**	C51-C57
Breast	C50	- **Cervical**	- C53
Lung (inc. trachea)	C33-C34	- **Ovarian (inc. fallopian tube)**	- C56-C57.4
Prostate	C61	- **Uterine**	- C54-C55
Head & neck	C00-C14, C30-C32	**Urinary**	C64-C67
- **Oral**	- C00-C14	- **Bladder**	- C67
- **Laryngeal**	- C32	- **Kidney**	- C64
- **Nasal cavity & other sinuses**	- C30-C31	**Malignant melanoma**	C43
Upper gastrointestinal	C15-C16	**Brain (inc. CNS)**	C70-C72, C75.1-C75.3
- **Oesophageal**	- C15	**Haematological**	C81-C96
- **Stomach**	- C16	- **Leukaemia**	- C91-C95
Hepatobiliary & pancreatic	C22-C25	- **Lymphoma**	- C81-C86
- **Liver**	- C22	- **Multiple myeloma**	- C90
- **Gallbladder & other biliary**	- C23-C24		
- **Pancreas**	- C25	**All cancers (ex. NMSC)**	C00-C43, C45-C97

CNS: Central Nervous System, NMSC: Non-melanoma skin cancer

Geographic areas

NICR routinely collects address information, including postcode, allowing geographic areas to be assigned to records of cancer incidence. This is accomplished for each patient through an electronic process that uses the collected postcode along with a lookup file, known as the Central Postcode Directory (CPD) [7], that provides the relationship between each valid postcode in Northern Ireland and a range of higher geographic areas. The key areas derived from the patient's postcode in this manner for the routes to diagnosis project are Health and Social Care Trusts (HSCT) and Super Output Areas (SOA - a small geographic area with a target population of around 2,000 people). Addresses with an unknown, incomplete or invalid postcode cannot be assigned higher geographic areas, however only a small proportion of records for cancers diagnosed fall into this category (0.01% in 2018-2020).

Socio-economic deprivation

The 2017 Northern Ireland multiple deprivation measure (NIMDM) [8] assigns a deprivation score to each Super Output Area (SOA) in Northern Ireland based upon the economic characteristics of all persons usually resident in that area. For the purposes of this report SOAs were ranked according to this score and divided into quintiles, with quintile 1 containing the fifth of the population resident in the most deprived SOAs and quintile 5 containing the fifth of the population resident in the least deprived SOAs. Patients were then assigned a deprivation quintile based upon their SOA of residence which was derived for each patient based upon their postcode of residence.

Cancer stage

Staging is carried out using a number of laboratory and clinical tests at diagnosis. The staging classification used throughout this report is the TNM stage [9] that includes information on the extent of the primary tumour (T), the absence or presence of lymph node metastasis (N) and the absence or presence of distant metastasis (M). The classification combines these three elements to produce an overall TNM stage for the tumour, although the manner in which the overall TNM stage is derived depends upon the cancer site. Staging is carried out for most cancer sites, however there is no TNM classification for brain cancer, leukaemia and multiple myeloma.

For analysis purposes the overall TNM stage for each cancer is coded to four groups, ranging from early tumours (Stage I) to advanced tumours that have distant metastasis (Stage IV). Cancers without a stage assigned are classified as 'unknown', but are retained in the analysis as a lack of cancer staging still has clinical relevance with such patients less likely to have had treatment for their cancer.

2.2: Additional Data Sources

Data from NICR is linked to several additional data sources in order to collate the information required to derive a route to diagnosis for each patient.

Screening data

Screening data is supplied by the three cancer screening programmes in Northern Ireland (Breast, Bowel and Cervix) which are managed by the Public Health Agency. Each data provider is securely sent a list of Health and Care Numbers (HCN) relating to patients who have been diagnosed with a breast, bowel or cervical cancer along with the date they were diagnosed and the site and morphology of the cancer.

The breast and bowel screening services use this information to derive whether or not these cancers were screen detected. This indicator is returned securely to NICR where it is linked to the cancer incidence record. The cervical screening program does not make a determination on whether a cancer is screen detected but returns the date and result of the most recent screening test (if one occurred). A screen detected cervical cancer is then defined by NICR as one with a positive screening result in the six months prior to diagnosis.

Cancer referrals from primary care

Referral data is sourced from the Cancer Patient Pathway System (CaPPS). This information system is used by the NHS to monitor the progress of each patient throughout their cancer diagnosis and treatment pathway. It is one of the data sources used in the production of cancer waiting time information in Northern Ireland, and is thus the closest equivalent data source to the National Cancer Waiting Times dataset used in the derivation of English routes to diagnosis information.

Data on all confirmed cancers recorded in CaPPS is extracted from this dataset for the relevant study years and is linked to the cancer registry data based upon Health and Care Number. Given that patients can have more than one cancer diagnosed, even within the space of a couple of years, only links between data sources that have diagnosis dates within six months of each other are retained. An exact match between diagnosis dates is not expected between NICR and CaPPS as different definitions are used.

Referral data from CaPPS is then coded into two distinct categories:

- **Red flag referrals from a GP** which occurred up to six months prior to cancer diagnosis. In the event that a patient had more than one of this type of referral the closest to diagnosis is retained. The red-flag group represents the closest equivalent measure to the Two Week Wait (TWW) category used in the English classification.
- **All other referral types** including non-red flag GP referral, any referral type from other health professionals such as dentists and consultants (including those that later receive an upgrade to red-flag status) and referrals from A&E departments.

Hospital Inpatient Data

The Patient Administration System (PAS) contains all records of hospital inpatient admissions in Northern Ireland. Records with cancer as a primary or secondary medical condition coded on the system are sent to NICR by each Trust on a biannual basis. This information includes the method and date of hospital admission, which are extracted and linked to the NICR cancer incidence data as part of the routes to diagnosis project. Admissions in the six months up to diagnosis are retained and are coded into three distinct categories:

- **Emergency admissions.** These include attendance at Emergency Departments (ED) either via walk in or ambulance, referrals to EDs from GPs, paramedics or consultants and transfers/referrals to EDs from outpatient departments.
- **Elective admissions.** These include any planned or booked admissions, referrals from screening, GPs or consultants as a result of suspected cancer and admissions of patients on waiting lists.
- **Other admissions.** Any admission types not included above such as maternity admissions, internal admissions and transfers from other hospitals.

The closest admission to diagnosis of each type (up to a maximum of six months) is used in assigning the route to diagnosis.

Hospital Outpatient Data

Hospital outpatient data is sourced in a similar manner to screening information with Business Services Organisation providing matched outpatient records for cancer patients to NICR. Once received they are processed in a similar manner to hospital inpatient data with outpatient appointments up to six months prior to diagnosis linked to cancer incidence data. Outpatient appointments are coded into five distinct categories based upon the source of referral of each appointment.

- **Emergency referral.** These include any appointments resulting from a referral from an Emergency Department.
- **GP referral.** Appointments initiated as a result of a referral (of any type) from a GP.
- **Other external referral.** Appointments initiated as a result of a referral from any other health professional that is external to the specialty responsible for the patients cancer care. These would include allied health professionals such as dentists and optometrists, specialist nurses, screening services, external bodies such as Action Cancer and the private sector.
- **Consultant referral.** Any appointments resulting from an internal referral from a consultant. This would also include those referrals coded as coming from a particular specialty (e.g. General Medicine).
- **Other internal referral.** Appointments initiated as a result of a referral from any other health professional who is already responsible for the patients care such as non-specialist nurses. Internal transfers including inter-Trust and inter-hospital transfers are included in this group.

The closest appointment to diagnosis of each type is used in assigning the route to diagnosis, however, in some cases the subtype of each referral type (e.g. whether an appointment originated from a screening referral) is relevant to the final classification of diagnosis route.

2.3: Routes to Diagnosis Algorithm

Starting from the date of diagnosis, the routes to diagnosis algorithm works backwards by examining the data gathered from the sources described in the previous section. The steps are as follows:

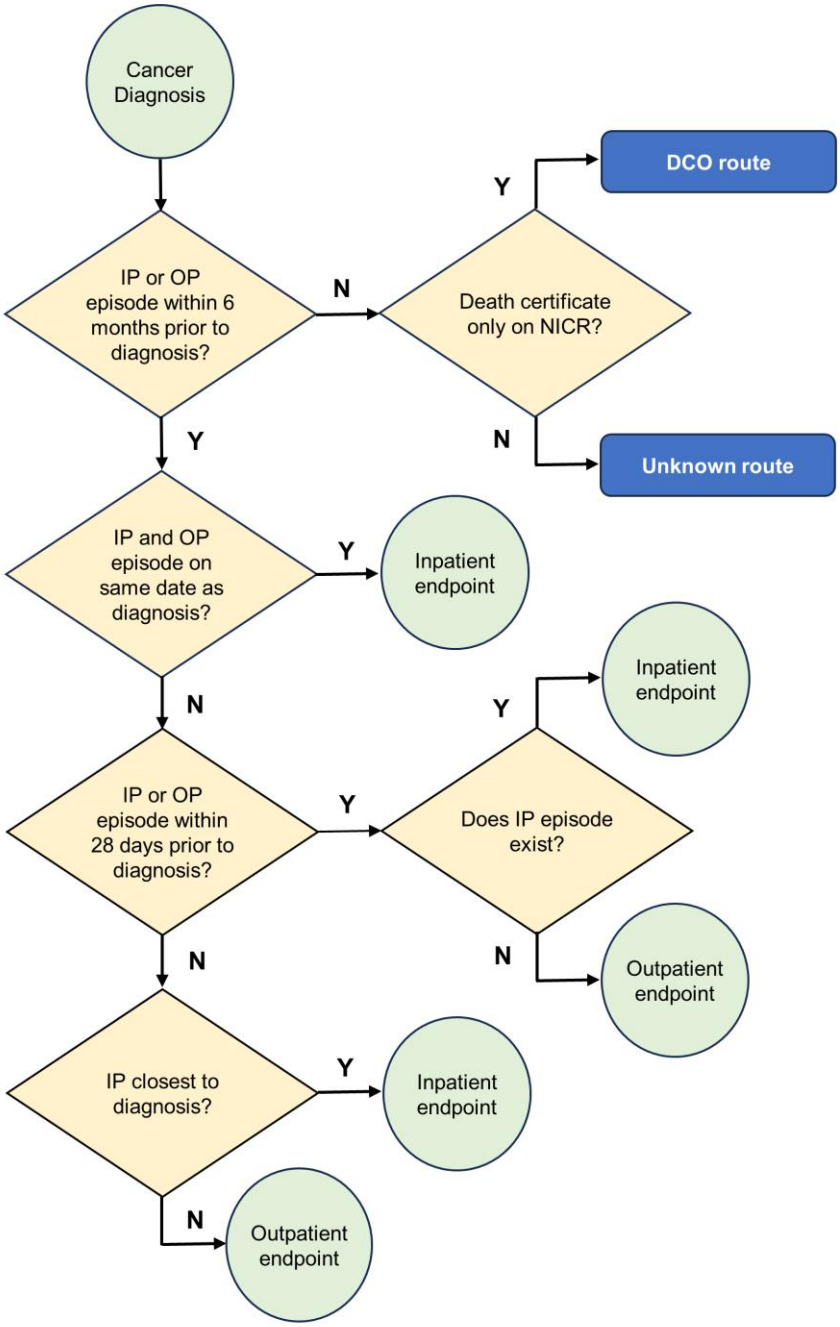
Step 01 – Determine the end point

The end point of the route is considered to be the inpatient admission or outpatient appointment that led most immediately to a diagnosis of cancer. A specific set of rules is applied to assign this end point to each patient:

1. Determine whether an inpatient or outpatient episode occurs in the six months prior to a cancer diagnosis and assign to 'Unknown' end point if none exists.
2. Reassign the end point to 'Death certificate only' (DCO) if no inpatient or outpatient episode exists and the basis of diagnosis assigned by NICR is DCO.
3. Determine whether both an inpatient and outpatient episode occur on the diagnosis date and assign the end point to 'Inpatient' if they do.

4. Determine whether there is an inpatient episode in the 28 days prior to diagnosis. If so assign the end point to 'Inpatient' otherwise assign the end point to 'Outpatient' if such events also exist in this time frame.
5. Otherwise determine whether there is an inpatient or outpatient episode more than 28 days prior to diagnosis (up to a maximum of six months) and if so use the nearest to diagnosis as the end point. Inpatient episodes have priority over outpatient episodes if both exist on the same day.

Figure 2.1: Route to diagnosis algorithm - Step 1: Assigning inpatient (IP) and outpatient (OP) end points



Step 02 – Inpatient routes

For patients with an 'Inpatient' end point start to work backwards to derive an inpatient start point.

1. Assign the start point to either 'Emergency admission', 'Elective admission' or 'Other admission' based upon which of these was used to assign the endpoint. In the event that more than one episode occurs at the end point give priority to 'Emergency admission', then 'Elective admission' and then 'Other admission'.
2. For patients with an 'Other admission' starting point, identify those which are transfers and reassign the starting point as an 'Elective admission' if no other admission type exists for that patient prior to this event. If prior inpatient episodes to the transfer do exist, use the nearest other emergency or elective admission to diagnosis as the starting point.
3. Treat any remaining 'Other admission' in the same manner as an 'Elective admission' (e.g. This will include admissions such as maternity admissions).
4. Separate out elective admissions that originated from screening services and assign them to a 'Screening referral' starting point.
5. Fix the starting point for any further 'Elective admission' or 'Other admission' inpatients as an 'Elective admission', unless there is an earlier outpatient appointment recorded in which case the end point is reassigned to 'Outpatient' status.
6. Keep the starting point for 'Emergency admission' inpatients as is unless they have been admitted via an outpatient clinic. If they are then the endpoint is reassigned to 'Outpatient' status, but only if earlier outpatient episodes have been recorded, otherwise they remain assigned to 'Emergency admission'.

Step 03 – Outpatient routes

For patients with an 'Outpatient' end point start to work backwards to derive an outpatient start point.

1. Assign the start point to either 'Emergency referral', 'GP referral', 'Other external referral', 'Consultant referral' or 'Other internal referral' based upon which of these was used to assign the endpoint. In the event that more than one appointment occurs at the end point give priority to 'Emergency referral', then 'GP referral', then 'Other external referral', then 'Consultant referral', then 'Other internal referral' routes.
2. For patients with an 'Other internal referral' or 'Consultant referral' outpatient starting point check whether a preceding outpatient appointment exists up to six months prior to diagnosis. If one does then reassign the route to diagnosis to 'Emergency referral', 'GP referral', or 'Other external referral' depending upon which is the closest to diagnosis. If more than one exists give priority to 'Emergency referral', then 'GP referral', then 'Other external referral' routes.
3. Assign any remaining 'Other internal referral' or 'Consultant referral' starting points to 'Other external referral' route, which is then relabelled as 'Other outpatient appointment'.

Figure 2.2: Route to diagnosis algorithm - Step 2: Assigning inpatient (IP) start point

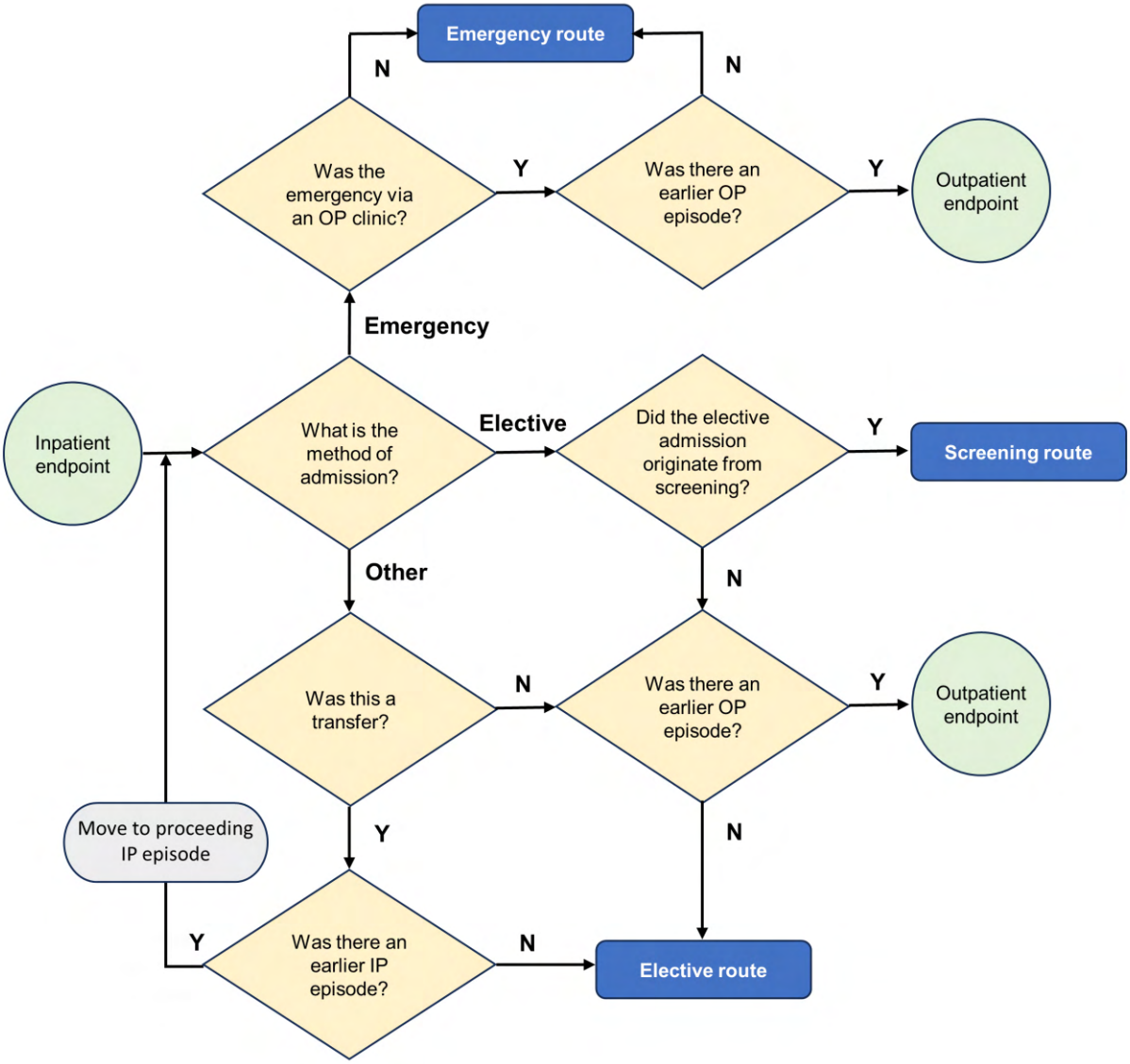
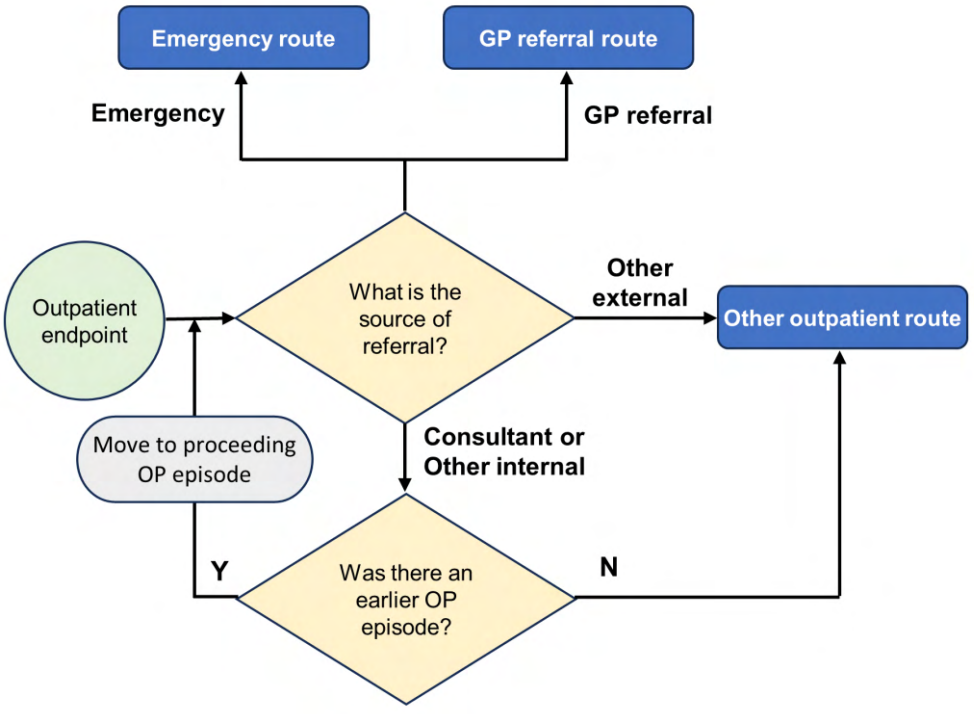


Figure 2.3: Route to diagnosis algorithm - Step 3: Assigning outpatient (OP) start point

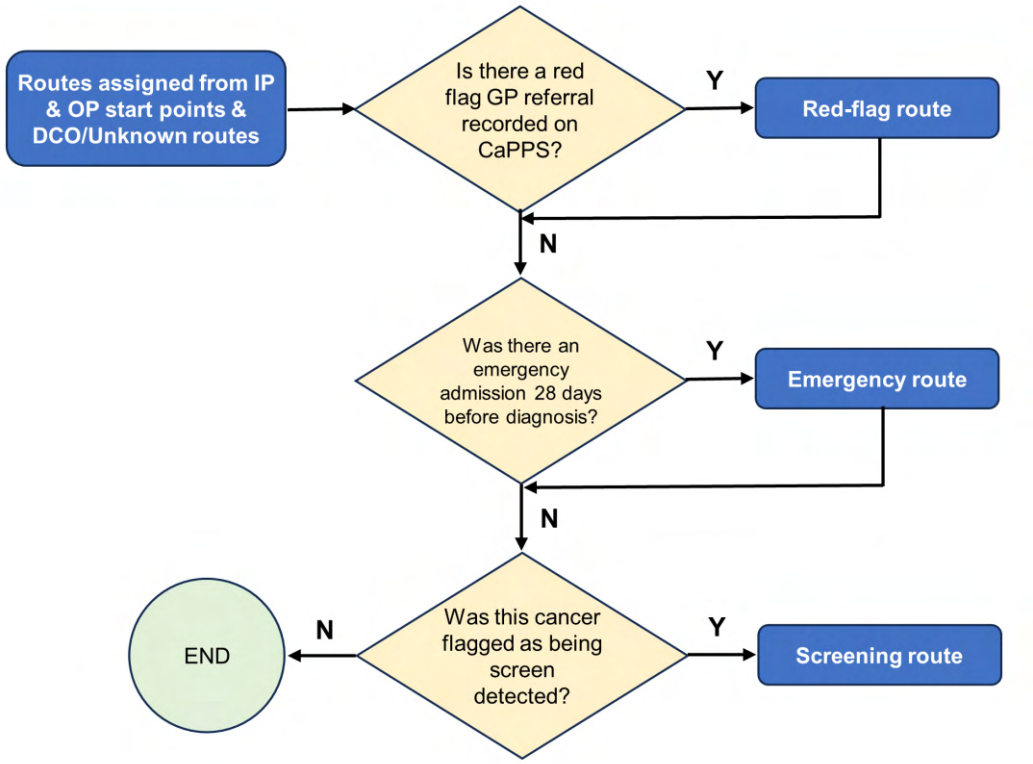


Step 04 – Assign route to diagnosis

Using the information gathered using these rules, a route to diagnosis can now be assigned.

1. Set the route to diagnosis as the inpatient or outpatient start points depending upon the end point classification plus the end point for records with no hospital data. This should result in one of seven categories: 'Emergency admission', 'Emergency referral', 'Elective admission', 'GP referral', 'Other outpatient appointment', 'Death certificate only' and 'Unknown'.
2. The 'Emergency admission' from inpatient data and 'Emergency referral' from outpatient data are grouped into a single category labelled 'Emergency presentation'.
3. Data on red flags from GPs are then used to overwrite all other events except screening referrals and emergency admissions that occur up to 28 days from diagnosis. This category is labelled 'Red-flag referral'.
4. Data on emergency admissions up to 28 days from diagnosis are used to overwrite all other events except screening. This data is part of the 'Emergency presentation' category.
5. Data on screen detection of cancers from the screening programmes overwrites any previously assigned route. This category is part of the 'Screening referral' category.

Figure 2.4: Route to diagnosis algorithm - Step 4: Assigning final route to diagnosis



2.4: Statistical Analysis

The most useful statistical measure of the route to diagnosis for cancer patients is the absolute number of cases diagnosed by each route in a given period of time. However, the number of cancer cases within a year compared to the size of the population of Northern Ireland is relatively small, particularly in the less common cancers. This can result in the number of events being studied fluctuating each year as a result of natural variation, particularly when data are broken down by smaller geographic areas such as Health Trusts or by patient demographics such as age. In order to introduce more stability into any presented statistics we observe the population over several years and present a mean number of cases per year, which should be interpreted as a typical value for the annual number of cases in the patient group being studied.

In order to properly investigate the distribution of cancer by route to diagnosis and to make comparisons between different groups, proportions are presented alongside the annual average number of cases. All proportions are multiplied by 100% to provide a percentage value. Percentages are accompanied by 95% confidence intervals which are derived using the Wilson score method [10,11], as the more standard approach using a normal approximation method does not perform well when the numerator and/or denominator is small. Comparisons of the distribution of cases by route to diagnosis across different patient characteristics (e.g. by gender or age group) are tested for significance using the chi-square test. Comparisons of specific pairs of proportions (e.g. proportion of cases which were screen detected in Northern Ireland compared to in England) are tested using the z-test for proportions, but with the Bonferroni correction for multiple comparisons applied.

Confidentiality and data utility

In order to preserve the confidentiality of patients, tables are constructed so that the total number of cases that each table cell is based upon is greater than or equal to 5. This is done by combining categories with less than five patients in the route to diagnosis classification with the 'Unknown' category to create an 'Other/Unknown' category. While this category may contain less than 5 patients, no information can be derived from this grouping.

Comparisons with other studies

Where possible comparisons of the results presented in this report are made with other studies conducted in Northern Ireland [2] and in England [12]. The previous NI study was conducted using data for cancer patients diagnosed in 2012-2016, while the most recent study in England was conducted for patients diagnosed in 2018. Due to the potential impact of the Covid-19 pandemic on the routes to diagnosis experienced by patients diagnosed with cancer in 2020, we have based any comparisons with these studies on patients diagnosed in the 2018-2019 period only.

Comparisons with the results from England should be treated cautiously due to different data systems, definitions and coding. In particular the red-flag category in Northern Ireland is compared to the two-week wait category in England which has a similar purpose, but relates to different targets and policies.

When making comparisons with the previous study in Northern Ireland, readers should be aware that differences in coding and data sources make drawing conclusions difficult, particularly when considering changes over time. Difficulties were encountered in the previous study with regards coding of outpatient appointments into the categories needed for the application of the route to diagnosis algorithm, some of which have been resolved in the current study. In addition data from CaPPS on emergency admissions was used in the current study due to concerns with regards completeness of inpatient data received by NICR. This was not the case in the previous study. Variations between the previous and current study should not therefore be interpreted as either improvement or deterioration – a consistent methodology is required to make such a determination.

Cancer survival

Survival refers to the proportion of patients who are alive a given amount of time after a diagnosis of cancer. It is one of the best indicators as to the efficiency of diagnostic and treatment methods in a geographic area and is widely used by cancer registries as a broad indicator as to the effectiveness of health services in the treatment of cancer.

In this report age-standardised net survival is used to provide an estimate of patient survival which has been adjusted to take account of deaths unrelated to cancer. It also assumes a standard age distribution thereby removing the impact of changes in the age distribution of cancer patients on changes in survival by route to diagnosis. While this measure is hypothetical, as it assumes patients can only die from cancer related factors, it is a better indicator of the impact of changes in cancer care on patient survival.

The method of calculation used in this report for net survival is the Pohar-Perme method [13] which is calculated using the stns module in the Stata statistical software package [14]. This requires the use of background mortality rates by calendar year, sex and single year of age which are derived from mortality data provided by GRO, but are smoothed using Poisson regression in order to remove fluctuations caused by the small number of events recorded.

Age-standardisation is conducted using the standard populations suggested by Corazziari et al [15], but collapsed to four age groups due to the small number of events in the NI population for specific age ranges. Age-standardised results are only reported for groups with more than 50 patients. For groups with between 10 and 50 patients, unstandardised net survival is reported.

As with the other statistical measures used in this report net survival values are accompanied by 95% confidence intervals.

03: ALL CANCERS EXCLUDING NON-MELANOMA SKIN CANCER (NMSC)

The most common route to diagnosis among cancer (ex NMSC) patients during 2018-2020 was via a red-flag referral, with 3,294 (33.2%) cases diagnosed on average each year. This was followed by an emergency presentation route with 2,303 (23.2%) cases diagnosed on average each year. Screening referrals made up 5.5% of cases during this period.

Figure 3.1: Route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2020

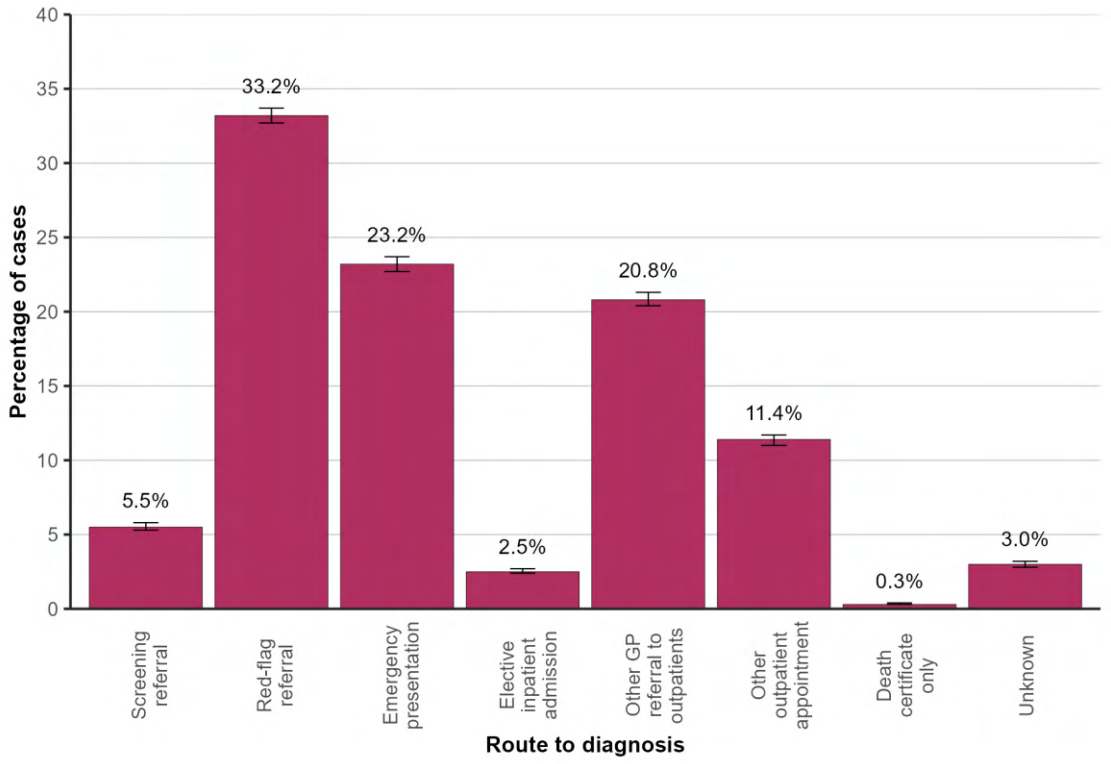


Table 3.1: Average number of cancer (ex NMSC) cases diagnosed each year during 2018-2020 by route to diagnosis

Route to diagnosis	Cases per year	Proportion (95% CI)
Screening referral	548	5.5% (5.3% - 5.8%)
Red-flag referral	3,294	33.2% (32.7% - 33.7%)
Emergency presentation	2,303	23.2% (22.7% - 23.7%)
Elective inpatient admission	252	2.5% (2.4% - 2.7%)
Other GP referral to outpatients	2,068	20.8% (20.4% - 21.3%)
Other outpatient appointment	1,128	11.4% (11.0% - 11.7%)
Death certificate only	32	0.3% (0.3% - 0.4%)
Unknown	296	3.0% (2.8% - 3.2%)

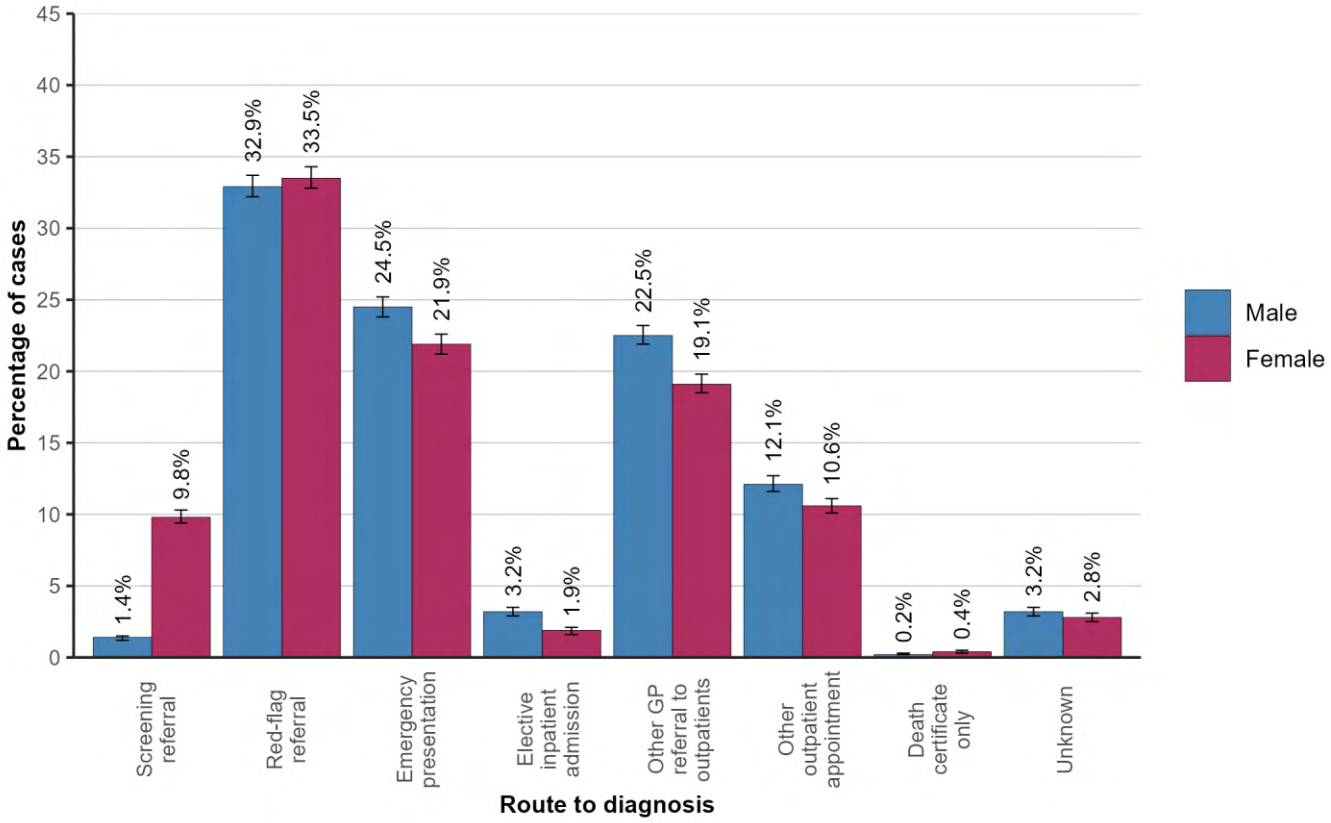
CI: Confidence Interval

3.1: ROUTES TO DIAGNOSIS BY GENDER

During 2018-2020 there were 1,661 male and 1,633 female cases of cancer (ex NMSC) diagnosed each year where the route to diagnosis was a red-flag referral. This was the most common route to diagnosis for both men (32.9%) and women (33.5%).

The route to diagnosis with the biggest difference between males and females was a screening referral with 1.4% of male cases and 9.8% of female cases diagnosed via this route. The variation in route to diagnosis by gender was statistically significant ($p < 0.001$).

Figure 3.2: Route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2020 by gender

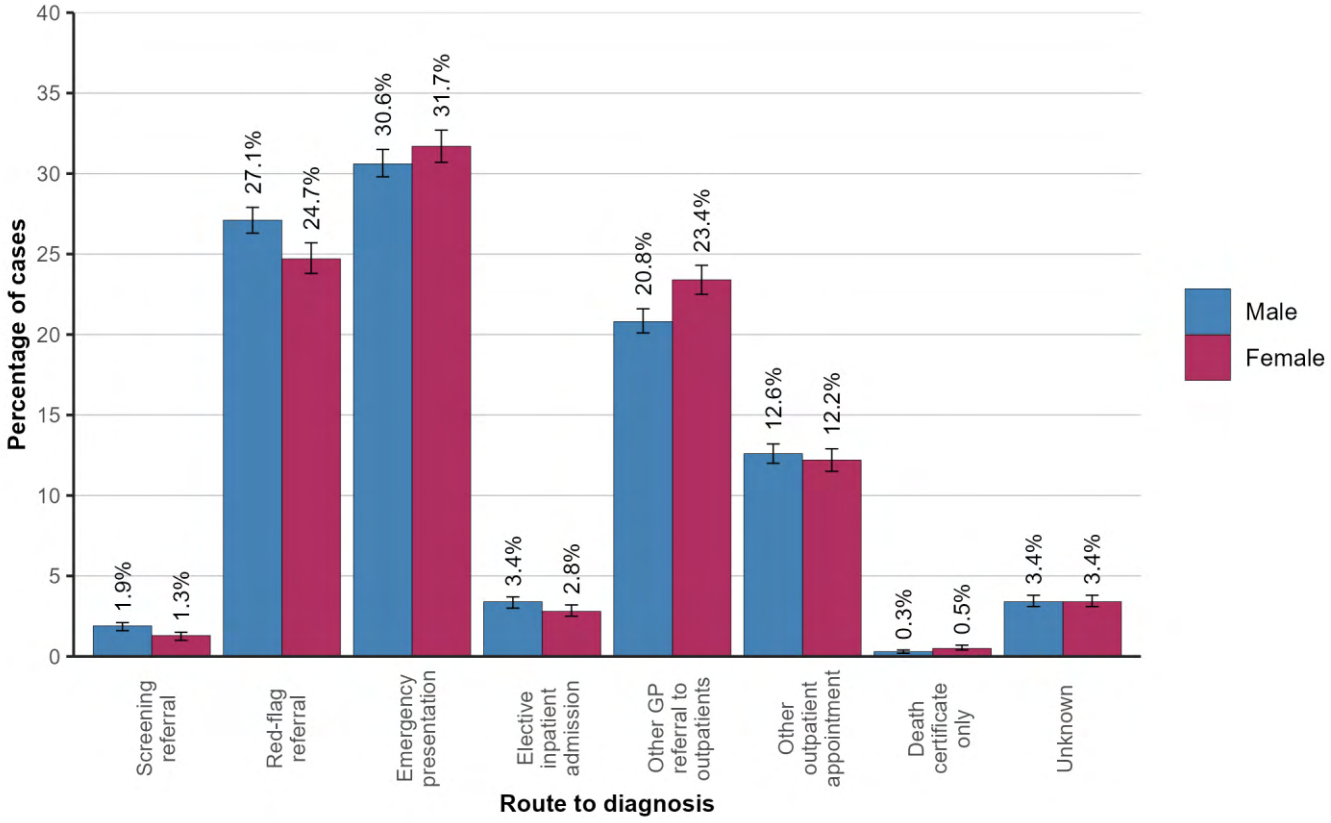


Excluding gender-specific cancers

During 2018-2020 there were 1,115 male and 890 female cases of cancer (excluding non-melanoma skin, breast, gynaecological, prostate and male genital cancers) diagnosed each year where the route to diagnosis was an emergency presentation. This was the most common route to diagnosis for both men (30.6%) and women (31.7%).

The route to diagnosis with the biggest difference between males and females was another GP referral to outpatients with 20.8% of male cases and 23.4% of female cases diagnosed via this route. The variation in route to diagnosis by gender was statistically significant ($p < 0.001$).

Figure 3.3: Route to diagnosis for cancer (excluding non-melanoma skin, breast, gynaecological, prostate and male genital cancers) patients diagnosed in 2018-2020 by gender

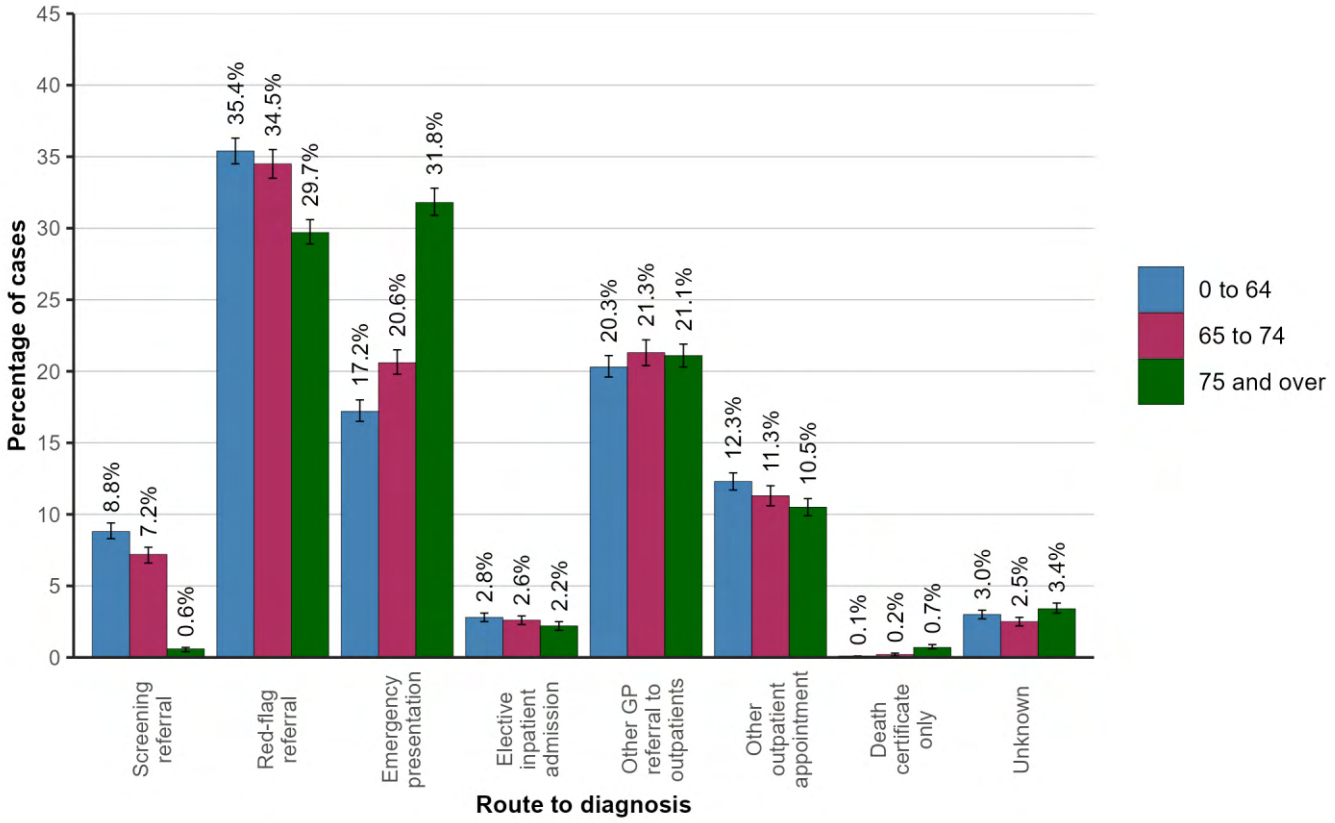


3.2: ROUTES TO DIAGNOSIS BY AGE GROUP

During 2018-2020 the most common route to diagnosis for cases of cancer (ex NMSC) overall was a red-flag referral. Among those aged 0 to 64 there were 1,299 (35.4%) diagnosed per year via this route, compared to 1,009 (29.7%) per year among those aged 75 and over. This made it the most common route to diagnosis for those aged 0 to 64 but not those aged 75 and over. The most common route to diagnosis for those aged 75 and over was an emergency presentation (31.8%).

The route to diagnosis with the biggest difference between those aged 0 to 64 and aged 75 and over was an emergency presentation with 17.2% of those aged 0 to 64 and 31.8% of those aged 75 and over diagnosed via this route. The variation in route to diagnosis by age group was statistically significant ($p < 0.001$).

Figure 3.4: Route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2020 by age group



3.3: ROUTES TO DIAGNOSIS BY AREA OF RESIDENCE

Health and Social Care Trust

During 2018-2020 the proportion of cases of cancer (ex NMSC) diagnosed via a red-flag referral ranged from 30.2% in Belfast HSCT to 37.6% in Western HSCT. The proportions diagnosed via an emergency presentation ranged from 21.4% to 26.3% in Northern HSCT and Belfast HSCT respectively. Screening referral was the route taken in 4.9% of cases in South Eastern HSCT and 6.5% of cases in Southern HSCT. The variation in route to diagnosis by Health and Social Care Trust was statistically significant ($p < 0.001$).

Area-based socio-economic deprivation

During 2018-2020 the proportion of cases of cancer (ex NMSC) diagnosed via a red-flag referral was 31.4% in the most deprived areas compared to 33.0% in the least deprived areas. The proportions diagnosed via an emergency presentation were 26.3% and 21.2% in the most and least deprived areas respectively. Screening referral was the route taken in 5.3% of cases from the most deprived areas and 5.4% of cases in the least deprived areas. The variation in route to diagnosis by deprivation quintile was statistically significant ($p < 0.001$).

Figure 3.5: Route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2020 by Health and Social Care Trust

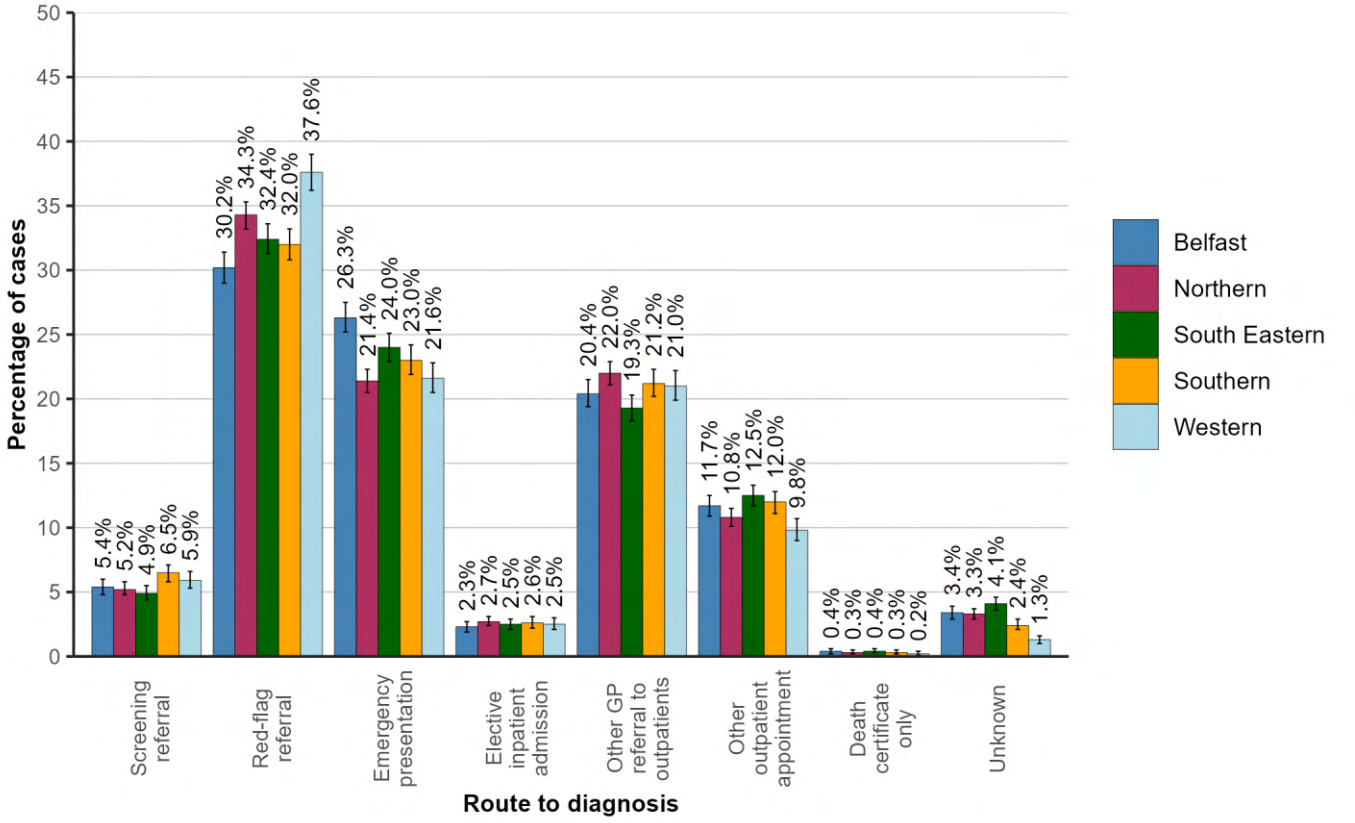
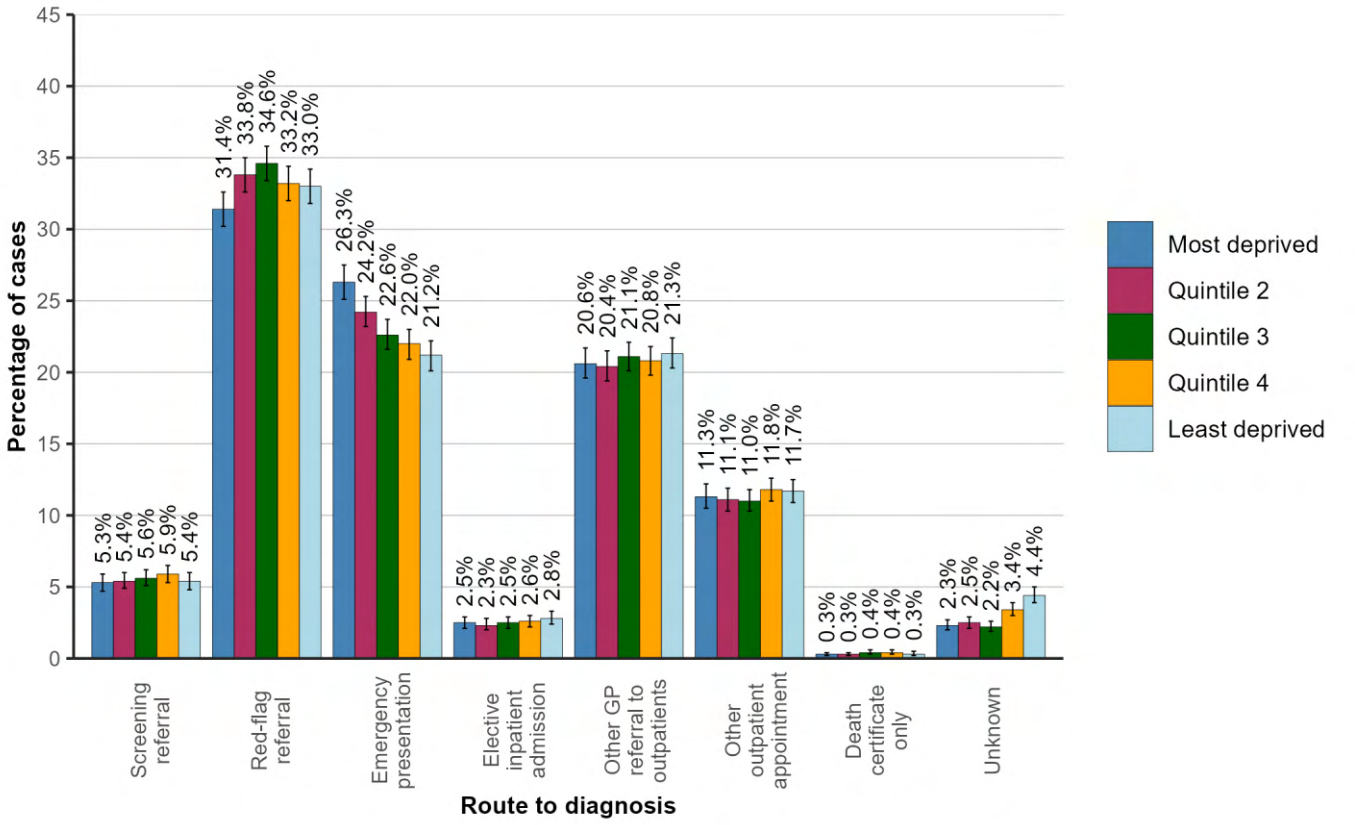


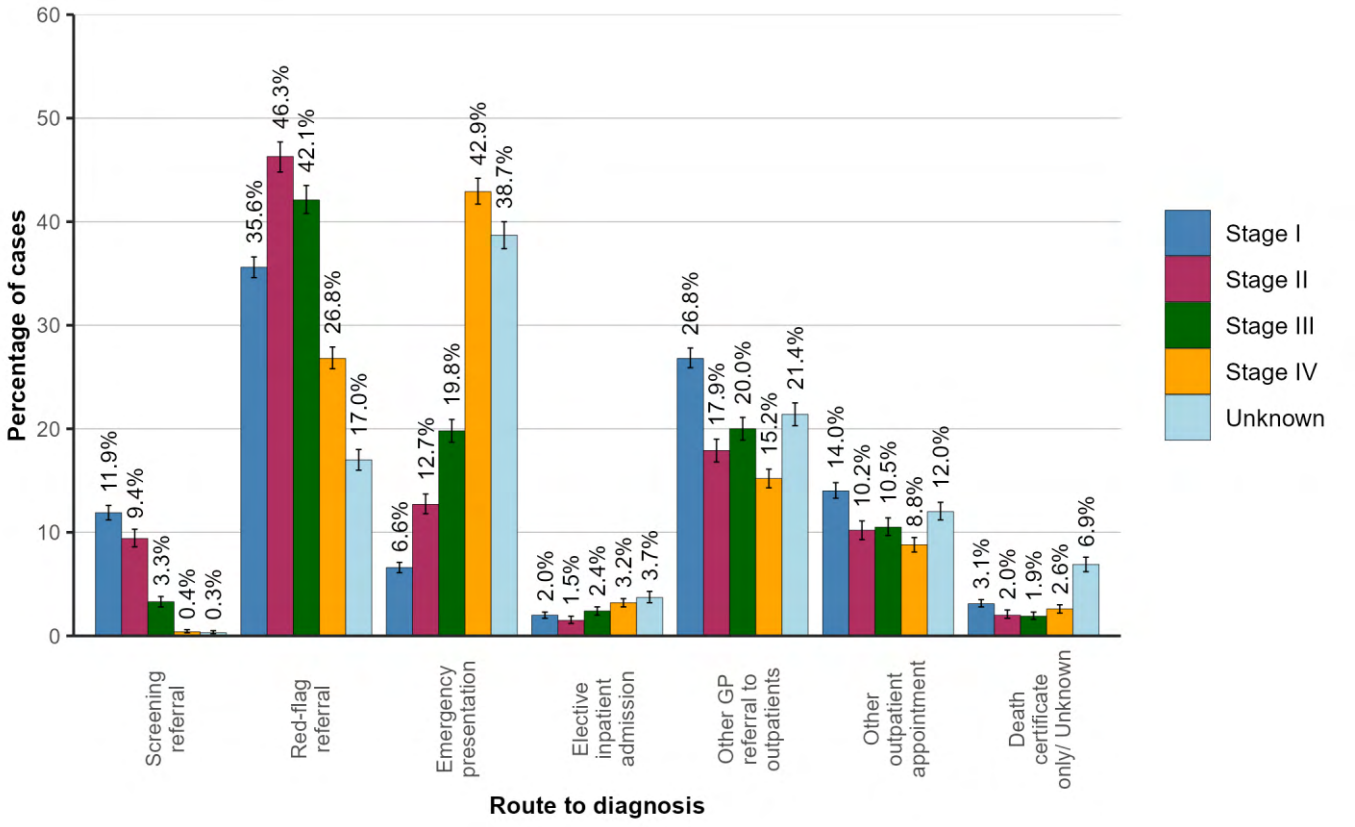
Figure 3.6: Route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2020 by deprivation quintile



3.4: ROUTES TO DIAGNOSIS BY STAGE AT DIAGNOSIS

During 2018-2020 the proportion of cases of cancer (ex NMSC) diagnosed via a red-flag referral was 35.6% among stage I cancers compared to 26.8% among stage IV cancers. The proportions diagnosed via a screening referral were 11.9% and 0.4% for stage I and stage IV cancers respectively. Emergency presentation was the route taken in 42.9% of cases diagnosed at stage IV and 6.6% of cases diagnosed at stage I. The variation in route to diagnosis by stage at diagnosis was statistically significant ($p < 0.001$).

Figure 3.7: Route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2020 by stage at diagnosis



3.5: ROUTES TO DIAGNOSIS BY YEAR OF DIAGNOSIS

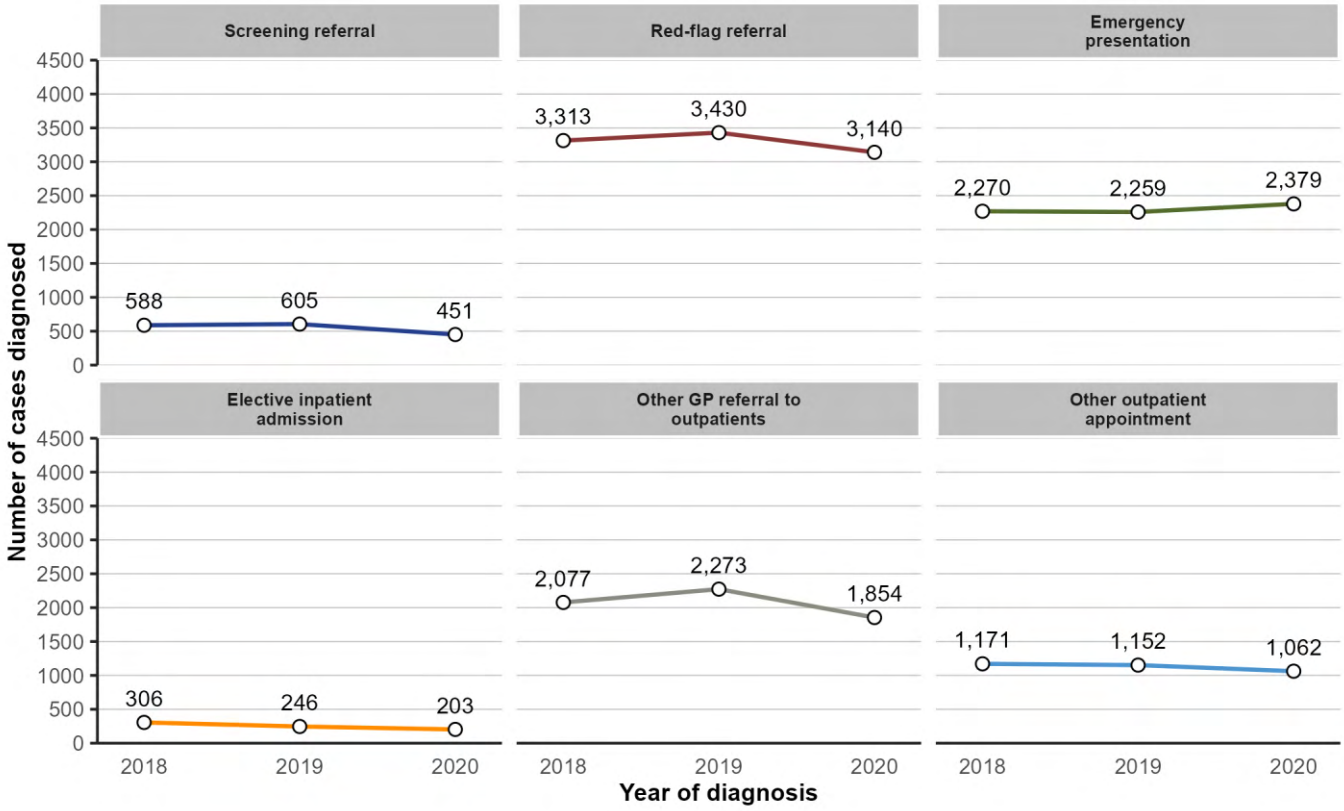
The number of cancer (ex NMSC) cases diagnosed via a screening referral each year decreased by 24.5% from 597 per year in 2018-19 to 451 in 2020. As a proportion of all cases, a screening referral diagnosis decreased from 5.9% in 2018-19 to 4.8% in 2020.

The number of cancer (ex NMSC) cases diagnosed via a red-flag referral each year decreased by 6.9% from 3,372 per year in 2018-19 to 3,140 in 2020. As a proportion of all cases, a red-flag referral diagnosis increased from 33.1% in 2018-19 to 33.5% in 2020.

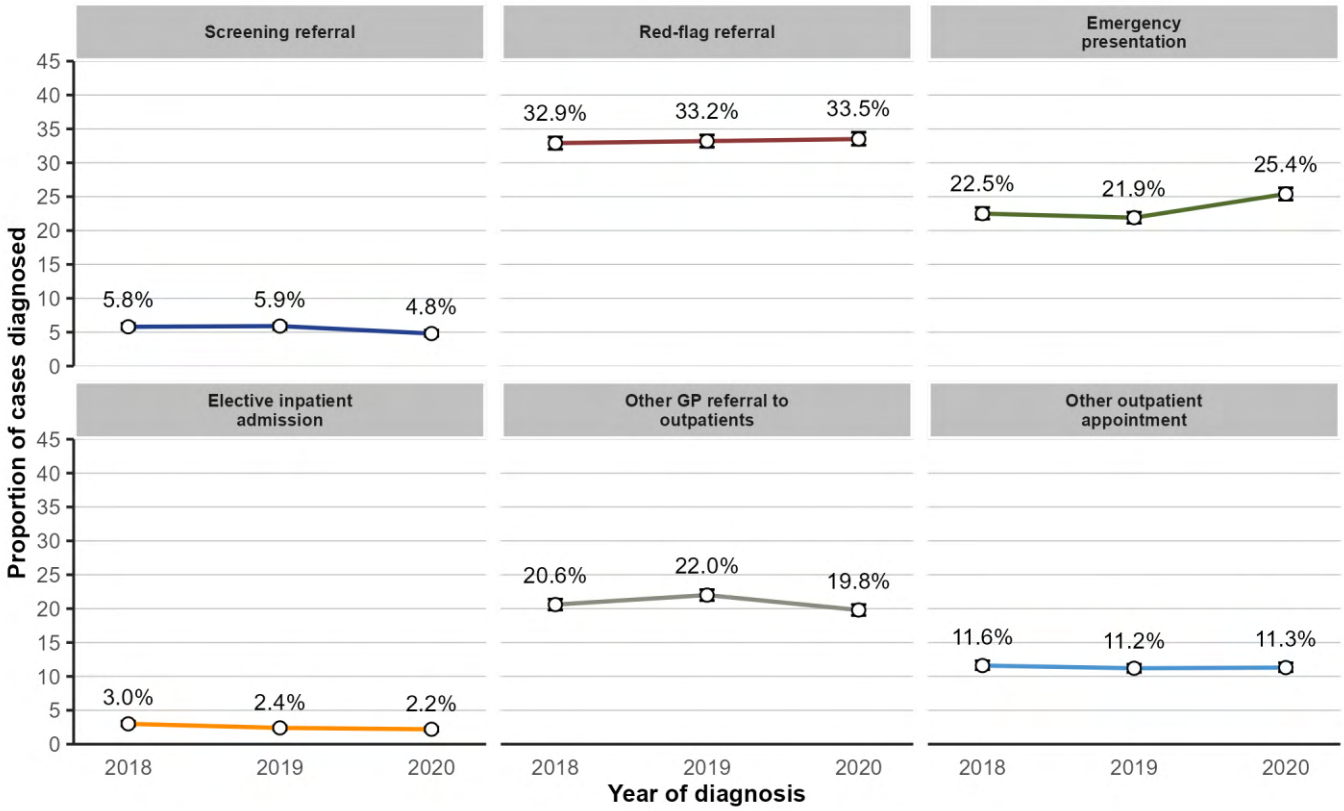
The number of cancer (ex NMSC) cases diagnosed via an emergency presentation each year increased by 5.0% from 2,265 per year in 2018-19 to 2,379 in 2020. As a proportion of all cases, an emergency presentation diagnosis increased from 22.2% in 2018-19 to 25.4% in 2020. The variation in route to diagnosis by year of diagnosis was statistically significant ($p < 0.001$).

Figure 3.8: Route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2020 by year of diagnosis

(a) Number of cases



(b) Proportion of cases

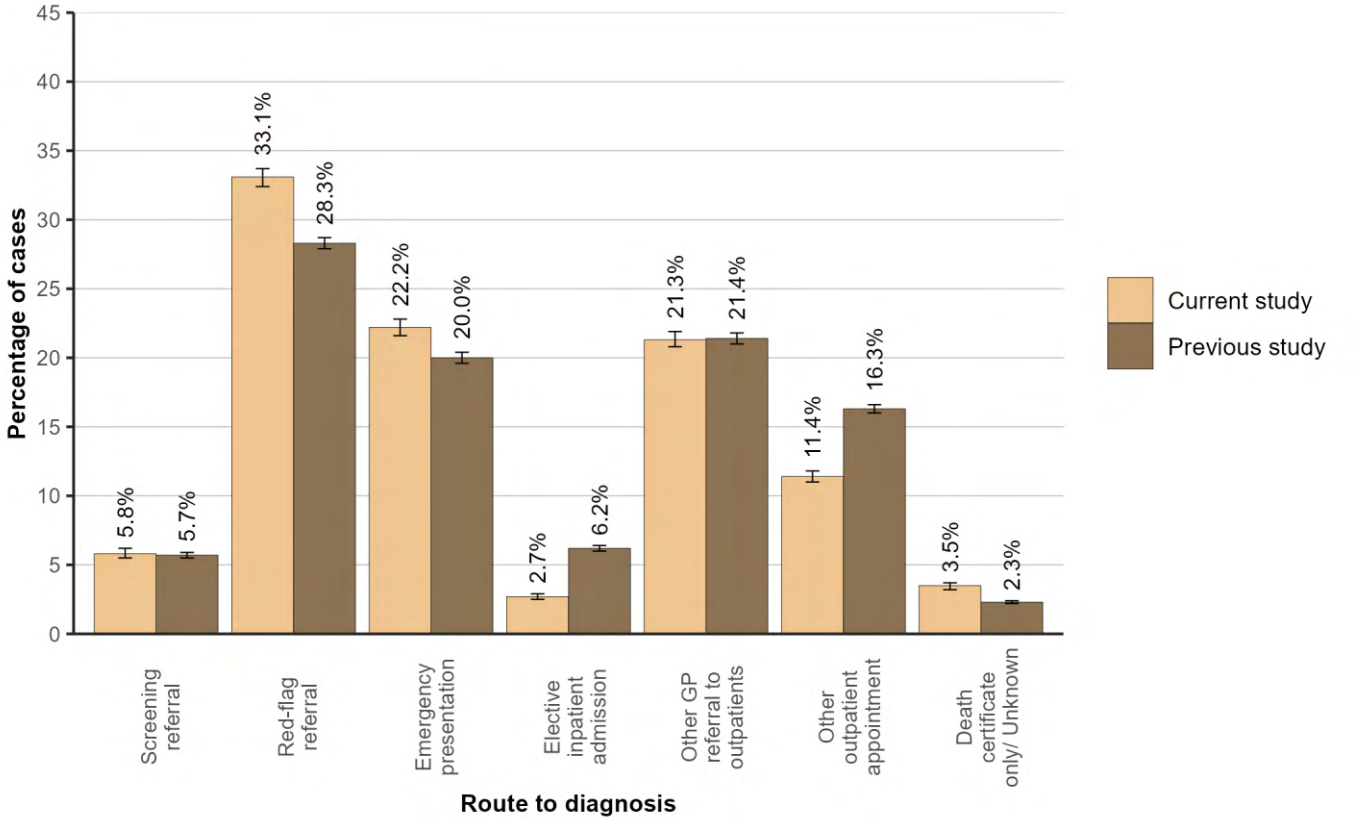


3.6: COMPARISON WITH PREVIOUS STUDIES

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with cancer (ex NMSC) in 2018-2019 compared to patients from the previous Northern Ireland study, which was for patients diagnosed in 2012-2016.

- Red-flag referral (33.1% in 2018-2019 compared to 28.3% previously ; p<0.001).
- Emergency presentation (22.2% in 2018-2019 compared to 20.0% previously ; p<0.001).
- Elective inpatient admission (2.7% in 2018-2019 compared to 6.2% previously ; p<0.001).
- Other outpatient appointment (11.4% in 2018-2019 compared to 16.3% previously ; p<0.001).

Figure 3.9: Route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2019 compared to patients diagnosed in 2012-2016 (from previous Northern Ireland study)



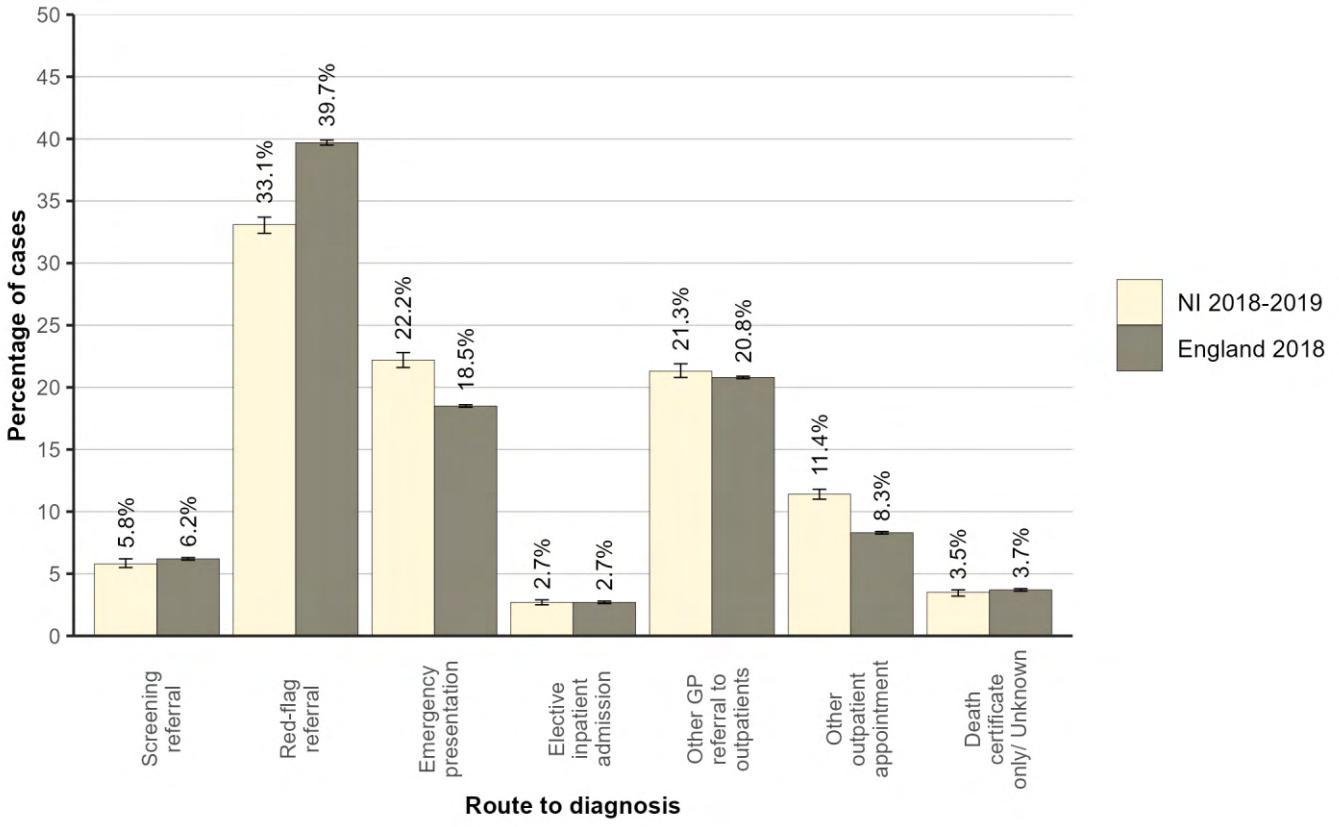
Source of previous data: Centre for Public Health, See reference 2.
Note that due to the impact of the COVID-19 pandemic on cancer diagnosis, comparisons exclude data from 2020.
Due to potential differences in coding and data sources, differences between the two studies should not be interpreted as a time trend.

3.7: Comparison with England

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with cancer (ex NMSC) in 2018-2019 compared to patients diagnosed in England during 2018.

- Red-flag referral (33.1% in NI compared to 39.7% in England ; p<0.001).
- Emergency presentation (22.2% in NI compared to 18.5% in England ; p<0.001).
- Other outpatient appointment (11.4% in NI compared to 8.3% in England ; p<0.001).

Figure 3.10: Route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2019 compared to patients diagnosed in England during 2018



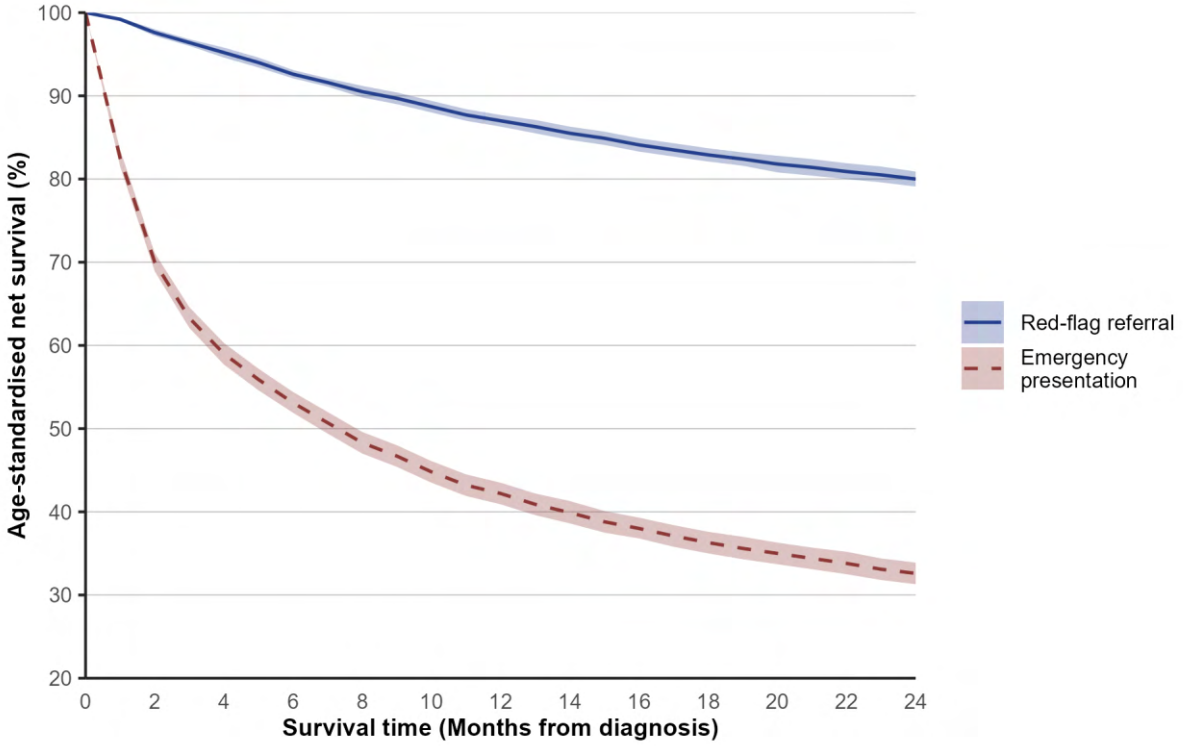
Source of English data: National Disease Registration Service, See reference 12.
Note that due to the impact of the COVID-19 pandemic on cancer diagnosis, comparisons exclude data from 2020.
Due to potential differences in coding and data sources, differences between the two studies should be treated as an approximate comparison.

3.8: SURVIVAL

During 2018-2020 one-year age-standardised net survival from cancer (ex NMSC) ranged from 42.2% for those diagnosed via an emergency presentation route to 87.0% for those diagnosed via a red-flag referral route. Two years from diagnosis age-standardised net survival ranged from 32.6% for those diagnosed via an emergency presentation route to 80.0% for those diagnosed via a red-flag referral route.

Figure 3.11: Age-standardised net survival by route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2020

(a) Red-flag and emergency routes



(b) Other routes

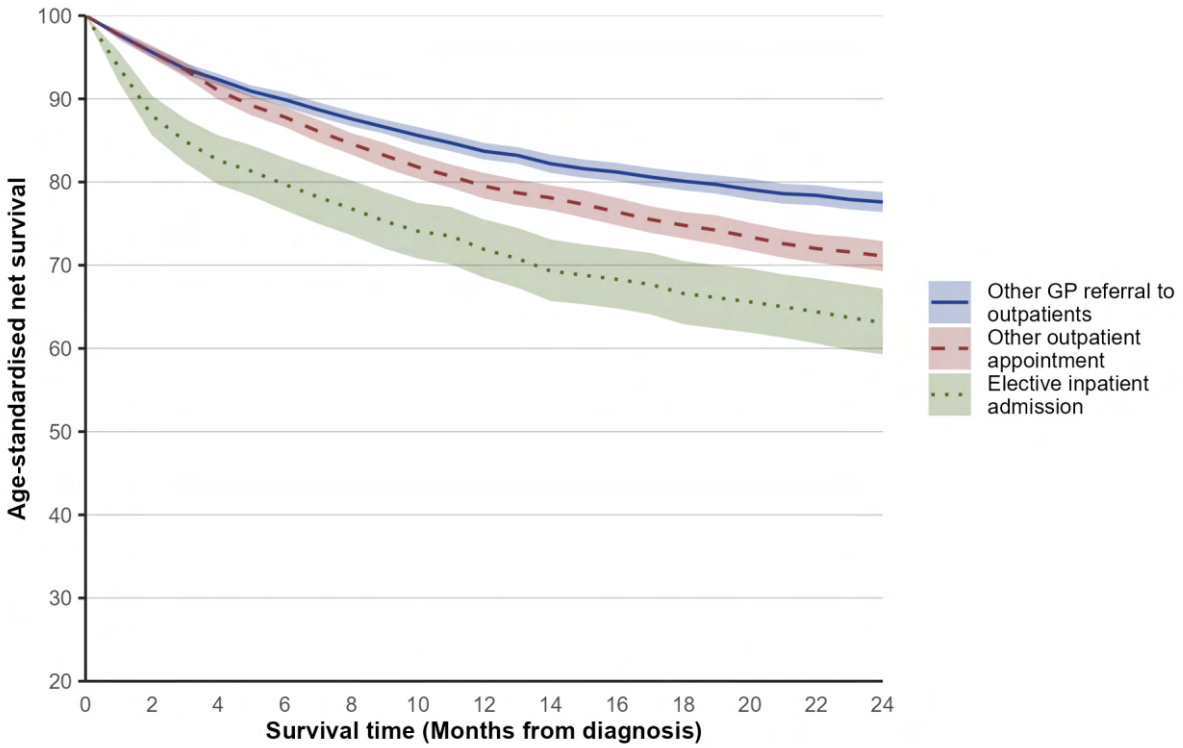


Table 3.2: Age-standardised net survival by route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2020

Route to diagnosis	One-year survival (ASNS)	Two-year survival (ASNS)
Red-flag referral	87.0% (86.3% - 87.7%)	80.0% (79.1% - 80.9%)
Emergency presentation	42.2% (40.9% - 43.5%)	32.6% (31.3% - 33.9%)
Elective inpatient admission	71.9% (68.5% - 75.5%)	63.1% (59.3% - 67.2%)
Other GP referral to outpatients	83.7% (82.7% - 84.7%)	77.6% (76.4% - 78.8%)
Other outpatient appointment	79.5% (78.0% - 81.1%)	71.1% (69.3% - 72.9%)
Unknown	72.8% (69.6% - 76.2%)	67.1% (63.5% - 70.9%)

ASNS: Age-standardised net survival with 95% confidence interval.

04: Colorectal Cancer

The most common route to diagnosis among colorectal cancer patients during 2018-2020 was via a red-flag referral, with 395 (33.6%) cases diagnosed on average each year. This was followed by an emergency presentation route with 328 (27.9%) cases diagnosed on average each year. Screening referrals made up 8.8% of cases during this period.

Figure 4.1: Route to diagnosis for colorectal cancer patients diagnosed in 2018-2020

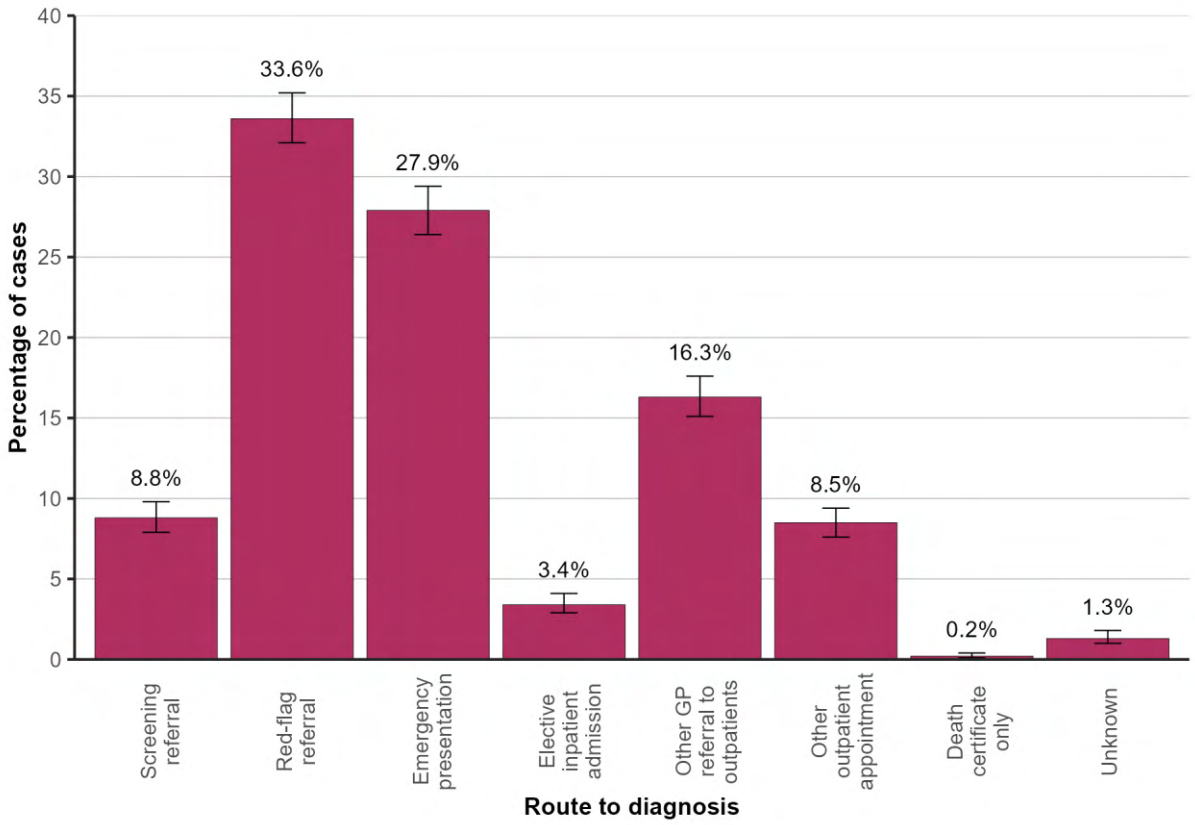


Table 4.1: Average number of colorectal cancer cases diagnosed each year during 2018-2020 by route to diagnosis

Route to diagnosis	Cases per year	Proportion (95% CI)
Screening referral	104	8.8% (7.9% - 9.8%)
Red-flag referral	395	33.6% (32.1% - 35.2%)
Emergency presentation	328	27.9% (26.4% - 29.4%)
Elective inpatient admission	40	3.4% (2.9% - 4.1%)
Other GP referral to outpatients	192	16.3% (15.1% - 17.6%)
Other outpatient appointment	99	8.5% (7.6% - 9.4%)
Death certificate only	2	0.2% (0.1% - 0.4%)
Unknown	16	1.3% (1.0% - 1.8%)

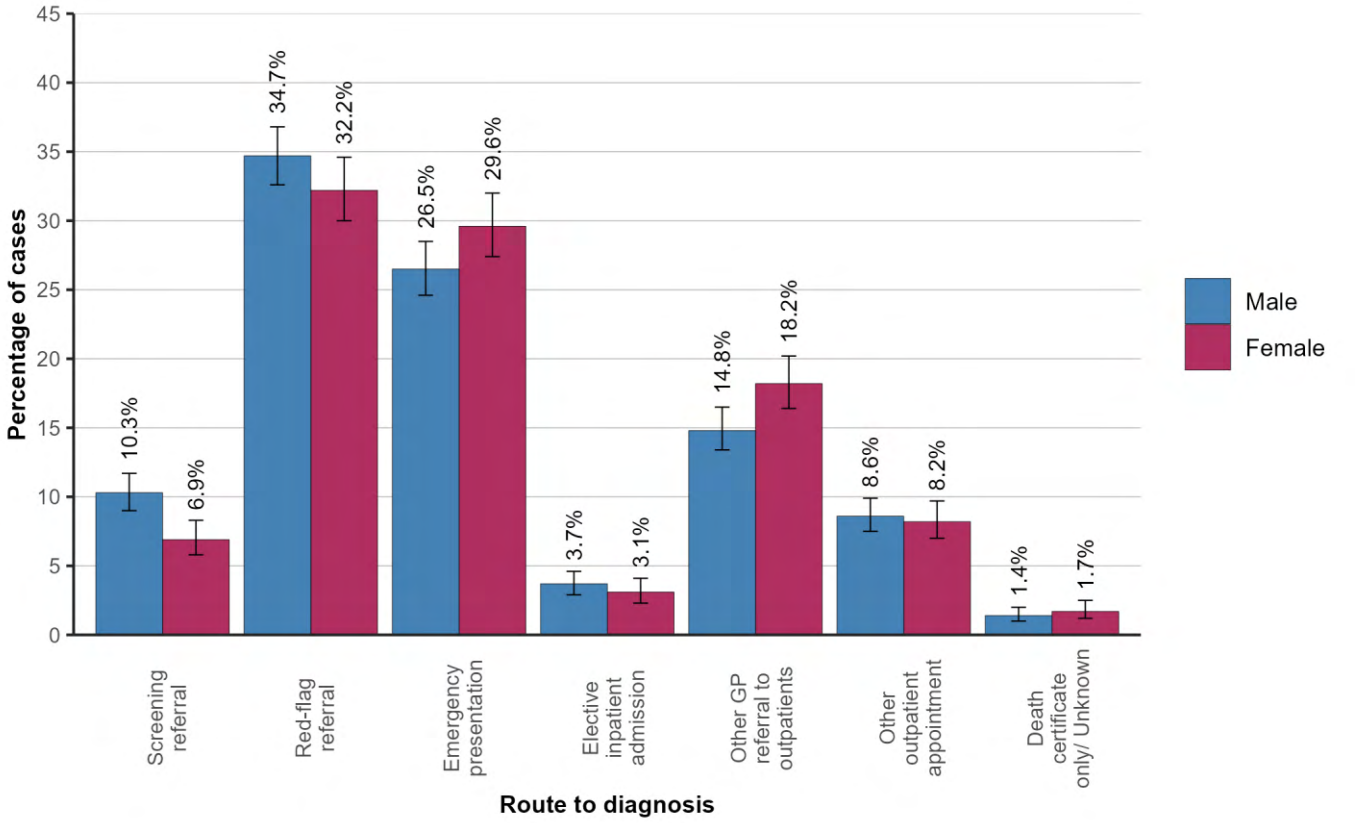
CI: Confidence Interval

4.1: ROUTES TO DIAGNOSIS BY GENDER

During 2018-2020 there were 230 male and 165 female cases of colorectal cancer diagnosed each year where the route to diagnosis was a red-flag referral. This was the most common route to diagnosis for both men (34.7%) and women (32.2%).

The route to diagnosis with the biggest difference between males and females was another GP referral to outpatients with 14.8% of male cases and 18.2% of female cases diagnosed via this route. The variation in route to diagnosis by gender was statistically significant ($p < 0.001$).

Figure 4.2: Route to diagnosis for colorectal cancer patients diagnosed in 2018-2020 by gender

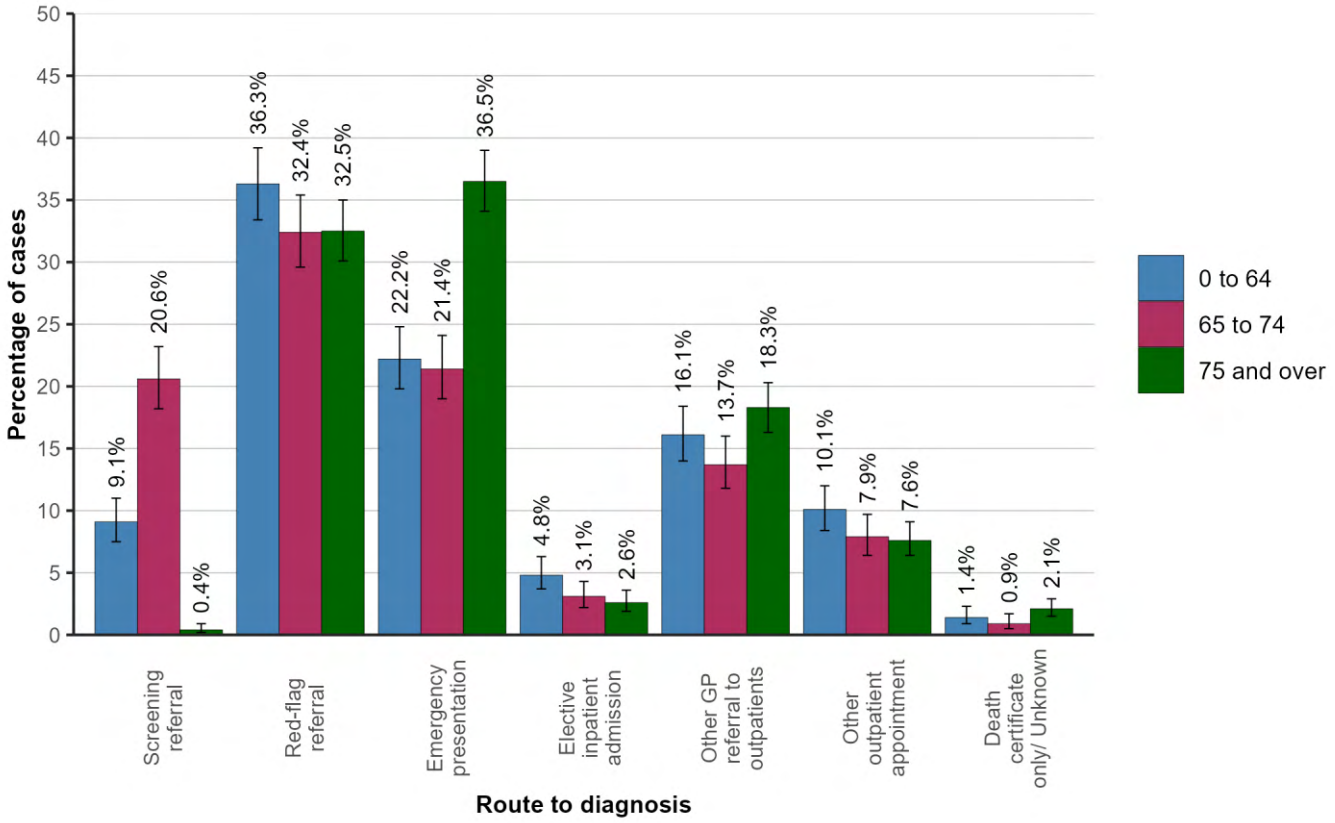


4.2: ROUTES TO DIAGNOSIS BY AGE GROUP

During 2018-2020 the most common route to diagnosis for cases of colorectal cancer overall was a red-flag referral. Among those aged 0 to 64 there were 128 (36.3%) diagnosed per year via this route, compared to 157 (32.5%) per year among those aged 75 and over. This made it the most common route to diagnosis for those aged 0 to 64 but not those aged 75 and over. The most common route to diagnosis for those aged 75 and over was an emergency presentation (36.5%).

The route to diagnosis with the biggest difference between those aged 0 to 64 and aged 75 and over was an emergency presentation with 22.2% of those aged 0 to 64 and 36.5% of those aged 75 and over diagnosed via this route. The variation in route to diagnosis by age group was statistically significant ($p < 0.001$).

Figure 4.3: Route to diagnosis for colorectal cancer patients diagnosed in 2018-2020 by age group



For patients of screening age

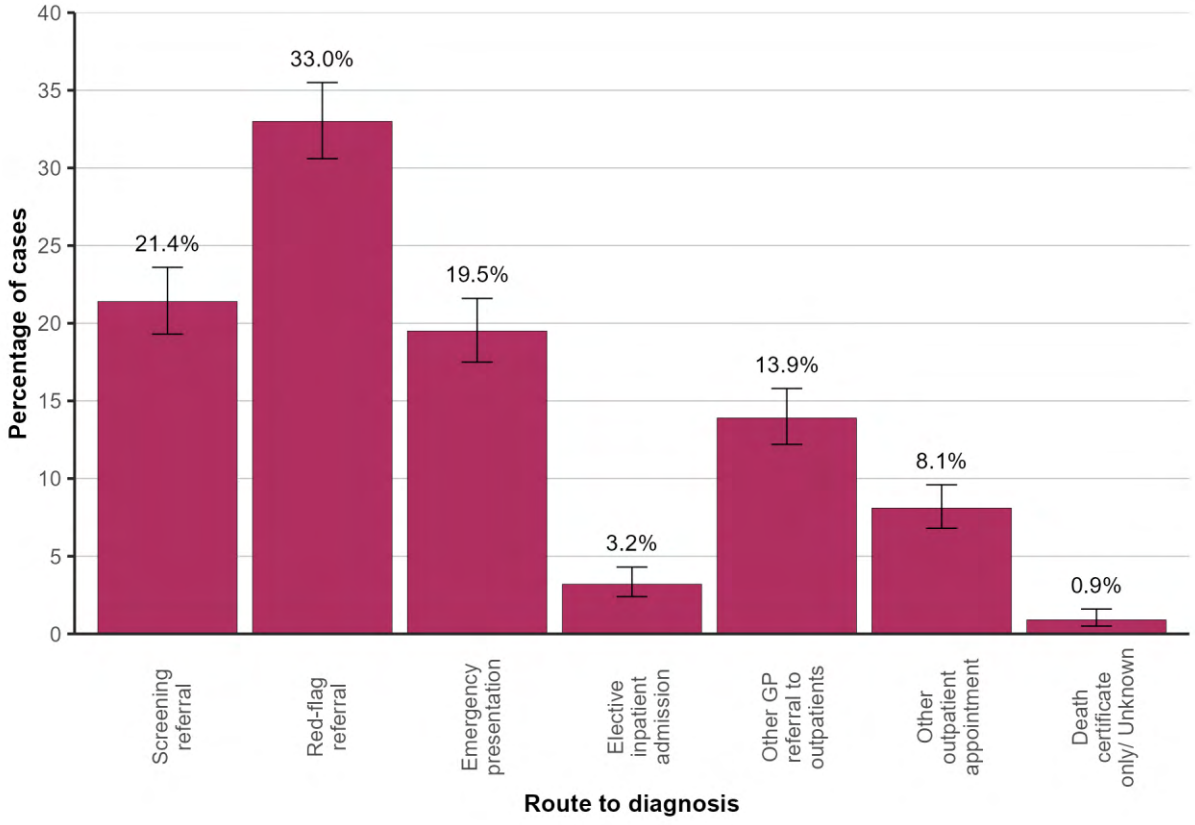
The most common route to diagnosis among colorectal cancer patients diagnosed within screening age (aged 60 to 74) during 2018-2020 was via a red-flag referral, with 157 (33.0%) cases diagnosed on average each year. This was followed by a screening referral route with 102 (21.4%) cases diagnosed on average each year. Emergency presentations made up 19.5% of cases among those diagnosed within screening age during this period.

