

Protecting and improving the nation's health

National Cancer Registration and Analysis Service

Be Clear on Cancer: local, regional and first, second and third national Blood in Pee campaigns

Final Evaluation

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Public Health England (PHE)

National Cancer Registration and Analysis Service (NCRAS) Be Clear on Cancer: Local, regional and first, second and third national Blood in Pee campaigns

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Executive summary

1.1 Background

Cancer survival in England appears to be worse than in many other nations in Western Europe. Reports have usually compared the national cancer registry statistics for England with frequently incomplete data from regional registries in Continental Europe (1). These differences can be partly explained by the model of care (more screening and opportunist imaging in Continental Europe). In addition, delayed presentation of cancer in England leads to poor one-year survival which in turn accounts for much of the difference seen between England and its neighbours.

The Blood in Pee (BiP) campaign was introduced to educate and encourage patients to present early with symptoms suggestive of bladder or kidney cancer in order to promote early diagnosis. This could potentially manifest itself in other improved clinical outcomes.

The local pilot BiP awareness campaign ran from January to March 2012 in the Avon, Somerset and Wiltshire Cancer Network, and the regional pilot from January to March 2013 in the Tyne Tees and Borders TV regions. The first national BiP awareness campaign ran in England from October to November 2013, the second from October to November 2014 and the third from February to March 2016. The core message of all three national campaigns was 'if you notice blood in your pee, even if it's just the once, tell your doctor straight away.' Blood in urine is a symptom of both bladder and kidney cancers.

1.2 Summary of evaluation metric data

The following points form a summary of the main results detailed in this report:

Local pilot

- An increase in urgent General Practitioner (GP) referrals for suspected urological cancer
- No clear evidence of an increase in the number of cancer diagnoses resulting from these referrals

Regional pilot

• An improvement in public knowledge relating to blood in pee

- An increase in the expressed intention to present early with symptoms should they occur
- An increase in attendance at GP surgeries for blood in pee
- An increase in urgent GP referral for suspected urological cancer
- An increase in the number of diagnoses of urological cancers resulting from these referrals
- An increase in the number of cystoscopies performed

National Campaigns: first, second and third

- Campaign recognition and public awareness
 - For the first national campaign there was a strong level of recognition of the campaign. In addition, there were high levels of prompted knowledge of blood in pee as a warning sign of bladder or kidney cancer
 - The second campaign had a positive impact on spontaneous knowledge of blood in pee as a symptom and similarly had a positive impact on people's confidence in identifying symptoms of bladder and kidney cancer
 - The third campaign was well recognised, with overall campaign recognition in line with the first and second blood in pee campaigns
- GP attendance for blood in pee
 - o An increase during and after the first campaign
 - An increase during the second campaign
 - No evidence of impact in the third campaign
- Urgent GP referrals for suspected urological cancers
 - An increase during and after the first campaign
 - o An increase during the second campaign
 - A possible increase during the third campaign
- Number of bladder, kidney and urological cancer diagnoses resulting from an urgent GP referral for suspected urological cancer
 - Some evidence of an increase particularly for bladder cancer in the first campaign
 - o Changes consistent with long-term trends in the second campaign
 - A small impact on the number of bladder cancer cases particularly in those aged 70-79 years, but no effect on kidney cancers in the third campaign
- Number of cancer diagnoses recorded in the Cancer Waiting Times database
 - Some evidence of an increase in kidney and urological cancer diagnoses in the first and third campaigns, but this was also consistent with long-term trends
 - No impact in the second campaign

- Emergency presentation
 - No evidence of a significant change in the proportion of patients presenting as an emergency for all three national campaigns
- Diagnostic imaging
 - No impact on the number of kidney and bladder ultrasounds carried out during or following the three campaigns
- Cystoscopies performed
 - No evidence of an impact in any of the three campaigns
- Cancers diagnosed
 - An increase in the number of bladder and kidney cancers diagnosed in the first and second campaigns
 - An increase in the number of bladder cancers diagnosed in the third campaign
- Early stage at diagnosis
 - An increased proportion of stage 1 bladder cancer diagnoses in the second and third campaigns
 - An increased proportion of stage 1 and 2 kidney cancers in the first campaign
- One-year survival
 - No evidence of an impact on kidney or bladder cancer survival as a result of any of the campaigns.

