



Public Health  
England

Protecting and improving the nation's health

# **National Cancer Intelligence Network**

## Interim evaluation reports for Be Clear on Cancer campaigns: Methodology

## About Public Health England

Public Health England exists to protect and improve the nation's health and wellbeing, and reduce health inequalities. It does this through world-class science, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. PHE is an operationally autonomous executive agency of the Department of Health.

Public Health England  
Wellington House  
133-155 Waterloo Road  
London SE1 8UG  
Tel: 020 7654 8000  
[www.gov.uk/phe](http://www.gov.uk/phe)  
Twitter: @PHE\_uk  
Facebook: [www.facebook.com/PublicHealthEngland](https://www.facebook.com/PublicHealthEngland)

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# The intelligence networks

Public Health England operates a number of intelligence networks, which work with partners to develop world-class population health intelligence to help improve local, national and international public health systems.

## **National Cancer Intelligence Network**

The National Cancer Intelligence Network (NCIN) is a UK-wide initiative, working to drive improvements in standards of cancer care and clinical outcomes by improving and using the information collected about cancer patients for analysis, publication and research.

## **National Cardiovascular Intelligence Network**

The National Cardiovascular Intelligence Network (NCVIN) analyses information and data and turns it into meaningful timely health intelligence for commissioners, policy makers, clinicians and health professionals to improve services and outcomes.

## **National Child and Maternal Health Intelligence Network**

The National Child and Maternal Health Intelligence Network provides information and intelligence to improve decision-making for high-quality, cost-effective services. Its work supports policy makers, commissioners, managers, regulators, and other health stakeholders working on children's, young people's and maternal health.

## **National Mental Health, Dementia and Neurology Intelligence Network**

The National Mental Health Intelligence Networks (NMHDNIN) brings together the distinct National Mental Health Intelligence Network, the Dementia Intelligence Network and the Neurology Intelligence Network under a single programme. The Networks work in partnership with key stakeholder organisations. The Networks seeks to put information and intelligence into the hands of decision makers to improve mental health and wellbeing, support the reduction of risk and improve the lives of people living with dementia and improve neurology services.

## **National End of Life Care Intelligence Network**

The National End of Life Care Intelligence Network (NEoLCIN) aims to improve the collection and analysis of information related to the quality, volume and costs of care provided by the NHS, social services and the third sector to adults approaching the end of life. This intelligence will help drive improvements in the quality and productivity of services.

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# Urgent GP referrals for suspected cancer and related cancer diagnoses

## Metric definitions

Analysis of the Cancer Waiting Times data considers five metrics:

### **Urgent GP referrals for suspected cancer (R)**

Urgent GP referrals for suspected cancer, presented by month first seen.  
(Also known as two week wait (TWW) referrals.)

### **Cancer diagnoses resulting from an urgent GP referral for suspected cancer (TC)**

Those cancer diagnoses resulting from an urgent GP referral for suspected cancer, presented by month first seen.  
(Also known as two week wait (TWW) cancers, or 62 day cancers [based on the waiting times target from urgent GP referral to first treatment].)

### **Conversion rate (C)**

Percentage of urgent GP referrals for suspected cancer resulting in a diagnosis of cancer, presented by month first seen.

### **Cancer diagnoses recorded in the Cancer Waiting Times database (CC)**

All cancer diagnoses recorded in the CWT database (CWT-Db), presented by month of first treatment.  
(Also known as CWT cancers, or 31 day cancers [based on the waiting times target from decision to treat to first treatment].)

### **Detection Rate (D)**

Percentage of CWT-Db recorded cancer diagnoses which resulted from an urgent GP referral for suspected cancer, presented by month of first treatment.

## Referral and cancer types

When patients are referred, cancer is only a suspicion, with the cancer or other diagnoses to be confirmed. As a result, specific cancer type diagnoses are unknown and so urgent GP referrals for suspected cancer are recorded against a limited number of broad cancer types. For example, referrals for suspected urological cancers are related to bladder, kidney and prostate cancers. Therefore, for campaigns relating to more specific cancer types, analyses are repeated for all diagnoses of the broad cancer

type (eg all urological cancers) and for the specific cancer types related to the campaign (eg bladder cancer and kidney cancer).

### Defining the campaign and post-campaign periods

We might expect campaigns to have an impact on referrals first seen during the campaign months<sup>1</sup> (unless it started very near to the end of a month) and, allowing for reasonable delays from campaign activity to referral, in the month following the end of the campaign. These delays may occur for several reasons, for example some patients may need to see the campaign materials multiple times before reacting, or some patients may need to wait for a GP appointment, especially if they prefer a convenient time or a specific GP, and so may be seen by the GP after the campaign ended.

Dates are based on 'date first seen' as recorded in the CWT-Db, reflecting the date seen in secondary care rather than primary care, and referrals made towards the end of the campaign may not have been seen in secondary care until after the campaign ended.

Therefore the 'campaign period' for referrals is usually considered to be the months of the campaign<sup>1</sup> and the following month. The same months are considered to be the 'campaign period' for cancer diagnoses resulting from an urgent GP referral for suspected cancer and for the conversion rate, as these are defined using the date first seen recorded for the referral.