Table 4.2: Average number of colorectal cancer cases diagnosed each year among patients of screening age (aged 60 to 74) during 2018-2020 by route to diagnosis

Route to diagnosis	Cases per year	Proportion (95% CI)
Screening referral	102	21.4% (19.3% - 23.6%)
Red-flag referral	157	33.0% (30.6% - 35.5%)
Emergency presentation	93	19.5% (17.5% - 21.6%)
Elective inpatient admission	15	3.2% (2.4% - 4.3%)
Other GP referral to outpatients	66	13.9% (12.2% - 15.8%)
Other outpatient appointment	38	8.1% (6.8% - 9.6%)
Death certificate only/ Unknown	4	0.9% (0.5% - 1.6%)

CI: Confidence Interval

Figure 4.4: Route to diagnosis for colorectal cancer patients of screening age (aged 60 to 74) diagnosed in 2018-2020



4.3: ROUTES TO DIAGNOSIS BY AREA OF RESIDENCE

Health and Social Care Trust

During 2018-2020 the proportion of cases of colorectal cancer diagnosed via a red-flag referral ranged from 30.9% in South Eastern HSCT to 38.1% in Western HSCT. The proportions diagnosed via an emergency presentation ranged from 24.2% to 29.1% in Southern HSCT and South Eastern HSCT respectively. Screening referral was the route taken in 7.2% of cases in South Eastern HSCT and 10.8% of cases in Belfast HSCT. The variation in route to diagnosis by Health and Social Care Trust was statistically significant ($p < 0.001$).

Area-based socio-economic deprivation

During 2018-2020 the proportion of cases of colorectal cancer diagnosed via a red-flag referral was 33.7% in the most deprived areas compared to 36.1% in the least deprived areas. The proportions diagnosed via an emergency presentation were 27.4% and 24.9% in the most and least deprived areas respectively. Screening referral was the route taken in 9.6% of cases from the most deprived areas and 9.3% of cases in the least deprived areas. The variation in route to diagnosis by deprivation quintile was not statistically significant.

Figure 4.5: Route to diagnosis for colorectal cancer patients diagnosed in 2018-2020 by Health and Social Care Trust

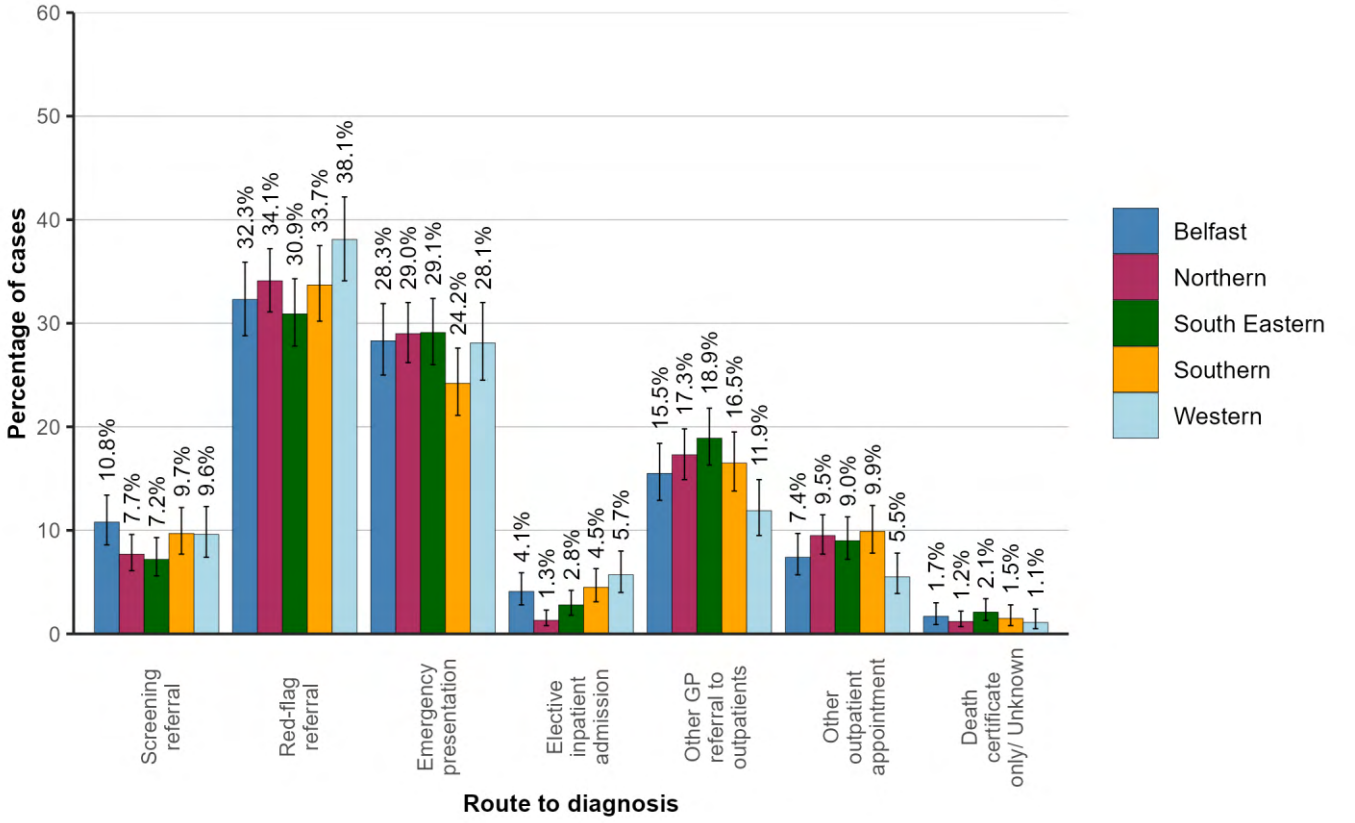
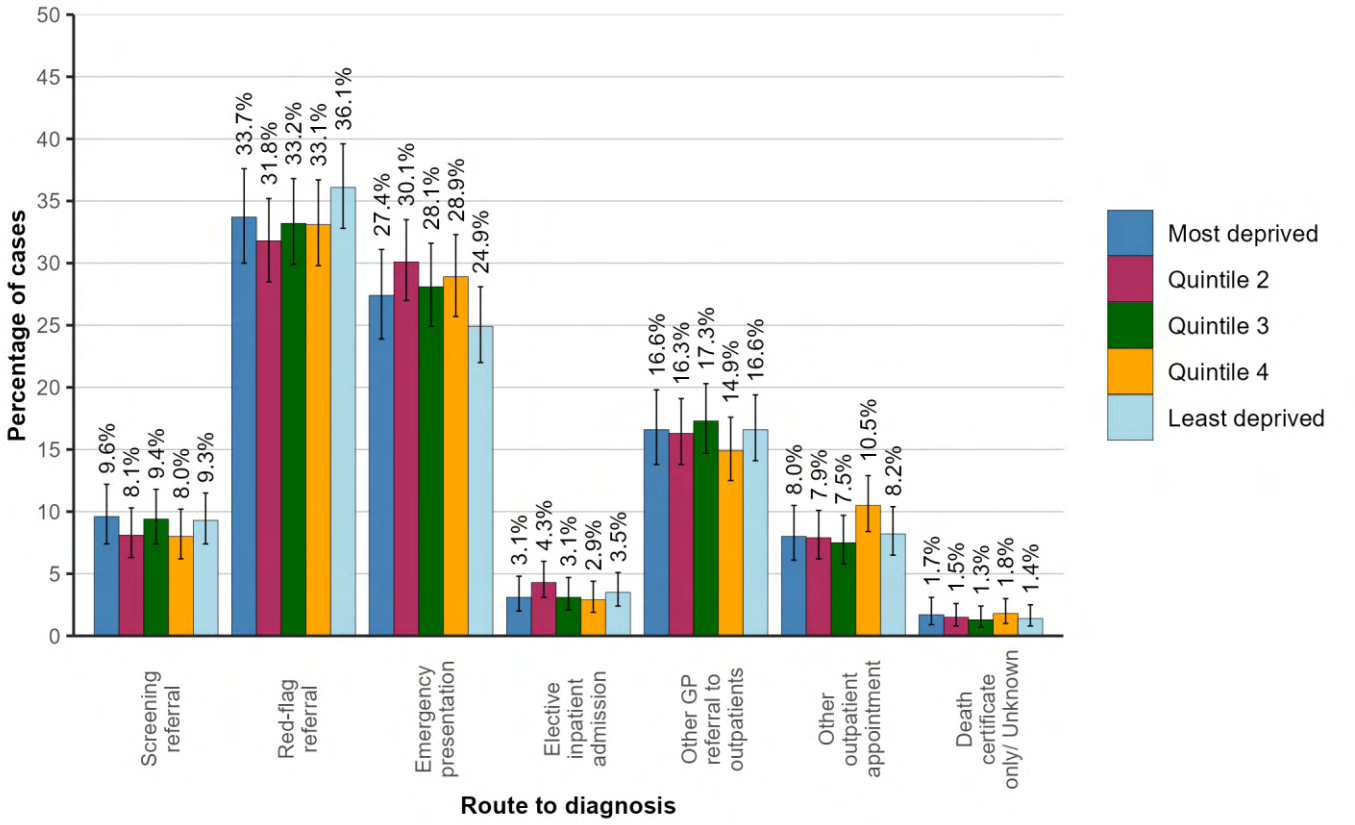


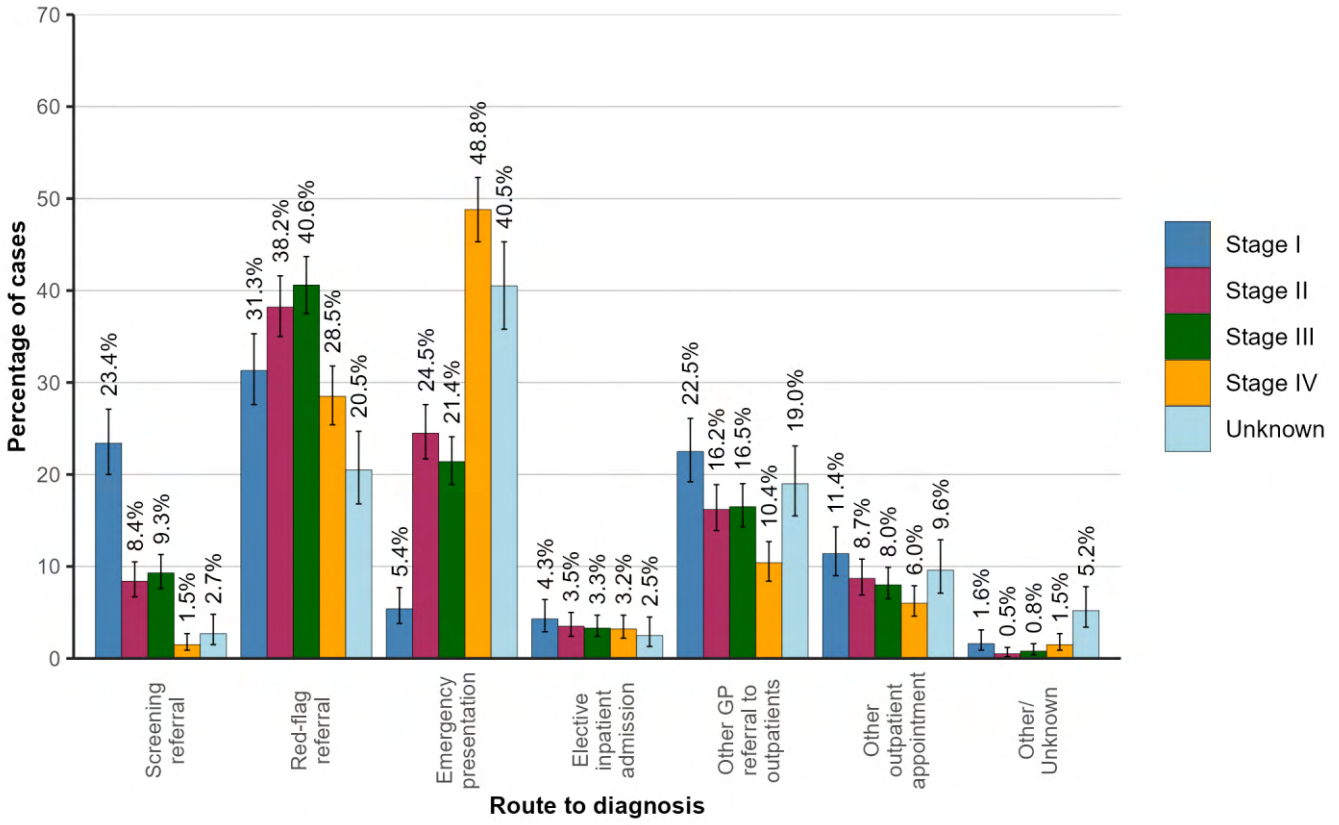
Figure 4.6: Route to diagnosis for colorectal cancer patients diagnosed in 2018-2020 by deprivation quintile



4.4: ROUTES TO DIAGNOSIS BY STAGE AT DIAGNOSIS

During 2018-2020 the proportion of cases of colorectal cancer diagnosed via a red-flag referral was 31.3% among stage I cancers compared to 28.5% among stage IV cancers. The proportions diagnosed via a screening referral were 23.4% and 1.5% for stage I and stage IV cancers respectively. Emergency presentation was the route taken in 48.8% of cases diagnosed at stage IV and 5.4% of cases diagnosed at stage I. The variation in route to diagnosis by stage at diagnosis was statistically significant ($p < 0.001$).

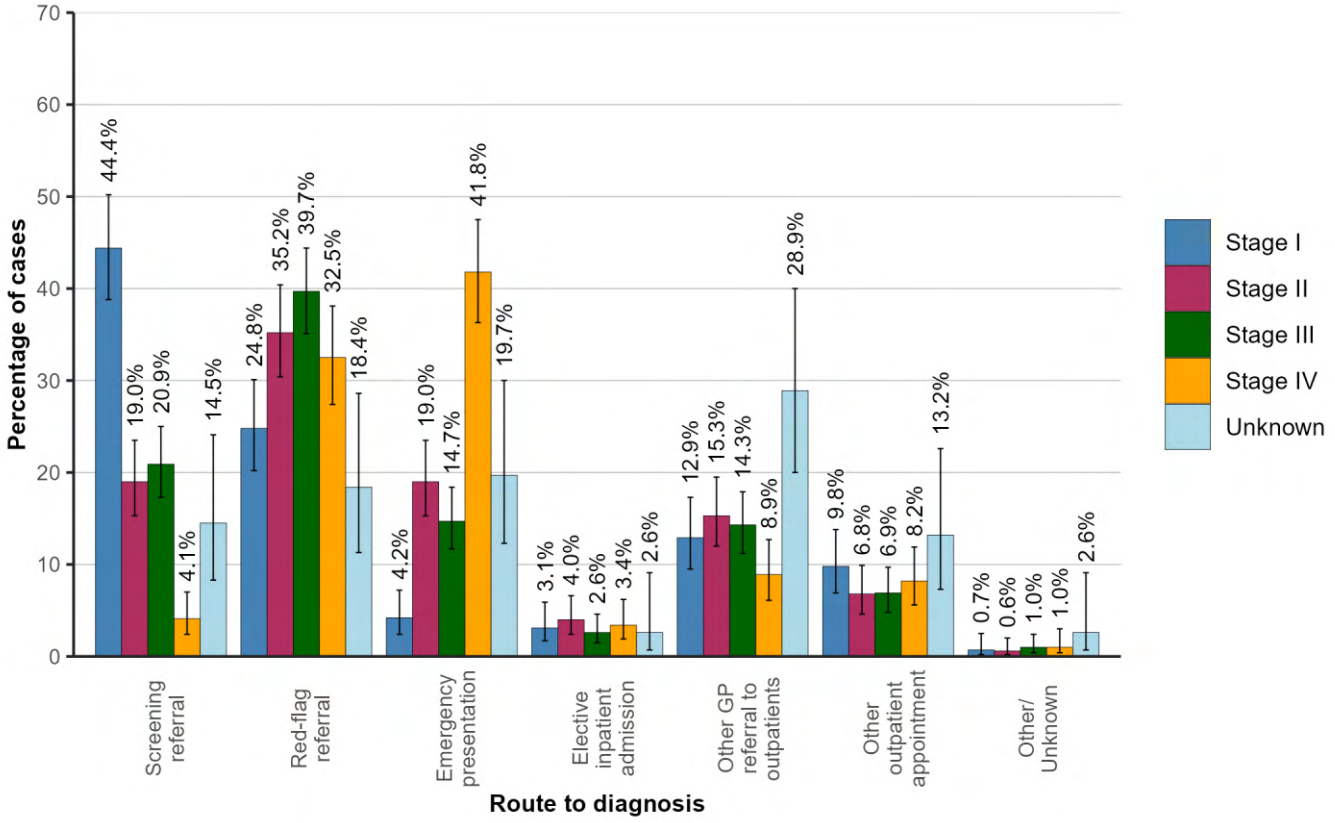
Figure 4.7: Route to diagnosis for colorectal cancer patients diagnosed in 2018-2020 by stage at diagnosis



For patients of screening age

During 2018-2020 the proportion of colorectal cancer cases among patients of screening age who were diagnosed via a screening referral was 44.4% among stage I cancers compared to 4.1% among stage IV cancers. The proportions diagnosed via a red-flag referral were 24.8% and 32.5% for stage I and stage IV cancers respectively. Emergency presentation was the route taken in 41.8% of cases diagnosed at stage IV and 4.2% of cases diagnosed at stage I. The variation in route to diagnosis by stage among those of screening age was statistically significant ($p < 0.001$).

Figure 4.8: Route to diagnosis for colorectal cancer patients of screening age (aged 60 to 74) diagnosed in 2018-2020 by stage at diagnosis



4.5: ROUTES TO DIAGNOSIS BY YEAR OF DIAGNOSIS

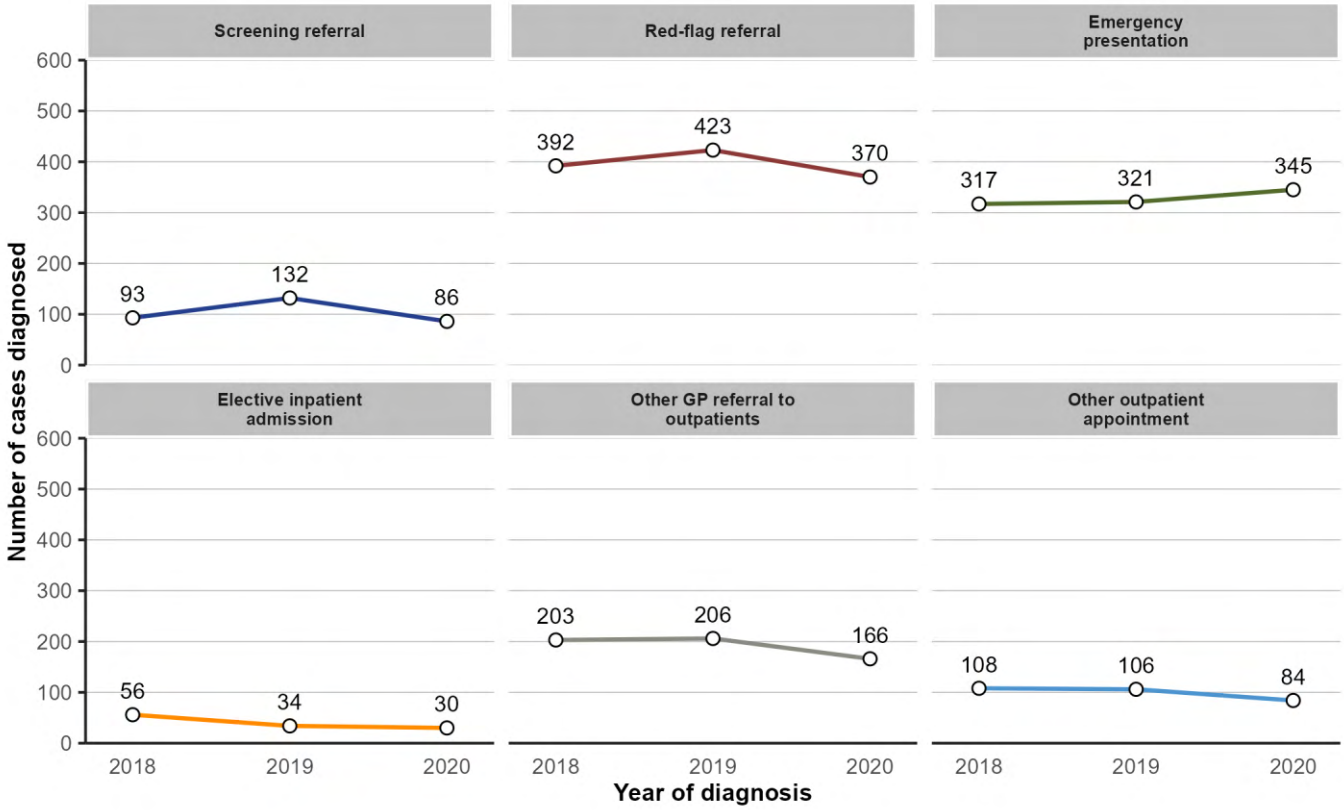
The number of colorectal cancer cases diagnosed via a screening referral each year decreased by 23.9% from 113 per year in 2018-19 to 86 in 2020. As a proportion of all cases, a screening referral diagnosis decreased from 9.3% in 2018-19 to 7.8% in 2020.

The number of colorectal cancer cases diagnosed via a red-flag referral each year decreased by 9.3% from 408 per year in 2018-19 to 370 in 2020. As a proportion of all cases, a red-flag referral diagnosis decreased from 33.6% in 2018-19 to 33.5% in 2020.

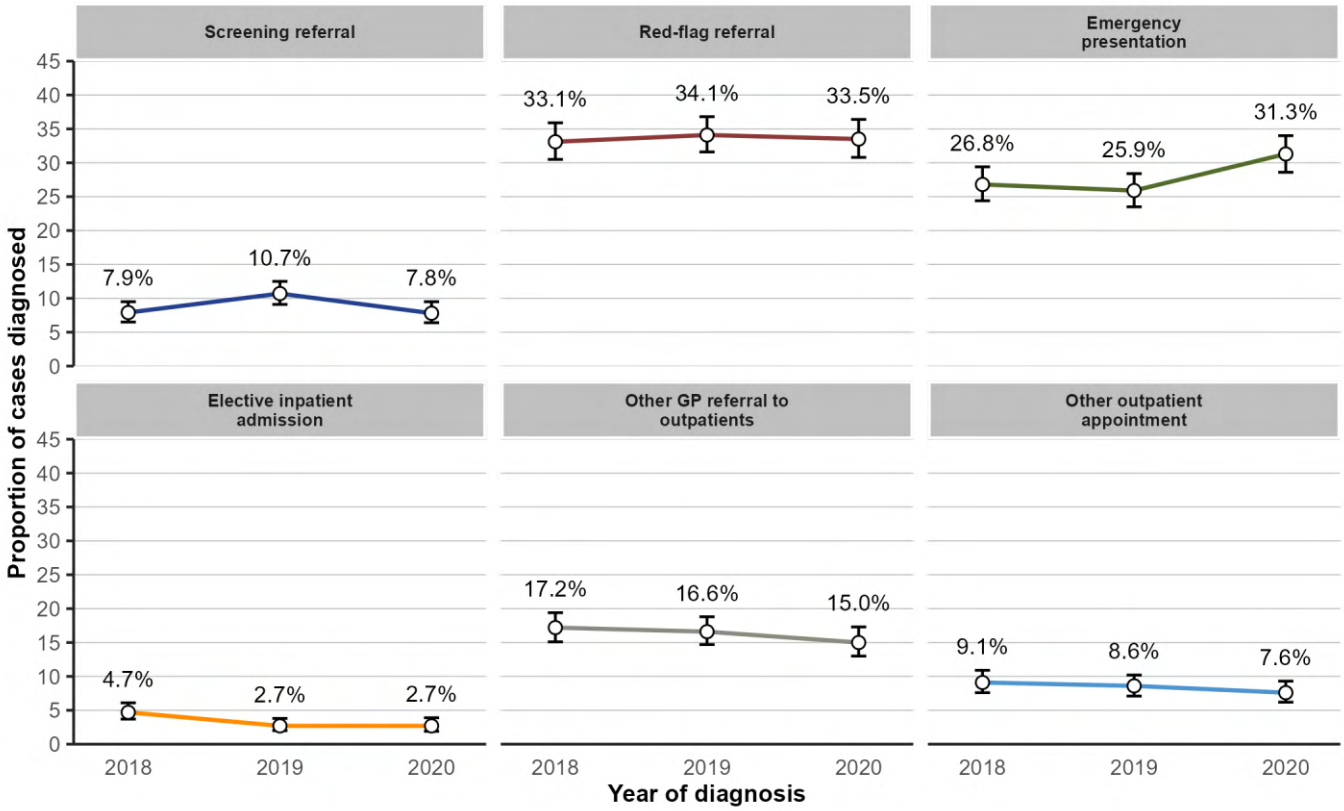
The number of colorectal cancer cases diagnosed via an emergency presentation each year increased by 8.2% from 319 per year in 2018-19 to 345 in 2020. As a proportion of all cases, an emergency presentation diagnosis increased from 26.3% in 2018-19 to 31.3% in 2020. The variation in route to diagnosis by year of diagnosis was statistically significant (p = 0.003).

Figure 4.9: Route to diagnosis for colorectal cancer patients diagnosed in 2018-2020 by year of diagnosis

(a) Number of cases



(b) Proportion of cases

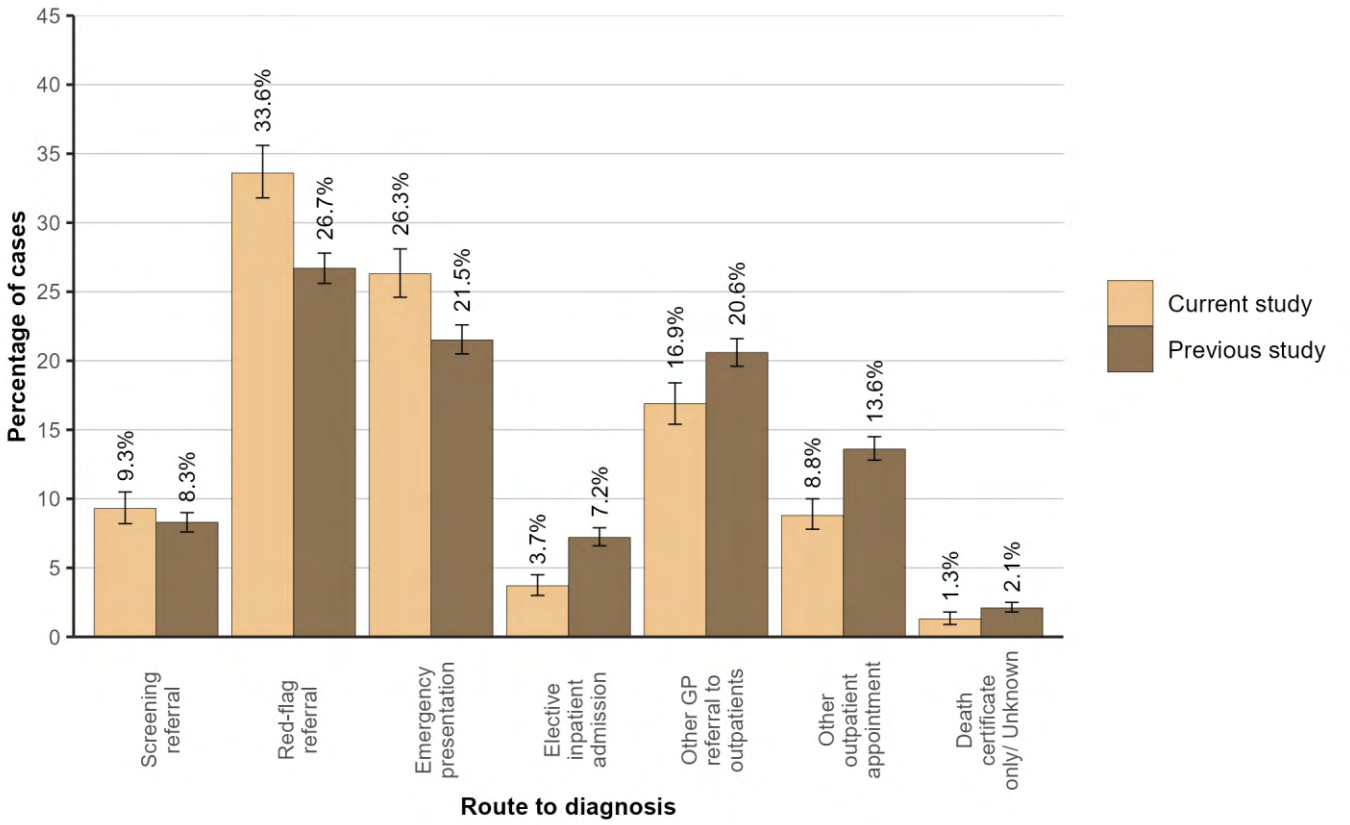


4.6: COMPARISON WITH PREVIOUS STUDIES

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with colorectal cancer in 2018-2019 compared to patients from the previous Northern Ireland study, which was for patients diagnosed in 2012-2016.

- Red-flag referral (33.6% in 2018-2019 compared to 26.7% previously ; p<0.001).
- Emergency presentation (26.3% in 2018-2019 compared to 21.5% previously ; p<0.001).
- Elective inpatient admission (3.7% in 2018-2019 compared to 7.2% previously ; p<0.001).
- Other GP referral to outpatients (16.9% in 2018-2019 compared to 20.6% previously ; p<0.001).
- Other outpatient appointment (8.8% in 2018-2019 compared to 13.6% previously ; p<0.001).

Figure 4.10: Route to diagnosis for colorectal cancer patients diagnosed in 2018-2019 compared to patients diagnosed in 2012-2016 (from previous Northern Ireland study)



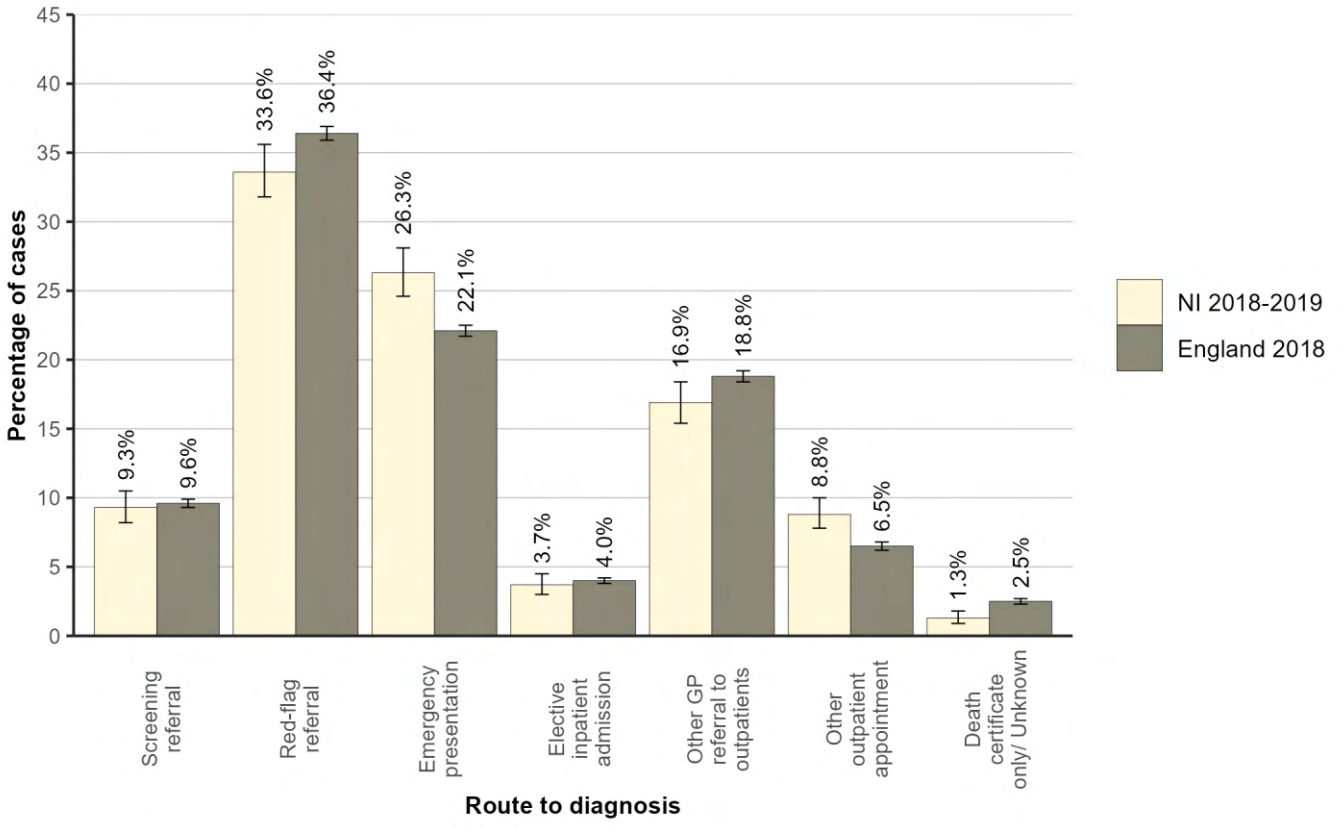
Source of previous data: Centre for Public Health, See reference 2.
Note that due to the impact of the COVID-19 pandemic on cancer diagnosis, comparisons exclude data from 2020.
Due to potential differences in coding and data sources, differences between the two studies should not be interpreted as a time trend.

4.7: COMPARISON WITH ENGLAND

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with colorectal cancer in 2018-2019 compared to patients diagnosed in England during 2018.

- Red-flag referral (33.6% in NI compared to 36.4% in England ; p=0.006).
- Emergency presentation (26.3% in NI compared to 22.1% in England ; p<0.001).
- Other outpatient appointment (8.8% in NI compared to 6.5% in England ; p<0.001).

Figure 4.11: Route to diagnosis for colorectal cancer patients diagnosed in 2018-2019 compared to patients diagnosed in England during 2018



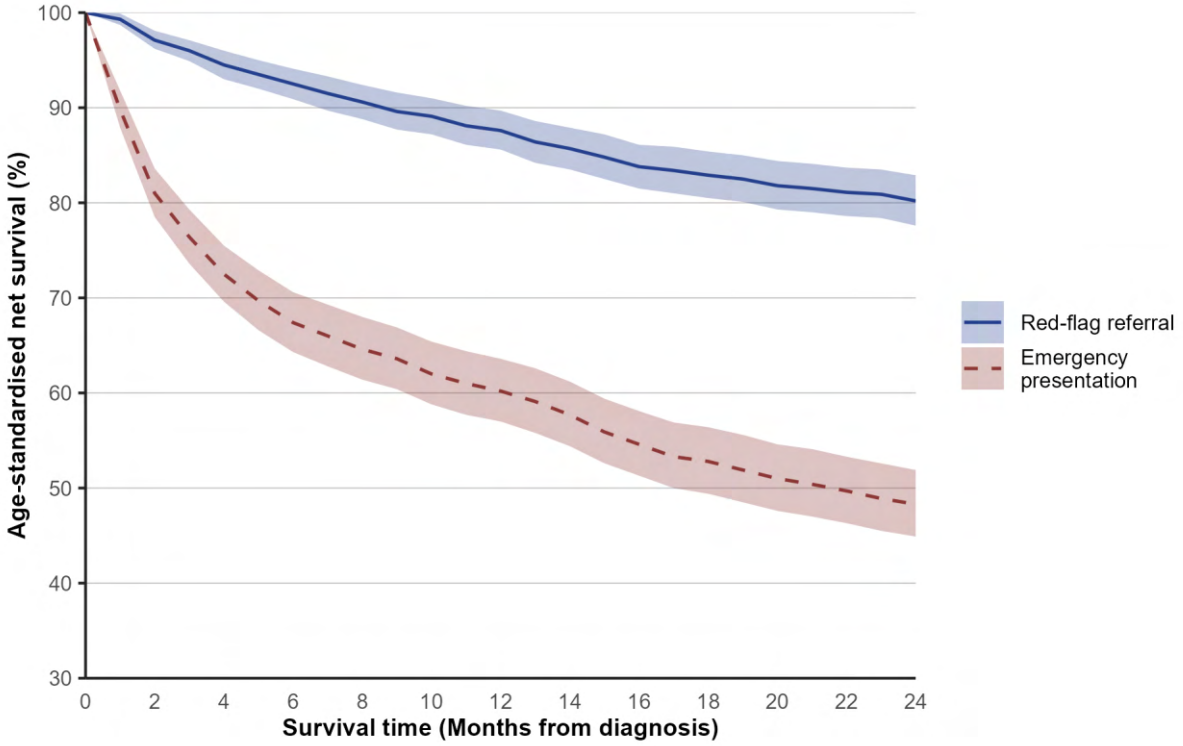
Source of English data: National Disease Registration Service, See reference 12.
Note that due to the impact of the COVID-19 pandemic on cancer diagnosis, comparisons exclude data from 2020.
Due to potential differences in coding and data sources, differences between the two studies should be treated as an approximate comparison.

4.8: SURVIVAL

During 2018-2020 one-year age-standardised net survival from colorectal cancer ranged from 60.2% for those diagnosed via an emergency presentation route to 89.9% for those diagnosed via an elective inpatient admission route. Two years from diagnosis age-standardised net survival ranged from 48.3% for those diagnosed via an emergency presentation route to 84.1% for those diagnosed via an elective inpatient admission route.

Figure 4.12: Age-standardised net survival by route to diagnosis for colorectal cancer patients diagnosed in 2018-2020

(a) Red-flag and emergency routes



(b) Other routes

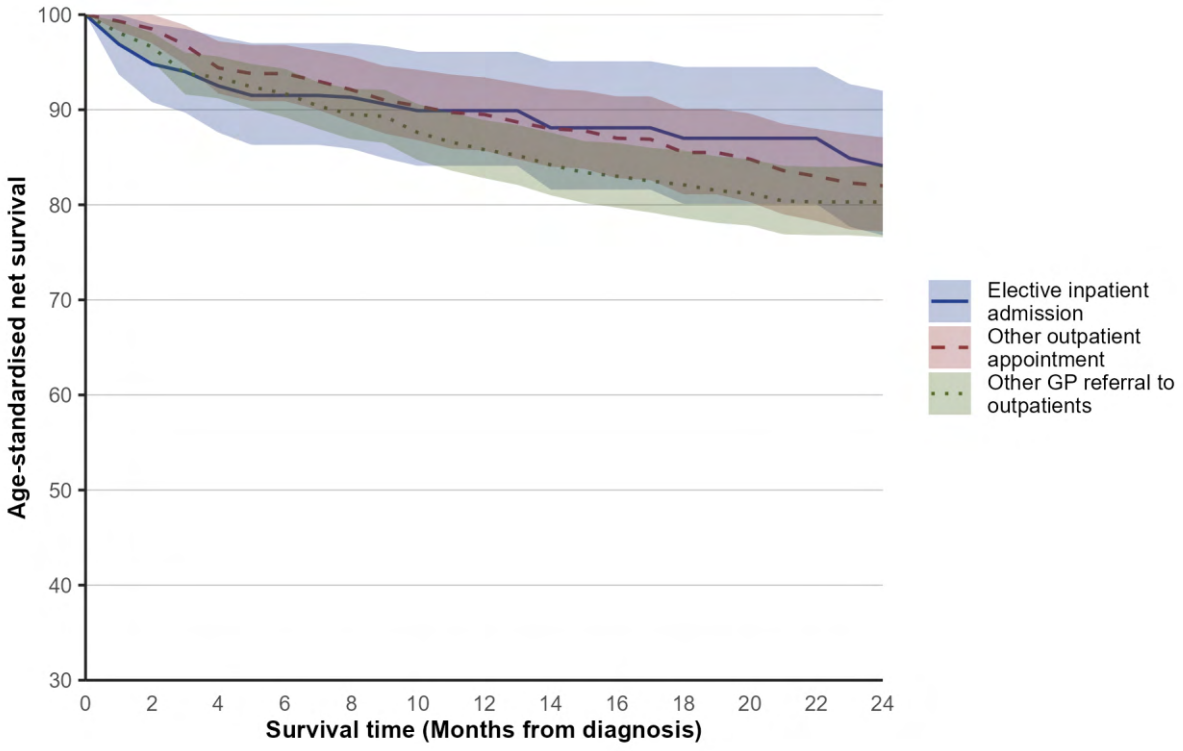


Table 4.3: Age-standardised net survival by route to diagnosis for colorectal cancer patients diagnosed in 2018-2020

Route to diagnosis	One-year survival (ASNS)	Two-year survival (ASNS)
Red-flag referral	87.6% (85.6% - 89.7%)	80.2% (77.6% - 82.9%)
Emergency presentation	60.2% (57.0% - 63.6%)	48.3% (44.9% - 51.9%)
Elective inpatient admission	89.9% (84.1% - 96.1%)	84.1% (76.8% - 92.0%)
Other GP referral to outpatients	85.8% (82.8% - 88.9%)	80.3% (76.6% - 84.2%)
Other outpatient appointment	89.5% (85.7% - 93.4%)	82.0% (77.2% - 87.1%)
Unknown	54.5% (41.7% - 71.1%)*	49.5% (36.5% - 67.1%)*

*ASNS: Age-standardised net survival with 95% confidence interval. * Unstandardised net survival presented as less than 50 patients in this group.*

For patients of screening age

During 2018-2020 one-year net survival from colorectal cancer for patients diagnosed within screening age (aged 60 to 74) ranged from 61.4% for those diagnosed via an emergency presentation route to 98.7% for those diagnosed via a screening referral route. Two years from diagnosis net survival for patients diagnosed within screening age ranged from 49.7% for those diagnosed via an emergency presentation route to 97.8% for those diagnosed via a screening referral route.

Figure 4.13: Net survival by route to diagnosis for colorectal cancer patients of screening age (aged 60 to 74) diagnosed in 2018-2020

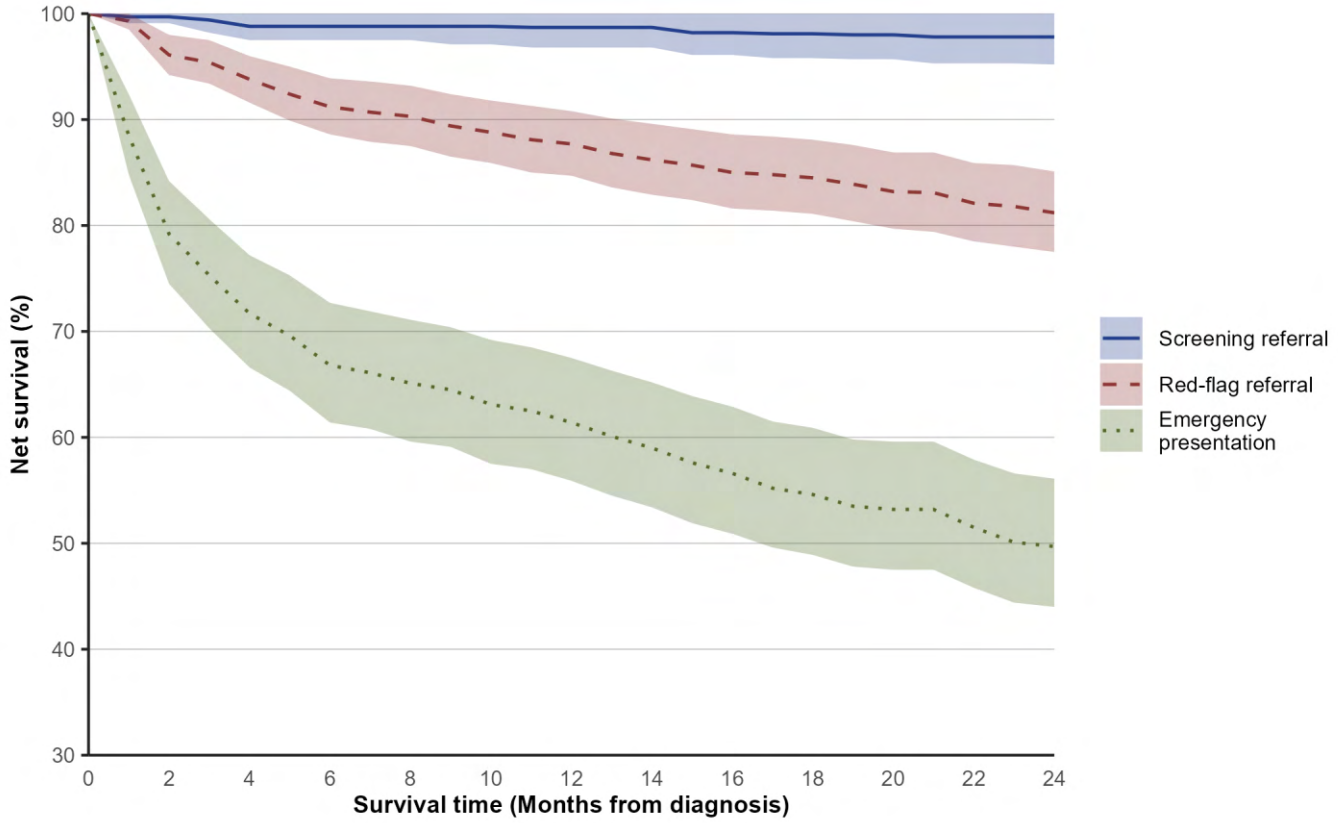


Table 4.4: Net survival by route to diagnosis for colorectal cancer patients of screening age (aged 60 to 74) diagnosed in 2018-2020

Route to diagnosis	One-year survival (NS)	Two-year survival (NS)
Screening referral	98.7% (96.8% - 100.0%)	97.8% (95.2% - 100.0%)
Red-flag referral	87.7% (84.7% - 90.8%)	81.2% (77.5% - 85.1%)
Emergency presentation	61.4% (55.9% - 67.5%)	49.7% (44.0% - 56.1%)
Elective inpatient admission	92.2% (84.3% - 100.0%)	86.9% (76.8% - 98.3%)
Other GP referral to outpatients	87.0% (82.0% - 92.3%)	83.7% (78.2% - 89.6%)
Other outpatient appointment	86.9% (80.7% - 93.6%)	81.1% (73.7% - 89.3%)
Unknown	66.8% (45.7% - 97.7%)	66.8% (45.7% - 97.7%)

NS: Net survival with 95% confidence interval

05: Female Breast Cancer

The most common route to diagnosis among female breast cancer patients during 2018-2020 was via a red-flag referral, with 691 (47.6%) cases diagnosed on average each year. This was followed by a screening referral route with 413 (28.4%) cases diagnosed on average each year. Emergency presentations made up 4.0% of cases during this period.

Figure 5.1: Route to diagnosis for female breast cancer patients diagnosed in 2018-2020

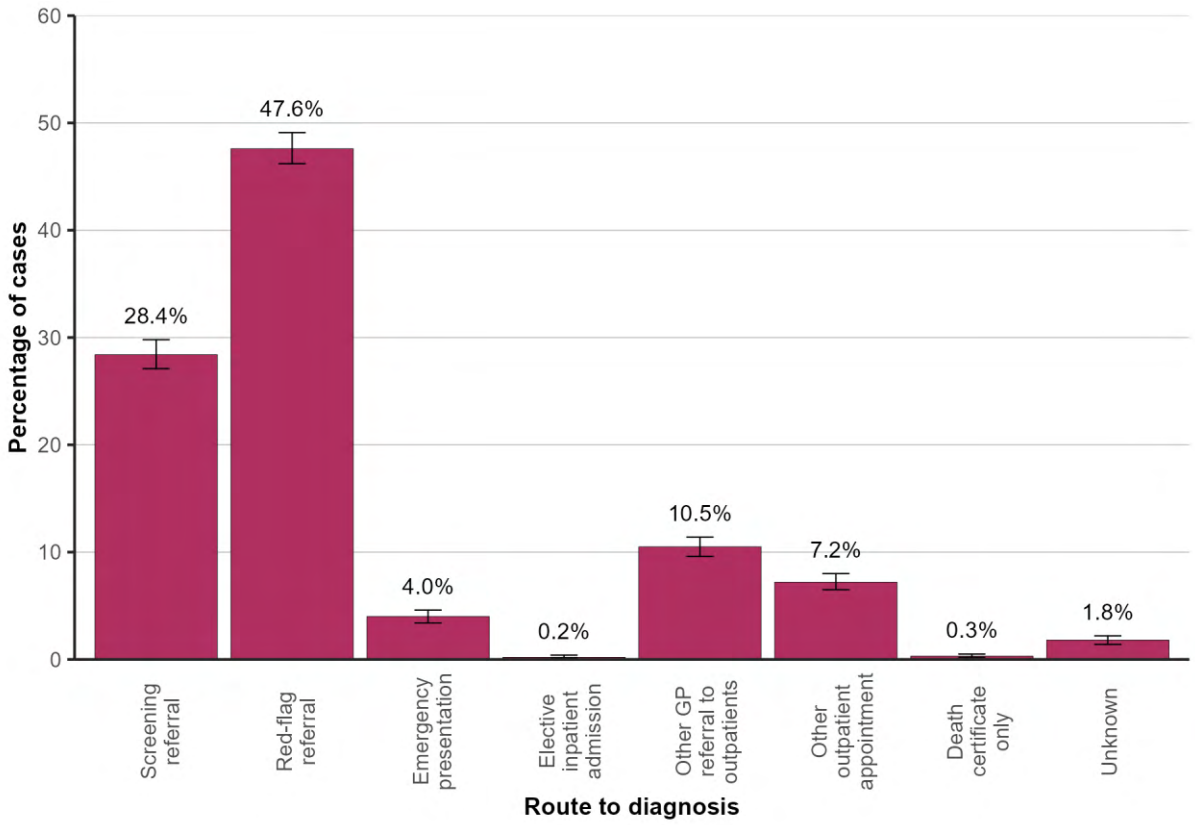


Table 5.1: Average number of female breast cancer cases diagnosed each year during 2018-2020 by route to diagnosis

Route to diagnosis	Cases per year	Proportion (95% CI)
Screening referral	413	28.4% (27.1% - 29.8%)
Red-flag referral	691	47.6% (46.2% - 49.1%)
Emergency presentation	57	4.0% (3.4% - 4.6%)
Elective inpatient admission	3	0.2% (0.1% - 0.4%)
Other GP referral to outpatients	152	10.5% (9.6% - 11.4%)
Other outpatient appointment	105	7.2% (6.5% - 8.0%)
Death certificate only	4	0.3% (0.2% - 0.5%)
Unknown	26	1.8% (1.4% - 2.2%)

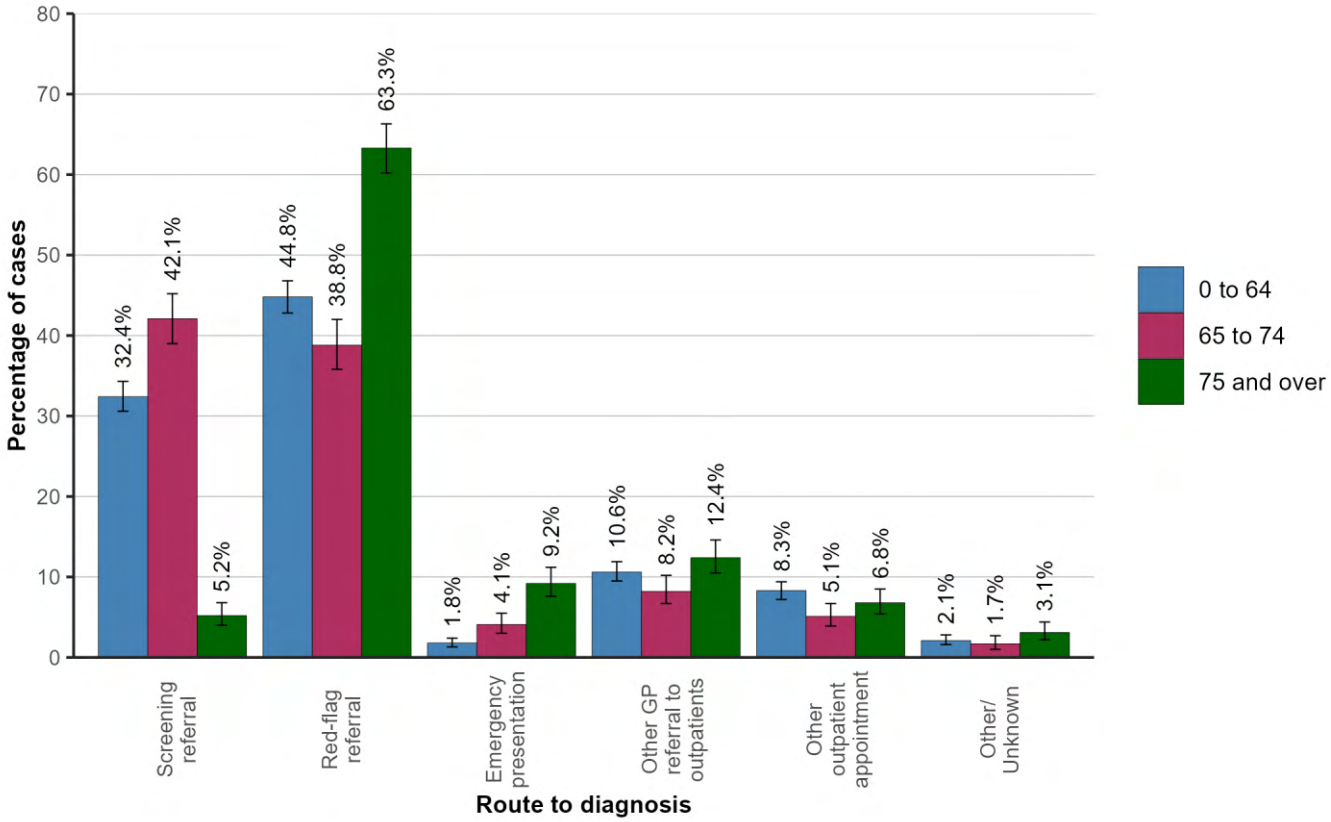
CI: Confidence Interval

5.1: ROUTES TO DIAGNOSIS BY AGE GROUP

During 2018-2020 the most common route to diagnosis for cases of female breast cancer overall was a red-flag referral. Among those aged 0 to 64 there were 361 (44.8%) diagnosed per year via this route, compared to 206 (63.3%) per year among those aged 75 and over. This made it the most common route to diagnosis for both those aged 0 to 64 and those aged 75 and over.

The route to diagnosis with the biggest difference between those aged 0 to 64 and aged 75 and over was a screening referral with 32.4% of those aged 0 to 64 and 5.2% of those aged 75 and over diagnosed via this route. The variation in route to diagnosis by age group was statistically significant ($p < 0.001$).

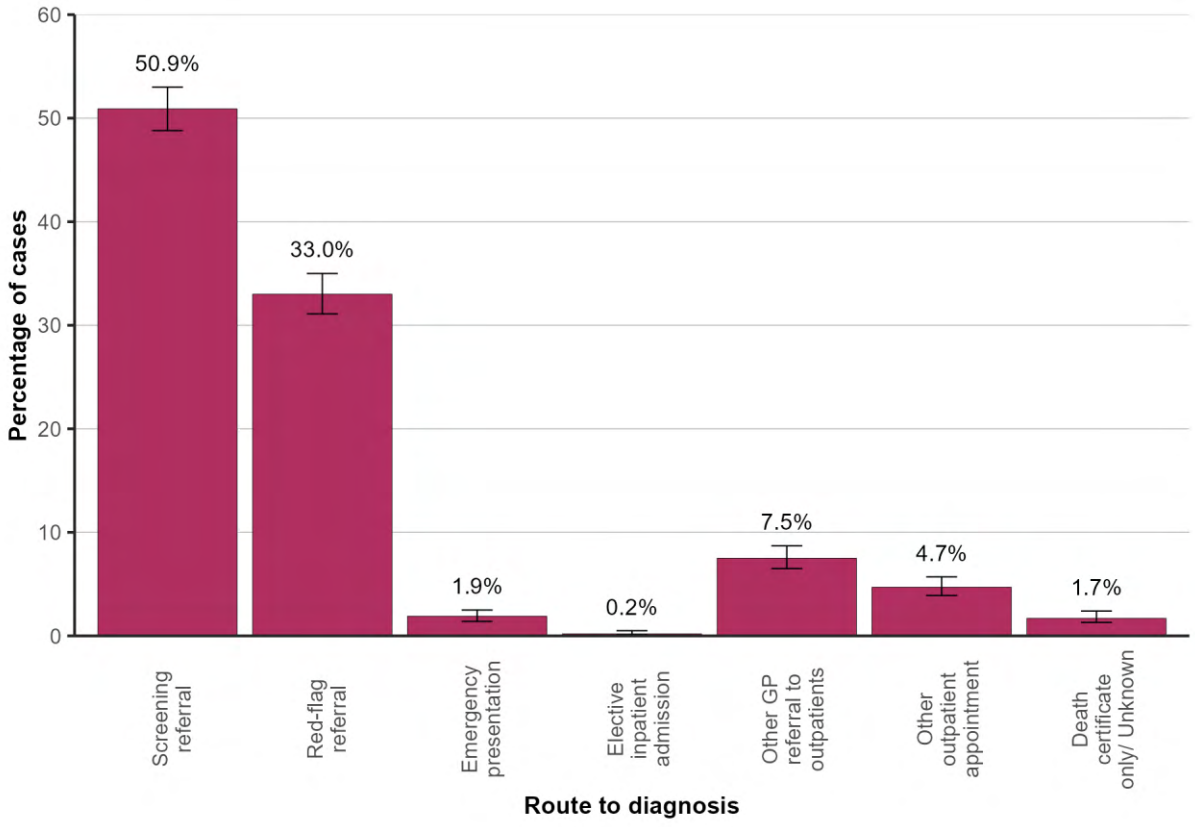
Figure 5.2: Route to diagnosis for female breast cancer patients diagnosed in 2018-2020 by age group



For patients of screening age

The most common route to diagnosis among female breast cancer patients diagnosed within screening age (aged 50 to 70) during 2018-2020 was via a screening referral, with 372 (50.9%) cases diagnosed on average each year. This was followed by a red-flag referral route with 242 (33.0%) cases diagnosed on average each year. Emergency presentations made up 1.9% of cases among those diagnosed within screening age during this period.

Figure 5.3: Route to diagnosis for female breast cancer patients of screening age (aged 50 to 70) diagnosed in 2018-2020



5.2: ROUTES TO DIAGNOSIS BY AREA OF RESIDENCE

Health and Social Care Trust

During 2018-2020 the proportion of cases of female breast cancer diagnosed via a red-flag referral ranged from 43.3% in Southern HSCT to 50.2% in Northern HSCT. The proportions diagnosed via a screening referral ranged from 26.7% to 31.8% in Belfast HSCT and Southern HSCT respectively. Emergency presentation was the route taken in 3.6% of cases in Northern HSCT and 4.5% of cases in Belfast HSCT. The variation in route to diagnosis by Health and Social Care Trust was statistically significant ($p = 0.024$).

Area-based socio-economic deprivation

During 2018-2020 the proportion of cases of female breast cancer diagnosed via a red-flag referral was 48.4% in the most deprived areas compared to 45.4% in the least deprived areas. The proportions diagnosed via a screening referral were 28.0% and 26.7% in the most and least deprived areas respectively. Emergency presentation was the route taken in 4.1% of cases from the most deprived areas and 2.7% of cases in the least deprived areas. The variation in route to diagnosis by deprivation quintile was statistically significant ($p < 0.001$).

Figure 5.4: Route to diagnosis for female breast cancer patients diagnosed in 2018-2020 by Health and Social Care Trust

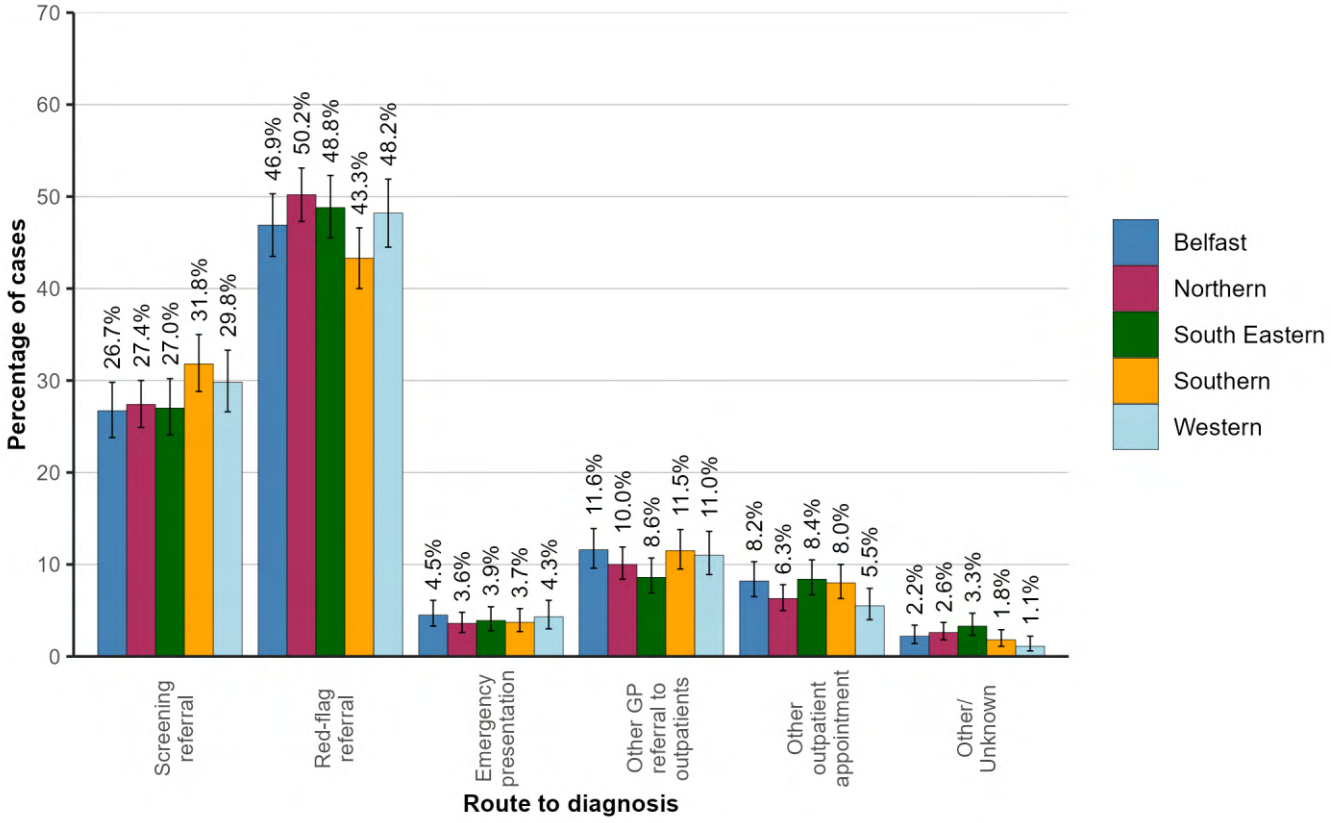
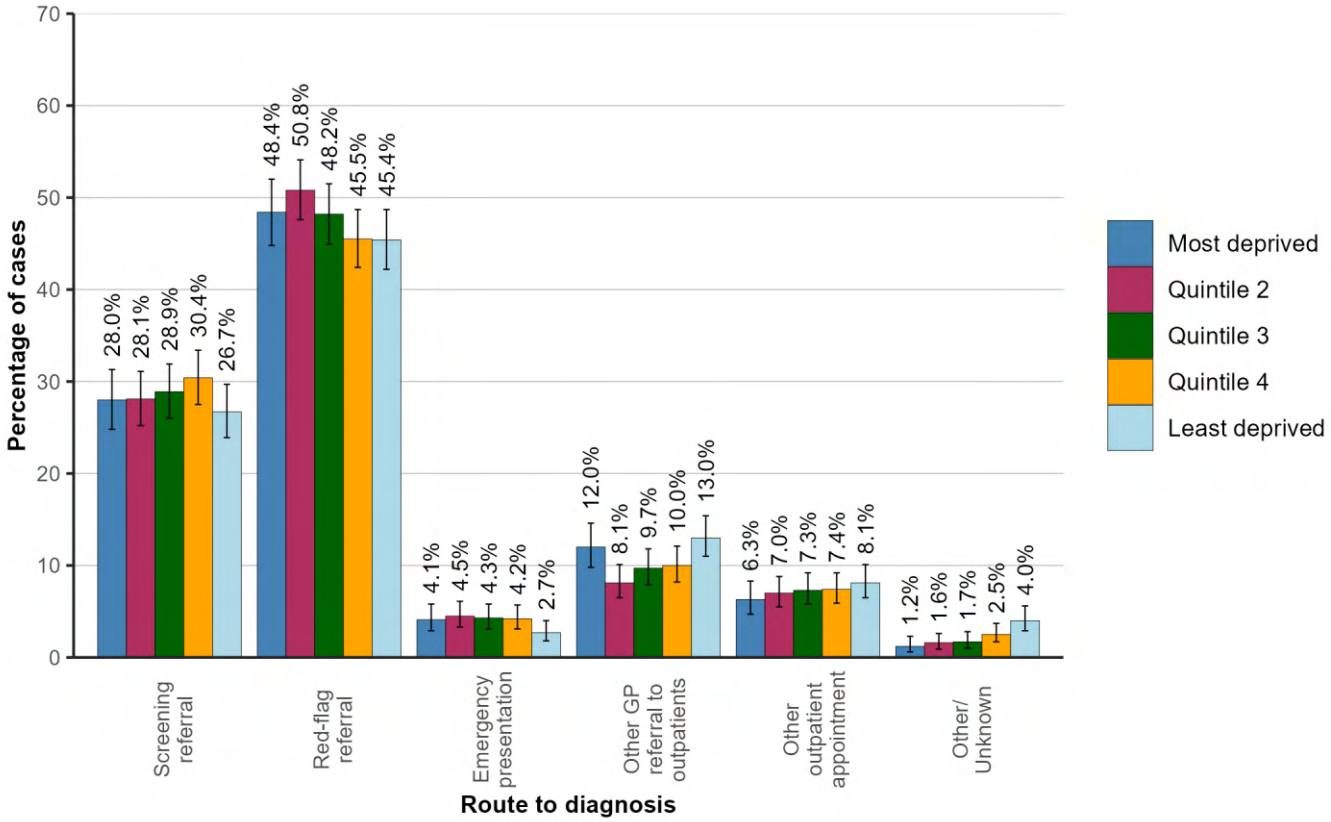


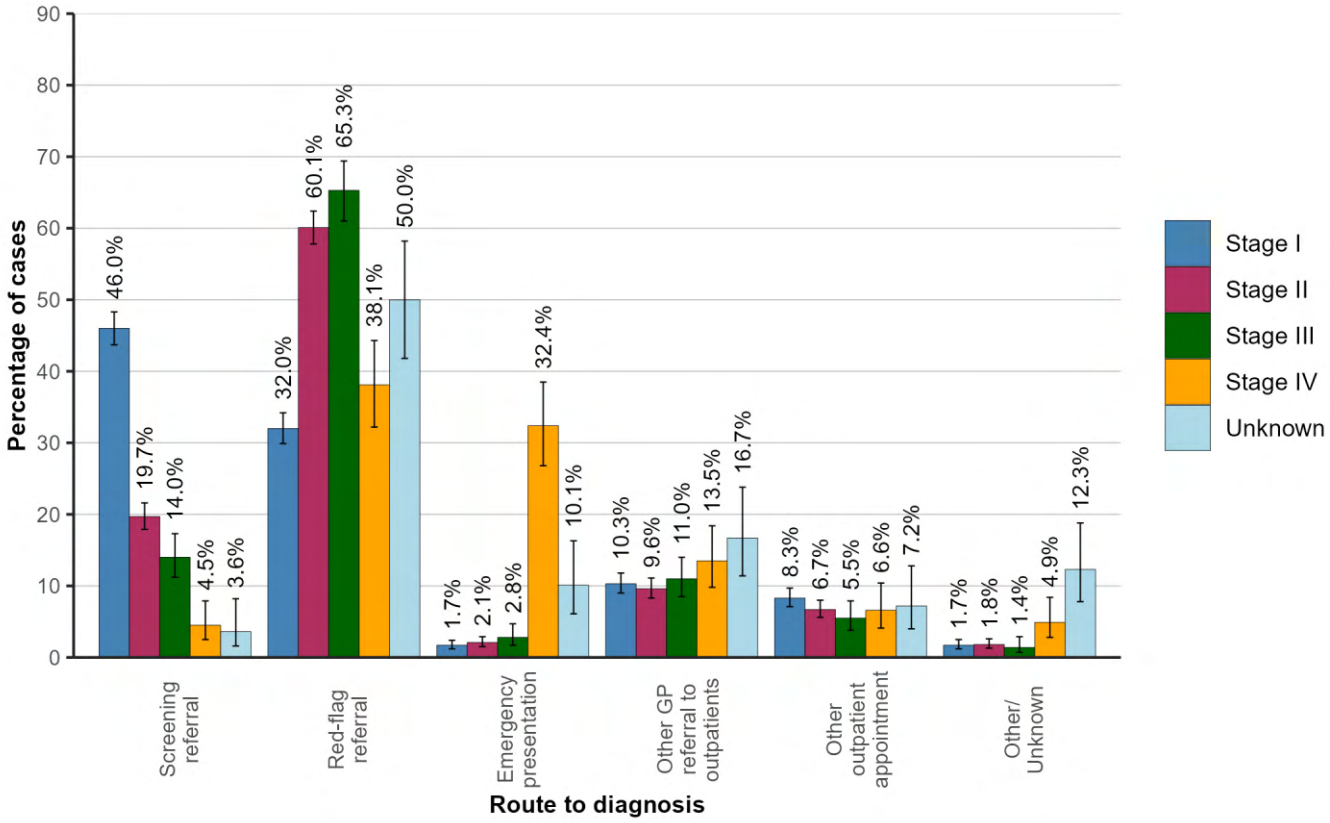
Figure 5.5: Route to diagnosis for female breast cancer patients diagnosed in 2018-2020 by deprivation quintile



5.3: ROUTES TO DIAGNOSIS BY STAGE AT DIAGNOSIS

During 2018-2020 the proportion of cases of female breast cancer diagnosed via a screening referral was 46.0% among stage I cancers compared to 4.5% among stage IV cancers. The proportions diagnosed via a red-flag referral were 32.0% and 38.1% for stage I and stage IV cancers respectively. Emergency presentation was the route taken in 32.4% of cases diagnosed at stage IV and 1.7% of cases diagnosed at stage I. The variation in route to diagnosis by stage at diagnosis was statistically significant ($p < 0.001$).

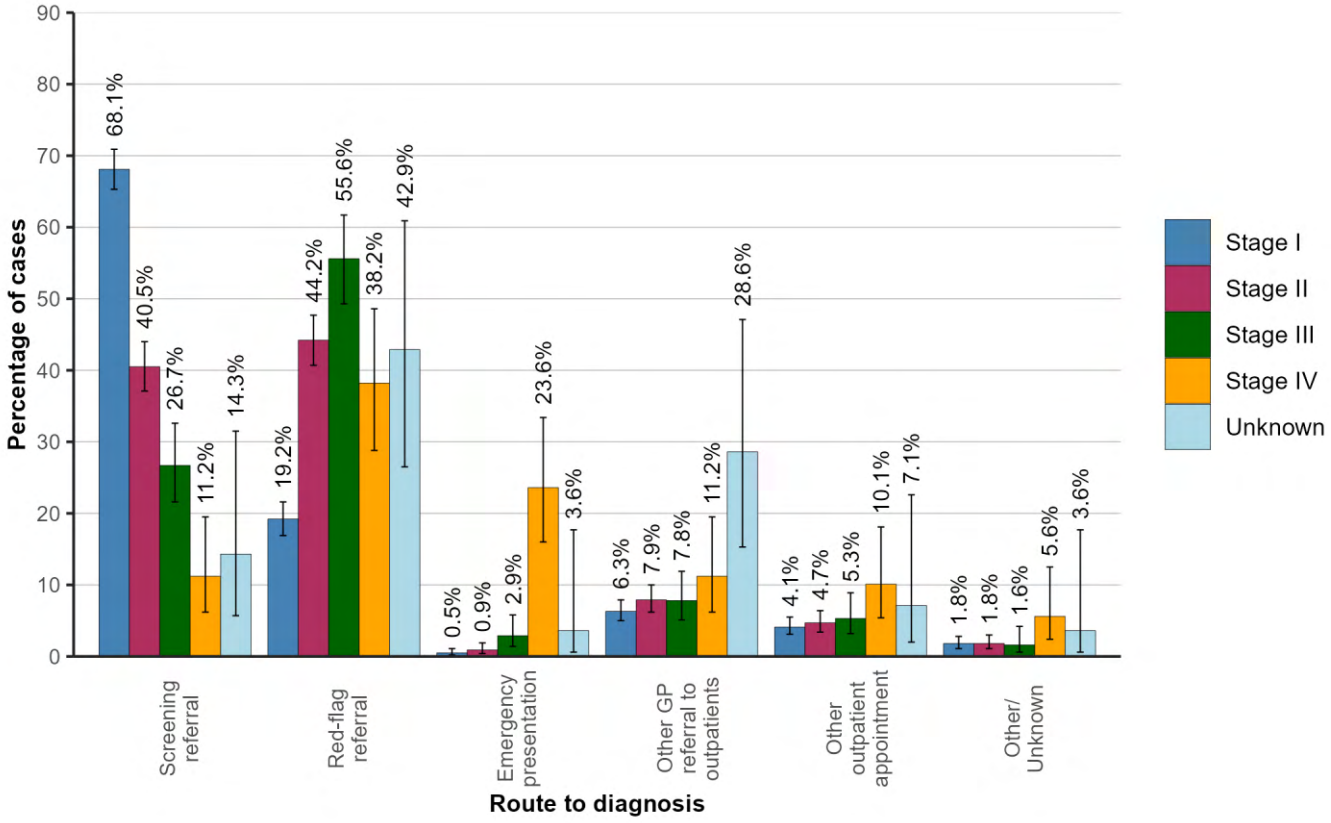
Figure 5.6: Route to diagnosis for female breast cancer patients diagnosed in 2018-2020 by stage at diagnosis



For patients of screening age

During 2018-2020 the proportion of female breast cancer cases among patients of screening age who were diagnosed via a screening referral was 68.1% among stage I cancers compared to 11.2% among stage IV cancers. The proportions diagnosed via a red-flag referral were 19.2% and 38.2% for stage I and stage IV cancers respectively. Emergency presentation was the route taken in 23.6% of cases diagnosed at stage IV and 0.5% of cases diagnosed at stage I. The variation in route to diagnosis by stage among those of screening age was statistically significant ($p < 0.001$).

Figure 5.7: Route to diagnosis for female breast cancer patients of screening age (aged 50 to 70) diagnosed in 2018-2020 by stage at diagnosis



5.4: ROUTES TO DIAGNOSIS BY YEAR OF DIAGNOSIS

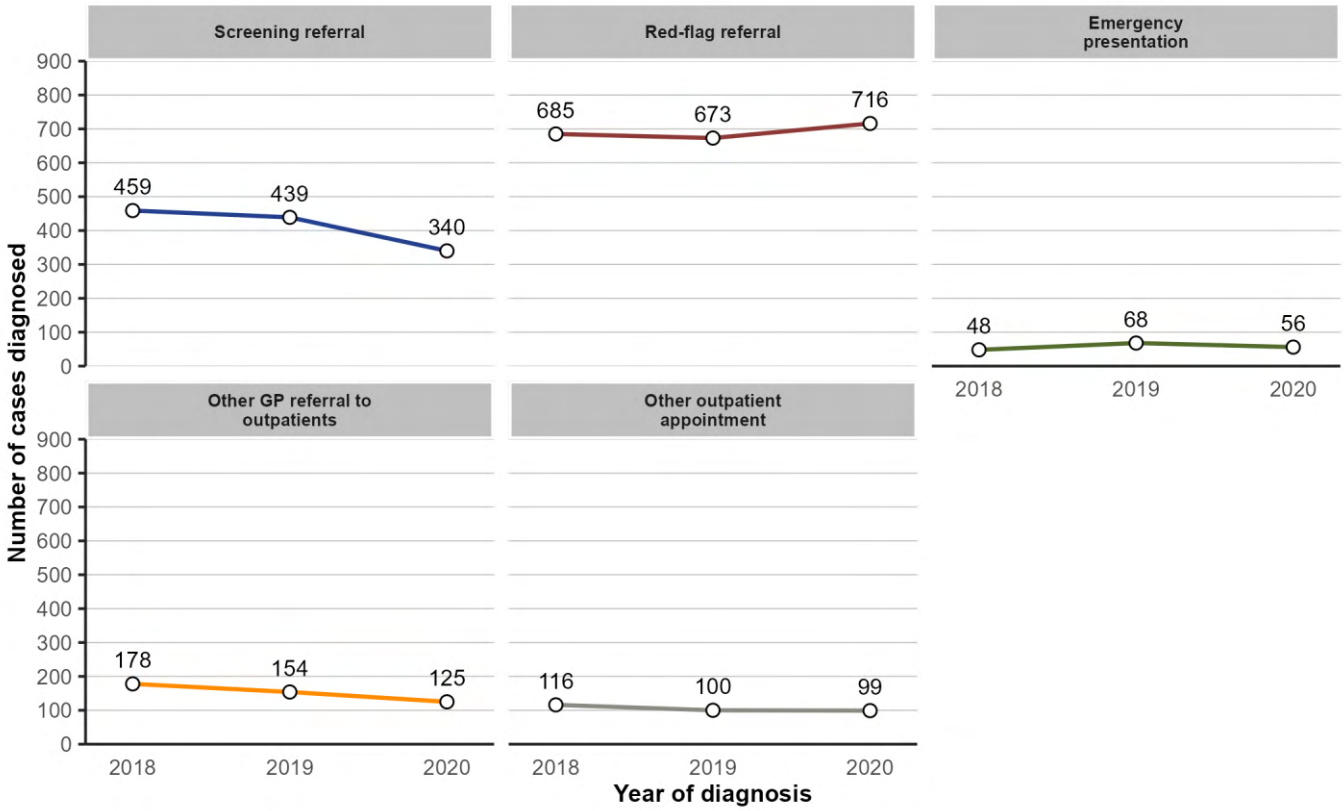
The number of female breast cancer cases diagnosed via a screening referral each year decreased by 24.3% from 449 per year in 2018-19 to 340 in 2020. As a proportion of all cases, a screening referral diagnosis decreased from 30.0% in 2018-19 to 25.0% in 2020.

The number of female breast cancer cases diagnosed via a red-flag referral each year increased by 5.4% from 679 per year in 2018-19 to 716 in 2020. As a proportion of all cases, a red-flag referral diagnosis increased from 45.4% in 2018-19 to 52.6% in 2020.

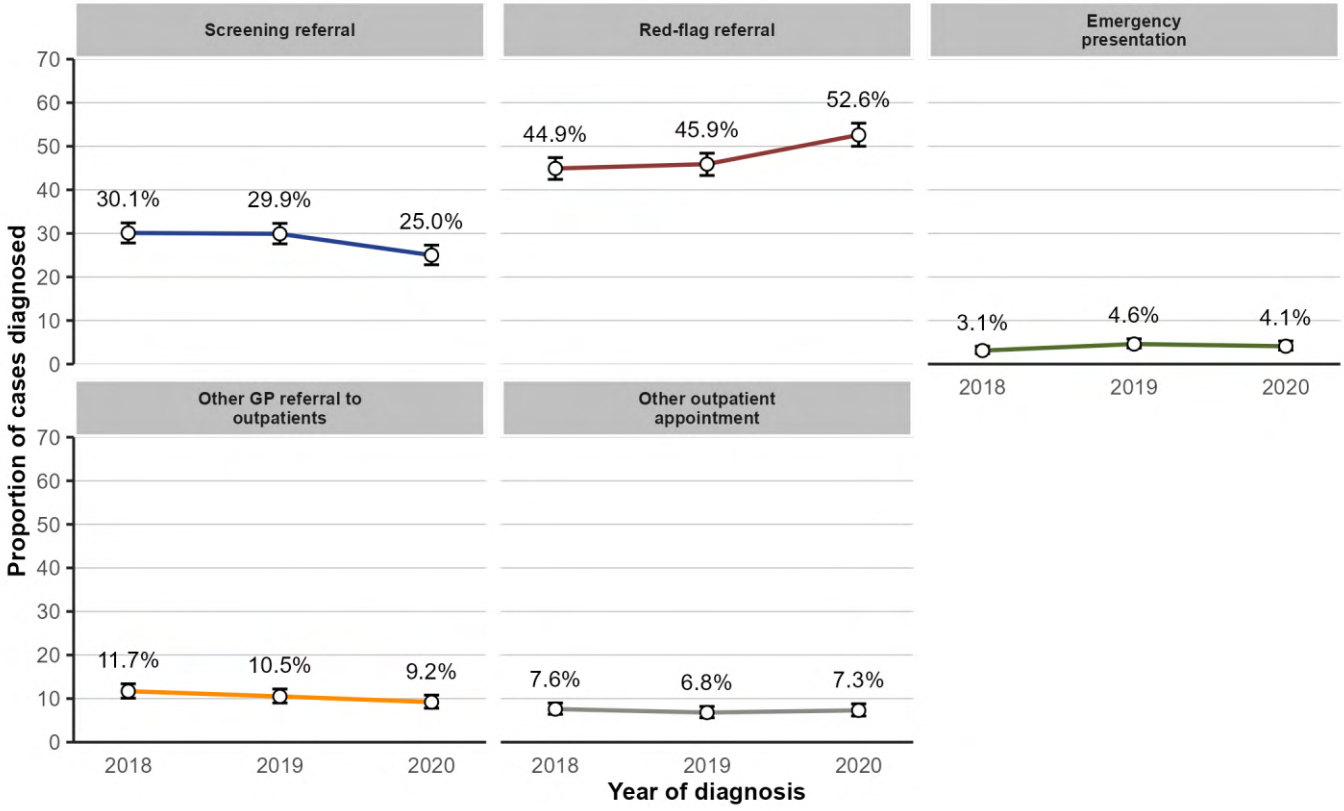
The number of female breast cancer cases diagnosed via an emergency presentation each year decreased by 3.4% from 58 per year in 2018-19 to 56 in 2020. As a proportion of all cases, an emergency presentation diagnosis increased from 3.9% in 2018-19 to 4.1% in 2020. The variation in route to diagnosis by year of diagnosis was statistically significant ($p < 0.001$).

Figure 5.8: Route to diagnosis for female breast cancer patients diagnosed in 2018-2020 by year of diagnosis

(a) Number of cases



(b) Proportion of cases

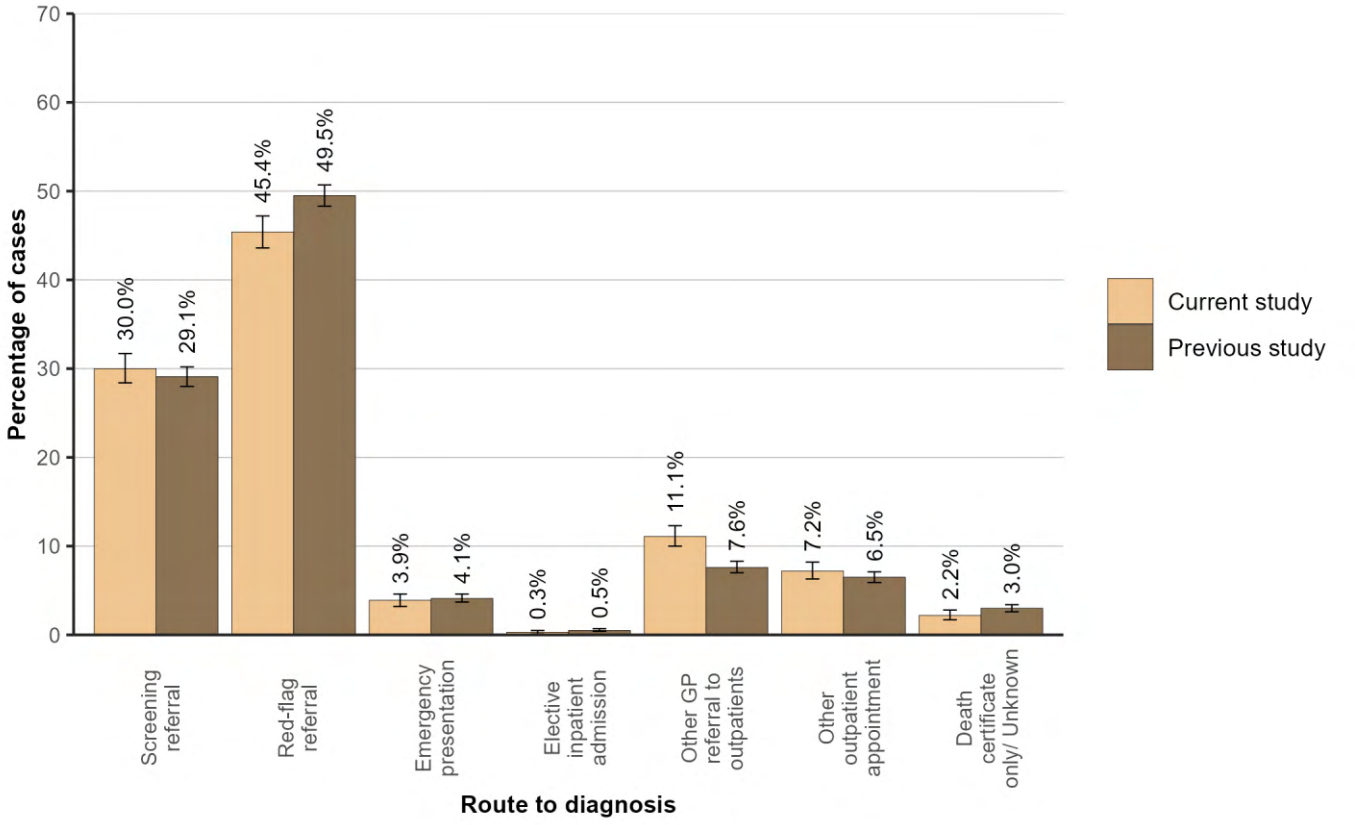


5.5: COMPARISON WITH PREVIOUS STUDIES

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with female breast cancer in 2018-2019 compared to patients from the previous Northern Ireland study, which was for patients diagnosed in 2012-2016.

- Red-flag referral (45.4% in 2018-2019 compared to 49.5% previously ; p<0.001).
- Other GP referral to outpatients (11.1% in 2018-2019 compared to 7.6% previously ; p<0.001).

Figure 5.9: Route to diagnosis for female breast cancer patients diagnosed in 2018-2019 compared to patients diagnosed in 2012-2016 (from previous Northern Ireland study)



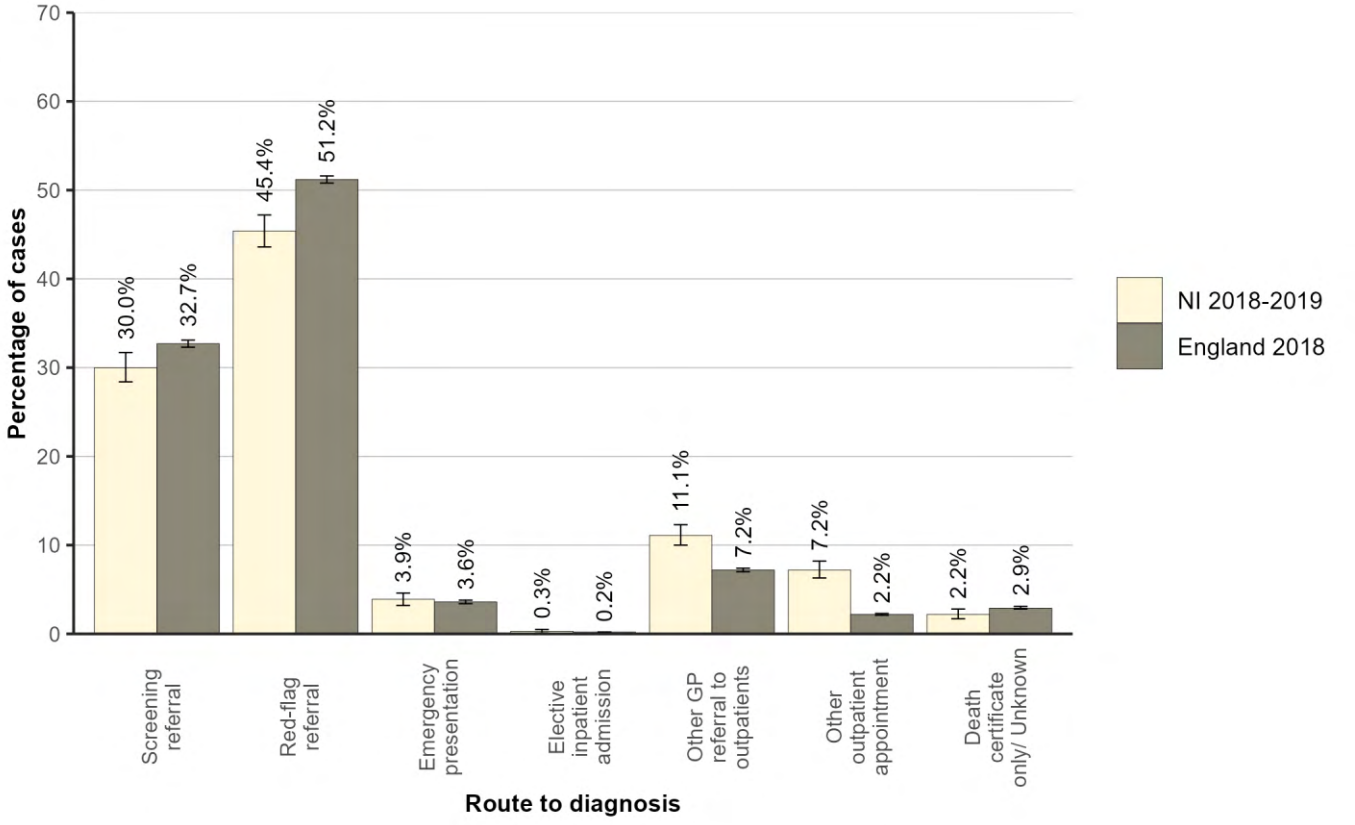
Source of previous data: Centre for Public Health, See reference 2.
Note that due to the impact of the COVID-19 pandemic on cancer diagnosis, comparisons exclude data from 2020.
Due to potential differences in coding and data sources, differences between the two studies should not be interpreted as a time trend.

5.6: COMPARISON WITH ENGLAND

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with female breast cancer in 2018-2019 compared to patients diagnosed in England during 2018.

- Screening referral (30.0% in NI compared to 32.7% in England ; p=0.002).
- Red-flag referral (45.4% in NI compared to 51.2% in England ; p<0.001).
- Other GP referral to outpatients (11.1% in NI compared to 7.2% in England ; p<0.001).
- Other outpatient appointment (7.2% in NI compared to 2.2% in England ; p<0.001).

Figure 5.10: Route to diagnosis for female breast cancer patients diagnosed in 2018-2019 compared to patients diagnosed in England during 2018



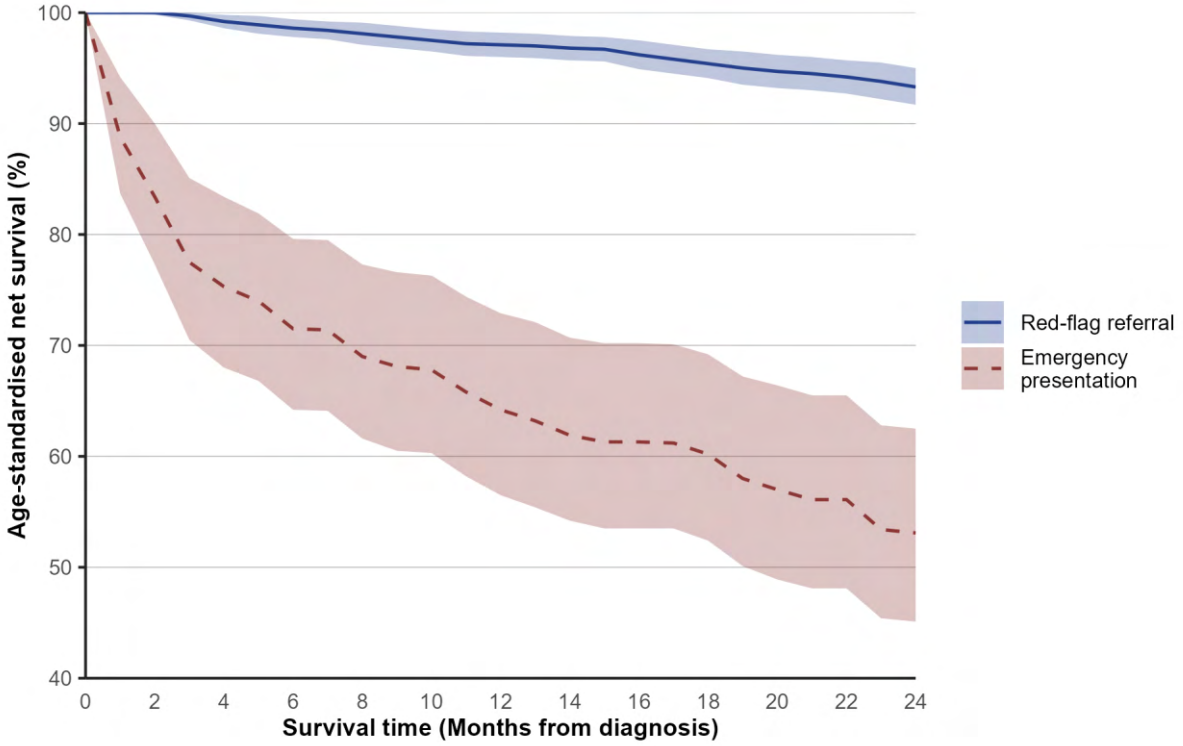
Source of English data: National Disease Registration Service, See reference 12.
Note that due to the impact of the COVID-19 pandemic on cancer diagnosis, comparisons exclude data from 2020.
Due to potential differences in coding and data sources, differences between the two studies should be treated as an approximate comparison.

5.7: SURVIVAL

During 2018-2020 one-year age-standardised net survival from female breast cancer ranged from 64.2% for those diagnosed via an emergency presentation route to 97.1% for those diagnosed via a red-flag referral route. Two years from diagnosis age-standardised net survival ranged from 53.1% for those diagnosed via an emergency presentation route to 93.3% for those diagnosed via a red-flag referral route.

Figure 5.11: Age-standardised net survival by route to diagnosis for female breast cancer patients diagnosed in 2018-2020

(a) Red-flag and emergency routes



(b) Other routes

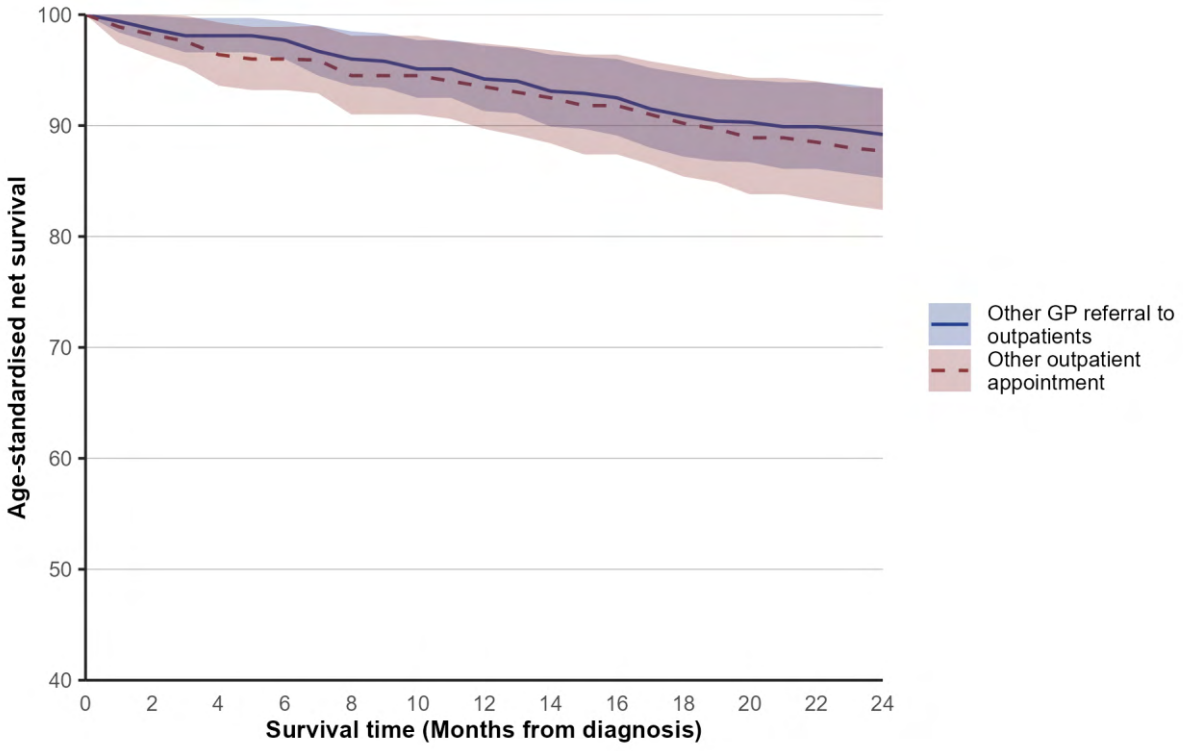


Table 5.2: Age-standardised net survival by route to diagnosis for female breast cancer patients diagnosed in 2018-2020

Route to diagnosis	One-year survival (ASNS)	Two-year survival (ASNS)
Red-flag referral	97.1% (96.0% - 98.2%)	93.3% (91.7% - 95.0%)
Emergency presentation	64.2% (56.5% - 72.9%)	53.1% (45.1% - 62.5%)
Other GP referral to outpatients	94.2% (91.3% - 97.2%)	89.2% (85.3% - 93.3%)
Other outpatient appointment	93.5% (89.7% - 97.4%)	87.7% (82.4% - 93.4%)
Unknown	88.1% (78.6% - 98.7%)	88.1% (78.6% - 98.7%)

ASNS: Age-standardised net survival with 95% confidence interval.