2. Background to the problem

3.1 Bladder cancer

Bladder cancer is the tenth most common cancer; 8,671 people were diagnosed in 2018 in England (2). However, these figures do not include around 9,000 non-invasive bladder tumours (including all pTa^a transitional cell carcinomas and flat *carcinoma in situ*) (3) which often progress to invasive cancer. For the BCoC BiP campaigns some of the metrics, at least, included a proportion of patients with non-invasive transitional cell carcinoma.

Five-year survival is poor at around 50% for all persons and is worse among women at 40%. Diagnosis is rare below the age of 40, with fewer than 50 cases in the UK per year. The peak incidence is between ages 75 and 79 (Figure 1).

A large majority (90%) of bladder cancers present with visible haematuria (blood in pee) (4) and delay in presentation and referral is often described (5). Hence there is a substantial opportunity to encourage earlier diagnosis from the BiP campaign and a significant chance to influence survival.



Figure 1: Bladder cancer incidence by age and sex. Data source: NCRAS

^a pTa tumours are "bladder tumours" that have not grown beyond the inner layer of the bladder

3.2 Kidney cancer

Kidney cancer is increasingly common and is now the seventh most common cancer in the UK; 9,438 people were diagnosed in 2018 in England. The incidence is rising worldwide; in the UK the incidence has risen by 40% in a decade (6) (Figure 2); this is partly due to improving detection of asymptomatic disease.

What we mean by kidney cancer needs to be defined. International classification of disease (ICD) code C64 is cancer of the renal parenchyma while code C65 is cancer of the renal pelvis. The definitions vary by metrics evaluated because this was how the national data sets provided the data; for example some have included only C64, while others have included both C64 and C65 as discussed in chapter 6.1 and Table 1.

In contemporary studies two thirds of patients presented with an incidental renal mass. Data from the British Association of Urological Surgeons shows that for patients undergoing nephrectomy (the surgical removal of a kidney), 27.5% present with haematuria (7). Therefore, for kidney cancer the opportunity for the campaign to promote earlier diagnosis is less clear.



Figure 2: observed and projected age standardised incidence rates of kidney cancer (C64-C66, C68) between 1979 and 2035 by sex, UK.

3. History of campaigns

Public Health England (PHE) is responsible for a wide range of campaigns aimed at improving the health of the nation. These range from Be Clear on Cancer through to School Zone; a total of 30 campaigns are currently listed on its website (8).

Following the publication of Improving Outcomes: A Strategy for Cancer (2011), the Government's ambition was to save an additional 5,000 lives from cancer per year by 2014/15. It was expected that earlier diagnosis and better access to treatment would be the means to deliver this target. PHE worked in partnership with the Department of Health and Social Care (DHSC) and NHS England (NHSE) to develop an early diagnosis cancer campaign.

The DHSC appointed the agency M&C Saatchi in 2010; in collaboration they created the Be Clear on Cancer brand which has been used to promote awareness and early diagnosis since January 2011.

The Be Clear on Cancer campaigns aim to improve early diagnosis of cancer by raising public awareness of signs and/or symptoms of cancer, and to encourage people to see their GP without delay. The programme is led by PHE, working in partnership with DHSC, NHSE and Cancer Research UK. Each campaign is tested locally and then regionally. These campaigns then form the basis of a national campaign where they are shown to be effective. The Be Clear on Cancer campaigns have included bowel, lung, breast, blood in pee (as a symptom of bladder and kidney cancer), oesophago-gastric and ovarian cancers.

The National BiP campaign used a combination of television (9) and radio adverts, leaflets and billboard advertising. It now has a significant presence on social media for example on twitter #beclearoncancer and its own website (10). Some examples of leaflets and posters used are shown in Figure 3.

Be Clear on Cancer: Local, regional and first, second and third national Blood in Pee campaigns



Figure 3: Examples of campaign material

Figure 4 shows the timeline of the BIP campaigns from the first local campaign in 2013 to the third national campaign in 2016.



Figure 4: Timeline of Blood in Pee campaigns

4. Campaign recognition and public awareness

4.1 Methods

The research was conducted by Kantar, an independent market research agency specialising in social research. All the pre- and post-campaign surveys were conducted face-to-face among a representative sample of adults aged 50 years and over in England.

