

Diagnostic pathways explainer: Two projects investigating diagnostic intervals.

Clare Pearson, Jess Fraser (CRUK-PHE partnership), Fazaan Dasu, Lucy Young (CADEAS)

Purpose of explainer

There is substantial variation in the time taken for patients to be referred, diagnosed, and treated for cancer. Cancer diagnostic pathways are complex and improved understanding of variation in diagnostic intervals can help to plan services better. Two projects involving PHE partnerships investigating diagnostic intervals in cancer pathways were published by NCRAS in May 2019.

This document describes the findings, compares these findings between projects and explains some methodological differences.

Firstly, the Cancer Alliance Data, Evidence and Analysis Service (CADEAS) published three national reports [*'Median pathway analysis by patient demographics, cancer stage and route to diagnosis, for colorectal, lung and prostate cancer \(2013-2017\)'*](#).

Secondly, the CRUK-PHE partnership published an online tool and SOP of the [Secondary Care Diagnostic Interval \(SCDI\) for cancers diagnosed in 2014-2015](#), accompanied by a [paper in Cancer Epidemiology](#) and two blogs (one published by [PHE](#) and one by [CRUK](#))

Brief overview of the projects

CADEAS median pathway analysis

The aim of the median pathways project was to provide Cancer Alliances with in-depth analysis of the variation in median days for different intervals of the patient pathway (referral, first seen in secondary care, diagnosis, first MDT meeting and treatment start). It looked at lengths for each segment of the pathway by patient demographics, cancer stage and route to diagnosis, enabling Cancer Alliances to identify variation and determine whether local strategies can be implemented to address health inequalities. In addition, it provided the basis for identification and sharing of best practice for faster diagnosis and improving patient experience.

The analysis used linked Cancer Registration, Cancer Care Plan and Cancer Waiting Times datasets. The median time taken between the different intervals in the pathway was calculated and segmented by the following factors: year of diagnosis, sex, age at diagnosis, stage at diagnosis, ethnicity, income domain quintile (as a measure of deprivation) and route to diagnosis. As well as the national reports, variation of the median pathway intervals by the factors stated have been presented at a Cancer Alliance level with an England comparison.

CRUK-PHE SCDI project

This project aimed to calculate the length of the diagnostic pathway for all cancer patients and examine differences by stage and patient characteristics. This project aimed to calculate diagnostic intervals for all cancer patients where possible. Knowledge of these intervals and their variation for patients could aid decision-making for the Faster Diagnostic Standard and Rapid Diagnostic Centres (RDCs) roll-out, as it improves our understanding of those patients who could benefit most from these expedited pathways. The Secondary Care Diagnostic Interval (SCDI) was calculated for over 95% of patients in 25 different cancer sites (490,093 diagnoses). The interval is defined as time from first relevant secondary care interaction (including diagnostic tests, hospital referral or appointment) to

diagnosis. The online tool presents results by various factors (route to diagnosis, stage, demographics) and cancer type, along with a section to compare Cancer Alliances with England.

Methodological differences between the projects

The SCDI project calculated the interval using the first relevant event in the 6 months prior to diagnosis as the start of the interval. This included relevant diagnostic imaging ordered from primary care (taking place in secondary care) as the start of the interval for some patients. This will be particularly relevant for cancer sites where pre-referral imaging takes place (e.g. Lung cancer with Chest X-rays). The CADEAS project used a common starting point of the intervals; namely referral into secondary care.

Other differences between the projects are presented in table 1.

Table 1: Methodologies of both projects

	CADEAS median pathway analysis	CRUK-PHE SCDI project
Audience	Cancer Alliances	General
Tumour sites	Lung, prostate and colorectal	25 cancer sites
Time period	2013 – 2017 – split by year	2014-2015 combined
Cohorts covered	Patients 20 years or over with CWT record	All patients
Intervals examined	4 different intervals: <ul style="list-style-type: none"> - Referral to first seen in secondary care - First seen in secondary care to diagnosis - Diagnosis to first MDT* date - First MDT date to treatment 	Secondary Care Diagnostic Interval
Data completeness	Data completeness varies for the different time points in the intervals (diagnosis date=100%) Please refer to tumour specific national reports for data completeness on first seen, diagnosis, MDT and treatment start dates.	SCDIs calculated for 80.8% of cancers diagnosed in 2014-2015
Available geographies	England & Cancer Alliance	England & Cancer Alliance
Socio-demographic and disease factors	Age, sex, ethnicity, deprivation, route to diagnosis, stage	Age, sex, ethnicity, deprivation, comorbidity score, route to diagnosis, stage

*MDT – Multidisciplinary Diagnostic Team

Results

Comparisons were made between the SCDI medians and first two intervals of the CADEAS work (referral to diagnosis). Overall, patterns of interval length by route to diagnosis, stage, age, ethnicity, sex and deprivation are broadly similar for the three sites in common (colorectal, lung, prostate). The SCDIs were usually longer than the CADEAS intervals, for colorectal cancers diagnosed at stages 1 and 3, the median SCDIs were 29 and 24 respectively, the CADEAS intervals were 24 and 21 days. For lung cancers diagnosed via the Two Week Wait route, median SCDI was 35 days, whereas the CADEAS intervals were 25 in 2014 and 2015. This is predominantly due to inclusion of diagnostic imaging prior to referral which were included in the SCDI project. This is illustrated by longer SCDIs in lung cancer (where diagnostic imaging pre-referral is common) compared with colorectal and prostate cancers where patients will usually have secondary care activity prior to diagnostics. This pattern is not evident in the CADEAS intervals.

We hope this document will be of use to Cancer Alliances and others who are interested in cancer diagnostic pathways in describing the projects and the similarities/differences between the methods and results.

CADEAS have also published other work on cancer pathways at Cancer Alliance level, including by treatment modality. These aim to provide further insight to Cancer Alliances on where to focus particular interventions.

Documents published by CADEAS can be found here:

http://www.ncin.org.uk/local_cancer_intelligence/cadeas

The Secondary Care Diagnostic Interval project has links to outputs here:

http://www.ncin.org.uk/about_ncin/scdi