For patients of screening age

During 2018-2020 one-year net survival from female breast cancer for patients diagnosed within screening age (aged 50 to 70) ranged from 68.9% for those diagnosed via an emergency presentation route to 99.8% for those diagnosed via a screening referral route. Two years from diagnosis net survival for patients diagnosed within screening age ranged from 55.9% for those diagnosed via an emergency presentation route to 99.4% for those diagnosed via a screening referral route.

Figure 5.12: Net survival by route to diagnosis for female breast cancer patients of screening age (aged 50 to 70) diagnosed in 2018-2020

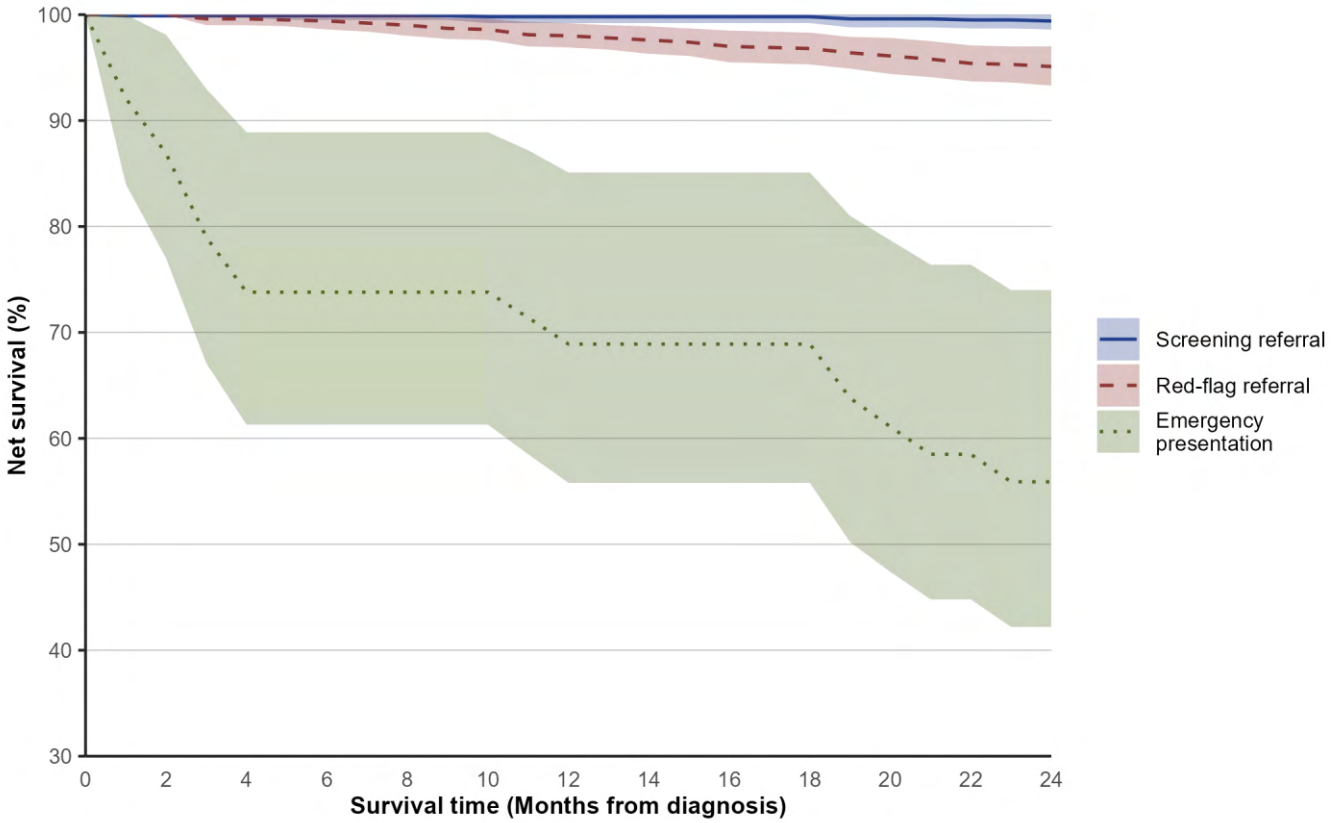


Table 5.3: Net survival by route to diagnosis for female breast cancer patients of screening age (aged 50 to 70) diagnosed in 2018-2020

Route to diagnosis	One-year survival (NS)	Two-year survival (NS)
Screening referral	99.8% (99.2% - 100.0%)	99.4% (98.6% - 100.0%)
Red-flag referral	98.0% (96.9% - 99.2%)	95.1% (93.3% - 97.0%)
Emergency presentation	68.9% (55.8% - 85.1%)	55.9% (42.2% - 74.0%)
Other GP referral to outpatients	98.0% (95.5% - 100.0%)	94.7% (90.9% - 98.7%)
Other outpatient appointment	93.6% (88.8% - 98.7%)	90.9% (85.2% - 97.0%)
Unknown	97.1% (91.7% - 100.0%)	97.1% (91.7% - 100.0%)

NS: Net survival with 95% confidence interval

06: LUNG CANCER (INCLUDING TRACHEA)

The most common route to diagnosis among lung cancer patients during 2018-2020 was via an emergency presentation, with 553 (40.8%) cases diagnosed on average each year. This was followed by a red-flag referral route with 289 (21.3%) cases diagnosed on average each year.

Figure 6.1: Route to diagnosis for lung cancer patients diagnosed in 2018-2020

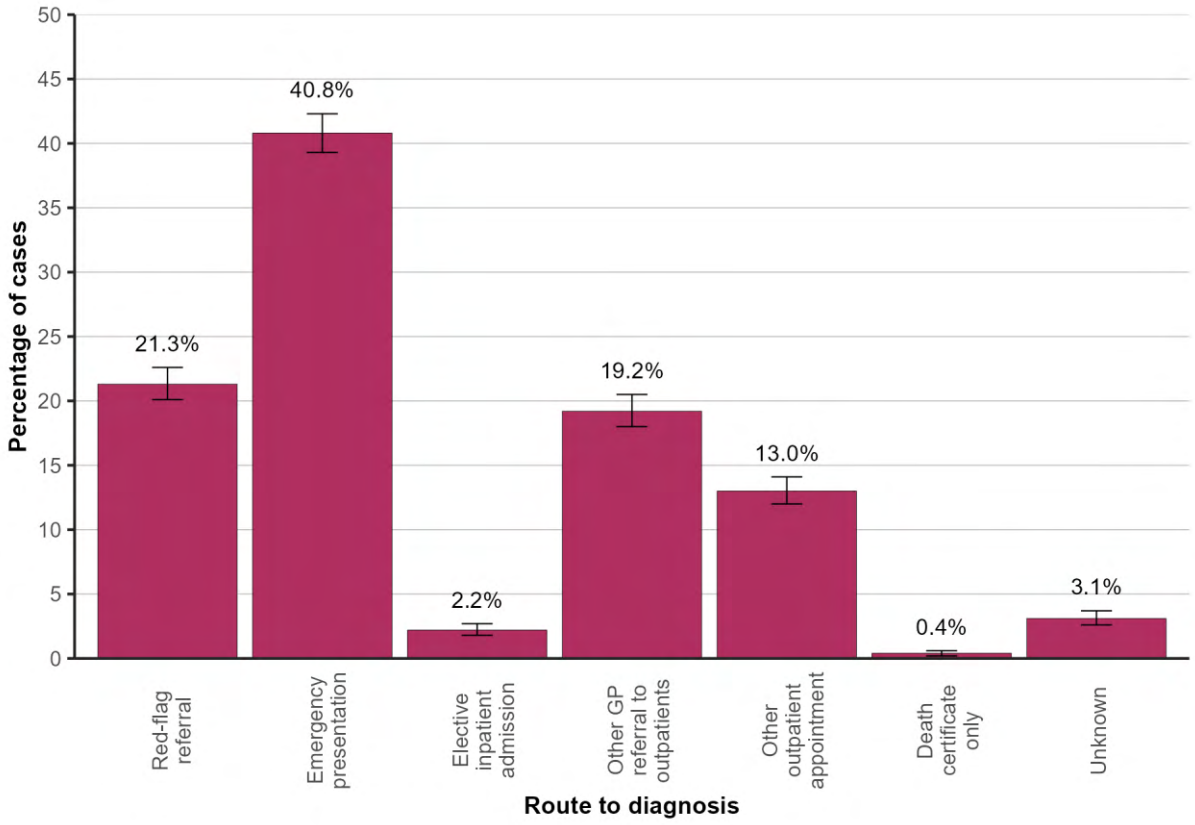


Table 6.1: Average number of lung cancer cases diagnosed each year during 2018-2020 by route to diagnosis

Route to diagnosis	Cases per year	Proportion (95% CI)
Red-flag referral	289	21.3% (20.1% - 22.6%)
Emergency presentation	553	40.8% (39.3% - 42.3%)
Elective inpatient admission	30	2.2% (1.8% - 2.7%)
Other GP referral to outpatients	261	19.2% (18.0% - 20.5%)
Other outpatient appointment	177	13.0% (12.0% - 14.1%)
Death certificate only	5	0.4% (0.2% - 0.6%)
Unknown	42	3.1% (2.6% - 3.7%)

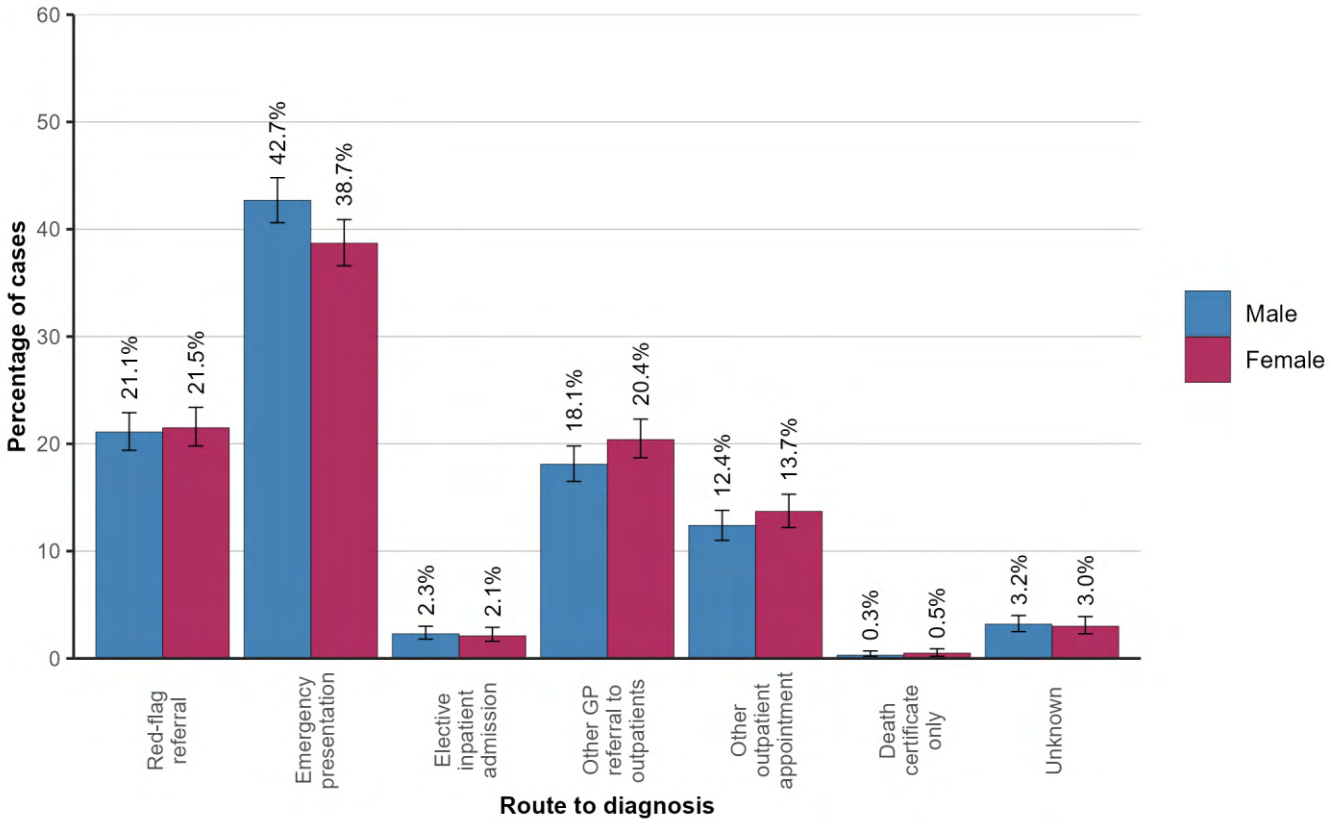
CI: Confidence Interval

6.1: ROUTES TO DIAGNOSIS BY GENDER

During 2018-2020 there were 301 male and 252 female cases of lung cancer diagnosed each year where the route to diagnosis was an emergency presentation. This was the most common route to diagnosis for both men (42.7%) and women (38.7%).

Emergency presentation routes also demonstrated the biggest difference between males and females. The variation in route to diagnosis by gender was not statistically significant.

Figure 6.2: Route to diagnosis for lung cancer patients diagnosed in 2018-2020 by gender

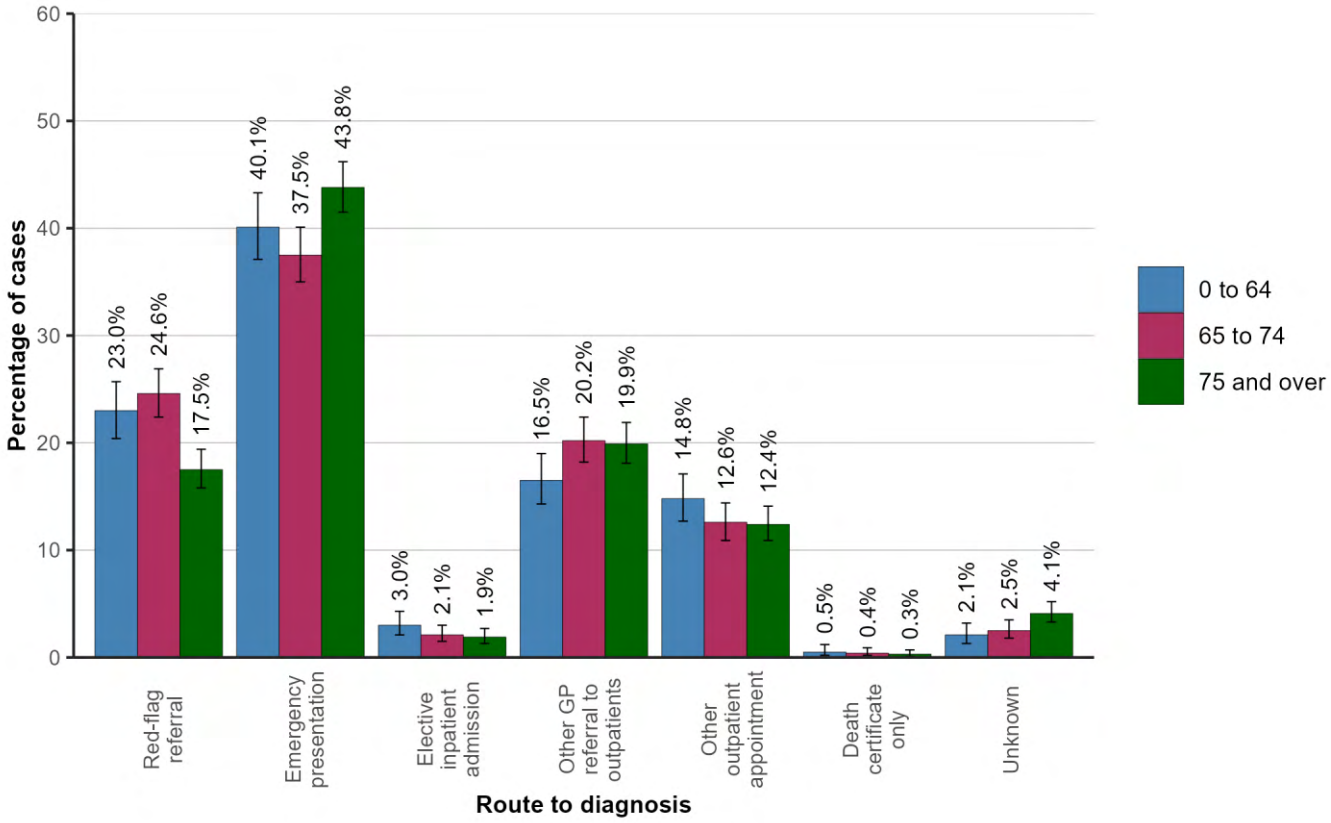


6.2: ROUTES TO DIAGNOSIS BY AGE GROUP

During 2018-2020 the most common route to diagnosis for cases of lung cancer overall was an emergency presentation. Among those aged 0 to 64 there were 129 (40.1%) diagnosed per year via this route, compared to 247 (43.8%) per year among those aged 75 and over. This made it the most common route to diagnosis for both those aged 0 to 64 and those aged 75 and over.

The route to diagnosis with the biggest difference between those aged 0 to 64 and aged 75 and over was a red-flag referral with 23.0% of those aged 0 to 64 and 17.5% of those aged 75 and over diagnosed via this route. The variation in route to diagnosis by age group was statistically significant ($p < 0.001$).

Figure 6.3: Route to diagnosis for lung cancer patients diagnosed in 2018-2020 by age group



6.3: ROUTES TO DIAGNOSIS BY AREA OF RESIDENCE

Health and Social Care Trust

During 2018-2020 the proportion of cases of lung cancer diagnosed via an emergency presentation ranged from 36.3% in Western HSCT to 45.5% in South Eastern HSCT. The proportions diagnosed via a red-flag referral ranged from 16.9% to 28.1% in Belfast HSCT and Western HSCT respectively. The variation in route to diagnosis by Health and Social Care Trust was statistically significant ($p < 0.001$).

Area-based socio-economic deprivation

During 2018-2020 the proportion of cases of lung cancer diagnosed via an emergency presentation was 41.1% in the most deprived areas compared to 45.1% in the least deprived areas. The proportions diagnosed via a red-flag referral were 22.8% and 17.3% in the most and least deprived areas respectively. The variation in route to diagnosis by deprivation quintile was not statistically significant.

Figure 6.4: Route to diagnosis for lung cancer patients diagnosed in 2018-2020 by Health and Social Care Trust

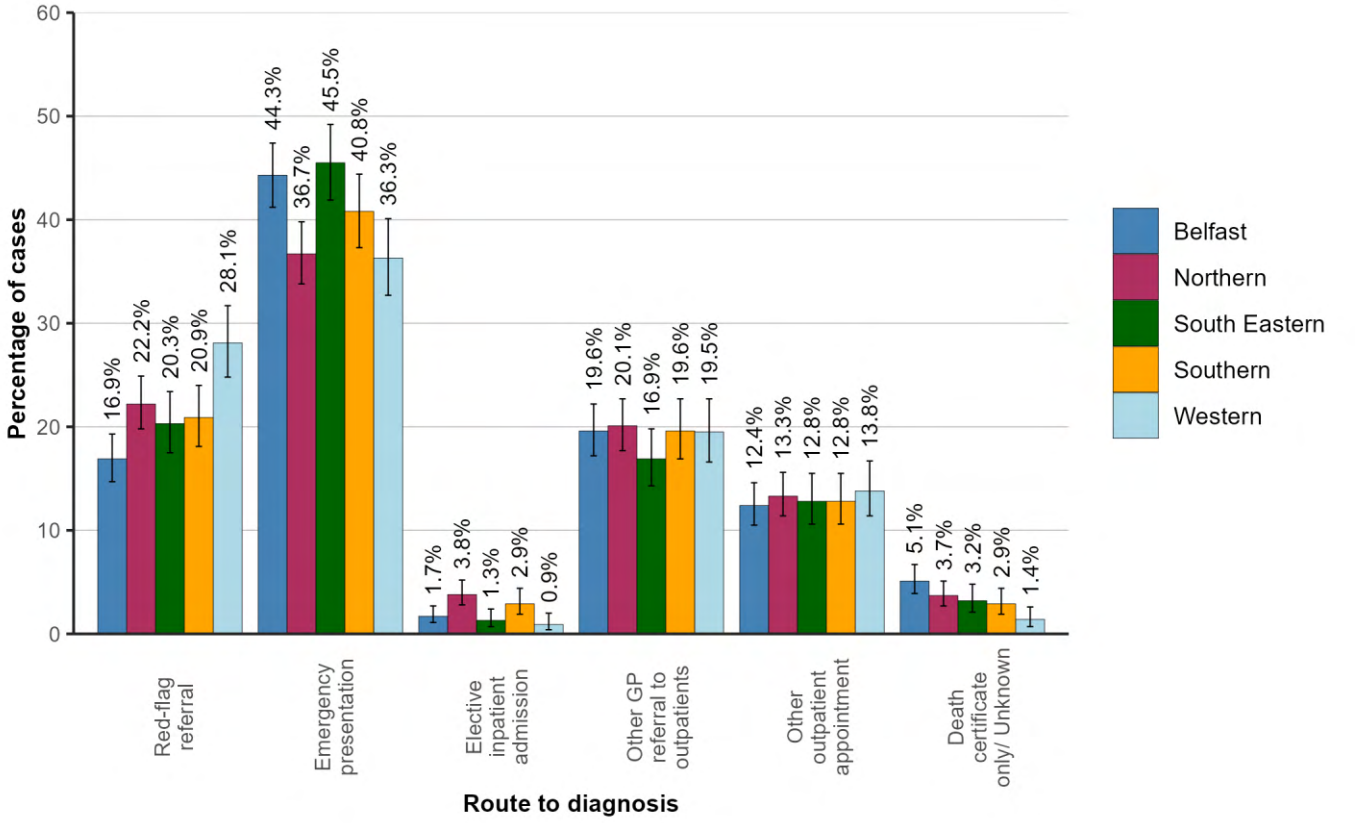
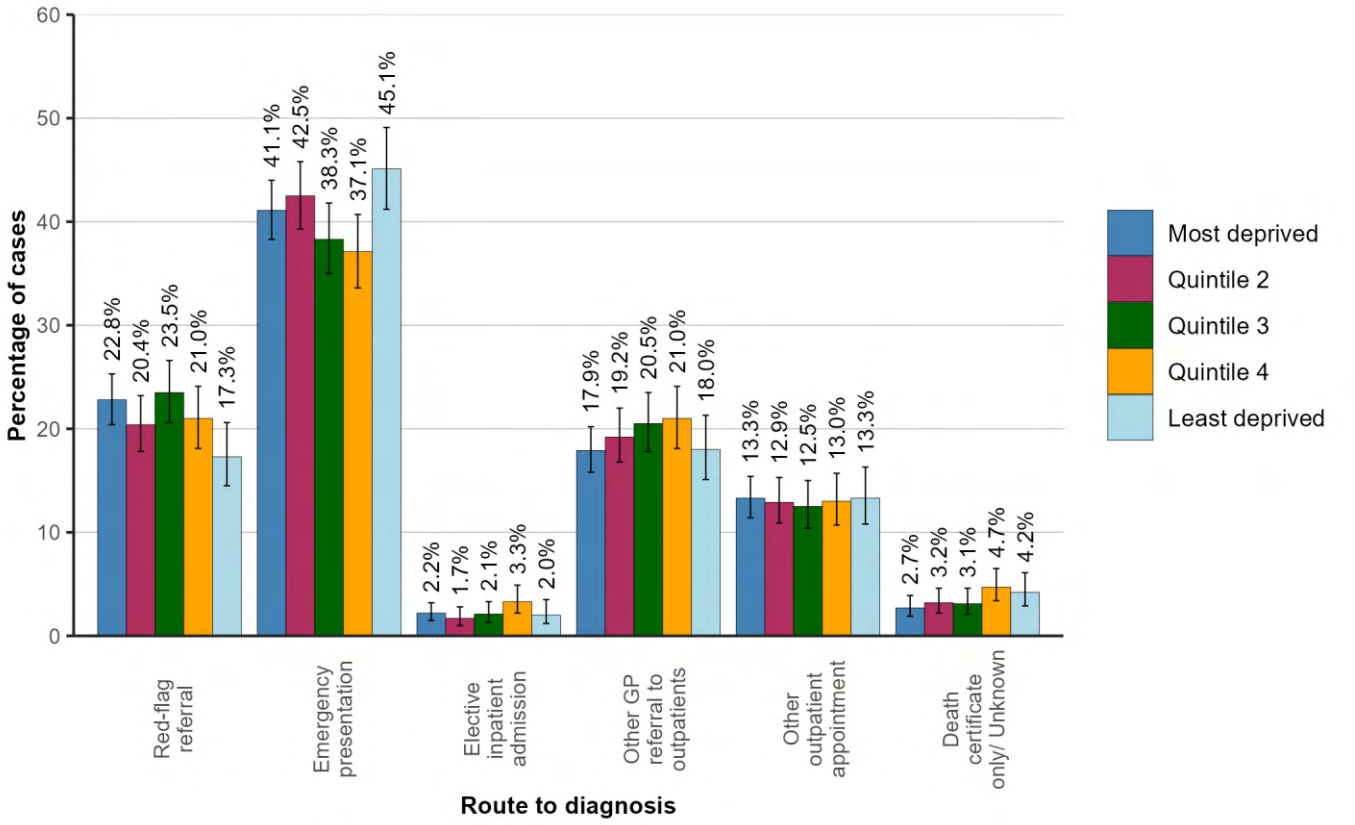


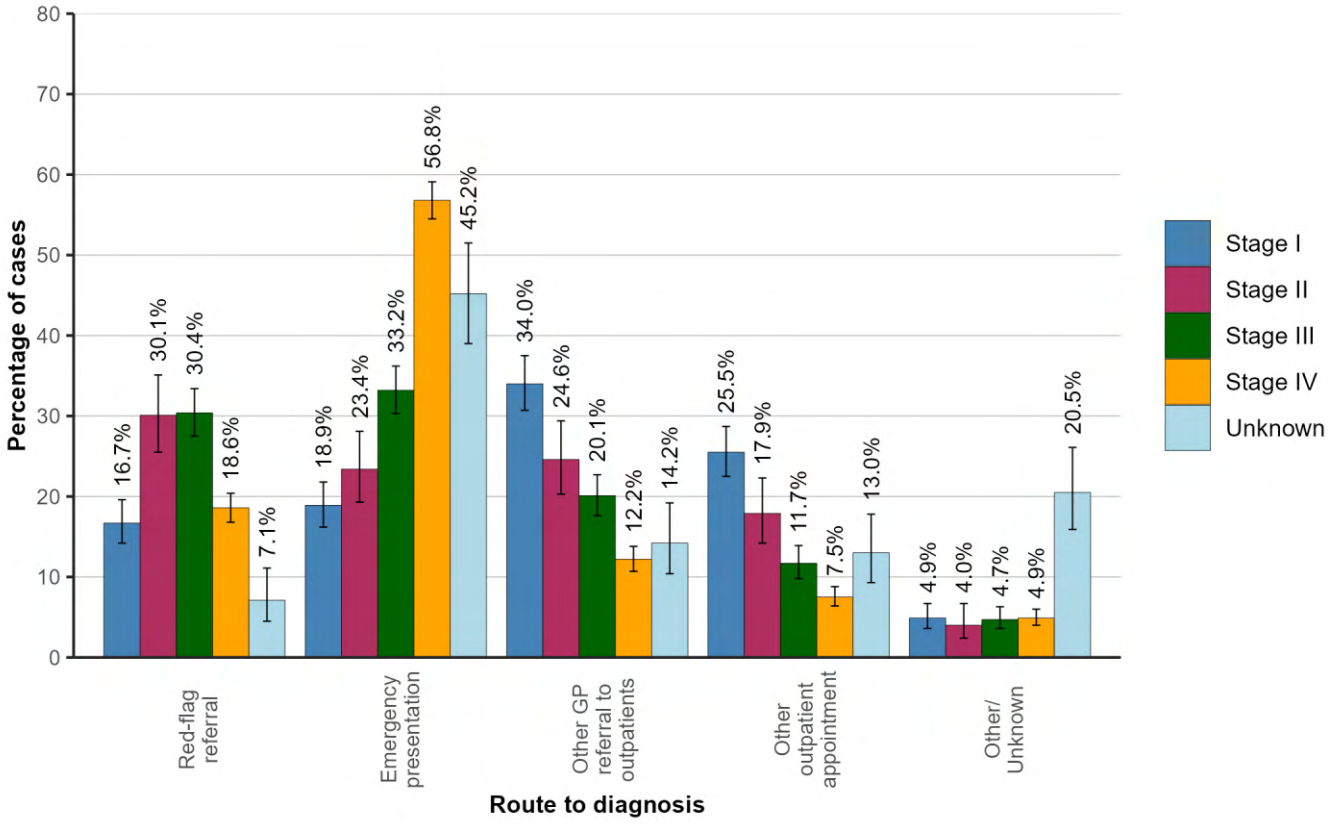
Figure 6.5: Route to diagnosis for lung cancer patients diagnosed in 2018-2020 by deprivation quintile



6.4: ROUTES TO DIAGNOSIS BY STAGE AT DIAGNOSIS

During 2018-2020 the proportion of cases of lung cancer diagnosed via an emergency presentation was 18.9% among stage I cancers compared to 56.8% among stage IV cancers. The proportions diagnosed via a red-flag referral were 16.7% and 18.6% for stage I and stage IV cancers respectively. The variation in route to diagnosis by stage at diagnosis was statistically significant ($p < 0.001$).

Figure 6.6: Route to diagnosis for lung cancer patients diagnosed in 2018-2020 by stage at diagnosis



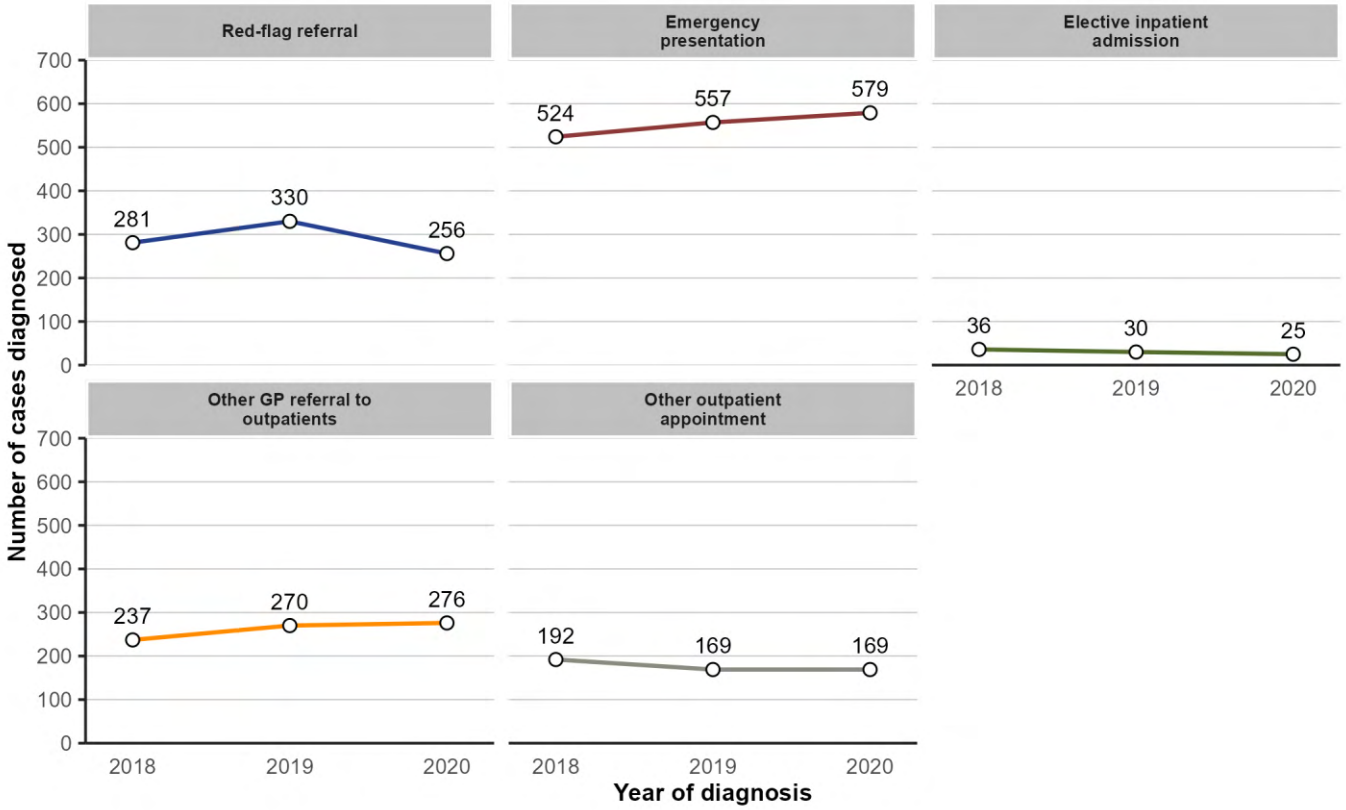
6.5: ROUTES TO DIAGNOSIS BY YEAR OF DIAGNOSIS

The number of lung cancer cases diagnosed via a red-flag referral each year decreased by 16.3% from 306 per year in 2018-19 to 256 in 2020. As a proportion of all cases, a red-flag referral diagnosis decreased from 22.5% in 2018-19 to 18.9% in 2020.

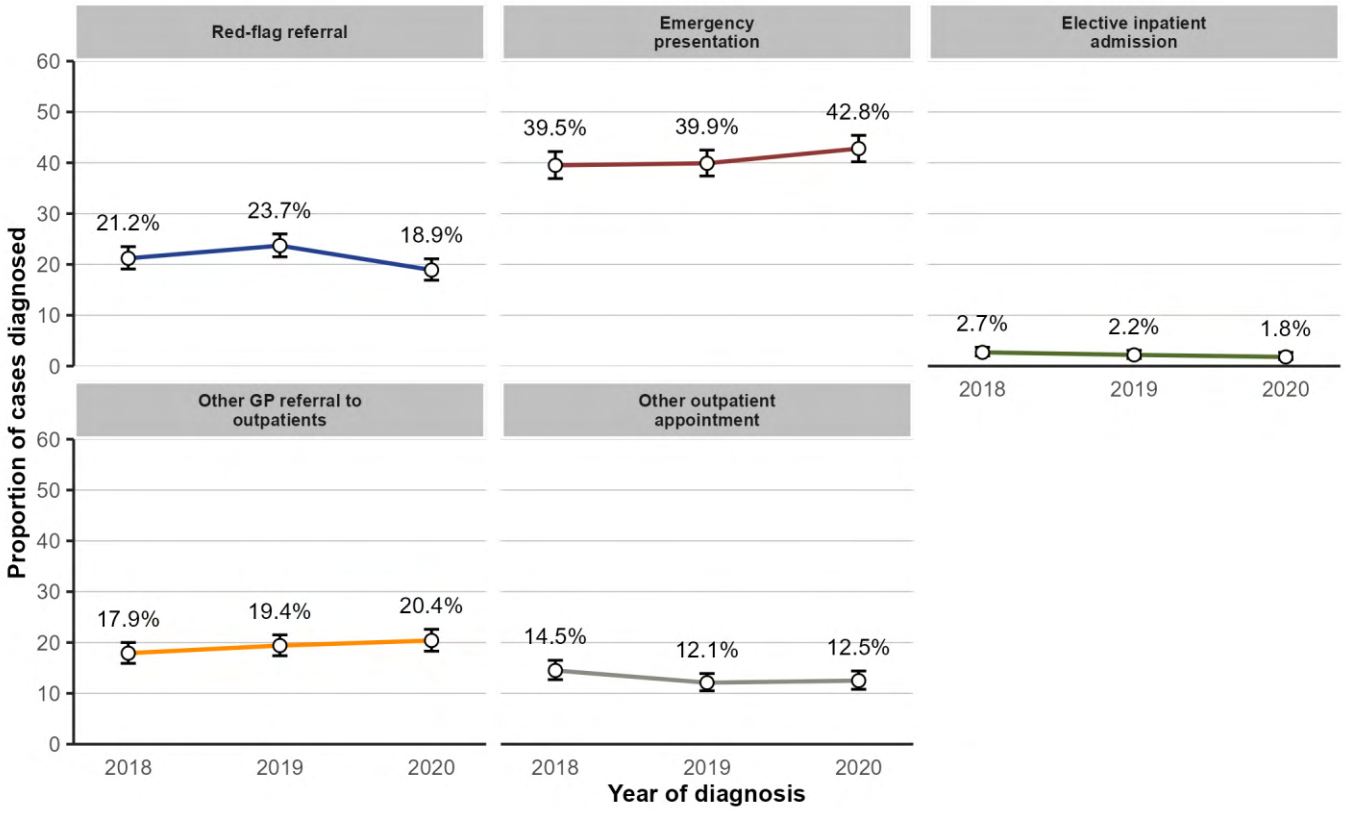
The number of lung cancer cases diagnosed via an emergency presentation each year increased by 7.0% from 541 per year in 2018-19 to 579 in 2020. As a proportion of all cases, an emergency presentation diagnosis increased from 39.7% in 2018-19 to 42.8% in 2020. The variation in route to diagnosis by year of diagnosis was statistically significant ($p = 0.022$).

Figure 6.7: Route to diagnosis for lung cancer patients diagnosed in 2018-2020 by year of diagnosis

(a) Number of cases



(b) Proportion of cases

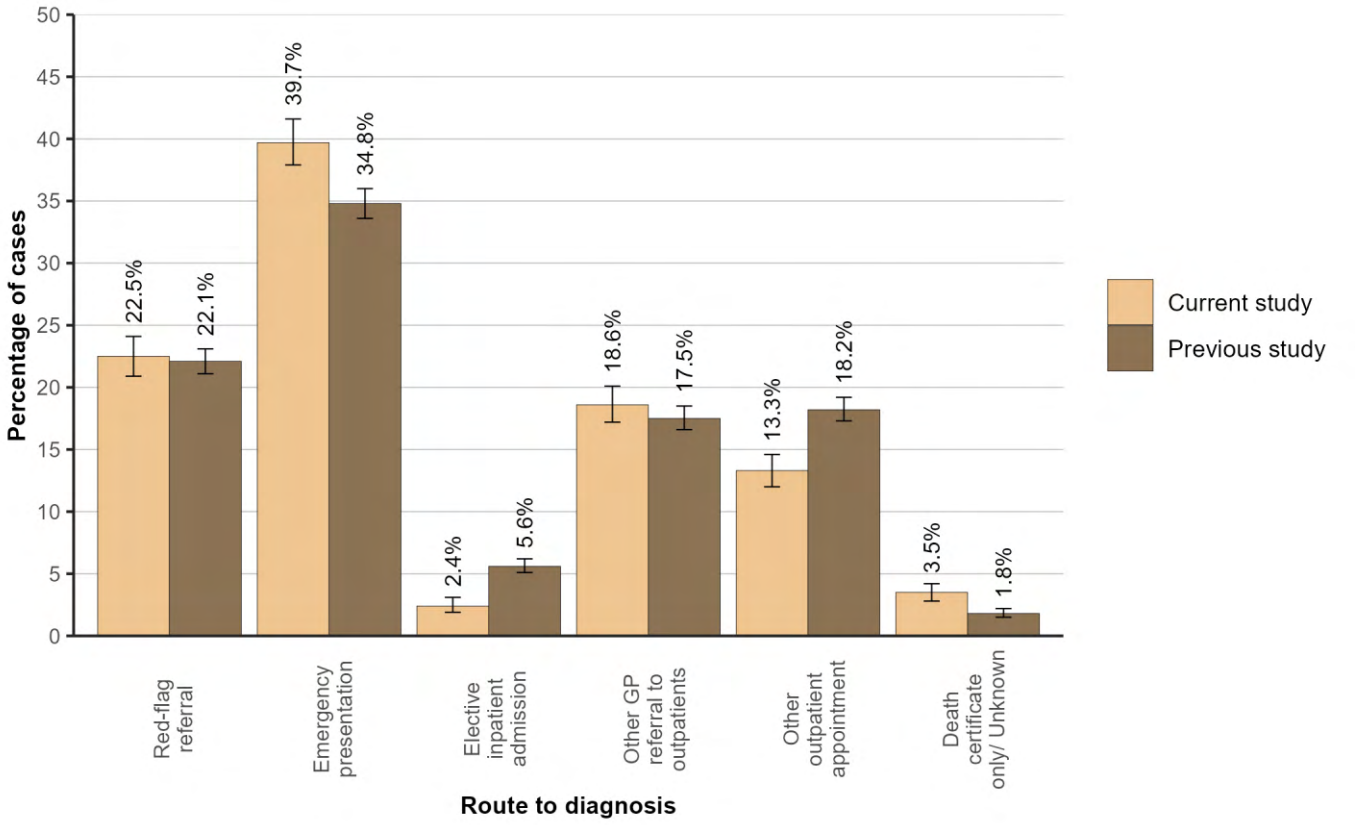


6.6: COMPARISON WITH PREVIOUS STUDIES

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with lung cancer in 2018-2019 compared to patients from the previous Northern Ireland study, which was for patients diagnosed in 2012-2016.

- Emergency presentation (39.7% in 2018-2019 compared to 34.8% previously ; p<0.001).
- Elective inpatient admission (2.4% in 2018-2019 compared to 5.6% previously ; p<0.001).
- Other outpatient appointment (13.3% in 2018-2019 compared to 18.2% previously ; p<0.001).

Figure 6.8: Route to diagnosis for lung cancer patients diagnosed in 2018-2019 compared to patients diagnosed in 2012-2016 (from previous Northern Ireland study)



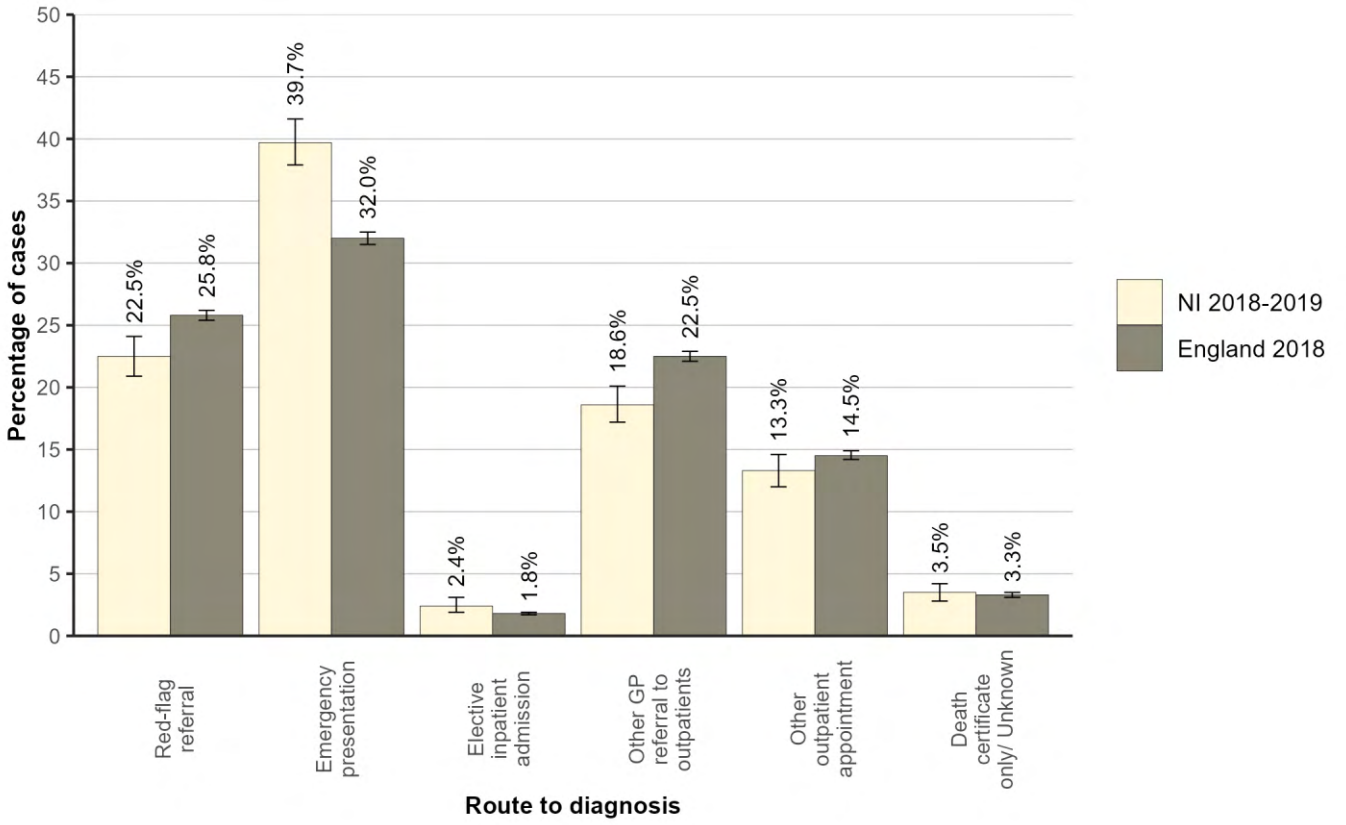
Source of previous data: Centre for Public Health, See reference 2.
Note that due to the impact of the COVID-19 pandemic on cancer diagnosis, comparisons exclude data from 2020.
Due to potential differences in coding and data sources, differences between the two studies should not be interpreted as a time trend.

6.7: Comparison with England

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with lung cancer in 2018-2019 compared to patients diagnosed in England during 2018.

- Red-flag referral (22.5% in NI compared to 25.8% in England ; p<0.001).
- Emergency presentation (39.7% in NI compared to 32.0% in England ; p<0.001).
- Other GP referral to outpatients (18.6% in NI compared to 22.5% in England ; p<0.001).

Figure 6.9: Route to diagnosis for lung cancer patients diagnosed in 2018-2019 compared to patients diagnosed in England during 2018



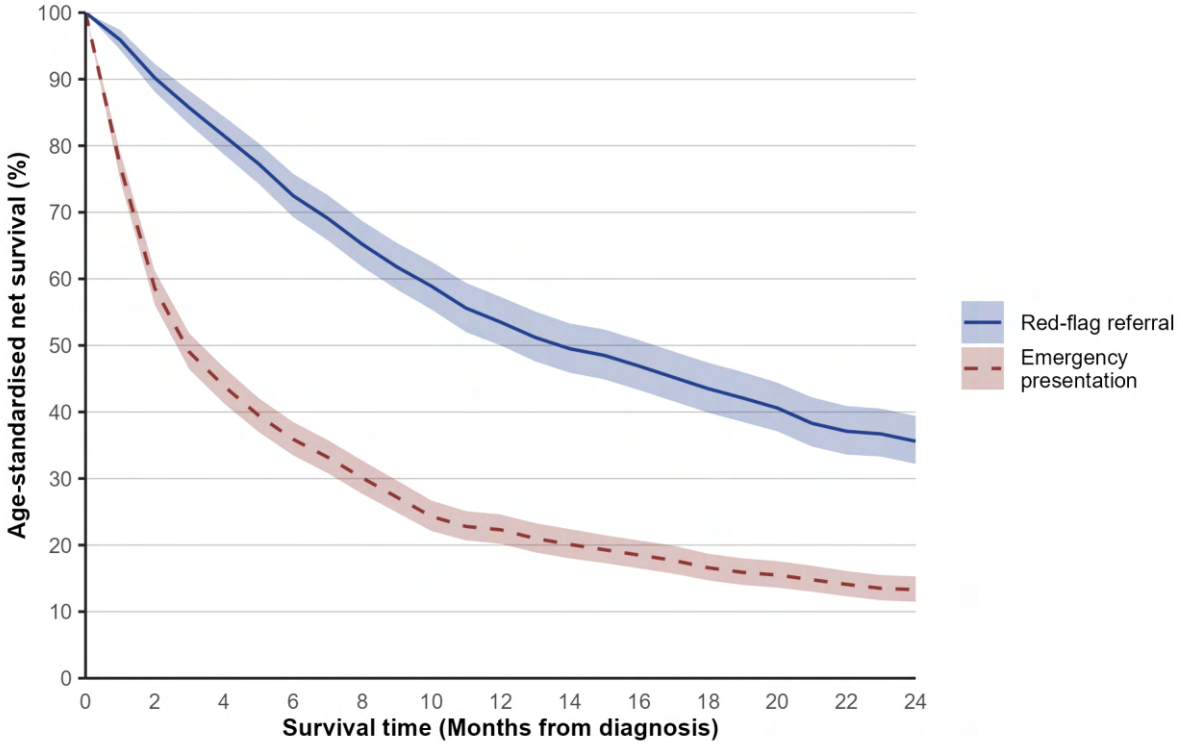
Source of English data: National Disease Registration Service, See reference 12.
Note that due to the impact of the COVID-19 pandemic on cancer diagnosis, comparisons exclude data from 2020.
Due to potential differences in coding and data sources, differences between the two studies should be treated as an approximate comparison.

6.8: SURVIVAL

During 2018-2020 one-year age-standardised net survival from lung cancer ranged from 22.3% for those diagnosed via an emergency presentation route to 61.2% for those diagnosed via another GP referral to outpatients route. Two years from diagnosis age-standardised net survival ranged from 13.3% for those diagnosed via an emergency presentation route to 44.5% for those diagnosed via another GP referral to outpatients route.

Figure 6.10: Age-standardised net survival by route to diagnosis for lung cancer patients diagnosed in 2018-2020

(a) Red-flag and emergency routes



(b) Other routes

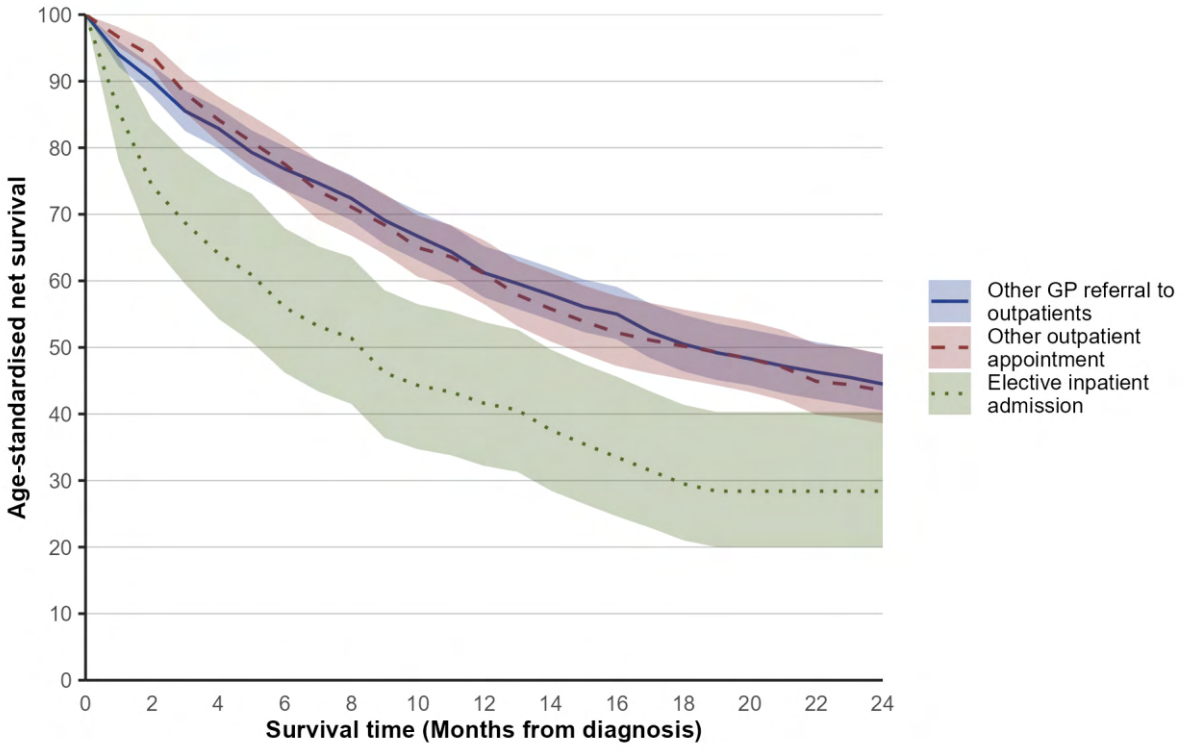


Table 6.2: Age-standardised net survival by route to diagnosis for lung cancer patients diagnosed in 2018-2020

Route to diagnosis	One-year survival (ASNS)	Two-year survival (ASNS)
Red-flag referral	53.5% (50.0% - 57.3%)	35.6% (32.2% - 39.4%)
Emergency presentation	22.3% (20.2% - 24.6%)	13.3% (11.5% - 15.3%)
Elective inpatient admission	41.6% (32.2% - 53.8%)	28.4% (20.0% - 40.3%)
Other GP referral to outpatients	61.2% (57.5% - 65.2%)	44.5% (40.5% - 48.9%)
Other outpatient appointment	61.1% (56.5% - 66.1%)	43.5% (38.6% - 49.0%)
Unknown	42.4% (32.5% - 55.2%)	20.6% (15.8% - 26.8%)

ASNS: Age-standardised net survival with 95% confidence interval.

07: Prostate Cancer

The most common route to diagnosis among prostate cancer patients during 2018-2020 was via a red-flag referral, with 620 (47.5%) cases diagnosed on average each year. This was followed by another GP referral to outpatients route with 364 (27.8%) cases diagnosed on average each year. Emergency presentations made up 8.0% of cases during this period.

Figure 7.1: Route to diagnosis for prostate cancer patients diagnosed in 2018-2020

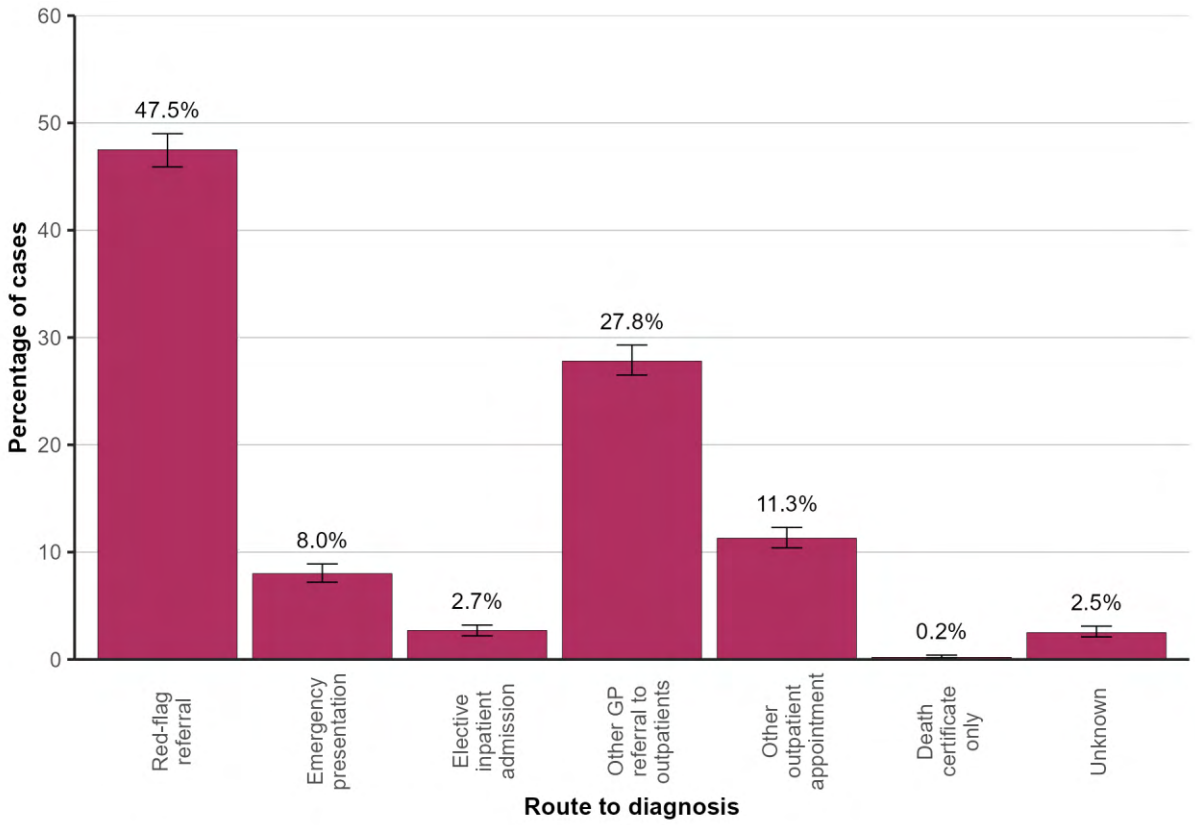


Table 7.1: Average number of prostate cancer cases diagnosed each year during 2018-2020 by route to diagnosis

Route to diagnosis	Cases per year	Proportion (95% CI)
Red-flag referral	620	47.5% (45.9% - 49.0%)
Emergency presentation	105	8.0% (7.2% - 8.9%)
Elective inpatient admission	35	2.7% (2.2% - 3.2%)
Other GP referral to outpatients	364	27.8% (26.5% - 29.3%)
Other outpatient appointment	148	11.3% (10.4% - 12.3%)
Death certificate only	2	0.2% (0.1% - 0.4%)
Unknown	33	2.5% (2.1% - 3.1%)

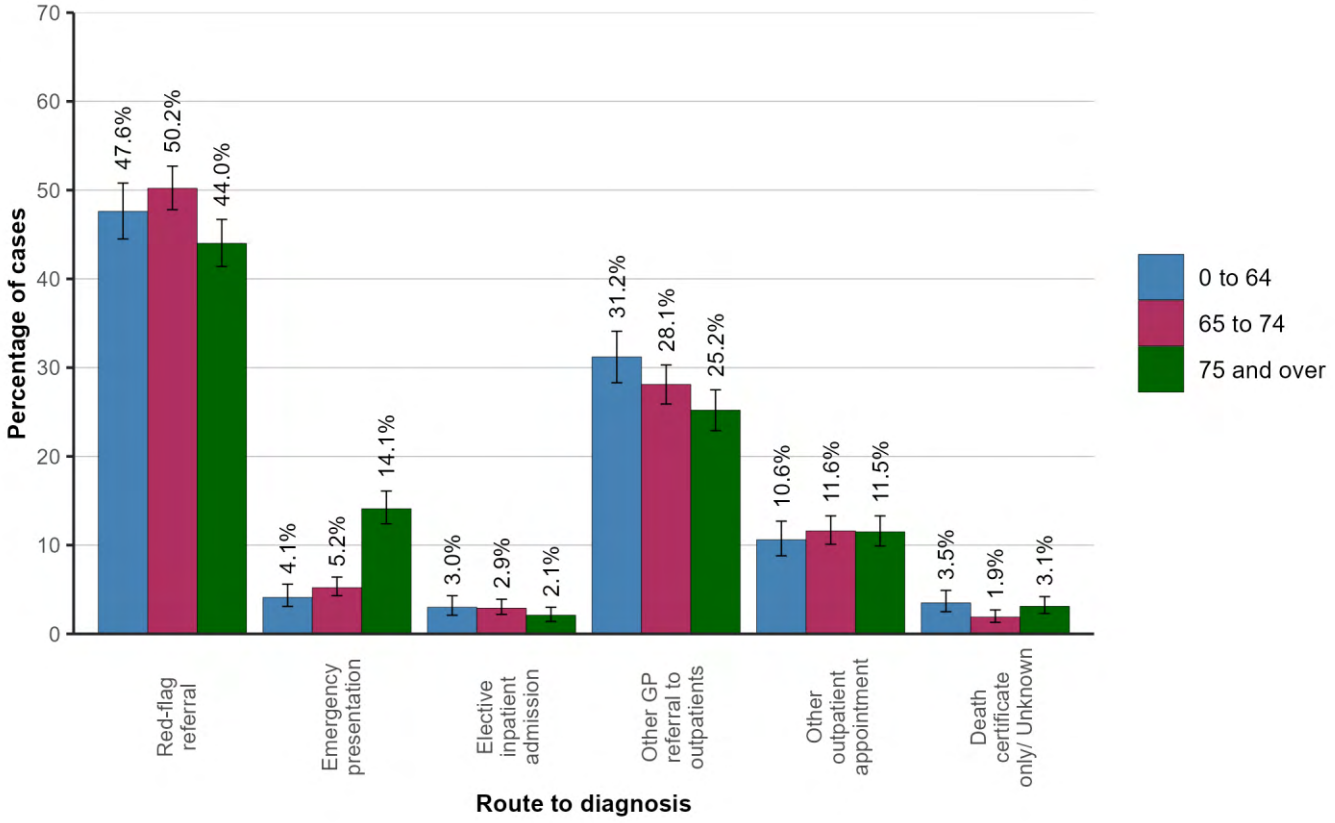
CI: Confidence Interval

7.1: ROUTES TO DIAGNOSIS BY AGE GROUP

During 2018-2020 the most common route to diagnosis for cases of prostate cancer overall was a red-flag referral. Among those aged 0 to 64 there were 153 (47.6%) diagnosed per year via this route, compared to 198 (44.0%) per year among those aged 75 and over. This made it the most common route to diagnosis for both those aged 0 to 64 and those aged 75 and over.

The route to diagnosis with the biggest difference between those aged 0 to 64 and aged 75 and over was an emergency presentation with 4.1% of those aged 0 to 64 and 14.1% of those aged 75 and over diagnosed via this route. The variation in route to diagnosis by age group was statistically significant ($p < 0.001$).

Figure 7.2: Route to diagnosis for prostate cancer patients diagnosed in 2018-2020 by age group



7.2: ROUTES TO DIAGNOSIS BY AREA OF RESIDENCE

Health and Social Care Trust

During 2018-2020 the proportion of cases of prostate cancer diagnosed via a red-flag referral ranged from 43.0% in Belfast HSCT to 51.5% in Western HSCT. The proportions diagnosed via an emergency presentation ranged from 5.8% to 9.6% in Western HSCT and Southern HSCT respectively. The variation in route to diagnosis by Health and Social Care Trust was statistically significant ($p < 0.001$).

Figure 7.3: Route to diagnosis for prostate cancer patients diagnosed in 2018-2020 by Health and Social Care Trust

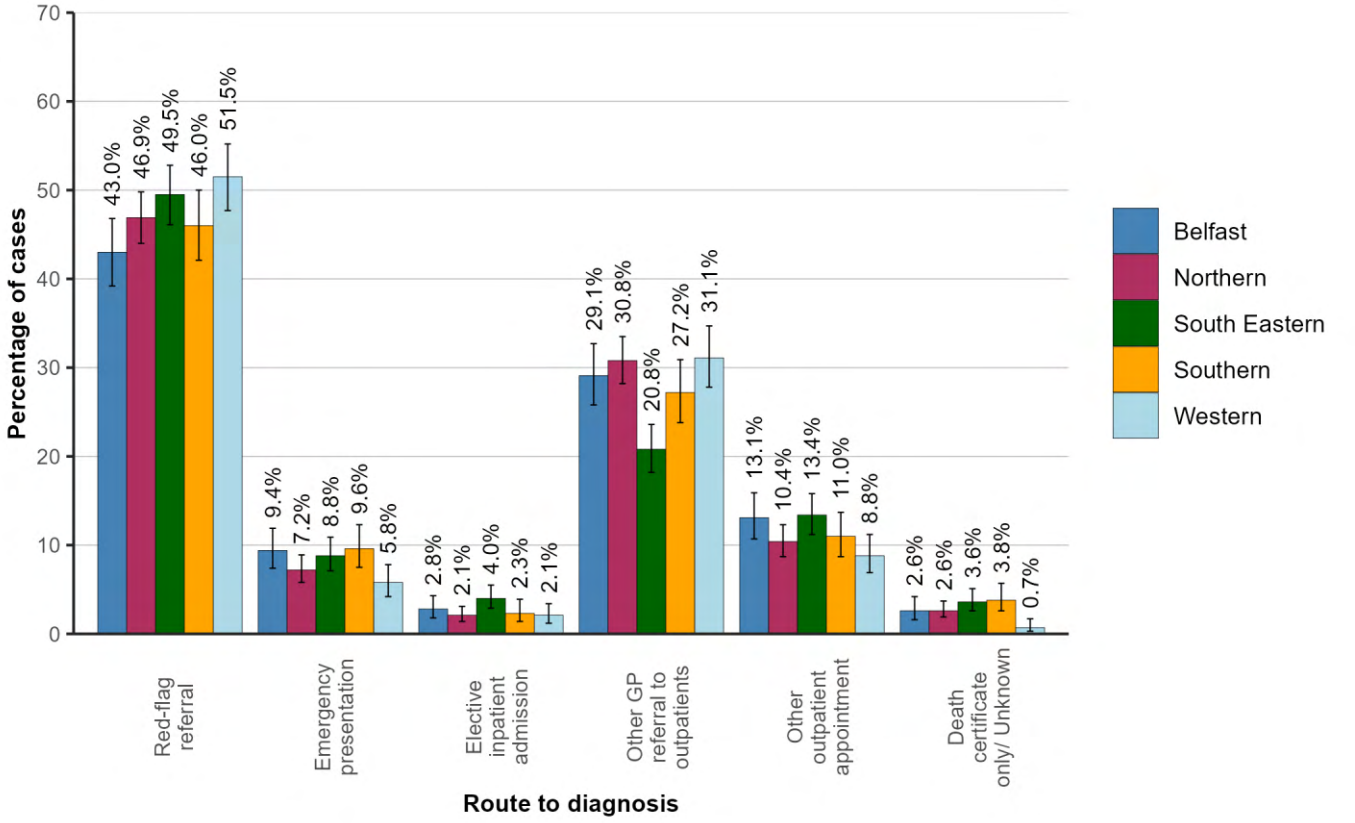
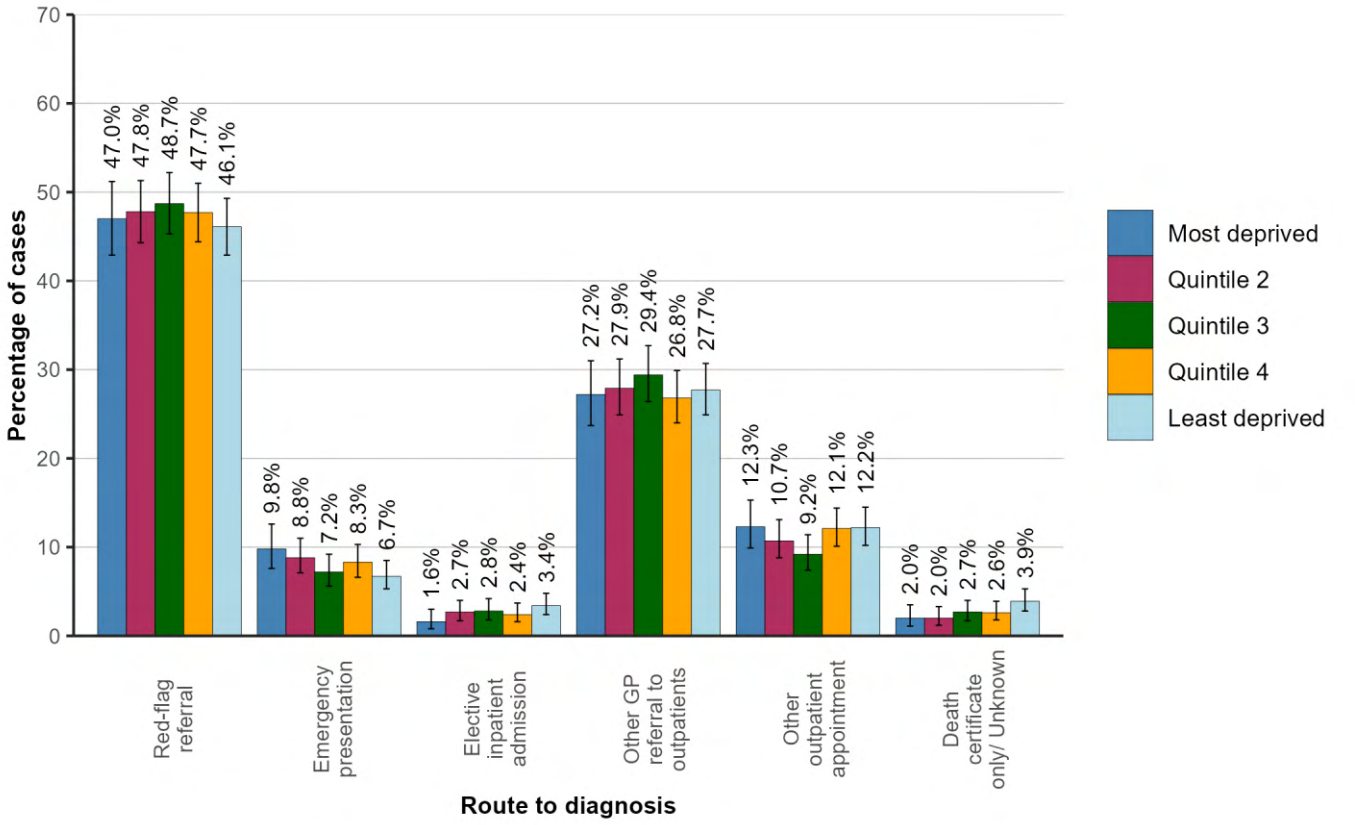


Figure 7.4: Route to diagnosis for prostate cancer patients diagnosed in 2018-2020 by deprivation quintile



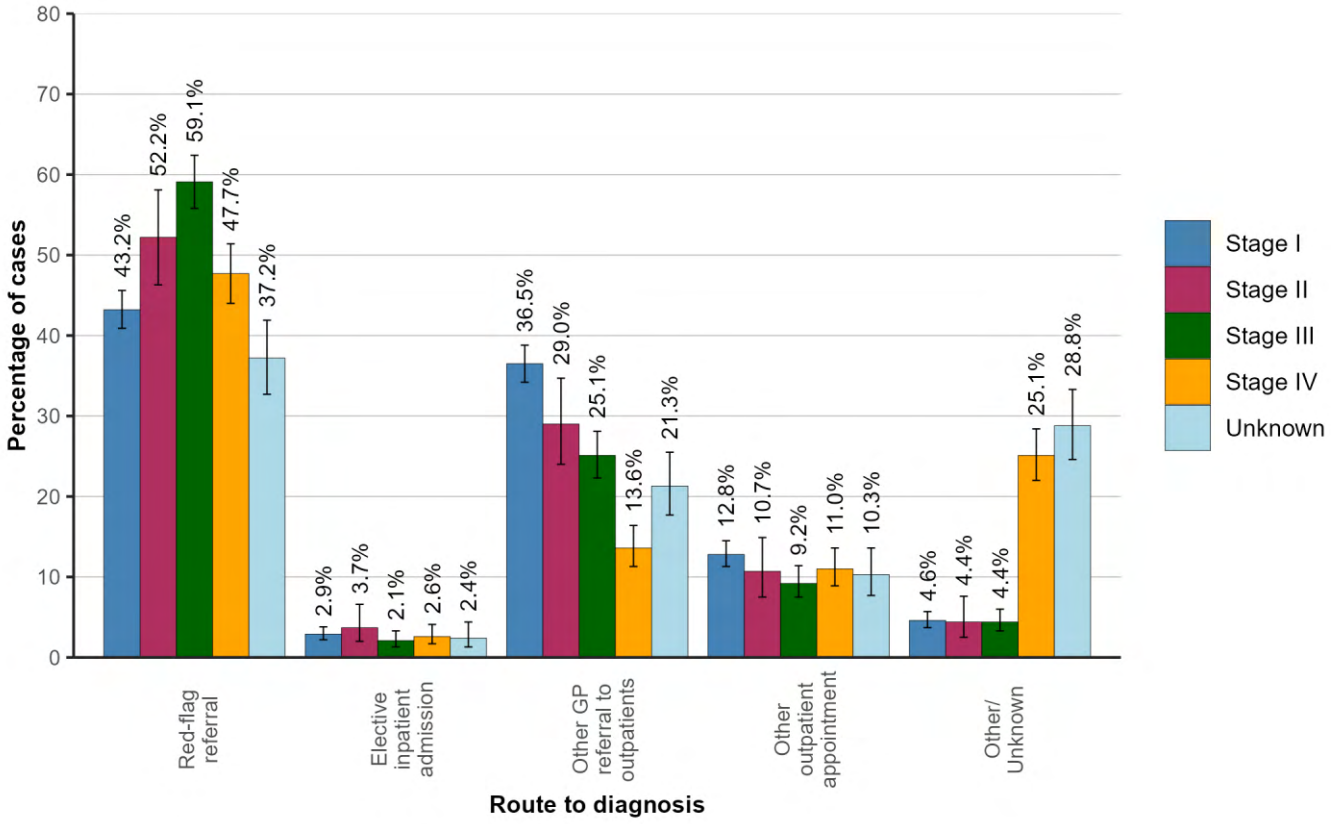
Area-based socio-economic deprivation

During 2018-2020 the proportion of cases of prostate cancer diagnosed via a red-flag referral was 47.0% in the most deprived areas compared to 46.1% in the least deprived areas. The proportions diagnosed via an emergency presentation were 9.8% and 6.7% in the most and least deprived areas respectively. The variation in route to diagnosis by deprivation quintile was not statistically significant.

7.3: Routes to diagnosis by stage at diagnosis

During 2018-2020 the proportion of cases of prostate cancer diagnosed via a red-flag referral was 43.2% among stage I cancers compared to 47.7% among stage IV cancers. The variation in route to diagnosis by stage at diagnosis was statistically significant ($p < 0.001$).

Figure 7.5: Route to diagnosis for prostate cancer patients diagnosed in 2018-2020 by stage at diagnosis



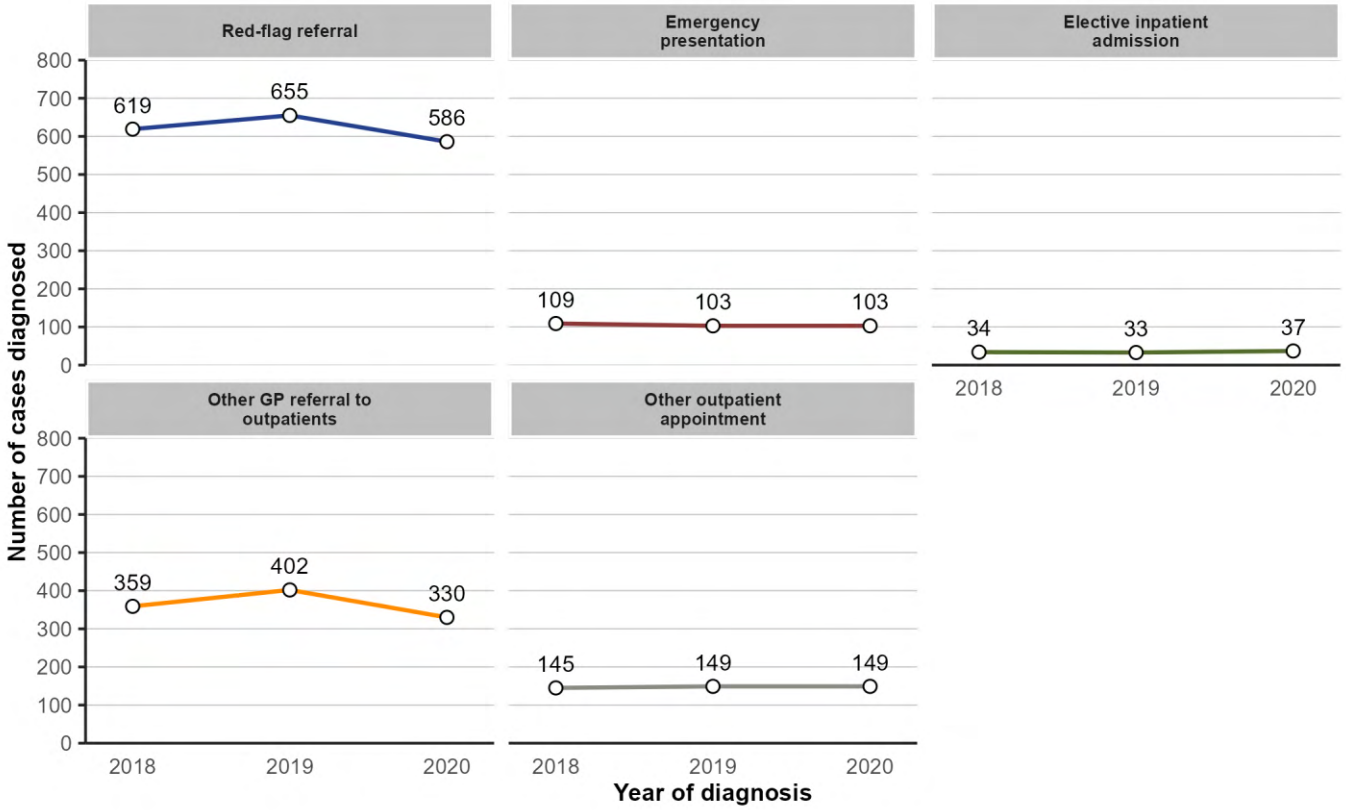
7.4: Routes to diagnosis by year of diagnosis

The number of prostate cancer cases diagnosed via a red-flag referral each year decreased by 8.0% from 637 per year in 2018-19 to 586 in 2020. As a proportion of all cases, a red-flag referral diagnosis increased from 47.3% in 2018-19 to 47.8% in 2020.

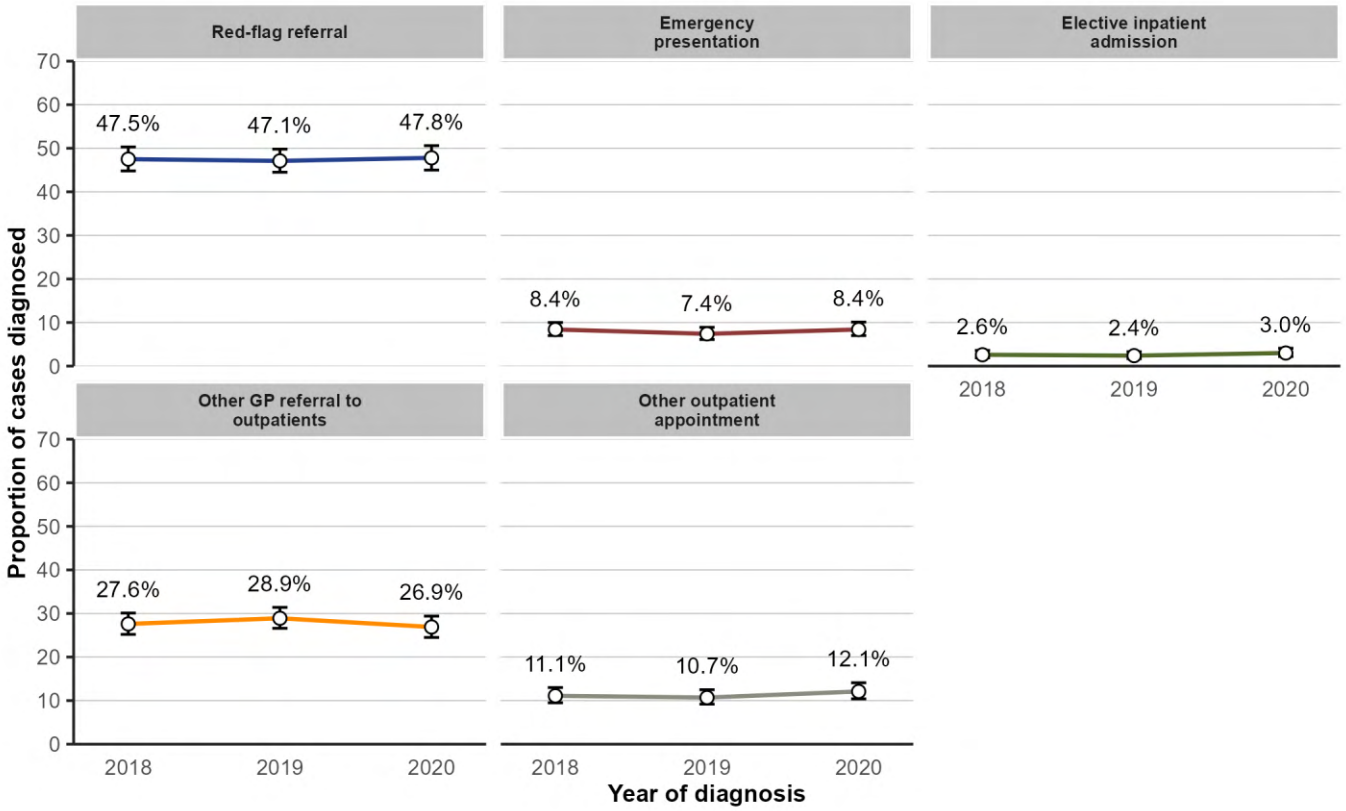
The number of prostate cancer cases diagnosed via an emergency presentation each year decreased by 2.8% from 106 per year in 2018-19 to 103 in 2020. As a proportion of all cases, an emergency presentation diagnosis increased from 7.9% in 2018-19 to 8.4% in 2020. The variation in route to diagnosis by year of diagnosis was not statistically significant.

Figure 7.6: Route to diagnosis for prostate cancer patients diagnosed in 2018-2020 by year of diagnosis

(a) Number of cases



(b) Proportion of cases

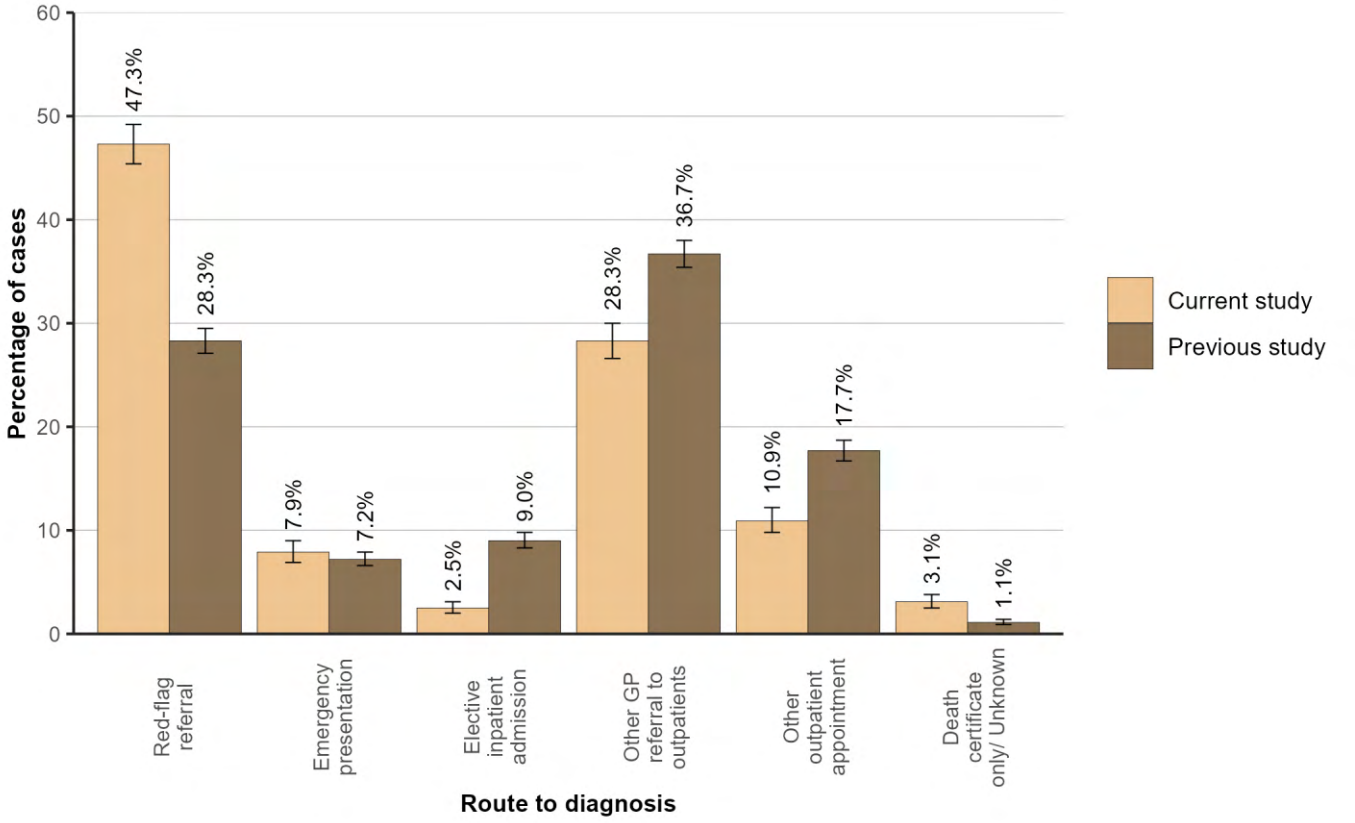


7.5: COMPARISON WITH PREVIOUS STUDIES

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with prostate cancer in 2018-2019 compared to patients from the previous Northern Ireland study, which was for patients diagnosed in 2012-2016.

- Red-flag referral (47.3% in 2018-2019 compared to 28.3% previously ; p<0.001).
- Elective inpatient admission (2.5% in 2018-2019 compared to 9.0% previously ; p<0.001).
- Other GP referral to outpatients (28.3% in 2018-2019 compared to 36.7% previously ; p<0.001).
- Other outpatient appointment (10.9% in 2018-2019 compared to 17.7% previously ; p<0.001).

Figure 7.7: Route to diagnosis for prostate cancer patients diagnosed in 2018-2019 compared to patients diagnosed in 2012-2016 (from previous Northern Ireland study)



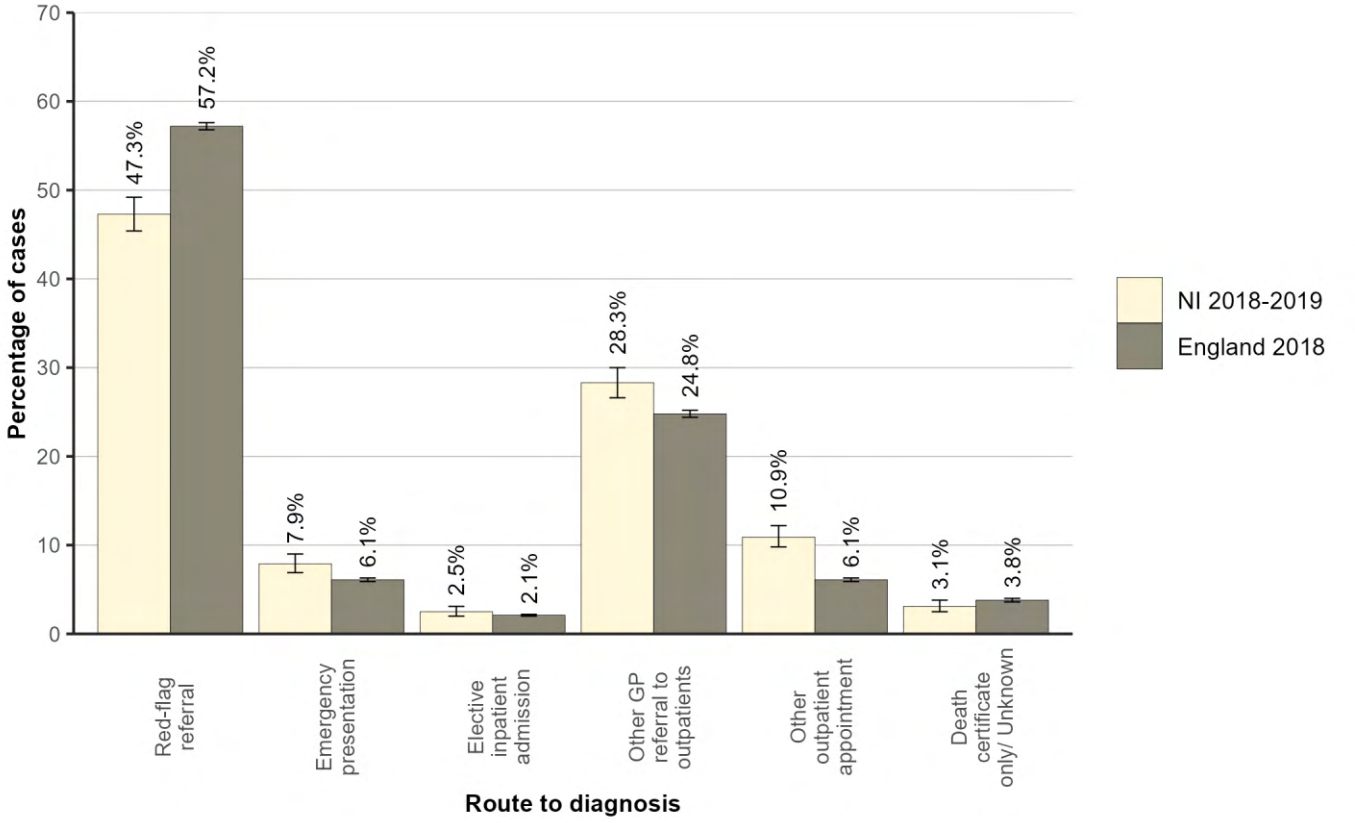
Source of previous data: Centre for Public Health, See reference 2.
Note that due to the impact of the COVID-19 pandemic on cancer diagnosis, comparisons exclude data from 2020.
Due to potential differences in coding and data sources, differences between the two studies should not be interpreted as a time trend.

7.6: Comparison with England

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with prostate cancer in 2018-2019 compared to patients diagnosed in England during 2018.

- Red-flag referral (47.3% in NI compared to 57.2% in England ; p<0.001).
- Emergency presentation (7.9% in NI compared to 6.1% in England ; p<0.001).
- Other GP referral to outpatients (28.3% in NI compared to 24.8% in England ; p<0.001).
- Other outpatient appointment (10.9% in NI compared to 6.1% in England ; p<0.001).

Figure 7.8: Route to diagnosis for prostate cancer patients diagnosed in 2018-2019 compared to patients diagnosed in England during 2018



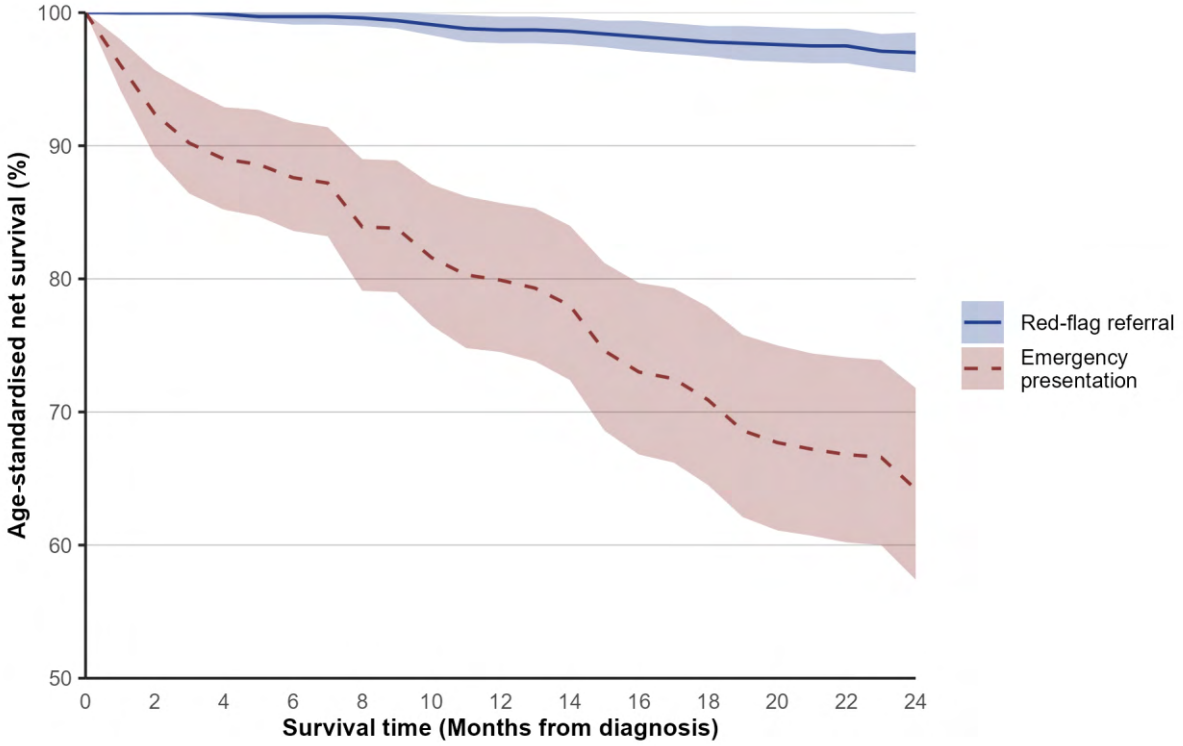
Source of English data: National Disease Registration Service, See reference 12.
Note that due to the impact of the COVID-19 pandemic on cancer diagnosis, comparisons exclude data from 2020.
Due to potential differences in coding and data sources, differences between the two studies should be treated as an approximate comparison.

7.7: SURVIVAL

During 2018-2020 one-year age-standardised net survival from prostate cancer ranged from 79.9% for those diagnosed via an emergency presentation route to 99.0% for those diagnosed via another GP referral to outpatients route. Two years from diagnosis age-standardised net survival ranged from 64.2% for those diagnosed via an emergency presentation route to 98.4% for those diagnosed via another GP referral to outpatients route.

Figure 7.9: Age-standardised net survival by route to diagnosis for prostate cancer patients diagnosed in 2018-2020

(a) Red-flag and emergency routes



(b) Other routes

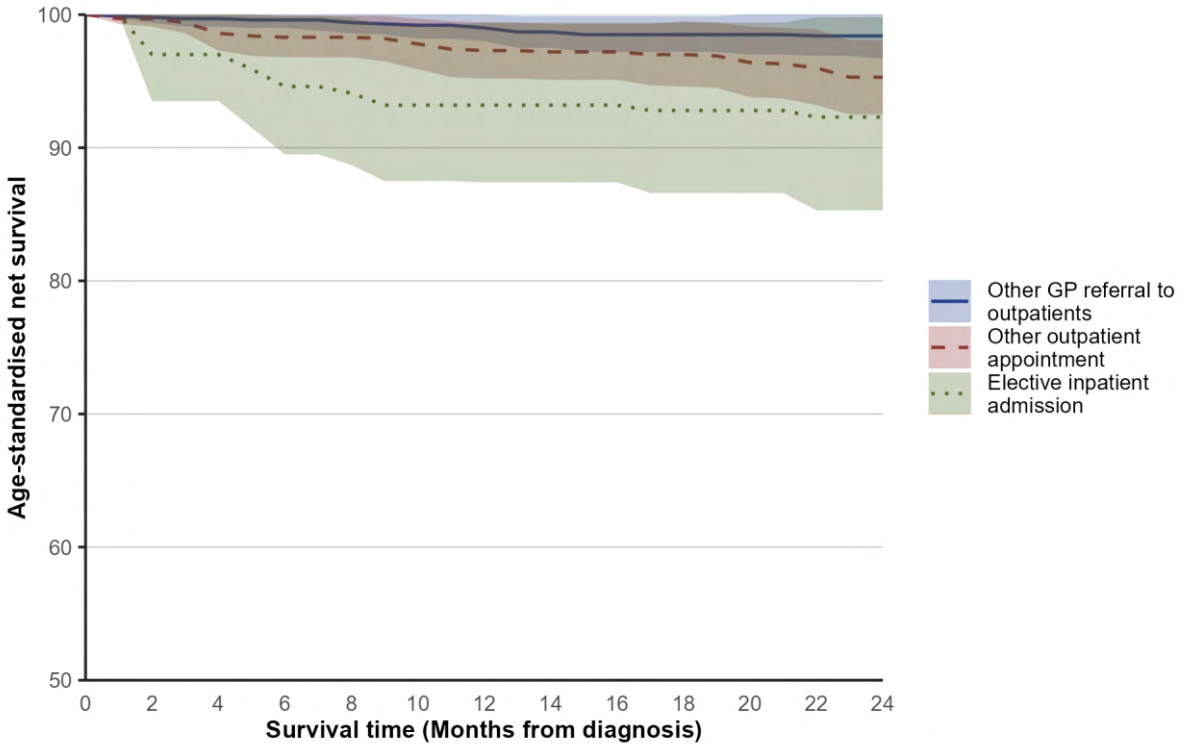


Table 7.2: Age-standardised net survival by route to diagnosis for prostate cancer patients diagnosed in 2018-2020

Route to diagnosis	One-year survival (ASNS)	Two-year survival (ASNS)
Red-flag referral	98.7% (97.7% - 99.7%)	97.0% (95.5% - 98.5%)
Emergency presentation	79.9% (74.5% - 85.7%)	64.2% (57.4% - 71.8%)
Elective inpatient admission	93.2% (87.4% - 99.4%)	92.3% (85.3% - 99.8%)
Other GP referral to outpatients	99.0% (98.0% - 100.0%)	98.4% (96.7% - 100.0%)
Other outpatient appointment	97.3% (95.2% - 99.4%)	95.3% (92.5% - 98.1%)
Unknown	93.8% (88.8% - 99.1%)	91.3% (84.9% - 98.2%)

ASNS: Age-standardised net survival with 95% confidence interval.

