Deploying Data-Driven Intelligence to measure the impact of COVID-19 on cancer care and cancer patients

December 2020
National Histopathology Quality Improvement Programme (NHQI)
National Cancer Control Programme (NCCP)
National GI Endoscopy Quality Improvement Programme (NEQI)
DATA-CAN, the UK’s Health Data Research Hub for Cancer
Queen’s University Belfast and the Northern Ireland Cancer Registry
Faculty of Pathology, Royal College of Physicians of Ireland (RCPI)

Main Contributors to the work in alphabetical order:

Prof Louise Burke, Dean, Faculty of Pathology, RCPI
Mr Conor Canavan, Programme Manager, National GI Endoscopy Quality Improvement Programme
Dr Ian Dawkins, Data Analyst, Cancer Intelligence, NCCP
Prof Glen Doherty, National Training Lead, Acute Operations National Endoscopy Programme
Dr David Donnelly, Statistician, NI Ireland Cancer Registry
Prof Anna Gavin, Director, Northern Ireland Cancer Registry
Prof Mark Lawler, Associate Pro-Vice-Chancellor and Professor of Digital Health, Queen’s University Belfast; Scientific Director, DATA-CAN, the UK’s Health Data Research Hub for Cancer
Dr Jan Leyden, Chair, National GI Endoscopy Quality Improvement Programme
Dr Caîtriona McCarthy, Consultant in Public Health Medicine, NCCP
Mrs Áine Mitchell, Programme Manager, National Histopathology Quality Improvement Programme
Dr Deirdre Murray, Head of Cancer Intelligence NCCP
Prof Risteárd O’Laoide, National Director, NCCP
Dr Niall Swan, Member, National Histopathology Quality Improvement Programme
Dr Ann Treacy, Chair, National Histopathology Quality Improvement Programme
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Executive Summary

Cancer impacts on the whole population, contributes to the highest number of hospital admissions every year\(^1\) and is the most common cause of death in Ireland, accounting for almost 31% of deaths in 2016, with an annual average of about 9,020 deaths\(^2\).

During the first wave of the COVID-19 pandemic, the cancer diagnostic and treatment pathways were affected at numerous key pinch points. These included pausing of screening programmes, reduced likelihood of GP attendance by the public for concerning symptoms, redeployment of staff to COVID-19 patient management and the impact on capacity of COVID-19 risk-reducing measures, such as distancing in clinics and infection prevention and control measures.

This report presents data on the adverse impact for cancer services in the early part of the management of the COVID-19 pandemic, compared to the same period in 2019. From a diagnostic perspective, there were significant reductions in referrals and attendances at rapid access clinics, and an overall reduction in diagnostic activity. From a treatment perspective, significantly fewer patients have undergone cancer treatments since the pandemic began, compared to the same period in 2019. Also, treatment regimens have changed due to reductions in surgical procedures.

The rate of recovery has been good in some areas. However, in all areas, particularly those related to cancer diagnostics, which are key to life-saving early diagnosis, the data indicate that intensive efforts are needed to ensure timely access for citizens and patients to all cancer services going forward.

Although numbers of screening, diagnostic and therapeutic procedures began to recover, the impact of the delay on patient outcomes is unknown. The duration and impact of the overall pandemic is also unknown, so it cannot be assumed that the fall in numbers experienced in the Spring of 2020 will not be repeated.

Key findings:

Referrals and attendances at rapid access clinics

- In March and April of 2020, the National Cancer Control Programme (NCCP) rapid access clinics experienced a significant fall in referrals, attendances and subsequent diagnoses of cancer across all three tumour sites of breast, lung and prostate.
- Referrals and attendances have returned to near normal levels, apart from patients attending prostate cancer clinics. At end of September 2020, referrals at prostate clinics

\(^{1}\) HPO report Activity in Irish Public Hospital, 2018
\(^{2}\) NCRI Annual Report 2019
were 9% below the figure for the same period in 2019, and attendances at prostate clinics to end August were 26% below 2019 levels.

- From March to June 2020, a total of 419 (23%) less cancers were detected (2019 - 1796, 2020 – 1377) through the NCCP rapid access clinics, compared with the same period in 2019.
- This figure is an underestimate of overall impact, given that the available NCCP data relate only to three tumour types diagnosed through rapid access clinics, thus representing circa 21% of all invasive cancers.
- Prostate cancer has been the most impacted, followed by breast and lung cancer. To date, the number of cancers detected through these clinics is at 89% of the 2019 level (98% for breast, 95% for lung, prostate 67%). Although the number of cases diagnosed has recovered considerably, cases have not yet matched 2019 figures.

Diagnostics

- From March to June 2020, there were 15,472 less biopsies performed (reduction of 44%) (excluding gastrointestinal biopsies) compared to 2019 figures.
- It is not possible to determine the number of these biopsies that represent a cancer diagnosis; however, it signifies a worrying trend during this period, reflecting reduced access to non-COVID related diagnostic services.
- Small biopsy cases began to increase in May and June 2020, but the numbers were still significantly less than in the two preceding years (a decrease of 41% from 2019 and 42% from 2018). The trend was similar with FNA (Fine Needle Aspiration) cytology\(^3\) specimens and GI Endoscopy biopsy cases.
- Overall, the large number of missing diagnoses is worrying. Delays in diagnosis of cancer, particularly in diseases such as colorectal cancer can lead to an upward stage shift, with cancer being diagnosed at a later stage of the disease, when it is more aggressive and less easy to treat.

Treatment

- In the March to June 2020 period, there were 668 less cancer resections (reduction of 13%) performed compared to 2019 figures.
- The reduction in cancer resection specimens is much less marked than that seen with small biopsies, GI endoscopy biopsies and FNA cytologies. This reflects patients who had diagnostic biopsies and cytologies performed earlier in the year and whose surgery was already completed. The ability to complete these resections was enhanced by arrangements during the early pandemic period which enabled private hospital capacity to be utilised for public patients.
- There was a minor increase in cancer resection cases in May 2020, which was maintained in June 2020 (90% & 77% respectively of levels for the same month in 2019).

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\(^3\) Fine Needle Aspiration (FNA) involves using a needle attached to a syringe to collect cells from lesions or masses in various body organs e.g. a fine needle aspiration of the thyroid gland or of a lymph node
Again, due to lag time with upload of data, it is not immediately clear whether there is an upward or a downward trend after June 2020.

- Attendances for chemotherapy began to fall in March 2020 and by April 2020 attendances were down 32% compared to previous years. Recovery began in May 2020 and further improved in June 2020 but overall, the year-to-date activity at the end of July 2020 was still at 84% of 2019 levels. These data most probably overestimate the fall in treatment numbers, as some hospitals moved their systemic therapy services offsite when the number of COVID-19 cases began to rise in Ireland. Most treatments have returned to their original locations, but that offsite activity is not captured in these data.

- As Radiation Oncology centres are standalone units, they didn’t need to move to alternate sites. Reduction in activity was thus the least impacted of the cancer services following COVID-19.

It is important to note that the adverse impact illustrated by the data is not unique to the Republic of Ireland. Based on analysis of data from Northern Ireland and elsewhere in the UK by DATA-CAN, the UK’s Health Data Research Hub for Cancer and the Northern Ireland Cancer Registry, similar results have been observed at NI/UK trusts. Much of these data were obtained in near “real time,” highlighting the impact of COVID-19 on citizens, cancer patients and cancer services in a timely fashion so as to inform the restarting of cancer services and aid the recovery.