First campaign

1,668 interviews were conducted at the pre-stage, and 1,577 at the post-stage.

Second campaign

726 interviews were conducted at the pre-stage, and 680 at the post-stage.

Third campaign

794 interviews were conducted at the pre-stage; 815 interviews were conducted at the post-stage.

4.2 Campaign messages

The core message of each campaign was 'if you notice blood in your pee, even if it's just the once, tell your doctor straight away'. Blood in urine is a symptom of both bladder and kidney cancers.

4.3 Campaign activity

The Be Clear on Cancer campaign to raise awareness of bladder and kidney cancer symptoms targets those aged 50 and over – the age group most at risk of cancer. All three campaign bursts used television, radio, online, out of home and press advertising (including media partnerships with a women's magazine). The out of home advertising included adverts on pharmacy bags and GP television screens, and in washrooms in motorway service stations, shopping centres, bars and football stadiums. Adverts in female washrooms included a "look before you flush" message, as women are less

likely to notice blood in their urine. Online advertising included sponsored posts on Facebook and paid-for "search" on Google.

First campaign

- Direct mail: the first campaign included direct mail activity. This comprised a
 letter and campaign leaflet which were sent to around 865,000 people aged 50
 and over in England in an NHS branded envelope. The letter was tailored to men
 or women, with the letter to men from Pat Hanlon, a male kidney cancer survivor,
 and the letter to women from Pam Crooks, a female kidney cancer survivor
- Face-to-face events: a total of 152 days of activity took place between 21 October 2013 and 26 November 2013 across 70 shopping centres and 12 football stadiums
- Public Relations (PR) activity: The launch press notice was based on statistics around the increase in kidney cancer diagnoses and deaths together with results of an attitudinal survey which showed low awareness of the symptoms of bladder and kidney cancers. A key contribution to the PR coverage came from a successful partnership with West Bromwich Albion Football Club, who piloted thermochromic posters in urinals which revealed the blood in pee campaign message when used

Second campaign

- Online advertising: women were also targeted with a "look before you flush" message through advertising on YouTube
- Face-to-face events: a total of 95 days of activity took place between 27 October 2014 and 22 November 2014 across 43 shopping centres and 9 football stadiums with around 54,000 positive engagements and over 66,000 leaflets and/or symptom cards distributed
- Public Relations activity: Following the success of the partnership with West Bromwich Albion for the first national BiP campaign in 2013, this tactic was upscaled to include four Premier League Football Clubs (Southampton, Liverpool, West Ham and West Bromwich Albion).

Third campaign

 Online advertising: as older audiences are increasingly online, advertising on social media was upweighted. Content on Facebook included a video featuring Dr Dawn Harper explaining the need for women to 'look before they flush' Face-to-face events: a total of 136 days of activity took place between 27 October 2014 and 22 November 2014 across 58 shopping centres and 10 football stadiums

4.4 Results

First campaign

Almost eight in ten (78%) of those surveyed may have seen at least one of the campaign advertisements, with the television advert the most highly recognised (61%), followed by radio (35%) and press (also 35%). Recognition of television and radio adverts, the leaflet and the direct mail was higher among men than women. Overall recognition was higher in the pilot region (86%), driven by higher recognition of the television (71%) and press (45%) adverts.

Overall recognition of the bladder and kidney cancer campaign was slightly lower than for the first national lung and bowel cancer campaigns.

Second campaign

Approximately eight in ten (77%) people recognised any of the campaign material. This was the same level achieved by the first national BiP campaign (78%). During this second campaign however, there were fewer differences between levels of recognition by men and women (at the first campaign men were more likely to recognise almost all the different types of adverts).

Third campaign

Around eight in ten (78%) people surveyed recognised a campaign element at the postcampaign stage, which is in line with previous campaigns (77% in the second campaign and 78% in the first campaign). Recognition of the television adverts was higher than in previous campaigns (72% compared to 67% in the second campaign and 61% in the first campaign) supported by higher spend and television ratings, but this was offset by lower recognition of and associated spend for support media.

Recognition of the male television advert was higher than for the female television advert. Two-thirds (67%) of people recognised the male advert while 40% recognised the female television advert. Women were more likely to recognise the female advert (44% compared to 36% of men).