08: Head and Neck Cancer

The most common route to diagnosis among head and neck cancer patients during 2018-2020 was via a red-flag referral, with 155 (43.4%) cases diagnosed on average each year. This was followed by another GP referral to outpatients route with 82 (22.8%) cases diagnosed on average each year. Emergency presentations made up 10.9% of cases during this period.

Figure 8.1: Route to diagnosis for head and neck cancer patients diagnosed in 2018-2020

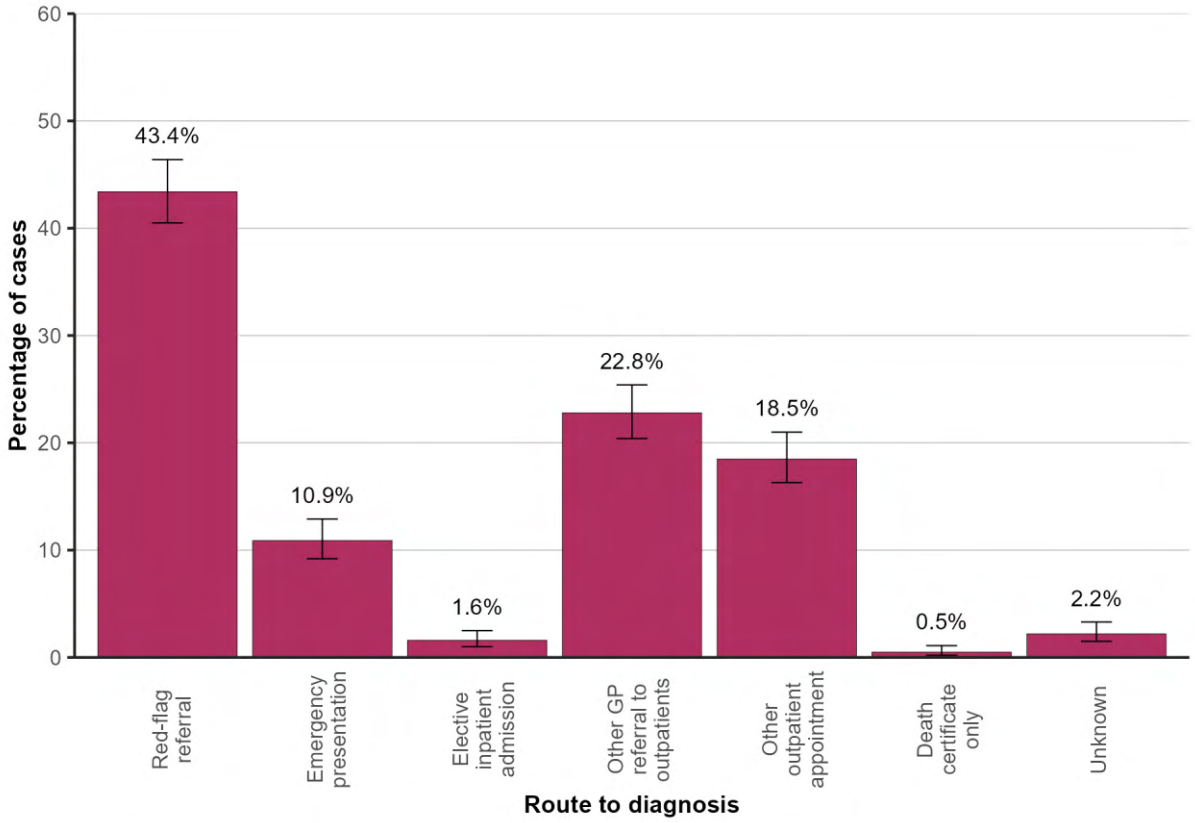


Table 8.1: Average number of head and neck cancer cases diagnosed each year during 2018-2020 by route to diagnosis

Route to diagnosis	Cases per year	Proportion (95% CI)
Red-flag referral	155	43.4% (40.5% - 46.4%)
Emergency presentation	39	10.9% (9.2% - 12.9%)
Elective inpatient admission	6	1.6% (1.0% - 2.5%)
Other GP referral to outpatients	82	22.8% (20.4% - 25.4%)
Other outpatient appointment	66	18.5% (16.3% - 21.0%)
Death certificate only	2	0.5% (0.2% - 1.1%)
Unknown	8	2.2% (1.5% - 3.3%)

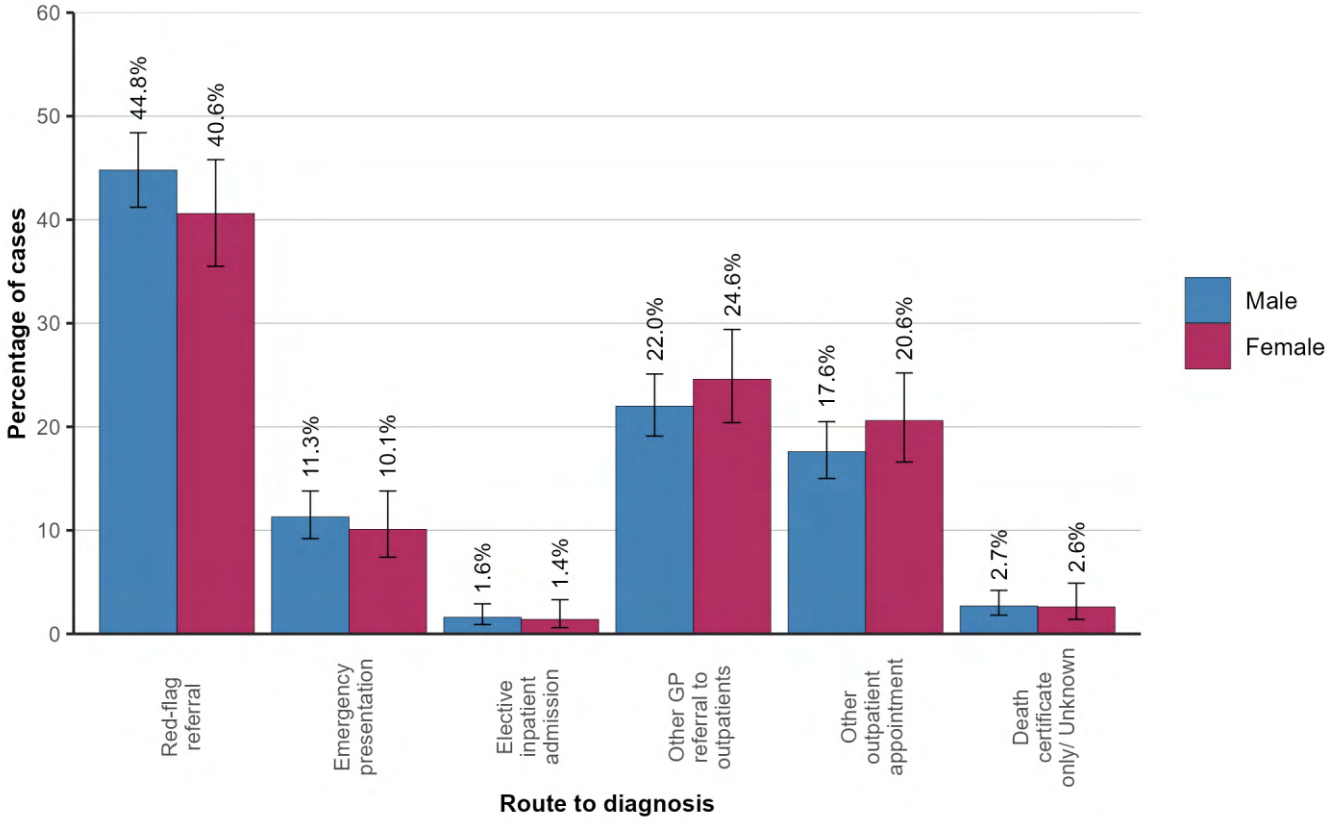
CI: Confidence Interval

8.1: ROUTES TO DIAGNOSIS BY GENDER

During 2018-2020 there were 109 male and 47 female cases of head and neck cancer diagnosed each year where the route to diagnosis was a red-flag referral. This was the most common route to diagnosis for both men (44.8%) and women (40.6%).

Red-flag referral routes also demonstrated the biggest difference between males and females. The variation in route to diagnosis by gender was not statistically significant.

Figure 8.2: Route to diagnosis for head and neck cancer patients diagnosed in 2018-2020 by gender

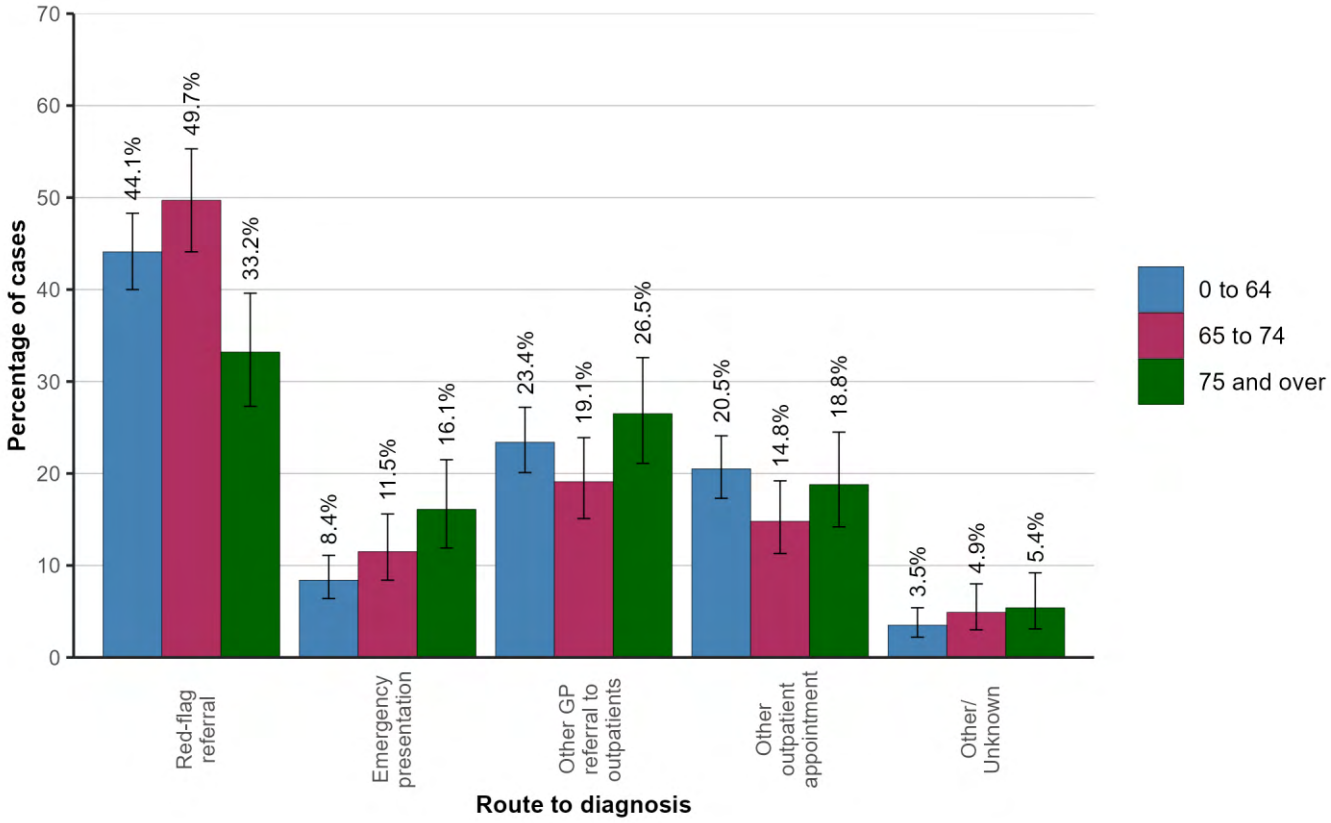


8.2: ROUTES TO DIAGNOSIS BY AGE GROUP

During 2018-2020 the most common route to diagnosis for cases of head and neck cancer overall was a red-flag referral. Among those aged 0 to 64 there were 80 (44.1%) diagnosed per year via this route, compared to 25 (33.2%) per year among those aged 75 and over. This made it the most common route to diagnosis for both those aged 0 to 64 and those aged 75 and over.

Red-flag referral routes also demonstrated the biggest difference between those aged 0 to 64 and 75 and over. The variation in route to diagnosis by age group was statistically significant (p = 0.001).

Figure 8.3: Route to diagnosis for head and neck cancer patients diagnosed in 2018-2020 by age group



8.3: ROUTES TO DIAGNOSIS BY AREA OF RESIDENCE

Health and Social Care Trust

During 2018-2020 the proportion of cases of head and neck cancer diagnosed via a red-flag referral ranged from 36.6% in South Eastern HSCT to 48.2% in Belfast HSCT. The proportions diagnosed via an emergency presentation ranged from 9.7% to 13.3% in Southern HSCT and Belfast HSCT respectively. The variation in route to diagnosis by Health and Social Care Trust was not statistically significant.

Area-based socio-economic deprivation

During 2018-2020 the proportion of cases of head and neck cancer diagnosed via a red-flag referral was 43.6% in the most deprived areas compared to 41.9% in the least deprived areas. The proportions diagnosed via an emergency presentation were 13.5% and 7.6% in the most and least deprived areas respectively. The variation in route to diagnosis by deprivation quintile was not statistically significant.

Figure 8.4: Route to diagnosis for head and neck cancer patients diagnosed in 2018-2020 by Health and Social Care Trust

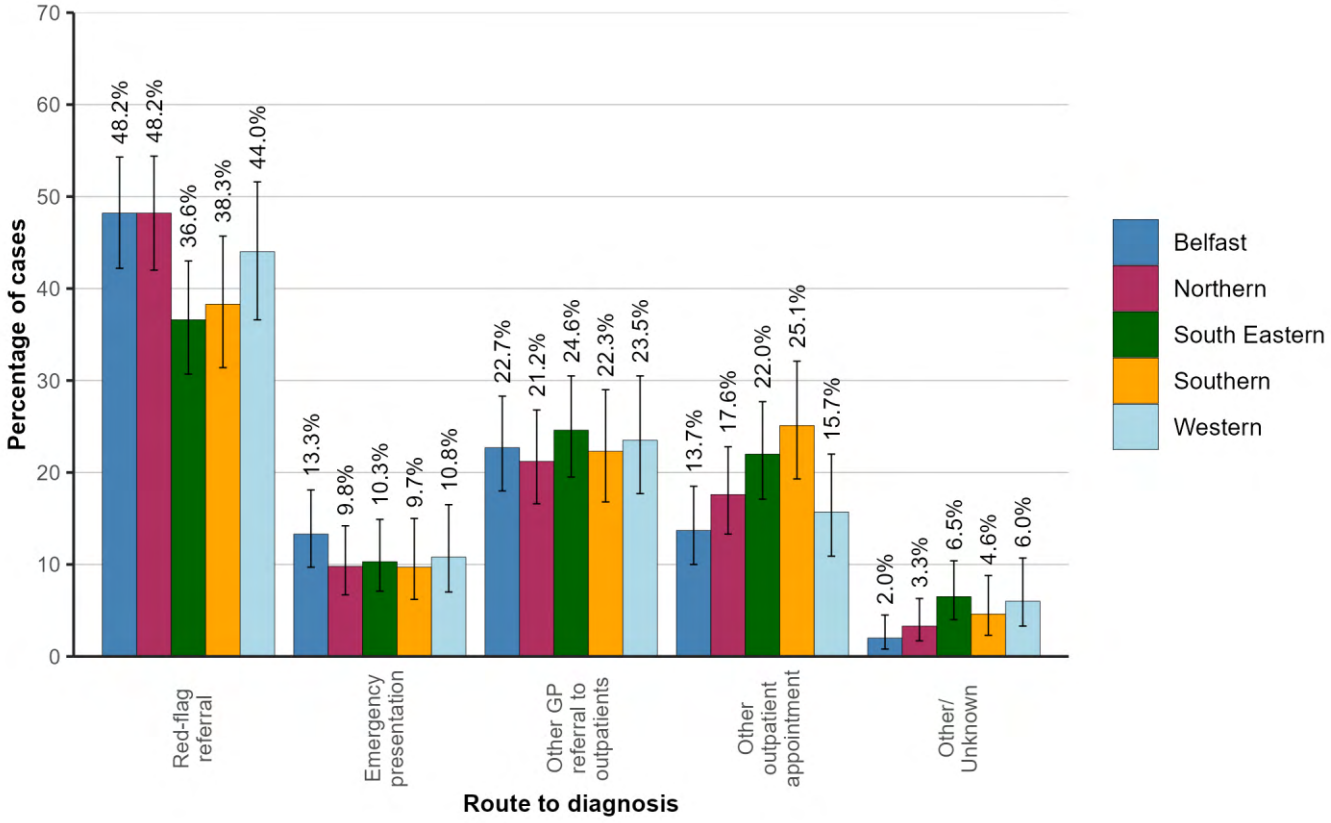
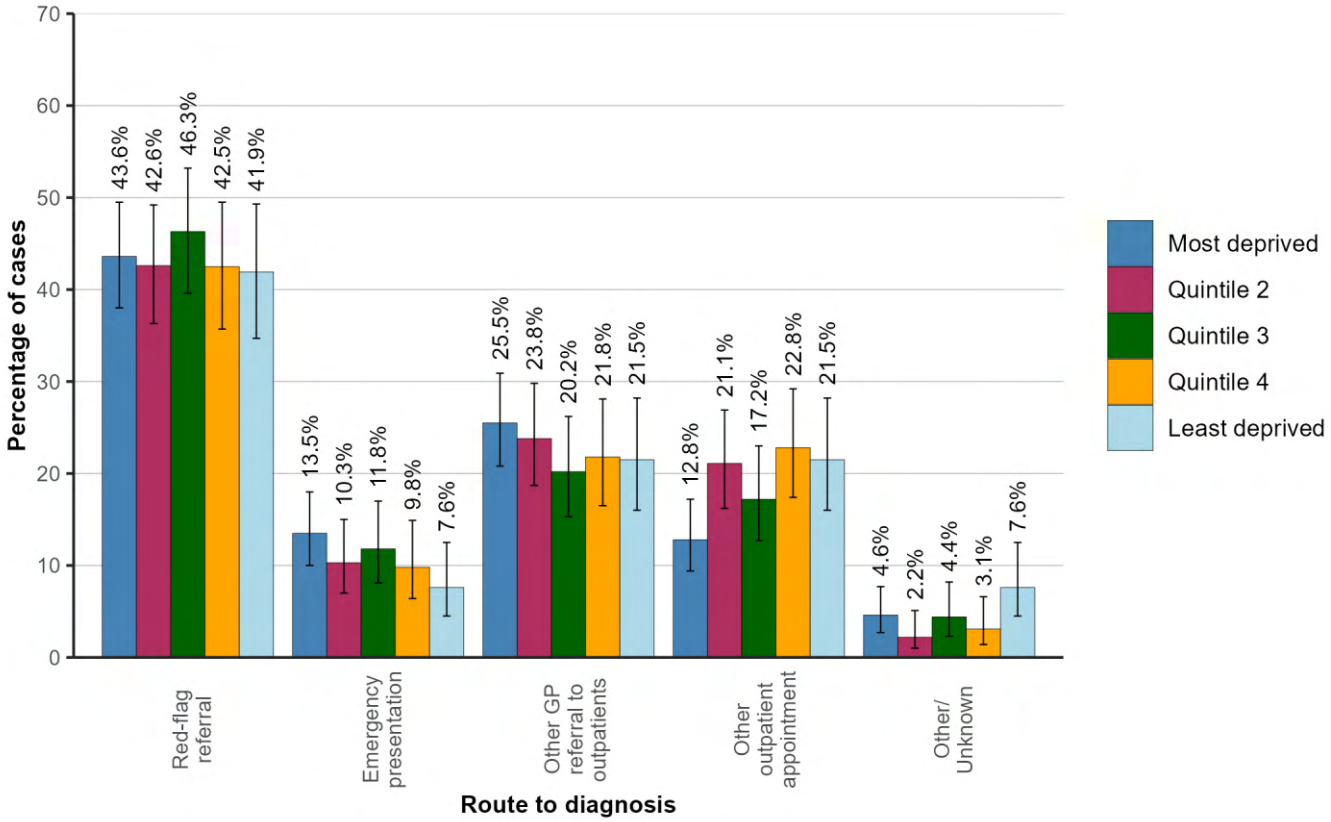


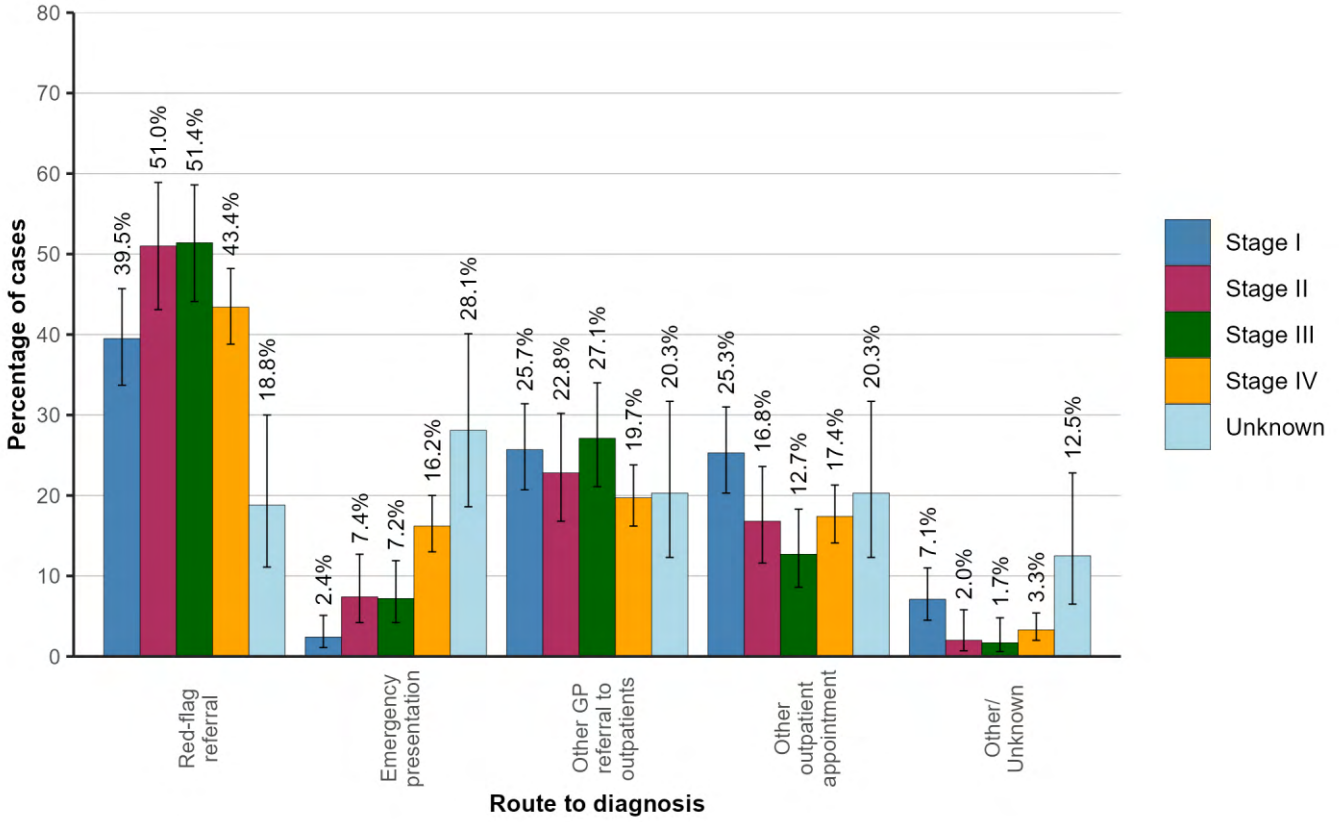
Figure 8.5: Route to diagnosis for head and neck cancer patients diagnosed in 2018-2020 by deprivation quintile



8.4: ROUTES TO DIAGNOSIS BY STAGE AT DIAGNOSIS

During 2018-2020 the proportion of cases of head and neck cancer diagnosed via a red-flag referral was 39.5% among stage I cancers compared to 43.4% among stage IV cancers. The proportions diagnosed via an emergency presentation were 2.4% and 16.2% for stage I and stage IV cancers respectively. The variation in route to diagnosis by stage at diagnosis was statistically significant ($p < 0.001$).

Figure 8.6: Route to diagnosis for head and neck cancer patients diagnosed in 2018-2020 by stage at diagnosis



8.5: ROUTES TO DIAGNOSIS BY CANCER TYPE

Oral cancer: The most common route to diagnosis among oral cancer patients during 2018-2020 was via a red-flag referral, with 111 (43.8%) cases diagnosed on average each year. This was followed by another outpatient appointment route with 55 (21.5%) cases diagnosed on average each year. Emergency presentations made up 9.1% of cases during this period.

Laryngeal cancer: The most common route to diagnosis among laryngeal cancer patients during 2018-2020 was via a red-flag referral, with 41 (46.1%) cases diagnosed on average each year. This was followed by another GP referral to outpatients route with 24 (26.8%) cases diagnosed on average each year. Emergency presentations made up 14.9% of cases during this period.

Figure 8.7: Route to diagnosis for oral cancer patients diagnosed in 2018-2020

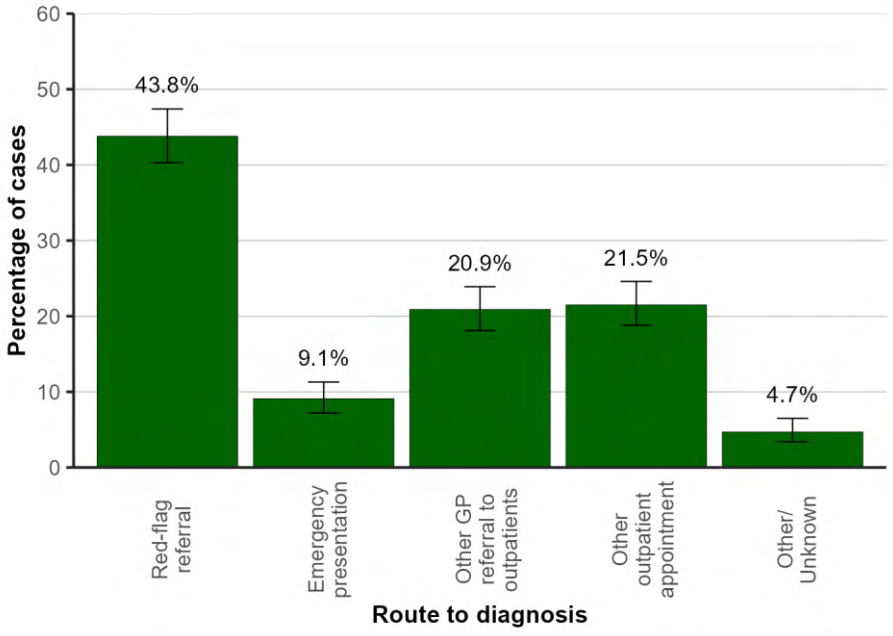
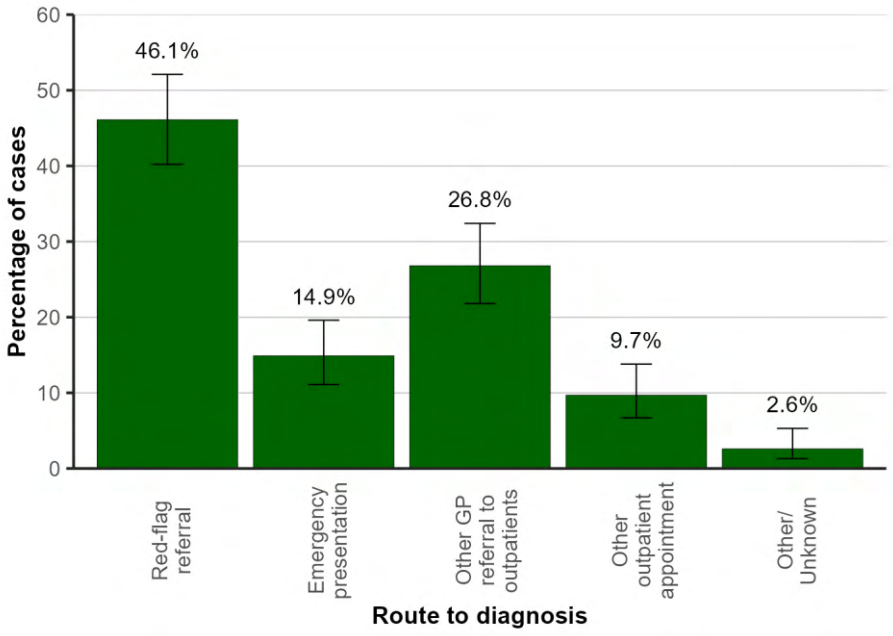


Figure 8.8: Route to diagnosis for laryngeal cancer patients diagnosed in 2018-2020



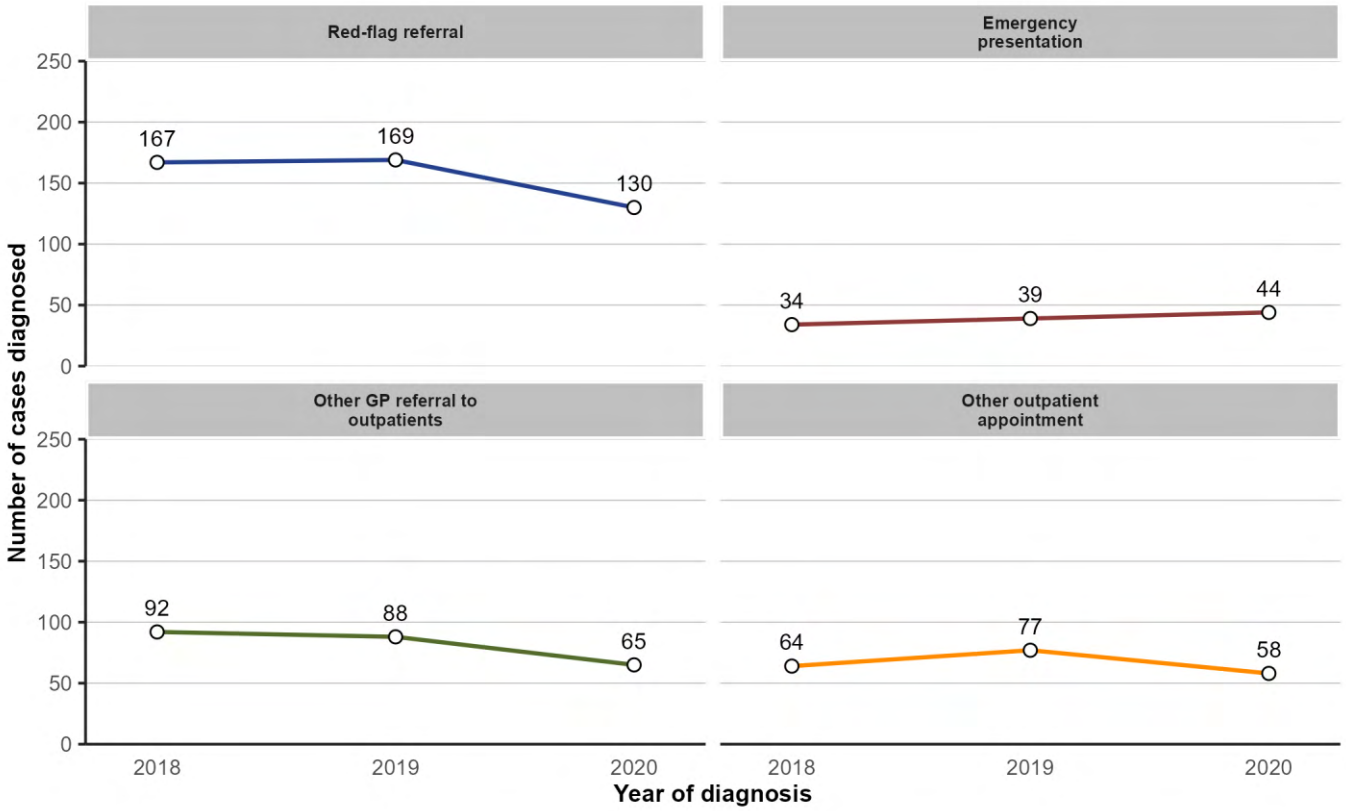
8.6: ROUTES TO DIAGNOSIS BY YEAR OF DIAGNOSIS

The number of head and neck cancer cases diagnosed via a red-flag referral each year decreased by 22.6% from 168 per year in 2018-19 to 130 in 2020. As a proportion of all cases, a red-flag referral diagnosis decreased from 43.8% in 2018-19 to 42.2% in 2020.

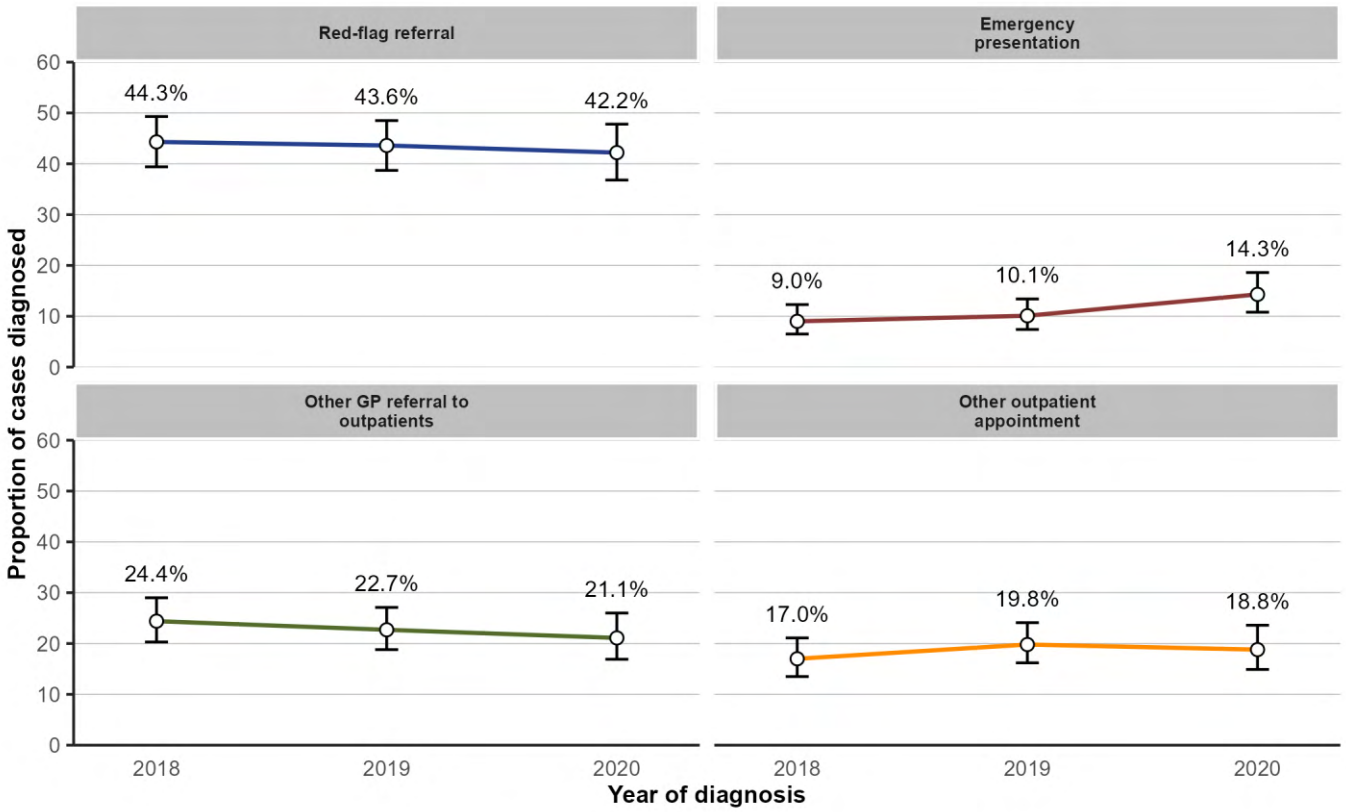
The number of head and neck cancer cases diagnosed via an emergency presentation each year increased by 18.9% from 37 per year in 2018-19 to 44 in 2020. As a proportion of all cases, an emergency presentation diagnosis increased from 9.6% in 2018-19 to 14.3% in 2020. The variation in route to diagnosis by year of diagnosis was not statistically significant.

Figure 8.9: Route to diagnosis for head and neck cancer patients diagnosed in 2018-2020 by year of diagnosis

(a) Number of cases



(b) Proportion of cases

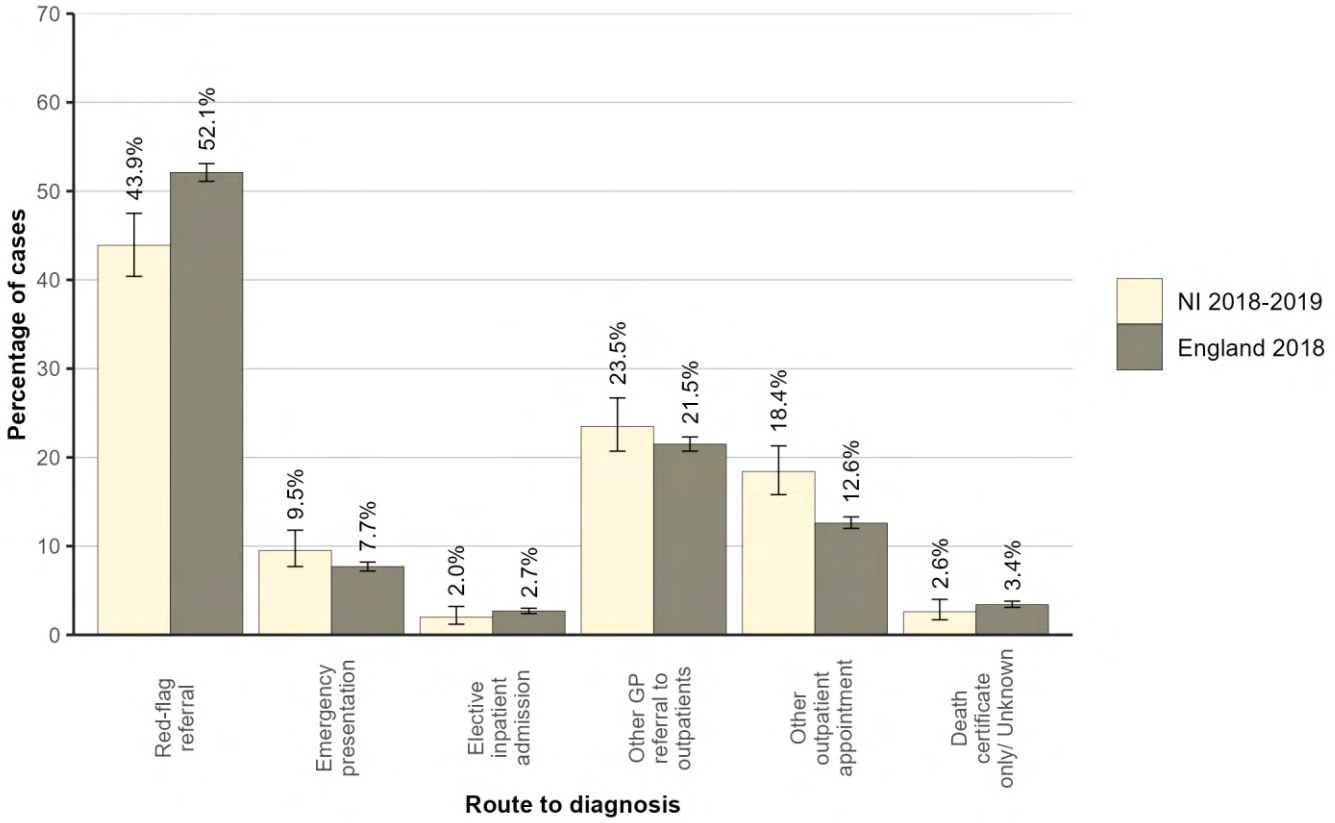


8.7: COMPARISON WITH ENGLAND

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with head and neck cancer in 2018-2019 compared to patients diagnosed in England during 2018.

- Red-flag referral (43.9% in NI compared to 52.1% in England ; p<0.001).
- Other outpatient appointment (18.4% in NI compared to 12.6% in England ; p<0.001).

Figure 8.10: Route to diagnosis for head and neck cancer patients diagnosed in 2018-2019 compared to patients diagnosed in England during 2018



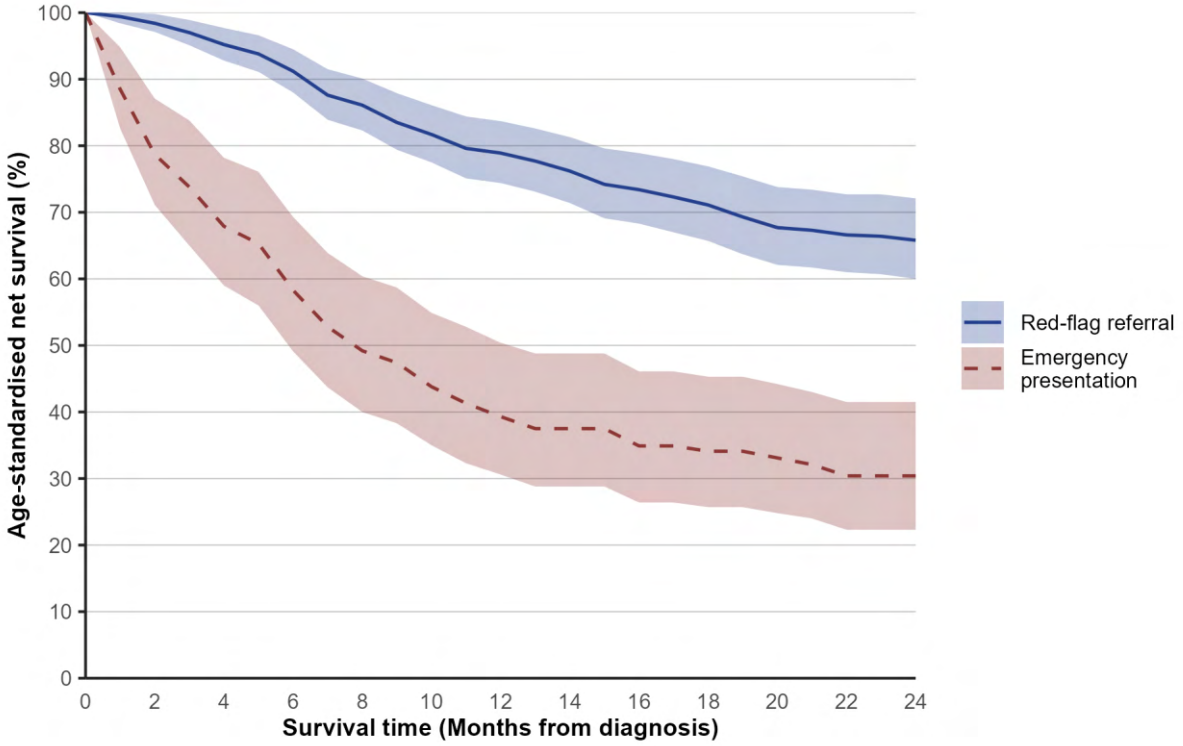
Source of English data: National Disease Registration Service, See reference 12.
Note that due to the impact of the COVID-19 pandemic on cancer diagnosis, comparisons exclude data from 2020.
Due to potential differences in coding and data sources, differences between the two studies should be treated as an approximate comparison.

8.8: SURVIVAL

During 2018-2020 one-year age-standardised net survival from head and neck cancer ranged from 39.3% for those diagnosed via an emergency presentation route to 82.2% for those diagnosed via another GP referral to outpatients route. Two years from diagnosis age-standardised net survival ranged from 30.4% for those diagnosed via an emergency presentation route to 72.9% for those diagnosed via another GP referral to outpatients route.

Figure 8.11: Age-standardised net survival by route to diagnosis for head and neck cancer patients diagnosed in 2018-2020

(a) Red-flag and emergency routes



(b) Other routes

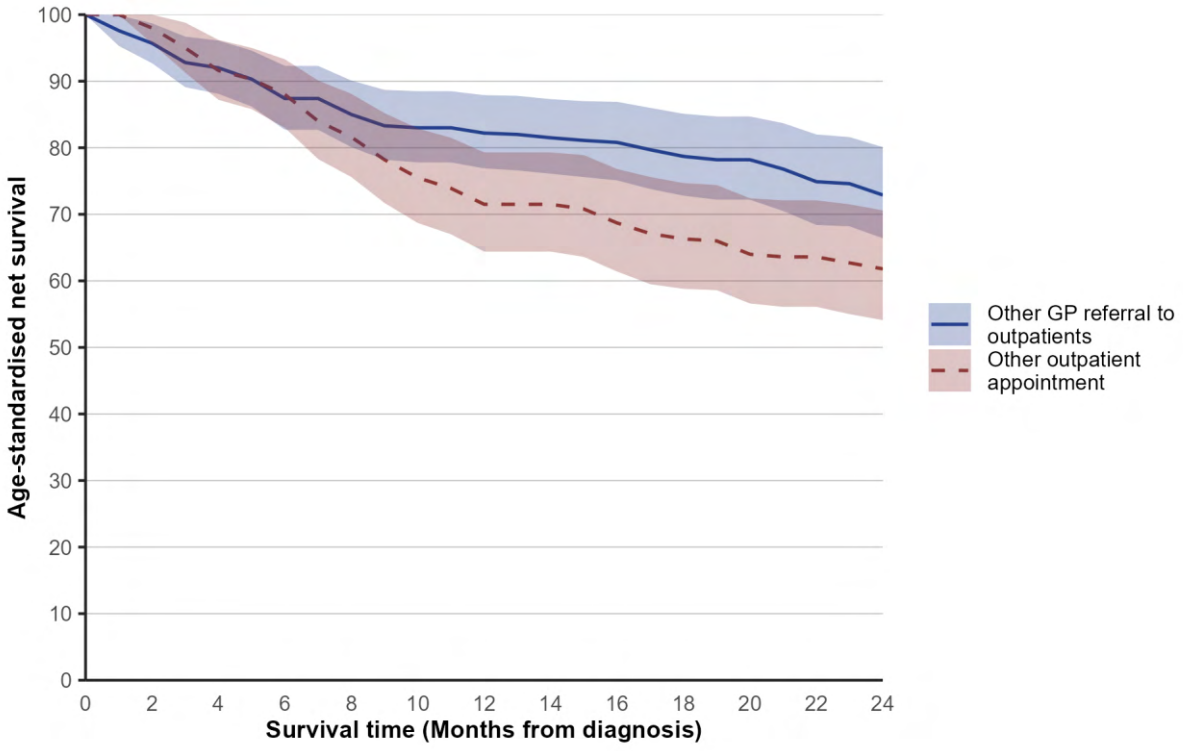


Table 8.2: Age-standardised net survival by route to diagnosis for head and neck cancer patients diagnosed in 2018-2020

Route to diagnosis	One-year survival (ASNS)	Two-year survival (ASNS)
Red-flag referral	78.9% (74.4% - 83.7%)	65.8% (60.0% - 72.1%)
Emergency presentation	39.3% (30.6% - 50.4%)	30.4% (22.3% - 41.5%)
Elective inpatient admission	78.0% (60.5% - 100.0%)*	73.8% (55.0% - 99.0%)*
Other GP referral to outpatients	82.2% (76.9% - 87.9%)	72.9% (66.4% - 80.1%)
Other outpatient appointment	71.5% (64.4% - 79.3%)	61.8% (54.1% - 70.6%)
Unknown	89.1% (76.9% - 100.0%)*	74.6% (58.3% - 95.5%)*

*ASNS: Age-standardised net survival with 95% confidence interval. * Unstandardised net survival presented as less than 50 patients in this group.*

09: Upper Gastrointestinal Cancer

The most common route to diagnosis among upper gastrointestinal cancer patients during 2018-2020 was via a red-flag referral, with 145 (36.6%) cases diagnosed on average each year. This was followed by an emergency presentation route with 124 (31.4%) cases diagnosed on average each year.

Figure 9.1: Route to diagnosis for upper gastrointestinal cancer patients diagnosed in 2018-2020

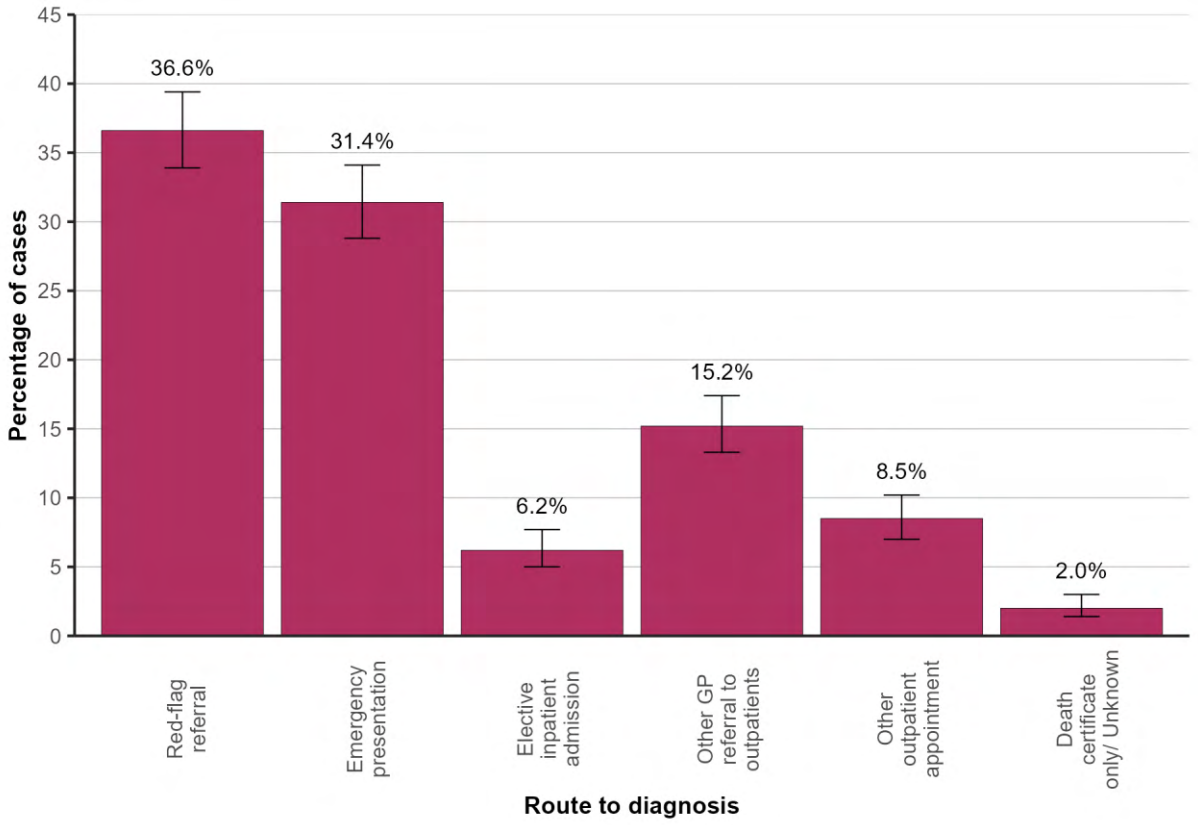


Table 9.1: Average number of upper gastrointestinal cancer cases diagnosed each year during 2018-2020 by route to diagnosis

Route to diagnosis	Cases per year	Proportion (95% CI)
Red-flag referral	145	36.6% (33.9% - 39.4%)
Emergency presentation	124	31.4% (28.8% - 34.1%)
Elective inpatient admission	25	6.2% (5.0% - 7.7%)
Other GP referral to outpatients	60	15.2% (13.3% - 17.4%)
Other outpatient appointment	34	8.5% (7.0% - 10.2%)
Death certificate only/ Unknown	8	2.0% (1.4% - 3.0%)

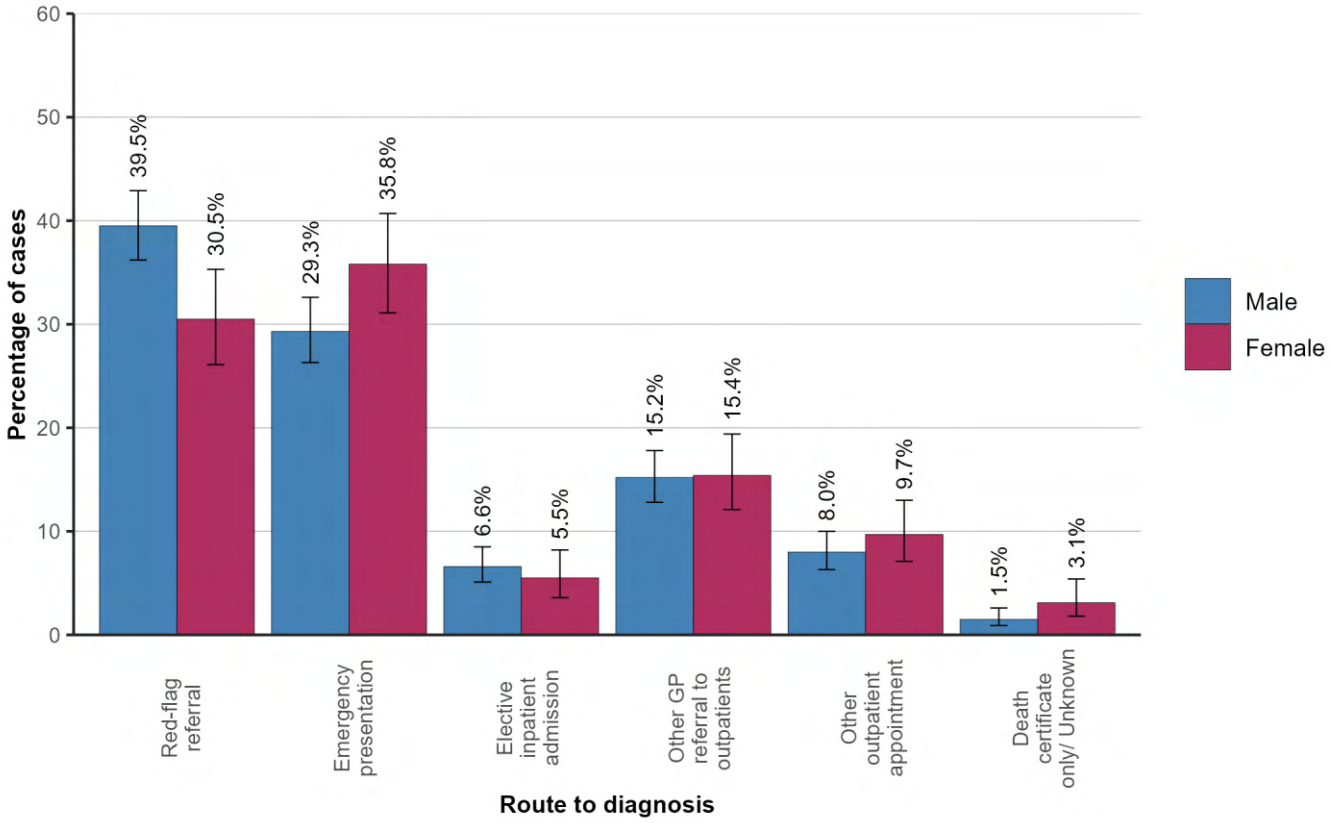
CI: Confidence Interval

9.1: ROUTES TO DIAGNOSIS BY GENDER

During 2018-2020 there were 106 male and 39 female cases of upper gastrointestinal cancer diagnosed each year where the route to diagnosis was a red-flag referral. This was the most common route to diagnosis for men (39.5%) but not women (30.5%). The most common route to diagnosis for women was an emergency presentation (35.8%).

Red-flag referral routes also demonstrated the biggest difference between males and females. The variation in route to diagnosis by gender was statistically significant (p = 0.016).

Figure 9.2: Route to diagnosis for upper gastrointestinal cancer patients diagnosed in 2018-2020 by gender

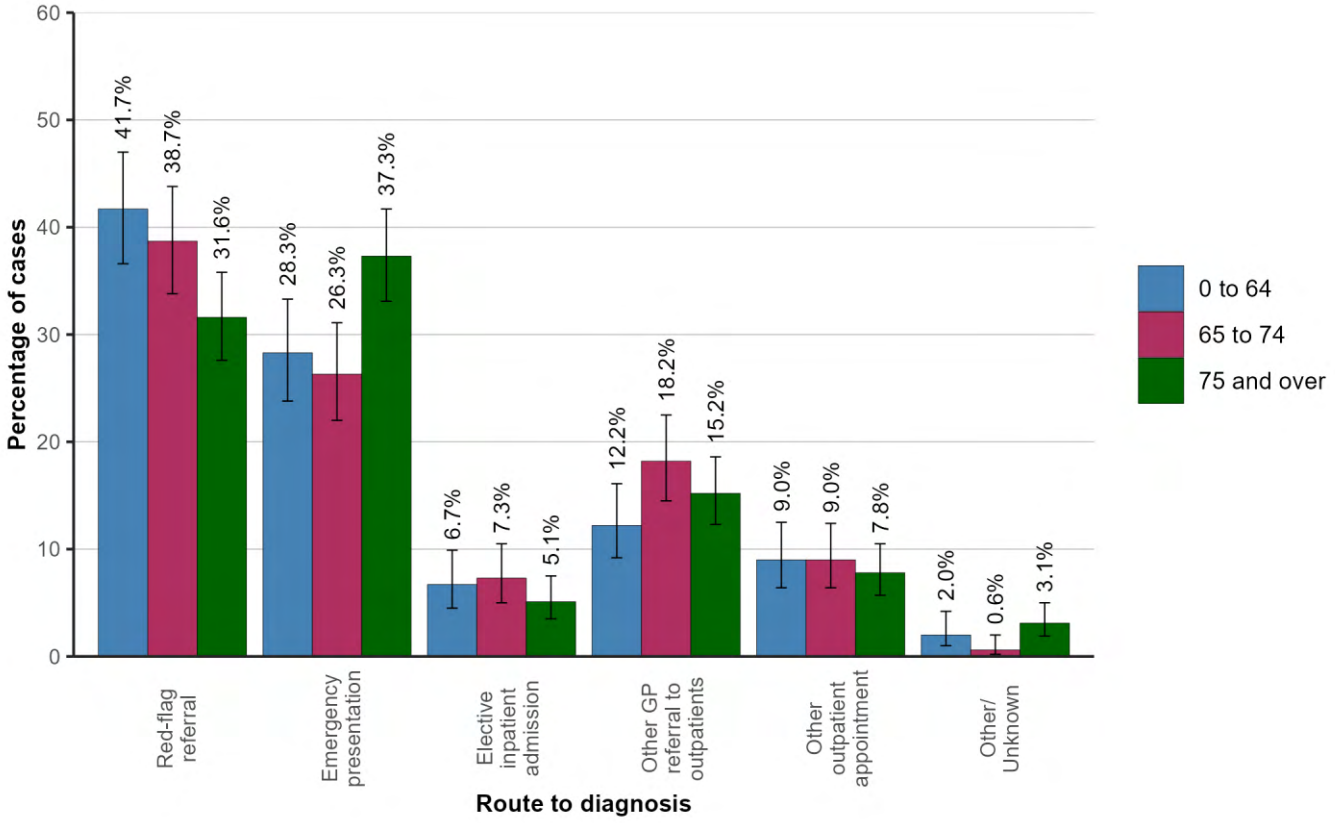


9.2: ROUTES TO DIAGNOSIS BY AGE GROUP

During 2018-2020 the most common route to diagnosis for cases of upper gastrointestinal cancer overall was a red-flag referral. Among those aged 0 to 64 there were 48 (41.7%) diagnosed per year via this route, compared to 51 (31.6%) per year among those aged 75 and over. This made it the most common route to diagnosis for those aged 0 to 64 but not those aged 75 and over. The most common route to diagnosis for those aged 75 and over was an emergency presentation (37.3%).

Red-flag referral routes also demonstrated the biggest difference between those aged 0 to 64 and 75 and over. The variation in route to diagnosis by age group was statistically significant (p = 0.002).

Figure 9.3: Route to diagnosis for upper gastrointestinal cancer patients diagnosed in 2018-2020 by age group



9.3: ROUTES TO DIAGNOSIS BY AREA OF RESIDENCE

Health and Social Care Trust

During 2018-2020 the proportion of cases of upper gastrointestinal cancer diagnosed via a red-flag referral ranged from 27.8% in Northern HSCT to 45.1% in Western HSCT. The proportions diagnosed via an emergency presentation ranged from 26.4% to 35.4% in Western HSCT and Belfast HSCT respectively. The variation in route to diagnosis by Health and Social Care Trust was statistically significant (p = 0.001).

Area-based socio-economic deprivation

During 2018-2020 the proportion of cases of upper gastrointestinal cancer diagnosed via a red-flag referral was 35.1% in the most deprived areas compared to 34.1% in the least deprived areas. The proportions diagnosed via an emergency presentation were 34.3% and 31.0% in the most and least deprived areas respectively. The variation in route to diagnosis by deprivation quintile was not statistically significant.

Figure 9.4: Route to diagnosis for upper gastrointestinal cancer patients diagnosed in 2018-2020 by Health and Social Care Trust

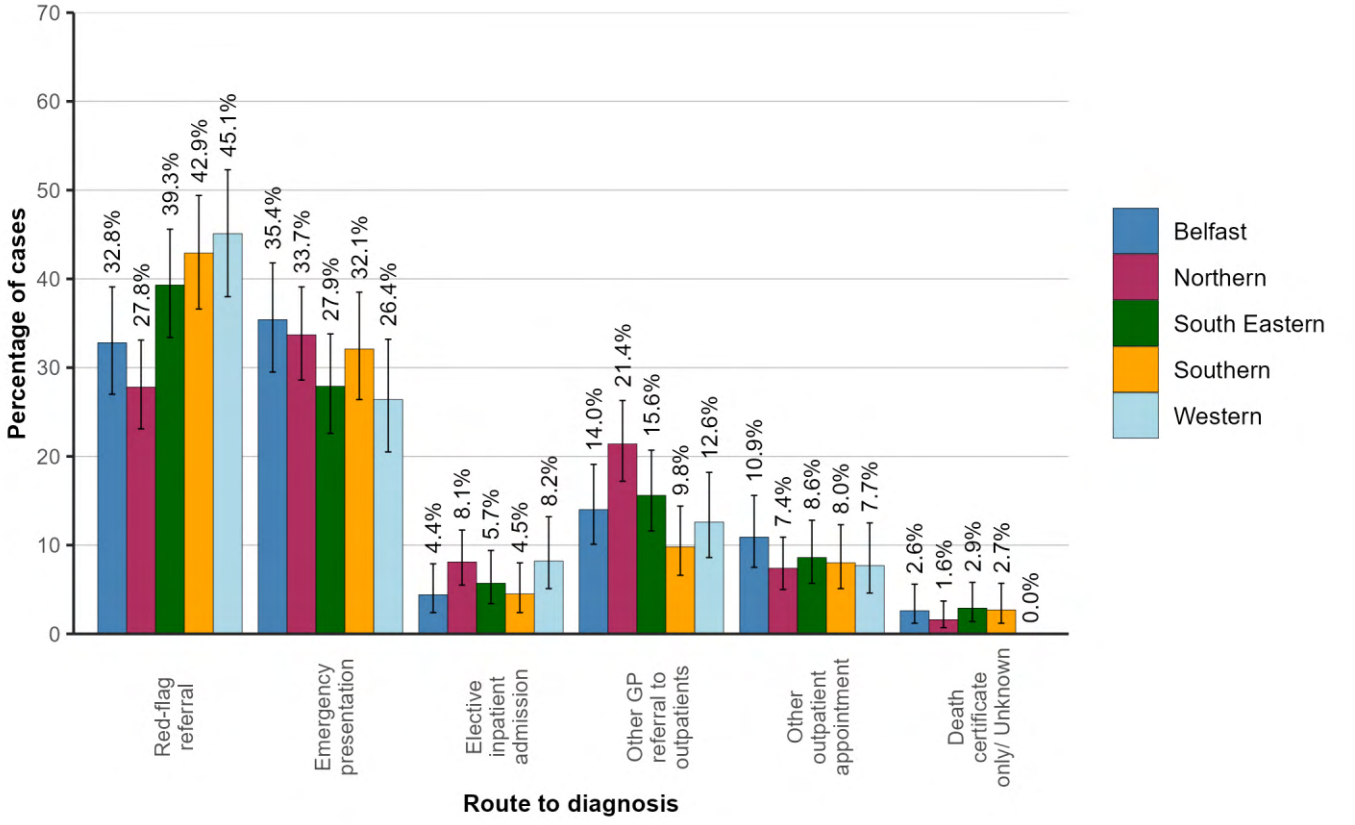
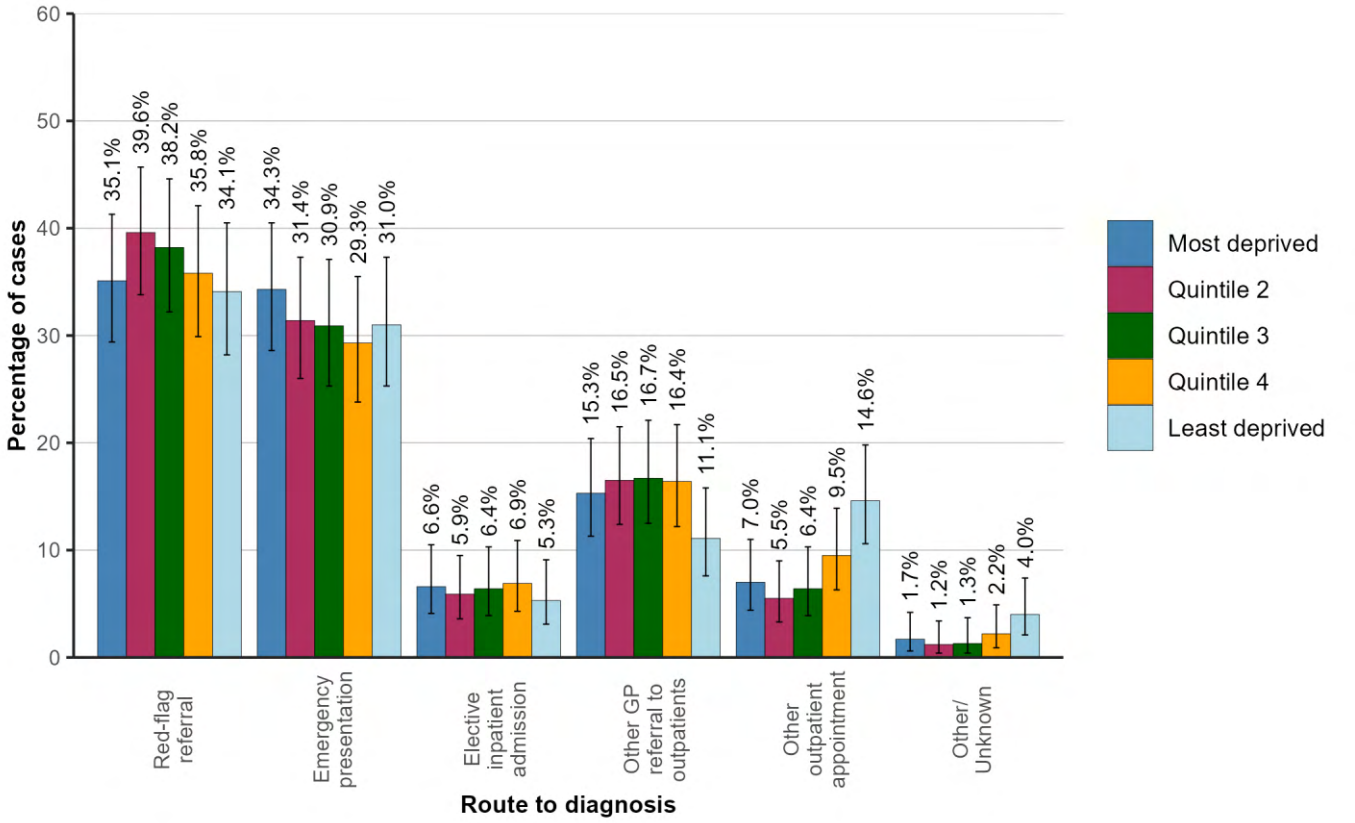


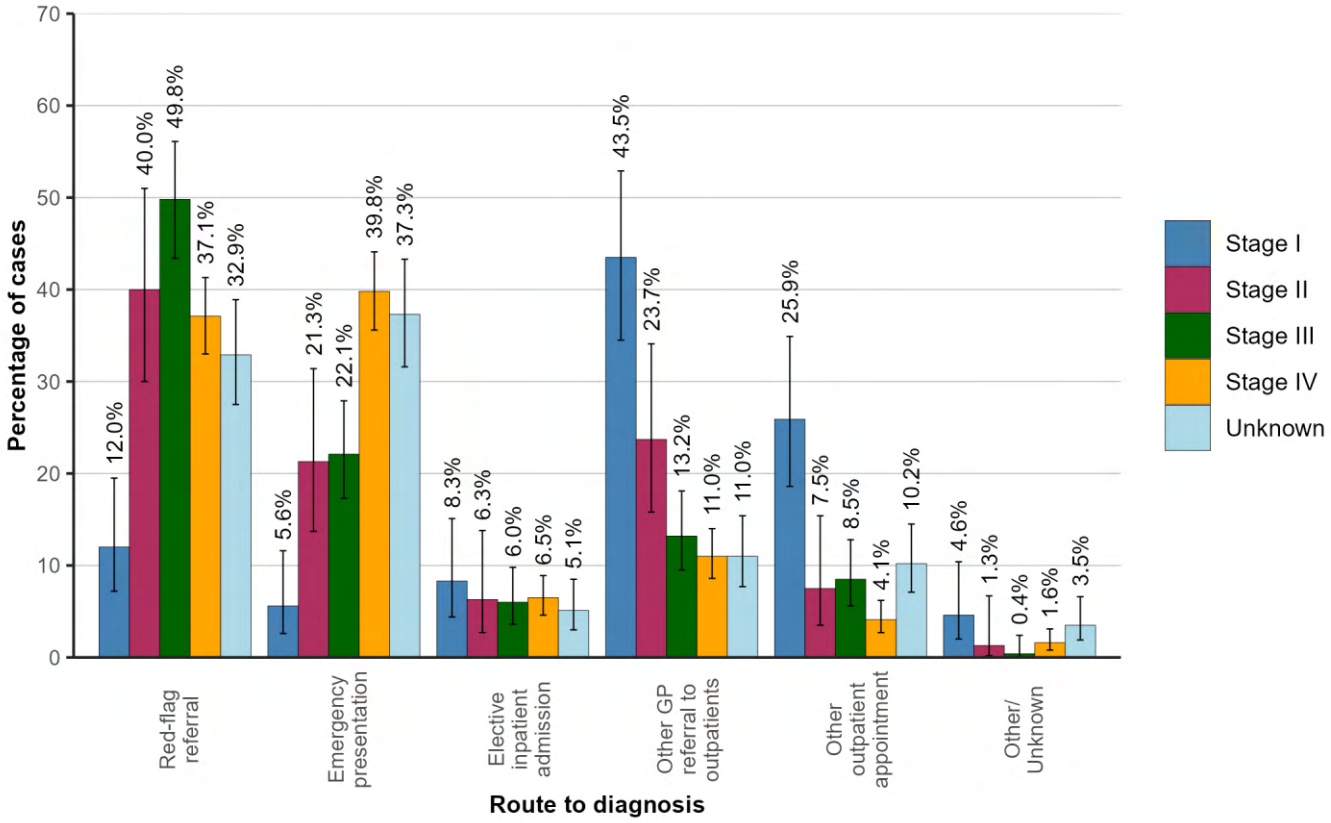
Figure 9.5: Route to diagnosis for upper gastrointestinal cancer patients diagnosed in 2018-2020 by deprivation quintile



9.4: ROUTES TO DIAGNOSIS BY STAGE AT DIAGNOSIS

During 2018-2020 the proportion of cases of upper gastrointestinal cancer diagnosed via a red-flag referral was 12.0% among stage I cancers compared to 37.1% among stage IV cancers. The proportions diagnosed via an emergency presentation were 5.6% and 39.8% for stage I and stage IV cancers respectively. The variation in route to diagnosis by stage at diagnosis was statistically significant ($p < 0.001$).

Figure 9.6: Route to diagnosis for upper gastrointestinal cancer patients diagnosed in 2018-2020 by stage at diagnosis



9.5: ROUTES TO DIAGNOSIS BY CANCER TYPE

Oesophageal cancer: The most common route to diagnosis among oesophageal cancer patients during 2018-2020 was via a red-flag referral, with 89 (43.6%) cases diagnosed on average each year. This was followed by an emergency presentation route with 53 (25.8%) cases diagnosed on average each year.

Stomach cancer: The most common route to diagnosis among stomach cancer patients during 2018-2020 was via an emergency presentation, with 72 (37.4%) cases diagnosed on average each year. This was followed by a red-flag referral route with 56 (29.2%) cases diagnosed on average each year.

Figure 9.7: Route to diagnosis for oesophageal cancer patients diagnosed in 2018-2020

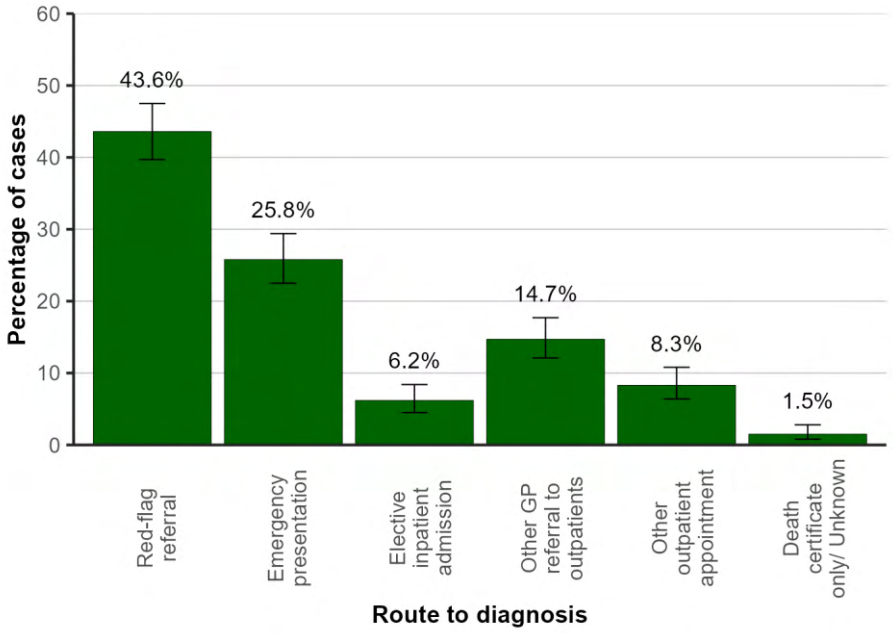
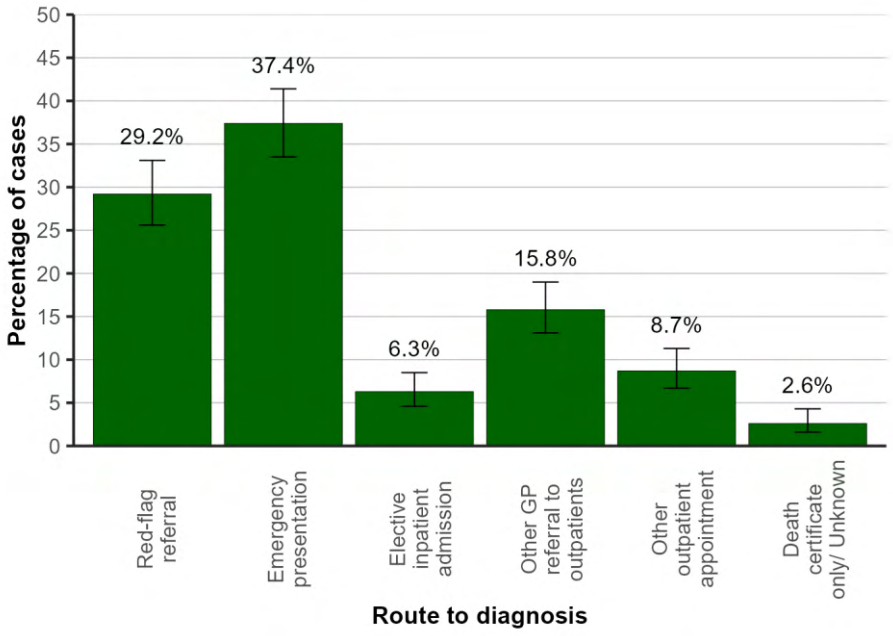


Figure 9.8: Route to diagnosis for stomach cancer patients diagnosed in 2018-2020



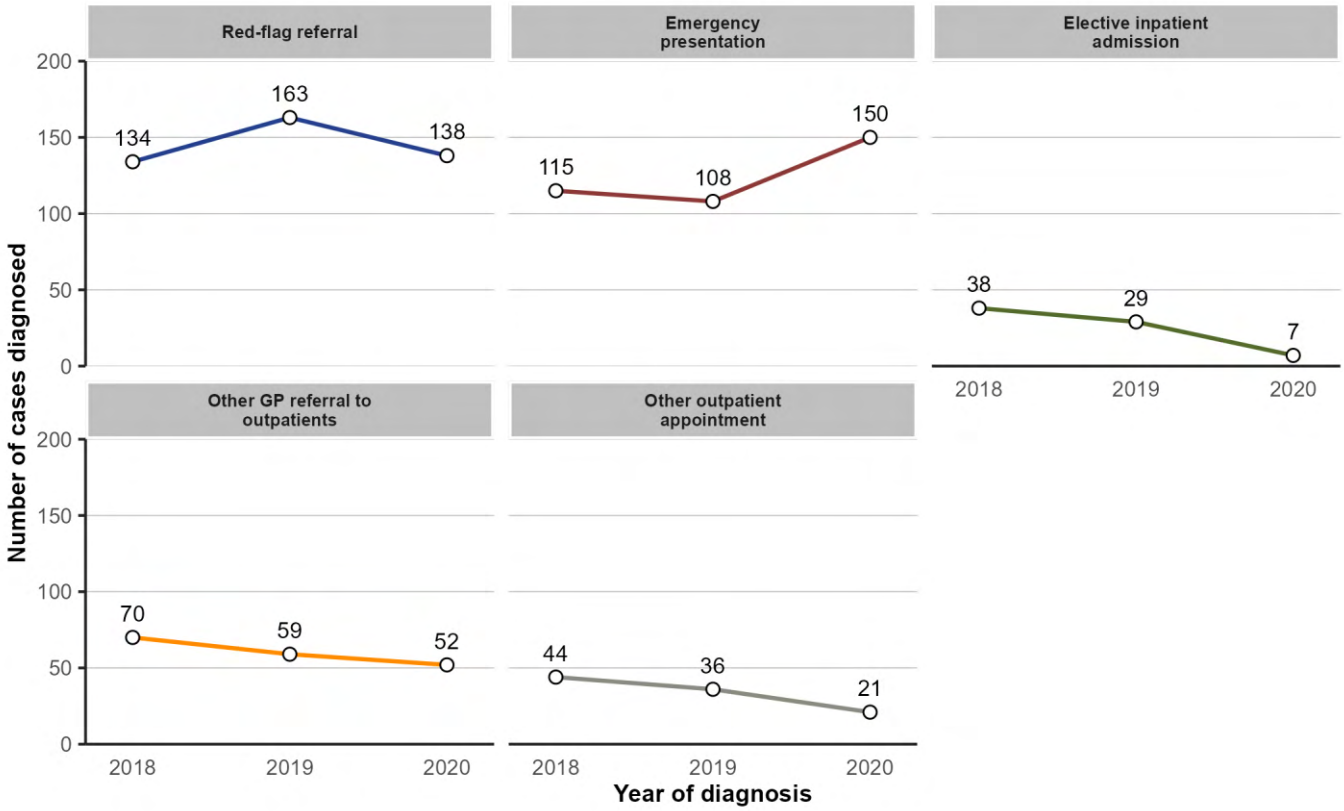
9.6: ROUTES TO DIAGNOSIS BY YEAR OF DIAGNOSIS

The number of upper gastrointestinal cancer cases diagnosed via a red-flag referral each year decreased by 7.4% from 149 per year in 2018-19 to 138 in 2020. As a proportion of all cases, a red-flag referral diagnosis decreased from 36.6% in 2018-19 to 36.4% in 2020.

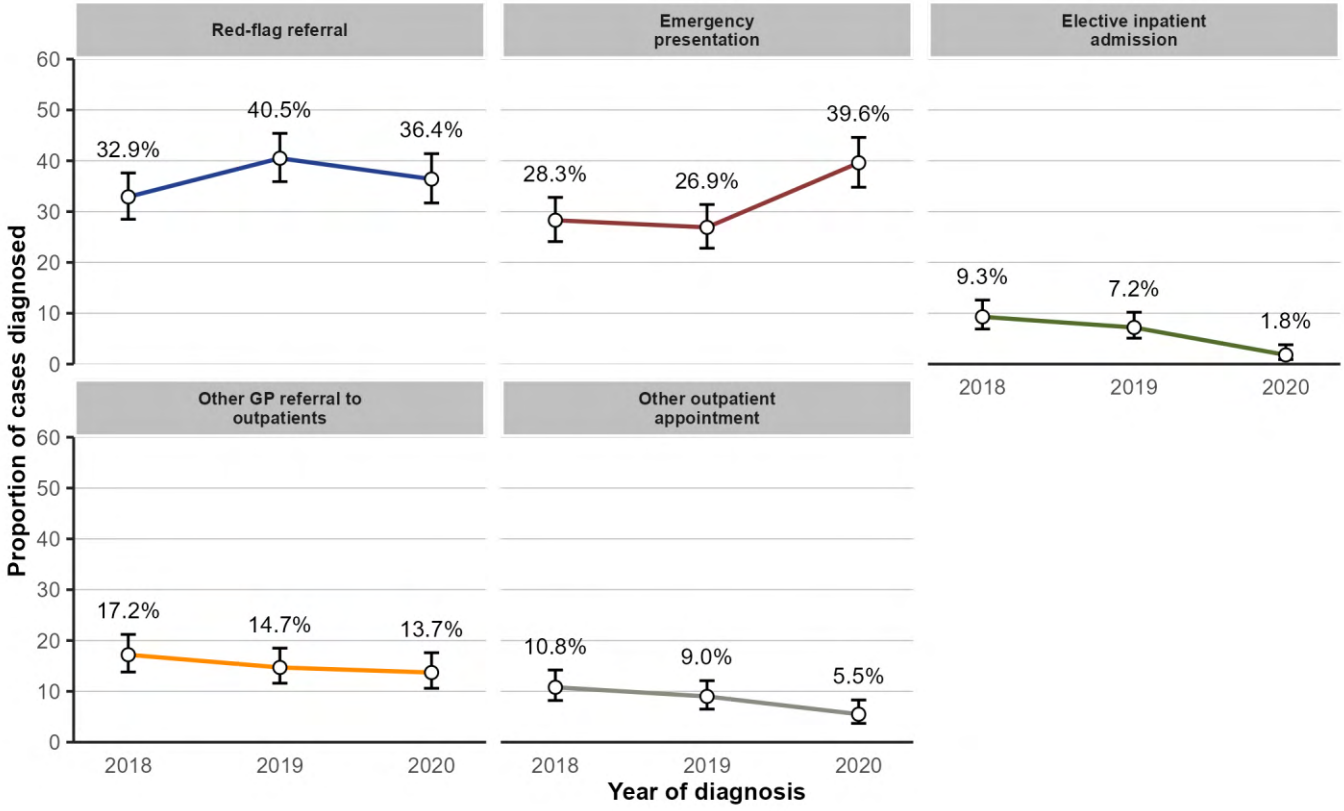
The number of upper gastrointestinal cancer cases diagnosed via an emergency presentation each year increased by 33.9% from 112 per year in 2018-19 to 150 in 2020. As a proportion of all cases, an emergency presentation diagnosis increased from 27.5% in 2018-19 to 39.6% in 2020. The variation in route to diagnosis by year of diagnosis was statistically significant ($p < 0.001$).

Figure 9.9: Route to diagnosis for upper gastrointestinal cancer patients diagnosed in 2018-2020 by year of diagnosis

(a) Number of cases



(b) Proportion of cases

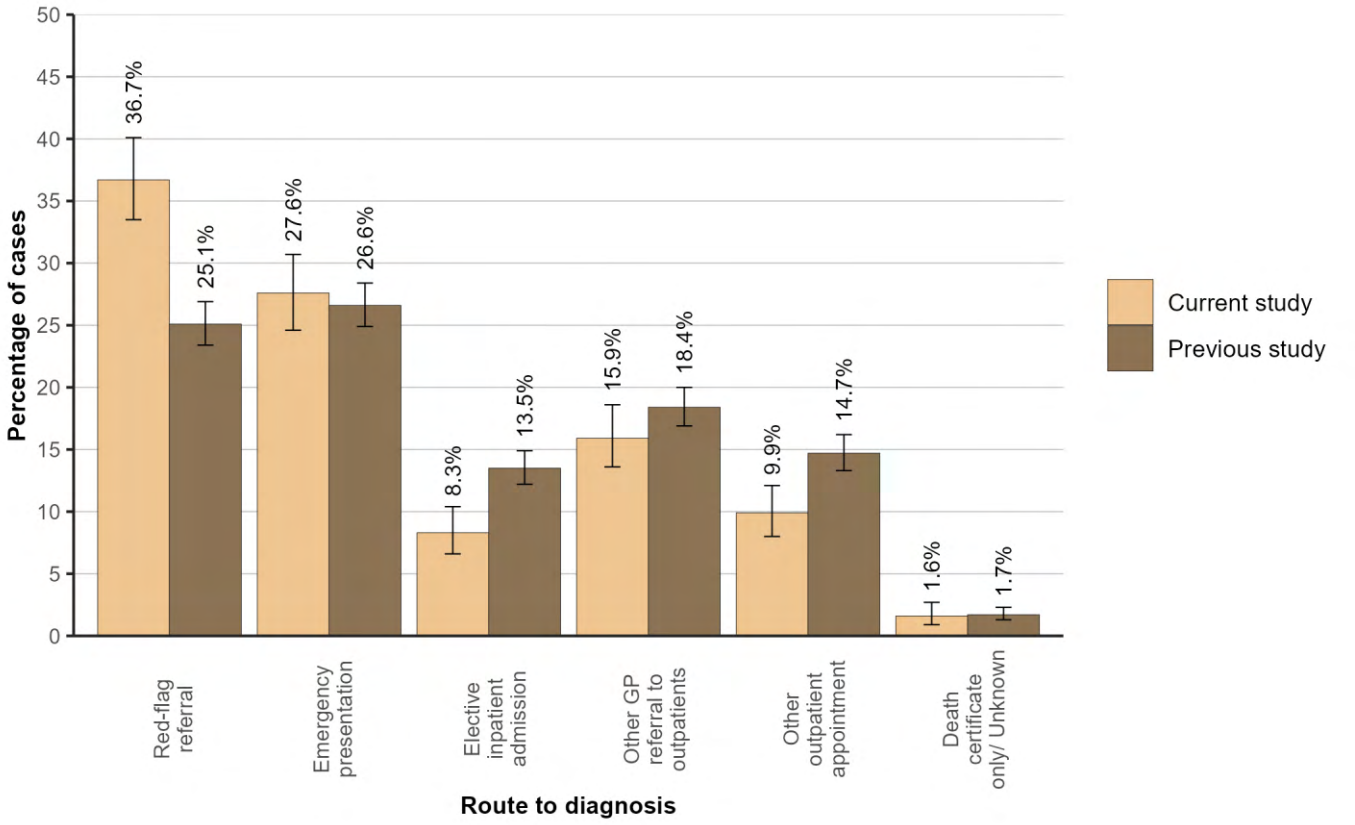


9.7: COMPARISON WITH PREVIOUS STUDIES

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with upper gastrointestinal cancer in 2018-2019 compared to patients from the previous Northern Ireland study, which was for patients diagnosed in 2012-2016.

- Red-flag referral (36.7% in 2018-2019 compared to 25.1% previously ; p<0.001).
- Elective inpatient admission (8.3% in 2018-2019 compared to 13.5% previously ; p<0.001).
- Other outpatient appointment (9.9% in 2018-2019 compared to 14.7% previously ; p=0.001).

Figure 9.10: Route to diagnosis for upper gastrointestinal cancer patients diagnosed in 2018-2019 compared to patients diagnosed in 2012-2016 (from previous Northern Ireland study)



Source of previous data: Centre for Public Health, See reference 2.
Note that due to the impact of the COVID-19 pandemic on cancer diagnosis, comparisons exclude data from 2020.
Due to potential differences in coding and data sources, differences between the two studies should not be interpreted as a time trend.
The previous NI study includes a small number of cancers of the small intestine thus comparisons should be treated cautiously.

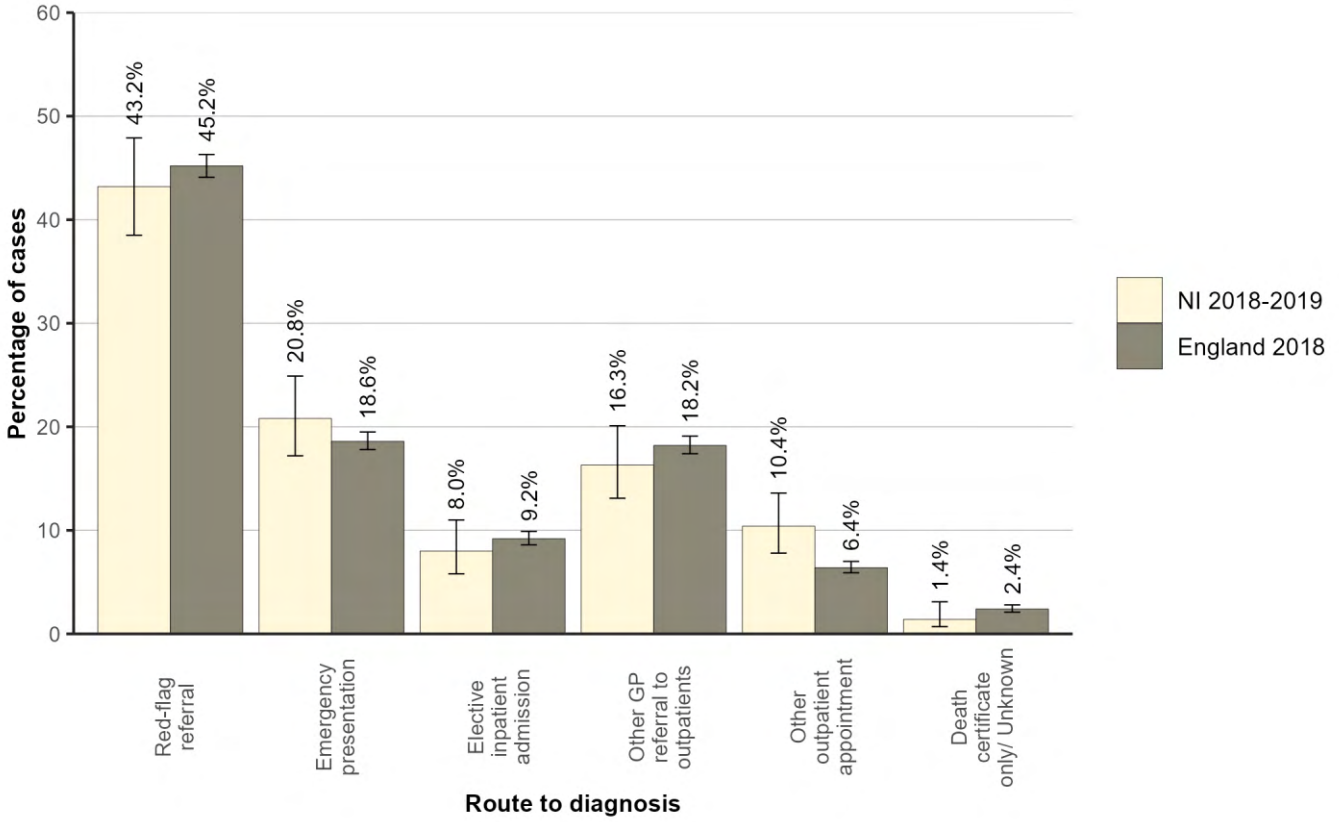
9.8: COMPARISON WITH ENGLAND

Oesophageal cancer

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with oesophageal cancer in 2018-2019 compared to patients diagnosed in England during 2018.

- Other outpatient appointment (10.4% in NI compared to 6.4% in England ; p=0.001).

Figure 9.11: Route to diagnosis for oesophageal cancer patients diagnosed in 2018-2019 compared to patients diagnosed in England during 2018



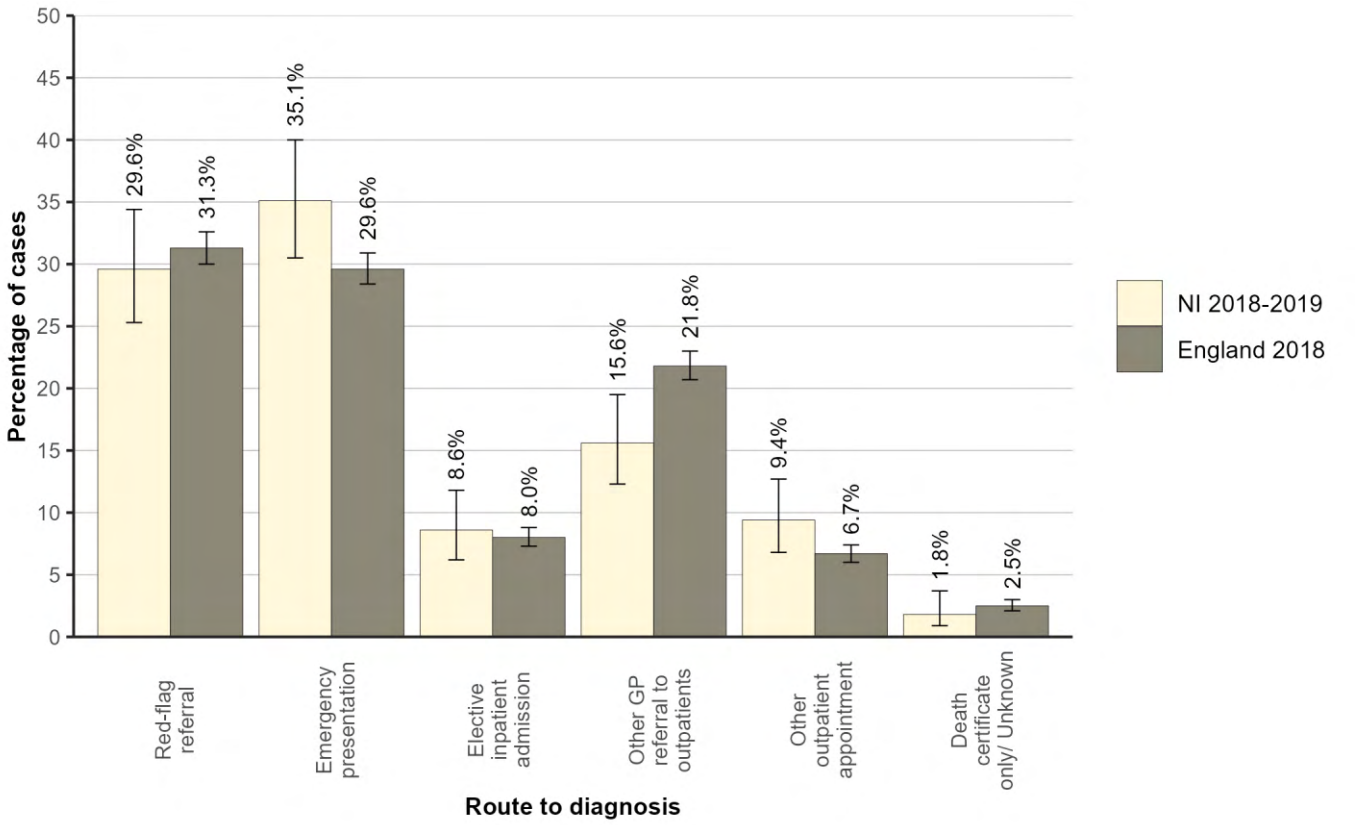
Source of English data: National Disease Registration Service, See reference 12.
Note that due to the impact of the COVID-19 pandemic on cancer diagnosis, comparisons exclude data from 2020.
Due to potential differences in coding and data sources, differences between the two studies should be treated as an approximate comparison.

Stomach cancer

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with stomach cancer in 2018-2019 compared to patients diagnosed in England during 2018.

- Other GP referral to outpatients (15.6% in NI compared to 21.8% in England ; p=0.004).