These data presented in this report emphasise the importance of continuing to encourage early presentation when there is a suspicion of cancer and ensuring the availability of diagnostic services to enable rapid diagnosis. It is crucial that there is the right balance in the management of the COVID-19 pandemic, such that disruption to other health services including cancer services is minimised, particularly during the second or future waves.

We also encountered considerable data constraints in preparing this report. We do not currently have a connected health data intelligence system capable of delivering the required (near) real time data to optimally monitor and lead recovery of all cancer services. It is essential that we develop an innovative eHealth solution to ensure the availability of high-quality data for forecasting and managing necessary service plans and developments, especially in dealing with the unprecedented challenges such as the present pandemic. More than ever, we need a commitment towards the complete implementation of the ‘eHealth Strategy for Ireland’ published in 2013. This includes Electronic Health Records (EHR), Individual health Identifier (IHI), and integration of cancer intelligence from all sources involved in cancer patient care including both private and public healthcare systems. The potential for an All-Island Real Time Cancer Data Network, working with our colleagues in DATA-CAN and the Northern Ireland Cancer Registry should also be considered.
Introduction

Cancer is a leading cause of death in Ireland and globally. Cancer impacts on the whole population, contributes to the highest number of hospital admissions every year and is the most common cause of death in Ireland, accounting for almost 31% of deaths in 2016, with an annual average of about 9,020 deaths from invasive cancer.

In the current pandemic, ensuring optimal cancer care, while balancing the need to protect citizens, patients and staff from the direct effect of COVID-19 infection is paramount. It is particularly important to maintain access to timely diagnosis and treatment of cancer. Prevention of upward stage migration, where the patient presents at a later more aggressive stage is critical, reducing the risk of increased morbidity and mortality.

To more clearly understand how the COVID-19 pandemic, and in particular the early phase incorporating a ‘Stay at home’ period (circa March 27th - May 18th 2020), has impacted on our cancer services within the Republic of Ireland, a COVID-19 and Cancer subgroup was convened by the Faculty of Pathology, Royal College of Physicians of Ireland (RCPI) to pool data resources and where possible, to make comparisons with data already generated by DATA-CAN (the UK’s National Health Data Research Hub for Cancer) and the Northern Ireland Cancer Registry (NICR). This activity allowed the subgroup to develop a clear picture of the adverse impact that the COVID-19 pandemic has had on cancer services here in Ireland, within the limitations of the available Irish data.

Collaborators in Ireland included the National Histopathology Quality Improvement Programme (NHQI), National Cancer Control Programme (NCCP), the National GI Endoscopy Quality Improvement Programme and the Faculty of Pathology, RCPI, while international collaborators were DATA-CAN and NICR. Data representing the activities in the key areas of cancer services were analysed (included those related to presentation, diagnostics and treatment of cancer) (See also Appendices A and B- Data Sources and Data Tables).

The strengths of this approach include the voluntary contribution of collaborators, along with the diversity of specialities represented. The commitment of the project authors was to provide essential information in a clear and concise way on the delivery of on-going non-COVID-19 healthcare to patients. In addition, the NHQI & GI Endoscopy QI programmes have the added advantage of including data from both public and private sources. Deploying data from across

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4 Ahmedin Jemal, DVM, Freddie Bray, Melissa M. Center, Jacques Ferlay, Elizabeth Ward, David Forman, Global Cancer Statistics; CA CANCER J CLIN 2011;61:69–90
the diagnostic and therapeutic pathways can provide crucial intelligence to inform policy going forward.

There are various challenges in collating and analysing these data; for example, the lack of a connected national health informatics system able to efficiently and effectively collate the information gathered from the various groups listed. Additionally, delays with the national laboratory informatics system have negatively impacted on the ability to gather more detailed information on histology specimens and cancer histopathological subtypes, which would have significantly contributed to a more complete data record for this pandemic period. In addition, and although the NCCP, which was established in 2007, delivers a programmatic approach to cancer service delivery aligned to the 8 cancer centres, the detailed data on the diagnostic pathway relates only to the three common cancers for which there are rapid access clinics and does not include data from the private healthcare system.

Notwithstanding these challenges, the data and analysis presented here will help inform a robust response that ensures effective COVID-19 risk reduction while minimising any adverse impacts on cancer services and other key components of our health system. It also provides the blueprint for a real-time cancer data network incorporating timely and robust evidence to inform cancer service development going forward.
NCCP Rapid Access Pathways

The NCCP has rapid access pathways for three of the major cancers - breast, lung and prostate cancer. Together, these three cancer groups account for 41% of the almost 24,000 invasive cancers (excluding non-melanoma skin cancers) diagnosed in Ireland each year.

It is estimated that almost all patients with symptoms, attending public hospitals and subsequently diagnosed with breast cancer are diagnosed via the symptomatic breast disease clinic. At least half of all lung cancer patients are diagnosed via the rapid access route and a third of prostate cancers are diagnosed via the rapid access route (Table A). The NCCP rapid access clinic data represents approximately 21% of all invasive tumours.

Table A

<table>
<thead>
<tr>
<th>Cancer</th>
<th>National Total</th>
<th>NCCP Clinic</th>
<th>Screen detected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast (invasive and in situ)</td>
<td>3,736</td>
<td>2,551</td>
<td>1,067</td>
</tr>
<tr>
<td>Lung</td>
<td>2,747</td>
<td>1,309</td>
<td>NA</td>
</tr>
<tr>
<td>Prostate</td>
<td>3,665</td>
<td>1,320</td>
<td>NA</td>
</tr>
</tbody>
</table>

Presentation

E-referrals to NCCP clinics

This refers to urgent referrals with a suspicion of cancer to the NCCP clinics. Data on E-referrals is available on a weekly basis. In March 2020, there was a sharp drop in e-referrals to the symptomatic breast disease (SBD), lung and prostate clinics (Figures 1a, 1b, 1c) as COVID-19 cases and hospitalisations began to increase in Ireland. Schools closed on 13 March 2020 and further restriction measures were put in place on 27 March 2020, including a “stay-at-home” instruction. For SBD clinics, e-referrals dropped by 39% in March 2020 and remained below normal levels in April 2020. E-referrals to the SBD clinics recovered in May 2020 and by end of September 2020 had surpassed last year’s numbers, looking at the year-to-date figures (Table 1 Appendix B).

Figure 1a. Number of new e-referrals to the NCCP SBD clinics, 2019 and year-to-date 2020

Source: Healthlink

A similar pattern was seen in e-referrals to lung and prostate clinics (Figures 1b and 1c), although those clinics experienced their lowest number of referrals in April 2020 rather than in March 2020 and recovery was slower and less complete. Lung clinic e-referrals dropped by 29% in March 2020 and 49% in April 2020 and began to recover in June 2020.

E-referrals to prostate rapid access clinics fell in April 2020 by 44% and recovery began in July 2020. E-referrals for both lung and prostate clinics (to end September 2020) were still overall 9% below expected levels (Table 1 Appendix B).
Figure 1b. Number of new e-referrals to the NCCP lung clinics, 2019 and year-to-date 2020

Source: Healthlink

Figure 1c. Number of new e-referrals to the NCCP prostate clinics, 2019 and year-to-date 2020

Source: Healthlink
**Attendances at Rapid Access Clinics:**

Figures 2a, 2b and 2c indicate the pattern of attendances to the rapid access clinics in 2020. Urgent breast attendances (Fig 2a) fell in March 2020 by 35% and took a further two months to recover. Year-to-date (to end of August 2020) data suggests that clinics are still 12% below expected (2019) levels (*Table 2 Appendix B*).