Radio was an efficient channel, with a quarter of the spend of the second campaign but only a modest reduction in recognition levels from 30% in the second campaign to 23% in the third campaign.

One in ten (11%) people surveyed recognised an element of the campaign from a digital channel.

4.5 Campaign communication

First campaign

The main message taken from the campaign was to go and visit the GP with any symptoms or concerns (36%). Around one in five (18%) people mentioned the 'blood in pee' message, showing that awareness of this symptom is cutting through in the advertising. However, there was no difference in awareness by gender.

In line with findings from previous BCoC campaigns, the kidney and bladder cancer campaigns were perceived to be clear and easy to understand (93%) and important (92%) while two thirds of people surveyed (68%) felt that the advertising stood out.

Two thirds of those surveyed agreed that the advertising was relevant to them (66%), with agreement higher among men (71%) than women (61%). Just fewer than half (45%) felt that it told them something new and only one in ten (10%) said that they were fed up of seeing this kind of cancer advertising. This is a good indication that members of the public are not becoming so used to the BCoC brand that they cease paying attention to it.

Second campaign

When asked to describe the main message conveyed by the adverts, the most common answer was for people to go and visit their GP with any symptoms or concerns (35%) and this was also the message most clearly received in the first campaign. There was an encouraging increase from the first campaign in the proportion who felt that the main message was to 'go to GP quickly if you have any symptoms/concerns' (from 8% at the first campaign to 16% at the second campaign). Interestingly, women were more likely to receive the message concerning urgency of action than men, for example to 'get checked out quickly'.

As has been the case with other Be Clear on Cancer campaigns, the campaign advertising was seen to be important (93%) and clear and easy to understand (93%) by most respondents. Two thirds of people felt that the advertising was relevant to them (65%), particularly men (71%).

In line with the first campaign, around two thirds (65%) felt that the adverts stood out from other advertising. Interestingly, the 'new news' perception of the campaign did not reduce, despite the campaign being aired twice: Just fewer than half of people (45% at the first and second campaign) agreed that the adverts were telling them something new. This indication that the advertising is not wearing out was also supported by the

fact that only one in ten people (11%) claimed that they were fed up of seeing this kind of cancer advertising.

Third campaign

The campaign scored well for the messages being important to show (92%; average across BCoC campaigns, 92%), clear and easy to understand (90%; average 92%), relevance (67%; average 63%) and standing out from other adverts (67%; average 66%).

Around four in five (78%) people surveyed said the advertising would make them more likely to go to their GP with the symptoms mentioned.

Around two in five (43%) people surveyed felt the advert told them something new, which is lower than the BCoC average (47%) and slightly lower than previous BiP campaigns (45%).

As a sign that the 'Look before you flush' message has resonated, women were more likely in the third campaign to find the campaign relevant than in the second campaign (67% vs. 59%).

There is little evidence of campaign wear-out: Just 12% say they are fed up of seeing this type of advertising about cancer.

4.6 Knowledge of blood in pee symptoms

First campaign

Spontaneous knowledge of blood in pee as a symptom of kidney or bladder cancer significantly increased after the campaign (from 27% to 44%). This is very encouraging particularly because of the campaign's symptom-led focus (rather than cancer-led). Knowledge in the original regional pilot region (North of England) was higher both preand post-campaign, increasing from 40% to 55%, showing that knowledge was retained after the first campaign burst, but it was then able to build further with a second airing.

Prompted knowledge of blood in pee as a warning sign of bladder or kidney cancer was unchanged pre- to post-campaign. However, the majority thought it was either definitely or probably a warning sign and over half thought it was definitely a warning sign.

Second campaign

Spontaneous knowledge of blood in pee as a symptom of kidney or bladder cancer significantly increased after the campaign from three four in ten (31%) people surveyed to four in ten (40%) people. There was limited residual awareness after the first

campaign, so while the second campaign increased knowledge pre- to post-campaign, it did not build on the results of the first campaign.

An increase in confidence identifying symptoms of kidney or bladder cancer took place pre- to post-campaign (from 30% to 40%). However, in line with knowledge, confidence levels remained at a similar level to that seen after the first campaign, suggesting that confidence did not cumulatively increase for each successive campaign. There were significant increases in both measures (spontaneous knowledge and confidence) for women, despite the fact they found the campaign less relevant than men.