Figure 9.12: Route to diagnosis for stomach cancer patients diagnosed in 2018-2019 compared to patients diagnosed in England during 2018



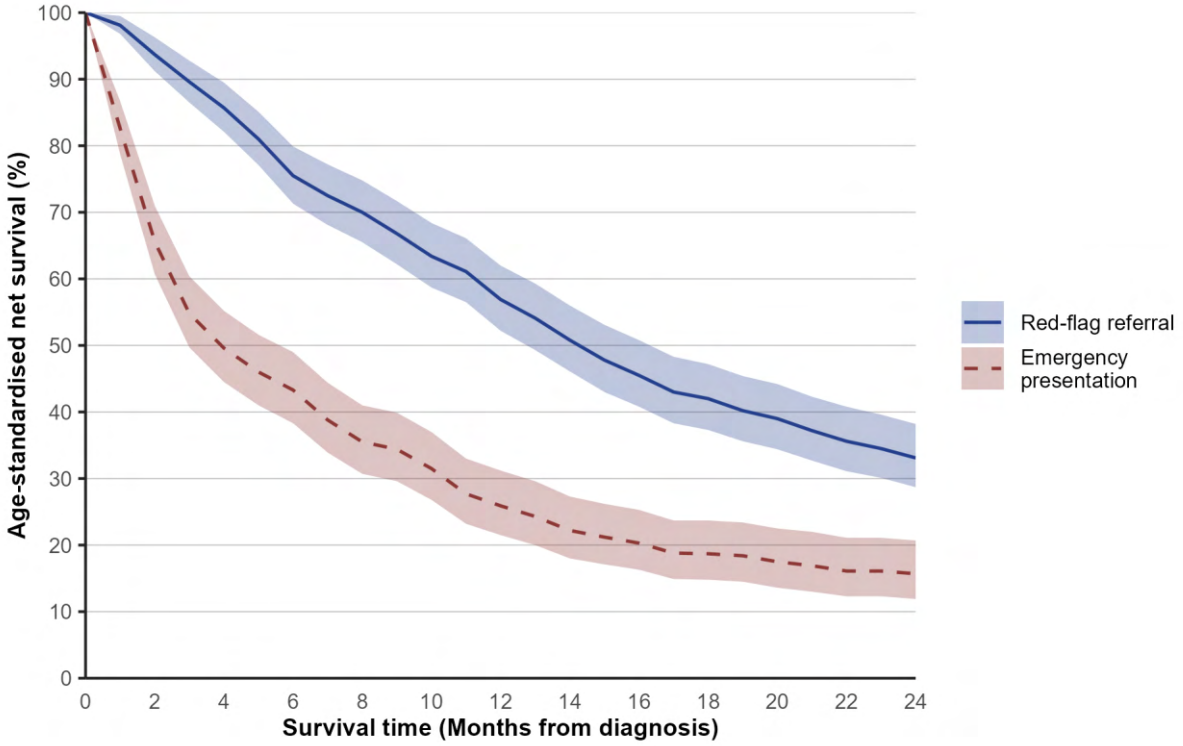
Source of English data: National Disease Registration Service, See reference 12.
Note that due to the impact of the COVID-19 pandemic on cancer diagnosis, comparisons exclude data from 2020.
Due to potential differences in coding and data sources, differences between the two studies should be treated as an approximate comparison.

9.9: SURVIVAL

During 2018-2020 one-year age-standardised net survival from upper gastrointestinal cancer ranged from 25.9% for those diagnosed via an emergency presentation route to 68.0% for those diagnosed via another GP referral to outpatients route. Two years from diagnosis age-standardised net survival ranged from 15.7% for those diagnosed via an emergency presentation route to 52.5% for those diagnosed via another outpatient appointment route.

Figure 9.13: Age-standardised net survival by route to diagnosis for upper gastrointestinal cancer patients diagnosed in 2018-2020

(a) Red-flag and emergency routes



(b) Other routes

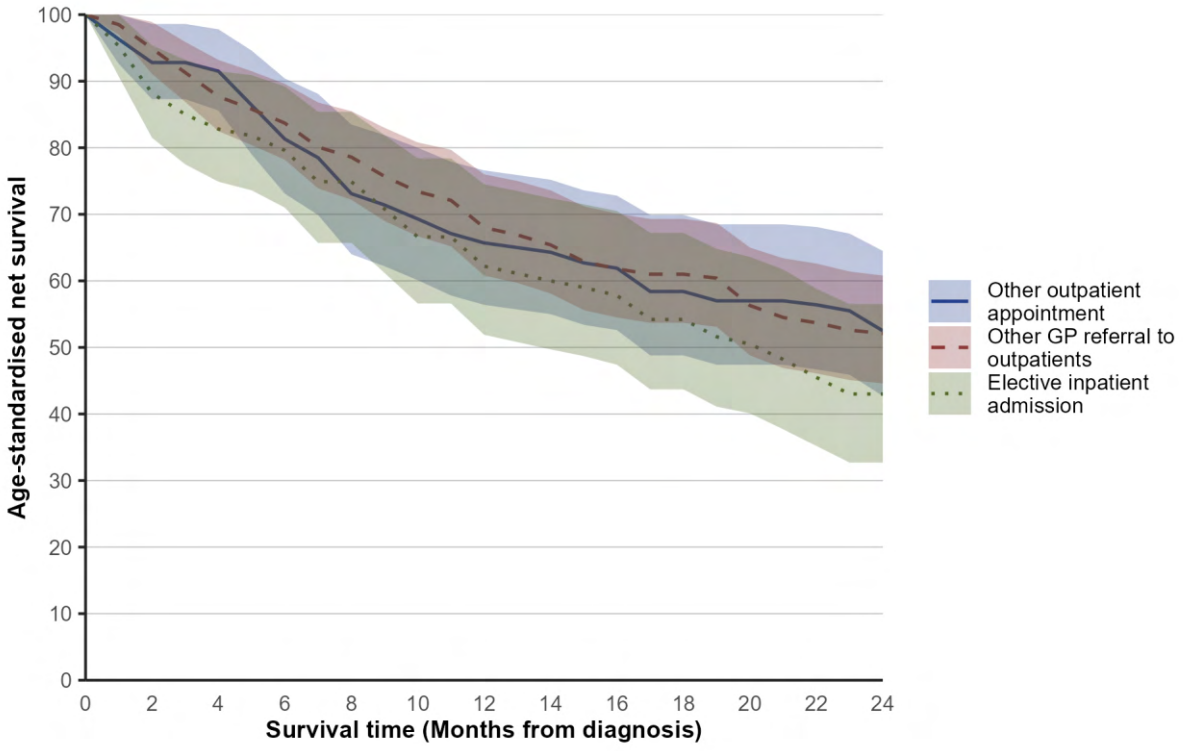


Table 9.2: Age-standardised net survival by route to diagnosis for upper gastrointestinal cancer patients diagnosed in 2018-2020

Route to diagnosis	One-year survival (ASNS)	Two-year survival (ASNS)
Red-flag referral	56.9% (52.2% - 62.0%)	33.1% (28.7% - 38.2%)
Emergency presentation	25.9% (21.5% - 31.2%)	15.7% (11.9% - 20.7%)
Elective inpatient admission	62.2% (51.9% - 74.5%)	43.0% (32.7% - 56.5%)
Other GP referral to outpatients	68.0% (60.8% - 76.0%)	52.1% (44.6% - 60.8%)
Other outpatient appointment	65.7% (56.4% - 76.6%)	52.5% (42.7% - 64.5%)
Unknown	29.7% (15.6% - 56.7%)*	29.7% (15.6% - 56.7%)*

*ASNS: Age-standardised net survival with 95% confidence interval. * Unstandardised net survival presented as less than 50 patients in this group.*

10: Hepatobiliary and Pancreatic Cancer

The most common route to diagnosis among hepatobiliary and pancreatic cancer patients during 2018-2020 was via an emergency presentation, with 262 (49.1%) cases diagnosed on average each year. This was followed by another GP referral to outpatients route with 90 (17.0%) cases diagnosed on average each year. Red flag referrals made up 13.6% of cases during this period.

Figure 10.1: Route to diagnosis for hepatobiliary and pancreatic cancer patients diagnosed in 2018-2020

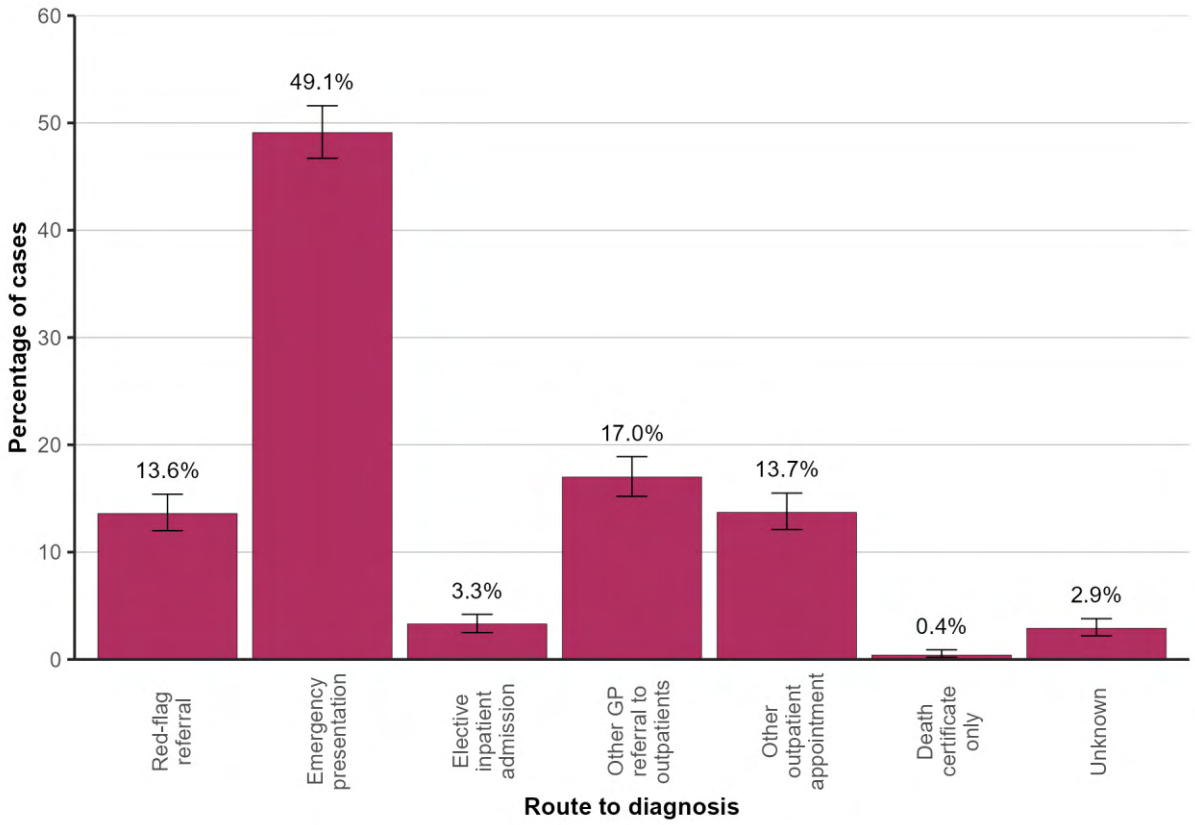


Table 10.1: Average number of hepatobiliary and pancreatic cancer cases diagnosed each year during 2018-2020 by route to diagnosis

Route to diagnosis	Cases per year	Proportion (95% CI)
Red-flag referral	73	13.6% (12.0% - 15.4%)
Emergency presentation	262	49.1% (46.7% - 51.6%)
Elective inpatient admission	17	3.3% (2.5% - 4.2%)
Other GP referral to outpatients	90	17.0% (15.2% - 18.9%)
Other outpatient appointment	73	13.7% (12.1% - 15.5%)
Death certificate only	2	0.4% (0.2% - 0.9%)
Unknown	15	2.9% (2.2% - 3.8%)

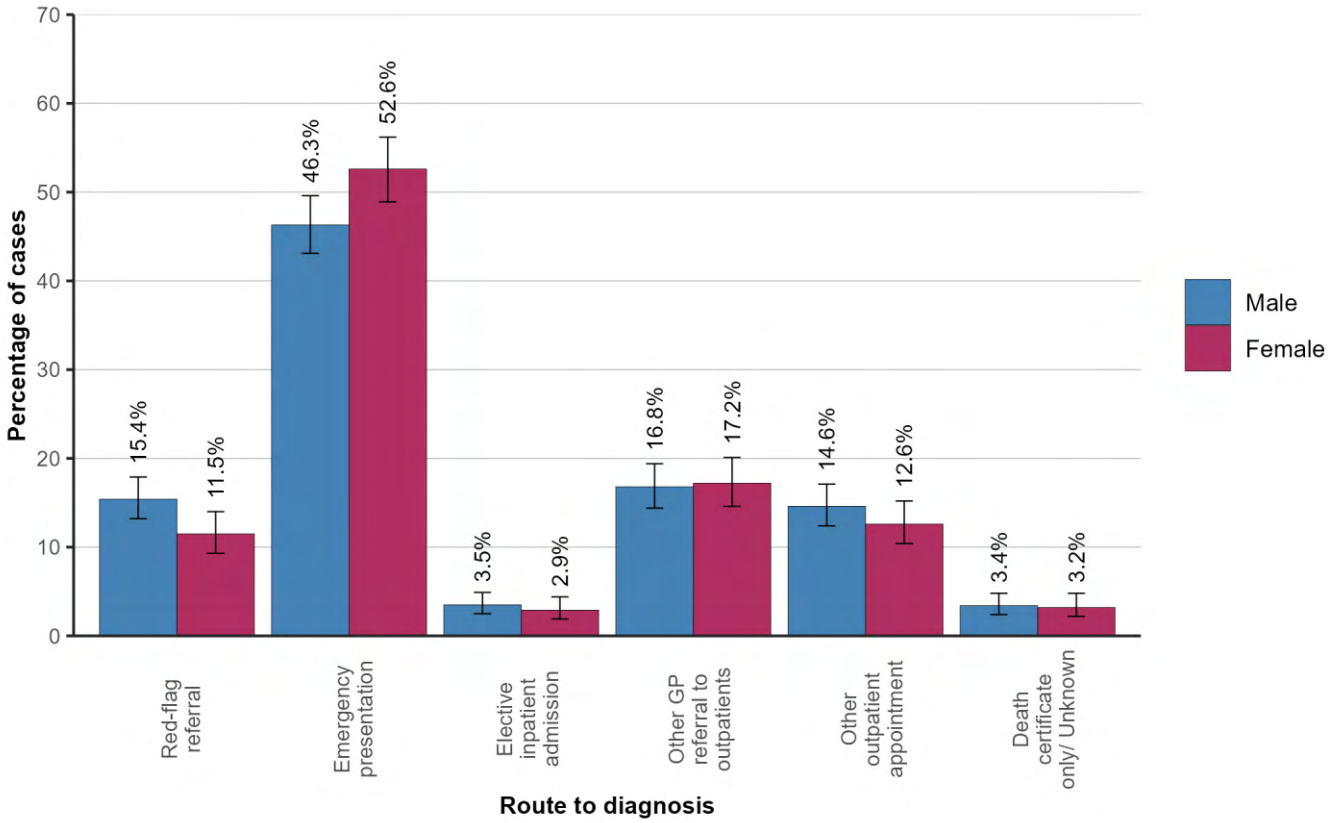
CI: Confidence Interval

10.1: ROUTES TO DIAGNOSIS BY GENDER

During 2018-2020 there were 136 male and 125 female cases of hepatobiliary and pancreatic cancer diagnosed each year where the route to diagnosis was an emergency presentation. This was the most common route to diagnosis for both men (46.3%) and women (52.6%).

Emergency presentation routes also demonstrated the biggest difference between males and females. The variation in route to diagnosis by gender was not statistically significant.

Figure 10.2: Route to diagnosis for hepatobiliary and pancreatic cancer patients diagnosed in 2018-2020 by gender

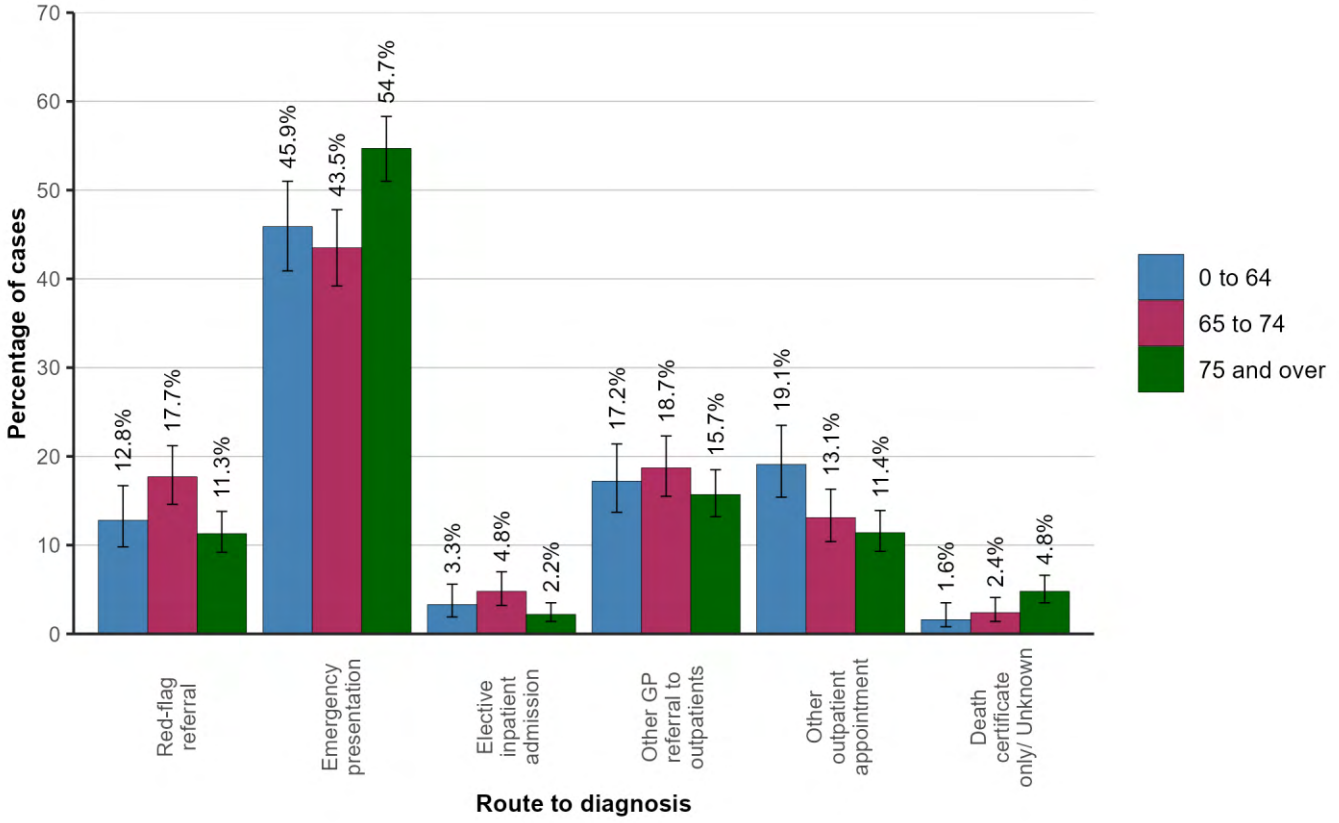


10.2: ROUTES TO DIAGNOSIS BY AGE GROUP

During 2018-2020 the most common route to diagnosis for cases of hepatobiliary and pancreatic cancer overall was an emergency presentation. Among those aged 0 to 64 there were 56 (45.9%) diagnosed per year via this route, compared to 133 (54.7%) per year among those aged 75 and over. This made it the most common route to diagnosis for both those aged 0 to 64 and those aged 75 and over.

Emergency presentation routes also demonstrated the biggest difference between those aged 0 to 64 and 75 and over. The variation in route to diagnosis by age group was statistically significant ($p < 0.001$).

Figure 10.3: Route to diagnosis for hepatobiliary and pancreatic cancer patients diagnosed in 2018-2020 by age group



10.3: ROUTES TO DIAGNOSIS BY AREA OF RESIDENCE

Health and Social Care Trust

During 2018-2020 the proportion of cases of hepatobiliary and pancreatic cancer diagnosed via an emergency presentation ranged from 42.1% in Western HSCT to 53.6% in Southern HSCT. The proportions diagnosed via a red-flag referral ranged from 10.1% to 23.4% in Southern HSCT and Western HSCT respectively. The variation in route to diagnosis by Health and Social Care Trust was statistically significant ($p < 0.001$).

Area-based socio-economic deprivation

During 2018-2020 the proportion of cases of hepatobiliary and pancreatic cancer diagnosed via an emergency presentation was 49.7% in the most deprived areas compared to 49.7% in the least deprived areas. The proportions diagnosed via a red-flag referral were 13.9% and 11.0% in the most and least deprived areas respectively. The variation in route to diagnosis by deprivation quintile was not statistically significant.

Figure 10.4: Route to diagnosis for hepatobiliary and pancreatic cancer patients diagnosed in 2018-2020 by Health and Social Care Trust

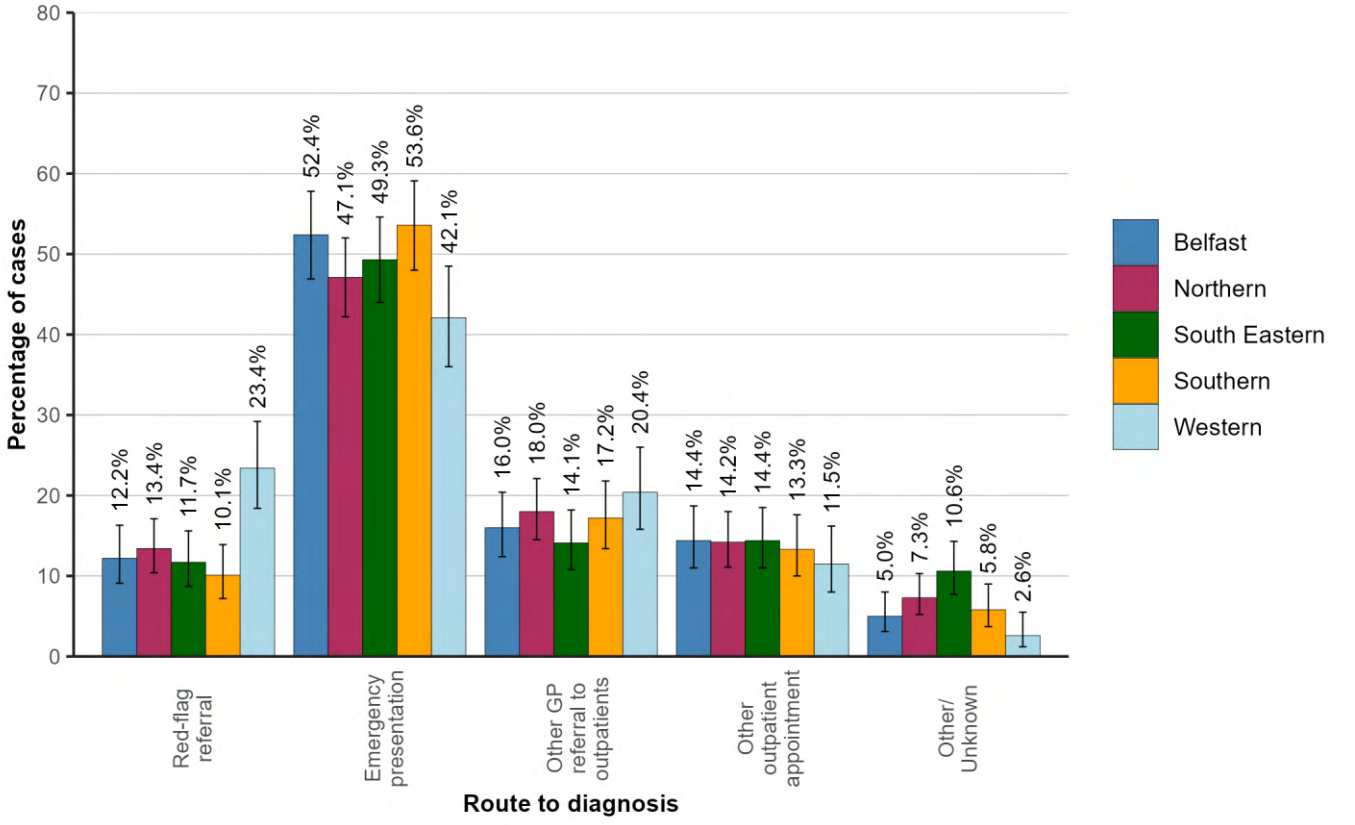
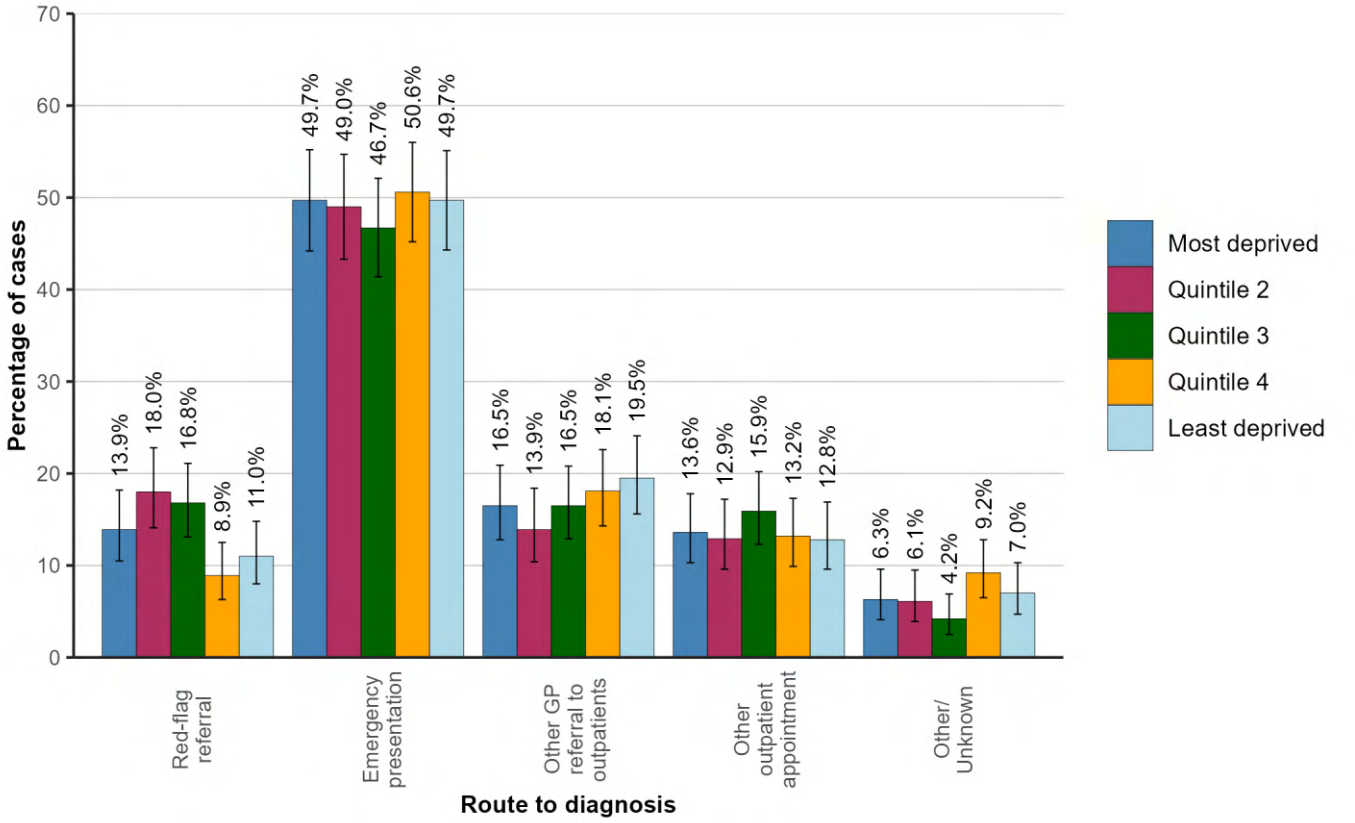


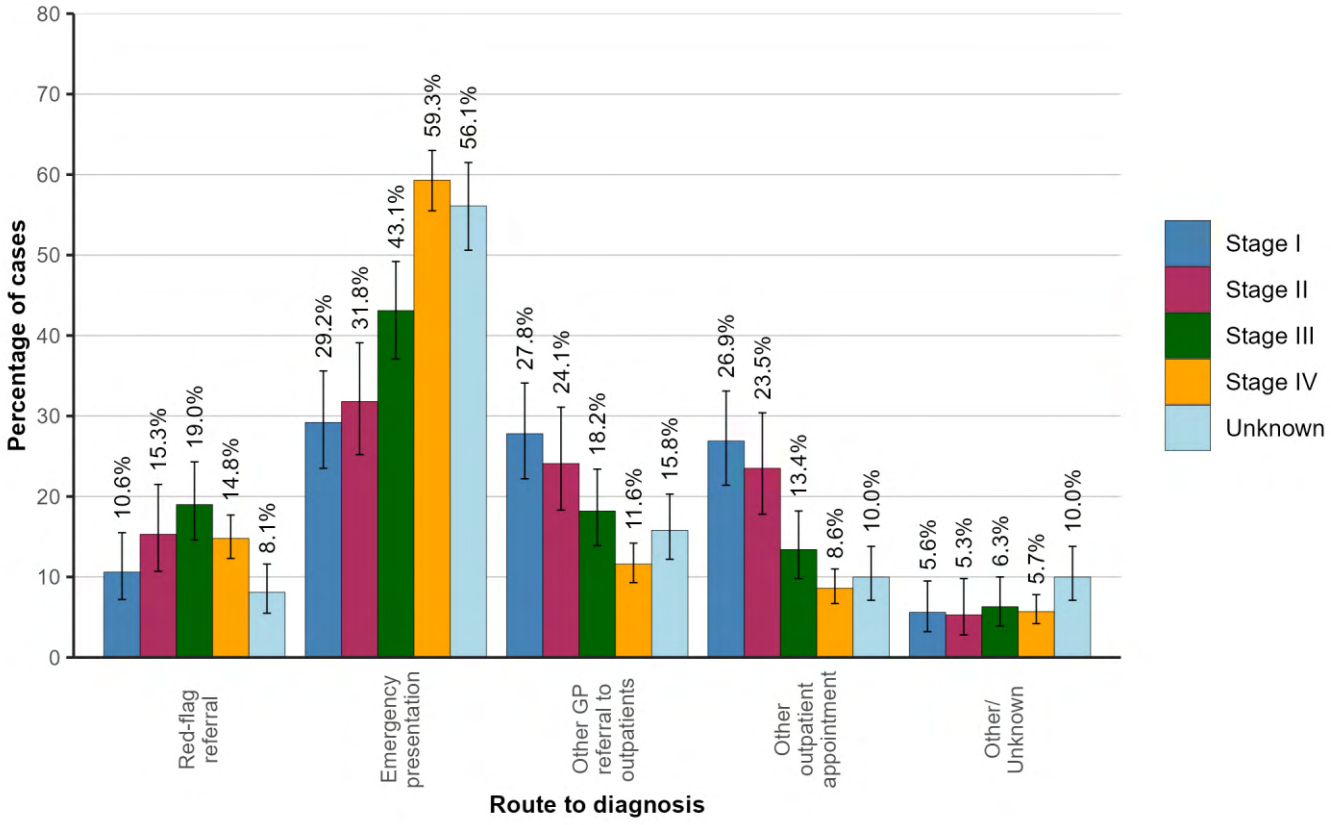
Figure 10.5: Route to diagnosis for hepatobiliary and pancreatic cancer patients diagnosed in 2018-2020 by deprivation quintile



10.4: ROUTES TO DIAGNOSIS BY STAGE AT DIAGNOSIS

During 2018-2020 the proportion of cases of hepatobiliary and pancreatic cancer diagnosed via an emergency presentation was 29.2% among stage I cancers compared to 59.3% among stage IV cancers. The proportions diagnosed via a red-flag referral were 10.6% and 14.8% for stage I and stage IV cancers respectively. The variation in route to diagnosis by stage at diagnosis was statistically significant ($p < 0.001$).

Figure 10.6: Route to diagnosis for hepatobiliary and pancreatic cancer patients diagnosed in 2018-2020 by stage at diagnosis



10.5: ROUTES TO DIAGNOSIS BY CANCER TYPE

Liver cancer: The most common route to diagnosis among liver cancer patients during 2018-2020 was via an emergency presentation, with 51 (35.3%) cases diagnosed on average each year. This was followed by another outpatient appointment route with 29 (20.4%) cases diagnosed on average each year. Red flag referrals made up 16.5% of cases during this period.

Pancreatic cancer: The most common route to diagnosis among pancreatic cancer patients during 2018-2020 was via an emergency presentation, with 146 (52.1%) cases diagnosed on average each year. This was followed by another GP referral to outpatients route with 45 (16.1%) cases diagnosed on average each year. Red flag referrals made up 14.5% of cases during this period.

Gallbladder and biliary cancer: The most common route to diagnosis among gallbladder and biliary cancer patients during 2018-2020 was via an emergency presentation, with 65 (59.6%) cases diagnosed on average each year. This was followed by another GP referral to outpatients route with 17 (15.3%) cases diagnosed on average each year. Red flag referrals made up 7.6% of cases during this period.

Figure 10.7: Route to diagnosis for liver cancer patients diagnosed in 2018-2020

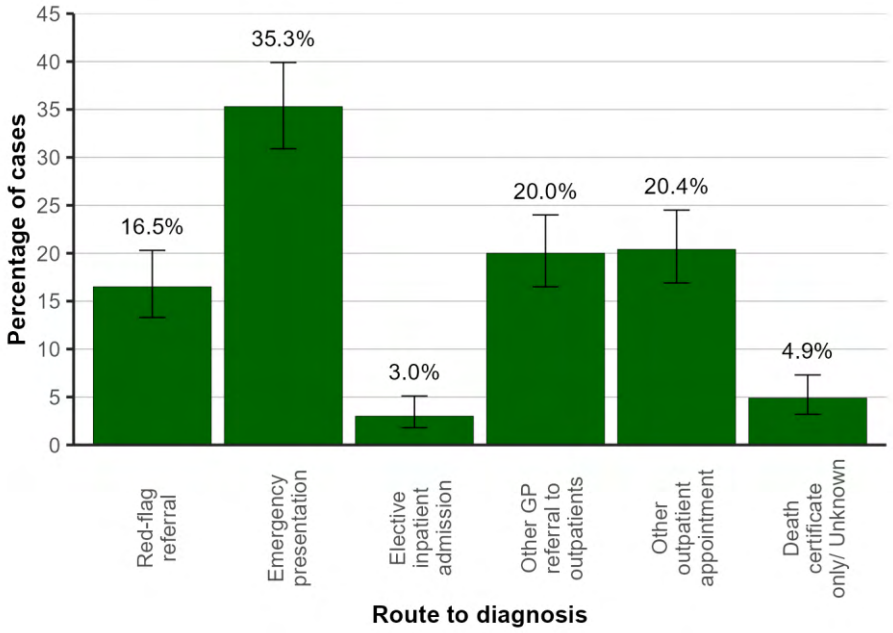


Figure 10.8: Route to diagnosis for pancreatic cancer patients diagnosed in 2018-2020

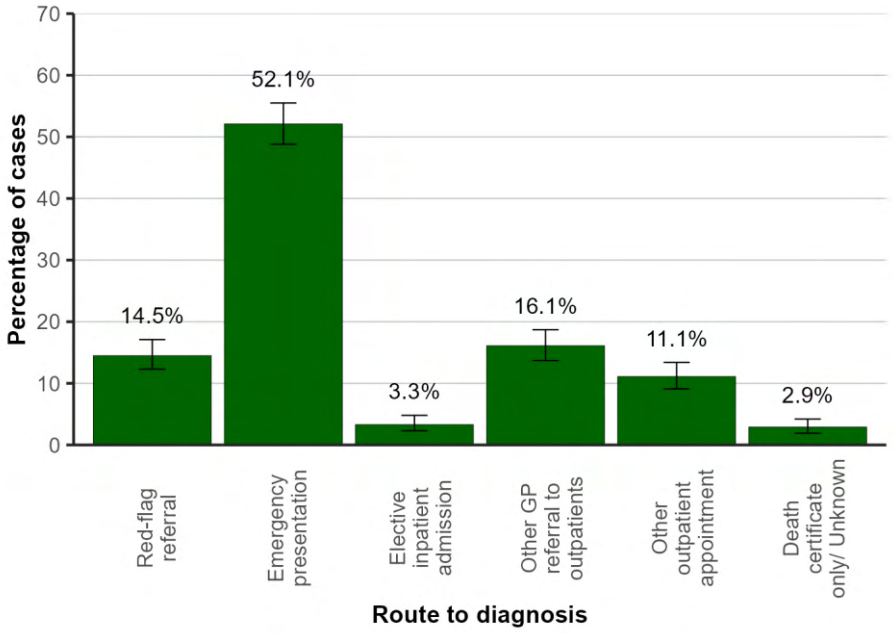
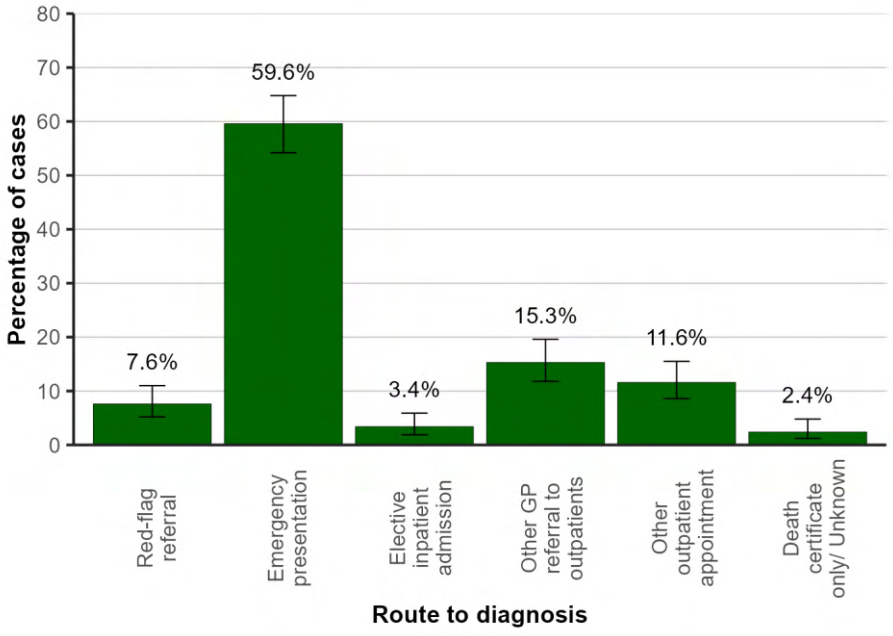


Figure 10.9: Route to diagnosis for gallbladder and biliary cancer patients diagnosed in 2018-2020



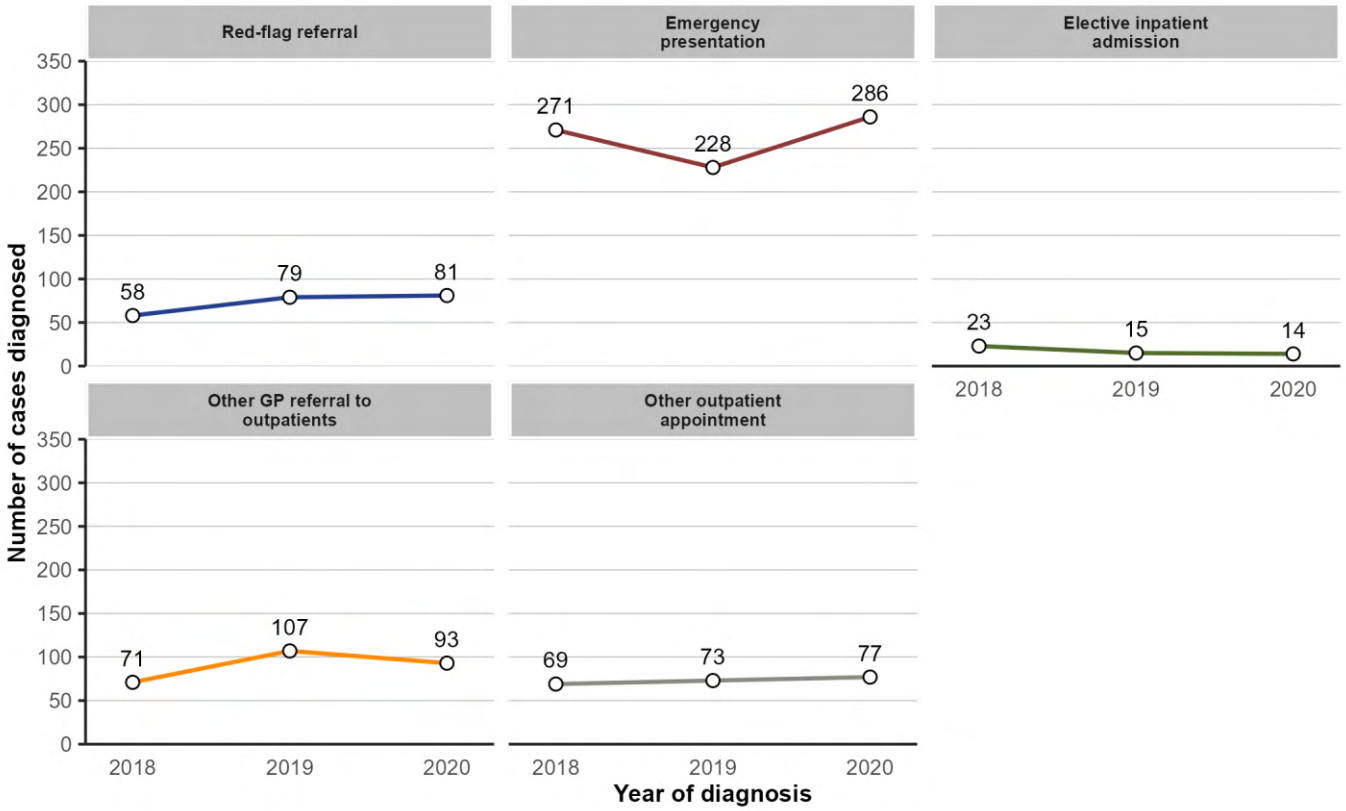
10.6: ROUTES TO DIAGNOSIS BY YEAR OF DIAGNOSIS

The number of hepatobiliary and pancreatic cancer cases diagnosed via a red-flag referral each year increased by 17.4% from 69 per year in 2018-19 to 81 in 2020. As a proportion of all cases, a red-flag referral diagnosis increased from 13.3% in 2018-19 to 14.4% in 2020.

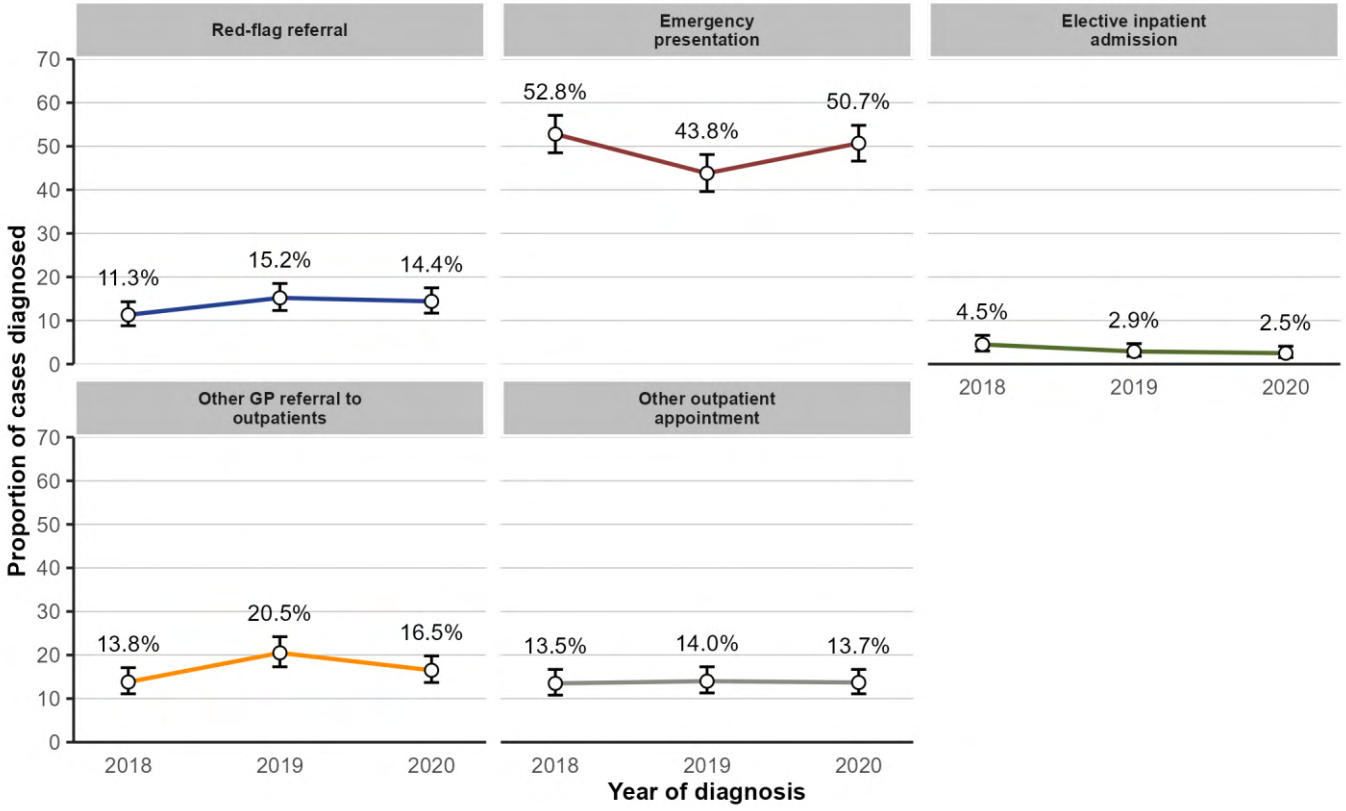
The number of hepatobiliary and pancreatic cancer cases diagnosed via an emergency presentation each year increased by 14.4% from 250 per year in 2018-19 to 286 in 2020. As a proportion of all cases, an emergency presentation diagnosis increased from 48.3% in 2018-19 to 50.7% in 2020. The variation in route to diagnosis by year of diagnosis was statistically significant (p = 0.018).

Figure 10.10: Route to diagnosis for hepatobiliary and pancreatic cancer patients diagnosed in 2018-2020 by year of diagnosis

(a) Number of cases



(b) Proportion of cases



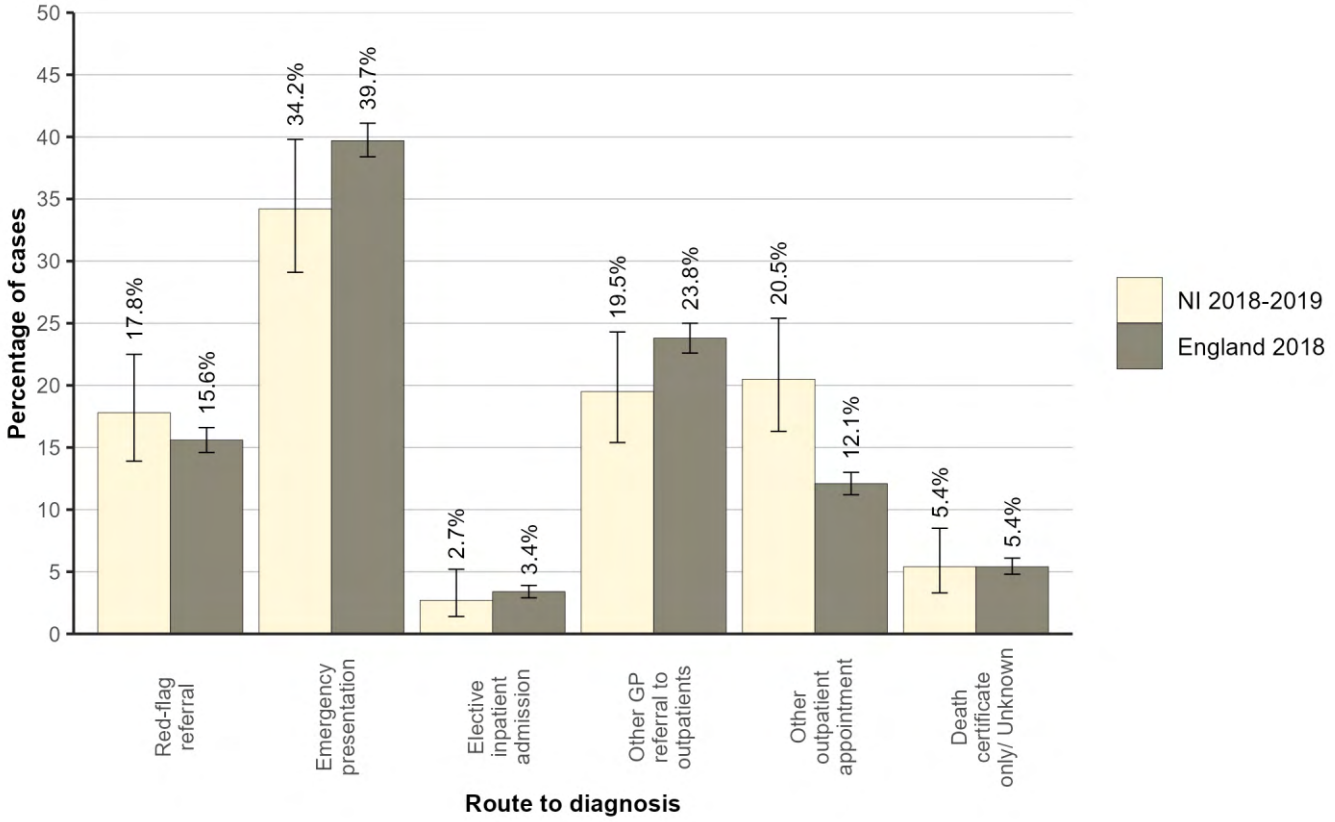
10.7: COMPARISON WITH ENGLAND

Liver cancer

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with liver cancer in 2018-2019 compared to patients diagnosed in England during 2018.

- Other outpatient appointment (20.5% in NI compared to 12.1% in England ; p<0.001).

Figure 10.11: Route to diagnosis for liver cancer patients diagnosed in 2018-2019 compared to patients diagnosed in England during 2018



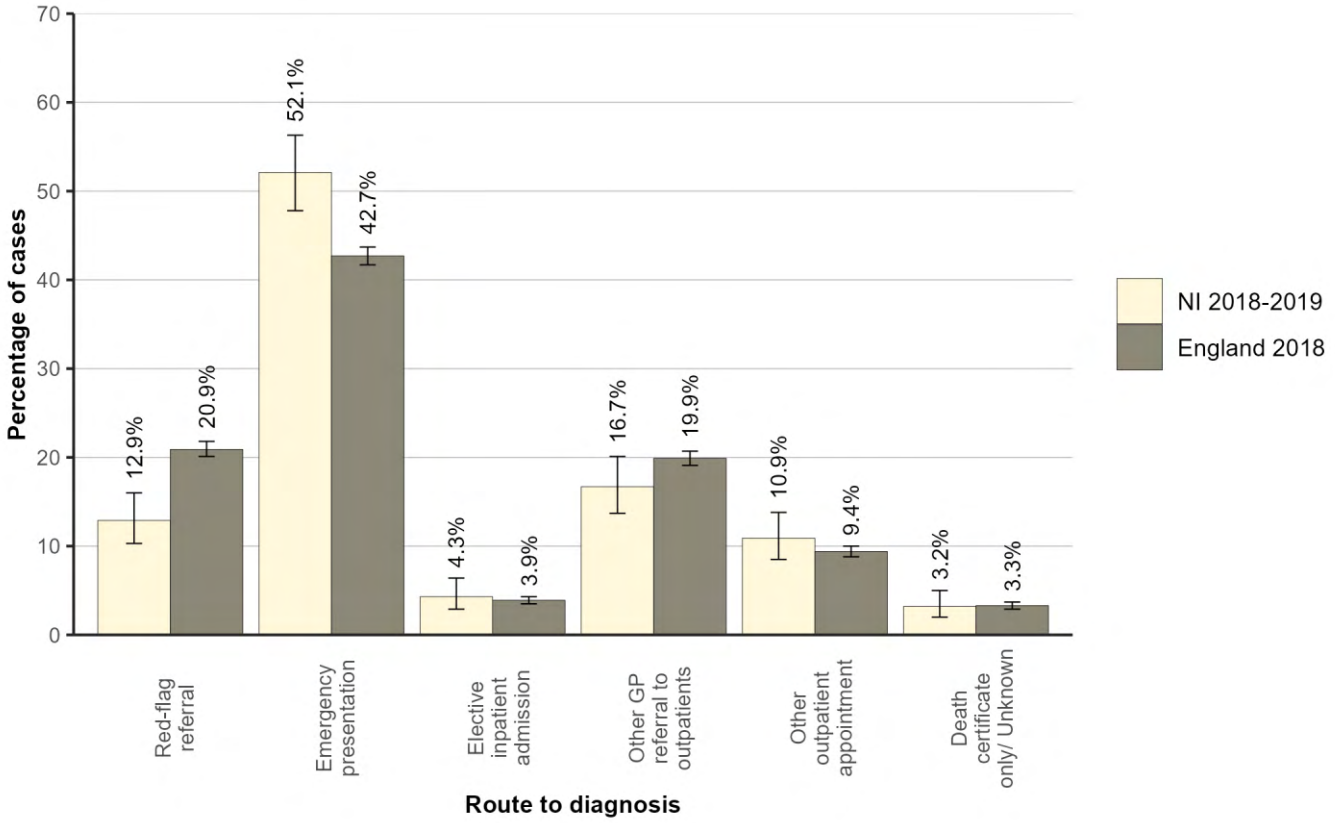
Source of English data: National Disease Registration Service, See reference 12.
Note that due to the impact of the COVID-19 pandemic on cancer diagnosis, comparisons exclude data from 2020.
Due to potential differences in coding and data sources, differences between the two studies should be treated as an approximate comparison.

Pancreatic cancer

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with pancreatic cancer in 2018-2019 compared to patients diagnosed in England during 2018.

- Red-flag referral (12.9% in NI compared to 20.9% in England ; p<0.001).
- Emergency presentation (52.1% in NI compared to 42.7% in England ; p<0.001).

Figure 10.12: Route to diagnosis for pancreatic cancer patients diagnosed in 2018-2019 compared to patients diagnosed in England during 2018



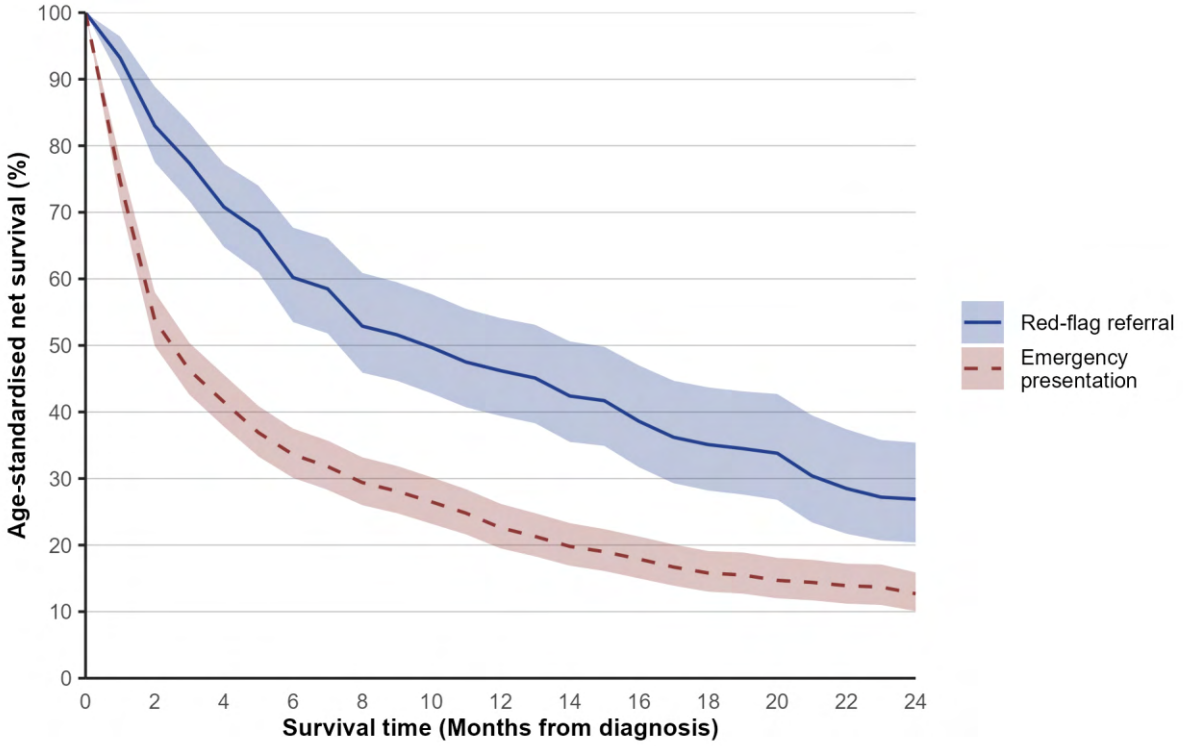
Source of English data: National Disease Registration Service, See reference 12.
Note that due to the impact of the COVID-19 pandemic on cancer diagnosis, comparisons exclude data from 2020.
Due to potential differences in coding and data sources, differences between the two studies should be treated as an approximate comparison.

10.8: SURVIVAL

During 2018-2020 one-year age-standardised net survival from hepatobiliary and pancreatic cancer ranged from 22.6% for those diagnosed via an emergency presentation route to 54.2% for those diagnosed via another outpatient appointment route. Two years from diagnosis age-standardised net survival ranged from 12.7% for those diagnosed via an emergency presentation route to 40.4% for those diagnosed via another outpatient appointment route.

Figure 10.13: Age-standardised net survival by route to diagnosis for hepatobiliary and pancreatic cancer patients diagnosed in 2018-2020

(a) Red-flag and emergency routes



(b) Other routes

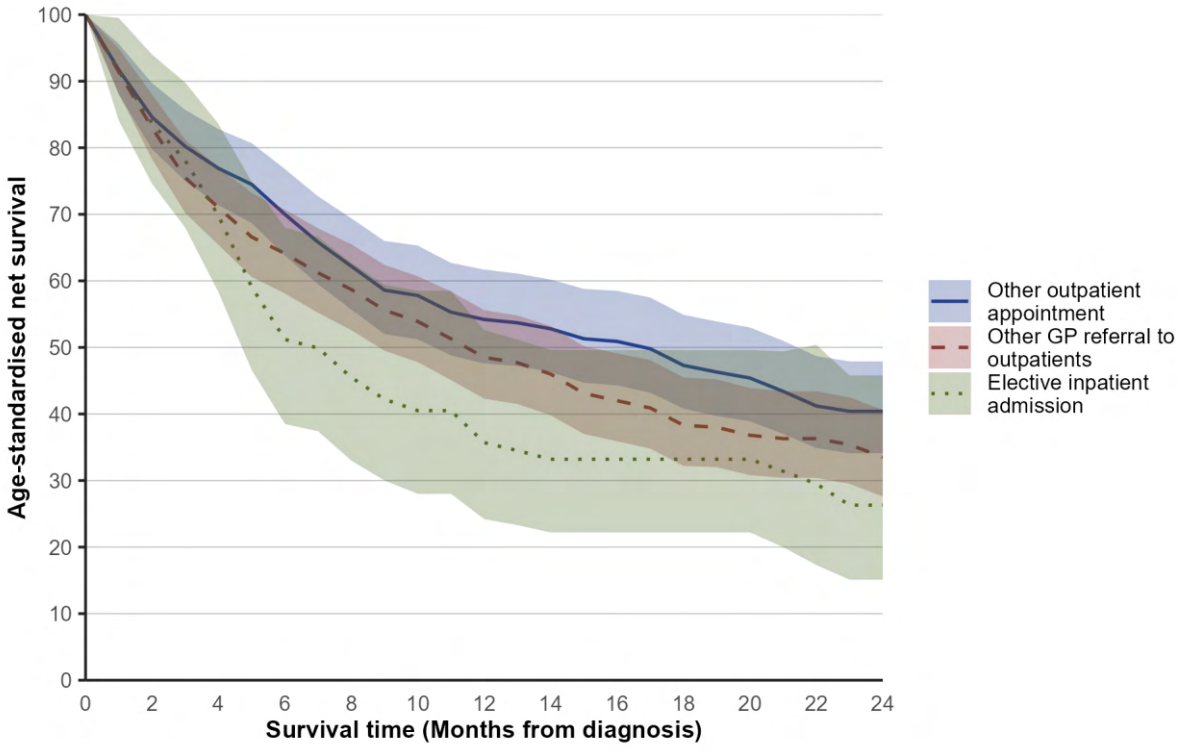


Table 10.2: Age-standardised net survival by route to diagnosis for hepatobiliary and pancreatic cancer patients diagnosed in 2018-2020

Route to diagnosis	One-year survival (ASNS)	Two-year survival (ASNS)
Red-flag referral	46.2% (39.4% - 54.1%)	26.9% (20.4% - 35.4%)
Emergency presentation	22.6% (19.5% - 26.2%)	12.7% (10.1% - 15.9%)
Elective inpatient admission	35.7% (24.2% - 52.6%)	26.3% (15.1% - 45.8%)
Other GP referral to outpatients	48.5% (42.3% - 55.6%)	33.5% (27.6% - 40.6%)
Other outpatient appointment	54.2% (47.6% - 61.7%)	40.4% (34.1% - 47.9%)
Unknown	28.2% (17.7% - 45.0%)*	18.5% (9.2% - 37.0%)*

*ASNS: Age-standardised net survival with 95% confidence interval. * Unstandardised net survival presented as less than 50 patients in this group.*

11: Gynaecological Cancer

The most common route to diagnosis among gynaecological cancer patients during 2018-2020 was via a red-flag referral, with 247 (40.4%) cases diagnosed on average each year. This was followed by another GP referral to outpatients route with 122 (19.9%) cases diagnosed on average each year. Emergency presentations made up 19.6% of cases during this period. Screening referrals made up 5.2% of cases during this period.

Figure 11.1: Route to diagnosis for gynaecological cancer patients diagnosed in 2018-2020

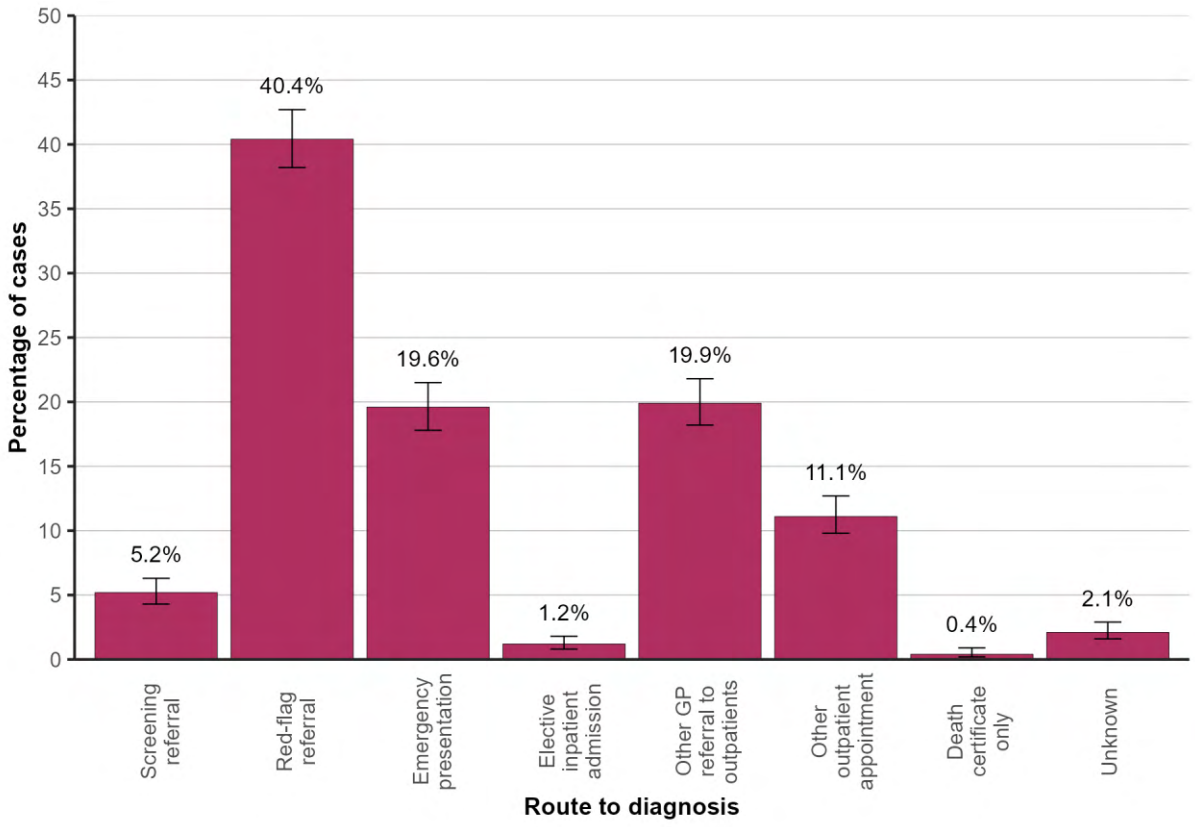


Table 11.1: Average number of gynaecological cancer cases diagnosed each year during 2018-2020 by route to diagnosis

Route to diagnosis	Cases per year	Proportion (95% CI)
Screening referral	32	5.2% (4.3% - 6.3%)
Red-flag referral	247	40.4% (38.2% - 42.7%)
Emergency presentation	120	19.6% (17.8% - 21.5%)
Elective inpatient admission	7	1.2% (0.8% - 1.8%)
Other GP referral to outpatients	122	19.9% (18.2% - 21.8%)
Other outpatient appointment	68	11.1% (9.8% - 12.7%)
Death certificate only	3	0.4% (0.2% - 0.9%)
Unknown	13	2.1% (1.6% - 2.9%)

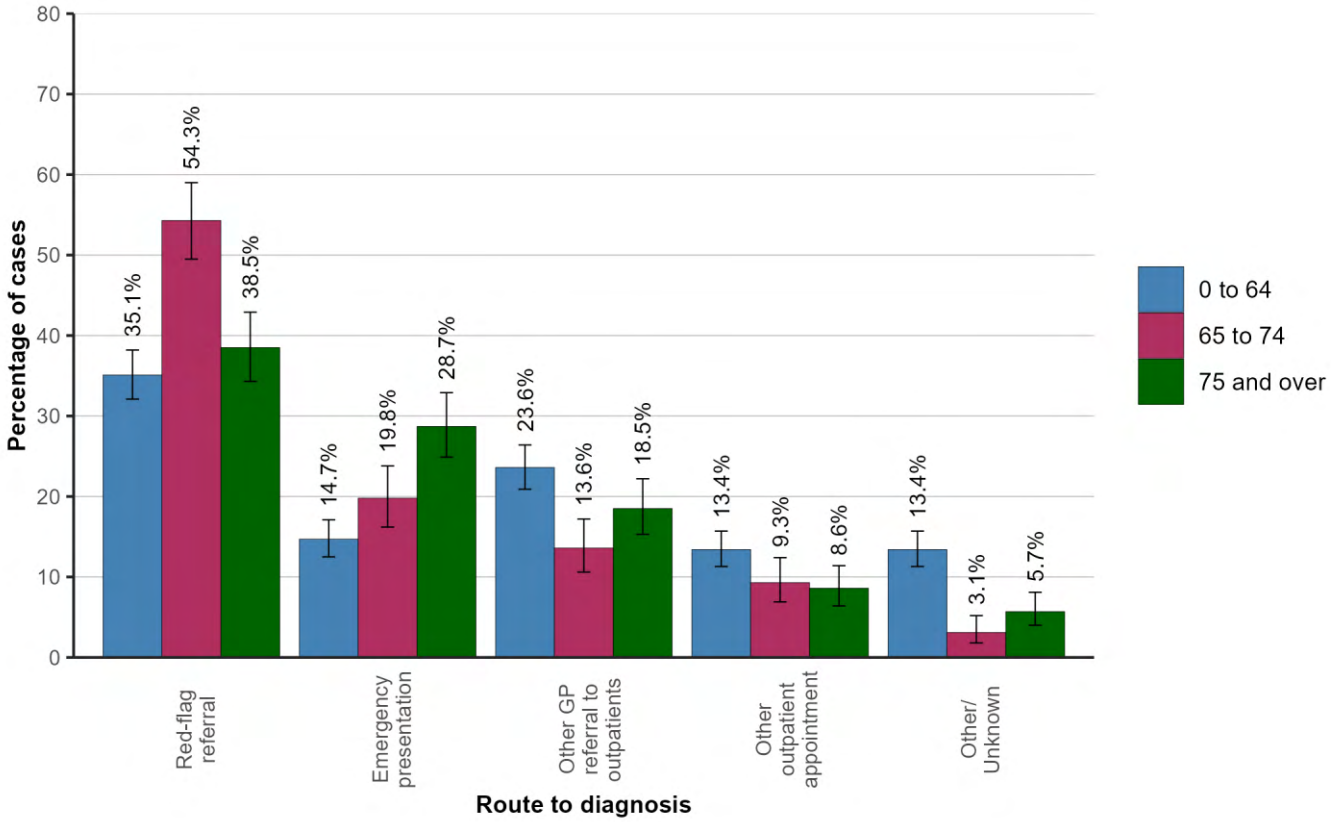
CI: Confidence Interval

11.1: ROUTES TO DIAGNOSIS BY AGE GROUP

During 2018-2020 the most common route to diagnosis for cases of gynaecological cancer overall was a red-flag referral. Among those aged 0 to 64 there were 108 (35.1%) diagnosed per year via this route, compared to 63 (38.5%) per year among those aged 75 and over. This made it the most common route to diagnosis for both those aged 0 to 64 and those aged 75 and over.

The route to diagnosis with the biggest difference between those aged 0 to 64 and aged 75 and over was an emergency presentation with 14.7% of those aged 0 to 64 and 28.7% of those aged 75 and over diagnosed via this route. The variation in route to diagnosis by age group was statistically significant ($p < 0.001$).

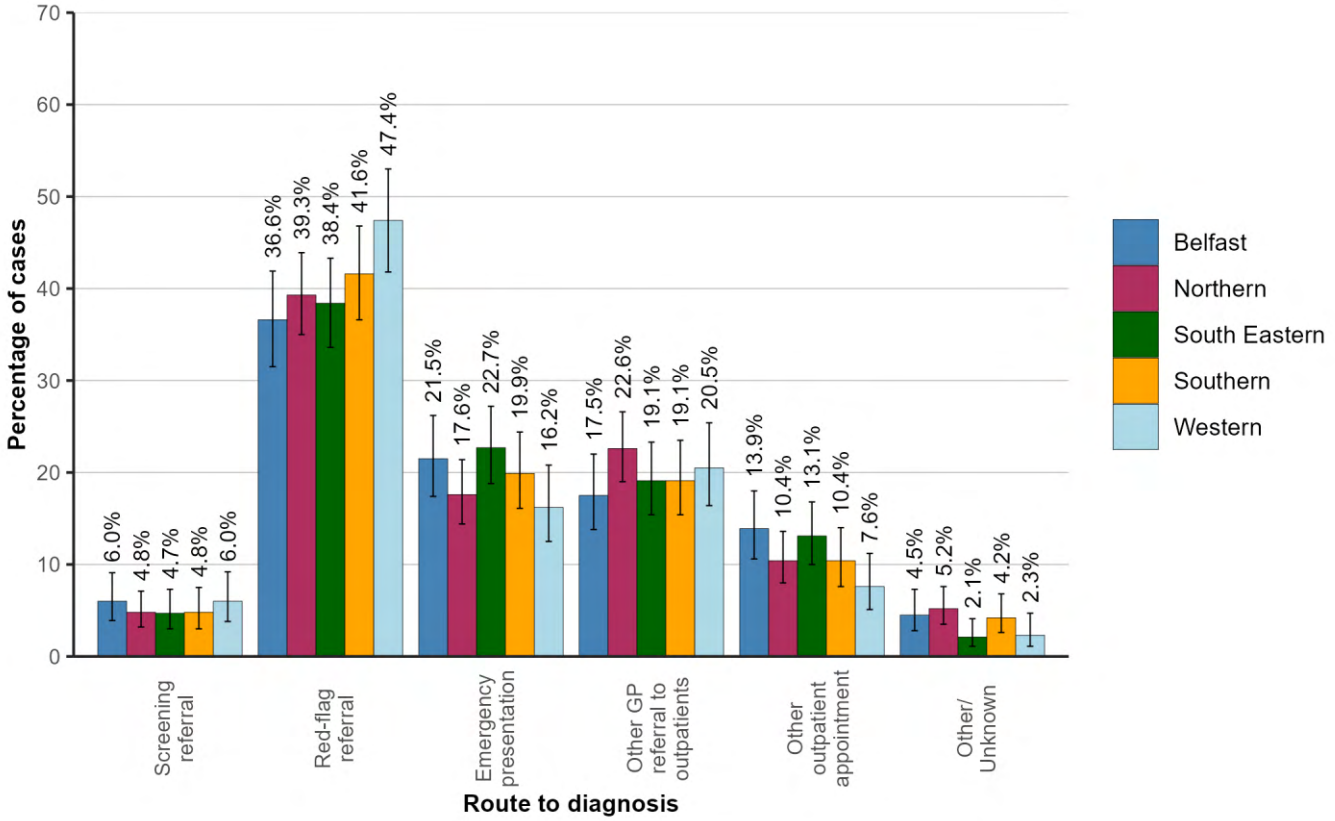
Figure 11.2: Route to diagnosis for gynaecological cancer patients diagnosed in 2018-2020 by age group



Health and Social Care Trust

During 2018-2020 the proportion of cases of gynaecological cancer diagnosed via a red-flag referral ranged from 36.6% in Belfast HSCT to 47.4% in Western HSCT. The proportions diagnosed via an emergency presentation ranged from 16.2% to 22.7% in Western HSCT and South Eastern HSCT respectively. Screening referral was the route taken in 4.7% of cases in South Eastern HSCT and 6.0% of cases in Belfast HSCT. The variation in route to diagnosis by Health and Social Care Trust was not statistically significant.

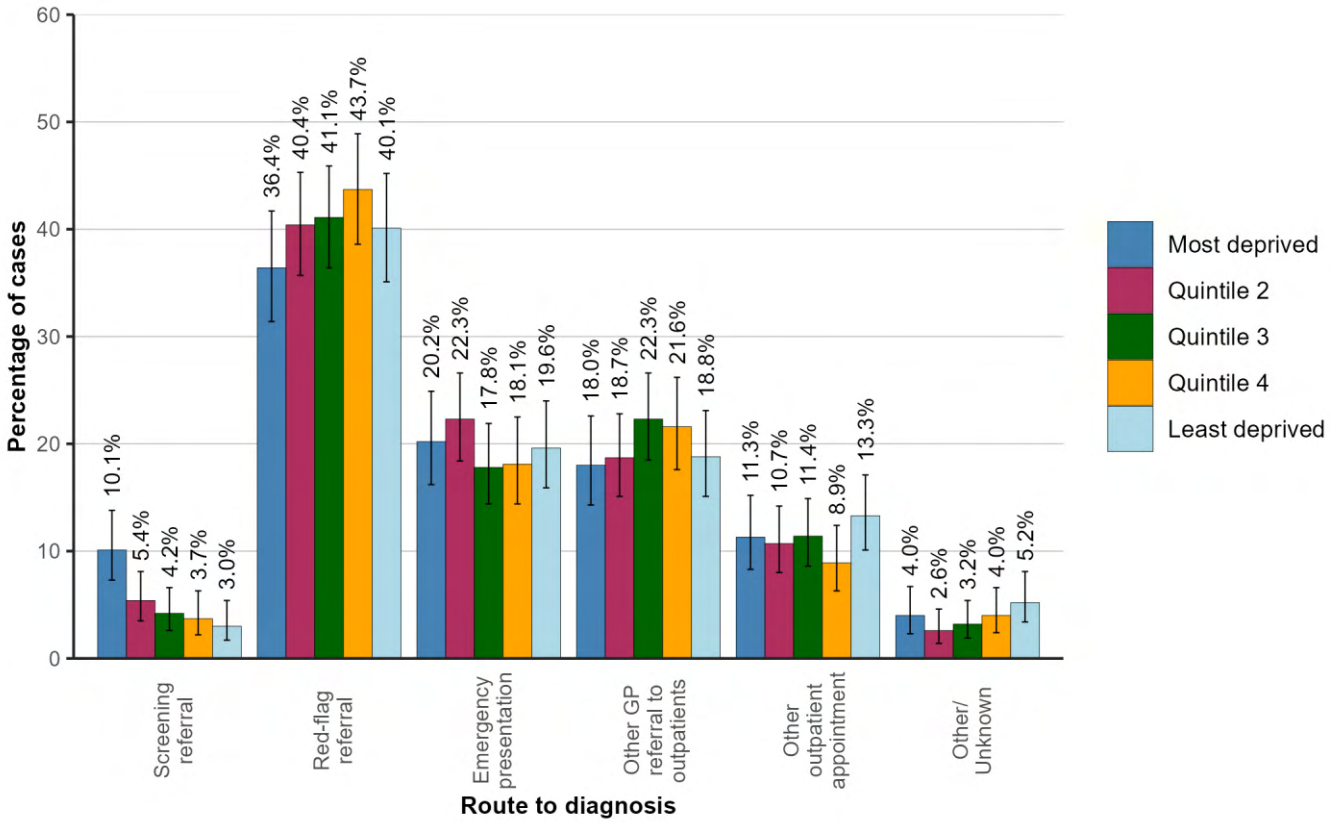
Figure 11.3: Route to diagnosis for gynaecological cancer patients diagnosed in 2018-2020 by Health and Social Care Trust



Area-based socio-economic deprivation

During 2018-2020 the proportion of cases of gynaecological cancer diagnosed via a red-flag referral was 36.4% in the most deprived areas compared to 40.1% in the least deprived areas. The proportions diagnosed via an emergency presentation were 20.2% and 19.6% in the most and least deprived areas respectively. Screening referral was the route taken in 10.1% of cases from the most deprived areas and 3.0% of cases in the least deprived areas. The variation in route to diagnosis by deprivation quintile was statistically significant (p = 0.019).

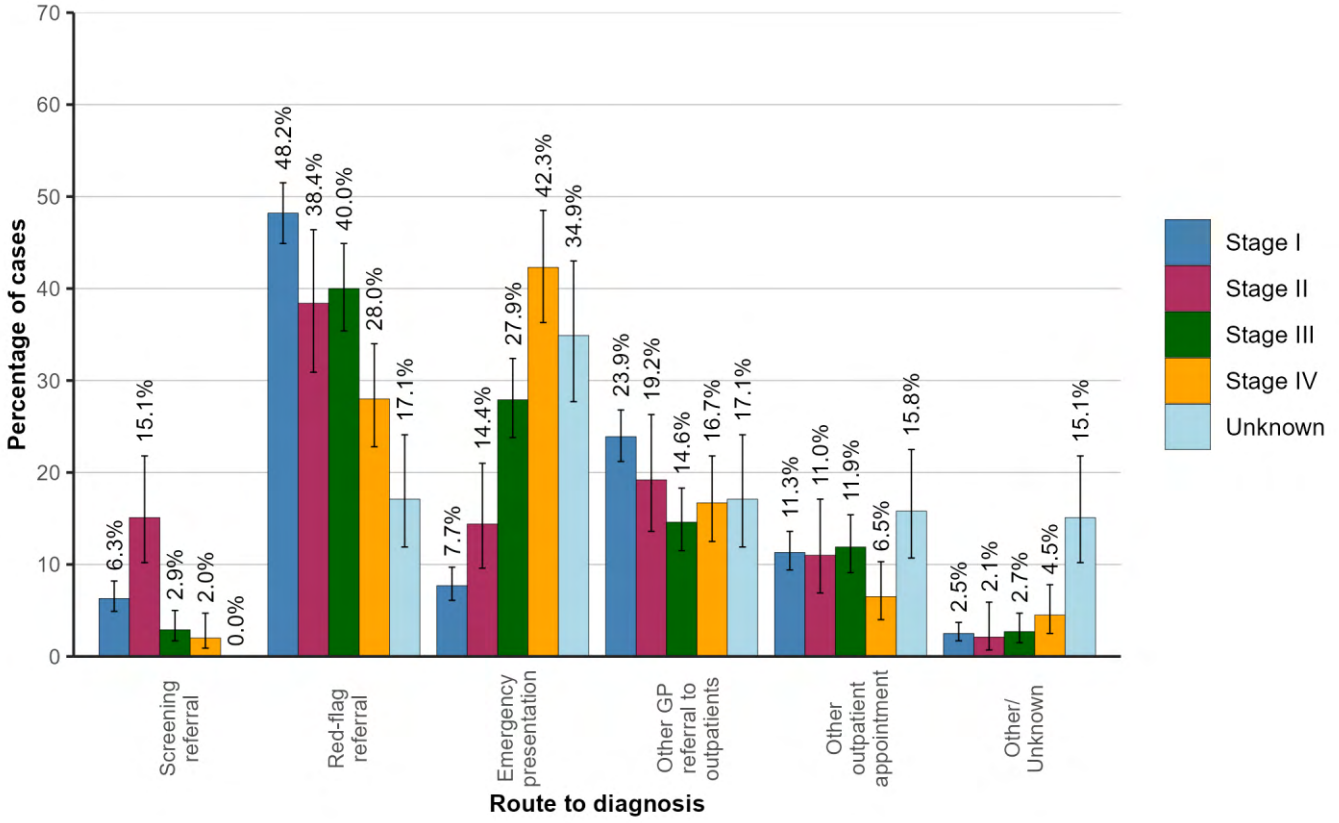
Figure 11.4: Route to diagnosis for gynaecological cancer patients diagnosed in 2018-2020 by deprivation quintile



11.3: Routes to diagnosis by stage at diagnosis

During 2018-2020 the proportion of cases of gynaecological cancer diagnosed via a red-flag referral was 48.2% among stage I cancers compared to 28.0% among stage IV cancers. The proportions diagnosed via an emergency presentation were 7.7% and 42.3% for stage I and stage IV cancers respectively. Screening referral was the route taken in 2.0% of cases diagnosed at stage IV and 6.3% of cases diagnosed at stage I. The variation in route to diagnosis by stage at diagnosis was statistically significant (p < 0.001).

Figure 11.5: Route to diagnosis for gynaecological cancer patients diagnosed in 2018-2020 by stage at diagnosis



11.4: ROUTES TO DIAGNOSIS BY YEAR OF DIAGNOSIS

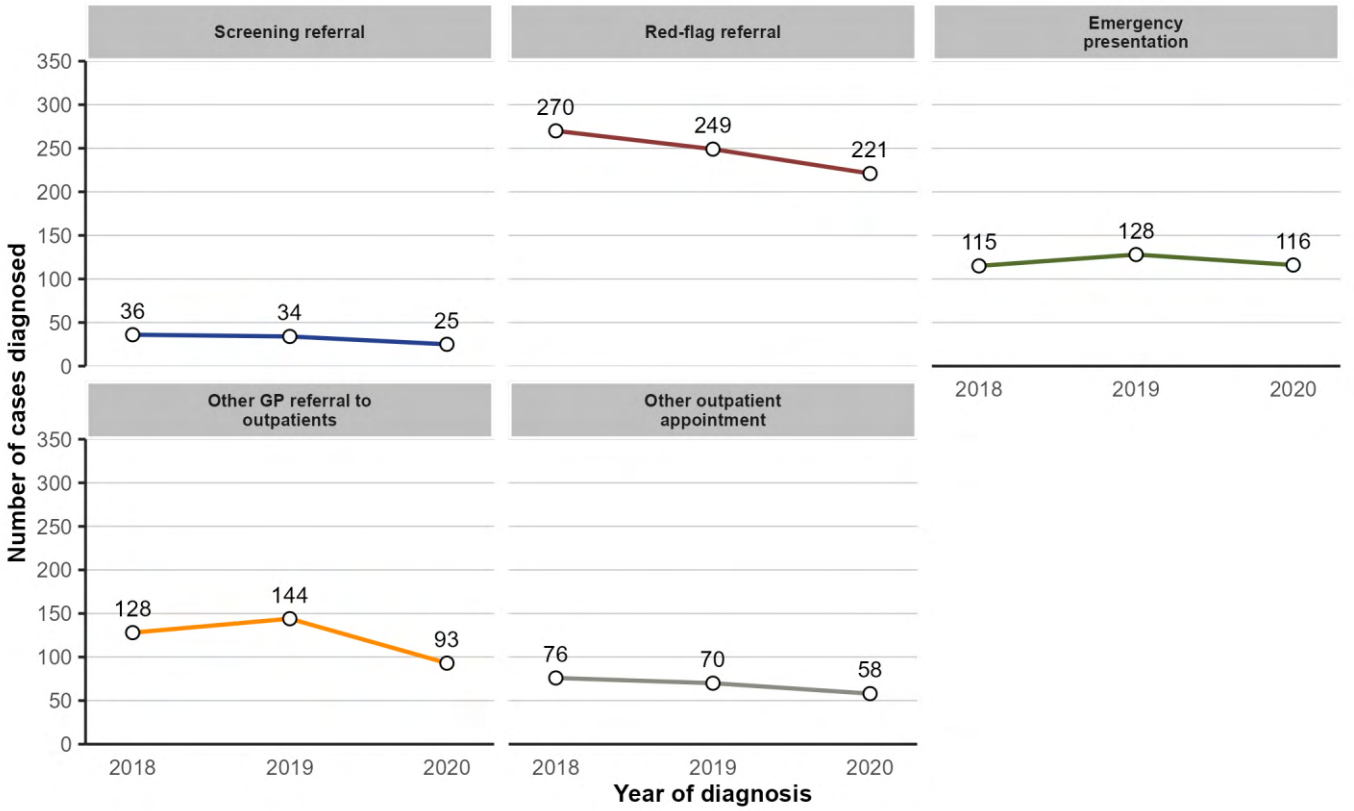
The number of gynaecological cancer cases diagnosed via a screening referral each year decreased by 28.6% from 35 per year in 2018-19 to 25 in 2020. As a proportion of all cases, a screening referral diagnosis decreased from 5.4% in 2018-19 to 4.7% in 2020.

The number of gynaecological cancer cases diagnosed via a red-flag referral each year decreased by 15.0% from 260 per year in 2018-19 to 221 in 2020. As a proportion of all cases, a red-flag referral diagnosis increased from 39.9% in 2018-19 to 41.6% in 2020.

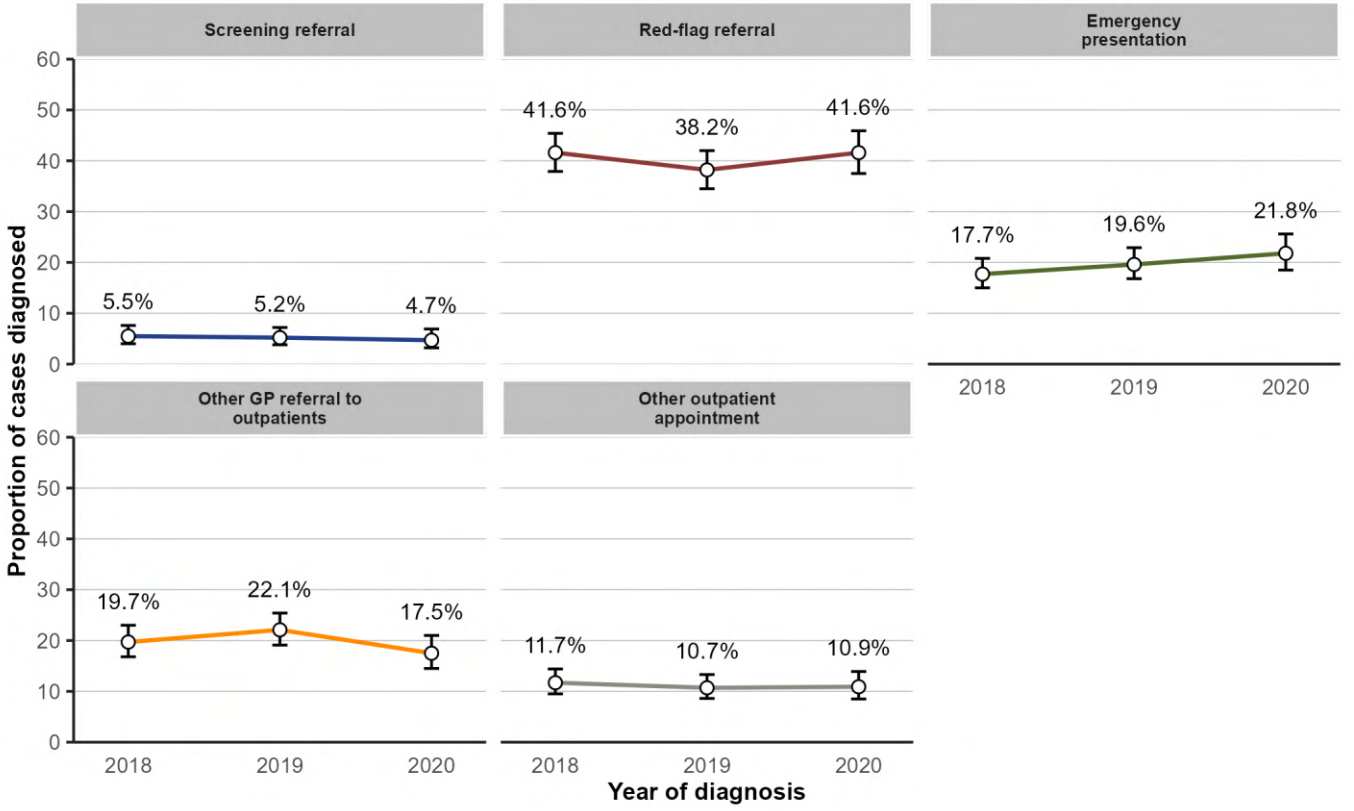
The number of gynaecological cancer cases diagnosed via an emergency presentation each year decreased by 4.9% from 122 per year in 2018-19 to 116 in 2020. As a proportion of all cases, an emergency presentation diagnosis increased from 18.7% in 2018-19 to 21.8% in 2020. The variation in route to diagnosis by year of diagnosis was not statistically significant.

Figure 11.6: Route to diagnosis for gynaecological cancer patients diagnosed in 2018-2020 by year of diagnosis

(a) Number of cases



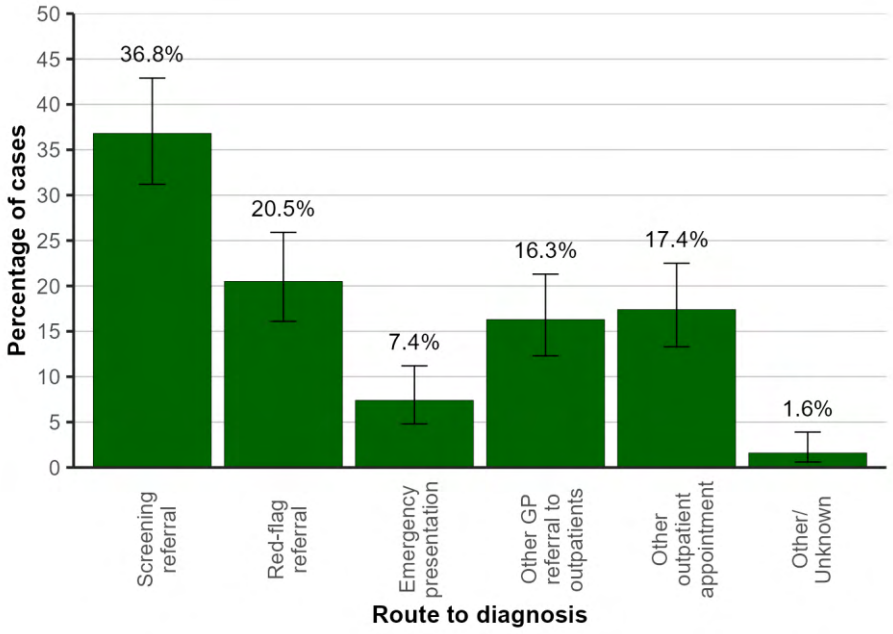
(b) Proportion of cases



11.5: ROUTES TO DIAGNOSIS BY CANCER TYPE

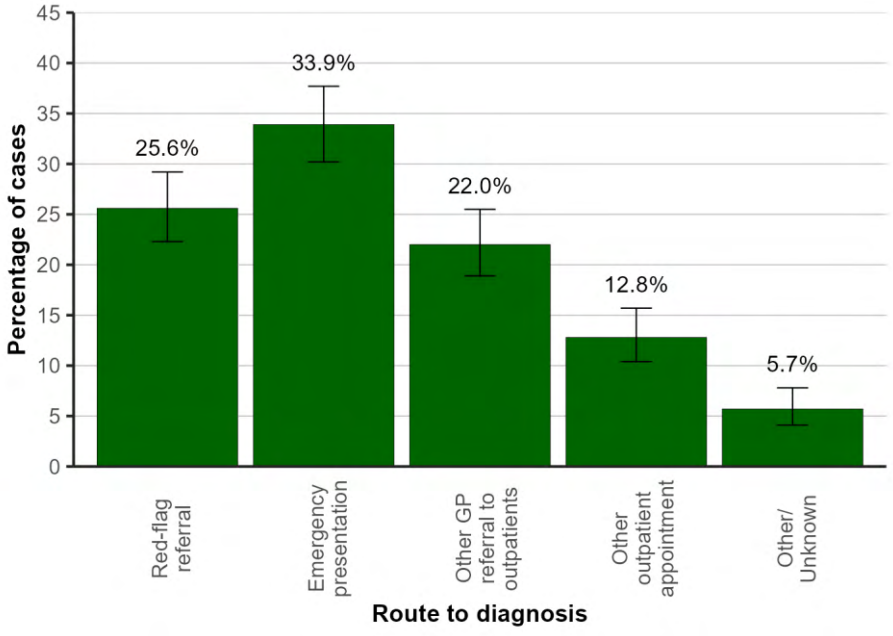
Cervical cancer: The most common route to diagnosis among cervical cancer patients during 2018-2020 was via a screening referral, with 32 (36.8%) cases diagnosed on average each year. This was followed by a red-flag referral route with 18 (20.5%) cases diagnosed on average each year. Emergency presentations made up 7.4% of cases during this period.

Figure 11.7: Route to diagnosis for cervical cancer patients diagnosed in 2018-2020



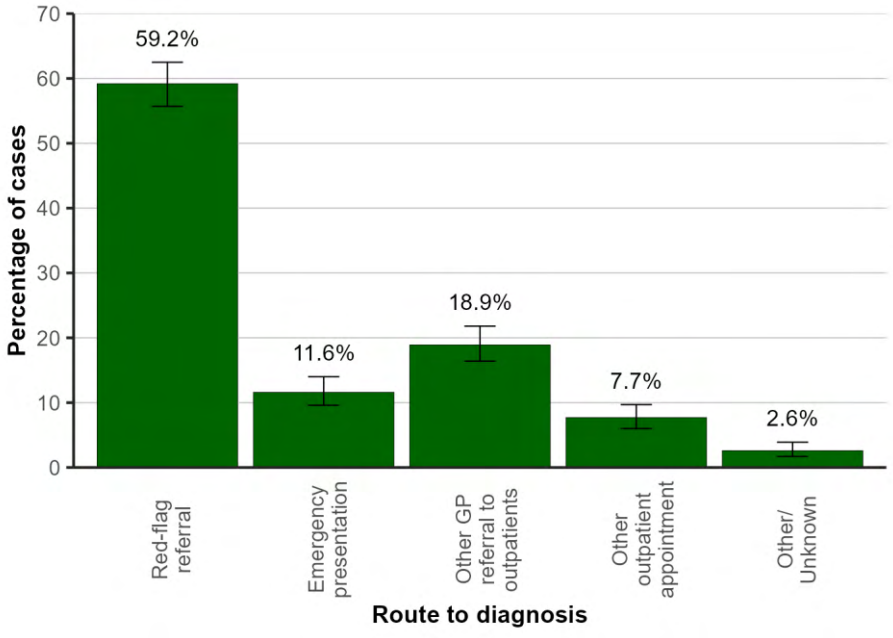
Ovarian cancer: The most common route to diagnosis among ovarian cancer patients during 2018-2020 was via an emergency presentation, with 70 (33.9%) cases diagnosed on average each year. This was followed by a red-flag referral route with 53 (25.6%) cases diagnosed on average each year.

Figure 11.8: Route to diagnosis for ovarian cancer patients diagnosed in 2018-2020



Uterine cancer: The most common route to diagnosis among uterine cancer patients during 2018-2020 was via a red-flag referral, with 159 (59.2%) cases diagnosed on average each year. This was followed by another GP referral to outpatients route with 51 (18.9%) cases diagnosed on average each year. Emergency presentations made up 11.6% of cases during this period.