*Figure 2a. New attendances at the urgent SBD clinics, 2019 and 2020*

![Graph showing new attendances to urgent breast clinics from January to December 2019 and 2020. The graph shows a decline in attendances in March 2020, with a recovery by the end of August 2020, but still below 2019 levels.]

Source: NCCP HealthAtlas Portal

Similar patterns were seen in the rapid access lung and prostate clinics, though attendances reached their lowest point a month later in April 2020 - lung clinic attendances dropped by 33% and there was a 57% fall in prostate clinic attendances (*Figures 2b and 2c and Table 2 Appendix B*). Lung clinic attendances have recovered but by end August 2020 are still overall 9% below 2019 attendances. Prostate clinic attendances by end August 2020 are still 26% below expected levels.
Figure 2b. New attendances at the lung rapid access clinics, 2019 and 2020

Source: NCCP HealthAtlas Portal

Figure 2c. New attendances at the prostate rapid access clinics, 2019 and 2020

Source: NCCP HealthAtlas Portal
Cancer Detection

A key outcome of the rapid access diagnostic clinics is the number of patients that are subsequently diagnosed with cancer.

In line with the fall in referrals and attendances, the number of cancers detected by the multidisciplinary teams in the clinics also fell to 52% of expected levels in April 2020 and then recovered as attendances at clinics increased. Overall, in the March 2020 to June 2020 period, this represented 419 less cancers were detected (reduction by 23%) (2019 - 1796, 2020 – 1377), with prostate being the worst affected, followed by breast and lung.

To end August 2020, the number of cancers detected is at 89% of the 2019 level (98% for breast, 95% for lung, 67% for prostate) (Figure 3 below and Table 3 of Appendix B).

Figure 3. Number of new patients that are subsequently diagnosed with a primary cancer, following attendance at one of the three rapid access clinics, 2019 and 2020

Source: NCCP HealthAtlas Portal
Diagnostics

P01 Small Biopsy
Diagnostic samples taken from patients vary in terms of sample type and size. We reviewed and present in this report the National Histopathology QI data for small biopsies, gastrointestinal biopsies and FNA (Fine Needle Aspirate) cytologies. All of these declined dramatically during the period March – June 2020 (15,472 less biopsies performed during this period reflecting a reduction of 44% compared to 2019 figures).

Figure 4: P01 Small Biopsy Comparison of all sites, 2018-2020

The above graph illustrates the decrease in workload associated with Small Biopsy (P01) cases in 2020 in comparison to 2019 and 2018. The aggregated data reveals that the number of these cases reported on began to decrease from early March 2020. These figures reached the lowest point in April 2020 with 2,941 cases reported (Table 4 of Appendix B). This is in contrast to an average of 8,356 cases reported in 2018 and 2019 in the same month and represents a percentage decrease of 65%.

It is not possible to determine the number of these biopsies that represent a cancer diagnosis; however, it signifies a very worrying trend during this period when there was reduced access to non-COVID related diagnostic services. It is not immediately clear also what direction the curve will take after June 2020 as there is an upload lead time of more than two months for the data.
**PO2 – GI Endoscopic Biopsy**

This refers to a sample of tissue taken from the gastrointestinal tract during an endoscopic procedure for diagnosis.

*Figure 5: PO2 GI Endoscopic Biopsy comparison of all sites, 2018-2020*

The GI Endoscopic Biopsy (PO2) cases show a similar picture to those for Small Biopsy. A significant decrease was observed in cases reported on from early March 2020, to the lowest point recorded to date in April 2020. Laboratories experienced a decrease of 87% in GI Endoscopic Biopsy cases reported on in April 2020, when compared to an average caseload of the same months in 2018 and 2019.

During March to June 2020 inclusive, there were 30,957 (61%) less GI Endoscopic Biopsies performed compared to 2019 figures (*Table 5 Appendix B*). The graph reveals a small increase in cases reported on in May and June 2020; however, these numbers are significantly less than in previous years. It is not possible to determine the number of these biopsies that represent a cancer diagnosis; however, it signifies a worrying trend during this period when there was reduced access to non-COVID related diagnostic services. It is not immediately clear what direction the curve will take after June 2020 due to an upload lead time of two months.
NQAIS-Endoscopy data, 2018 - 2020

Figure 5.1: National GI Endoscopy workload for all sites, 2018 – 2020

Data from NQAIS-Endoscopy reveals a large decrease in the number of procedures recorded in the system between February and April of 2020. The total workload shown in this graph is comprised of the total numbers of colonoscopies, oesophagogastroduodenoscopies and flexible sigmoidoscopies combined. There were 15,520 less procedures recorded in April than in February in the 2020 workload data. This represents an 87% reduction in the number of procedures collected in NQAIS-Endoscopy during this period and mirrors trends shown in the P02 data reported from NQAIS-Histopathology. In comparison to April of 2019 and 2018, the overall numbers of procedures during April 2020 were down 88.5% and 87% respectively.

The figures presented in Table 5.1 (Appendix B) and illustrated in figure 5.1 are representative of only colonoscopies, flexible sigmoidoscopies and oesophagogastroduodenoscopies captured in NQAIS-Endoscopy over the three-year period. These figures do not include Endoscopic Retrograde Cholangio-Pancreatography (ERCP) or Endoscopic Ultrasound procedures.

The Health Service Executive collects and reports the volume of GI endoscopy episodes of care in 39 acute hospitals throughout Ireland on a monthly basis. This includes episodes of day case endoscopy, inpatient elective scopes as well as emergency GI scope activity. While the dataset used by the HSE is not directly comparable to data from NQAIS-Endoscopy, it has shown that there is a 36% reduction in GI endoscopy day case activity from January to the end of September 2020 when compared to the expected level of activity for 2020 before the onset of COVID-19. Endoscopy activity levels are monitored by the HSE Acute Operations division, which includes the national Endoscopy Programme.
P06 Non-Gynaecological Cytology– FNA Comparison of all sites, 2018-2020

Fine Needle Aspiration (FNA) involves using a needle attached to a syringe to collect cells from lesions or masses in various body organs e.g. a fine needle aspiration of the thyroid gland or of a lymph node.

Figure 6: P06 Non-Gynaecological Cytology– FNA comparison of all sites, 2018-2020

The findings on non-gynaecological Cytology FNA (P06) cases illustrate a similar trend to those for Small Biopsy cases. A significant decrease was observed in cases reported on from February 2020, to the lowest point recorded to date in April 2020. As can be seen in the accompanying Table 6 (Appendix B) laboratories experienced a percentage decrease of 56% Non-Gynaecological Cytology cases reported on in April 2020, when compared to an average caseload of the same months in 2018 and 2019.

During March to June 2020 inclusive, there were 1,372 less FNA’s performed (reduced by 38%) compared to 2019 figures. FNA cytology provides an important diagnostic pathway for a number of cancers including lung cancer for both staging and treatment decisions. The reduction in numbers of FNA cytology specimens during this period reflects the reduction in patients being seen and assessed.

The graph reveals a small increase in cases reported on in May 2020 and June 2020; however, these numbers are less than in previous years (May and June 2019 comparison indicates a 53% and 82% reduction respectively). It is not immediately clear whether there is an upward or a downward trend after June 2020, due to an upload lead time of more than two months for the data.
Treatment

P03 Cancer Resection

A Cancer Resection is a partial or total resection specimen from surgical procedures for the treatment of cancer. Examples include mastectomy for the treatment of breast cancer, and colectomy for the treatment of colon cancer. Cancer resections are used for both diagnostic and therapeutic management of patients. Following a patient’s cancer resection, further decisions are made regarding chemotherapy or radiation therapy, based on their pathology report and disease staging.