There is a necessary period of time between the date first seen following an urgent GP referral for suspected cancer and the start of treatment. This is because of the time required to perform diagnostic tests or to plan and arrange treatment, for example, and will vary for different patients and trusts. This means that, for cancer diagnoses recorded in the CWT database and the detection rate, it is not possible to identify a clear period relating directly and specifically to the campaign. Diagnoses in the early campaign months could include those resulting from referrals prior to the campaign or at the beginning of the campaign. Similarly, diagnoses in the months after the campaign could include those resulting from referrals during the campaign or after the end of the campaign. Taking into consideration the average interval from date first seen to treatment start date, and the waiting times target of 62 days from urgent GP referral to first treatment, the campaign effect on all CWT recorded cancers and detection rate is thought to be best represented by the period one month later than campaign period for referrals. This period should include many of the diagnoses resulting from campaign period referrals without too many diagnoses from pre- or post-campaign referrals.

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<sup>1</sup> Unless the campaign started very near to the end of a month, in which case, you would expect very little impact in that first campaign month. For such campaigns, the first campaign month is not included in the "campaign period".

For first national campaigns, results are also reported for a 'post-campaign period', which is considered to be the three or four months immediately following the 'campaign period'.

### Comparator referral types

The number of urgent GP referrals for suspected cancer has continued to increase year-on-year<sup>2</sup>. This means that the evaluation's comparison of the change over a one (or two) year period is likely to reflect a combination of the campaign's impact and the general increase in referrals. It is not possible to separate these two reasons for any particular referral type, but it is useful to consider the change in referrals for other suspected cancers to provide an indication of increase that was not associated with the campaign.

Due to the impact of previous regional and national Be Clear on Cancer campaigns, it is necessary to exclude a number of campaign-affected referral types from this comparison.

### Comparison period

For most campaigns, comparisons are made to the respective numbers or rates for the same months one year earlier. However, where a previous regional or national campaign took place at a similar time in the previous year, these may have affected the number of referrals, and related figures, for this usual comparison period. In such cases, data for the campaign period is compared to that for the same period two years previously. This comparator is not ideal, considering the large impact of the more general trend for increasing referral, but the months affected by the previous campaigns are considered too closely aligned for a one year comparison to be meaningful.

### National campaigns – breakdowns for regional pilot and control areas

For national campaigns, it is important to consider that residents of the regional pilot area are likely to have already seen, and possibly reacted to, the campaign materials (including TV and radio advertisements) on an additional occasion. This means that in this regional pilot area the national campaign may have a different impact, as it acts more as a later reminder campaign. Therefore, an overall comparison of the impact in the regional pilot area and in England excluding the regional pilot area (the 'Control' area) provides an indication the similarity or difference in the scale of impact when the

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<sup>2</sup> [National trends in CWT metrics, 2009/10 - 2013/14, NCIN, 2015](#)

awareness activities are repeated. Full definitions of the pilot and control areas will be provided in the individual campaign reports.

### Local/regional pilot campaigns – breakdowns for local/regional pilot and control areas

For a local or regional pilot campaign, results for the local or regional pilot area are compared to a control area excluding, at least, the pilot area(s). Full definitions of the pilot and control areas will be provided in the individual campaign reports. Breakdowns by age and sex are considered for the local or regional pilot area only.

### Statistical results and methods

The number of urgent GP referrals for suspected cancer are presented for the campaign (or post-campaign) period and the comparison period. Percentage change figures, between the comparison and campaign periods, are calculated based on these referral counts, as this reflects the absolute change in levels of activity.

A referral rate is also presented, in order to provide some context to explain how differences in the percentage change between areas (or ages) may relate to differing referral patterns. Differences in referral rates would suggest there may be underlying differences in referral practices or cancer incidence between groups. It was not possible to assess whether any apparent campaign impact may have resulted from these underlying differences. Urgent GP referral rates vary greatly with age, so to take account of differing age profiles of patients in different areas, the rates presented are directly age-standardised and presented as rates per 100,000 population using the 2013 European Standard Population weights. Age-specific crude referral rates are presented for the age breakdown.

Data for cancer diagnoses resulting from an urgent GP referral for suspected cancer (TWW cancers) and all cancers recorded in the CWT-Db (CWT cancers) are presented for the campaign (or post-campaign) period and the comparison period, alongside figures for the percentage change figures between the comparison and campaign periods.

Data for the conversion rate and the detection rate are presented for the campaign (or post-campaign) period and the comparison period, alongside results for the percentage point change in the rate between the comparison and campaign period.

For referrals and cancer diagnoses, the reported p-values were obtained from a likelihood ratio test. The null hypothesis was that the number of urgent GP referrals or cancer diagnoses in the (post)-campaign period and the comparison period came from the same Poisson distribution.



For conversion and detection rates, the reported p-values are obtained from a two-sample proportion test. The null hypothesis was that the rate in the (post-)campaign period was equal to the equivalent rate in the comparison period.

P-values less than 0.05 indicate a statistically significant difference between the two periods, at the 95% level. This analyses provide results from a large number of statistical tests. Please note that, with a considered significance level of 95%, you could expect 5% of tests to provide a 'statistically significant' result by chance.

Monthly diagnoses, conversion rate and detection rate data can be quite variable because they are based on only a small number of cancer diagnoses, particularly for some of the smaller breakdowns.

### Data source

Cancer Waiting Times data were obtained from the National Cancer Waiting Times Monitoring Dataset, provided by NHS England.