Figure 11.9: Route to diagnosis for uterine cancer patients diagnosed in 2018-2020



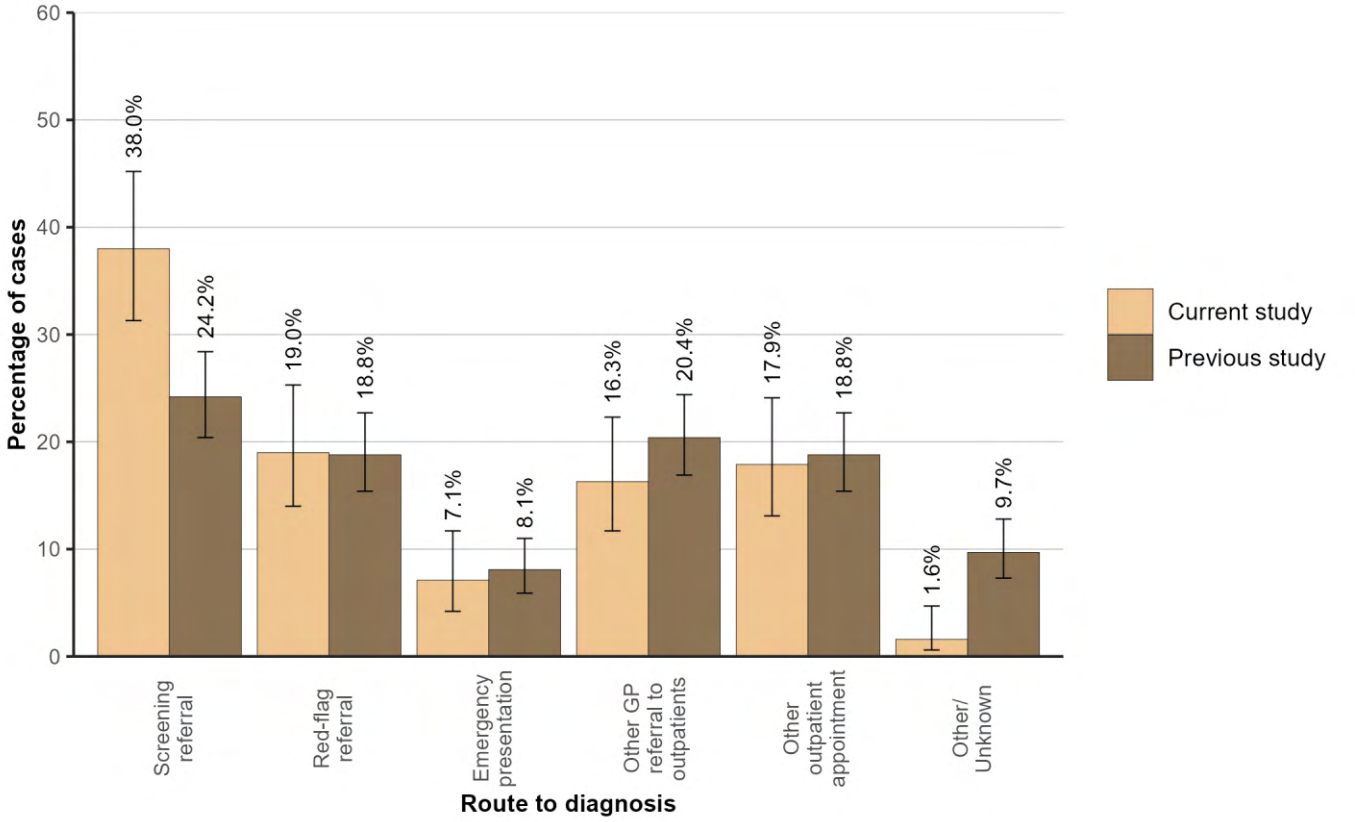
11.6: COMPARISON WITH PREVIOUS STUDIES

Cervical cancer

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with cervical cancer in 2018-2019 compared to patients from the previous Northern Ireland study, which was for patients diagnosed in 2012-2016.

- Screening referral (38.0% in 2018-2019 compared to 24.2% previously ; p<0.001).

Figure 11.10: Route to diagnosis for cervical cancer patients diagnosed in 2018-2019 compared to patients diagnosed in 2012-2016 (from previous Northern Ireland study)



Source of previous data: Centre for Public Health, See reference 2.
Note that due to the impact of the COVID-19 pandemic on cancer diagnosis, comparisons exclude data from 2020.
Due to potential differences in coding and data sources, differences between the two studies should not be interpreted as a time trend.
The previous NI study only considered cervical screening referrals that were strictly part of the 3/5 year recall cycle. The current study also included opportunistic screening as a screening referral.

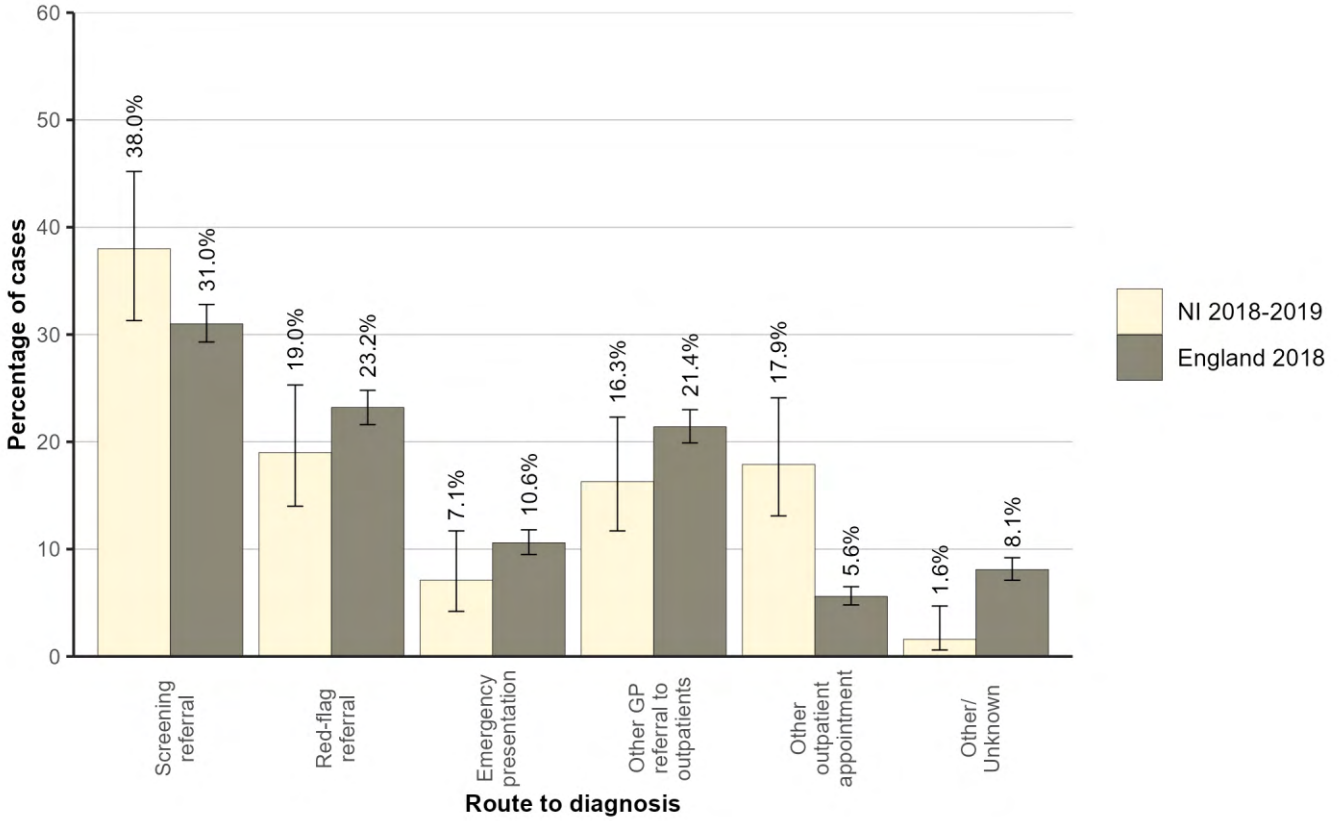
11.7: COMPARISON WITH ENGLAND

Cervical cancer

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with cervical cancer in 2018-2019 compared to patients diagnosed in England during 2018.

- Other outpatient appointment (17.9% in NI compared to 5.6% in England ; p<0.001).

Figure 11.11: Route to diagnosis for cervical cancer patients diagnosed in 2018-2019 compared to patients diagnosed in England during 2018

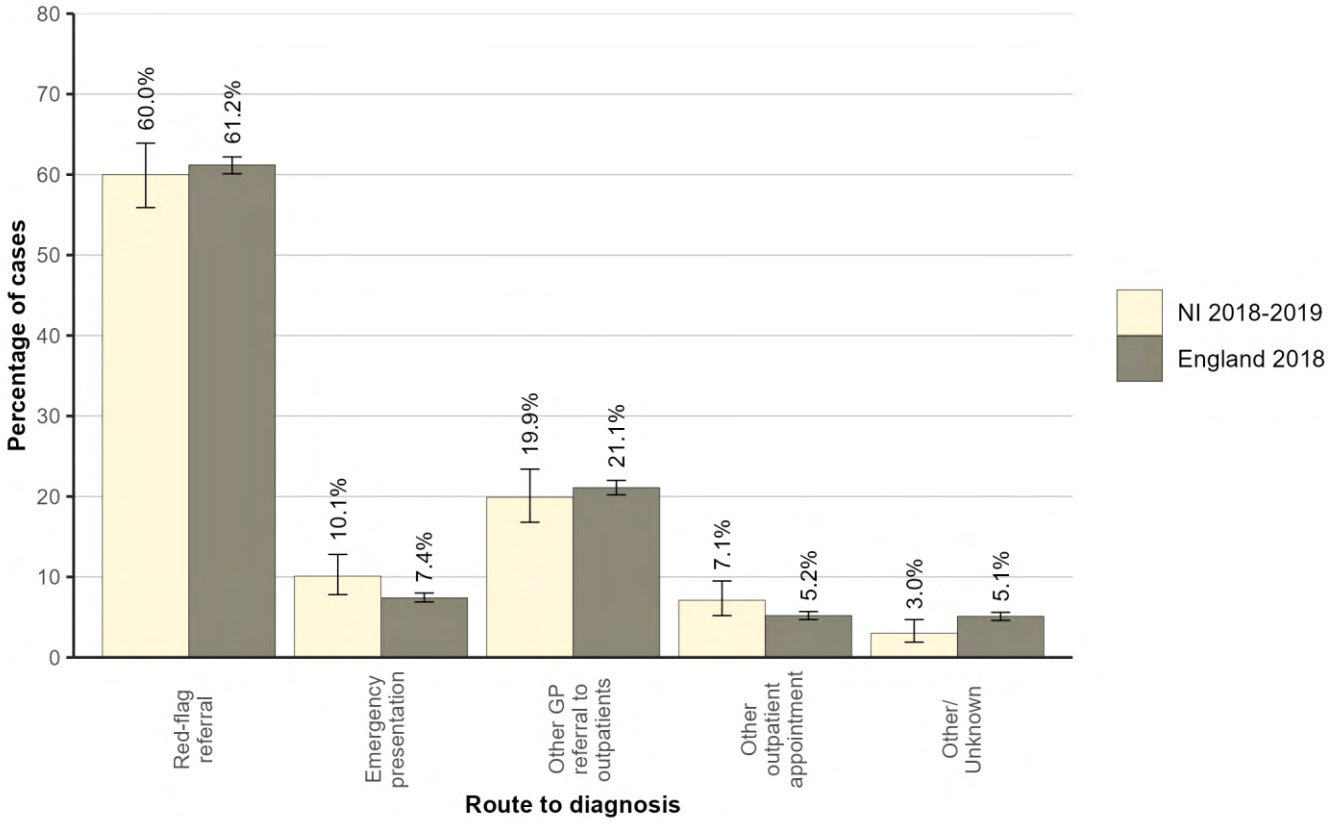


Source of English data: National Disease Registration Service, See reference 12.
Note that due to the impact of the COVID-19 pandemic on cancer diagnosis, comparisons exclude data from 2020.
Due to potential differences in coding and data sources, differences between the two studies should be treated as an approximate comparison.

Uterine cancer

The proportion of cases diagnosed with uterine cancer via each route to diagnosis in 2018-2019 did not vary significantly from patients diagnosed in England during 2018.

Figure 11.12: Route to diagnosis for uterine cancer patients diagnosed in 2018-2019 compared to patients diagnosed in England during 2018



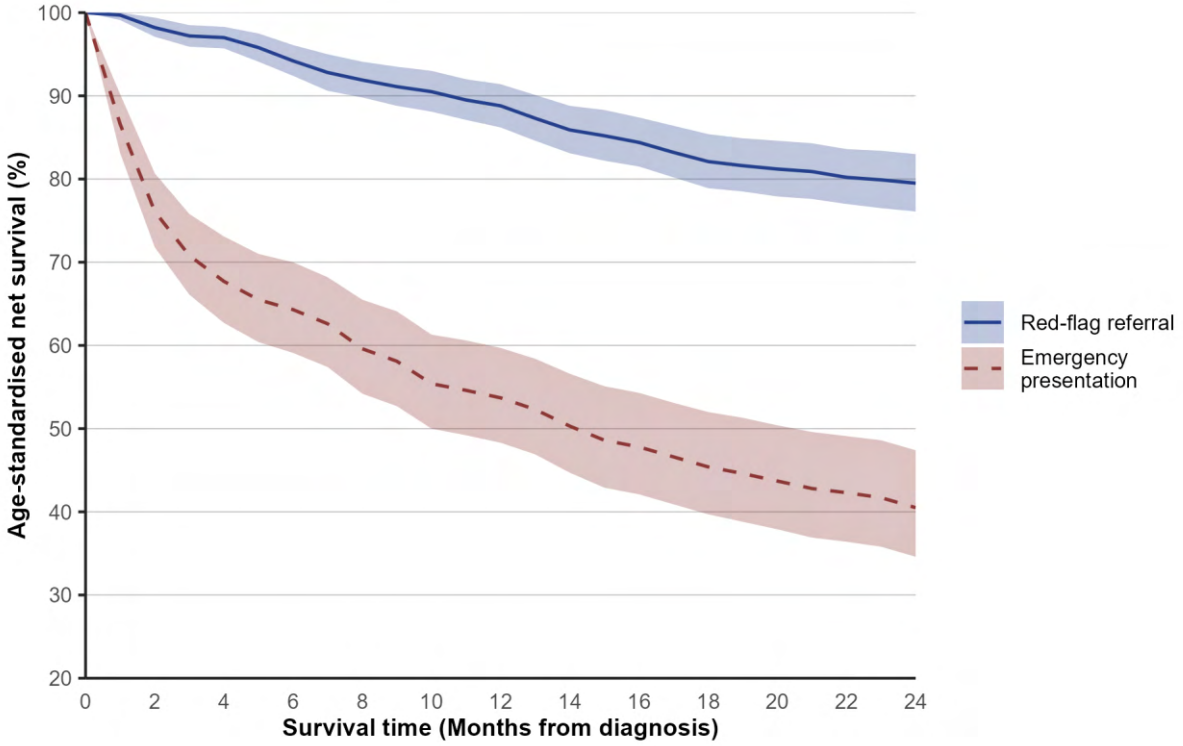
Source of English data: National Disease Registration Service, See reference 12.
Note that due to the impact of the COVID-19 pandemic on cancer diagnosis, comparisons exclude data from 2020.
Due to potential differences in coding and data sources, differences between the two studies should be treated as an approximate comparison.

11.8: SURVIVAL

During 2018-2020 one-year age-standardised net survival from gynaecological cancer ranged from 53.7% for those diagnosed via an emergency presentation route to 88.8% for those diagnosed via a red-flag referral route. Two years from diagnosis age-standardised net survival ranged from 40.5% for those diagnosed via an emergency presentation route to 79.6% for those diagnosed via another GP referral to outpatients route.

Figure 11.13: Age-standardised net survival by route to diagnosis for gynaecological cancer patients diagnosed in 2018-2020

(a) Red-flag and emergency routes



(b) Other routes

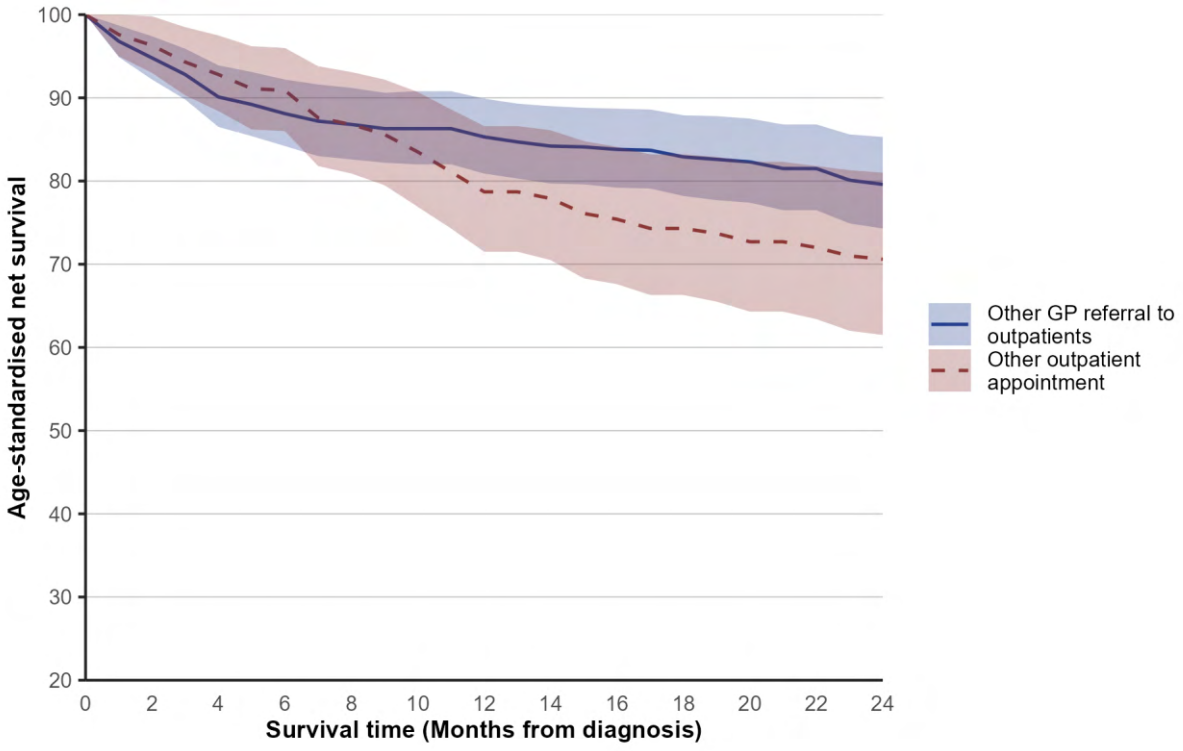


Table 11.2: Age-standardised net survival by route to diagnosis for gynaecological cancer patients diagnosed in 2018-2020

Route to diagnosis	One-year survival (ASNS)	Two-year survival (ASNS)
Red-flag referral	88.8% (86.2% - 91.4%)	79.5% (76.1% - 83.0%)
Emergency presentation	53.7% (48.3% - 59.7%)	40.5% (34.6% - 47.4%)
Elective inpatient admission	76.7% (60.7% - 96.8%)*	62.9% (45.4% - 87.1%)*
Other GP referral to outpatients	85.3% (80.9% - 89.9%)	79.6% (74.3% - 85.3%)
Other outpatient appointment	78.7% (71.5% - 86.6%)	70.6% (61.5% - 81.0%)
Unknown	56.4% (42.4% - 74.9%)*	51.3% (37.3% - 70.5%)*

*ASNS: Age-standardised net survival with 95% confidence interval. * Unstandardised net survival presented as less than 50 patients in this group.*

For patients of screening age

During 2018-2020 one-year net survival from cervical cancer for patients diagnosed within screening age (aged 25 to 64) ranged from 63.8% for those diagnosed via an emergency presentation route to 99.0% for those diagnosed via a screening referral route. Two years from diagnosis net survival for patients diagnosed within screening age ranged from 45.6% for those diagnosed via an emergency presentation route to 95.2% for those diagnosed via another outpatient appointment route.

Figure 11.14: Net survival by route to diagnosis for cervical cancer patients of screening age (aged 25 to 64) diagnosed in 2018-2020

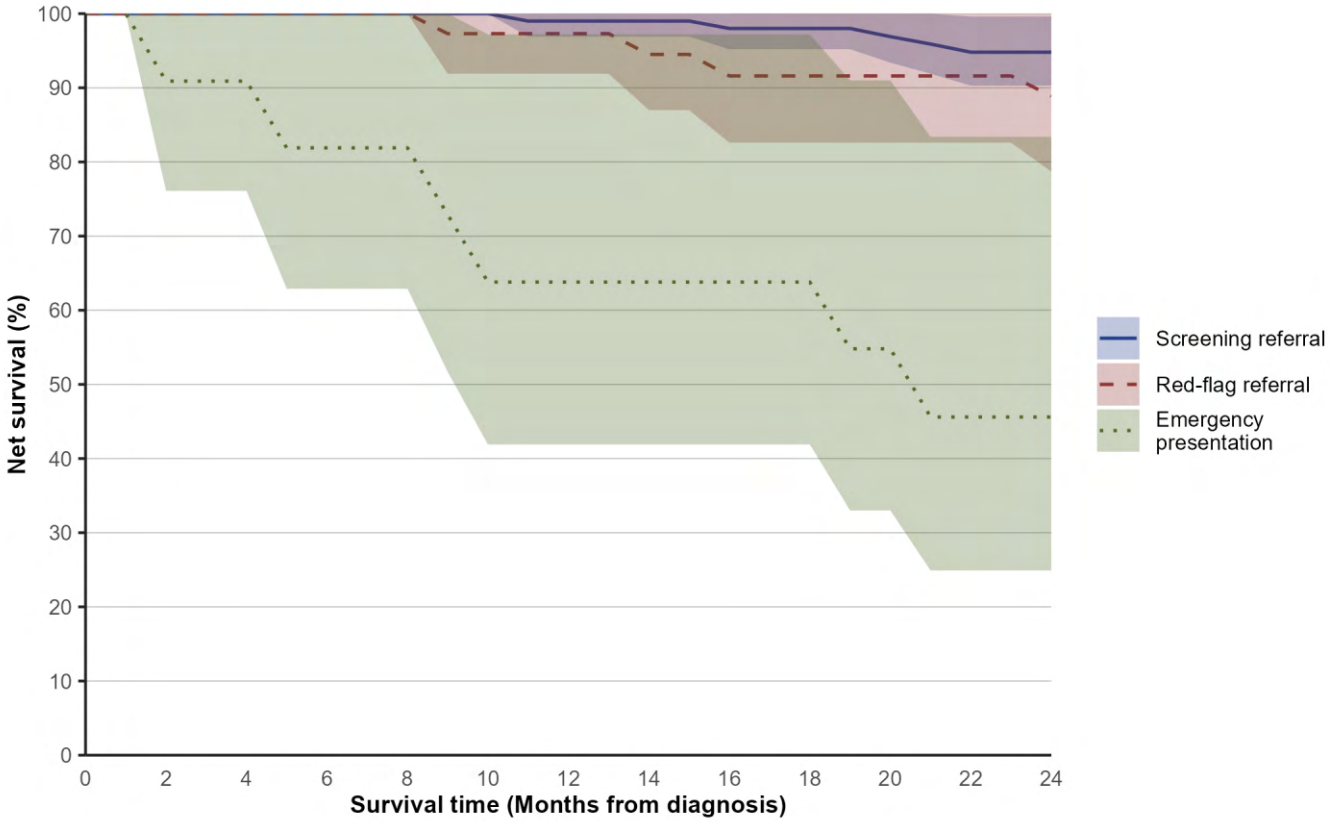


Table 11.3: Net survival by route to diagnosis for cervical cancer patients of screening age (aged 25 to 64) diagnosed in 2018-2020

Route to diagnosis	One-year survival (NS)	Two-year survival (NS)
Screening referral	99.0% (96.9% - 100.0%)	94.8% (90.3% - 99.6%)
Red-flag referral	97.3% (91.9% - 100.0%)	88.9% (78.7% - 100.0%)
Emergency presentation	63.8% (41.9% - 97.2%)	45.6% (24.9% - 83.4%)
Other GP referral to outpatients	94.5% (87.2% - 100.0%)	83.1% (71.6% - 96.4%)
Other outpatient appointment	97.7% (93.0% - 100.0%)	95.2% (88.7% - 100.0%)

NS: Net survival with 95% confidence interval

12: Urinary Cancer

The most common route to diagnosis among urinary cancer patients during 2018-2020 was via a red-flag referral, with 169 (29.3%) cases diagnosed on average each year. This was followed by another GP referral to outpatients route with 149 (25.9%) cases diagnosed on average each year. Emergency presentations made up 20.7% of cases during this period.

Figure 12.1: Route to diagnosis for urinary cancer patients diagnosed in 2018-2020

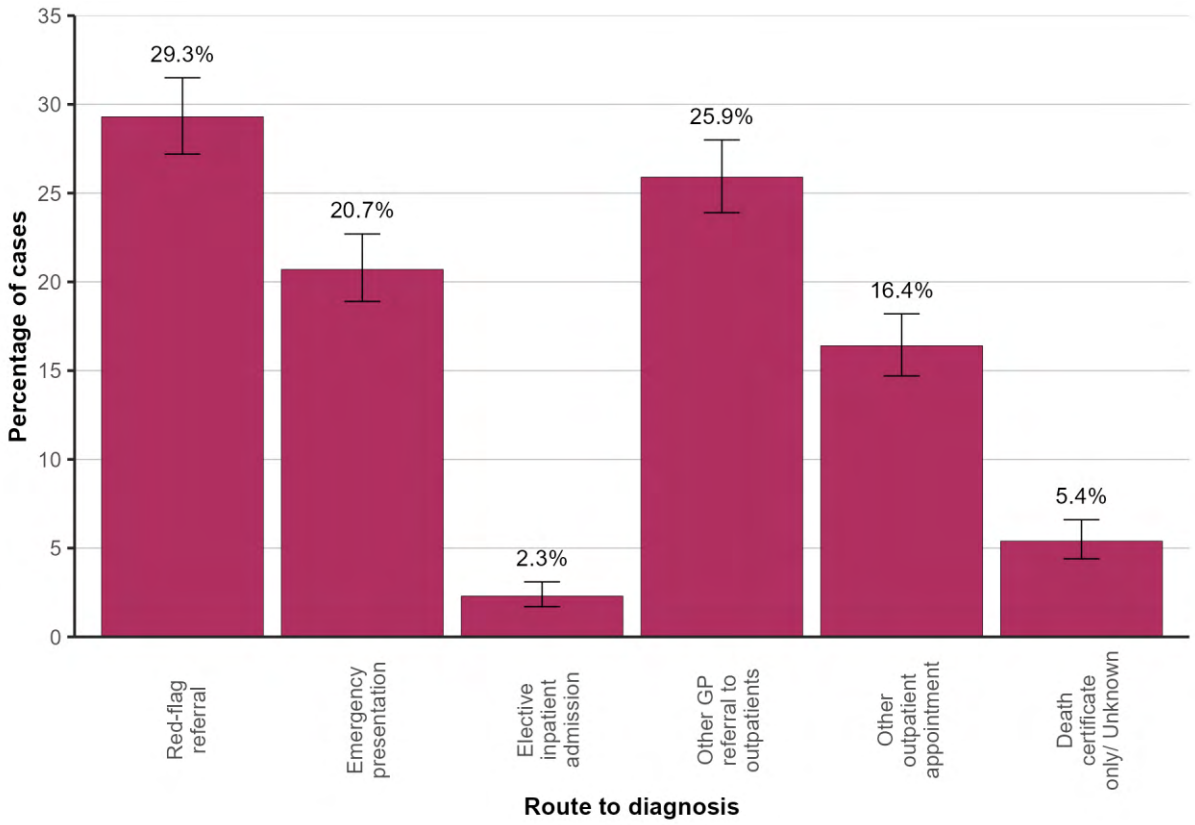


Table 12.1: Average number of urinary cancer cases diagnosed each year during 2018-2020 by route to diagnosis

Route to diagnosis	Cases per year	Proportion (95% CI)
Red-flag referral	169	29.3% (27.2% - 31.5%)
Emergency presentation	119	20.7% (18.9% - 22.7%)
Elective inpatient admission	13	2.3% (1.7% - 3.1%)
Other GP referral to outpatients	149	25.9% (23.9% - 28.0%)
Other outpatient appointment	94	16.4% (14.7% - 18.2%)
Death certificate only/ Unknown	31	5.4% (4.4% - 6.6%)

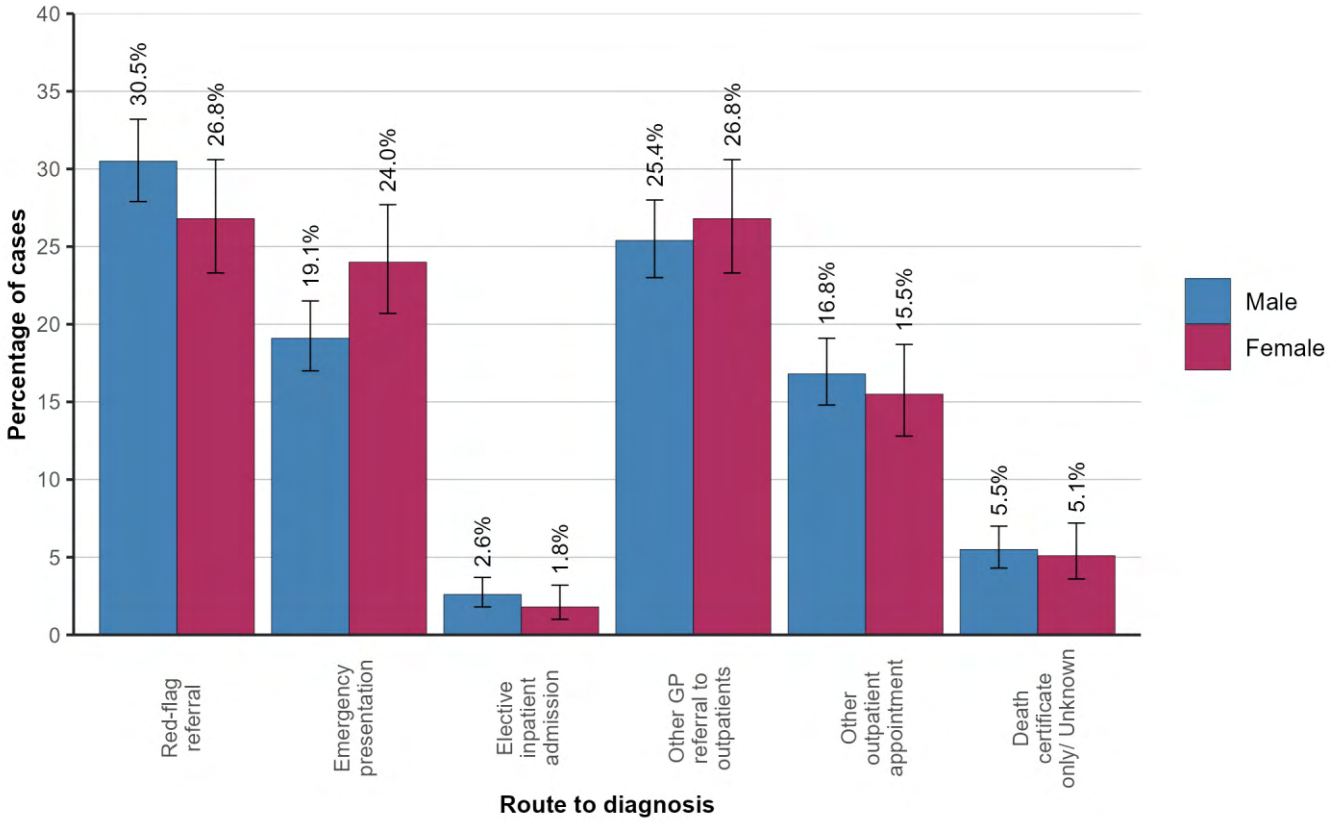
CI: Confidence Interval

12.1: ROUTES TO DIAGNOSIS BY GENDER

During 2018-2020 there were 118 male and 51 female cases of urinary cancer diagnosed each year where the route to diagnosis was a red-flag referral. This was the most common route to diagnosis for both men (30.5%) and women (26.8%).

The route to diagnosis with the biggest difference between males and females was an emergency presentation with 19.1% of male cases and 24.0% of female cases diagnosed via this route. The variation in route to diagnosis by gender was not statistically significant.

Figure 12.2: Route to diagnosis for urinary cancer patients diagnosed in 2018-2020 by gender

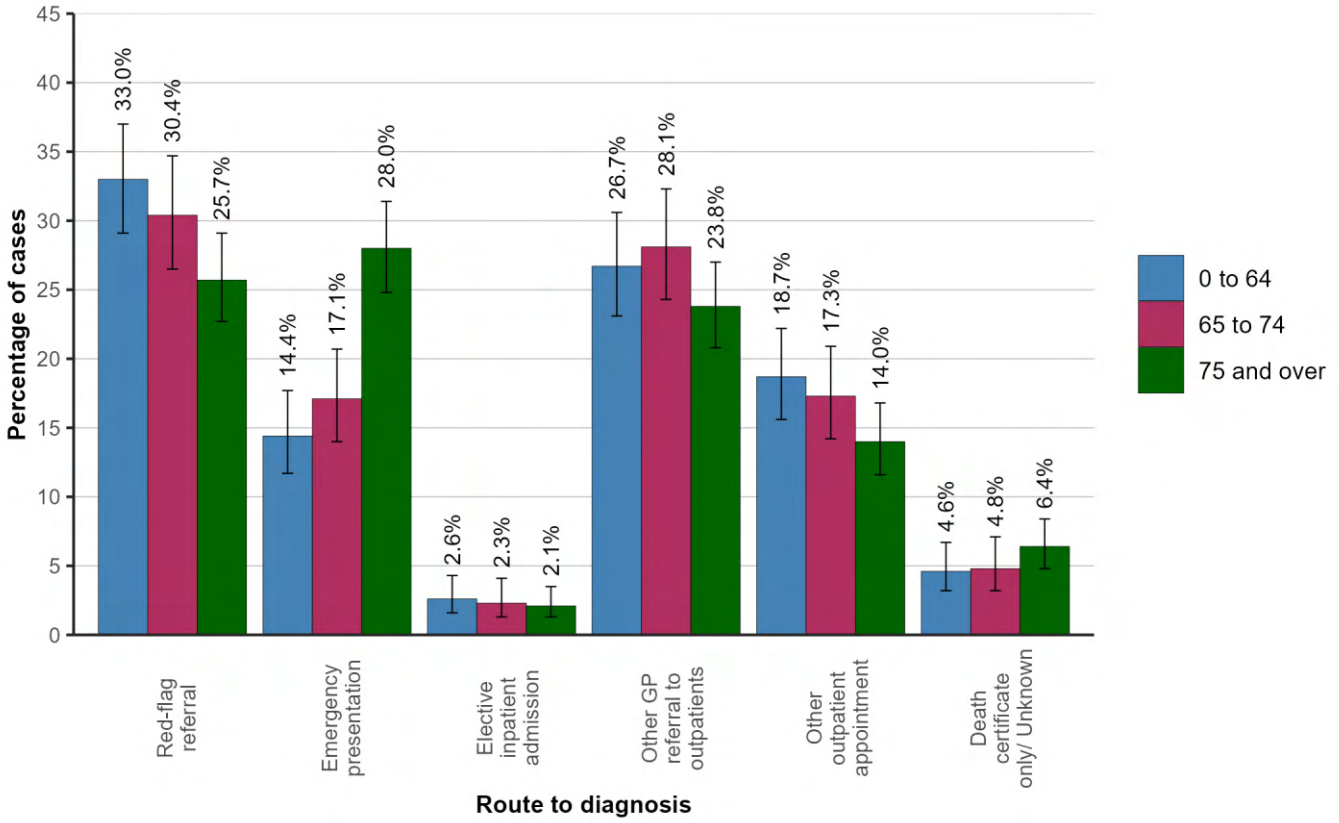


12.2: ROUTES TO DIAGNOSIS BY AGE GROUP

During 2018-2020 the most common route to diagnosis for cases of urinary cancer overall was a red-flag referral. Among those aged 0 to 64 there were 59 (33.0%) diagnosed per year via this route, compared to 61 (25.7%) per year among those aged 75 and over. This made it the most common route to diagnosis for those aged 0 to 64 but not those aged 75 and over. The most common route to diagnosis for those aged 75 and over was an emergency presentation (28.0%).

The route to diagnosis with the biggest difference between those aged 0 to 64 and aged 75 and over was an emergency presentation with 14.4% of those aged 0 to 64 and 28.0% of those aged 75 and over diagnosed via this route. The variation in route to diagnosis by age group was statistically significant ($p < 0.001$).

Figure 12.3: Route to diagnosis for urinary cancer patients diagnosed in 2018-2020 by age group



12.3: ROUTES TO DIAGNOSIS BY AREA OF RESIDENCE

Health and Social Care Trust

During 2018-2020 the proportion of cases of urinary cancer diagnosed via a red-flag referral ranged from 22.6% in Belfast HSCT to 42.0% in Western HSCT. The proportions diagnosed via an emergency presentation ranged from 15.2% to 25.9% in Western HSCT and Belfast HSCT respectively. The variation in route to diagnosis by Health and Social Care Trust was statistically significant ($p < 0.001$).

Area-based socio-economic deprivation

During 2018-2020 the proportion of cases of urinary cancer diagnosed via a red-flag referral was 26.3% in the most deprived areas compared to 27.3% in the least deprived areas. The proportions diagnosed via an emergency presentation were 22.5% and 20.6% in the most and least deprived areas respectively. The variation in route to diagnosis by deprivation quintile was statistically significant ($p = 0.029$).

Figure 12.4: Route to diagnosis for urinary cancer patients diagnosed in 2018-2020 by Health and Social Care Trust

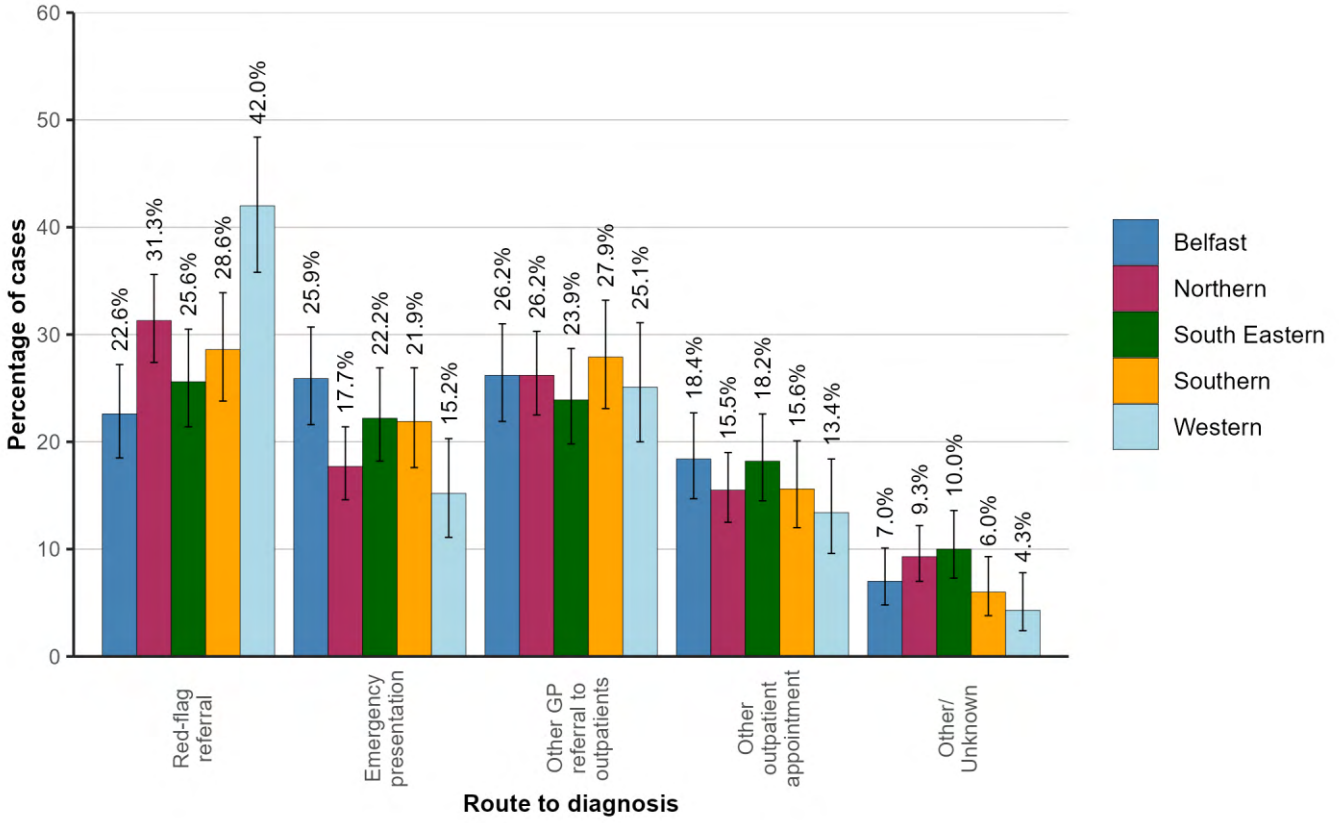
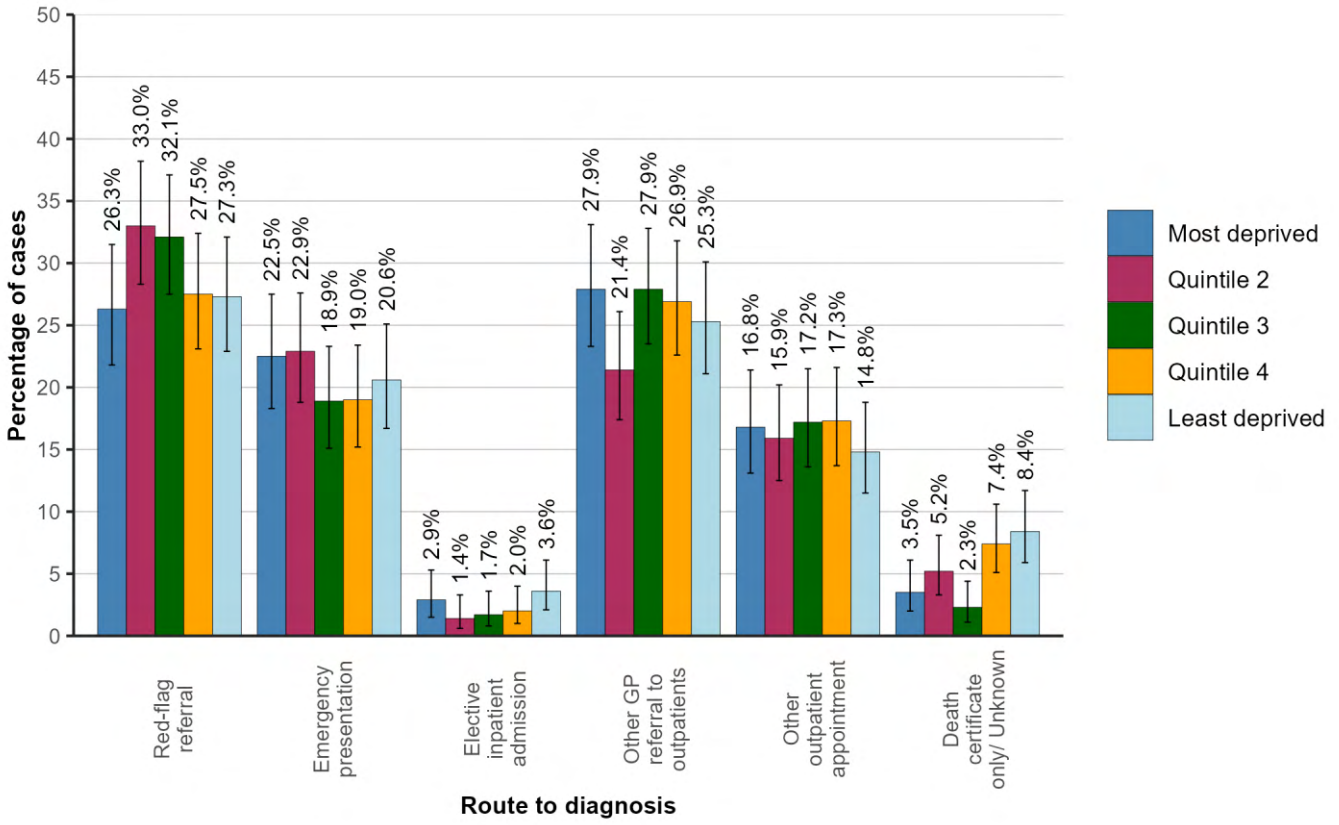


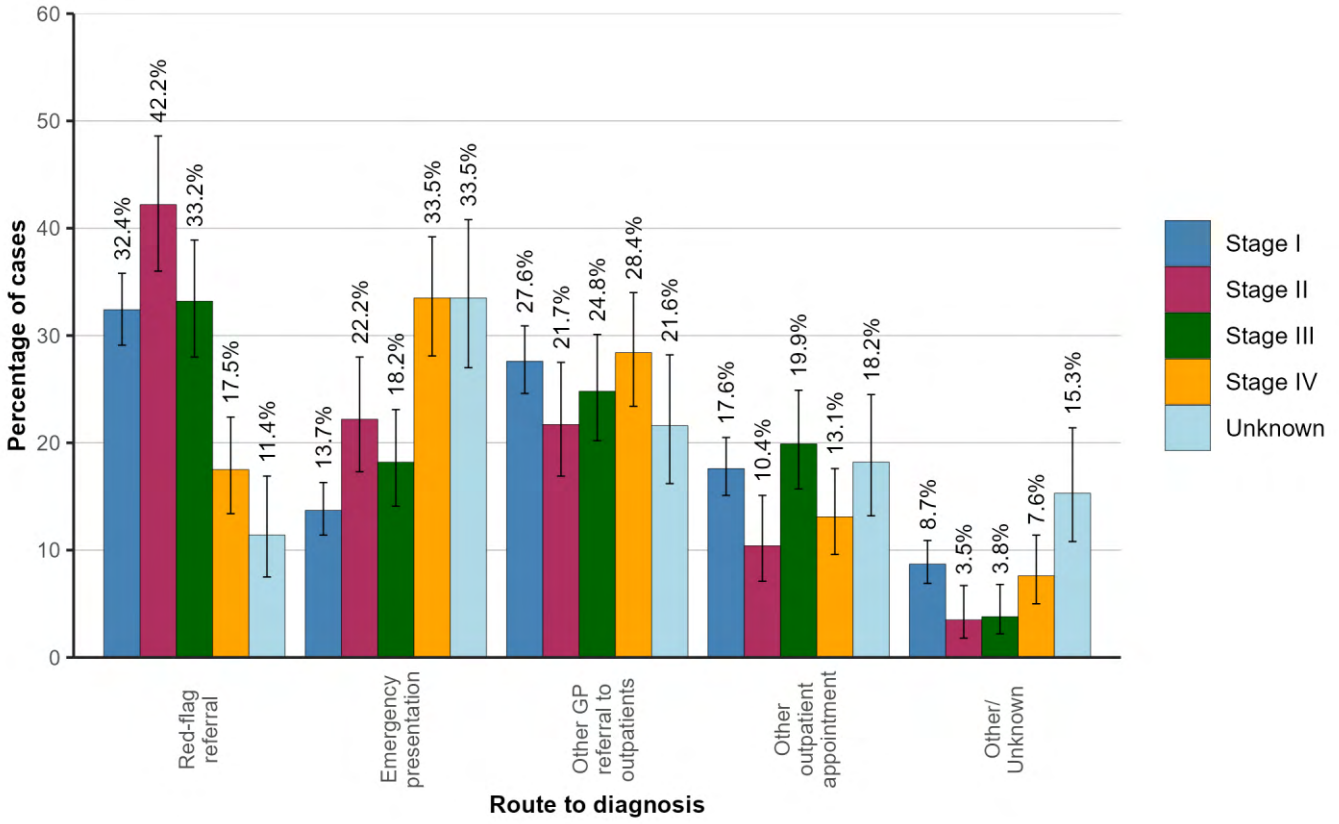
Figure 12.5: Route to diagnosis for urinary cancer patients diagnosed in 2018-2020 by deprivation quintile



12.4: ROUTES TO DIAGNOSIS BY STAGE AT DIAGNOSIS

During 2018-2020 the proportion of cases of urinary cancer diagnosed via a red-flag referral was 32.4% among stage I cancers compared to 17.5% among stage IV cancers. The proportions diagnosed via an emergency presentation were 13.7% and 33.5% for stage I and stage IV cancers respectively. The variation in route to diagnosis by stage at diagnosis was statistically significant ($p < 0.001$).

Figure 12.6: Route to diagnosis for urinary cancer patients diagnosed in 2018-2020 by stage at diagnosis



12.5: ROUTES TO DIAGNOSIS BY CANCER TYPE

Bladder cancer: The most common route to diagnosis among bladder cancer patients during 2018-2020 was via a red-flag referral, with 90 (39.1%) cases diagnosed on average each year. This was followed by an emergency presentation route with 49 (21.2%) cases diagnosed on average each year.

Kidney cancer: The most common route to diagnosis among kidney cancer patients during 2018-2020 was via another GP referral to outpatients, with 86 (29.0%) cases diagnosed on average each year. This was followed by a red-flag referral route with 66 (22.3%) cases diagnosed on average each year. Emergency presentations made up 20.1% of cases during this period.

Figure 12.7: Route to diagnosis for bladder cancer patients diagnosed in 2018-2020

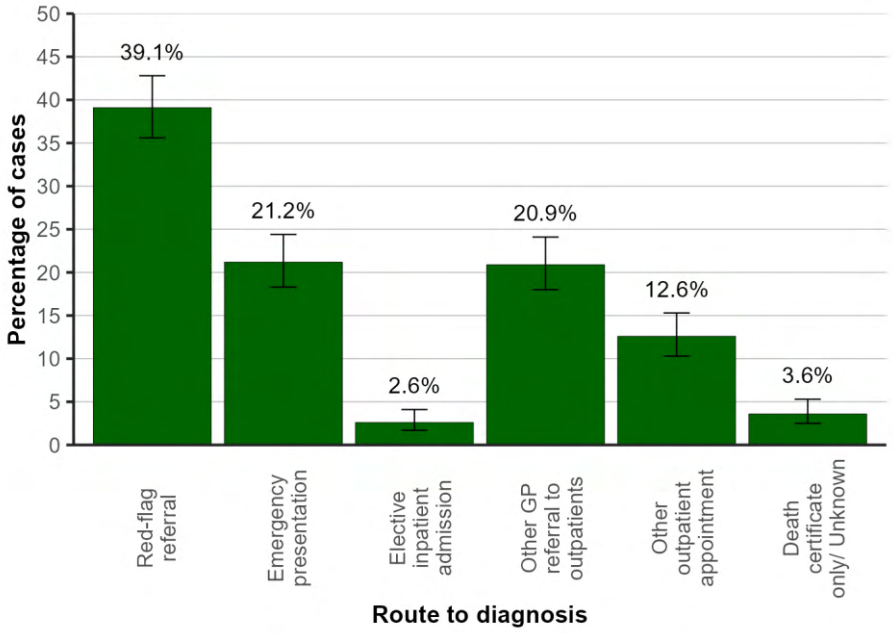
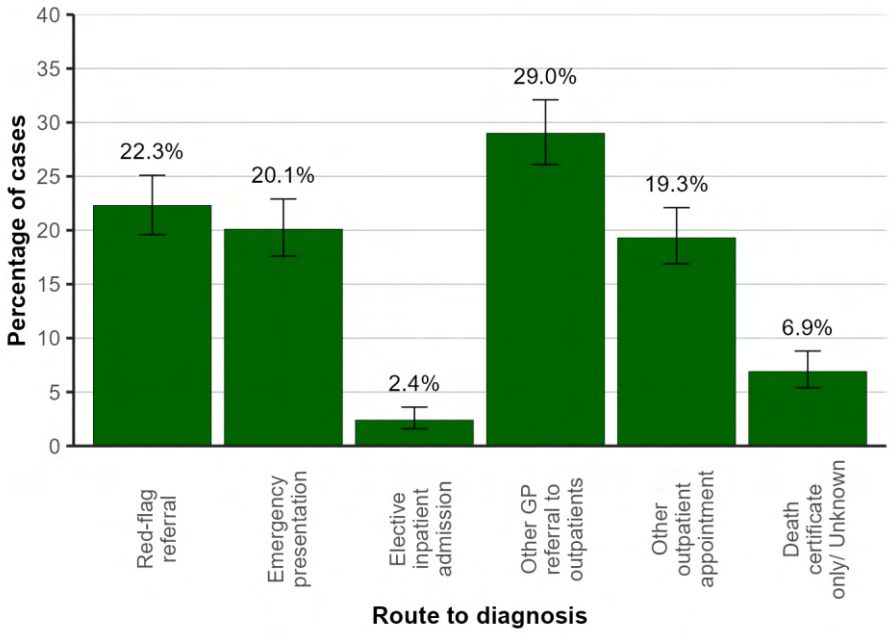


Figure 12.8: Route to diagnosis for kidney cancer patients diagnosed in 2018-2020



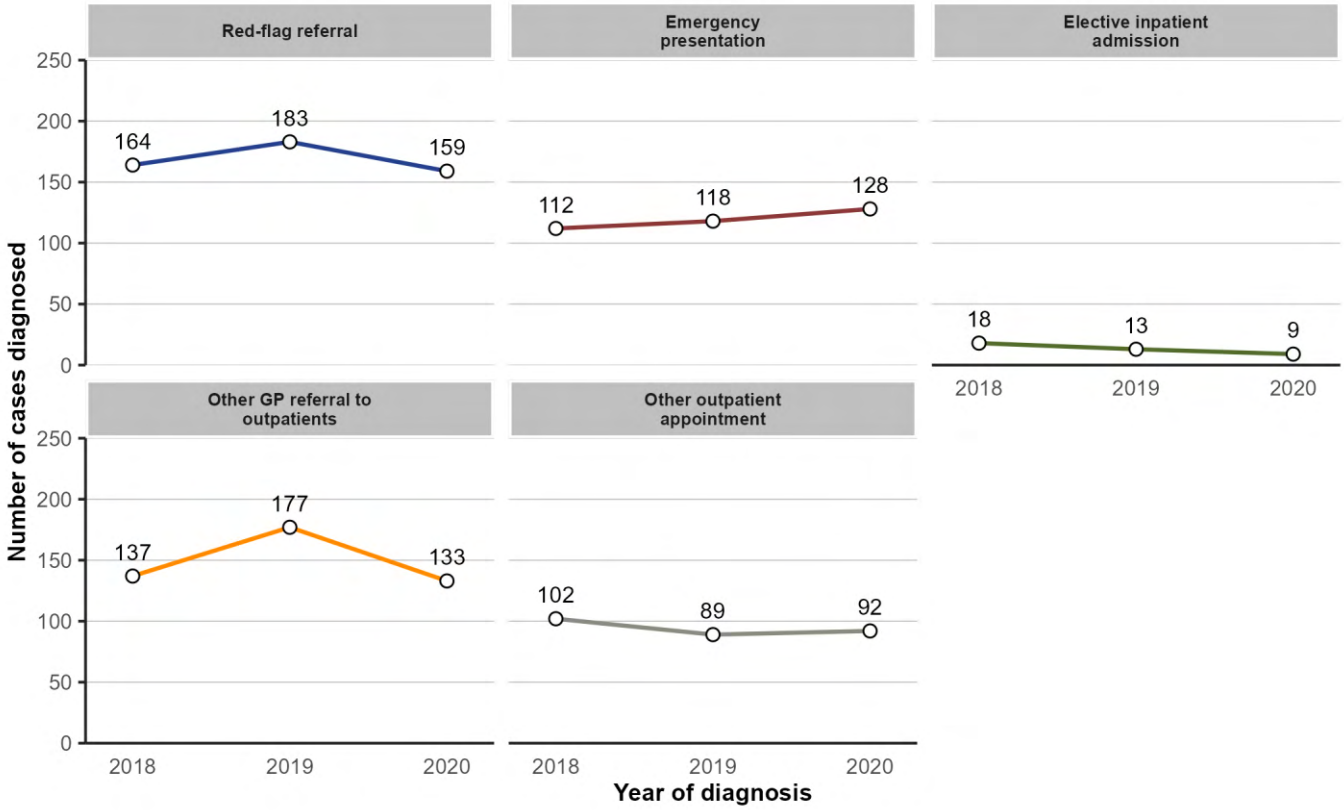
12.6: ROUTES TO DIAGNOSIS BY YEAR OF DIAGNOSIS

The number of urinary cancer cases diagnosed via a red-flag referral each year decreased by 8.6% from 174 per year in 2018-19 to 159 in 2020. As a proportion of all cases, a red-flag referral diagnosis increased from 29.1% in 2018-19 to 29.7% in 2020.

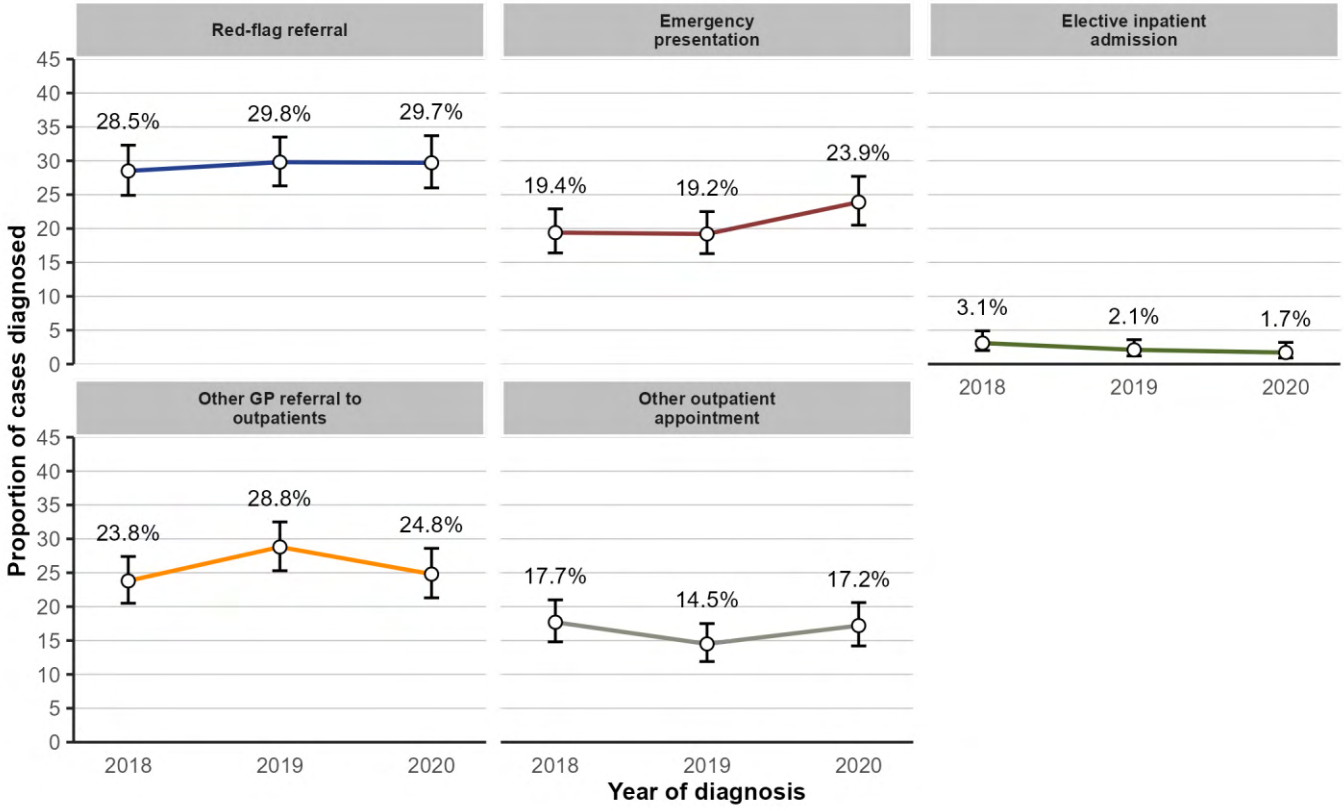
The number of urinary cancer cases diagnosed via an emergency presentation each year increased by 11.3% from 115 per year in 2018-19 to 128 in 2020. As a proportion of all cases, an emergency presentation diagnosis increased from 19.3% in 2018-19 to 23.9% in 2020. The variation in route to diagnosis by year of diagnosis was statistically significant (p = 0.009).

Figure 12.9: Route to diagnosis for urinary cancer patients diagnosed in 2018-2020 by year of diagnosis

(a) Number of cases



(b) Proportion of cases

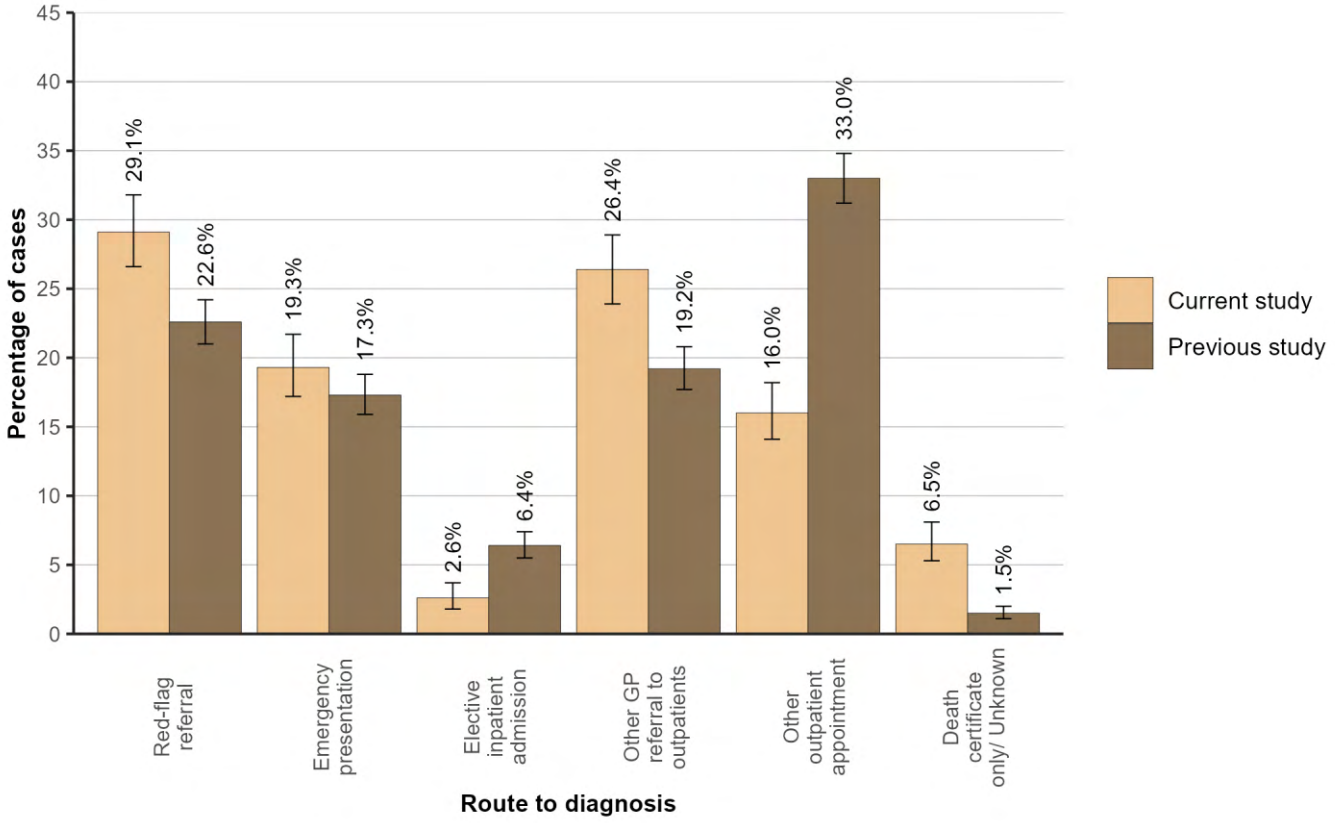


12.7: COMPARISON WITH PREVIOUS STUDIES

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with urinary cancer in 2018-2019 compared to patients from the previous Northern Ireland study, which was for patients diagnosed in 2012-2016.

- Red-flag referral (29.1% in 2018-2019 compared to 22.6% previously ; p<0.001).
- Elective inpatient admission (2.6% in 2018-2019 compared to 6.4% previously ; p<0.001).
- Other GP referral to outpatients (26.4% in 2018-2019 compared to 19.2% previously ; p<0.001).
- Other outpatient appointment (16.0% in 2018-2019 compared to 33.0% previously ; p<0.001).

Figure 12.10: Route to diagnosis for urinary cancer patients diagnosed in 2018-2019 compared to patients diagnosed in 2012-2016 (from previous Northern Ireland study)



Source of previous data: Centre for Public Health, See reference 2.
Note that due to the impact of the COVID-19 pandemic on cancer diagnosis, comparisons exclude data from 2020.
Due to potential differences in coding and data sources, differences between the two studies should not be interpreted as a time trend.

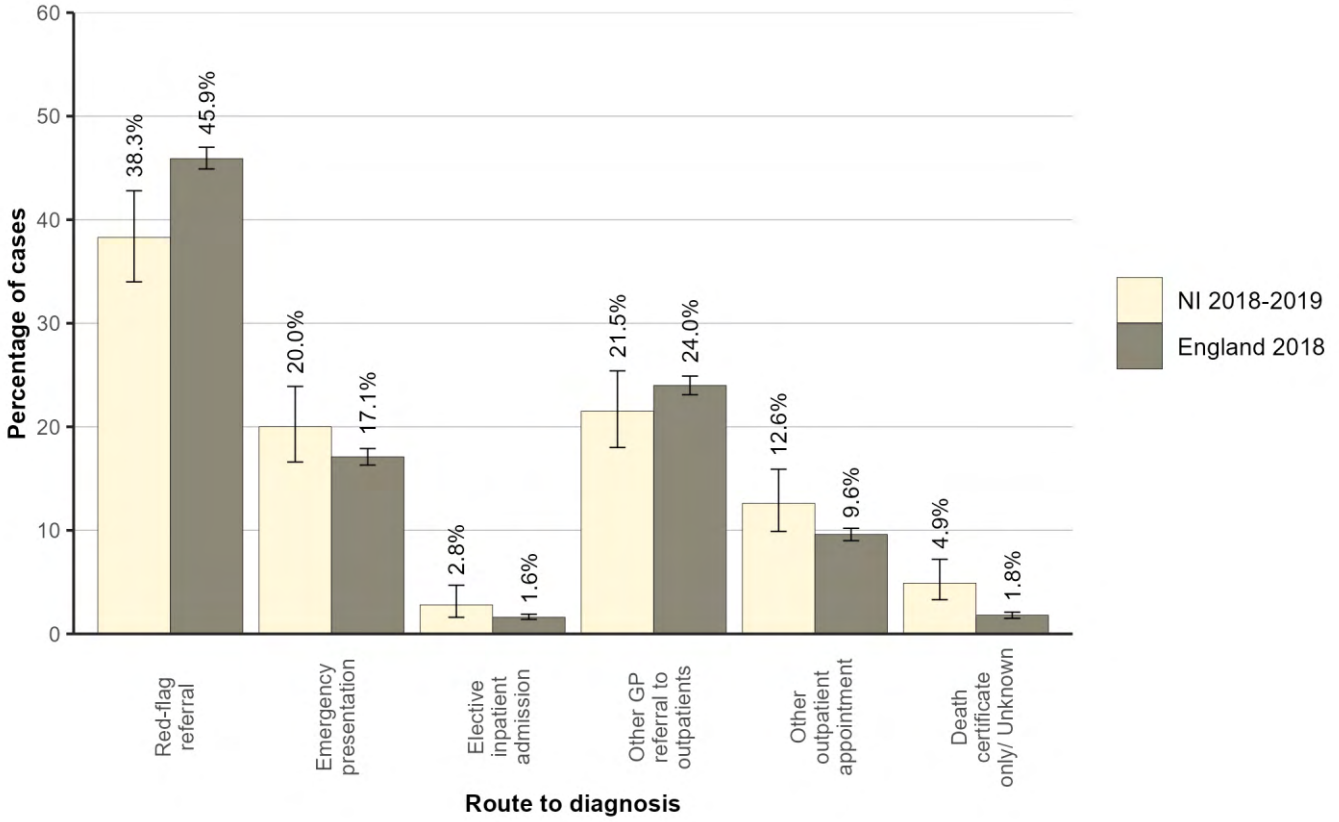
12.8: COMPARISON WITH ENGLAND

Bladder cancer

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with bladder cancer in 2018-2019 compared to patients diagnosed in England during 2018.

- Red-flag referral (38.3% in NI compared to 45.9% in England ; p=0.001).

Figure 12.11: Route to diagnosis for bladder cancer patients diagnosed in 2018-2019 compared to patients diagnosed in England during 2018



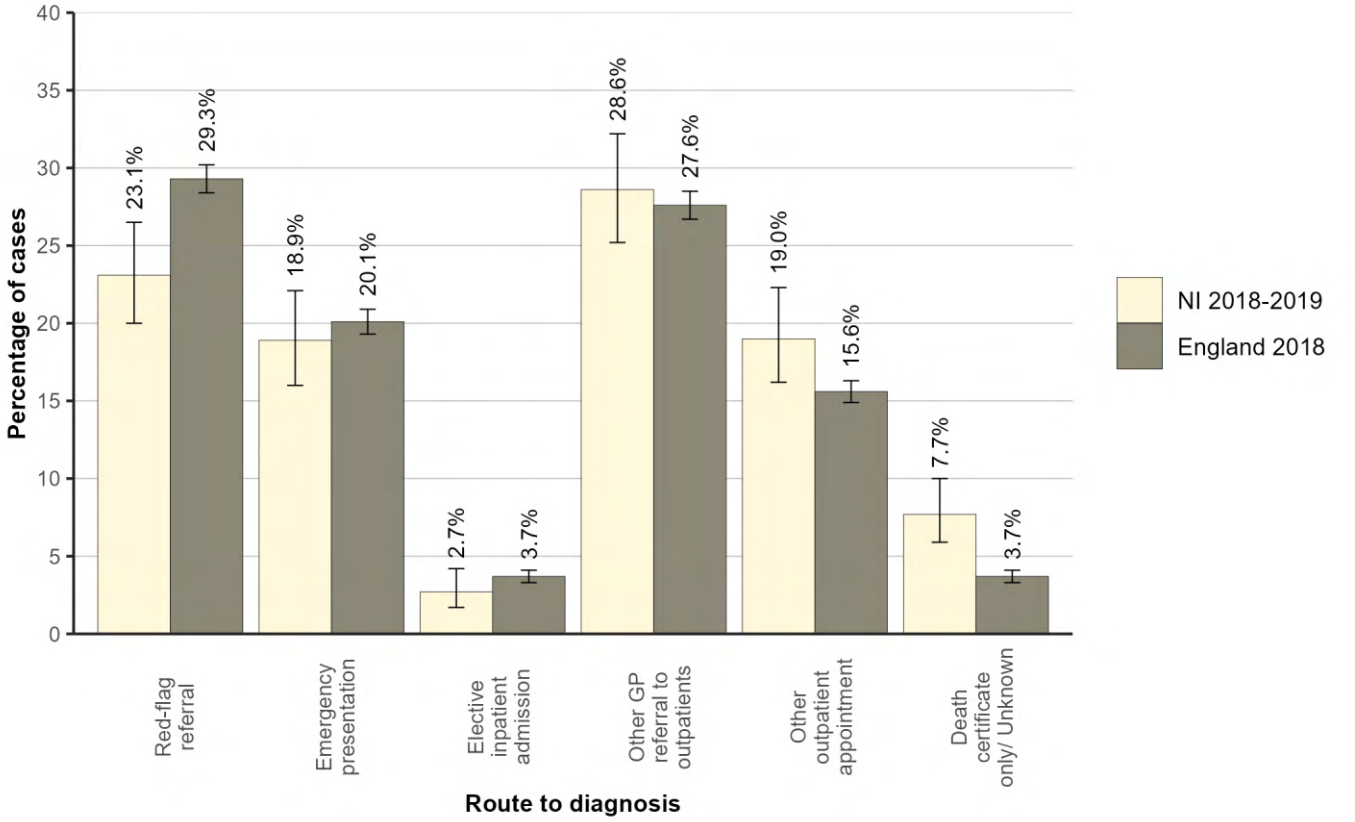
Source of English data: National Disease Registration Service, See reference 12.
Note that due to the impact of the COVID-19 pandemic on cancer diagnosis, comparisons exclude data from 2020.
Due to potential differences in coding and data sources, differences between the two studies should be treated as an approximate comparison.

Kidney cancer

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with kidney cancer in 2018-2019 compared to patients diagnosed in England during 2018.

- Red-flag referral (23.1% in NI compared to 29.3% in England ; p=0.001).

Figure 12.12: Route to diagnosis for kidney cancer patients diagnosed in 2018-2019 compared to patients diagnosed in England during 2018



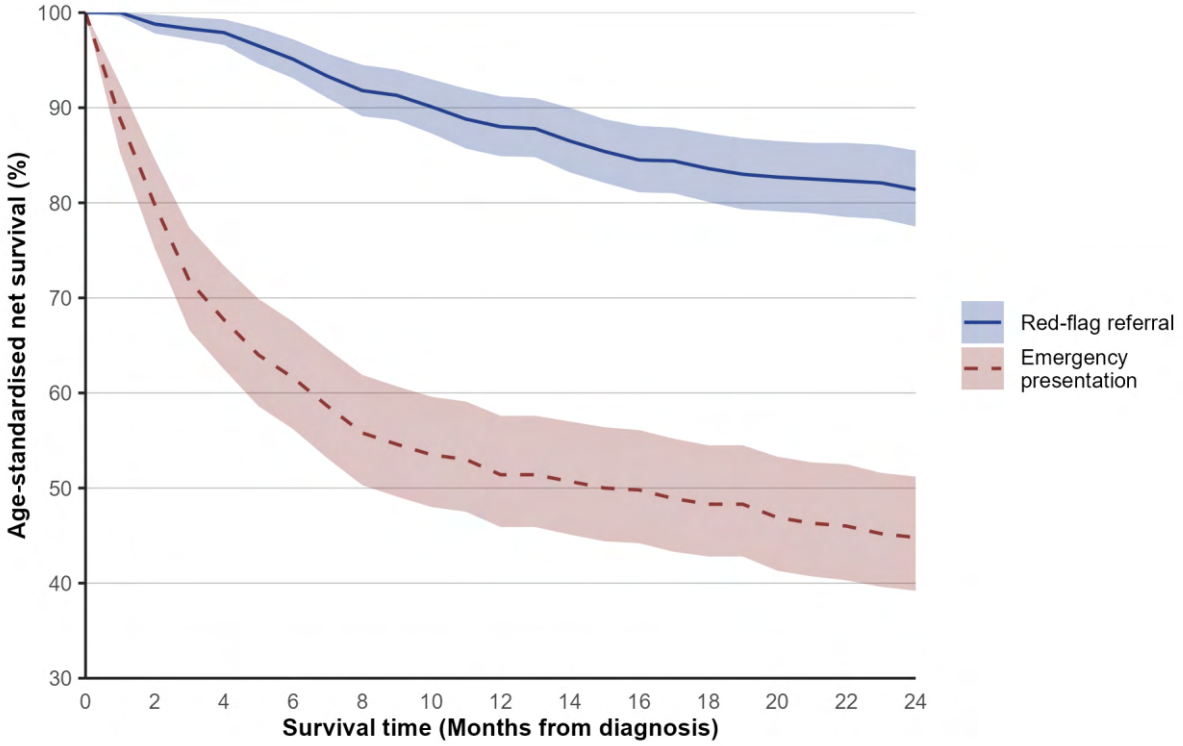
Source of English data: National Disease Registration Service, See reference 12.
Note that due to the impact of the COVID-19 pandemic on cancer diagnosis, comparisons exclude data from 2020.
Due to potential differences in coding and data sources, differences between the two studies should be treated as an approximate comparison.

12.9: SURVIVAL

During 2018-2020 one-year age-standardised net survival from urinary cancer ranged from 51.4% for those diagnosed via an emergency presentation route to 88.0% for those diagnosed via a red-flag referral route. Two years from diagnosis age-standardised net survival ranged from 44.8% for those diagnosed via an emergency presentation route to 81.4% for those diagnosed via a red-flag referral route.

Figure 12.13: Age-standardised net survival by route to diagnosis for urinary cancer patients diagnosed in 2018-2020

(a) Red-flag and emergency routes



(b) Other routes

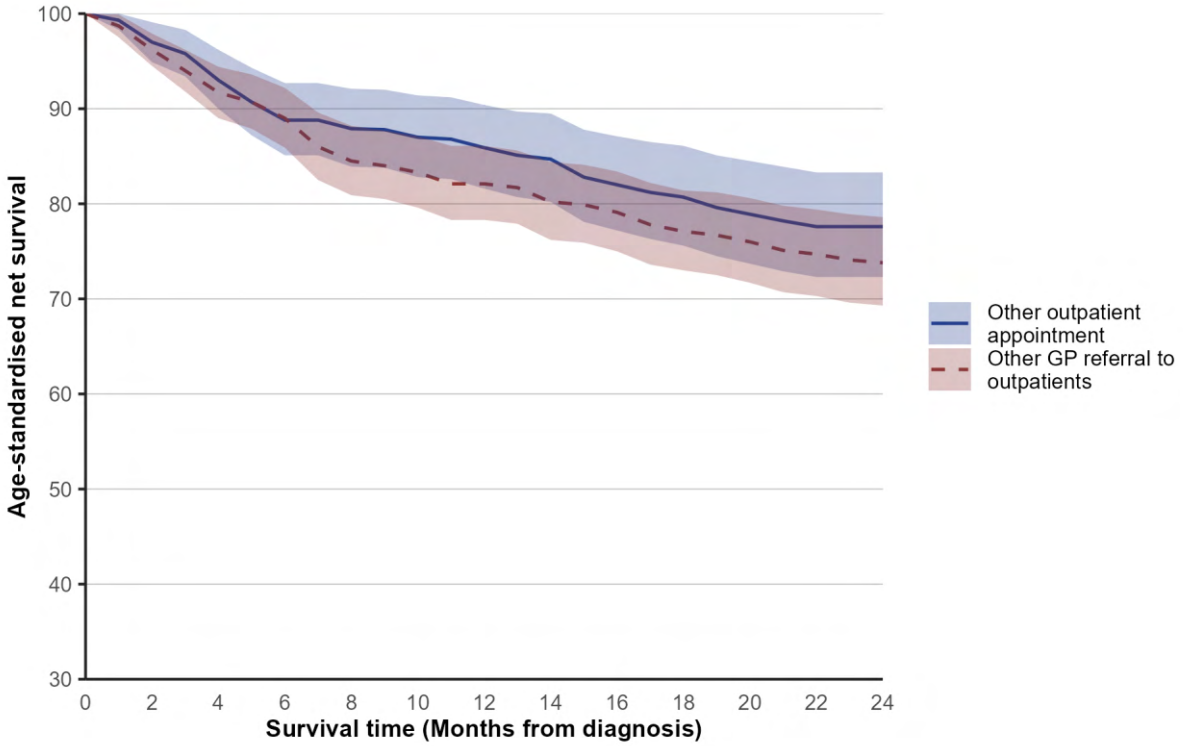


Table 12.2: Age-standardised net survival by route to diagnosis for urinary cancer patients diagnosed in 2018-2020

Route to diagnosis	One-year survival (ASNS)	Two-year survival (ASNS)
Red-flag referral	88.0% (84.9% - 91.2%)	81.4% (77.5% - 85.5%)
Emergency presentation	51.4% (45.9% - 57.6%)	44.8% (39.2% - 51.2%)
Elective inpatient admission	59.7% (45.7% - 77.9%)*	52.2% (37.9% - 72.0%)*
Other GP referral to outpatients	82.1% (78.3% - 86.1%)	73.8% (69.3% - 78.6%)
Other outpatient appointment	85.9% (81.6% - 90.4%)	77.6% (72.3% - 83.3%)
Unknown	76.2% (67.6% - 85.9%)	69.5% (59.9% - 80.7%)

*ASNS: Age-standardised net survival with 95% confidence interval. * Unstandardised net survival presented as less than 50 patients in this group.*

13: Malignant Melanoma

The most common route to diagnosis among melanoma patients during 2018-2020 was via a red-flag referral, with 217 (56.0%) cases diagnosed on average each year. This was followed by another GP referral to outpatients route with 103 (26.6%) cases diagnosed on average each year. Emergency presentations made up 1.3% of cases during this period.

Figure 13.1: Route to diagnosis for melanoma patients diagnosed in 2018-2020

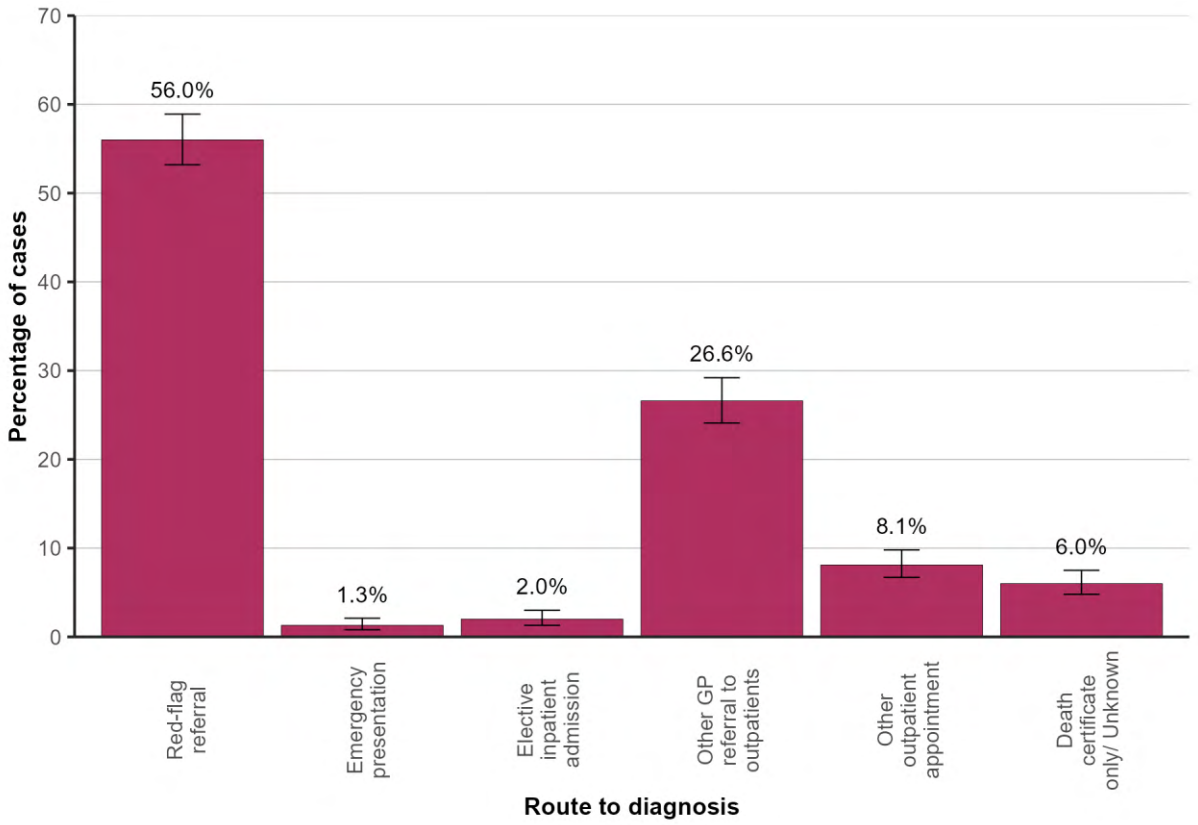


Table 13.1: Average number of melanoma cases diagnosed each year during 2018-2020 by route to diagnosis

Route to diagnosis	Cases per year	Proportion (95% CI)
Red-flag referral	217	56.0% (53.2% - 58.9%)
Emergency presentation	5	1.3% (0.8% - 2.1%)
Elective inpatient admission	8	2.0% (1.3% - 3.0%)
Other GP referral to outpatients	103	26.6% (24.1% - 29.2%)
Other outpatient appointment	31	8.1% (6.7% - 9.8%)
Death certificate only/ Unknown	23	6.0% (4.8% - 7.5%)

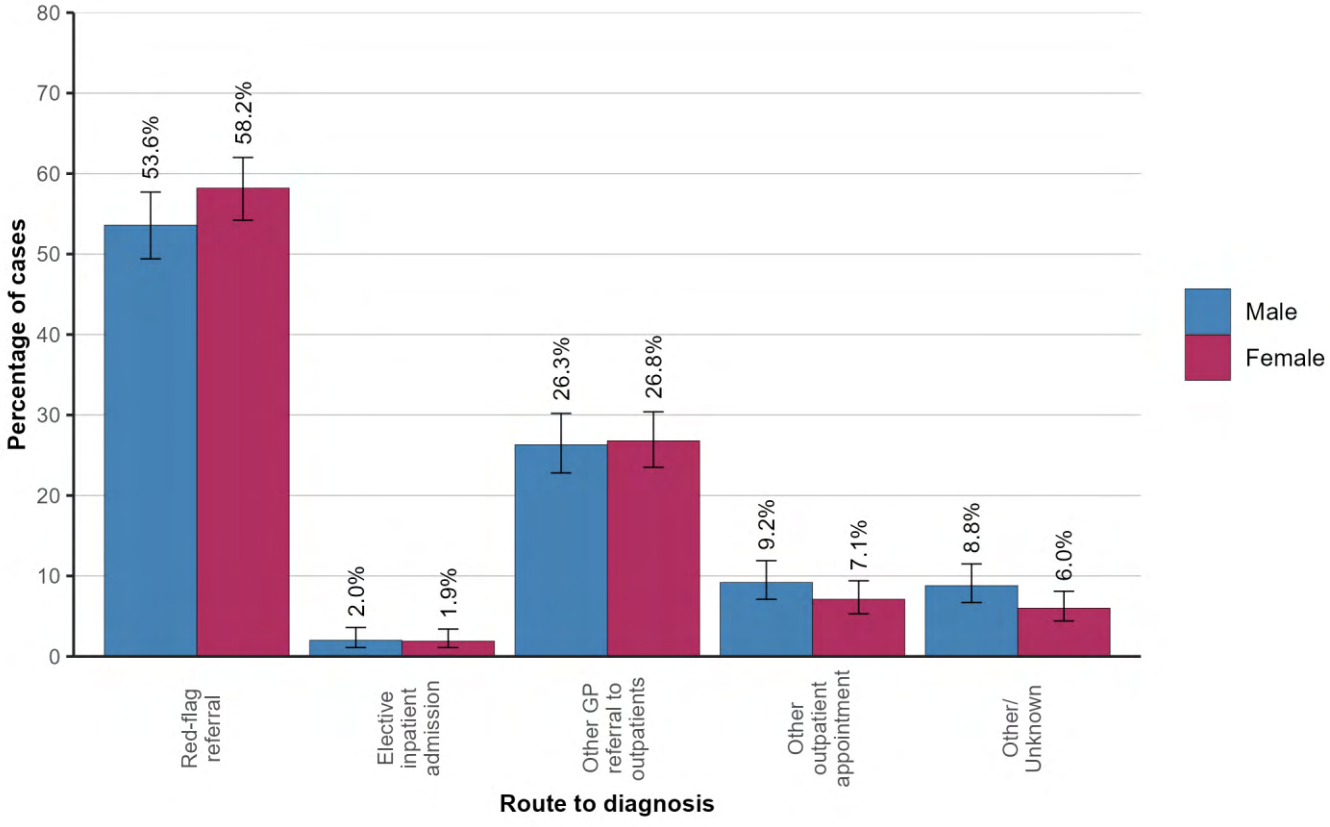
CI: Confidence Interval

13.1: ROUTES TO DIAGNOSIS BY GENDER

During 2018-2020 there were 97 male and 120 female cases of melanoma diagnosed each year where the route to diagnosis was a red-flag referral. This was the most common route to diagnosis for both men (53.6%) and women (58.2%).

Red-flag referral routes also demonstrated the biggest difference between males and females. The variation in route to diagnosis by gender was not statistically significant.

Figure 13.2: Route to diagnosis for melanoma patients diagnosed in 2018-2020 by gender

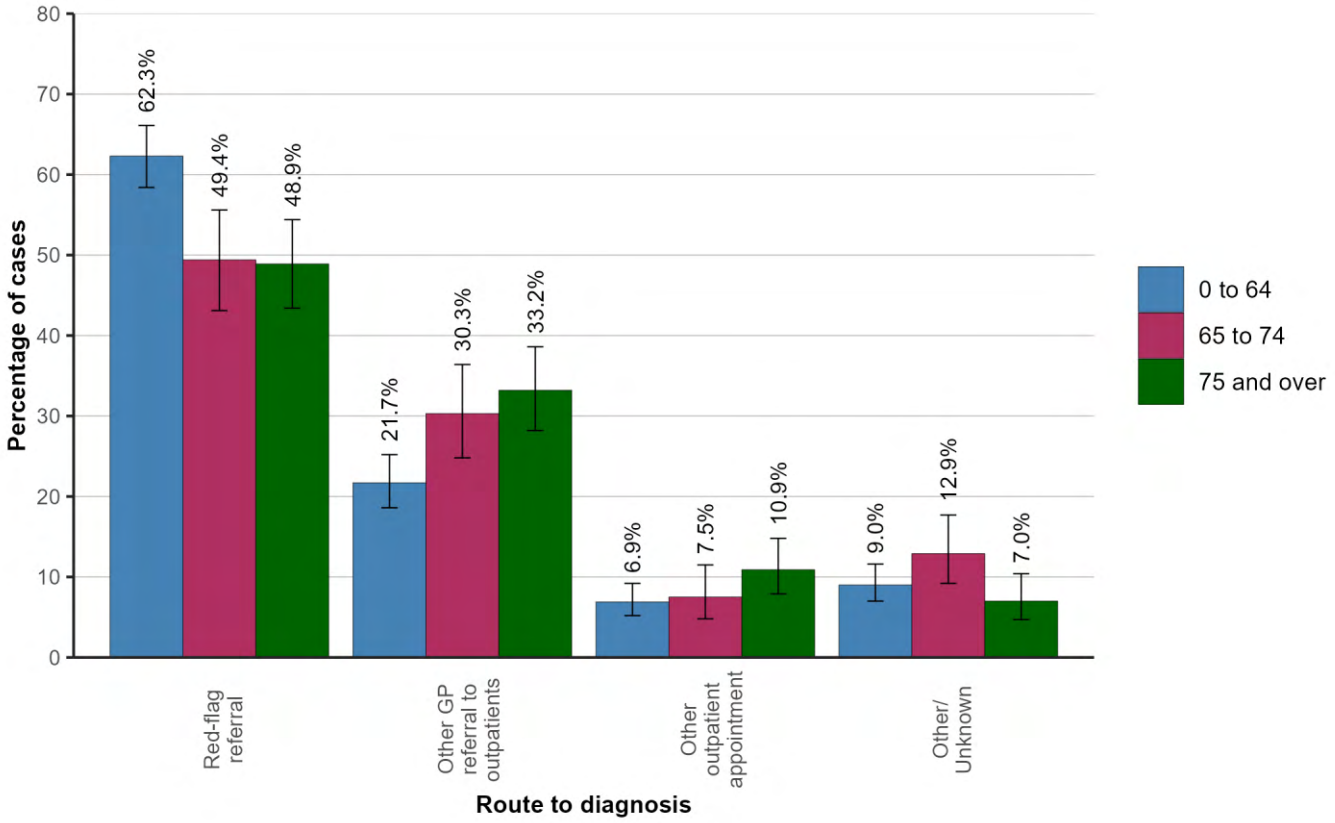


13.2: ROUTES TO DIAGNOSIS BY AGE GROUP

During 2018-2020 the most common route to diagnosis for cases of melanoma overall was a red-flag referral. Among those aged 0 to 64 there were 126 (62.3%) diagnosed per year via this route, compared to 51 (48.9%) per year among those aged 75 and over. This made it the most common route to diagnosis for both those aged 0 to 64 and those aged 75 and over.

Red-flag referral routes also demonstrated the biggest difference between those aged 0 to 64 and 75 and over. The variation in route to diagnosis by age group was statistically significant ($p < 0.001$).

Figure 13.3: Route to diagnosis for melanoma patients diagnosed in 2018-2020 by age group



13.3: ROUTES TO DIAGNOSIS BY AREA OF RESIDENCE

Health and Social Care Trust

During 2018-2020 the proportion of cases of melanoma diagnosed via a red-flag referral ranged from 42.9% in Western HSCT to 61.2% in Northern HSCT. The variation in route to diagnosis by Health and Social Care Trust was statistically significant ($p < 0.001$).

Area-based socio-economic deprivation

During 2018-2020 the proportion of cases of melanoma diagnosed via a red-flag referral was 52.0% in the most deprived areas compared to 54.8% in the least deprived areas. The variation in route to diagnosis by deprivation quintile was not statistically significant.