Figure 7: P03 – Cancer Resection comparison of all sites, 2018-2020

The analysis on Cancer Resection (P03) cases reveals that the number of cases reported on began to significantly decrease in March 2020. As can be seen in the accompanying table (Table 7 of Appendix B), in the previous two years, laboratories were reporting on an average of 1,298 cases in the month of April, while in 2020 a percentage decrease of 26% in Non-Biopsy Cancer Resection cases being reported is observed.

During March to June 2020 inclusive, there were 740 less cancer resections performed (reduced by 14% compared to 2019 figures). The reduction in cancer resection specimens is much less marked than that seen with small biopsies and FNA cytologies presented above. This may reflect the patients who had diagnostic biopsies and cytologies earlier in the year to diagnose their cancers and who were awaiting surgery when the crisis began in March 2020. It also highlights the arrangement between public and private hospitals, whereby public patients continued to have their care delivered in private hospitals over this period. There was a minor increase in cases reported on in May 2020, which was maintained in June 2020 (May/June 2019 comparison indicates a 10% and 23% reduction respectively. However, it is not immediately clear what direction the curve will take after June 2020 due to an upload lead time of more than two months.
Systemic Therapy and Radiation Treatments:

Some hospitals moved their systemic therapy services offsite when the number of COVID-19 cases began to increase in Ireland. Most have returned to their original locations, but that offsite activity is not reflected in the data presented (Fig 8) below, which thus overestimates the fall in treatment numbers. In addition, medical oncologists in some cases revised the protocols of their patients, taking into account the risk of COVID-19 infection and thus reduced the number of patients on active treatment that required day case attendances.

In April 2020, patient attendance as a day case for chemotherapy in Irish public hospitals reached its lowest point (down 32% compared to previous years) (Figure 8). Recovery began in May and activity in June was back to 2019 levels but overall, the year-to-date activity is still 16% below expected levels.

Figure 8. Number of patients who attended as a day case for systemic therapy, 2019 and 2020

For radiation oncology patients, activity fell by 20% in April 2020, recovering in June 2020 and by the end of July 2020 it was 10% below expected levels (Fig 9).

Figure 9. Number of patients who attended as a day case for radiotherapy, 2019 and 2020
Comparison with UK & Northern Ireland Cancer Data

**DATA-CAN**

DATA-CAN (the UK’s National Health Data Research Hub for Cancer) has been at the forefront of UK efforts to delineate the significant adverse impact of the COVID-19 pandemic on cancer and has also highlighted how data informed intervention can mitigate the indirect effects of COVID-19 on cancer services and cancer patients. ⁶ ⁷ ⁸

A data-driven collaboration between DATA-CAN and University College London analysed weekly aggregated data in near real time from hospital trusts within England and Northern Ireland (NI). The data clearly outlined the significant disruptions to cancer care that occurred during the early phase of pandemic management, with an average drop of 71% in 2 week wait referrals (also known as red flag referrals and akin to urgent referrals in Ireland) and a reduction of over 40% in chemotherapy attendances. Their data (which they shared with the 4 Chief Medical Officers of the nations of the UK and the National Cancer Director) clearly outlined the necessity to utilize data in (near) real time to empower the recovery and maintenance of cancer services and contributed to the UK government’s decision to restore cancer services and prioritise cancer as the Number 1 priority for the NHS.

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Figure 10. DATA-CAN analysis of 2 Week Wait Times and Chemotherapy Attendances in Hospital Trusts in England and Northern Ireland Left hand panel 2 Week Wait Times; Right hand Panel Chemotherapy Attendances. Adapted from BMJ Open. 2020 Nov 17;10(11):e043828. doi: 10.1136/bmjopen-2020-043828. BMJ Open. 2020. PMID: 33203640

The data presented in Figure 10 showed similar results to the data from Ireland with March 2020 & April 2020 being the most severely affected period, indicating that our observations in Ireland reflect international trends.

Northern Ireland - Recent trends in the number of patients with pathology samples indicating cancer: Sept 2020

This summary provides an overview of recent trends in the number of patients with pathology samples indicating cancer (excluding non-melanoma skin cancer, NMSC) whose first sample was taken from 1st January 2020 to the week ending 12th September 2020 in Northern Ireland. These trends are contrasted with the annual average number of patients with pathology samples indicating cancer (ex NMSC) during 2017-2019 in order to provide an indication of the potential impact of the Covid-19 restrictions on diagnostic cancer services. Data are sourced from the four NHS pathology laboratories in Northern Ireland (Belfast, Altnagelvin, Antrim, Craigavon), which are usually provided to the NI Cancer Registry on a monthly basis.
From 1st March to 12th September 2020, the number of patients with a pathological sample indicating cancer was 23% lower than the average number for the same time period in 2017-2019.

Based upon the monthly trend in patients with pathology samples indicating cancer, there was an estimated shortfall of 1,130 patients during March-August 2020 compared to the expected number. Some of these “missing” patients may have a clinical only diagnosis (e.g. as a result of an emergency hospital admission.

*Figure 11. Trends in patients with pathology samples indicating cancer by week first sample taken*
Figure 12. Trend in patients with pathology samples indicating cancer by month and year first sample taken

![Graph showing trend in patients with pathology samples indicating cancer by month and year first sample taken.]

Figure 13. Percentage change between 2017-19 and 2020 in patients whose first pathology sample indicating cancer was taken in the previous five weeks

![Bar chart showing percentage change between 2017-19 and 2020 for patients whose first pathology sample indicating cancer was taken in the previous five weeks.]

- Week 27 (04 Jul): -17%
- Week 29 (18 Jul): -21%
- Week 31 (01 Aug): -21%
- Week 33 (15 Aug): -18%
- Week 35 (29 Aug): -22%
- Week 37 (12 Sep): -15%
There was a 5% reduction in the number of patients with a pathology sample indicating cancer in weeks 33-37 of 2020, compared to the average value for weeks 33-37 in 2017-2019.

Compared to the annual average for weeks 33-37 in 2017-2019, the number of patients with a pathology sample indicating lung cancer in 2020 decreased by 21%, while those indicating prostate cancer decreased by 10%. However, the number of patients with pathology samples indicating bowel or breast cancer increased by 12% and 6% respectively, while the number of haematological cancer patients increased by 30%. (Figure 15)

*Figure 14. Impact according to Cancer type*
Figure 15 Percentage change from 2017-2019 to 2020 in the number of patients with pathology samples indicating cancer, and estimates of the number of "missed" patients in 2020