Prompted knowledge of blood in pee as a definite warning sign of kidney or bladder cancer remained relatively static pre (48%) to post (51%) campaign.

Third campaign

At the post-stage, there was an increase in unprompted mentions of blood in urine as a sign of bladder/kidney cancer (37% at the post-stage, up from 25% at the pre-stage). This is similar to increases seen in the first campaign and the second campaign (44% from 27% and 40% from 31%, respectively).

There was also increased confidence in identifying signs or symptoms of kidney or bladder cancer, with an increase to 36% at the post-stage from 29% at the pre-stage (second campaign: 40% post; 30% pre). Women drove this increase in confidence (40% post; 30% pre. Men: 31% post; 28% pre).

The campaign also drove an increase in agreement that blood in pee is a definite or probable warning sign for kidney/bladder cancer (92% post; 86% pre). It also increased the proportion who thought it was definitely a sign (55% post vs. 38% pre).

4.7 Campaign impact

First campaign

Eight in ten (81%) people surveyed agreed that the advertising would make them more likely to go to the GP if they had any of the symptoms and felt concerned, and one in six (16%) of those who recognised the advertising had taken some action as a result. This is slightly lower than that seen for previous national campaigns (19% for lung cancer and 20% for bowel cancer) but it is reassuring that over one in five (6%) reported that they had made an appointment with their GP and 3% had considered this.

Second campaign

Eight in ten (81%) people surveyed agreed that the advertising would make them more likely to go their GP with relevant concerns – the same proportion seen after the first campaign and in line with previous BCoC campaigns.

Levels of reported action following the campaign were relatively low (16% took any action) compared to other BCoC national campaigns. Despite this it is reassuring that more than one in twenty (6%) people who recognised the campaign reported that they had made an appointment with their GP as a result of seeing a campaign advert. Men were more likely than women to say that they had visited their GP (9% compared with 3%), which is positive as it is often more difficult to motivate men to act on health issues.

Third campaign

The campaign delivered positive behaviour change in increasing the proportion of men and women who reported always checking the colour of their pee before they flush. At the post-campaign stage half of men (51%) reported always checking, compared to 44% at the pre-stage, while around a third of women (31%) said they did so, compared to a quarter (23%) at the pre-stage. While this positive behaviour change is encouraging, over half of women (54%) at the post-campaign stage said they check only occasionally or less often, which signifies that there is still work needed to be done to encourage further behaviour change among women.

When asked what they would do if they saw blood in their pee just once, two-thirds at the pre-stage (67%) said they would visit their GP. This was higher than the pre-stage for previous campaigns (65% in the second campaign and 63% in the first campaign). Furthermore, the proportion saying they would wait and see if it happens again before taking action was lower at the pre-stage (14% compared to 21% in the second campaign and 19% in the first campaign). This suggests the broader BCoC campaign is helping to normalise GP visits as an action when first encountering symptoms.

The campaign did not build the overall proportion who would visit their GP if they noticed blood in their pee just once (68% at the post-stage). However, there was an increase among men (73% post; 69% pre) but no change among women (64% post; 65% pre).

Additionally, respondents were asked a similar question: after how many times of seeing blood in their pee would they visit their GP. At both the pre- and post-campaign stages, half said they would visit their GP if they noticed blood in their pee once (52% post; 50% pre) which was in line with previous campaigns.

In terms of action, 15% said they took action as a result of seeing the campaign, with no differences between men and women. This overall level of action is similar to the second campaign (16%), although claimed action among men is slightly lower (20% in the second campaign).

5. Summary of evaluation metric data for local and regional pilot campaigns

5.1 Local pilot

A local pilot in the Avon, Somerset and Wiltshire Cancer Network took place from January to March 2012 (11).

- Data collected from General Practice showed an increase in attendances from 2011 to 2012. However, the increase was not clearly linked to the start of the campaign
- The week-to-week variation in GP attendances, comparing 2011 with 2012, was large. This ranged from a 24.3% decrease to a 59.1% increase, consistent with a high level of variance in activity prior to the campaign and no clear relationship between that campaign and the increase in attendance
- Referral data showed an increase in urgent GP referral for suspected urological cancer (January to May) of 26% (4473 to 5656, p<0.001) for suspected urological cancer in the pilot area but only an 18% increase (40,577 to 47,876, p<0.001) in the comparison area (12).
- Despite the increase in referral from January to May there was only 5.3% increase in the number of bladder or kidney cancers diagnosed following an urgent GP referral for suspected urological cancer within the pilot area compared with an 11.9% increase in the comparison area.