Figure 13.4: Route to diagnosis for melanoma patients diagnosed in 2018-2020 by Health and Social Care Trust

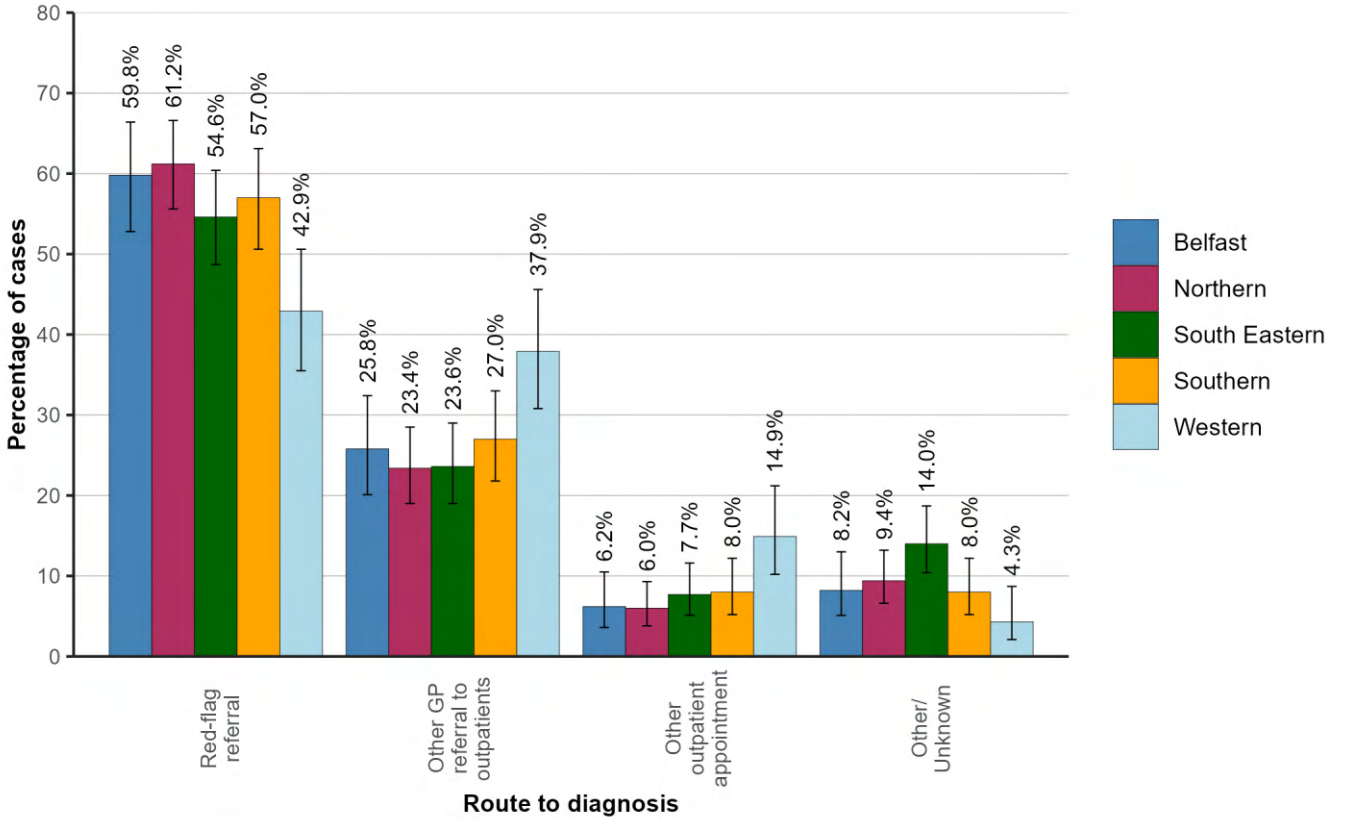
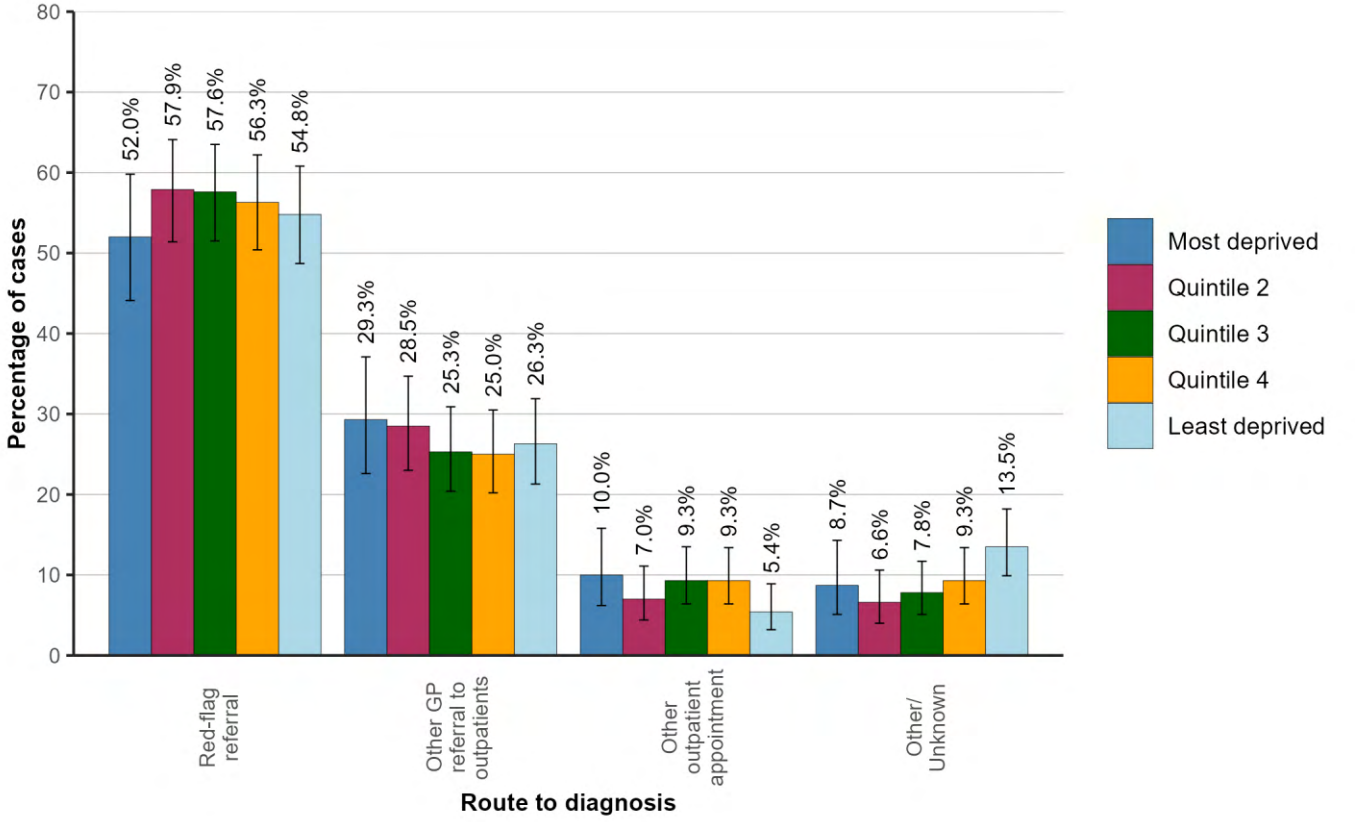


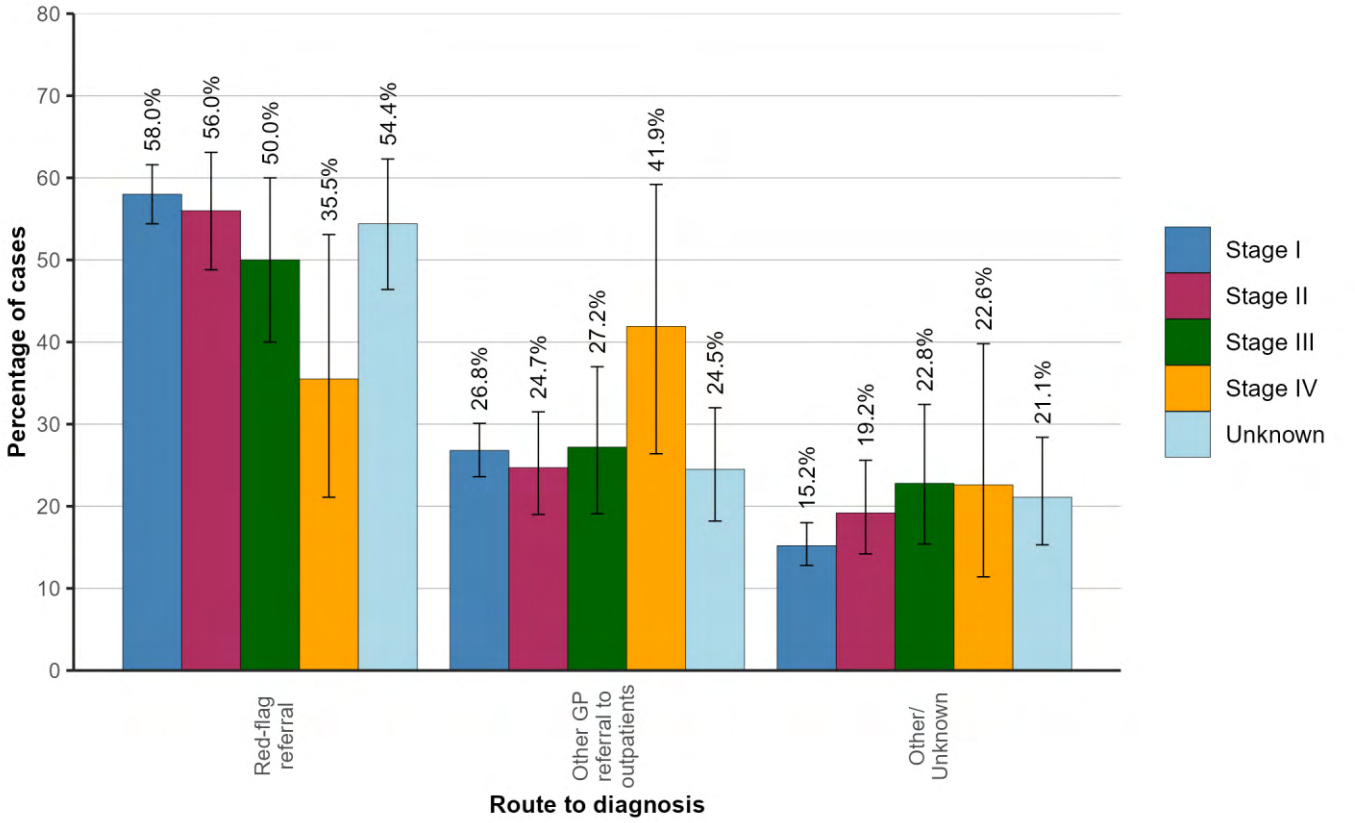
Figure 13.5: Route to diagnosis for melanoma patients diagnosed in 2018-2020 by deprivation quintile



13.4: ROUTES TO DIAGNOSIS BY STAGE AT DIAGNOSIS

During 2018-2020 the proportion of cases of melanoma diagnosed via a red-flag referral was 58.0% among stage I cancers compared to 35.5% among stage IV cancers. The variation in route to diagnosis by stage at diagnosis was not statistically significant.

Figure 13.6: Route to diagnosis for melanoma patients diagnosed in 2018-2020 by stage at diagnosis

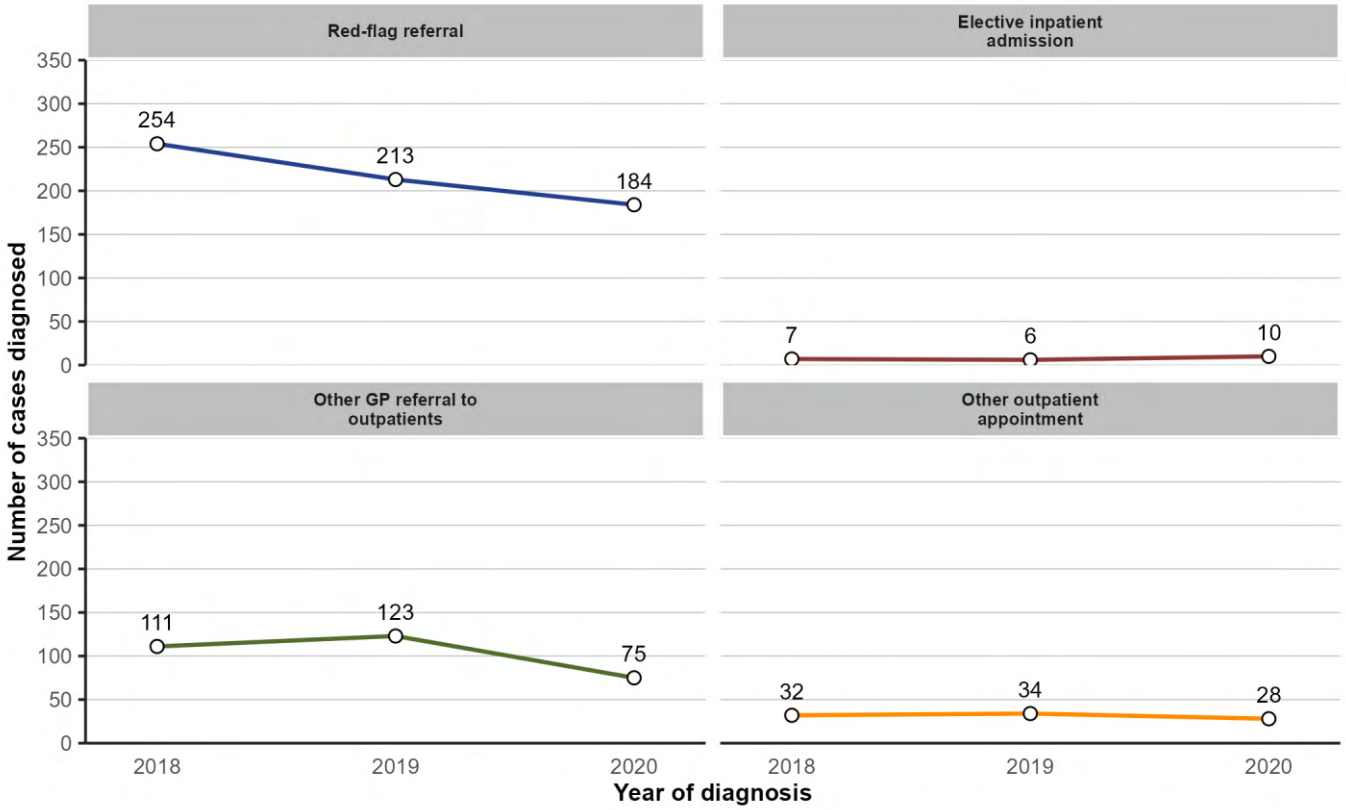


13.5: ROUTES TO DIAGNOSIS BY YEAR OF DIAGNOSIS

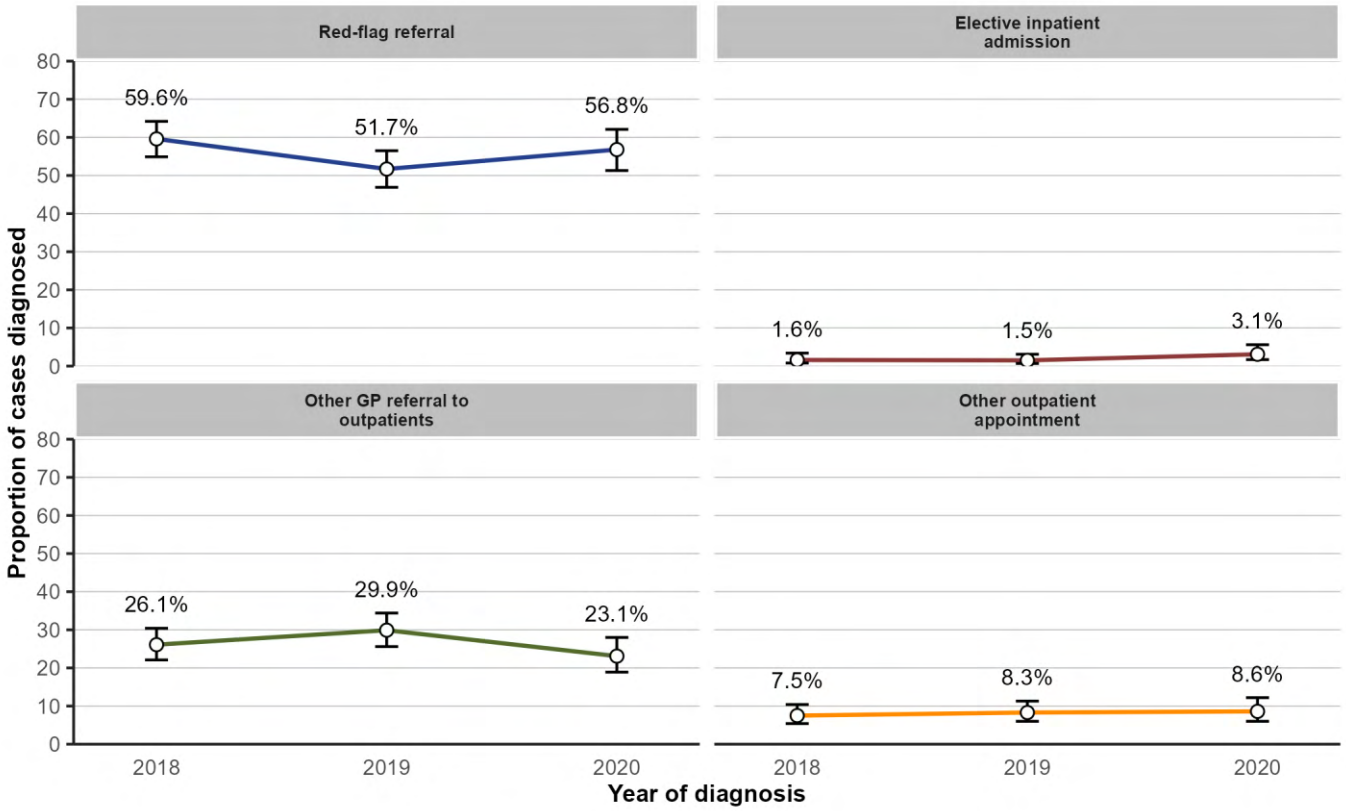
The number of melanoma cases diagnosed via a red-flag referral each year decreased by 21.4% from 234 per year in 2018-19 to 184 in 2020. As a proportion of all cases, a red-flag referral diagnosis increased from 55.7% in 2018-19 to 56.8% in 2020. The variation in route to diagnosis by year of diagnosis was not statistically significant.

Figure 13.7: Route to diagnosis for melanoma patients diagnosed in 2018-2020 by year of diagnosis

(a) Number of cases



(b) Proportion of cases

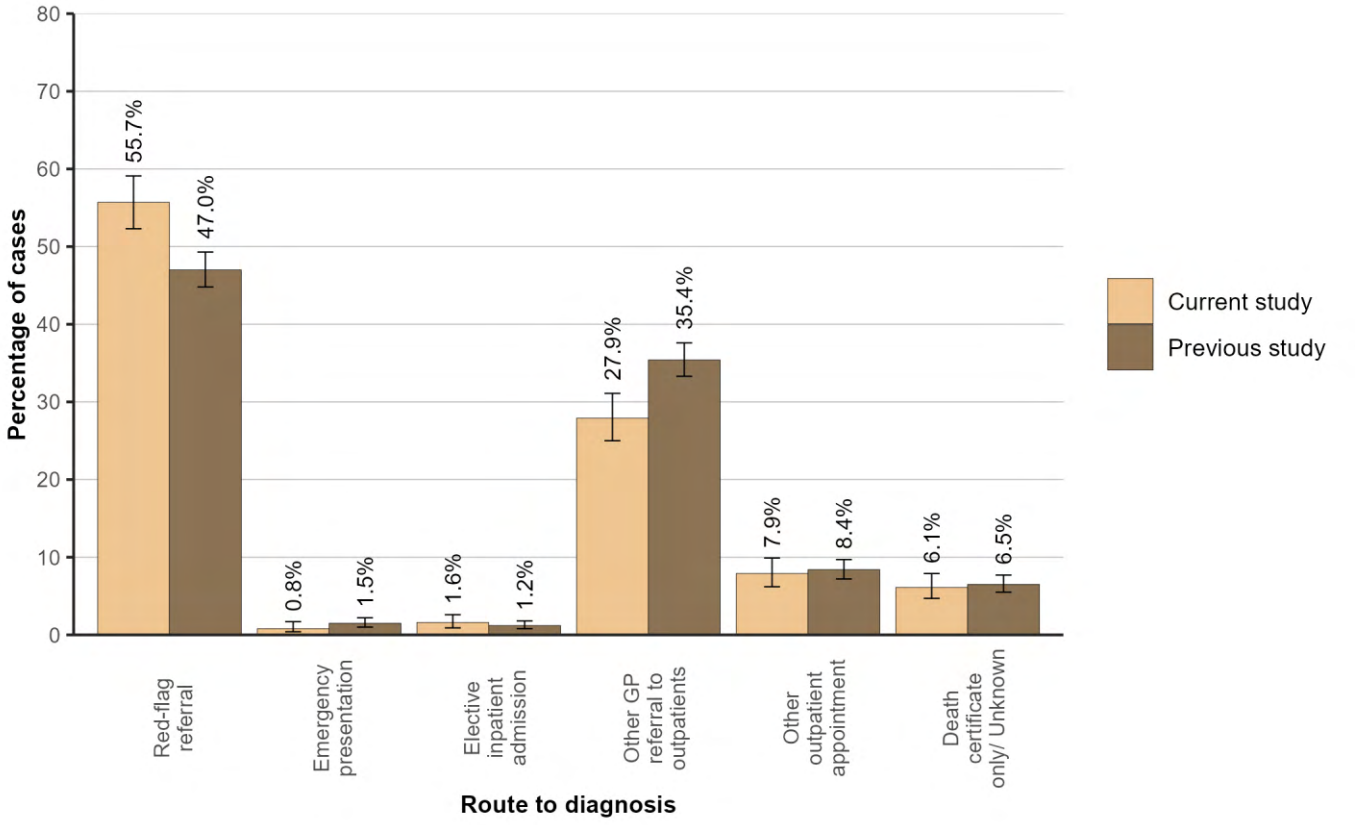


13.6: COMPARISON WITH PREVIOUS STUDIES

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with melanoma in 2018-2019 compared to patients from the previous Northern Ireland study, which was for patients diagnosed in 2012-2016.

- Red-flag referral (55.7% in 2018-2019 compared to 47.0% previously ; p<0.001).
- Other GP referral to outpatients (27.9% in 2018-2019 compared to 35.4% previously ; p<0.001).

Figure 13.8: Route to diagnosis for melanoma patients diagnosed in 2018-2019 compared to patients diagnosed in 2012-2016 (from previous Northern Ireland study)



Source of previous data: Centre for Public Health, See reference 2.
Note that due to the impact of the COVID-19 pandemic on cancer diagnosis, comparisons exclude data from 2020.
Due to potential differences in coding and data sources, differences between the two studies should not be interpreted as a time trend.

13.7: SURVIVAL

During 2018-2020 one-year age-standardised net survival from melanoma ranged from 96.2% for those diagnosed via another outpatient appointment route to 100.0% for those diagnosed via a unknown route. Two years from diagnosis age-standardised net survival ranged from 93.5% for those diagnosed via another outpatient appointment route to 99.3% for those diagnosed via a unknown route.

Figure 13.9: Age-standardised net survival by route to diagnosis for melanoma patients diagnosed in 2018-2020

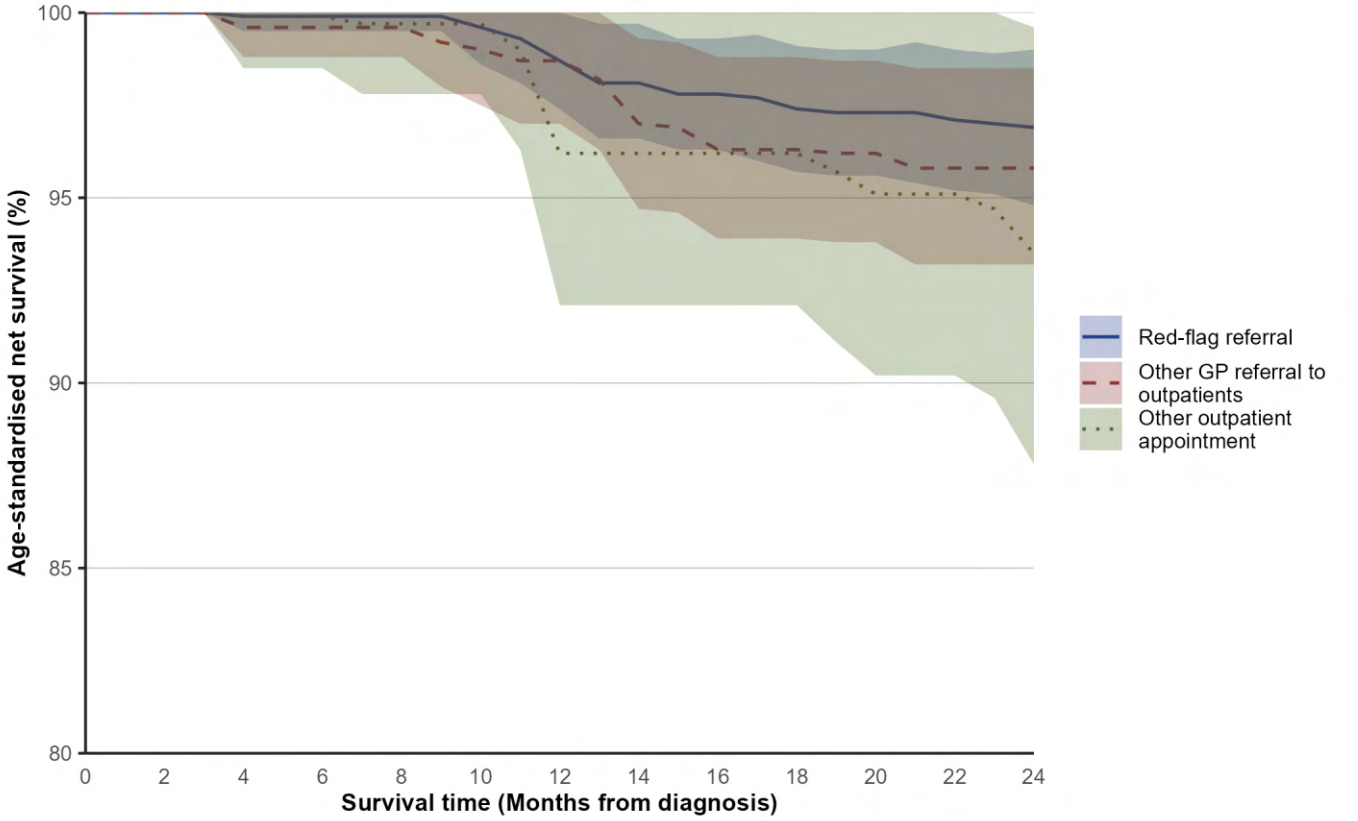


Table 13.2: Age-standardised net survival by route to diagnosis for melanoma patients diagnosed in 2018-2020

Route to diagnosis	One-year survival (ASNS)	Two-year survival (ASNS)
Red-flag referral	98.7% (97.4% - 100.0%)	96.9% (94.8% - 99.0%)
Emergency presentation	73.6% (54.7% - 98.9%)*	68.2% (47.7% - 97.4%)*
Elective inpatient admission	100.0% *	100.0% *
Other GP referral to outpatients	98.7% (97.0% - 100.0%)	95.8% (93.2% - 98.5%)
Other outpatient appointment	96.2% (92.1% - 100.0%)	93.5% (87.8% - 99.6%)
Unknown	100.0%	99.3% (96.2% - 100.0%)

*ASNS: Age-standardised net survival with 95% confidence interval. * Unstandardised net survival presented as less than 50 patients in this group.*

14: Brain Cancer (including central nervous system)

The most common route to diagnosis among brain cancer (including central nervous system) patients during 2018-2020 was via an emergency presentation, with 100 (63.3%) cases diagnosed on average each year. This was followed by another outpatient appointment route with 23 (14.8%) cases diagnosed on average each year. Red flag referrals made up 1.3% of cases during this period.

Figure 14.1: Route to diagnosis for brain cancer (including central nervous system) patients diagnosed in 2018-2020

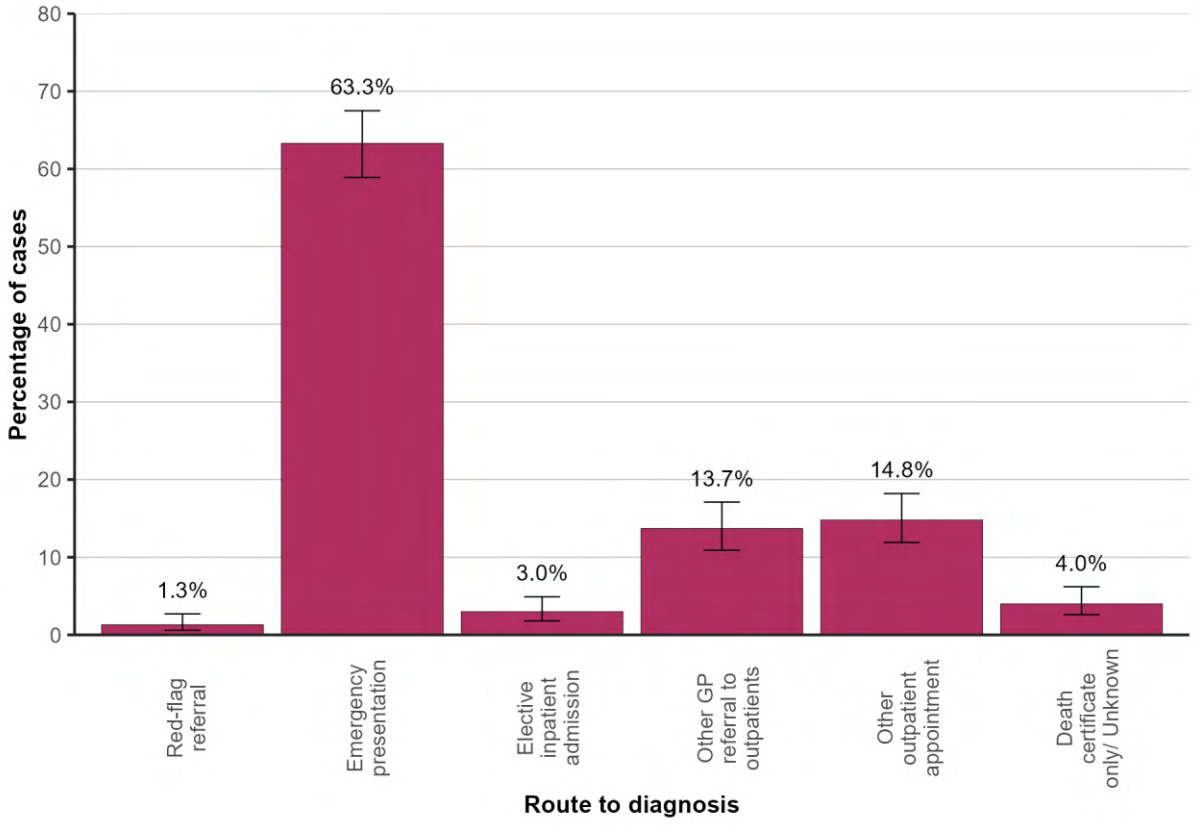


Table 14.1: Average number of brain cancer (including central nervous system) cases diagnosed each year during 2018-2020 by route to diagnosis

Route to diagnosis	Cases per year	Proportion (95% CI)
Red-flag referral	2	1.3% (0.6% - 2.7%)
Emergency presentation	100	63.3% (58.9% - 67.5%)
Elective inpatient admission	5	3.0% (1.8% - 4.9%)
Other GP referral to outpatients	22	13.7% (10.9% - 17.1%)
Other outpatient appointment	23	14.8% (11.9% - 18.2%)
Death certificate only/ Unknown	6	4.0% (2.6% - 6.2%)

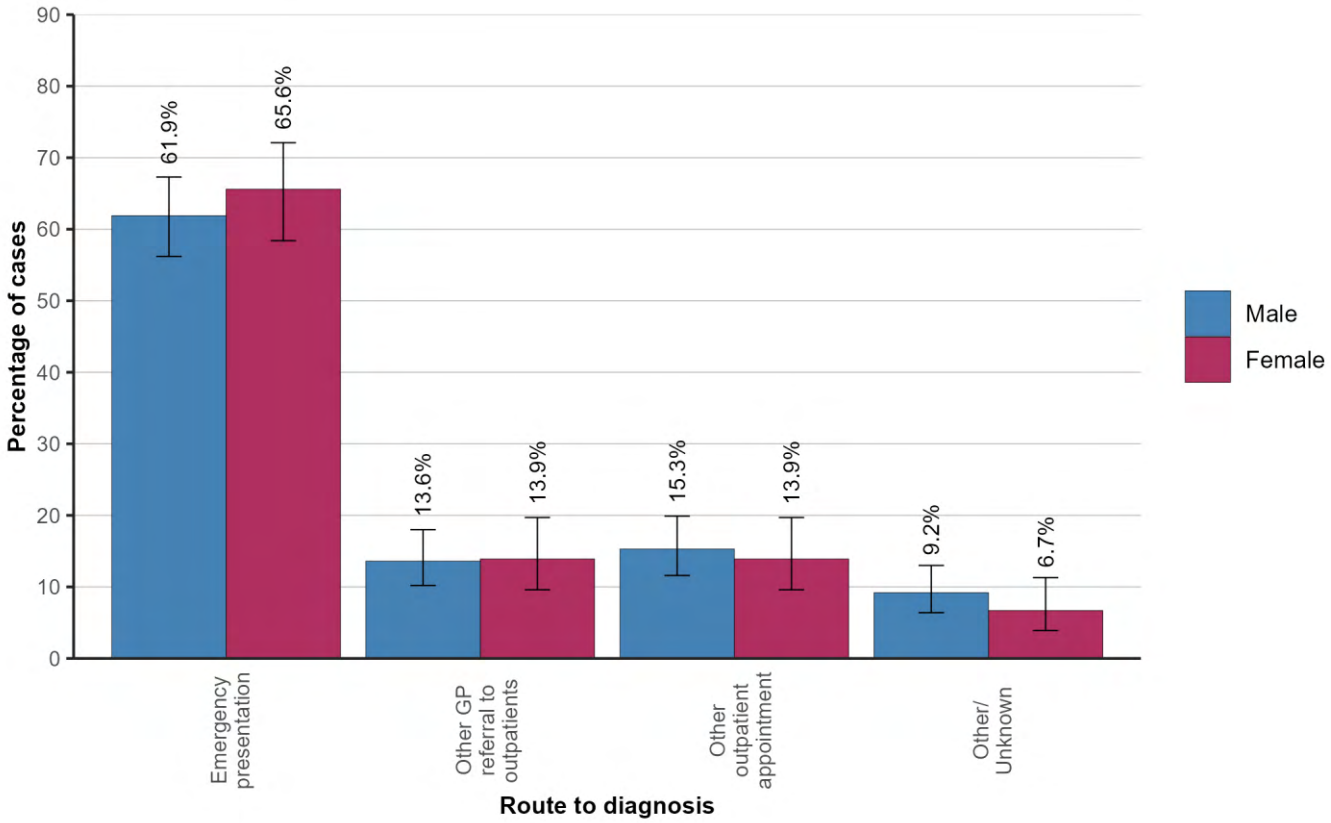
CI: Confidence Interval

14.1: ROUTES TO DIAGNOSIS BY GENDER

During 2018-2020 there were 61 male and 39 female cases of brain cancer (including central nervous system) diagnosed each year where the route to diagnosis was an emergency presentation. This was the most common route to diagnosis for both men (61.9%) and women (65.6%).

Emergency presentation routes also demonstrated the biggest difference between males and females. The variation in route to diagnosis by gender was not statistically significant.

Figure 14.2: Route to diagnosis for brain cancer (including central nervous system) patients diagnosed in 2018-2020 by gender

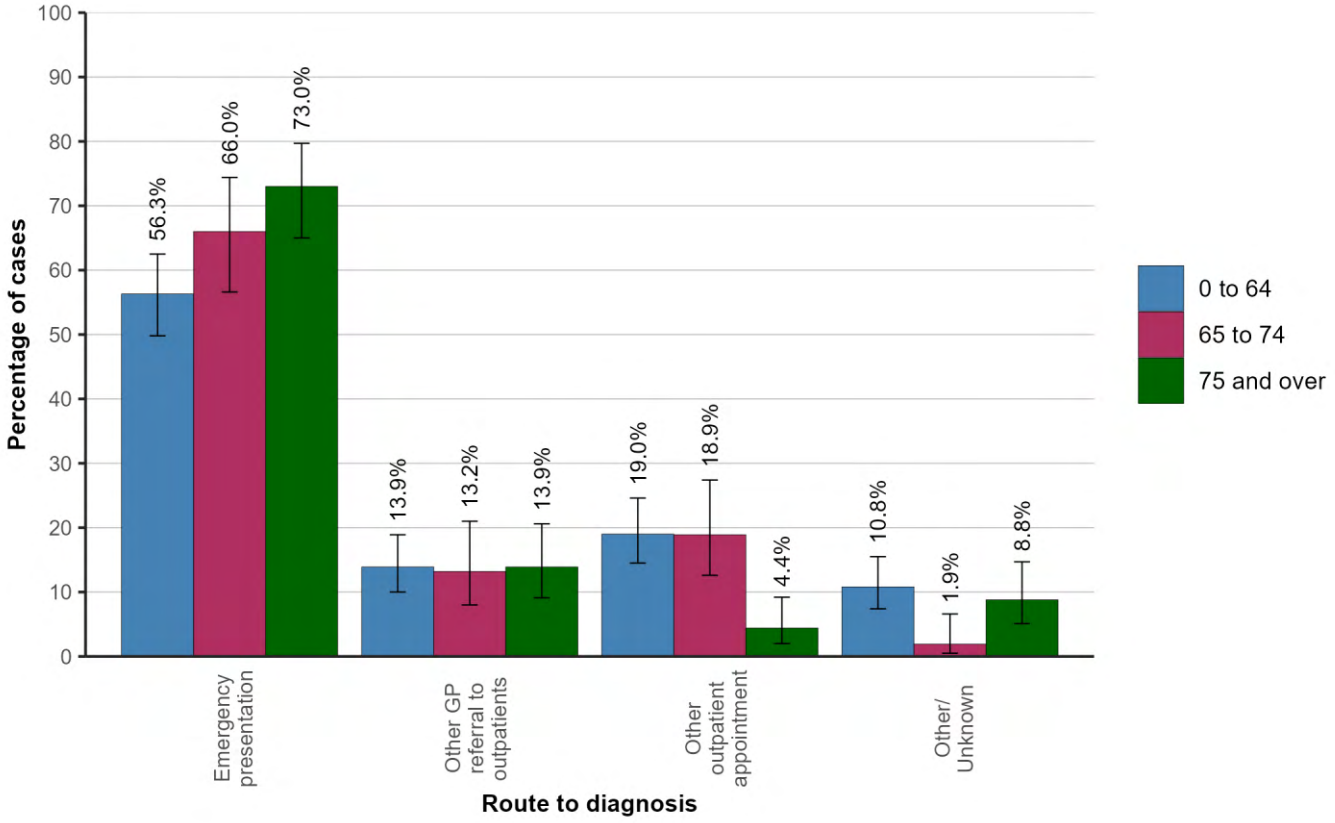


14.2: ROUTES TO DIAGNOSIS BY AGE GROUP

During 2018-2020 the most common route to diagnosis for cases of brain cancer (including central nervous system) overall was an emergency presentation. Among those aged 0 to 64 there were 43 (56.3%) diagnosed per year via this route, compared to 33 (73.0%) per year among those aged 75 and over. This made it the most common route to diagnosis for both those aged 0 to 64 and those aged 75 and over.

Emergency presentation routes also demonstrated the biggest difference between those aged 0 to 64 and 75 and over. The variation in route to diagnosis by age group was statistically significant ($p < 0.001$).

Figure 14.3: Route to diagnosis for brain cancer (including central nervous system) patients diagnosed in 2018-2020 by age group



14.3: ROUTES TO DIAGNOSIS BY AREA OF RESIDENCE

Health and Social Care Trust

During 2018-2020 the proportion of cases of brain cancer (including central nervous system) diagnosed via an emergency presentation ranged from 56.7% in South Eastern HSCT to 72.2% in Belfast HSCT. The variation in route to diagnosis by Health and Social Care Trust was not statistically significant.

Area-based socio-economic deprivation

During 2018-2020 the proportion of cases of brain cancer (including central nervous system) diagnosed via an emergency presentation was 65.3% in the most deprived areas compared to 65.1% in the least deprived areas. The variation in route to diagnosis by deprivation quintile was not statistically significant.

Figure 14.4: Route to diagnosis for brain cancer (including central nervous system) patients diagnosed in 2018-2020 by Health and Social Care Trust

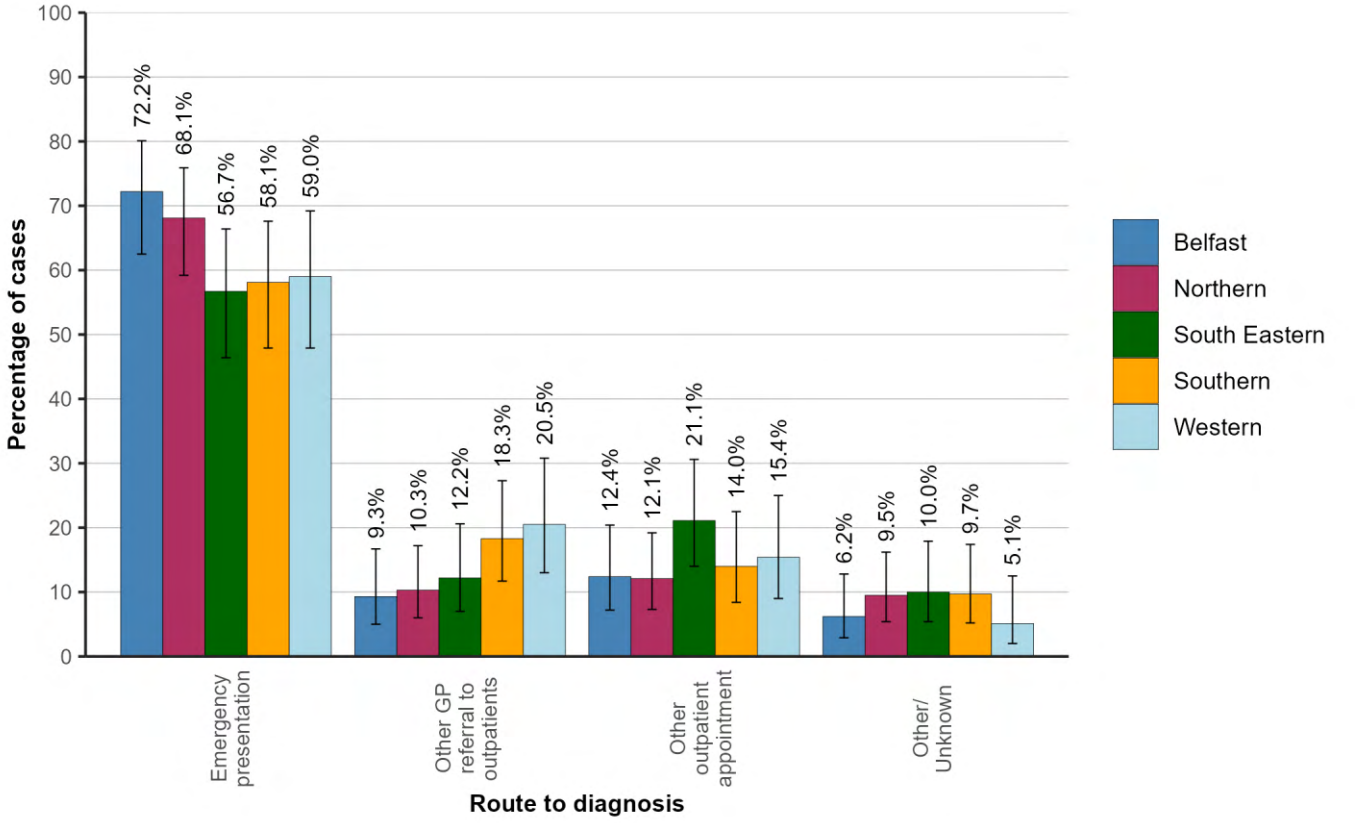
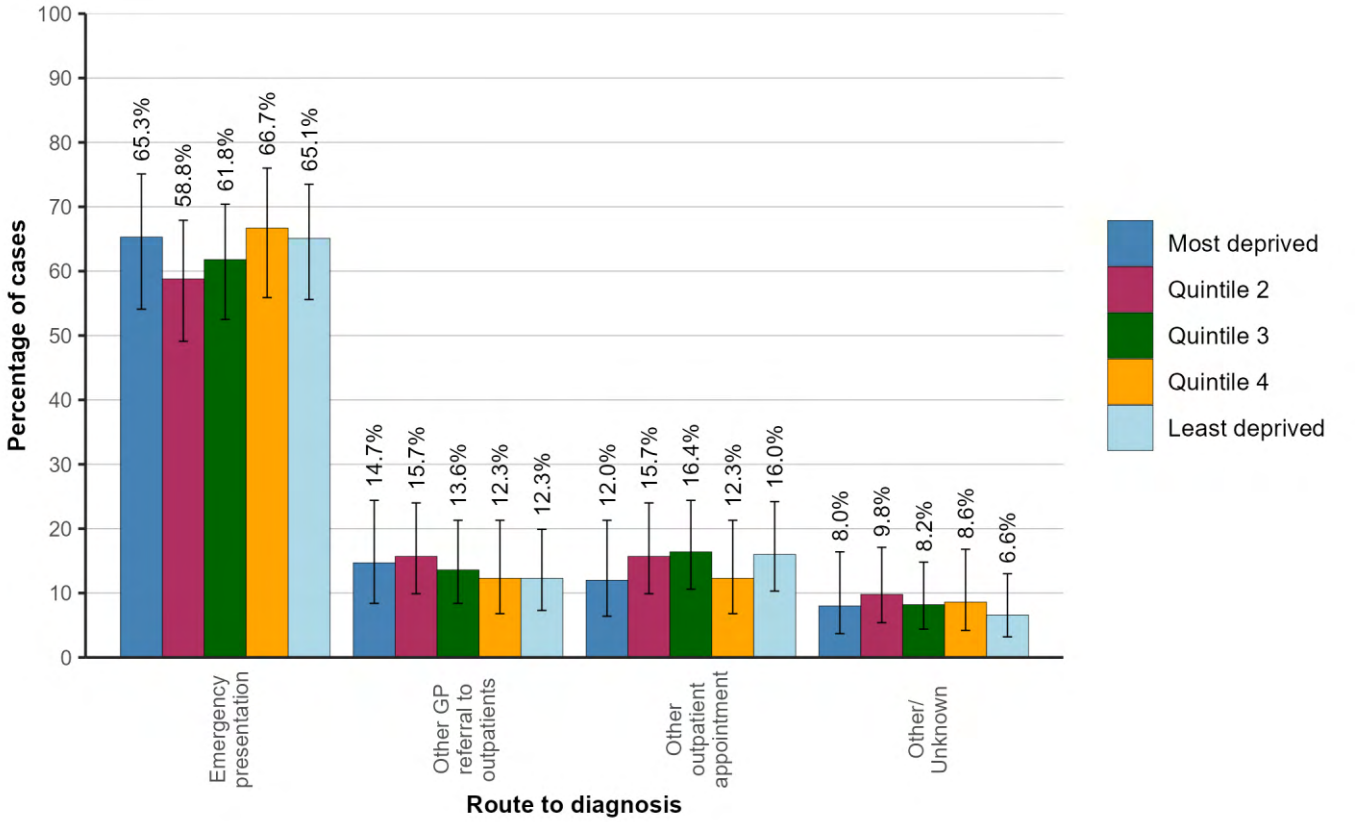


Figure 14.5: Route to diagnosis for brain cancer (including central nervous system) patients diagnosed in 2018-2020 by deprivation quintile

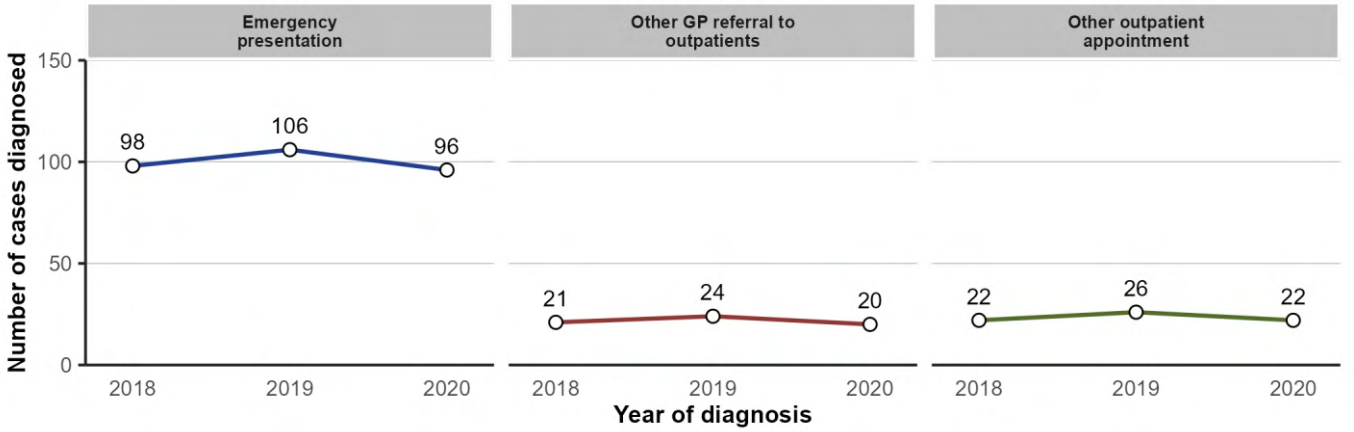


14.4: ROUTES TO DIAGNOSIS BY YEAR OF DIAGNOSIS

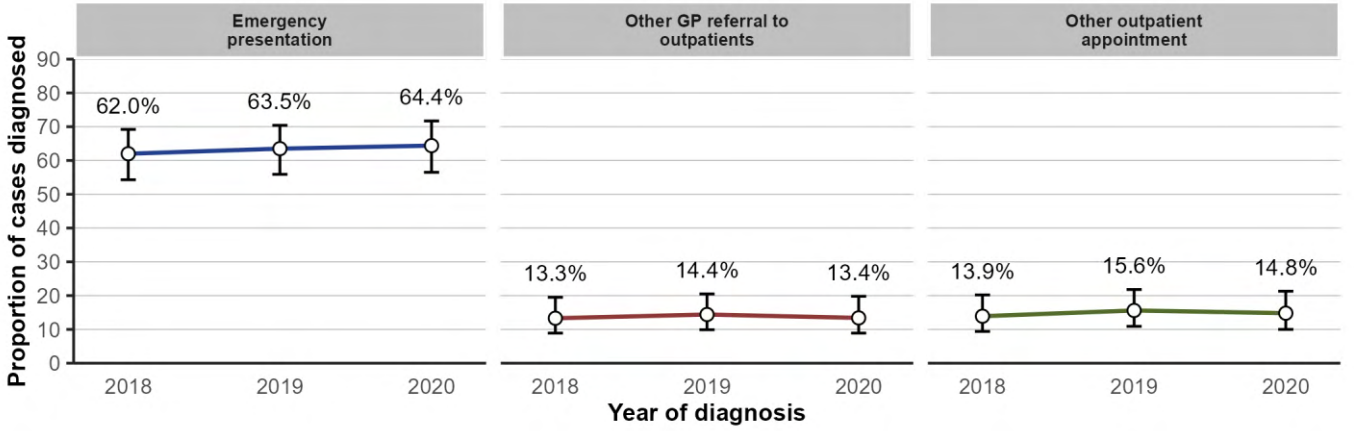
The number of brain cancer (including central nervous system) cases diagnosed via an emergency presentation each year decreased by 5.9% from 102 per year in 2018-19 to 96 in 2020. As a proportion of all cases, an emergency presentation diagnosis increased from 62.6% in 2018-19 to 64.4% in 2020. The variation in route to diagnosis by year of diagnosis was not statistically significant.

Figure 14.6: Route to diagnosis for brain cancer (including central nervous system) patients diagnosed in 2018-2020 by year of diagnosis

(a) Number of cases



(b) Proportion of cases



15: Haematological Cancer

The most common route to diagnosis among haematological cancer patients during 2018-2020 was via another GP referral to outpatients, with 280 (32.1%) cases diagnosed on average each year. This was followed by an emergency presentation route with 255 (29.3%) cases diagnosed on average each year. Red flag referrals made up 17.2% of cases during this period.

Figure 15.1: Route to diagnosis for haematological cancer patients diagnosed in 2018-2020

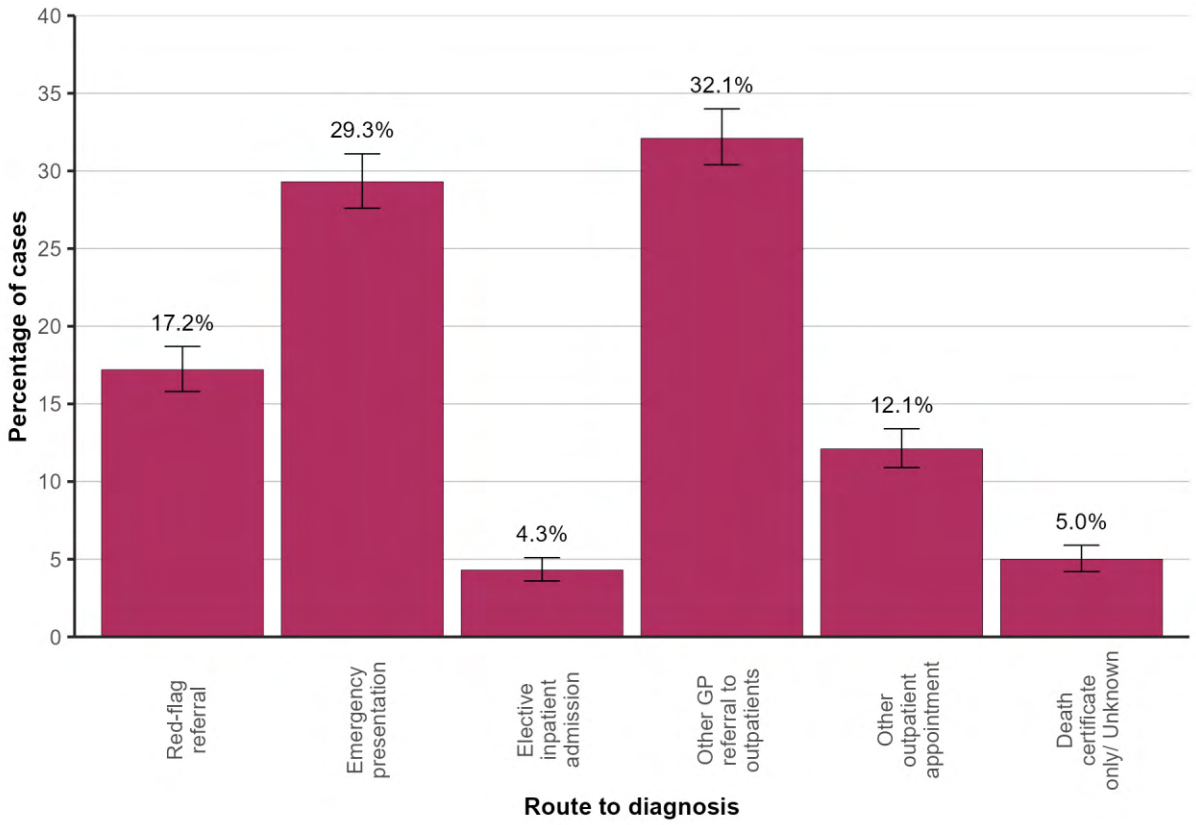


Table 15.1: Average number of haematological cancer cases diagnosed each year during 2018-2020 by route to diagnosis

Route to diagnosis	Cases per year	Proportion (95% CI)
Red-flag referral	150	17.2% (15.8% - 18.7%)
Emergency presentation	255	29.3% (27.6% - 31.1%)
Elective inpatient admission	37	4.3% (3.6% - 5.1%)
Other GP referral to outpatients	280	32.1% (30.4% - 34.0%)
Other outpatient appointment	105	12.1% (10.9% - 13.4%)
Death certificate only/ Unknown	44	5.0% (4.2% - 5.9%)

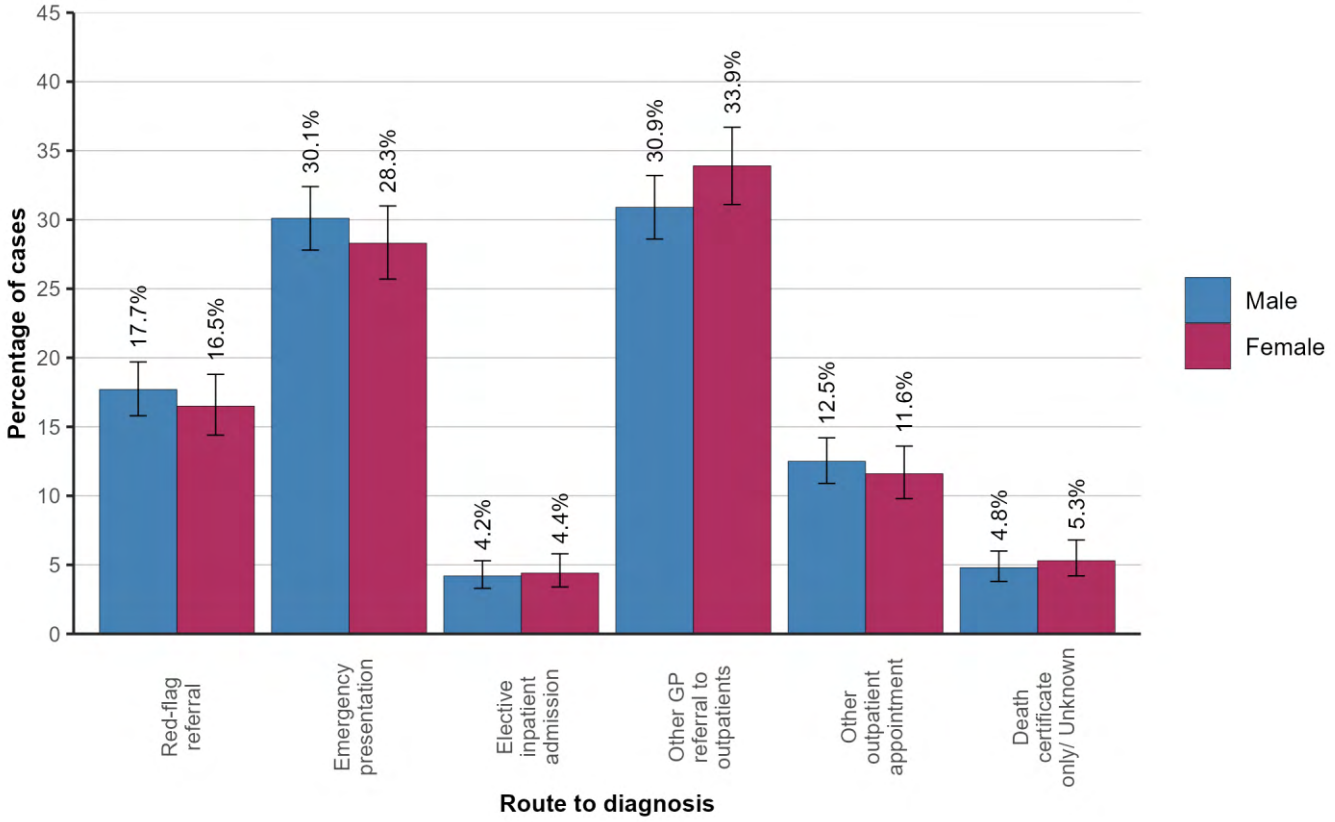
CI: Confidence Interval

15.1: ROUTES TO DIAGNOSIS BY GENDER

During 2018-2020 there were 155 male and 125 female cases of haematological cancer diagnosed each year where the route to diagnosis was another GP referral to outpatients. This was the most common route to diagnosis for both men (30.9%) and women (33.9%).

Other GP referral to outpatients routes also demonstrated the biggest difference between males and females. The variation in route to diagnosis by gender was not statistically significant.

Figure 15.2: Route to diagnosis for haematological cancer patients diagnosed in 2018-2020 by gender

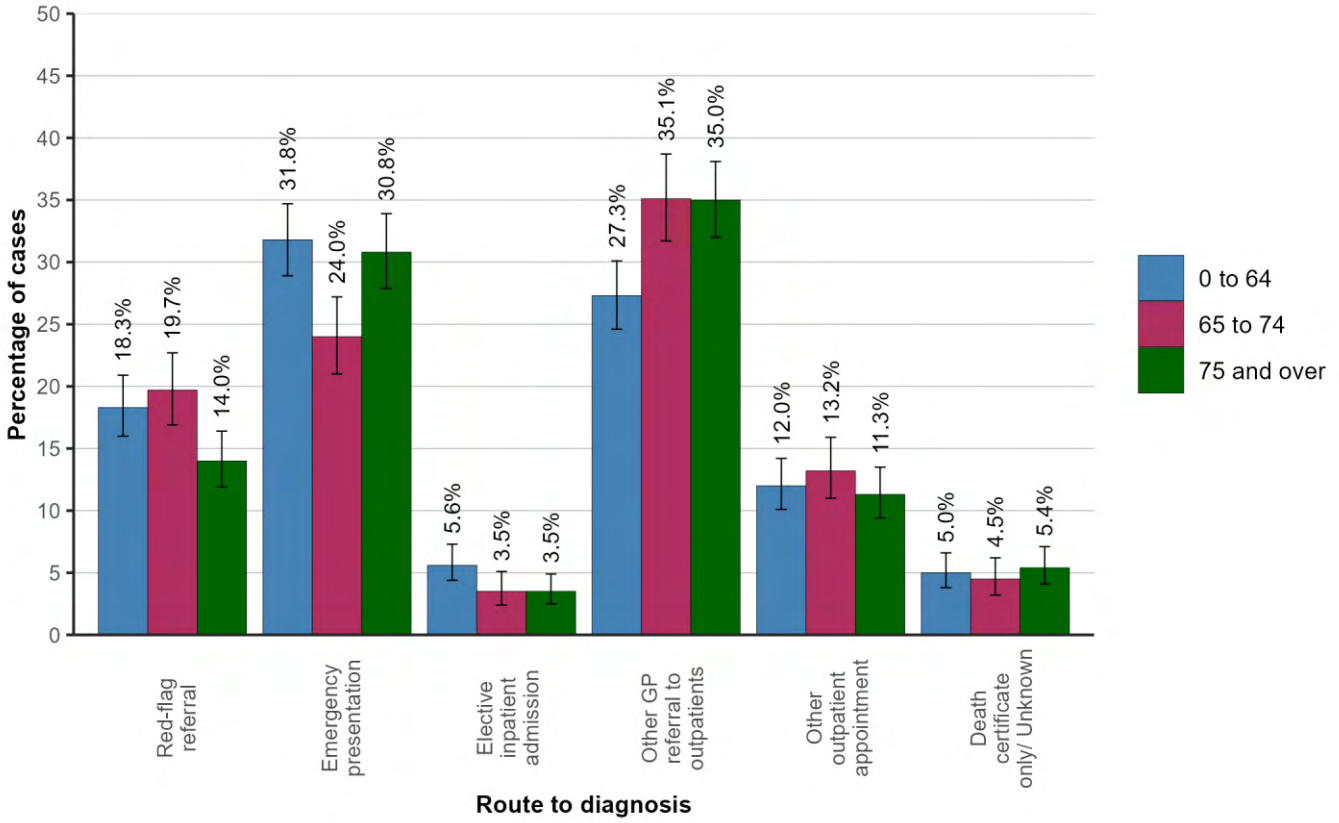


15.2: ROUTES TO DIAGNOSIS BY AGE GROUP

During 2018-2020 the most common route to diagnosis for cases of haematological cancer overall was another GP referral to outpatients. Among those aged 0 to 64 there were 89 (27.3%) diagnosed per year via this route, compared to 107 (35.0%) per year among those aged 75 and over. This made it the most common route to diagnosis for those aged 75 and over but not those aged 0 to 64. The most common route to diagnosis for those aged 0 to 64 was an emergency presentation (31.8%).

Other GP referral to outpatients routes also demonstrated the biggest difference between those aged 0 to 64 and 75 and over. The variation in route to diagnosis by age group was statistically significant ($p < 0.001$).

Figure 15.3: Route to diagnosis for haematological cancer patients diagnosed in 2018-2020 by age group



15.3: ROUTES TO DIAGNOSIS BY AREA OF RESIDENCE

Health and Social Care Trust

During 2018-2020 the proportion of cases of haematological cancer diagnosed via an emergency presentation ranged from 25.8% in Southern HSCT to 34.9% in Western HSCT. The proportions diagnosed via a red-flag referral ranged from 13.9% to 20.3% in South Eastern HSCT and Western HSCT respectively. The variation in route to diagnosis by Health and Social Care Trust was statistically significant ($p < 0.001$).

Area-based socio-economic deprivation

During 2018-2020 the proportion of cases of haematological cancer diagnosed via an emergency presentation was 30.5% in the most deprived areas compared to 25.1% in the least deprived areas. The proportions diagnosed via a red-flag referral were 16.0% and 18.5% in the most and least deprived areas respectively. The variation in route to diagnosis by deprivation quintile was not statistically significant.

Figure 15.4: Route to diagnosis for haematological cancer patients diagnosed in 2018-2020 by Health and Social Care Trust

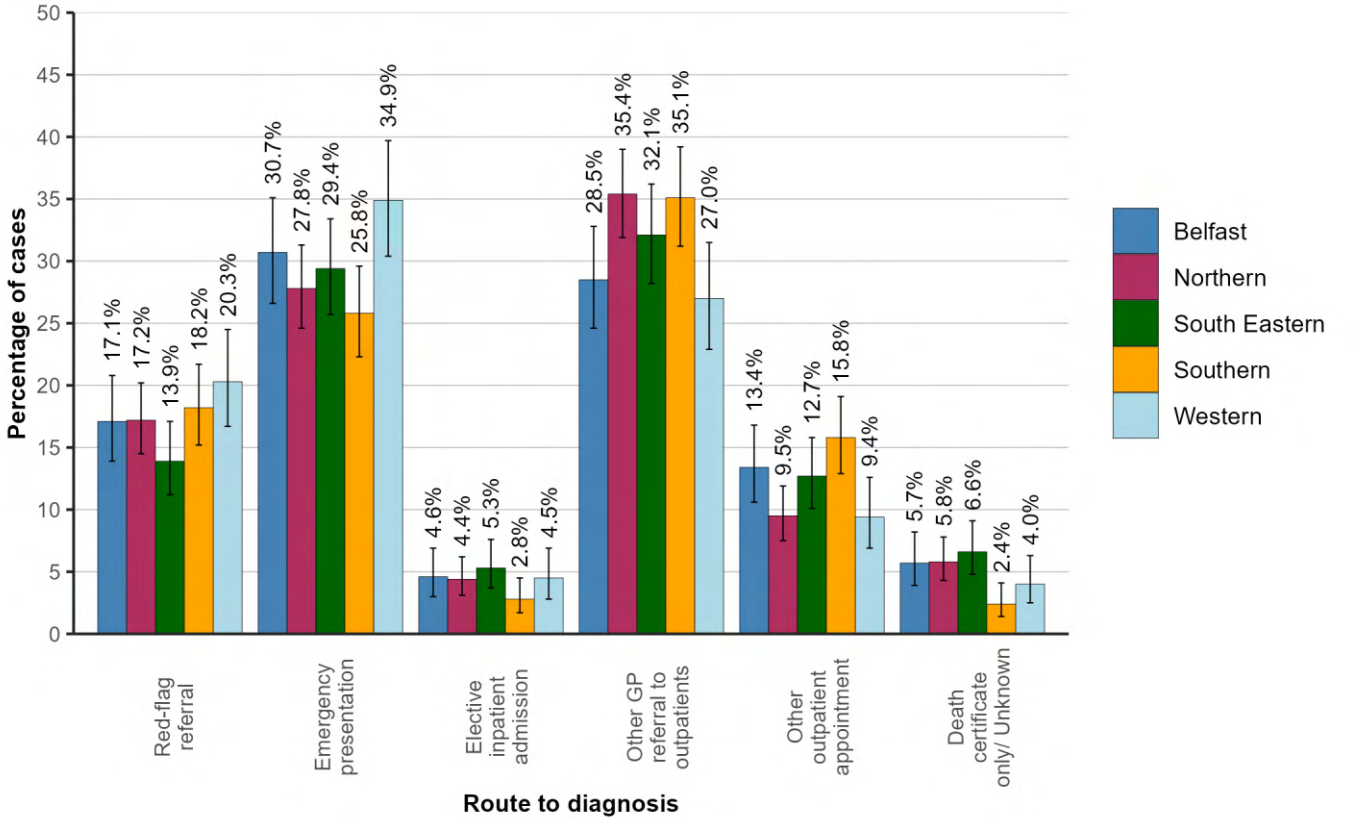
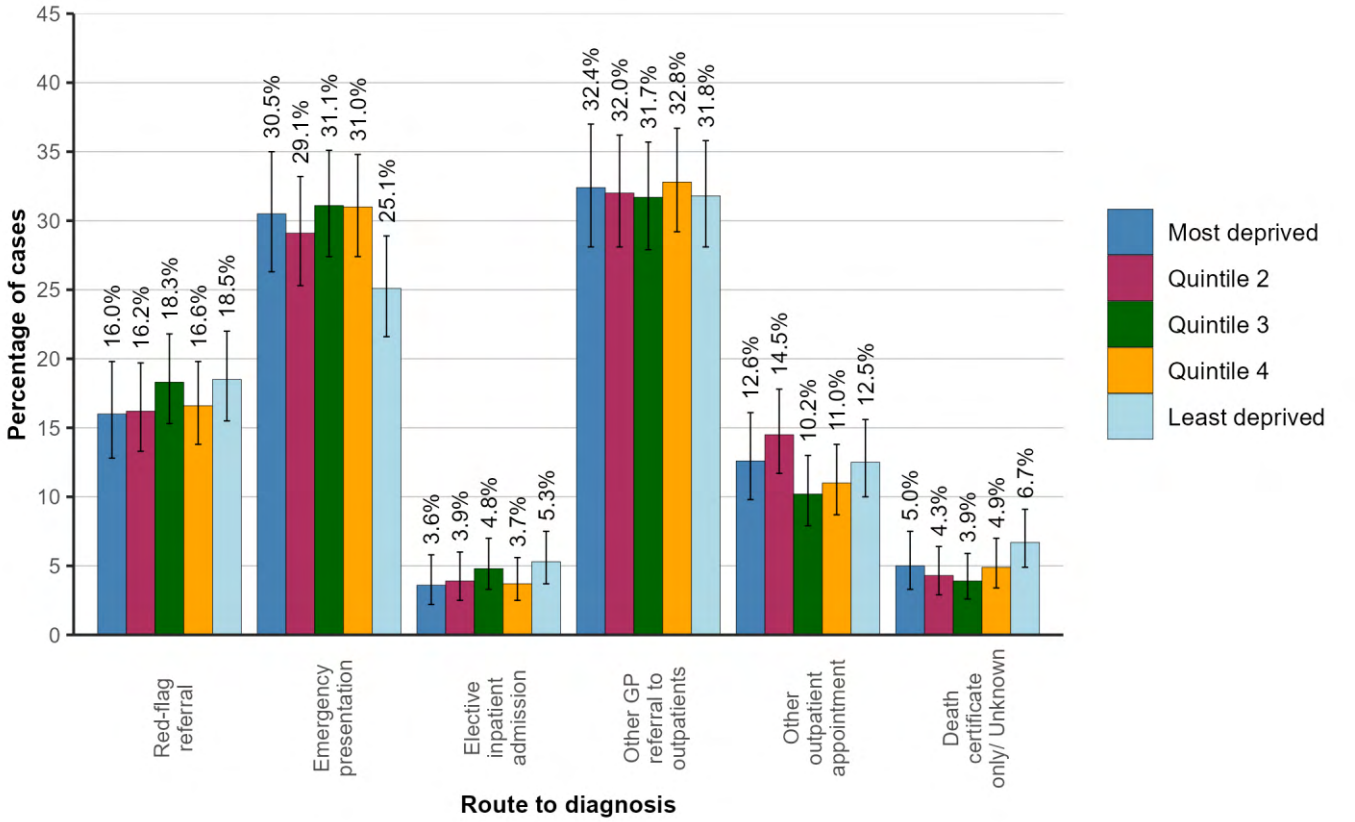


Figure 15.5: Route to diagnosis for haematological cancer patients diagnosed in 2018-2020 by deprivation quintile



15.4: ROUTES TO DIAGNOSIS BY CANCER TYPE

Lymphoma: The most common route to diagnosis among lymphoma patients during 2018-2020 was via another GP referral to outpatients, with 136 (33.3%) cases diagnosed on average each year. This was followed by an emergency presentation route with 115 (28.0%) cases diagnosed on average each year. Red flag referrals made up 18.1% of cases during this period.

Figure 15.6: Route to diagnosis for lymphoma patients diagnosed in 2018-2020

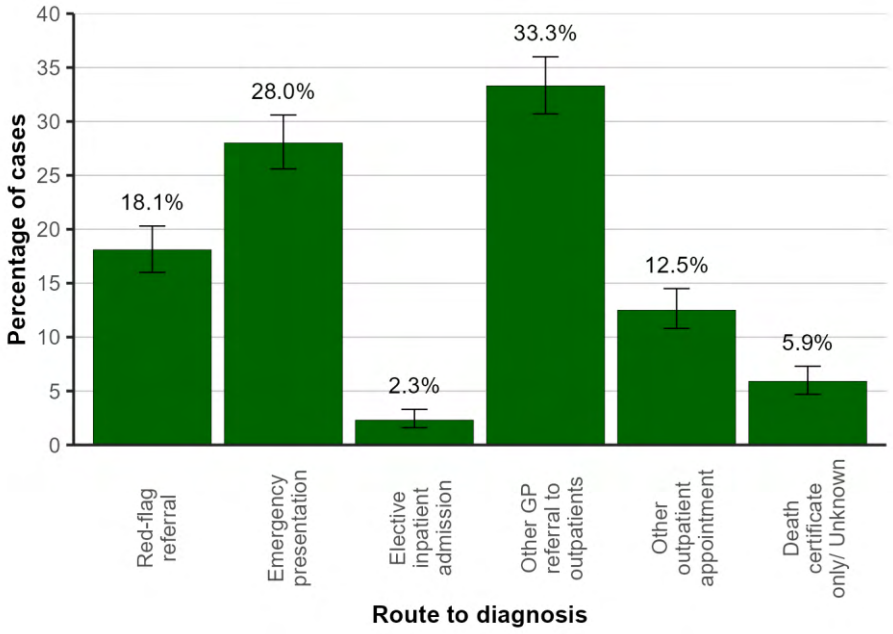
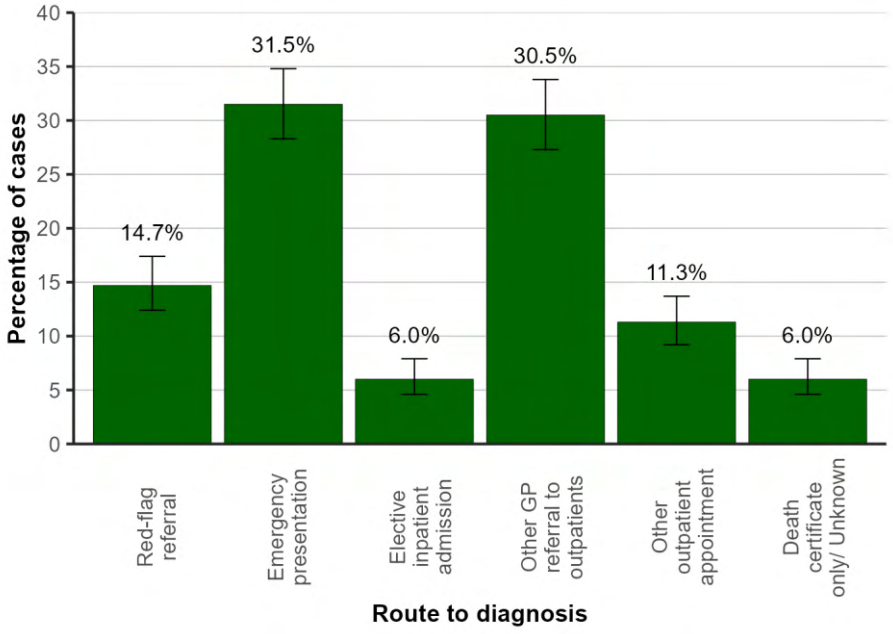


Figure 15.7: Route to diagnosis for leukaemia patients diagnosed in 2018-2020

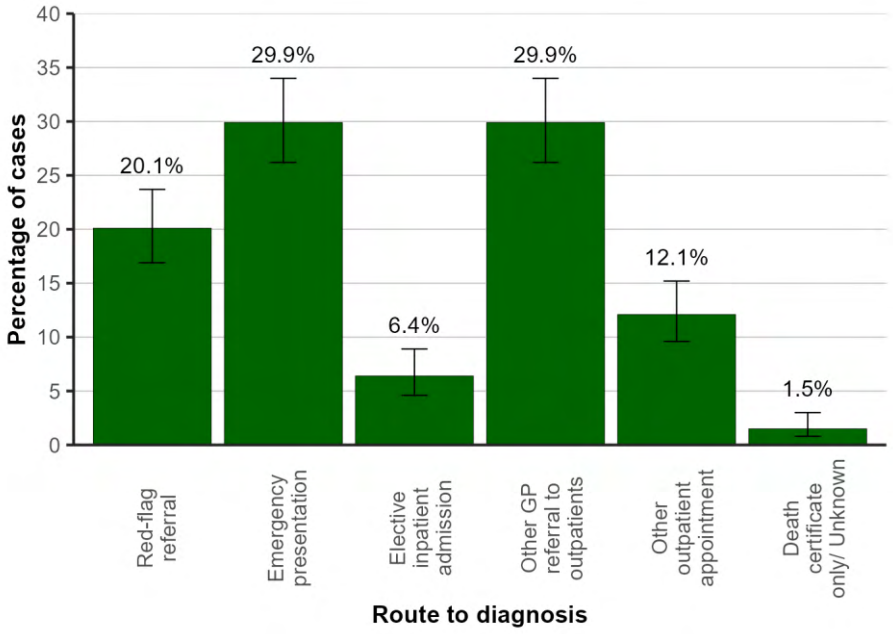


Leukaemia: The most common route to diagnosis among leukaemia patients during 2018-2020 was via an emergency presentation, with 82 (31.5%) cases diagnosed on average each year. This was followed by

another GP referral to outpatients route with 79 (30.5%) cases diagnosed on average each year. Red flag referrals made up 14.7% of cases during this period.

Multiple myeloma: The most common route to diagnosis among multiple myeloma patients during 2018-2020 was via an emergency presentation, with 53 (29.9%) cases diagnosed on average each year. This was followed by another GP referral to outpatients route with 53 (29.9%) cases diagnosed on average each year. Red flag referrals made up 20.1% of cases during this period.

Figure 15.8: Route to diagnosis for multiple myeloma patients diagnosed in 2018-2020



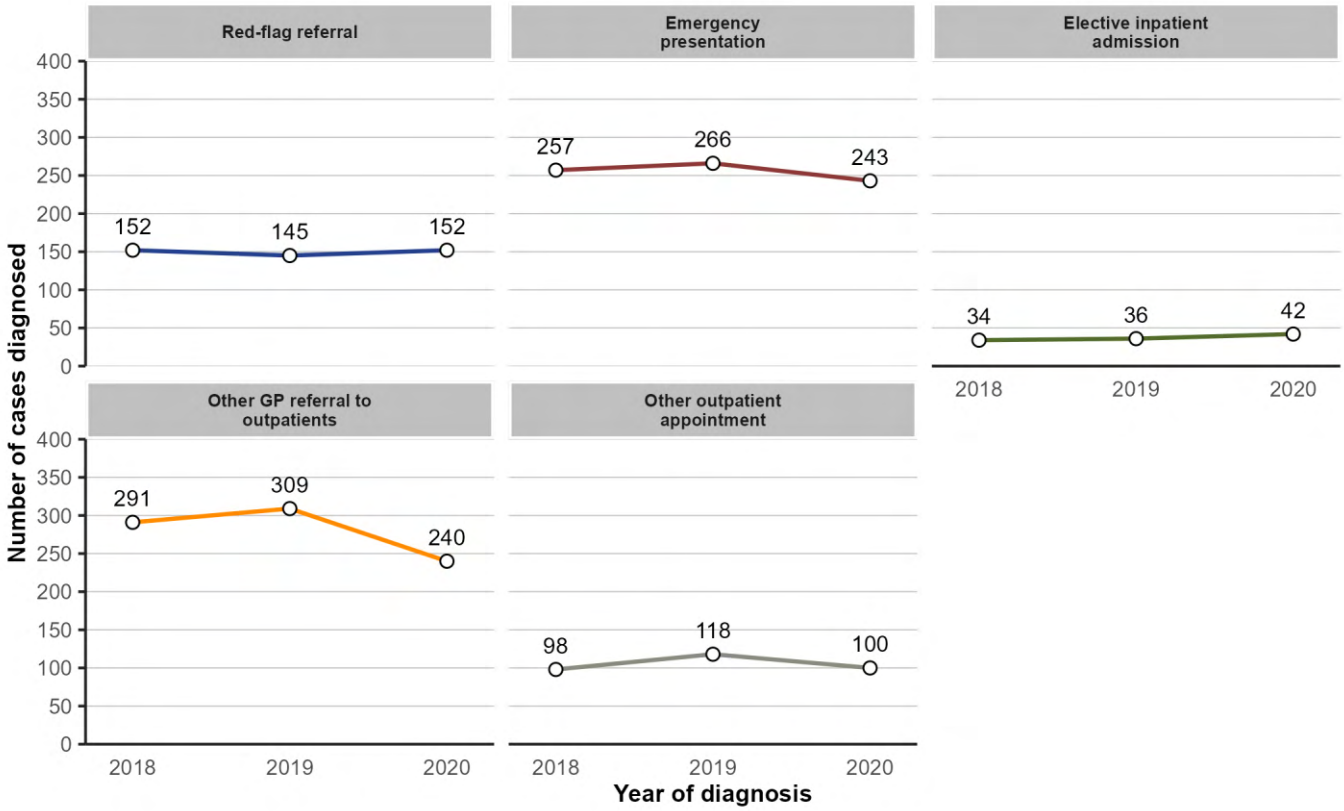
15.5: ROUTES TO DIAGNOSIS BY YEAR OF DIAGNOSIS

The number of haematological cancer cases diagnosed via a red-flag referral each year increased by 2.0% from 149 per year in 2018-19 to 152 in 2020. As a proportion of all cases, a red-flag referral diagnosis increased from 16.6% in 2018-19 to 18.6% in 2020.

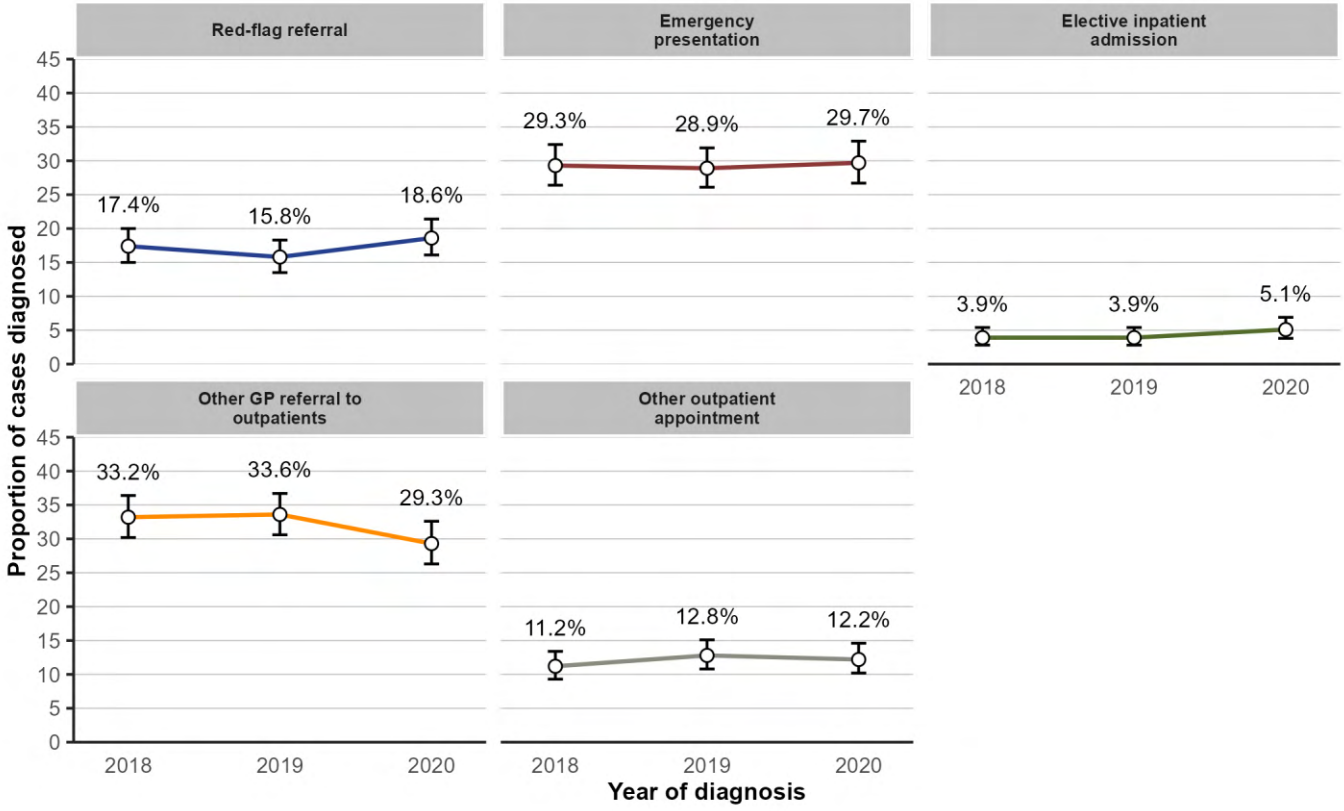
The number of haematological cancer cases diagnosed via an emergency presentation each year decreased by 7.3% from 262 per year in 2018-19 to 243 in 2020. As a proportion of all cases, an emergency presentation diagnosis increased from 29.1% in 2018-19 to 29.7% in 2020. The variation in route to diagnosis by year of diagnosis was not statistically significant.

Figure 15.9: Route to diagnosis for haematological cancer patients diagnosed in 2018-2020 by year of diagnosis

(a) Number of cases



(b) Proportion of cases

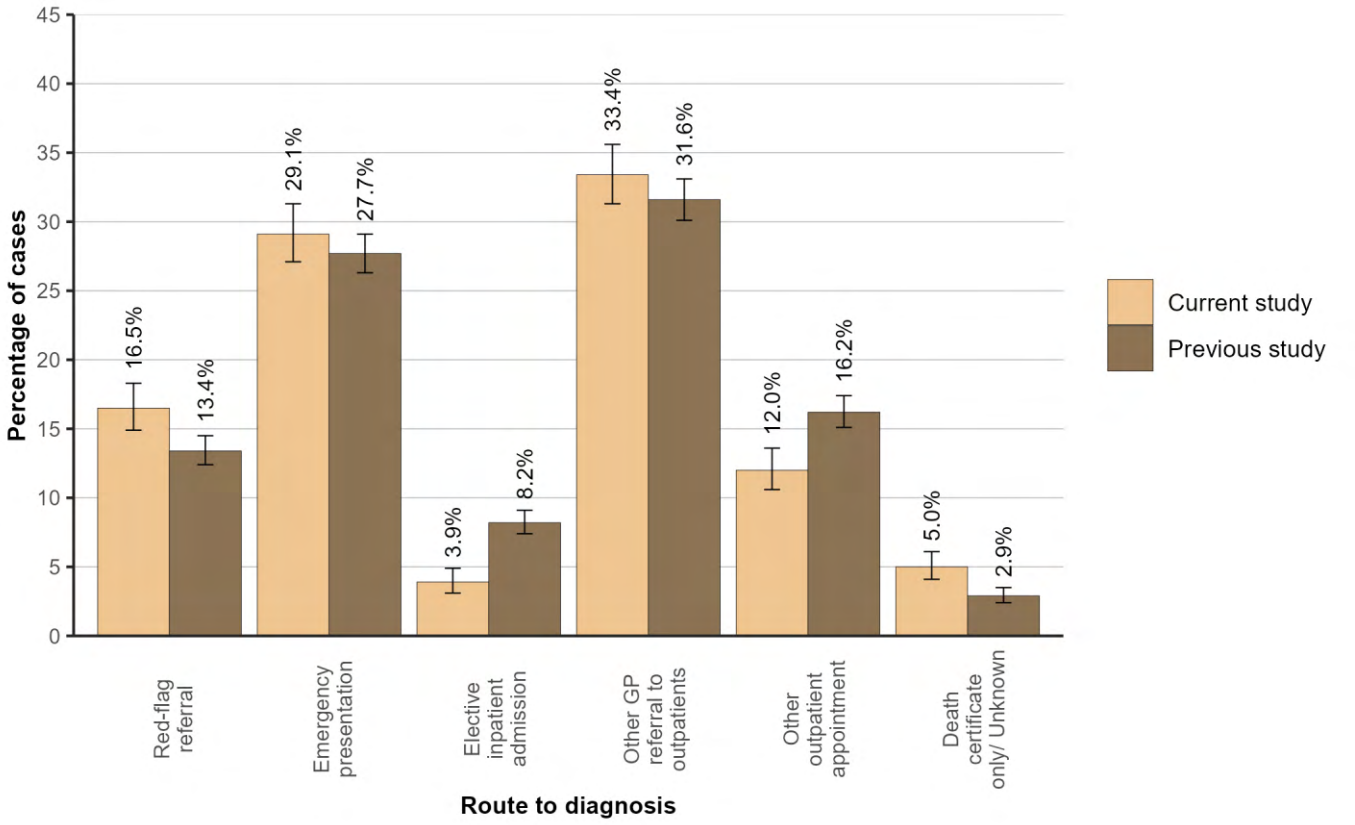


15.6: COMPARISON WITH PREVIOUS STUDIES

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with haematological cancer in 2018-2019 compared to patients from the previous Northern Ireland study, which was for patients diagnosed in 2012-2016.

- Red-flag referral (16.5% in 2018-2019 compared to 13.4% previously ; p=0.002).
- Elective inpatient admission (3.9% in 2018-2019 compared to 8.2% previously ; p<0.001).
- Other outpatient appointment (12.0% in 2018-2019 compared to 16.2% previously ; p<0.001).

Figure 15.10: Route to diagnosis for haematological cancer patients diagnosed in 2018-2019 compared to patients diagnosed in 2012-2016 (from previous Northern Ireland study)



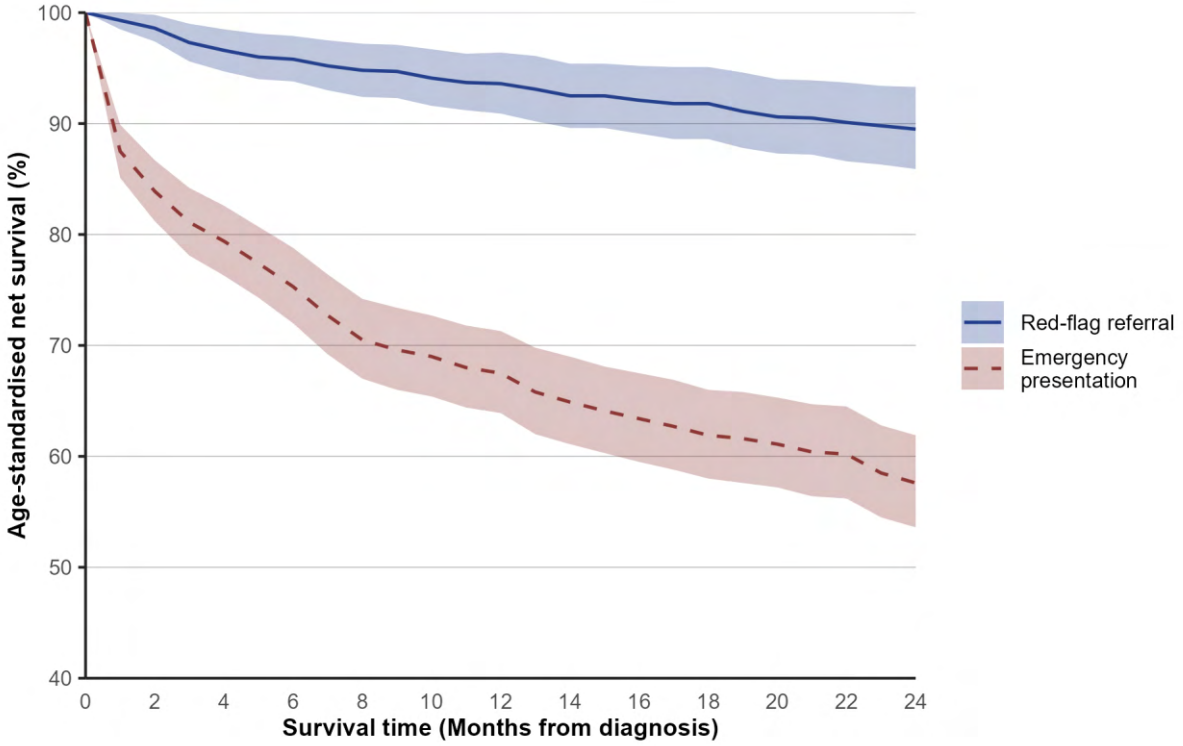
Source of previous data: Centre for Public Health, See reference 2.
Note that due to the impact of the COVID-19 pandemic on cancer diagnosis, comparisons exclude data from 2020.
Due to potential differences in coding and data sources, differences between the two studies should not be interpreted as a time trend.

15.7: SURVIVAL

During 2018-2020 one-year age-standardised net survival from haematological cancer ranged from 67.5% for those diagnosed via an emergency presentation route to 93.6% for those diagnosed via a red-flag referral route. Two years from diagnosis age-standardised net survival ranged from 57.6% for those diagnosed via an emergency presentation route to 89.5% for those diagnosed via a red-flag referral route.

Figure 15.11: Age-standardised net survival by route to diagnosis for haematological cancer patients diagnosed in 2018-2020

(a) Red-flag and emergency routes



(b) Other routes

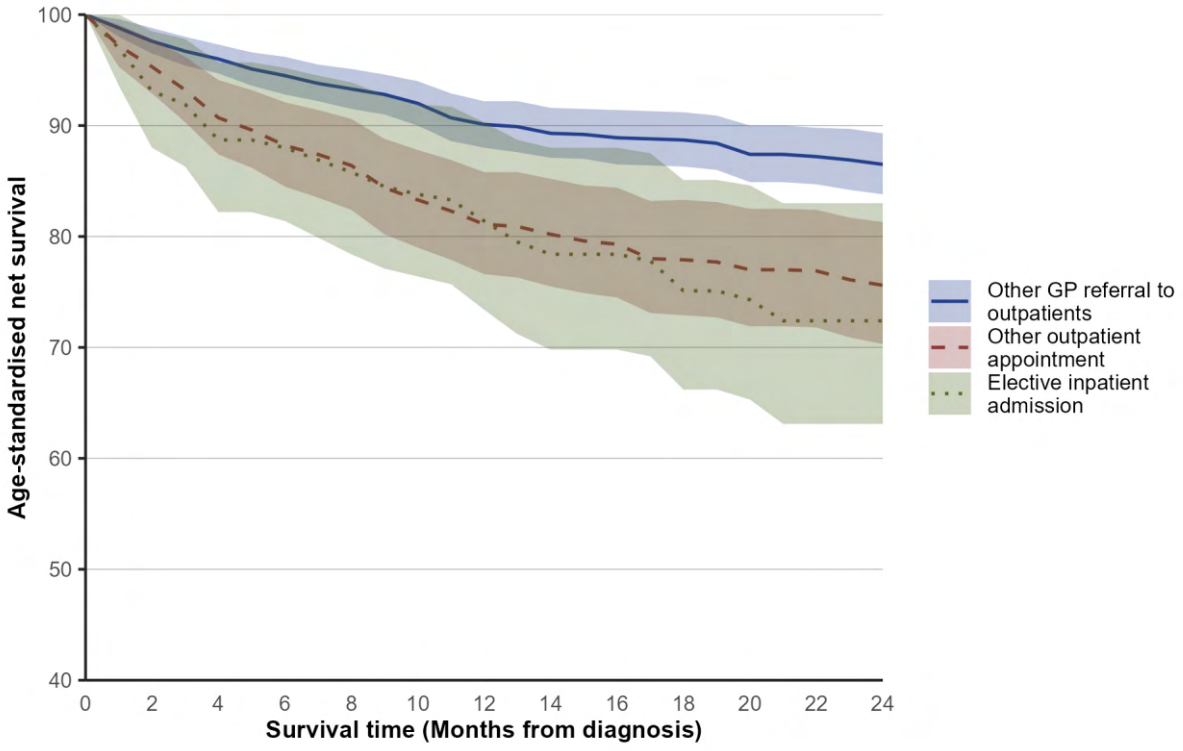


Table 15.2: Age-standardised net survival by route to diagnosis for haematological cancer patients diagnosed in 2018-2020

Route to diagnosis	One-year survival (ASNS)	Two-year survival (ASNS)
Red-flag referral	93.6% (90.9% - 96.4%)	89.5% (85.9% - 93.3%)
Emergency presentation	67.5% (63.9% - 71.3%)	57.6% (53.6% - 61.9%)
Elective inpatient admission	81.4% (73.4% - 90.3%)	72.4% (63.1% - 83.0%)
Other GP referral to outpatients	90.1% (88.0% - 92.2%)	86.5% (83.8% - 89.3%)
Other outpatient appointment	81.1% (76.6% - 85.8%)	75.6% (70.3% - 81.3%)
Unknown	85.1% (78.7% - 92.0%)	80.5% (73.0% - 88.8%)

ASNS: Age-standardised net survival with 95% confidence interval.

References

1. Department of Health. A cancer strategy for Northern Ireland 2022-2032. Available at https://www.health-ni.gov.uk/publications/cancer-strategy-northern-ireland-2022-2032. Accessed Feb 2024.
2. Centre for Public Health. Pathways to a cancer diagnosis 2012-2016. Queen's University, Belfast 2020.
3. Elliss-Brookes L, McPhail S, Ives A, et al. Routes to diagnosis for cancer - determining the patient journey using multiple routine data sets. Br J Cancer 2012; 107:1220-6.
4. Public Health England. Routes to diagnosis 2006-2016: Technical document. Available at http://www.ncin.org.uk/view?rid=3965. Accessed Jan 2024.
5. Tyczynski JE, Demaret E, Parkin DM. Standards and guidelines for cancer registration in Europe. IARC Technical Publication No. 40. Lyon: IARC; 2003
6. World Health Organisation. ICD10 International Classification of Diseases 10th revision. Geneva: WHO; 1997
7. Northern Ireland Statistics and Research Agency. Central Postcode Directory. Available at: www.nisra.gov.uk/support/geography/central-postcode-directory. Accessed Jan 2024.
8. Northern Ireland Statistics and Research Agency. Northern Ireland Multiple Deprivation Measure. Available at: www.nisra.gov.uk/statistics/deprivation. Accessed Jan 2024.
9. Brierley JD, Gospodarowicz MK, Wittekind C, eds. TNM classification of malignant tumors (8th edition). West Sussex UK: Wiley-Blackwell; 2017
10. Wilson EB. Probable inference, the law of succession, and statistical inference. J Am Stat Assoc 1927; 22:209-12.
11. Newcombe RG. Two-sided confidence intervals for the single proportion: comparison of seven methods. Stat Med 1998; 17:857-72.
12. National Disease Registration Service (NDRS). Routes to diagnosis. Available at: https://digital.nhs.uk/ndrs/our-work/ncras-work-programme/routes-to-diagnosis. Accessed Jan 2024.
13. Perme MP, Stare J, Esteve J. On estimation in relative survival. Biometrics 2012; 68:113-20.
14. Clerc-Urmès I, Grzebyk M, Hédelin, G. Net survival estimation with stns. Stata Journal 2014; 14:87-102.
15. Corazziari I, Quinn M, Capocaccia R. Standard cancer population for estimating age standardising survival ratios. Eur J Cancer 2004; 40: 2307-16.