<table>
<thead>
<tr>
<th></th>
<th>Percentage change from 2017-2019 to 2020 in the number of patients with pathology samples indicating cancer</th>
<th>Estimated number of &quot;missed&quot; patients at the end of August 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>All cancers (ex NMSC)</td>
<td>Weeks 33-37 (9 Aug to 12 Sept in 2020)</td>
<td>Weeks 10-37 (1 Mar to 12 Sept in 2020)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>-8%</td>
<td>-22%</td>
</tr>
<tr>
<td>Females</td>
<td>-2%</td>
<td>-23%</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ages 0-69</td>
<td>-6%</td>
<td>-23%</td>
</tr>
<tr>
<td>Ages 70+</td>
<td>-4%</td>
<td>-23%</td>
</tr>
<tr>
<td>Pathology Lab</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belfast</td>
<td>-3%</td>
<td>-17%</td>
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<tr>
<td>Altnagelvin</td>
<td>8%</td>
<td>-28%</td>
</tr>
<tr>
<td>Antrim</td>
<td>2%</td>
<td>-25%</td>
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<td>Craigavon</td>
<td>-29%</td>
<td>-36%</td>
</tr>
<tr>
<td>All cancers (ex NMSC)</td>
<td>-5%</td>
<td>-23%</td>
</tr>
<tr>
<td>Cancer type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NMSC</td>
<td>-14%</td>
<td>-37%</td>
</tr>
<tr>
<td>Bowel</td>
<td>12%</td>
<td>-17%</td>
</tr>
<tr>
<td>Lung</td>
<td>-21%</td>
<td>-27%</td>
</tr>
<tr>
<td>Female breast</td>
<td>6%</td>
<td>-20%</td>
</tr>
<tr>
<td>Prostate</td>
<td>-10%</td>
<td>-21%</td>
</tr>
<tr>
<td>Gynaecological</td>
<td>-18%</td>
<td>-29%</td>
</tr>
<tr>
<td>Upper GI</td>
<td>-2%</td>
<td>-27%</td>
</tr>
<tr>
<td>Head &amp; Neck</td>
<td>2%</td>
<td>-24%</td>
</tr>
<tr>
<td>Urinary</td>
<td>8%</td>
<td>-15%</td>
</tr>
</tbody>
</table>

9 NMSC: Non-melanoma skin cancer; GI: Gastrointestinal. Other cancers exclude cancer of unknown primary.

"Missed" patients may have a clinical only diagnosis (e.g. as a result of an emergency hospital admission).
"Missed" patients were calculated based upon the difference between the actual and expected number of patients recorded. The latter is determined using the trend in patients diagnosed pathologically from Jan 2017 to Feb 2020, and thus includes any expected increases (or decreases) as a result in annual changes in the number of cases diagnosed (e.g. as a result of population growth and/or ageing).
UK e-referral data

E referral data from the UK has indicated significant drops in referrals for all cancers but also evidence of recovery. However, recovery rates vary for different cancers, with lung cancer being most significantly affected. Similarly, looking at national 2 WW data (Figure 16 below), patterns of recovery vary for different diseases (lung cancer for example exhibiting the slowest rate of recovery), emphasising the importance of having disease-specific near real-time data.

Figure 16. UK e-referral data

2WW Referrals in England

- 2WW referrals for major cancers declined significantly but have begun to recover
- Lung is recovering at the slowest rate, possibly due to symptoms being mistaken for COVID or the population who would have ordinarily been referred by GPs are remaining to shield

Note: Pre-crisis levels defined as 7 Oct 2019 to 1 March 2020 average

Discussion & Conclusion:

Referrals and attendances

In March and April of 2020, the NCCP rapid access clinics (RAC) experienced a significant fall in referrals, attendances and subsequent diagnoses of cancer across all three tumour sites of breast, lung and prostate. Referrals and attendances have returned to near normal, apart from patients attending Prostate RAC.

The delay in return to normal levels of RAC activity can be attributed to two main factors – citizen concerns about hospital attendances and the risk of SAR-COV2 infection, particularly in the springtime, and clinic capacity changes due to the repurposing of health services towards infection control, with the consequent reduction in the availability of clinical and diagnostic slots for delivery of cancer services to patients. In addition, it is important also to note that some procedures were halted due to concerns about aerosol generation and overall infection control requirements; redeployment of staff to COVID related care/services may have also had an adverse impact.

In March to June of 2020 (incorporating the first ‘Stay at home’ period of March 27th to May 18th period), a total of 419 (23%) less cancers were detected through the NCCP rapid access clinics. This figure however is an underestimate, as the available NCCP data relates only to three tumour types and 21% of all invasive cancers in Ireland.

Prostate cancer has been most negatively impacted followed by lung and breast cancers. To date, the number of cancers detected through these clinics is at 89% of the 2019 level (98% for breast, 95% for lung, prostate 67%) (Figure & Table 3). Although the number of cases diagnosed has considerably recovered, cases have not as of yet matched 2019 figures; work by DATA-CAN suggests that services may need to be at 130% of pre COVID-19 capacity.

Diagnostics

In data from the National Histopathology Quality Improvement programme and National GI Endoscopy programme for the same March to June 2020 period, it is clear that there has been a significant reduction in biopsies /cytologies performed as well as in GI endoscopic activity compared to 2019 figures. The data are limited (in comparison for example to the DATA-CAN cancer intelligence) as it is not possible to delineate the number of these tests that could represent a cancer diagnosis, however, it nonetheless signifies a worrying trend during this period, with reduced access to non-COVID related diagnostic services.

At this time, it is not possible to determine the longer-term significance of these reductions in all aspects of the cancer diagnostic pathway. It is clear however that cancer diagnostics, which are key to life saving early cancer diagnosis, were disproportionally impacted. It suggests that there are a cohort of people in the community who have not yet been diagnosed with cancer and who
will subsequently present with more advanced disease, which will be more difficult to treat successfully.

**Treatment**

Treatment did not appear to be as adversely affected as diagnosis during this period, and this is also reflected in the comparative UK data (DATA-CAN's cancer intelligence indicates >70% reduction for 2 week wait, also known as red flag referrals, whereas chemotherapy attendances only dropped by ~40% ). These are akin to the urgent referrals.

In Ireland, in March to June 2020 period, there were 668 less cancer resections performed compared to 2019 figures, representing a 13% reduction. Ability to continue cancer resections during this period was certainly aided by the partnership between public and private healthcare facilities.

Attendances for systemic therapy began to fall in March 2020 and in April 2020 there was a drop of 32% of patients attending as a day case for treatment in Irish public hospitals when compared to 2019 levels. Recovery began in May 2020 and further improved in June 2020 but overall, the year-to-date activity at the end of July 2020 was still down by 16% of 2019 levels.

These data most probably overestimate the fall in treatment numbers however, as some hospitals moved their systemic therapy services offsite when the number of COVID-19 cases began to emerge in Ireland. Most have returned to their original locations, but that offsite activity is not reflected in these data, and therefore most probably overestimates the fall in treatment numbers.

Radiation Oncology centres are standalone units in themselves in Ireland. This meant they were naturally separated from COVID-19 care within acute hospitals, which helped minimise the risk to patients attending. That said, their capacity was still adversely impacted by the need to implement distancing and other infection prevention and control measures and to triage patients for COVID-19 prior to treatments. In addition, it is more likely that a course of radiotherapy will not be paused, even if a patient is diagnosed with COVID-19; they would continue their course of treatment with additional infection control precautions as required. Consequently, radiation oncology activity was least impacted.

**Importance of early presentation**

The delay in presentation observed along with the constraints of working in a COVID-19 environment has meant that fewer patients have undergone cancer treatments compared to 2019. Although numbers began to recover relatively quickly, the impact of the delay is unknown in terms of patient outcomes, although delayed diagnosis will presumably lead to more aggressive disease. The duration and overall impact of the pandemic is also unknown, so it cannot be assumed that the fall in numbers experienced in the Spring of 2020 will not be repeated.
All of these data that are presented in this report emphasise the importance of continuing to encourage citizens to immediately visit their GP if they have cancer symptoms, while also ensuring the availability of diagnostic services to enable rapid diagnosis. To this end, the NCCP has undertaken initiatives to assuage citizen and patient fears and encourage patients to continue to present to their GPs if they have symptoms. Public awareness campaigns were run as well as health professional education initiatives. The NCCP has also revised clinic and treatment processes to minimise the risk of COVID-19 and a number of capacity improvement initiatives are outlined in the HSE Winter plan.

E-health

The manual nature of patient records, the relatively siloed nature of health data and the absence of cancer flags in the datasets that are available in Ireland, all contribute to the considerable difficulty the NCCP, other national clinical programmes and cancer centres face in attempting to obtain a holistic view of cancer activity in real-time across the country.

The NCRI (National Cancer Registry of Ireland) provides excellent data on cancer, but because of the manual nature of so many data collection processes, the data it collects has a two-year lag in reporting. The relatively bespoke reporting solutions for the rapid access clinics are not replicated across all cancers and as outlined above, relate only to a subset of the overall cancer burden in Ireland. The work of DATA-CAN, the UK’s Health Data Research Hub for Cancer, in highlighting the adverse impact of the COVID-19 pandemic on cancer services and cancer patients through the use of near real-time data, has led to a widespread call in the UK for timely access to cancer intelligence that can inform service provision both during and after the current pandemic. We should consider a similar approach here in Ireland as timely cancer intelligence will undoubtedly improve our cancer services. DATA-CAN has also highlighted that getting back to pre COVID-19 levels is probably not enough. We need to be delivering at something approaching 130% of capacity to address the significant backlogs that have been highlighted through the generation of data-driven cancer intelligence. The potential for developing an all island approach, both through the development of a Real-Time Cancer Data Network and closer working between the two registries on the island (the NCRI and the NICR) should be further explored.

The development of an electronic patient record, the implementation of the unique health identifier and an initiative to bring together all health information systems into one repository have been discussed in Ireland for many years. Commitment is needed towards complete implementation of the ‘eHealth Strategy for Ireland’\textsuperscript{10} published in 2013 to include Electronic Health Records (EHR), Individual health Identifier (IHI), and integration of information from all sources involved in cancer patient care, including both private and public healthcare systems. Supporting the development of an innovative eHealth solution with the availability of optimal healthcare informatics resources will ensure the availability of high-quality data essential for

\textsuperscript{10}\url{https://www.ehealthireland.ie/Knowledge-Information-Plan/eHealth-Strategy-for-Ireland.pdf}
forecasting and managing necessary service plans and developments, especially in dealing with the unprecedented challenges such as the present pandemic.

On the 18th November 2020, the European Cancer Organisation’s Special Focussed Network on COVID-19 and Cancer launched a 7-Point Plan11 on how to address the challenges that the COVID-19 pandemic poses for European citizens, cancer patients and cancer services. Accurate and timely data are highlighted as a key enabler to help mitigate the adverse impacts of the pandemic. Ireland should adopt the 7-Point Plan and ensure that it can deploy a data-driven approach to ensure that cancer services are maintained and enhanced to address the COVID-19 challenge.

Limitations to study

Approximately 82% of all GP referrals to the SBD clinics and 91% of referrals to the prostate RAC are made electronically, so patterns are a good reflection of the overall number of referrals. However, for lung clinics, only 50 – 60% of referrals originate from GPs, with the remainder being from in-house emergency department, incidental finding or referral from other hospitals. Thus, the e-referral numbers are less representative for those clinics. In addition, some changes in the number of referrals may be due to an increased number of GPs using the system in the timeframe evaluated, rather than an actual increase in referrals.

Data from the RACs only relate to three tumour types, which overall comprise 21% of invasive cancers in Ireland. Not all cancers are treated in public hospitals, and the NCCP clinic cases are a further subset of the public hospital caseload. However, as all clinics were adversely impacted by the pandemic, there is no reason to conclude that the numbers of patients attending other clinics in public hospitals and subsequently being diagnosed with cancer would be higher as a proportion, compared to 2019 than those attending the RAC, as the RACs are primarily cancer services and as such, afforded much more protection than that happens for other services.

Lack of availability of cancer stage data means impact is not yet possible to estimate as this will depend on the work of the NCRI which should be able to measure the impact at population level, by age, socioeconomic group and cancer type. In addition, the limitations to data collation to obtain a holistic view of cancer activity have been detailed.

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Appendix A: Data Sources

Data was analysed from the following sources:

1. National Histopathology Quality Improvement Programme

The National Histopathology Quality Improvement (NHQI) Programme was launched by the Faculty of Pathology in January 2009 in collaboration with the National Cancer Control Programme (NCCP) and Directorate of Quality and Clinical Care in the Royal College of Physicians of Ireland (RCPI) in response to high profile cancer misdiagnoses. Funding was initially provided by the NCCP and was taken over by the HSE National Quality Improvement Team in 2014. RCPI continues to provide the management of the programme.

The central goal of the NHQI Programme is to give the public greater confidence in histopathology services in Ireland, to enhance patient safety and improve patient centred care with timely, accurate and complete pathology diagnoses and reports. This is achieved in a manner that is both supportive and encouraging to the participating histopathology laboratories.

The National Quality Assurance and Improvement System NQAIS-Histopathology functions as a central repository for quality improvement data from participating hospitals’ Laboratory Information Systems (LIS). It allows the programme to generate national reports on the accuracy and timeliness of diagnostic reporting in laboratories across Ireland. The data used, is both anonymised and pseudonymised and is, relating to Key Quality Indicators (KQIs), extracted from NQAIS and used to produce an annual report on these national metrics in histopathology. Ireland is the first country in the world to generate this national lab-based report. Laboratories can use the report to identify best practice and any variations, to review, improve and sustain the quality of their work in the context of national norms and targets set by the Faculty of Pathology.

NHQI Data Collection

The national data is usually compiled and reviewed for the annual report only and not reviewed in real-time. However, following the COVID-19 crisis with reduction of specimens in many histopathology laboratories and concern regarding patient access to diagnostic and therapeutic services, we compiled figures for 2020 to assess the 6-month period, January to June which was uploaded from participating laboratories.

The data contained in this report were collected between the following dates:

- **2019**: 1st January and 31st December - 29 laboratories, 22/22 public and 7/9 private hospitals.
- **2020**: 1st January and 30th June - 28 laboratories, 21/21 public and 7/9 private hospitals.
The number of participating laboratories decreased from 32 in 2018 to 28 in 2020. This is due to the consolidation of four laboratories whose workload is now captured in the NQAIS accounts of larger laboratories.

The data in the national report summarises the national workload down to case numbers, specimens, blocks and slides as well as immunohistochemistry and special stains. It compares the participating laboratories in an anonymised manner in terms of turnaround times as well as a range of important key quality indicators and targets such as intradepartmental consultation rates, MDT review rates and frozen section data.

The specimen types within the data collected are broken down into P codes depending on their size and type. We choose to analyse the small biopsies (designated P01), cancer resections (designated P03) and non-gynaecology cytology FNA (P06) as these specimen types are most important in histopathology for both cancer diagnostics and subsequent patient management.

2. National Cancer Control Programme (NCCP)

The NCCP was established in 2007 to ensure that a programmatic approach was applied to cancer care in Ireland. This enables a whole population, broad approach that deals with all aspects of cancer in a planned way, emphasises equity of care and ultimately seeks to deliver improved outcomes for patients. For any cancer, high-quality clinical care consists of early detection, accurate diagnosis and staging, prompt access to the right combination of surgery, radiotherapy, chemotherapy or supportive care, and appropriate specialist follow-up. Preventive strategies and palliative care are also crucially important phases of care. Across the cancer care pathway, a holistic approach, including psychosocial support and effective communication between clinical teams, patients and carers is critical. The NCCP aims to continuously monitor and improve the quality of cancer care delivered to all patients. Research is also an important component of the NCCP.