Supplementary tables

ALL CANCERS EXCLUDING NON-MELANOMA SKIN CANCER (NMSC)

Average number of cancer (ex NMSC) cases diagnosed each year during 2018-2020 by route to diagnosis
(Including proportions and 95% confidence intervals)

By gender

Route to diagnosis	Males	Females
Screening referral	68 1.4% (1.2%-1.5%)	480 9.8% (9.4%-10.3%)
Red-flag referral	1,661 32.9% (32.2%-33.7%)	1,633 33.5% (32.8%-34.3%)
Emergency presentation	1,236 24.5% (23.8%-25.2%)	1,067 21.9% (21.2%-22.6%)
Elective inpatient admission	161 3.2% (2.9%-3.5%)	90 1.9% (1.6%-2.1%)
Other GP referral to outpatients	1,137 22.5% (21.9%-23.2%)	931 19.1% (18.5%-19.8%)
Other outpatient appointment	613 12.1% (11.6%-12.7%)	515 10.6% (10.1%-11.1%)
Death certificate only	12 0.2% (0.2%-0.3%)	21 0.4% (0.3%-0.5%)
Unknown	161 3.2% (2.9%-3.5%)	135 2.8% (2.5%-3.1%)

By age group

Route to diagnosis	Aged 0 to 64	Aged 65 to 74	Aged 75 and over
Screening referral	324 8.8% (8.3%-9.4%)	205 7.2% (6.6%-7.7%)	19 0.6% (0.4%-0.7%)
Red-flag referral	1,299 35.4% (34.5%-36.3%)	986 34.5% (33.5%-35.5%)	1,009 29.7% (28.9%-30.6%)
Emergency presentation	632 17.2% (16.5%-18.0%)	589 20.6% (19.8%-21.5%)	1,081 31.8% (30.9%-32.8%)
Elective inpatient admission	103 2.8% (2.5%-3.1%)	74 2.6% (2.3%-2.9%)	75 2.2% (1.9%-2.5%)
Other GP referral to outpatients	745 20.3% (19.6%-21.1%)	608 21.3% (20.4%-22.2%)	715 21.1% (20.3%-21.9%)
Other outpatient appointment	451 12.3% (11.7%-12.9%)	322 11.3% (10.6%-12.0%)	355 10.5% (9.9%-11.1%)
Death certificate only	3 0.1% (0.0%-0.1%)	4 0.2% (0.1%-0.3%)	25 0.7% (0.6%-0.9%)
Unknown	110 3.0% (2.7%-3.3%)	71 2.5% (2.2%-2.8%)	115 3.4% (3.1%-3.8%)

By Health and Social Care Trust

Route to diagnosis	Belfast	Northern	South Eastern	Southern	Western
Screening referral	104 5.4% (4.8%-6.0%)	135 5.2% (4.8%-5.8%)	99 4.9% (4.4%-5.5%)	117 6.5% (5.8%-7.1%)	93 5.9% (5.3%-6.6%)
Red-flag referral	587 30.2% (29.0%-31.4%)	885 34.3% (33.2%-35.3%)	650 32.4% (31.3%-33.6%)	582 32.0% (30.8%-33.2%)	591 37.6% (36.2%-39.0%)
Emergency presentation	511 26.3% (25.2%-27.5%)	552 21.4% (20.5%-22.3%)	480 24.0% (22.9%-25.1%)	419 23.0% (21.9%-24.2%)	340 21.6% (20.5%-22.8%)
Elective inpatient admission	44 2.3% (1.9%-2.7%)	70 2.7% (2.4%-3.1%)	50 2.5% (2.1%-2.9%)	48 2.6% (2.2%-3.1%)	40 2.5% (2.1%-3.0%)
Other GP referral to outpatients	397 20.4% (19.4%-21.5%)	568 22.0% (21.1%-22.9%)	386 19.3% (18.3%-20.3%)	386 21.2% (20.2%-22.3%)	331 21.0% (19.9%-22.2%)
Other outpatient appointment	227 11.7% (10.9%-12.5%)	279 10.8% (10.1%-11.5%)	250 12.5% (11.7%-13.3%)	217 12.0% (11.1%-12.8%)	155 9.8% (9.0%-10.7%)
Death certificate only	7 0.4% (0.2%-0.6%)	8 0.3% (0.2%-0.5%)	8 0.4% (0.3%-0.6%)	5 0.3% (0.2%-0.5%)	3 0.2% (0.1%-0.4%)
Unknown	66 3.4% (2.9%-3.9%)	84 3.3% (2.9%-3.7%)	81 4.1% (3.6%-4.6%)	44 2.4% (2.1%-2.9%)	20 1.3% (1.0%-1.6%)

By deprivation quintile

Route to diagnosis	Most deprived	Quintile 2	Quintile 3	Quintile 4	Least deprived
Screening referral	98 5.3% (4.7%-5.9%)	110 5.4% (4.9%-6.0%)	113 5.6% (5.1%-6.2%)	120 5.9% (5.3%-6.5%)	106 5.4% (4.8%-6.0%)
Red-flag referral	582 31.4% (30.2%-32.6%)	688 33.8% (32.6%-35.0%)	697 34.6% (33.4%-35.8%)	675 33.2% (32.0%-34.4%)	652 33.0% (31.8%-34.2%)
Emergency presentation	488 26.3% (25.1%-27.5%)	493 24.2% (23.2%-25.3%)	457 22.6% (21.6%-23.7%)	447 22.0% (20.9%-23.0%)	418 21.2% (20.1%-22.2%)
Elective inpatient admission	46 2.5% (2.1%-2.9%)	48 2.3% (2.0%-2.8%)	50 2.5% (2.1%-2.9%)	53 2.6% (2.2%-3.0%)	55 2.8% (2.4%-3.3%)
Other GP referral to outpatients	383 20.6% (19.6%-21.7%)	416 20.4% (19.4%-21.5%)	425 21.1% (20.1%-22.1%)	423 20.8% (19.8%-21.8%)	421 21.3% (20.3%-22.4%)
Other outpatient appointment	210 11.3% (10.5%-12.2%)	225 11.1% (10.3%-11.9%)	222 11.0% (10.3%-11.8%)	239 11.8% (11.0%-12.6%)	231 11.7% (10.9%-12.5%)
Death certificate only	5 0.3% (0.2%-0.4%)	6 0.3% (0.2%-0.4%)	8 0.4% (0.3%-0.6%)	8 0.4% (0.3%-0.6%)	6 0.3% (0.2%-0.5%)
Unknown	43 2.3% (2.0%-2.7%)	51 2.5% (2.1%-2.9%)	45 2.2% (1.9%-2.6%)	69 3.4% (3.0%-3.9%)	88 4.4% (3.9%-5.0%)

By stage at diagnosis

Route to diagnosis	Stage I	Stage II	Stage III	Stage IV	Unknown
Screening referral	335 11.9% (11.2%-12.6%)	142 9.4% (8.6%-10.3%)	57 3.3% (2.8%-3.8%)	9 0.4% (0.3%-0.6%)	5 0.3% (0.2%-0.5%)
Red-flag referral	1,005 35.6% (34.6%-36.6%)	698 46.3% (44.8%-47.7%)	728 42.1% (40.8%-43.5%)	563 26.8% (25.8%-27.9%)	300 17.0% (16.0%-18.0%)
Emergency presentation	186 6.6% (6.1%-7.1%)	192 12.7% (11.8%-13.7%)	342 19.8% (18.7%-20.9%)	900 42.9% (41.7%-44.2%)	683 38.7% (37.4%-40.0%)
Elective inpatient admission	56 2.0% (1.7%-2.3%)	23 1.5% (1.2%-1.9%)	41 2.4% (2.0%-2.8%)	66 3.2% (2.8%-3.6%)	66 3.7% (3.2%-4.3%)
Other GP referral to outpatients	756 26.8% (25.9%-27.8%)	270 17.9% (16.8%-19.0%)	345 20.0% (18.9%-21.1%)	319 15.2% (14.3%-16.1%)	377 21.4% (20.3%-22.5%)
Other outpatient appointment	396 14.0% (13.3%-14.8%)	154 10.2% (9.3%-11.1%)	182 10.5% (9.7%-11.4%)	185 8.8% (8.1%-9.5%)	212 12.0% (11.2%-12.9%)
Death certificate only/ Unknown	88 3.1% (2.8%-3.5%)	31 2.0% (1.7%-2.5%)	33 1.9% (1.6%-2.3%)	55 2.6% (2.2%-3.0%)	122 6.9% (6.2%-7.6%)

By year of diagnosis

Route to diagnosis	2018	2019	2020
Screening referral	588 5.8% (5.4%-6.3%)	605 5.9% (5.4%-6.3%)	451 4.8% (4.4%-5.3%)
Red-flag referral	3,313 32.9% (32.0%-33.8%)	3,430 33.2% (32.3%-34.1%)	3,140 33.5% (32.6%-34.5%)
Emergency presentation	2,270 22.5% (21.7%-23.4%)	2,259 21.9% (21.1%-22.7%)	2,379 25.4% (24.5%-26.3%)
Elective inpatient admission	306 3.0% (2.7%-3.4%)	246 2.4% (2.1%-2.7%)	203 2.2% (1.9%-2.5%)
Other GP referral to outpatients	2,077 20.6% (19.8%-21.4%)	2,273 22.0% (21.2%-22.8%)	1,854 19.8% (19.0%-20.6%)
Other outpatient appointment	1,171 11.6% (11.0%-12.3%)	1,152 11.2% (10.6%-11.8%)	1,062 11.3% (10.7%-12.0%)
Death certificate only	20 0.2% (0.1%-0.3%)	38 0.4% (0.3%-0.5%)	39 0.4% (0.3%-0.6%)
Unknown	329 3.3% (2.9%-3.6%)	321 3.1% (2.8%-3.5%)	238 2.5% (2.2%-2.9%)

COLORECTAL CANCER

Average number of colorectal cancer cases diagnosed each year during 2018-2020 by route to diagnosis
(Including proportions and 95% confidence intervals)

By gender

Route to diagnosis	Males	Females
Screening referral	68 10.3% (9.0%-11.7%)	35 6.9% (5.8%-8.3%)
Red-flag referral	230 34.7% (32.6%-36.8%)	165 32.2% (30.0%-34.6%)
Emergency presentation	176 26.5% (24.6%-28.5%)	151 29.6% (27.4%-32.0%)
Elective inpatient admission	24 3.7% (2.9%-4.6%)	16 3.1% (2.3%-4.1%)
Other GP referral to outpatients	99 14.8% (13.4%-16.5%)	93 18.2% (16.4%-20.2%)
Other outpatient appointment	57 8.6% (7.5%-9.9%)	42 8.2% (7.0%-9.7%)
Death certificate only/ Unknown	9 1.4% (1.0%-2.0%)	9 1.7% (1.2%-2.5%)

By age group

Route to diagnosis	Aged 0 to 64	Aged 65 to 74	Aged 75 and over	Screening age (aged 60 to 74)
Screening referral	32 9.1% (7.5%-11.0%)	69 20.6% (18.2%-23.2%)	2 0.4% (0.2%-0.9%)	102 21.4% (19.3%-23.6%)
Red-flag referral	128 36.3% (33.4%-39.2%)	109 32.4% (29.6%-35.4%)	157 32.5% (30.1%-35.0%)	157 33.0% (30.6%-35.5%)
Emergency presentation	79 22.2% (19.8%-24.8%)	72 21.4% (19.0%-24.1%)	177 36.5% (34.1%-39.0%)	93 19.5% (17.5%-21.6%)
Elective inpatient admission	17 4.8% (3.7%-6.3%)	10 3.1% (2.2%-4.3%)	13 2.6% (1.9%-3.6%)	15 3.2% (2.4%-4.3%)
Other GP referral to outpatients	57 16.1% (14.0%-18.4%)	46 13.7% (11.8%-16.0%)	88 18.3% (16.3%-20.3%)	66 13.9% (12.2%-15.8%)
Other outpatient appointment	36 10.1% (8.4%-12.0%)	27 7.9% (6.4%-9.7%)	37 7.6% (6.4%-9.1%)	38 8.1% (6.8%-9.6%)
Death certificate only/ Unknown	5 1.4% (0.9%-2.3%)	3 0.9% (0.5%-1.7%)	10 2.1% (1.5%-2.9%)	4 0.9% (0.5%-1.6%)

By Health and Social Care Trust

Route to diagnosis	Belfast	Northern	South Eastern	Southern	Western
Screening referral	24 10.8% (8.6%-13.4%)	23 7.7% (6.1%-9.6%)	18 7.2% (5.6%-9.3%)	21 9.7% (7.7%-12.2%)	17 9.6% (7.4%-12.3%)
Red-flag referral	71 32.3% (28.8%-35.9%)	103 34.1% (31.1%-37.2%)	79 30.9% (27.8%-34.3%)	73 33.7% (30.2%-37.5%)	69 38.1% (34.1%-42.2%)
Emergency presentation	62 28.3% (25.0%-31.9%)	88 29.0% (26.2%-32.0%)	74 29.1% (26.0%-32.4%)	52 24.2% (21.1%-27.6%)	51 28.1% (24.5%-32.0%)
Elective inpatient admission	9 4.1% (2.8%-5.9%)	4 1.3% (0.8%-2.3%)	7 2.8% (1.8%-4.2%)	10 4.5% (3.1%-6.3%)	10 5.7% (4.0%-8.0%)
Other GP referral to outpatients	34 15.5% (12.9%-18.4%)	52 17.3% (14.9%-19.8%)	48 18.9% (16.3%-21.8%)	36 16.5% (13.8%-19.5%)	22 11.9% (9.5%-14.9%)
Other outpatient appointment	16 7.4% (5.7%-9.7%)	29 9.5% (7.7%-11.5%)	23 9.0% (7.2%-11.3%)	21 9.9% (7.8%-12.4%)	10 5.5% (3.9%-7.8%)
Death certificate only/ Unknown	4 1.7% (0.9%-3.0%)	4 1.2% (0.7%-2.2%)	5 2.1% (1.3%-3.4%)	3 1.5% (0.8%-2.8%)	2 1.1% (0.5%-2.4%)

By deprivation quintile

Route to diagnosis	Most deprived	Quintile 2	Quintile 3	Quintile 4	Least deprived
Screening referral	19 9.6% (7.4%-12.2%)	20 8.1% (6.3%-10.3%)	22 9.4% (7.4%-11.8%)	19 8.0% (6.2%-10.2%)	24 9.3% (7.4%-11.5%)
Red-flag referral	66 33.7% (30.0%-37.6%)	79 31.8% (28.5%-35.2%)	78 33.2% (29.9%-36.8%)	80 33.1% (29.8%-36.7%)	92 36.1% (32.8%-39.6%)
Emergency presentation	53 27.4% (23.9%-31.1%)	75 30.1% (27.0%-33.5%)	66 28.1% (24.9%-31.6%)	70 28.9% (25.7%-32.3%)	64 24.9% (22.0%-28.1%)
Elective inpatient admission	6 3.1% (2.0%-4.8%)	11 4.3% (3.1%-6.0%)	7 3.1% (2.1%-4.7%)	7 2.9% (1.9%-4.4%)	9 3.5% (2.4%-5.1%)
Other GP referral to outpatients	32 16.6% (13.8%-19.8%)	40 16.3% (13.8%-19.1%)	41 17.3% (14.7%-20.3%)	36 14.9% (12.5%-17.6%)	42 16.6% (14.1%-19.4%)
Other outpatient appointment	16 8.0% (6.1%-10.5%)	20 7.9% (6.2%-10.1%)	18 7.5% (5.8%-9.7%)	25 10.5% (8.4%-12.9%)	21 8.2% (6.5%-10.4%)
Death certificate only/ Unknown	3 1.7% (0.9%-3.1%)	4 1.5% (0.8%-2.6%)	3 1.3% (0.7%-2.4%)	4 1.8% (1.0%-3.0%)	4 1.4% (0.8%-2.5%)

By stage at diagnosis

Route to diagnosis	Stage I	Stage II	Stage III	Stage IV	Unknown
Screening referral	43 23.4% (20.0%-27.1%)	23 8.4% (6.7%-10.5%)	30 9.3% (7.6%-11.3%)	4 1.5% (0.9%-2.7%)	4 2.7% (1.5%-4.8%)
Red-flag referral	58 31.3% (27.6%-35.3%)	106 38.2% (35.0%-41.6%)	130 40.6% (37.5%-43.7%)	74 28.5% (25.4%-31.8%)	28 20.5% (16.8%-24.7%)
Emergency presentation	10 5.4% (3.8%-7.7%)	68 24.5% (21.7%-27.6%)	68 21.4% (18.9%-24.1%)	127 48.8% (45.3%-52.3%)	55 40.5% (35.8%-45.3%)
Elective inpatient admission	8 4.3% (2.9%-6.4%)	10 3.5% (2.4%-5.0%)	11 3.3% (2.4%-4.7%)	8 3.2% (2.2%-4.7%)	3 2.5% (1.3%-4.5%)
Other GP referral to outpatients	41 22.5% (19.2%-26.1%)	45 16.2% (13.9%-18.9%)	53 16.5% (14.3%-19.0%)	27 10.4% (8.4%-12.7%)	26 19.0% (15.5%-23.1%)
Other outpatient appointment	21 11.4% (9.0%-14.3%)	24 8.7% (6.9%-10.8%)	26 8.0% (6.5%-9.9%)	16 6.0% (4.6%-7.9%)	13 9.6% (7.1%-12.9%)
Other/ Unknown	3 1.6% (0.9%-3.1%)	1 0.5% (0.2%-1.2%)	3 0.8% (0.4%-1.6%)	4 1.5% (0.9%-2.7%)	7 5.2% (3.4%-7.8%)

By stage at diagnosis for patients of screening age (aged 60 to 74)

Route to diagnosis	Stage I	Stage II	Stage III	Stage IV	Unknown
Screening referral	42 44.4% (38.8%-50.2%)	22 19.0% (15.3%-23.5%)	29 20.9% (17.3%-25.0%)	4 4.1% (2.4%-7.0%)	4 14.5% (8.3%-24.1%)
Red-flag referral	24 24.8% (20.2%-30.1%)	41 35.2% (30.4%-40.4%)	56 39.7% (35.1%-44.4%)	32 32.5% (27.4%-38.1%)	5 18.4% (11.3%-28.6%)
Emergency presentation	4 4.2% (2.4%-7.2%)	22 19.0% (15.3%-23.5%)	21 14.7% (11.7%-18.4%)	41 41.8% (36.3%-47.5%)	5 19.7% (12.3%-30.0%)
Elective inpatient admission	3 3.1% (1.7%-5.9%)	5 4.0% (2.4%-6.6%)	4 2.6% (1.5%-4.6%)	3 3.4% (1.9%-6.2%)	1 2.6% (0.7%-9.1%)
Other GP referral to outpatients	12 12.9% (9.5%-17.3%)	18 15.3% (12.0%-19.5%)	20 14.3% (11.2%-17.9%)	9 8.9% (6.1%-12.7%)	7 28.9% (20.0%-40.0%)
Other outpatient appointment	9 9.8% (6.9%-13.8%)	8 6.8% (4.6%-9.9%)	10 6.9% (4.8%-9.7%)	8 8.2% (5.6%-11.9%)	3 13.2% (7.3%-22.6%)
Other/ Unknown	1 0.7% (0.2%-2.5%)	1 0.6% (0.2%-2.0%)	1 1.0% (0.4%-2.4%)	1 1.0% (0.4%-3.0%)	1 2.6% (0.7%-9.1%)

By year of diagnosis

Route to diagnosis	2018	2019	2020
Screening referral	93 7.9% (6.5%-9.5%)	132 10.7% (9.1%-12.5%)	86 7.8% (6.4%-9.5%)
Red-flag referral	392 33.1% (30.5%-35.9%)	423 34.1% (31.6%-36.8%)	370 33.5% (30.8%-36.4%)
Emergency presentation	317 26.8% (24.4%-29.4%)	321 25.9% (23.5%-28.4%)	345 31.3% (28.6%-34.0%)
Elective inpatient admission	56 4.7% (3.7%-6.1%)	34 2.7% (2.0%-3.8%)	30 2.7% (1.9%-3.9%)
Other GP referral to outpatients	203 17.2% (15.1%-19.4%)	206 16.6% (14.7%-18.8%)	166 15.0% (13.0%-17.3%)
Other outpatient appointment	108 9.1% (7.6%-10.9%)	106 8.6% (7.1%-10.2%)	84 7.6% (6.2%-9.3%)
Death certificate only/ Unknown	14 1.2% (0.7%-2.0%)	17 1.4% (0.9%-2.2%)	23 2.1% (1.4%-3.1%)

FEMALE BREAST CANCER

Average number of female breast cancer cases diagnosed each year during 2018-2020 by route to diagnosis
(Including proportions and 95% confidence intervals)

By age group

Route to diagnosis	Aged 0 to 64	Aged 65 to 74	Aged 75 and over	Screening age (aged 50 to 70)
Screening referral	261 32.4% (30.6%-34.3%)	134 42.1% (39.0%-45.2%)	17 5.2% (4.0%-6.8%)	372 50.9% (48.8%-53.0%)
Red-flag referral	361 44.8% (42.8%-46.8%)	124 38.8% (35.8%-42.0%)	206 63.3% (60.2%-66.3%)	242 33.0% (31.1%-35.0%)
Emergency presentation	14 1.8% (1.3%-2.4%)	13 4.1% (3.0%-5.5%)	30 9.2% (7.6%-11.2%)	14 1.9% (1.4%-2.5%)
Other GP referral to outpatients	86 10.6% (9.5%-11.9%)	26 8.2% (6.7%-10.2%)	40 12.4% (10.5%-14.6%)	55 7.5% (6.5%-8.7%)
Other outpatient appointment	67 8.3% (7.2%-9.4%)	16 5.1% (3.9%-6.7%)	22 6.8% (5.4%-8.5%)	35 4.7% (3.9%-5.7%)
Other/ Unknown	17 2.1% (1.6%-2.8%)	5 1.7% (1.0%-2.7%)	10 3.1% (2.2%-4.4%)	
- Elective inpatient admission				2 0.2% (0.1%-0.5%)
- Death certificate only/ Unknown				13 1.7% (1.3%-2.4%)

By Health and Social Care Trust

Route to diagnosis	Belfast	Northern	South Eastern	Southern	Western
Screening referral	74 26.7% (23.8%-29.8%)	105 27.4% (24.9%-30.0%)	74 27.0% (24.1%-30.2%)	91 31.8% (28.8%-35.0%)	69 29.8% (26.6%-33.3%)
Red-flag referral	130 46.9% (43.5%-50.3%)	192 50.2% (47.3%-53.1%)	134 48.8% (45.5%-52.3%)	123 43.3% (40.0%-46.6%)	112 48.2% (44.5%-51.9%)
Emergency presentation	12 4.5% (3.3%-6.1%)	14 3.6% (2.6%-4.8%)	11 3.9% (2.8%-5.4%)	11 3.7% (2.7%-5.2%)	10 4.3% (3.0%-6.1%)
Other GP referral to outpatients	32 11.6% (9.6%-13.9%)	38 10.0% (8.4%-11.9%)	24 8.6% (6.9%-10.7%)	33 11.5% (9.5%-13.8%)	26 11.0% (8.9%-13.6%)
Other outpatient appointment	23 8.2% (6.5%-10.3%)	24 6.3% (5.0%-7.8%)	23 8.4% (6.7%-10.5%)	23 8.0% (6.3%-10.0%)	13 5.5% (4.0%-7.4%)
Other/ Unknown	6 2.2% (1.4%-3.4%)	10 2.6% (1.8%-3.7%)	9 3.3% (2.3%-4.7%)	5 1.8% (1.1%-2.9%)	3 1.1% (0.6%-2.2%)

By deprivation quintile

Route to diagnosis	Most deprived	Quintile 2	Quintile 3	Quintile 4	Least deprived
Screening referral	68 28.0% (24.8%-31.3%)	83 28.1% (25.2%-31.1%)	86 28.9% (26.0%-31.9%)	96 30.4% (27.5%-33.4%)	79 26.7% (23.9%-29.7%)
Red-flag referral	118 48.4% (44.8%-52.0%)	151 50.8% (47.6%-54.1%)	143 48.2% (44.9%-51.5%)	144 45.5% (42.4%-48.7%)	135 45.4% (42.2%-48.7%)
Emergency presentation	10 4.1% (2.9%-5.8%)	13 4.5% (3.3%-6.1%)	13 4.3% (3.1%-5.8%)	13 4.2% (3.1%-5.7%)	8 2.7% (1.8%-4.0%)
Other GP referral to outpatients	29 12.0% (9.8%-14.6%)	24 8.1% (6.5%-10.1%)	29 9.7% (7.9%-11.8%)	32 10.0% (8.2%-12.1%)	39 13.0% (11.0%-15.4%)
Other outpatient appointment	15 6.3% (4.7%-8.3%)	21 7.0% (5.5%-8.8%)	22 7.3% (5.8%-9.2%)	23 7.4% (5.9%-9.2%)	24 8.1% (6.5%-10.1%)
Other/ Unknown	3 1.2% (0.6%-2.3%)	5 1.6% (0.9%-2.6%)	5 1.7% (1.0%-2.8%)	8 2.5% (1.7%-3.7%)	12 4.0% (2.9%-5.6%)

By stage at diagnosis

Route to diagnosis	Stage I	Stage II	Stage III	Stage IV	Unknown
Screening referral	273 46.0% (43.7%-48.3%)	111 19.7% (17.9%-21.6%)	23 14.0% (11.2%-17.3%)	4 4.5% (2.5%-7.9%)	2 3.6% (1.6%-8.2%)
Red-flag referral	190 32.0% (29.9%-34.2%)	340 60.1% (57.8%-62.4%)	107 65.3% (61.0%-69.4%)	31 38.1% (32.2%-44.3%)	23 50.0% (41.8%-58.2%)
Emergency presentation	10 1.7% (1.2%-2.4%)	12 2.1% (1.5%-2.9%)	5 2.8% (1.7%-4.7%)	26 32.4% (26.8%-38.5%)	5 10.1% (6.1%-16.3%)
Other GP referral to outpatients	61 10.3% (9.0%-11.8%)	54 9.6% (8.3%-11.1%)	18 11.0% (8.5%-14.0%)	11 13.5% (9.8%-18.4%)	8 16.7% (11.4%-23.8%)
Other outpatient appointment	49 8.3% (7.1%-9.7%)	38 6.7% (5.6%-8.0%)	9 5.5% (3.8%-7.9%)	5 6.6% (4.1%-10.4%)	3 7.2% (4.0%-12.8%)
Other/ Unknown	10 1.7% (1.2%-2.5%)	10 1.8% (1.3%-2.6%)	2 1.4% (0.7%-2.9%)	4 4.9% (2.8%-8.4%)	6 12.3% (7.8%-18.8%)

By stage at diagnosis for patients of screening age (aged 50 to 70)

Route to diagnosis	Stage I	Stage II	Stage III	Stage IV	Unknown
Screening referral	242 68.1% (65.3%-70.9%)	104 40.5% (37.1%-44.0%)	22 26.7% (21.6%-32.6%)	3 11.2% (6.2%-19.5%)	1 14.3% (5.7%-31.5%)
Red-flag referral	68 19.2% (16.9%-21.6%)	113 44.2% (40.7%-47.7%)	45 55.6% (49.3%-61.7%)	11 38.2% (28.8%-48.6%)	4 42.9% (26.5%-60.9%)
Emergency presentation	2 0.5% (0.2%-1.1%)	2 0.9% (0.4%-1.9%)	2 2.9% (1.4%-5.8%)	7 23.6% (16.0%-33.4%)	0 -
Other GP referral to outpatients	22 6.3% (5.0%-7.9%)	20 7.9% (6.2%-10.0%)	6 7.8% (5.1%-11.9%)	3 11.2% (6.2%-19.5%)	3 28.6% (15.3%-47.1%)
Other outpatient appointment	15 4.1% (3.1%-5.5%)	12 4.7% (3.4%-6.4%)	4 5.3% (3.2%-8.9%)	3 10.1% (5.4%-18.1%)	1 7.1% (2.0%-22.6%)
Other/ Unknown	6 1.8% (1.1%-2.8%)	5 1.8% (1.1%-3.0%)	1 1.6% (0.6%-4.2%)	2 5.6% (2.4%-12.5%)	0 -

By year of diagnosis

Route to diagnosis	2018	2019	2020
Screening referral	459 30.1% (27.8%-32.4%)	439 29.9% (27.6%-32.3%)	340 25.0% (22.8%-27.3%)
Red-flag referral	685 44.9% (42.4%-47.4%)	673 45.9% (43.3%-48.4%)	716 52.6% (50.0%-55.3%)
Emergency presentation	48 3.1% (2.4%-4.1%)	68 4.6% (3.7%-5.8%)	56 4.1% (3.2%-5.3%)
Other GP referral to outpatients	178 11.7% (10.1%-13.4%)	154 10.5% (9.0%-12.2%)	125 9.2% (7.8%-10.8%)
Other outpatient appointment	116 7.6% (6.4%-9.0%)	100 6.8% (5.6%-8.2%)	99 7.3% (6.0%-8.8%)
Other/ Unknown	40 2.6% (1.9%-3.5%)	33 2.2% (1.6%-3.1%)	25 1.8% (1.2%-2.7%)

LUNG CANCER (INCLUDING TRACHEA)

Average number of lung cancer cases diagnosed each year during 2018-2020 by route to diagnosis

(Including proportions and 95% confidence intervals)

By gender

Route to diagnosis	Males	Females
Red-flag referral	149 21.1% (19.4%-22.9%)	140 21.5% (19.8%-23.4%)
Emergency presentation	301 42.7% (40.6%-44.8%)	252 38.7% (36.6%-40.9%)
Elective inpatient admission	16 2.3% (1.8%-3.0%)	14 2.1% (1.6%-2.9%)
Other GP referral to outpatients	128 18.1% (16.5%-19.8%)	133 20.4% (18.7%-22.3%)
Other outpatient appointment	87 12.4% (11.0%-13.8%)	89 13.7% (12.2%-15.3%)
Death certificate only	2 0.3% (0.2%-0.7%)	3 0.5% (0.2%-0.9%)
Unknown	22 3.2% (2.5%-4.0%)	20 3.0% (2.3%-3.9%)

By age group

Route to diagnosis	Aged 0 to 64	Aged 65 to 74	Aged 75 and over
Red-flag referral	74 23.0% (20.4%-25.7%)	116 24.6% (22.4%-26.9%)	99 17.5% (15.8%-19.4%)
Emergency presentation	129 40.1% (37.1%-43.3%)	177 37.5% (35.0%-40.1%)	247 43.8% (41.5%-46.2%)
Elective inpatient admission	10 3.0% (2.1%-4.3%)	10 2.1% (1.5%-3.0%)	11 1.9% (1.3%-2.7%)
Other GP referral to outpatients	53 16.5% (14.3%-19.0%)	96 20.2% (18.2%-22.4%)	112 19.9% (18.1%-21.9%)
Other outpatient appointment	47 14.8% (12.7%-17.1%)	59 12.6% (10.9%-14.4%)	70 12.4% (10.9%-14.1%)
Death certificate only	2 0.5% (0.2%-1.2%)	2 0.4% (0.2%-0.9%)	2 0.3% (0.1%-0.7%)
Unknown	7 2.1% (1.3%-3.2%)	12 2.5% (1.8%-3.5%)	23 4.1% (3.3%-5.2%)

By Health and Social Care Trust

Route to diagnosis	Belfast	Northern	South Eastern	Southern	Western
Red-flag referral	56 16.9% (14.7%-19.3%)	73 22.2% (19.8%-24.9%)	48 20.3% (17.5%-23.4%)	50 20.9% (18.1%-24.0%)	62 28.1% (24.8%-31.7%)
Emergency presentation	146 44.3% (41.2%-47.4%)	121 36.7% (33.8%-39.8%)	109 45.5% (41.9%-49.2%)	98 40.8% (37.3%-44.4%)	80 36.3% (32.7%-40.1%)
Elective inpatient admission	6 1.7% (1.1%-2.7%)	13 3.8% (2.8%-5.2%)	3 1.3% (0.7%-2.4%)	7 2.9% (1.9%-4.4%)	2 0.9% (0.4%-2.0%)
Other GP referral to outpatients	65 19.6% (17.2%-22.2%)	66 20.1% (17.7%-22.7%)	40 16.9% (14.3%-19.8%)	47 19.6% (16.9%-22.7%)	43 19.5% (16.6%-22.7%)
Other outpatient appointment	41 12.4% (10.5%-14.6%)	44 13.3% (11.4%-15.6%)	31 12.8% (10.6%-15.5%)	31 12.8% (10.6%-15.5%)	30 13.8% (11.4%-16.7%)
Death certificate only/ Unknown	17 5.1% (3.9%-6.7%)	12 3.7% (2.7%-5.1%)	8 3.2% (2.1%-4.8%)	7 2.9% (1.9%-4.4%)	3 1.4% (0.7%-2.6%)

By deprivation quintile

Route to diagnosis	Most deprived	Quintile 2	Quintile 3	Quintile 4	Least deprived
Red-flag referral	86 22.8% (20.4%-25.3%)	59 20.4% (17.8%-23.2%)	61 23.5% (20.6%-26.6%)	49 21.0% (18.1%-24.1%)	34 17.3% (14.5%-20.6%)
Emergency presentation	155 41.1% (38.3%-44.0%)	124 42.5% (39.3%-45.8%)	99 38.3% (35.0%-41.8%)	87 37.1% (33.6%-40.7%)	89 45.1% (41.2%-49.1%)
Elective inpatient admission	8 2.2% (1.5%-3.2%)	5 1.7% (1.0%-2.8%)	5 2.1% (1.3%-3.3%)	8 3.3% (2.2%-4.9%)	4 2.0% (1.2%-3.5%)
Other GP referral to outpatients	67 17.9% (15.8%-20.2%)	56 19.2% (16.8%-22.0%)	53 20.5% (17.8%-23.5%)	49 21.0% (18.1%-24.1%)	36 18.0% (15.1%-21.3%)
Other outpatient appointment	50 13.3% (11.4%-15.4%)	38 12.9% (10.9%-15.3%)	32 12.5% (10.4%-15.0%)	30 13.0% (10.7%-15.7%)	26 13.3% (10.8%-16.3%)
Death certificate only/ Unknown	10 2.7% (1.9%-3.9%)	9 3.2% (2.2%-4.6%)	8 3.1% (2.1%-4.6%)	11 4.7% (3.4%-6.5%)	8 4.2% (2.9%-6.1%)

By stage at diagnosis

Route to diagnosis	Stage I	Stage II	Stage III	Stage IV	Unknown
Red-flag referral	42 16.7% (14.2%-19.6%)	35 30.1% (25.5%-35.1%)	96 30.4% (27.5%-33.4%)	110 18.6% (16.8%-20.4%)	6 7.1% (4.5%-11.1%)
Emergency presentation	47 18.9% (16.2%-21.8%)	27 23.4% (19.3%-28.1%)	105 33.2% (30.3%-36.2%)	338 56.8% (54.5%-59.1%)	36 45.2% (39.0%-51.5%)
Other GP referral to outpatients	85 34.0% (30.7%-37.5%)	28 24.6% (20.3%-29.4%)	64 20.1% (17.6%-22.7%)	72 12.2% (10.7%-13.8%)	11 14.2% (10.4%-19.2%)
Other outpatient appointment	64 25.5% (22.5%-28.7%)	21 17.9% (14.2%-22.3%)	37 11.7% (9.8%-13.9%)	45 7.5% (6.4%-8.8%)	10 13.0% (9.3%-17.8%)
Other/ Unknown	12 4.9% (3.6%-6.7%)	5 4.0% (2.4%-6.7%)	15 4.7% (3.6%-6.3%)	29 4.9% (4.0%-6.0%)	16 20.5% (15.9%-26.1%)

By year of diagnosis

Route to diagnosis	2018	2019	2020
Red-flag referral	281 21.2% (19.1%-23.5%)	330 23.7% (21.5%-26.0%)	256 18.9% (16.9%-21.1%)
Emergency presentation	524 39.5% (36.9%-42.2%)	557 39.9% (37.4%-42.5%)	579 42.8% (40.2%-45.4%)
Elective inpatient admission	36 2.7% (2.0%-3.7%)	30 2.2% (1.5%-3.1%)	25 1.8% (1.3%-2.7%)
Other GP referral to outpatients	237 17.9% (15.9%-20.0%)	270 19.4% (17.4%-21.5%)	276 20.4% (18.3%-22.6%)
Other outpatient appointment	192 14.5% (12.7%-16.5%)	169 12.1% (10.5%-13.9%)	169 12.5% (10.8%-14.4%)
Death certificate only/ Unknown	55 4.2% (3.2%-5.4%)	39 2.8% (2.1%-3.8%)	48 3.5% (2.7%-4.7%)

PROSTATE CANCER

Average number of prostate cancer cases diagnosed each year during 2018-2020 by route to diagnosis
(Including proportions and 95% confidence intervals)

By age group

Route to diagnosis	Aged 0 to 64	Aged 65 to 74	Aged 75 and over
Red-flag referral	153 47.6% (44.5%-50.8%)	268 50.2% (47.8%-52.7%)	198 44.0% (41.4%-46.7%)
Emergency presentation	13 4.1% (3.1%-5.6%)	28 5.2% (4.3%-6.4%)	64 14.1% (12.4%-16.1%)
Elective inpatient admission	10 3.0% (2.1%-4.3%)	16 2.9% (2.2%-3.9%)	9 2.1% (1.4%-3.0%)
Other GP referral to outpatients	100 31.2% (28.3%-34.1%)	150 28.1% (25.9%-30.3%)	113 25.2% (22.9%-27.5%)
Other outpatient appointment	34 10.6% (8.8%-12.7%)	62 11.6% (10.1%-13.3%)	52 11.5% (9.9%-13.3%)
Death certificate only/ Unknown	11 3.5% (2.5%-4.9%)	10 1.9% (1.3%-2.7%)	14 3.1% (2.3%-4.2%)

By Health and Social Care Trust

Route to diagnosis	Belfast	Northern	South Eastern	Southern	Western
Red-flag referral	93 43.0% (39.2%-46.8%)	178 46.9% (44.0%-49.8%)	141 49.5% (46.1%-52.8%)	92 46.0% (42.1%-50.0%)	116 51.5% (47.7%-55.2%)
Emergency presentation	20 9.4% (7.4%-11.9%)	27 7.2% (5.8%-8.9%)	25 8.8% (7.1%-10.9%)	19 9.6% (7.5%-12.3%)	13 5.8% (4.2%-7.8%)
Elective inpatient admission	6 2.8% (1.8%-4.3%)	8 2.1% (1.4%-3.1%)	11 4.0% (2.9%-5.5%)	5 2.3% (1.4%-3.9%)	5 2.1% (1.2%-3.4%)
Other GP referral to outpatients	63 29.1% (25.8%-32.7%)	117 30.8% (28.2%-33.5%)	59 20.8% (18.2%-23.6%)	55 27.2% (23.8%-30.9%)	70 31.1% (27.8%-34.7%)
Other outpatient appointment	28 13.1% (10.7%-15.9%)	39 10.4% (8.7%-12.3%)	38 13.4% (11.2%-15.8%)	22 11.0% (8.7%-13.7%)	20 8.8% (6.9%-11.2%)
Death certificate only/ Unknown	6 2.6% (1.6%-4.2%)	10 2.6% (1.9%-3.7%)	10 3.6% (2.6%-5.1%)	8 3.8% (2.6%-5.7%)	2 0.7% (0.3%-1.7%)

By deprivation quintile

Route to diagnosis	Most deprived	Quintile 2	Quintile 3	Quintile 4	Least deprived
Red-flag referral	88 47.0% (42.9%-51.2%)	126 47.8% (44.3%-51.3%)	129 48.7% (45.3%-52.2%)	138 47.7% (44.4%-51.0%)	140 46.1% (42.9%-49.3%)
Emergency presentation	18 9.8% (7.6%-12.6%)	23 8.8% (7.1%-11.0%)	19 7.2% (5.6%-9.2%)	24 8.3% (6.6%-10.3%)	20 6.7% (5.3%-8.5%)
Elective inpatient admission	3 1.6% (0.8%-3.0%)	7 2.7% (1.7%-4.0%)	7 2.8% (1.8%-4.2%)	7 2.4% (1.6%-3.7%)	10 3.4% (2.4%-4.8%)
Other GP referral to outpatients	51 27.2% (23.7%-31.0%)	74 27.9% (24.9%-31.2%)	78 29.4% (26.4%-32.7%)	78 26.8% (24.0%-29.9%)	84 27.7% (24.9%-30.7%)
Other outpatient appointment	23 12.3% (9.9%-15.3%)	28 10.7% (8.8%-13.1%)	24 9.2% (7.4%-11.4%)	35 12.1% (10.1%-14.4%)	37 12.2% (10.2%-14.5%)
Death certificate only/ Unknown	4 2.0% (1.1%-3.5%)	5 2.0% (1.2%-3.3%)	7 2.7% (1.7%-4.0%)	8 2.6% (1.8%-3.9%)	12 3.9% (2.8%-5.3%)

By stage at diagnosis

Route to diagnosis	Stage I	Stage II	Stage III	Stage IV	Unknown
Red-flag referral	243 43.2% (40.9%-45.6%)	47 52.2% (46.3%-58.1%)	169 59.1% (55.8%-62.4%)	110 47.7% (44.0%-51.4%)	52 37.2% (32.7%-41.9%)
Elective inpatient admission	16 2.9% (2.2%-3.8%)	3 3.7% (2.0%-6.6%)	6 2.1% (1.3%-3.3%)	6 2.6% (1.7%-4.1%)	3 2.4% (1.3%-4.4%)
Other GP referral to outpatients	205 36.5% (34.2%-38.8%)	26 29.0% (24.0%-34.7%)	72 25.1% (22.3%-28.1%)	31 13.6% (11.3%-16.4%)	30 21.3% (17.7%-25.5%)
Other outpatient appointment	72 12.8% (11.3%-14.5%)	10 10.7% (7.5%-14.9%)	26 9.2% (7.5%-11.4%)	25 11.0% (8.9%-13.6%)	14 10.3% (7.7%-13.6%)
Other/ Unknown	26 4.6% (3.7%-5.7%)	4 4.4% (2.5%-7.6%)	13 4.4% (3.3%-6.0%)	58 25.1% (22.0%-28.4%)	40 28.8% (24.6%-33.3%)

By year of diagnosis

Route to diagnosis	2018	2019	2020
Red-flag referral	619 47.5% (44.8%-50.3%)	655 47.1% (44.5%-49.8%)	586 47.8% (45.0%-50.6%)
Emergency presentation	109 8.4% (7.0%-10.0%)	103 7.4% (6.1%-8.9%)	103 8.4% (7.0%-10.1%)
Elective inpatient admission	34 2.6% (1.9%-3.6%)	33 2.4% (1.7%-3.3%)	37 3.0% (2.2%-4.1%)
Other GP referral to outpatients	359 27.6% (25.2%-30.1%)	402 28.9% (26.6%-31.4%)	330 26.9% (24.5%-29.4%)
Other outpatient appointment	145 11.1% (9.5%-13.0%)	149 10.7% (9.2%-12.5%)	149 12.1% (10.4%-14.1%)
Death certificate only/ Unknown	36 2.8% (2.0%-3.8%)	48 3.5% (2.6%-4.5%)	22 1.8% (1.2%-2.7%)

HEAD AND NECK CANCER

Average number of head and neck cancer cases diagnosed each year during 2018-2020 by route to diagnosis
(Including proportions and 95% confidence intervals)

By gender

Route to diagnosis	Males	Females
Red-flag referral	109 44.8% (41.2%-48.4%)	47 40.6% (35.5%-45.8%)
Emergency presentation	27 11.3% (9.2%-13.8%)	12 10.1% (7.4%-13.8%)
Elective inpatient admission	4 1.6% (0.9%-2.9%)	2 1.4% (0.6%-3.3%)
Other GP referral to outpatients	53 22.0% (19.1%-25.1%)	28 24.6% (20.4%-29.4%)
Other outpatient appointment	43 17.6% (15.0%-20.5%)	24 20.6% (16.6%-25.2%)
Death certificate only/ Unknown	7 2.7% (1.8%-4.2%)	3 2.6% (1.4%-4.9%)

By age group

Route to diagnosis	Aged 0 to 64	Aged 65 to 74	Aged 75 and over
Red-flag referral	80 44.1% (40.0%-48.3%)	50 49.7% (44.1%-55.3%)	25 33.2% (27.3%-39.6%)
Emergency presentation	15 8.4% (6.4%-11.1%)	12 11.5% (8.4%-15.6%)	12 16.1% (11.9%-21.5%)
Other GP referral to outpatients	43 23.4% (20.1%-27.2%)	19 19.1% (15.1%-23.9%)	20 26.5% (21.1%-32.6%)
Other outpatient appointment	37 20.5% (17.3%-24.1%)	15 14.8% (11.3%-19.2%)	14 18.8% (14.2%-24.5%)
Other/ Unknown	6 3.5% (2.2%-5.4%)	5 4.9% (3.0%-8.0%)	4 5.4% (3.1%-9.2%)

By Health and Social Care Trust

Route to diagnosis	Belfast	Northern	South Eastern	Southern	Western
Red-flag referral	41 48.2% (42.2%-54.3%)	39 48.2% (42.0%-54.4%)	28 36.6% (30.7%-43.0%)	22 38.3% (31.4%-45.7%)	24 44.0% (36.6%-51.6%)
Emergency presentation	11 13.3% (9.7%-18.1%)	8 9.8% (6.7%-14.2%)	8 10.3% (7.1%-14.9%)	6 9.7% (6.2%-15.0%)	6 10.8% (7.0%-16.5%)
Other GP referral to outpatients	19 22.7% (18.0%-28.3%)	17 21.2% (16.6%-26.8%)	19 24.6% (19.5%-30.5%)	13 22.3% (16.8%-29.0%)	13 23.5% (17.7%-30.5%)
Other outpatient appointment	12 13.7% (10.0%-18.5%)	14 17.6% (13.3%-22.8%)	17 22.0% (17.1%-27.7%)	15 25.1% (19.3%-32.1%)	9 15.7% (10.9%-22.0%)
Other/ Unknown	2 2.0% (0.8%-4.5%)	3 3.3% (1.7%-6.3%)	5 6.5% (4.0%-10.4%)	3 4.6% (2.3%-8.8%)	3 6.0% (3.3%-10.7%)

By deprivation quintile

Route to diagnosis	Most deprived	Quintile 2	Quintile 3	Quintile 4	Least deprived
Red-flag referral	41 43.6% (38.0%-49.5%)	32 42.6% (36.3%-49.2%)	31 46.3% (39.6%-53.2%)	27 42.5% (35.7%-49.5%)	24 41.9% (34.7%-49.3%)
Emergency presentation	13 13.5% (10.0%-18.0%)	8 10.3% (7.0%-15.0%)	8 11.8% (8.1%-17.0%)	6 9.8% (6.4%-14.9%)	4 7.6% (4.5%-12.5%)
Other GP referral to outpatients	24 25.5% (20.8%-30.9%)	18 23.8% (18.7%-29.8%)	14 20.2% (15.3%-26.2%)	14 21.8% (16.5%-28.1%)	12 21.5% (16.0%-28.2%)
Other outpatient appointment	12 12.8% (9.4%-17.2%)	16 21.1% (16.2%-26.9%)	12 17.2% (12.7%-23.0%)	15 22.8% (17.4%-29.2%)	12 21.5% (16.0%-28.2%)
Other/ Unknown	4 4.6% (2.7%-7.7%)	2 2.2% (1.0%-5.1%)	3 4.4% (2.3%-8.2%)	2 3.1% (1.4%-6.6%)	4 7.6% (4.5%-12.5%)

By stage at diagnosis

Route to diagnosis	Stage I	Stage II	Stage III	Stage IV	Unknown
Red-flag referral	33 39.5% (33.7%-45.7%)	25 51.0% (43.1%-58.9%)	31 51.4% (44.1%-58.6%)	62 43.4% (38.8%-48.2%)	4 18.8% (11.1%-30.0%)
Emergency presentation	2 2.4% (1.1%-5.1%)	4 7.4% (4.2%-12.7%)	4 7.2% (4.2%-11.9%)	23 16.2% (13.0%-20.0%)	6 28.1% (18.6%-40.1%)
Other GP referral to outpatients	22 25.7% (20.7%-31.4%)	11 22.8% (16.8%-30.2%)	16 27.1% (21.1%-34.0%)	28 19.7% (16.2%-23.8%)	4 20.3% (12.3%-31.7%)
Other outpatient appointment	21 25.3% (20.3%-31.0%)	8 16.8% (11.6%-23.6%)	8 12.7% (8.6%-18.3%)	25 17.4% (14.1%-21.3%)	4 20.3% (12.3%-31.7%)
Other/ Unknown	6 7.1% (4.5%-11.0%)	1 2.0% (0.7%-5.8%)	1 1.7% (0.6%-4.8%)	5 3.3% (2.0%-5.4%)	3 12.5% (6.5%-22.8%)

By cancer type

Route to diagnosis	Cancer of the nasal cavity or sinuses	Laryngeal cancer	Oral cancer
Red-flag referral	3 19.0% (10.0%-33.3%)	41 46.1% (40.2%-52.1%)	111 43.8% (40.3%-47.4%)
Emergency presentation	3 19.0% (10.0%-33.3%)	13 14.9% (11.1%-19.6%)	23 9.1% (7.2%-11.3%)
Other GP referral to outpatients	5 33.3% (21.0%-48.4%)	24 26.8% (21.8%-32.4%)	53 20.9% (18.1%-23.9%)
Other outpatient appointment	3 21.4% (11.7%-35.9%)	9 9.7% (6.7%-13.8%)	55 21.5% (18.8%-24.6%)
Other/ Unknown	1 7.1% (2.5%-19.0%)	2 2.6% (1.3%-5.3%)	12 4.7% (3.4%-6.5%)

By year of diagnosis

Route to diagnosis	2018	2019	2020
Red-flag referral	167 44.3% (39.4%-49.3%)	169 43.6% (38.7%-48.5%)	130 42.2% (36.8%-47.8%)
Emergency presentation	34 9.0% (6.5%-12.3%)	39 10.1% (7.4%-13.4%)	44 14.3% (10.8%-18.6%)
Other GP referral to outpatients	92 24.4% (20.3%-29.0%)	88 22.7% (18.8%-27.1%)	65 21.1% (16.9%-26.0%)
Other outpatient appointment	64 17.0% (13.5%-21.1%)	77 19.8% (16.2%-24.1%)	58 18.8% (14.9%-23.6%)
Other/ Unknown	20 5.3% (3.5%-8.1%)	15 3.9% (2.4%-6.3%)	11 3.6% (2.0%-6.3%)

UPPER GASTROINTESTINAL CANCER

Average number of upper gastrointestinal cancer cases diagnosed each year during 2018-2020 by route to diagnosis
(Including proportions and 95% confidence intervals)

By gender

Route to diagnosis	Males	Females
Red-flag referral	106 39.5% (36.2%-42.9%)	39 30.5% (26.1%-35.3%)
Emergency presentation	79 29.3% (26.3%-32.6%)	46 35.8% (31.1%-40.7%)
Elective inpatient admission	18 6.6% (5.1%-8.5%)	7 5.5% (3.6%-8.2%)
Other GP referral to outpatients	41 15.2% (12.8%-17.8%)	20 15.4% (12.1%-19.4%)
Other outpatient appointment	21 8.0% (6.3%-10.0%)	12 9.7% (7.1%-13.0%)
Death certificate only/ Unknown	4 1.5% (0.9%-2.6%)	4 3.1% (1.8%-5.4%)

By age group

Route to diagnosis	Aged 0 to 64	Aged 65 to 74	Aged 75 and over
Red-flag referral	48 41.7% (36.6%-47.0%)	46 38.7% (33.8%-43.8%)	51 31.6% (27.6%-35.8%)
Emergency presentation	32 28.3% (23.8%-33.3%)	31 26.3% (22.0%-31.1%)	61 37.3% (33.1%-41.7%)
Elective inpatient admission	8 6.7% (4.5%-9.9%)	9 7.3% (5.0%-10.5%)	8 5.1% (3.5%-7.5%)
Other GP referral to outpatients	14 12.2% (9.2%-16.1%)	22 18.2% (14.5%-22.5%)	25 15.2% (12.3%-18.6%)
Other outpatient appointment	10 9.0% (6.4%-12.5%)	11 9.0% (6.4%-12.4%)	13 7.8% (5.7%-10.5%)
Other/ Unknown	2 2.0% (1.0%-4.2%)	1 0.6% (0.2%-2.0%)	5 3.1% (1.9%-5.0%)

By Health and Social Care Trust

Route to diagnosis	Belfast	Northern	South Eastern	Southern	Western
Red-flag referral	25 32.8% (27.0%-39.1%)	29 27.8% (23.1%-33.1%)	32 39.3% (33.4%-45.6%)	32 42.9% (36.6%-49.4%)	27 45.1% (38.0%-52.3%)
Emergency presentation	27 35.4% (29.5%-41.8%)	35 33.7% (28.6%-39.1%)	23 27.9% (22.6%-33.8%)	24 32.1% (26.4%-38.5%)	16 26.4% (20.5%-33.2%)
Elective inpatient admission	3 4.4% (2.4%-7.9%)	8 8.1% (5.5%-11.7%)	5 5.7% (3.4%-9.4%)	3 4.5% (2.4%-8.0%)	5 8.2% (5.1%-13.2%)
Other GP referral to outpatients	11 14.0% (10.1%-19.1%)	22 21.4% (17.2%-26.3%)	13 15.6% (11.6%-20.7%)	7 9.8% (6.6%-14.4%)	8 12.6% (8.6%-18.2%)
Other outpatient appointment	8 10.9% (7.5%-15.6%)	8 7.4% (5.0%-10.9%)	7 8.6% (5.7%-12.8%)	6 8.0% (5.1%-12.3%)	5 7.7% (4.6%-12.5%)
Death certificate only/ Unknown	2 2.6% (1.2%-5.6%)	2 1.6% (0.7%-3.7%)	2 2.9% (1.4%-5.8%)	2 2.7% (1.2%-5.7%)	0 -

By deprivation quintile

Route to diagnosis	Most deprived	Quintile 2	Quintile 3	Quintile 4	Least deprived
Red-flag referral	28 35.1% (29.4%-41.3%)	34 39.6% (33.8%-45.7%)	30 38.2% (32.2%-44.6%)	28 35.8% (29.9%-42.1%)	26 34.1% (28.2%-40.5%)
Emergency presentation	28 34.3% (28.6%-40.5%)	27 31.4% (26.0%-37.3%)	24 30.9% (25.3%-37.1%)	23 29.3% (23.8%-35.5%)	23 31.0% (25.3%-37.3%)
Elective inpatient admission	5 6.6% (4.1%-10.5%)	5 5.9% (3.6%-9.5%)	5 6.4% (3.9%-10.3%)	5 6.9% (4.3%-10.9%)	4 5.3% (3.1%-9.1%)
Other GP referral to outpatients	12 15.3% (11.3%-20.4%)	14 16.5% (12.4%-21.5%)	13 16.7% (12.5%-22.1%)	13 16.4% (12.2%-21.7%)	8 11.1% (7.6%-15.8%)
Other outpatient appointment	6 7.0% (4.4%-11.0%)	5 5.5% (3.3%-9.0%)	5 6.4% (3.9%-10.3%)	7 9.5% (6.3%-13.9%)	11 14.6% (10.6%-19.8%)
Other/ Unknown	1 1.7% (0.6%-4.2%)	1 1.2% (0.4%-3.4%)	1 1.3% (0.4%-3.7%)	2 2.2% (0.9%-4.9%)	3 4.0% (2.1%-7.4%)

By stage at diagnosis

Route to diagnosis	Stage I	Stage II	Stage III	Stage IV	Unknown
Red-flag referral	4 12.0% (7.2%-19.5%)	11 40.0% (30.0%-51.0%)	39 49.8% (43.4%-56.1%)	63 37.1% (33.0%-41.3%)	28 32.9% (27.5%-38.9%)
Emergency presentation	2 5.6% (2.6%-11.6%)	6 21.3% (13.7%-31.4%)	17 22.1% (17.3%-27.9%)	68 39.8% (35.6%-44.1%)	32 37.3% (31.6%-43.3%)
Elective inpatient admission	3 8.3% (4.4%-15.1%)	2 6.3% (2.7%-13.8%)	5 6.0% (3.6%-9.8%)	11 6.5% (4.6%-8.9%)	4 5.1% (3.0%-8.5%)
Other GP referral to outpatients	16 43.5% (34.5%-52.9%)	6 23.7% (15.8%-34.1%)	10 13.2% (9.5%-18.1%)	19 11.0% (8.6%-14.0%)	9 11.0% (7.7%-15.4%)
Other outpatient appointment	9 25.9% (18.6%-34.9%)	2 7.5% (3.5%-15.4%)	7 8.5% (5.6%-12.8%)	7 4.1% (2.7%-6.2%)	9 10.2% (7.1%-14.5%)
Other/ Unknown	2 4.6% (2.0%-10.4%)	0 -	0 -	3 1.6% (0.8%-3.1%)	3 3.5% (1.9%-6.6%)

By cancer type

Route to diagnosis	Oesophageal cancer	Stomach cancer
Red-flag referral	89 43.6% (39.7%-47.5%)	56 29.2% (25.6%-33.1%)
Emergency presentation	53 25.8% (22.5%-29.4%)	72 37.4% (33.5%-41.4%)
Elective inpatient admission	13 6.2% (4.5%-8.4%)	12 6.3% (4.6%-8.5%)
Other GP referral to outpatients	30 14.7% (12.1%-17.7%)	30 15.8% (13.1%-19.0%)
Other outpatient appointment	17 8.3% (6.4%-10.8%)	17 8.7% (6.7%-11.3%)
Death certificate only/ Unknown	3 1.5% (0.8%-2.8%)	5 2.6% (1.6%-4.3%)

By year of diagnosis

Route to diagnosis	2018	2019	2020
Red-flag referral	134 32.9% (28.5%-37.6%)	163 40.5% (35.9%-45.4%)	138 36.4% (31.7%-41.4%)
Emergency presentation	115 28.3% (24.1%-32.8%)	108 26.9% (22.8%-31.4%)	150 39.6% (34.8%-44.6%)
Elective inpatient admission	38 9.3% (6.9%-12.6%)	29 7.2% (5.1%-10.2%)	7 1.8% (0.9%-3.8%)
Other GP referral to outpatients	70 17.2% (13.8%-21.2%)	59 14.7% (11.6%-18.5%)	52 13.7% (10.6%-17.6%)
Other outpatient appointment	44 10.8% (8.2%-14.2%)	36 9.0% (6.5%-12.1%)	21 5.5% (3.7%-8.3%)
Death certificate only/ Unknown	6 1.5% (0.7%-3.2%)	7 1.7% (0.8%-3.6%)	11 2.9% (1.6%-5.1%)

HEPATOBILIARY AND PANCREATIC CANCER

Average number of hepatobiliary and pancreatic cancer cases diagnosed each year during 2018-2020 by route to diagnosis
(Including proportions and 95% confidence intervals)

By gender

Route to diagnosis	Males	Females
Red-flag referral	45 15.4% (13.2%-17.9%)	27 11.5% (9.3%-14.0%)
Emergency presentation	136 46.3% (43.1%-49.6%)	125 52.6% (48.9%-56.2%)
Elective inpatient admission	10 3.5% (2.5%-4.9%)	7 2.9% (1.9%-4.4%)
Other GP referral to outpatients	49 16.8% (14.4%-19.4%)	41 17.2% (14.6%-20.1%)
Other outpatient appointment	43 14.6% (12.4%-17.1%)	30 12.6% (10.4%-15.2%)
Death certificate only/ Unknown	10 3.4% (2.4%-4.8%)	8 3.2% (2.2%-4.8%)

By age group

Route to diagnosis	Aged 0 to 64	Aged 65 to 74	Aged 75 and over
Red-flag referral	16 12.8% (9.8%-16.7%)	30 17.7% (14.6%-21.2%)	27 11.3% (9.2%-13.8%)
Emergency presentation	56 45.9% (40.9%-51.0%)	73 43.5% (39.2%-47.8%)	133 54.7% (51.0%-58.3%)
Elective inpatient admission	4 3.3% (1.9%-5.6%)	8 4.8% (3.2%-7.0%)	5 2.2% (1.4%-3.5%)
Other GP referral to outpatients	21 17.2% (13.7%-21.4%)	31 18.7% (15.5%-22.3%)	38 15.7% (13.2%-18.5%)
Other outpatient appointment	23 19.1% (15.4%-23.5%)	22 13.1% (10.4%-16.3%)	28 11.4% (9.3%-13.9%)
Death certificate only/ Unknown	2 1.6% (0.8%-3.5%)	4 2.4% (1.4%-4.1%)	12 4.8% (3.5%-6.6%)

By Health and Social Care Trust

Route to diagnosis	Belfast	Northern	South Eastern	Southern	Western
Red-flag referral	13 12.2% (9.1%-16.3%)	18 13.4% (10.4%-17.1%)	13 11.7% (8.7%-15.6%)	10 10.1% (7.2%-13.9%)	18 23.4% (18.4%-29.2%)
Emergency presentation	56 52.4% (46.9%-57.8%)	62 47.1% (42.2%-52.0%)	56 49.3% (44.0%-54.6%)	55 53.6% (48.0%-59.1%)	33 42.1% (36.0%-48.5%)
Other GP referral to outpatients	17 16.0% (12.4%-20.4%)	24 18.0% (14.5%-22.1%)	16 14.1% (10.8%-18.2%)	18 17.2% (13.4%-21.8%)	16 20.4% (15.8%-26.0%)
Other outpatient appointment	15 14.4% (11.0%-18.7%)	19 14.2% (11.1%-18.0%)	16 14.4% (11.0%-18.5%)	14 13.3% (10.0%-17.6%)	9 11.5% (8.0%-16.2%)
Other/ Unknown	5 5.0% (3.1%-8.0%)	10 7.3% (5.2%-10.3%)	12 10.6% (7.7%-14.3%)	6 5.8% (3.7%-9.0%)	2 2.6% (1.2%-5.5%)

By deprivation quintile

Route to diagnosis	Most deprived	Quintile 2	Quintile 3	Quintile 4	Least deprived
Red-flag referral	15 13.9% (10.5%-18.2%)	18 18.0% (14.1%-22.8%)	19 16.8% (13.1%-21.1%)	10 8.9% (6.3%-12.5%)	12 11.0% (8.0%-14.8%)
Emergency presentation	52 49.7% (44.2%-55.2%)	48 49.0% (43.3%-54.7%)	52 46.7% (41.4%-52.1%)	55 50.6% (45.2%-56.0%)	54 49.7% (44.3%-55.1%)
Other GP referral to outpatients	17 16.5% (12.8%-20.9%)	14 13.9% (10.4%-18.4%)	18 16.5% (12.9%-20.8%)	20 18.1% (14.3%-22.6%)	21 19.5% (15.6%-24.1%)
Other outpatient appointment	14 13.6% (10.3%-17.8%)	13 12.9% (9.6%-17.2%)	18 15.9% (12.3%-20.2%)	14 13.2% (9.9%-17.3%)	14 12.8% (9.6%-16.9%)
Other/ Unknown	7 6.3% (4.1%-9.6%)	6 6.1% (3.9%-9.5%)	5 4.2% (2.5%-6.9%)	10 9.2% (6.5%-12.8%)	8 7.0% (4.7%-10.3%)

By stage at diagnosis

Route to diagnosis	Stage I	Stage II	Stage III	Stage IV	Unknown
Red-flag referral	8 10.6% (7.2%-15.5%)	9 15.3% (10.7%-21.5%)	16 19.0% (14.6%-24.3%)	32 14.8% (12.3%-17.7%)	8 8.1% (5.5%-11.6%)
Emergency presentation	21 29.2% (23.5%-35.6%)	18 31.8% (25.2%-39.1%)	36 43.1% (37.1%-49.2%)	128 59.3% (55.5%-63.0%)	58 56.1% (50.6%-61.5%)
Other GP referral to outpatients	20 27.8% (22.2%-34.1%)	14 24.1% (18.3%-31.1%)	15 18.2% (13.9%-23.4%)	25 11.6% (9.3%-14.2%)	16 15.8% (12.2%-20.3%)
Other outpatient appointment	19 26.9% (21.4%-33.1%)	13 23.5% (17.8%-30.4%)	11 13.4% (9.8%-18.2%)	19 8.6% (6.7%-11.0%)	10 10.0% (7.1%-13.8%)
Other/ Unknown	4 5.6% (3.2%-9.5%)	3 5.3% (2.8%-9.8%)	5 6.3% (3.9%-10.0%)	12 5.7% (4.2%-7.8%)	10 10.0% (7.1%-13.8%)

By cancer type

Route to diagnosis	Gallbladder and biliary cancer	Liver cancer	Pancreatic cancer
Red-flag referral	8 7.6% (5.2%-11.0%)	24 16.5% (13.3%-20.3%)	41 14.5% (12.3%-17.1%)
Emergency presentation	65 59.6% (54.2%-64.8%)	51 35.3% (30.9%-39.9%)	146 52.1% (48.8%-55.5%)
Elective inpatient admission	4 3.4% (1.9%-5.9%)	4 3.0% (1.8%-5.1%)	9 3.3% (2.3%-4.8%)
Other GP referral to outpatients	17 15.3% (11.8%-19.6%)	29 20.0% (16.5%-24.0%)	45 16.1% (13.7%-18.7%)
Other outpatient appointment	13 11.6% (8.6%-15.5%)	29 20.4% (16.9%-24.5%)	31 11.1% (9.1%-13.4%)
Death certificate only/ Unknown	3 2.4% (1.2%-4.8%)	7 4.9% (3.2%-7.3%)	8 2.9% (1.9%-4.2%)

By year of diagnosis

Route to diagnosis	2018	2019	2020
Red-flag referral	58 11.3% (8.8%-14.3%)	79 15.2% (12.3%-18.5%)	81 14.4% (11.7%-17.5%)
Emergency presentation	271 52.8% (48.5%-57.1%)	228 43.8% (39.6%-48.1%)	286 50.7% (46.6%-54.8%)
Elective inpatient admission	23 4.5% (3.0%-6.6%)	15 2.9% (1.8%-4.7%)	14 2.5% (1.5%-4.1%)
Other GP referral to outpatients	71 13.8% (11.1%-17.1%)	107 20.5% (17.3%-24.2%)	93 16.5% (13.7%-19.8%)
Other outpatient appointment	69 13.5% (10.8%-16.7%)	73 14.0% (11.3%-17.3%)	77 13.7% (11.1%-16.7%)
Death certificate only/ Unknown	21 4.1% (2.7%-6.2%)	19 3.6% (2.3%-5.6%)	13 2.3% (1.4%-3.9%)

GYNAECOLOGICAL CANCER

Average number of gynaecological cancer cases diagnosed each year during 2018-2020 by route to diagnosis
(Including proportions and 95% confidence intervals)

By age group

Route to diagnosis	Aged 0 to 64	Aged 65 to 74	Aged 75 and over
Red-flag referral	108 35.1% (32.1%-38.2%)	76 54.3% (49.5%-59.0%)	63 38.5% (34.3%-42.9%)
Emergency presentation	45 14.7% (12.5%-17.1%)	28 19.8% (16.2%-23.8%)	47 28.7% (24.9%-32.9%)
Other GP referral to outpatients	72 23.6% (20.9%-26.4%)	19 13.6% (10.6%-17.2%)	30 18.5% (15.3%-22.2%)
Other outpatient appointment	41 13.4% (11.3%-15.7%)	13 9.3% (6.9%-12.4%)	14 8.6% (6.4%-11.4%)
Other/ Unknown	41 13.4% (11.3%-15.7%)	4 3.1% (1.8%-5.2%)	9 5.7% (4.0%-8.1%)

By Health and Social Care Trust

Route to diagnosis	Belfast	Northern	South Eastern	Southern	Western
Screening referral	7 6.0% (3.9%-9.1%)	7 4.8% (3.2%-7.1%)	6 4.7% (3.0%-7.3%)	6 4.8% (3.0%-7.5%)	6 6.0% (3.8%-9.2%)
Red-flag referral	40 36.6% (31.5%-41.9%)	60 39.3% (35.0%-43.9%)	49 38.4% (33.6%-43.3%)	49 41.6% (36.6%-46.8%)	48 47.4% (41.8%-53.0%)
Emergency presentation	24 21.5% (17.4%-26.2%)	27 17.6% (14.4%-21.4%)	29 22.7% (18.8%-27.2%)	24 19.9% (16.1%-24.4%)	16 16.2% (12.5%-20.8%)
Other GP referral to outpatients	19 17.5% (13.8%-22.0%)	35 22.6% (19.0%-26.6%)	24 19.1% (15.4%-23.3%)	23 19.1% (15.4%-23.5%)	21 20.5% (16.4%-25.4%)
Other outpatient appointment	15 13.9% (10.6%-18.0%)	16 10.4% (8.0%-13.6%)	17 13.1% (10.0%-16.8%)	12 10.4% (7.6%-14.0%)	8 7.6% (5.1%-11.2%)
Other/ Unknown	5 4.5% (2.8%-7.3%)	8 5.2% (3.5%-7.6%)	3 2.1% (1.1%-4.1%)	5 4.2% (2.6%-6.8%)	2 2.3% (1.1%-4.7%)

By deprivation quintile

Route to diagnosis	Most deprived	Quintile 2	Quintile 3	Quintile 4	Least deprived
Screening referral	11 10.1% (7.3%-13.8%)	7 5.4% (3.5%-8.1%)	6 4.2% (2.6%-6.6%)	4 3.7% (2.2%-6.3%)	4 3.0% (1.7%-5.4%)
Red-flag referral	40 36.4% (31.4%-41.7%)	53 40.4% (35.7%-45.3%)	55 41.1% (36.4%-45.9%)	51 43.7% (38.6%-48.9%)	48 40.1% (35.1%-45.2%)
Emergency presentation	22 20.2% (16.2%-24.9%)	29 22.3% (18.4%-26.6%)	24 17.8% (14.4%-21.9%)	21 18.1% (14.4%-22.5%)	24 19.6% (15.9%-24.0%)
Other GP referral to outpatients	20 18.0% (14.3%-22.6%)	24 18.7% (15.1%-22.8%)	30 22.3% (18.5%-26.6%)	25 21.6% (17.6%-26.2%)	23 18.8% (15.1%-23.1%)
Other outpatient appointment	12 11.3% (8.3%-15.2%)	14 10.7% (8.0%-14.2%)	15 11.4% (8.6%-14.9%)	10 8.9% (6.3%-12.4%)	16 13.3% (10.1%-17.1%)
Other/ Unknown	4 4.0% (2.3%-6.7%)	3 2.6% (1.4%-4.6%)	4 3.2% (1.9%-5.4%)	5 4.0% (2.4%-6.6%)	6 5.2% (3.4%-8.1%)

By stage at diagnosis

Route to diagnosis	Stage I	Stage II	Stage III	Stage IV	Unknown
Screening referral	19 6.3% (4.9%-8.2%)	7 15.1% (10.2%-21.8%)	4 2.9% (1.7%-5.0%)	2 2.0% (0.9%-4.7%)	0 -
Red-flag referral	142 48.2% (44.9%-51.5%)	19 38.4% (30.9%-46.4%)	55 40.0% (35.4%-44.9%)	23 28.0% (22.8%-34.0%)	8 17.1% (11.9%-24.1%)
Emergency presentation	23 7.7% (6.1%-9.7%)	7 14.4% (9.6%-21.0%)	38 27.9% (23.8%-32.4%)	35 42.3% (36.3%-48.5%)	17 34.9% (27.7%-43.0%)
Other GP referral to outpatients	70 23.9% (21.2%-26.8%)	9 19.2% (13.6%-26.3%)	20 14.6% (11.5%-18.3%)	14 16.7% (12.5%-21.8%)	8 17.1% (11.9%-24.1%)
Other outpatient appointment	33 11.3% (9.4%-13.6%)	5 11.0% (6.9%-17.1%)	16 11.9% (9.1%-15.4%)	5 6.5% (4.0%-10.3%)	8 15.8% (10.7%-22.5%)
Other/ Unknown	7 2.5% (1.7%-3.7%)	1 2.1% (0.7%-5.9%)	4 2.7% (1.5%-4.7%)	4 4.5% (2.5%-7.8%)	7 15.1% (10.2%-21.8%)

By cancer type

Route to diagnosis	Cervical cancer	Ovarian cancer	Uterine cancer
Screening referral	32 36.8% (31.2%-42.9%)	0 -	0 -
Red-flag referral	18 20.5% (16.1%-25.9%)	53 25.6% (22.3%-29.2%)	159 59.2% (55.7%-62.5%)
Emergency presentation	6 7.4% (4.8%-11.2%)	70 33.9% (30.2%-37.7%)	31 11.6% (9.6%-14.0%)
Other GP referral to outpatients	14 16.3% (12.3%-21.3%)	45 22.0% (18.9%-25.5%)	51 18.9% (16.4%-21.8%)
Other outpatient appointment	15 17.4% (13.3%-22.5%)	26 12.8% (10.4%-15.7%)	21 7.7% (6.0%-9.7%)
Other/ Unknown	1 1.6% (0.6%-3.9%)	12 5.7% (4.1%-7.8%)	7 2.6% (1.7%-3.9%)

By year of diagnosis

Route to diagnosis	2018	2019	2020
Screening referral	36 5.5% (4.0%-7.6%)	34 5.2% (3.8%-7.2%)	25 4.7% (3.2%-6.9%)
Red-flag referral	270 41.6% (37.9%-45.4%)	249 38.2% (34.5%-42.0%)	221 41.6% (37.5%-45.9%)
Emergency presentation	115 17.7% (15.0%-20.8%)	128 19.6% (16.8%-22.9%)	116 21.8% (18.5%-25.6%)
Other GP referral to outpatients	128 19.7% (16.8%-23.0%)	144 22.1% (19.1%-25.4%)	93 17.5% (14.5%-21.0%)
Other outpatient appointment	76 11.7% (9.5%-14.4%)	70 10.7% (8.6%-13.3%)	58 10.9% (8.5%-13.9%)
Other/ Unknown	24 3.7% (2.5%-5.4%)	27 4.1% (2.9%-6.0%)	18 3.4% (2.2%-5.3%)

URINARY CANCER

Average number of urinary cancer cases diagnosed each year during 2018-2020 by route to diagnosis
(Including proportions and 95% confidence intervals)

By gender

Route to diagnosis	Males	Females
Red-flag referral	118 30.5% (27.9%-33.2%)	51 26.8% (23.3%-30.6%)
Emergency presentation	74 19.1% (17.0%-21.5%)	45 24.0% (20.7%-27.7%)
Elective inpatient admission	10 2.6% (1.8%-3.7%)	3 1.8% (1.0%-3.2%)
Other GP referral to outpatients	98 25.4% (23.0%-28.0%)	51 26.8% (23.3%-30.6%)
Other outpatient appointment	65 16.8% (14.8%-19.1%)	29 15.5% (12.8%-18.7%)
Death certificate only/ Unknown	21 5.5% (4.3%-7.0%)	10 5.1% (3.6%-7.2%)

By age group

Route to diagnosis	Aged 0 to 64	Aged 65 to 74	Aged 75 and over
Red-flag referral	59 33.0% (29.1%-37.0%)	49 30.4% (26.5%-34.7%)	61 25.7% (22.7%-29.1%)
Emergency presentation	26 14.4% (11.7%-17.7%)	27 17.1% (14.0%-20.7%)	66 28.0% (24.8%-31.4%)
Elective inpatient admission	5 2.6% (1.6%-4.3%)	4 2.3% (1.3%-4.1%)	5 2.1% (1.3%-3.5%)
Other GP referral to outpatients	48 26.7% (23.1%-30.6%)	45 28.1% (24.3%-32.3%)	56 23.8% (20.8%-27.0%)
Other outpatient appointment	34 18.7% (15.6%-22.2%)	28 17.3% (14.2%-20.9%)	33 14.0% (11.6%-16.8%)
Death certificate only/ Unknown	8 4.6% (3.2%-6.7%)	8 4.8% (3.2%-7.1%)	15 6.4% (4.8%-8.4%)

By Health and Social Care Trust

Route to diagnosis	Belfast	Northern	South Eastern	Southern	Western
Red-flag referral	27 22.6% (18.5%-27.2%)	51 31.3% (27.4%-35.6%)	30 25.6% (21.4%-30.5%)	29 28.6% (23.8%-33.9%)	32 42.0% (35.8%-48.4%)
Emergency presentation	31 25.9% (21.6%-30.7%)	29 17.7% (14.6%-21.4%)	26 22.2% (18.2%-26.9%)	22 21.9% (17.6%-26.9%)	12 15.2% (11.1%-20.3%)
Other GP referral to outpatients	31 26.2% (21.9%-31.0%)	42 26.2% (22.5%-30.3%)	28 23.9% (19.8%-28.7%)	28 27.9% (23.1%-33.2%)	19 25.1% (20.0%-31.1%)
Other outpatient appointment	22 18.4% (14.7%-22.7%)	25 15.5% (12.5%-19.0%)	21 18.2% (14.5%-22.6%)	16 15.6% (12.0%-20.1%)	10 13.4% (9.6%-18.4%)
Other/ Unknown	8 7.0% (4.8%-10.1%)	15 9.3% (7.0%-12.2%)	12 10.0% (7.3%-13.6%)	6 6.0% (3.8%-9.3%)	3 4.3% (2.4%-7.8%)

By deprivation quintile

Route to diagnosis	Most deprived	Quintile 2	Quintile 3	Quintile 4	Least deprived
Red-flag referral	28 26.3% (21.8%-31.5%)	38 33.0% (28.3%-38.2%)	38 32.1% (27.5%-37.1%)	32 27.5% (23.1%-32.4%)	33 27.3% (22.9%-32.1%)
Emergency presentation	24 22.5% (18.3%-27.5%)	26 22.9% (18.8%-27.6%)	22 18.9% (15.1%-23.3%)	22 19.0% (15.2%-23.4%)	25 20.6% (16.7%-25.1%)
Elective inpatient admission	3 2.9% (1.5%-5.3%)	2 1.4% (0.6%-3.3%)	2 1.7% (0.8%-3.6%)	2 2.0% (1.0%-4.0%)	4 3.6% (2.1%-6.1%)
Other GP referral to outpatients	29 27.9% (23.3%-33.1%)	25 21.4% (17.4%-26.1%)	33 27.9% (23.5%-32.8%)	32 26.9% (22.6%-31.8%)	30 25.3% (21.1%-30.1%)
Other outpatient appointment	18 16.8% (13.1%-21.4%)	18 15.9% (12.5%-20.2%)	20 17.2% (13.6%-21.5%)	20 17.3% (13.7%-21.6%)	18 14.8% (11.5%-18.8%)
Death certificate only/ Unknown	4 3.5% (2.0%-6.1%)	6 5.2% (3.3%-8.1%)	3 2.3% (1.1%-4.4%)	9 7.4% (5.1%-10.6%)	10 8.4% (5.9%-11.7%)

By stage at diagnosis

Route to diagnosis	Stage I	Stage II	Stage III	Stage IV	Unknown
Red-flag referral	82 32.4% (29.1%-35.8%)	32 42.2% (36.0%-48.6%)	32 33.2% (28.0%-38.9%)	16 17.5% (13.4%-22.4%)	7 11.4% (7.5%-16.9%)
Emergency presentation	35 13.7% (11.4%-16.3%)	17 22.2% (17.3%-28.0%)	17 18.2% (14.1%-23.1%)	31 33.5% (28.1%-39.2%)	20 33.5% (27.0%-40.8%)
Other GP referral to outpatients	70 27.6% (24.6%-30.9%)	17 21.7% (16.9%-27.5%)	24 24.8% (20.2%-30.1%)	26 28.4% (23.4%-34.0%)	13 21.6% (16.2%-28.2%)
Other outpatient appointment	45 17.6% (15.1%-20.5%)	8 10.4% (7.1%-15.1%)	19 19.9% (15.7%-24.9%)	12 13.1% (9.6%-17.6%)	11 18.2% (13.2%-24.5%)
Other/ Unknown	22 8.7% (6.9%-10.9%)	3 3.5% (1.8%-6.7%)	4 3.8% (2.2%-6.8%)	7 7.6% (5.0%-11.4%)	9 15.3% (10.8%-21.4%)

By cancer type

Route to diagnosis	Bladder cancer	Kidney cancer
Red-flag referral	90 39.1% (35.6%-42.8%)	66 22.3% (19.6%-25.1%)
Emergency presentation	49 21.2% (18.3%-24.4%)	59 20.1% (17.6%-22.9%)
Elective inpatient admission	6 2.6% (1.7%-4.1%)	7 2.4% (1.6%-3.6%)
Other GP referral to outpatients	48 20.9% (18.0%-24.1%)	86 29.0% (26.1%-32.1%)
Other outpatient appointment	29 12.6% (10.3%-15.3%)	57 19.3% (16.9%-22.1%)
Death certificate only/ Unknown	8 3.6% (2.5%-5.3%)	20 6.9% (5.4%-8.8%)

By year of diagnosis

Route to diagnosis	2018	2019	2020
Red-flag referral	164 28.5% (24.9%-32.3%)	183 29.8% (26.3%-33.5%)	159 29.7% (26.0%-33.7%)
Emergency presentation	112 19.4% (16.4%-22.9%)	118 19.2% (16.3%-22.5%)	128 23.9% (20.5%-27.7%)
Elective inpatient admission	18 3.1% (2.0%-4.9%)	13 2.1% (1.2%-3.6%)	9 1.7% (0.9%-3.2%)
Other GP referral to outpatients	137 23.8% (20.5%-27.4%)	177 28.8% (25.3%-32.5%)	133 24.8% (21.3%-28.6%)
Other outpatient appointment	102 17.7% (14.8%-21.0%)	89 14.5% (11.9%-17.5%)	92 17.2% (14.2%-20.6%)
Death certificate only/ Unknown	43 7.5% (5.6%-9.9%)	35 5.7% (4.1%-7.8%)	15 2.8% (1.7%-4.6%)

MALIGNANT MELANOMA

Average number of melanoma cases diagnosed each year during 2018-2020 by route to diagnosis

(Including proportions and 95% confidence intervals)

By gender

Route to diagnosis	Males	Females
Red-flag referral	97 53.6% (49.4%-57.7%)	120 58.2% (54.2%-62.0%)
Elective inpatient admission	4 2.0% (1.1%-3.6%)	4 1.9% (1.1%-3.4%)
Other GP referral to outpatients	48 26.3% (22.8%-30.2%)	55 26.8% (23.5%-30.4%)
Other outpatient appointment	17 9.2% (7.1%-11.9%)	15 7.1% (5.3%-9.4%)
Other/ Unknown	16 8.8% (6.7%-11.5%)	12 6.0% (4.4%-8.1%)

By age group

Route to diagnosis	Aged 0 to 64	Aged 65 to 74	Aged 75 and over
Red-flag referral	126 62.3% (58.4%-66.1%)	40 49.4% (43.1%-55.6%)	51 48.9% (43.4%-54.4%)
Other GP referral to outpatients	44 21.7% (18.6%-25.2%)	24 30.3% (24.8%-36.4%)	35 33.2% (28.2%-38.6%)
Other outpatient appointment	14 6.9% (5.2%-9.2%)	6 7.5% (4.8%-11.5%)	11 10.9% (7.9%-14.8%)
Other/ Unknown	18 9.0% (7.0%-11.6%)	10 12.9% (9.2%-17.7%)	7 7.0% (4.7%-10.4%)

By Health and Social Care Trust

Route to diagnosis	Belfast	Northern	South Eastern	Southern	Western
Red-flag referral	39 59.8% (52.8%-66.4%)	61 61.2% (55.6%-66.6%)	49 54.6% (48.7%-60.4%)	45 57.0% (50.6%-63.1%)	23 42.9% (35.5%-50.6%)
Other GP referral to outpatients	17 25.8% (20.1%-32.4%)	23 23.4% (19.0%-28.5%)	21 23.6% (19.0%-29.0%)	21 27.0% (21.8%-33.0%)	20 37.9% (30.8%-45.6%)
Other outpatient appointment	4 6.2% (3.6%-10.5%)	6 6.0% (3.8%-9.3%)	7 7.7% (5.1%-11.6%)	6 8.0% (5.2%-12.2%)	8 14.9% (10.2%-21.2%)
Other/ Unknown	5 8.2% (5.1%-13.0%)	9 9.4% (6.6%-13.2%)	13 14.0% (10.4%-18.7%)	6 8.0% (5.2%-12.2%)	2 4.3% (2.1%-8.7%)

By deprivation quintile

Route to diagnosis	Most deprived	Quintile 2	Quintile 3	Quintile 4	Least deprived
Red-flag referral	26 52.0% (44.1%-59.8%)	44 57.9% (51.4%-64.1%)	49 57.6% (51.5%-63.5%)	50 56.3% (50.4%-62.2%)	47 54.8% (48.7%-60.8%)
Other GP referral to outpatients	15 29.3% (22.6%-37.1%)	22 28.5% (23.0%-34.7%)	22 25.3% (20.4%-30.9%)	22 25.0% (20.2%-30.5%)	23 26.3% (21.3%-31.9%)
Other outpatient appointment	5 10.0% (6.2%-15.8%)	5 7.0% (4.4%-11.1%)	8 9.3% (6.4%-13.5%)	8 9.3% (6.4%-13.4%)	5 5.4% (3.2%-8.9%)
Other/ Unknown	4 8.7% (5.1%-14.3%)	5 6.6% (4.0%-10.6%)	7 7.8% (5.1%-11.7%)	8 9.3% (6.4%-13.4%)	12 13.5% (9.9%-18.2%)

By stage at diagnosis

Route to diagnosis	Stage I	Stage II	Stage III	Stage IV	Unknown
Red-flag referral	137 58.0% (54.4%-61.6%)	34 56.0% (48.8%-63.1%)	15 50.0% (40.0%-60.0%)	4 35.5% (21.1%-53.1%)	27 54.4% (46.4%-62.3%)
Other GP referral to outpatients	63 26.8% (23.6%-30.1%)	15 24.7% (19.0%-31.5%)	8 27.2% (19.1%-37.0%)	4 41.9% (26.4%-59.2%)	12 24.5% (18.2%-32.0%)
Other/ Unknown	36 15.2% (12.8%-18.0%)	12 19.2% (14.2%-25.6%)	7 22.8% (15.4%-32.4%)	2 22.6% (11.4%-39.8%)	10 21.1% (15.3%-28.4%)

By year of diagnosis

Route to diagnosis	2018	2019	2020
Red-flag referral	254 59.6% (54.9%-64.2%)	213 51.7% (46.9%-56.5%)	184 56.8% (51.3%-62.1%)
Elective inpatient admission	7 1.6% (0.8%-3.4%)	6 1.5% (0.7%-3.1%)	10 3.1% (1.7%-5.6%)
Other GP referral to outpatients	111 26.1% (22.1%-30.4%)	123 29.9% (25.6%-34.4%)	75 23.1% (18.9%-28.0%)
Other outpatient appointment	32 7.5% (5.4%-10.4%)	34 8.3% (6.0%-11.3%)	28 8.6% (6.0%-12.2%)
Other/ Unknown	22 5.2% (3.4%-7.7%)	36 8.7% (6.4%-11.9%)	27 8.3% (5.8%-11.9%)

BRAIN CANCER (INCLUDING CENTRAL NERVOUS SYSTEM)

Average number of brain cancer (including central nervous system) cases diagnosed each year during 2018-2020 by route to diagnosis

(Including proportions and 95% confidence intervals)

By gender

Route to diagnosis	Males	Females
Emergency presentation	61 61.9% (56.2%-67.3%)	39 65.6% (58.4%-72.1%)
Other GP referral to outpatients	13 13.6% (10.2%-18.0%)	8 13.9% (9.6%-19.7%)
Other outpatient appointment	15 15.3% (11.6%-19.9%)	8 13.9% (9.6%-19.7%)
Other/ Unknown	9 9.2% (6.4%-13.0%)	4 6.7% (3.9%-11.3%)

By age group

Route to diagnosis	Aged 0 to 64	Aged 65 to 74	Aged 75 and over
Emergency presentation	43 56.3% (49.8%-62.5%)	23 66.0% (56.6%-74.4%)	33 73.0% (65.0%-79.7%)
Other GP referral to outpatients	11 13.9% (10.0%-18.9%)	5 13.2% (8.0%-21.0%)	6 13.9% (9.1%-20.6%)
Other outpatient appointment	15 19.0% (14.5%-24.6%)	7 18.9% (12.6%-27.4%)	2 4.4% (2.0%-9.2%)
Other/ Unknown	8 10.8% (7.4%-15.5%)	1 1.9% (0.5%-6.6%)	4 8.8% (5.1%-14.7%)

By Health and Social Care Trust

Route to diagnosis	Belfast	Northern	South Eastern	Southern	Western
Emergency presentation	23 72.2% (62.5%-80.1%)	26 68.1% (59.2%-75.9%)	17 56.7% (46.4%-66.4%)	18 58.1% (47.9%-67.6%)	15 59.0% (47.9%-69.2%)
Other GP referral to outpatients	3 9.3% (5.0%-16.7%)	4 10.3% (6.0%-17.2%)	4 12.2% (7.0%-20.6%)	6 18.3% (11.7%-27.3%)	5 20.5% (13.0%-30.8%)
Other outpatient appointment	4 12.4% (7.2%-20.4%)	5 12.1% (7.3%-19.2%)	6 21.1% (14.0%-30.6%)	4 14.0% (8.4%-22.5%)	4 15.4% (9.0%-25.0%)
Other/ Unknown	2 6.2% (2.9%-12.8%)	4 9.5% (5.4%-16.2%)	3 10.0% (5.4%-17.9%)	3 9.7% (5.2%-17.4%)	1 5.1% (2.0%-12.5%)

By deprivation quintile

Route to diagnosis	Most deprived	Quintile 2	Quintile 3	Quintile 4	Least deprived
Emergency presentation	16 65.3% (54.1%-75.1%)	20 58.8% (49.1%-67.9%)	23 61.8% (52.5%-70.4%)	18 66.7% (55.9%-76.0%)	23 65.1% (55.6%-73.5%)
Other GP referral to outpatients	4 14.7% (8.4%-24.4%)	5 15.7% (9.9%-24.0%)	5 13.6% (8.4%-21.3%)	3 12.3% (6.8%-21.3%)	4 12.3% (7.3%-19.9%)
Other outpatient appointment	3 12.0% (6.4%-21.3%)	5 15.7% (9.9%-24.0%)	6 16.4% (10.6%-24.4%)	3 12.3% (6.8%-21.3%)	6 16.0% (10.3%-24.2%)
Other/ Unknown	2 8.0% (3.7%-16.4%)	3 9.8% (5.4%-17.1%)	3 8.2% (4.4%-14.8%)	2 8.6% (4.2%-16.8%)	2 6.6% (3.2%-13.0%)

By year of diagnosis

Route to diagnosis	2018	2019	2020
Emergency presentation	98 62.0% (54.3%-69.2%)	106 63.5% (55.9%-70.4%)	96 64.4% (56.5%-71.7%)
Other GP referral to outpatients	21 13.3% (8.9%-19.5%)	24 14.4% (9.9%-20.5%)	20 13.4% (8.9%-19.8%)
Other outpatient appointment	22 13.9% (9.4%-20.2%)	26 15.6% (10.9%-21.8%)	22 14.8% (10.0%-21.3%)
Other/ Unknown	17 10.8% (6.8%-16.6%)	11 6.6% (3.7%-11.4%)	11 7.4% (4.2%-12.7%)

HAEMATOLOGICAL CANCER

Average number of haematological cancer cases diagnosed each year during 2018-2020 by route to diagnosis
(Including proportions and 95% confidence intervals)

By gender

Route to diagnosis	Males	Females
Red-flag referral	89 17.7% (15.8%-19.7%)	61 16.5% (14.4%-18.8%)
Emergency presentation	151 30.1% (27.8%-32.4%)	104 28.3% (25.7%-31.0%)
Elective inpatient admission	21 4.2% (3.3%-5.3%)	16 4.4% (3.4%-5.8%)
Other GP referral to outpatients	155 30.9% (28.6%-33.2%)	125 33.9% (31.1%-36.7%)
Other outpatient appointment	63 12.5% (10.9%-14.2%)	43 11.6% (9.8%-13.6%)
Death certificate only/ Unknown	24 4.8% (3.8%-6.0%)	20 5.3% (4.2%-6.8%)

By age group

Route to diagnosis	Aged 0 to 64	Aged 65 to 74	Aged 75 and over
Red-flag referral	60 18.3% (16.0%-20.9%)	47 19.7% (16.9%-22.7%)	43 14.0% (11.9%-16.4%)
Emergency presentation	103 31.8% (28.9%-34.7%)	57 24.0% (21.0%-27.2%)	95 30.8% (27.9%-33.9%)
Elective inpatient admission	18 5.6% (4.4%-7.3%)	8 3.5% (2.4%-5.1%)	11 3.5% (2.5%-4.9%)
Other GP referral to outpatients	89 27.3% (24.6%-30.1%)	84 35.1% (31.7%-38.7%)	107 35.0% (32.0%-38.1%)
Other outpatient appointment	39 12.0% (10.1%-14.2%)	32 13.2% (11.0%-15.9%)	35 11.3% (9.4%-13.5%)
Death certificate only/ Unknown	16 5.0% (3.8%-6.6%)	11 4.5% (3.2%-6.2%)	17 5.4% (4.1%-7.1%)

By Health and Social Care Trust

Route to diagnosis	Belfast	Northern	South Eastern	Southern	Western
Red-flag referral	26 17.1% (13.9%-20.8%)	39 17.2% (14.5%-20.2%)	24 13.9% (11.2%-17.1%)	33 18.2% (15.2%-21.7%)	27 20.3% (16.7%-24.5%)
Emergency presentation	47 30.7% (26.6%-35.1%)	64 27.8% (24.6%-31.3%)	52 29.4% (25.7%-33.4%)	46 25.8% (22.3%-29.6%)	47 34.9% (30.4%-39.7%)
Elective inpatient admission	7 4.6% (3.0%-6.9%)	10 4.4% (3.1%-6.2%)	9 5.3% (3.7%-7.6%)	5 2.8% (1.7%-4.5%)	6 4.5% (2.8%-6.9%)
Other GP referral to outpatients	43 28.5% (24.6%-32.8%)	81 35.4% (31.9%-39.0%)	56 32.1% (28.2%-36.2%)	63 35.1% (31.2%-39.2%)	36 27.0% (22.9%-31.5%)
Other outpatient appointment	20 13.4% (10.6%-16.8%)	22 9.5% (7.5%-11.9%)	22 12.7% (10.1%-15.8%)	28 15.8% (12.9%-19.1%)	13 9.4% (6.9%-12.6%)
Death certificate only/ Unknown	9 5.7% (3.9%-8.2%)	13 5.8% (4.3%-7.8%)	12 6.6% (4.8%-9.1%)	4 2.4% (1.4%-4.1%)	5 4.0% (2.5%-6.3%)

By deprivation quintile

Route to diagnosis	Most deprived	Quintile 2	Quintile 3	Quintile 4	Least deprived
Red-flag referral	22 16.0% (12.8%-19.8%)	28 16.2% (13.3%-19.7%)	33 18.3% (15.3%-21.8%)	33 16.6% (13.8%-19.8%)	34 18.5% (15.5%-22.0%)
Emergency presentation	43 30.5% (26.3%-35.0%)	50 29.1% (25.3%-33.2%)	56 31.1% (27.4%-35.1%)	61 31.0% (27.4%-34.8%)	46 25.1% (21.6%-28.9%)
Elective inpatient admission	5 3.6% (2.2%-5.8%)	7 3.9% (2.5%-6.0%)	9 4.8% (3.3%-7.0%)	7 3.7% (2.5%-5.6%)	10 5.3% (3.7%-7.5%)
Other GP referral to outpatients	45 32.4% (28.1%-37.0%)	55 32.0% (28.1%-36.2%)	57 31.7% (27.9%-35.7%)	65 32.8% (29.2%-36.7%)	58 31.8% (28.1%-35.8%)
Other outpatient appointment	18 12.6% (9.8%-16.1%)	25 14.5% (11.7%-17.8%)	18 10.2% (7.9%-13.0%)	22 11.0% (8.7%-13.8%)	23 12.5% (10.0%-15.6%)
Death certificate only/ Unknown	7 5.0% (3.3%-7.5%)	7 4.3% (2.9%-6.4%)	7 3.9% (2.6%-5.9%)	10 4.9% (3.4%-7.0%)	12 6.7% (4.9%-9.1%)

By cancer type

Route to diagnosis	Leukaemia	Lymphoma	Multiple myeloma
Red-flag referral	38 14.7% (12.4%-17.4%)	74 18.1% (16.0%-20.3%)	35 20.1% (16.9%-23.7%)
Emergency presentation	82 31.5% (28.3%-34.8%)	115 28.0% (25.6%-30.6%)	53 29.9% (26.2%-34.0%)
Elective inpatient admission	16 6.0% (4.6%-7.9%)	9 2.3% (1.6%-3.3%)	11 6.4% (4.6%-8.9%)
Other GP referral to outpatients	79 30.5% (27.3%-33.8%)	136 33.3% (30.7%-36.0%)	53 29.9% (26.2%-34.0%)
Other outpatient appointment	29 11.3% (9.2%-13.7%)	51 12.5% (10.8%-14.5%)	21 12.1% (9.6%-15.2%)
Death certificate only/ Unknown	16 6.0% (4.6%-7.9%)	24 5.9% (4.7%-7.3%)	3 1.5% (0.8%-3.0%)

By year of diagnosis

Route to diagnosis	2018	2019	2020
Red-flag referral	152 17.4% (15.0%-20.0%)	145 15.8% (13.5%-18.3%)	152 18.6% (16.1%-21.4%)
Emergency presentation	257 29.3% (26.4%-32.4%)	266 28.9% (26.1%-31.9%)	243 29.7% (26.7%-32.9%)
Elective inpatient admission	34 3.9% (2.8%-5.4%)	36 3.9% (2.8%-5.4%)	42 5.1% (3.8%-6.9%)
Other GP referral to outpatients	291 33.2% (30.2%-36.4%)	309 33.6% (30.6%-36.7%)	240 29.3% (26.3%-32.6%)
Other outpatient appointment	98 11.2% (9.3%-13.4%)	118 12.8% (10.8%-15.1%)	100 12.2% (10.2%-14.6%)
Death certificate only/ Unknown	44 5.0% (3.8%-6.7%)	46 5.0% (3.8%-6.6%)	41 5.0% (3.7%-6.7%)