Looking at improving the quality of care, the NCCP has focussed on a number of key processes that are correlated with improved outcomes for patients – access to treatment, application of key diagnostics along the pathway, multidisciplinary discussion, the quality of pathology reporting and the location, timeliness and quality of surgical treatment. High quality data needs to be as complete, timely and representative as possible to enable the provision of information for action.

The NCCP collect a suite of KPIs for each cancer centre and by six tumour sites that are designed to monitor in near real time that the delivery and organisation of national cancer services is in accordance with international best practice and that evidence is continuously available that each cancer centre is operating within their mandated service level agreements. Each tumour site is reported as separate datasets as a suite of numbered KPIs that are specific to activity in each month, quarter, bi-annual or annual recording period. Data is collected by each Hospital in a standardised manner and is returned to the NCCP. Only collect summarised data on counts of
patient workload and cancer centre activity is collected. Data at the individual patient-level is strictly not part of the KPI suite and as such no patient identifiable data is requested or kept by the NCCP.

The NCCP Cancer Intelligence team compiles a monthly performance report that monitors certain KPIs for each Cancer Centre by tumour type to maintain operational oversight of timeliness of referral to rapid access clinics, reasons for delay, patient workload volumes, cancer detection rates and commencement of treatment for medical and radiation oncology.

Each tumour group also hold annual or biennial AQR (Audit Quality Review) meetings at which the NCCP Cancer Intelligence team present detailed findings and commentary from the full KPI dataset.

NCCP Data Sources:

**E Referrals**
The number of e-referrals sent by general practitioners to each of the rapid access lung, prostate and symptomatic breast disease clinics via Healthlink. Only summary counts are reported by Healthlink to the NCCP and no patient level data is shared between Healthlink and NCCP.

Attendances and Cancer Detection Data is collected on a monthly basis from the eight cancer centres and Letterkenny on the key elements of the three rapid access clinics – breast, lung and prostate disease. Data is aggregate in nature and uploaded through the NCCP HealthAtlas portal, a web-based application that enables centres to see their own data and compare with the national picture in real time.

**Hospital Inpatient Enquiry (HIPE) System**
All admissions and discharges in the Irish public hospital system are coded onto one national database (HIPE). Monthly uploads of anonymised data from each hospital is sent to the HealthCare Pricing Office (HPO) who are responsible for quality assuring the data. The NCCP source HIPE data via the HPO portal. Activity in private hospitals is not covered by HIPE.

Individual hospitals are not identified in this report and as such the data presented is the sum total across the eight cancer centres and Letterkenny.

**Data Collection Period**
1st January to 31st December 2019 - All
1st January to 30th September 2020 – e referrals
1st January to 31st August 2020 Clinic activity
1st January to 31st July 2020 HIPE data
3. National GI Endoscopy Quality Improvement Programme

About the National GI Endoscopy Quality Improvement Programme
The Conjoint Board of the Royal College of Physicians of Ireland (RCPI) and the Royal College of Surgeons in Ireland (RCSI) launched the National GI Endoscopy Quality Improvement (NEQI) Programme in October 2011 in collaboration with the National Cancer Control Programme (NCCP). As of 2014, this programme has been funded by the HSE National Quality Improvement Team and is managed by the Specialty Quality Improvement Team, RCPI.

The National Quality Assurance and Improvement System (NQAIS)
Endoscopy units participating in the NEQI Programme implement continuous quality improvement measures, as outlined in the Guidelines for the National GI Endoscopy Quality Improvement Programme. Endoscopy units upload their hospital’s data to NQAIS-Endoscopy via a data extract obtained from the local Endoscopy Reporting System (ERS)

Data Collection
The data contained in this report was collected between the following dates:
2018: 1st January and 31st December
2019: 1st January and 31st December
2020: 1st January and 30th June

Data Analysis
The national dataset in this report was analysed by the NEQI Programme Manager. No patient identifiable information is collected within NQAIS-Endoscopy. All data used in the analysis for this report was pseudonymised national level data.

Please note: roll out of the NEQI Programme in hospitals was ongoing during the years that comprise the data in this report. As such, the data set will have grown a small amount each year as more hospitals began contributing data to NQAIS-Endoscopy. The number of hospitals grew from 42 in 2108 to 45 in 2020.

4. DATA-CAN (HDRUK) / NI Cancer Registry

DATA-CAN is the UK’s national Health Data Research Hub for Cancer\textsuperscript{12}. It is part of Health Data Research UK (HDRUK) the national health data science institute for the digital world. For the data presented here, DATA-CAN collected weekly data from hospital trusts across the UK, specifically targeting data that would highlight the adverse impact of the COVID-19 pandemic on the cancer diagnostic and treatment pathways. Data was collected on 2 Week Wait (also known as red flag referrals (equivalent to urgent referrals here in Ireland) which allowed evaluation of the impact of COVID-19 on the diagnostic pathway, while collection of weekly data on

\textsuperscript{12} https://www.data-can.org.uk/
chemotherapy attendances at clinic allowed the impact on the cancer treatment pathway to be evaluated.
### Appendix B: Data Tables

**Table 1 (a,b,c). Number of new e-referrals to the NCCP SBD clinics, 2019 and year to date 2020**

<table>
<thead>
<tr>
<th>Healthlink</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>YTD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Breast</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2020</td>
<td>3,518</td>
<td>3,069</td>
<td>1,932</td>
<td>2,206</td>
<td>3,079</td>
<td>3,350</td>
<td>3,554</td>
<td>3,147</td>
<td>3,803</td>
<td>27,658</td>
</tr>
<tr>
<td>2019</td>
<td>3,317</td>
<td>3,096</td>
<td>3,145</td>
<td>2,846</td>
<td>3,091</td>
<td>2,485</td>
<td>2,736</td>
<td>2,583</td>
<td>2,702</td>
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<td>2020 as % of 2019</td>
<td>106.1%</td>
<td>99.1%</td>
<td>61.4%</td>
<td>77.5%</td>
<td>99.6%</td>
<td>134.8%</td>
<td>129.9%</td>
<td>121.8%</td>
<td>140.7%</td>
<td>106.4%</td>
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<tr>
<td><strong>Lung</strong></td>
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<td></td>
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<td>2020</td>
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<td>85</td>
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<td>143</td>
<td>150</td>
<td>168</td>
<td>170</td>
<td>129</td>
<td>126</td>
<td>153</td>
<td>120</td>
<td>1,297</td>
</tr>
<tr>
<td>2020 as % of 2019</td>
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<td>71.3%</td>
<td>50.6%</td>
<td>62.4%</td>
<td>106.2%</td>
<td>82.5%</td>
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<td></td>
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<tr>
<td>2020</td>
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<td>220</td>
<td>282</td>
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<td>2019</td>
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<td>280</td>
<td>276</td>
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<td>310</td>
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<td>77.5%</td>
<td>91.0%</td>
<td>103.0%</td>
<td>121.3%</td>
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<tr>
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<td>2020</td>
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<td>3,533</td>
<td>2,290</td>
<td>2,446</td>
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<td>3,707</td>
<td>3,940</td>
<td>3,527</td>
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<td>2020 as % of 2019</td>
<td>107.9%</td>
<td>100.8%</td>
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<td>74.3%</td>
<td>94.9%</td>
<td>127.9%</td>
<td>124.2%</td>
<td>103.0%</td>
<td>117.6%</td>
<td>90.6%</td>
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</table>

**Table 2 (a,b,c): New attendances at the rapid access clinics, Jan to August 2019 and 2020**

<table>
<thead>
<tr>
<th>New Attendances</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
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<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>YTD</th>
</tr>
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<tr>
<td><strong>Breast - Urgent</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td>1,894</td>
<td>1,737</td>
<td>1,206</td>
<td>1,189</td>
<td>1,564</td>
<td>1,675</td>
<td>1,734</td>
<td>1,490</td>
<td>12,489</td>
</tr>
<tr>
<td>2019</td>
<td>1,880</td>
<td>1,587</td>
<td>1,871</td>
<td>1,792</td>
<td>1,975</td>
<td>1,639</td>
<td>1,687</td>
<td>1,696</td>
<td>14,127</td>
</tr>
<tr>
<td>2020 as % of 2019</td>
<td>100.7%</td>
<td>109.5%</td>
<td>64.5%</td>
<td>66.4%</td>
<td>79.2%</td>
<td>102.2%</td>
<td>102.8%</td>
<td>87.9%</td>
<td>88.4%</td>
</tr>
<tr>
<td><strong>Lung</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2020</td>
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<td>358</td>
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<td>98.9%</td>
<td>74.9%</td>
<td>100.0%</td>
<td>90.8%</td>
</tr>
</tbody>
</table>
Table 3. Number of patients diagnosed with a primary cancer subsequent to their attendance at an SBD or RAC clinic, 2019 and 2020

<table>
<thead>
<tr>
<th>Cancers Diagnosed</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>YTD</th>
</tr>
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<tbody>
<tr>
<td><strong>Breast - Primary Cancer</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2020</td>
<td>248</td>
<td>212</td>
<td>184</td>
<td>156</td>
<td>191</td>
<td>209</td>
<td>252</td>
<td>220</td>
<td>1,672</td>
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<tr>
<td>2019</td>
<td>223</td>
<td>182</td>
<td>208</td>
<td>232</td>
<td>246</td>
<td>185</td>
<td>202</td>
<td>226</td>
<td>1,704</td>
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<tr>
<td>2020 as % of 2019</td>
<td>111.2%</td>
<td>116.5%</td>
<td>88.5%</td>
<td>67.2%</td>
<td>77.6%</td>
<td>113.0%</td>
<td>124.8%</td>
<td>97.3%</td>
<td>98.1%</td>
</tr>
<tr>
<td><strong>Lung - Primary Cancer</strong></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td>112</td>
<td>115</td>
<td>120</td>
<td>70</td>
<td>93</td>
<td>135</td>
<td>93</td>
<td>95</td>
<td>833</td>
</tr>
<tr>
<td>2019</td>
<td>110</td>
<td>82</td>
<td>102</td>
<td>135</td>
<td>115</td>
<td>106</td>
<td>132</td>
<td>92</td>
<td>874</td>
</tr>
<tr>
<td>2020 as % of 2019</td>
<td>101.8%</td>
<td>140.2%</td>
<td>117.6%</td>
<td>51.9%</td>
<td>80.9%</td>
<td>127.4%</td>
<td>70.5%</td>
<td>103.3%</td>
<td>95.3%</td>
</tr>
<tr>
<td><strong>Prostate - Primary Cancer</strong></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2020</td>
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<td>109</td>
<td>53</td>
<td>17</td>
<td>60</td>
<td>89</td>
<td>89</td>
<td>79</td>
<td>609</td>
</tr>
<tr>
<td>2019</td>
<td>127</td>
<td>81</td>
<td>97</td>
<td>104</td>
<td>135</td>
<td>131</td>
<td>127</td>
<td>112</td>
<td>914</td>
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<tr>
<td>2020 as % of 2019</td>
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<td>134.6%</td>
<td>54.6%</td>
<td>16.3%</td>
<td>44.4%</td>
<td>67.9%</td>
<td>70.1%</td>
<td>70.5%</td>
<td>66.6%</td>
</tr>
<tr>
<td><strong>Total - Primary Cancer</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2020</td>
<td>473</td>
<td>436</td>
<td>357</td>
<td>243</td>
<td>344</td>
<td>433</td>
<td>434</td>
<td>394</td>
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<td>2019</td>
<td>460</td>
<td>345</td>
<td>407</td>
<td>471</td>
<td>496</td>
<td>422</td>
<td>461</td>
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<tr>
<td>2020 as % of 2019</td>
<td>102.8%</td>
<td>126.4%</td>
<td>87.7%</td>
<td>51.6%</td>
<td>69.4%</td>
<td>102.6%</td>
<td>94.1%</td>
<td>91.6%</td>
<td>89.2%</td>
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</table>

Source: NCCP HealthAtlas Portal
Diagnostics

**Table 4: P01 Small Biopsy comparison of all sites, 2018-2020**

<table>
<thead>
<tr>
<th>Year</th>
<th>January</th>
<th>February</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
<th>November</th>
<th>December</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>8565</td>
<td>7976</td>
<td>7732</td>
<td>7873</td>
<td>9611</td>
<td>8426</td>
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<td>8625</td>
<td>9775</td>
<td>9709</td>
<td>6661</td>
<td>102370</td>
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<tr>
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<td>8311</td>
<td>8149</td>
<td>8583</td>
<td>8840</td>
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<tr>
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**Table 5: P02 GI Endoscopic Biopsy comparison of all sites, 2018-2020**

<table>
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<tr>
<th>Year</th>
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<th>February</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
<th>November</th>
<th>December</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>11707</td>
<td>11233</td>
<td>10739</td>
<td>11717</td>
<td>13445</td>
<td>11916</td>
<td>11792</td>
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<td>11929</td>
<td>13181</td>
<td>13506</td>
<td>10149</td>
<td>143159</td>
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<td>2019</td>
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<td>11192</td>
<td>12569</td>
<td>12916</td>
<td>13678</td>
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<td>13346</td>
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<td>12801</td>
<td>13430</td>
<td>13406</td>
<td>9537</td>
<td>148108</td>
</tr>
<tr>
<td>2020</td>
<td>12618</td>
<td>12507</td>
<td>7646</td>
<td>1540</td>
<td>3785</td>
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**Table 5.1: GI Endoscopy 2018 – 2020 Workload Data**

<table>
<thead>
<tr>
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<th>February</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
<th>November</th>
<th>December</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>17711</td>
<td>16763</td>
<td>16067</td>
<td>17878</td>
<td>20310</td>
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<td>17829</td>
<td>19722</td>
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<tr>
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<td>16841</td>
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<td>19708</td>
<td>20829</td>
<td>17121</td>
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<td>19034</td>
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<tr>
<td>2020</td>
<td>18079</td>
<td>17780</td>
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<td>10141</td>
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</table>

**Table 6: P06 Non-Gynaecological Cytology– FNA comparison all sites, 2018-2020**

<table>
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<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
<th>November</th>
<th>December</th>
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</thead>
<tbody>
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<td>922</td>
<td>908</td>
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<td>891</td>
<td>867</td>
<td>977</td>
<td>830</td>
<td>896</td>
<td>732</td>
<td>859</td>
<td>921</td>
<td>925</td>
<td>670</td>
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</tr>
<tr>
<td>2020</td>
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<td>886</td>
<td>610</td>
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<td>522</td>
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Therapeutics

**Table 7: P03 - Cancer Resection comparison of all sites, 2018-2020**

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<th>Year</th>
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<th>February</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
<th>November</th>
<th>December</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
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<td>1377</td>
<td>1415</td>
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<td>1520</td>
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