5.2 Regional pilot

A regional BiP pilot took place from January to March 2013 (11) in the Tyne Tees and Borders TV regions.

• Public knowledge was assessed and demonstrated a statistically significant increase in recognition of blood in pee as a definite warning sign of kidney and bladder cancer. Knowledge improved from 41% of individuals prior to the campaign to 65% post-campaign in those over 54 years (p<0.001)

- Similarly, there was a statistically significant increase in people aged over 54 who stated that their behaviour would change. If there was a change in bladder habits, 27% said they would visit the GP on the same day compared to 18% precampaign (p=0.015)
- Analysis of 54 GPs showed that GP attendances for visible blood in urine (macroscopic haematuria) increased by 32% (p<0.001) in patients over 49 during the campaign when compared with the same period in 2012 (adjusted for working days). This was equivalent to an additional 0.29 visits per practice, per week
- During the campaign, pilot areas saw a statistically significant 28% (p<0.001) increase in urgent referrals for suspected urological cancers (excluding testicular), compared to a 9% (p<0.001) increase in comparison areas
- Pilot areas saw a 22% (p<0.001) increase (0.3% increase p=0.883 in comparison area) in the number of urological cancers (excluding testicular) diagnosed following a TWW referral in January to April 2013 when compared to the same period in the previous year. The conversion rate remained around the same; 15.6% to 14.9% (p=0.404)
- Hospital Episode Statistics (HES) data showed a statistically significant rise in cystoscopy activity in the pilot areas between January to March 2013 compared to the same period in 2012 (3% after adjusting for working days). This compares to a 1% increase in control areas (statistically significant).

6. Summary of evaluation metric data for national campaigns

6.1 List of evaluation metrics

The evaluation of the national BiP awareness campaigns is based on the metric analyses defined in Table 1.

Metric	Description	Codes used
Campaign recognition and public awareness	Public awareness and recognition of the campaigns and public knowledge regarding blood in pee	N/A
GP attendances	Number of visits to their GP with visible blood in pee (macroscopic haematuria)	
Cancer Waiting Times (CWT) data:		
Urgent GP (Two Week Wait) referrals	Number of urgent GP referrals for suspected bladder, kidney or urological cancers or symptoms, also known as Two Week Wait (TWW) referrals	N/A
Cancer diagnoses resulting from urgent GP referrals	Number of bladder, kidney or urological cancer diagnoses resulting from urgent referrals for suspected bladder, kidney or urological cancers or symptoms also known as: Two Week Wait (TWW) cancers, 62-day waits and 62-day cancers	
Conversion rates	Percentage of urgent GP referrals for suspected bladder, kidney or urological cancers or symptoms resulting in a diagnosis of bladder, kidney or urological cancer	Kidney: ICD-10 C67 Kidney: ICD-10 C64 to 65 Urological: ICD-10 C60 to 61, C63 to 68
Diagnoses in CWT- database	Number of bladder, kidney or urological cancers or symptoms diagnoses recorded in the CWT-database, also known as: CWT cancers, 31-day waits and 31-day cancers	

Table 1: List of campaign evaluation metrics and their descriptions

Detection rates	Percentage of bladder, kidney or urological cancer diagnoses recorded in the CWT database which resulted from an urgent GP referral for suspected bladder, kidney or urological cancers or symptoms	
Emergency presentations	Proportion of men and women diagnosed with bladder and kidney cancer who first presented as an emergency	Bladder: ICD-10 C67 Kidney: ICD-10 C64 to C66, C68
Diagnostics in secondary care (DID)	Number of imaging tests, for suspected kidney and bladder cancer	DID imaging codes (see appendix 10.1)
Cystoscopy	Number of cystoscopies performed	DM01 return (Diagnostics waiting times and activity) Diagnostic ID 14
Cancers diagnosed	Number of newly diagnosed bladder and kidney cancers	
Early stage at diagnosis	Proportion of bladder and kidney cancers diagnosed at an early stage (at Stage 1 or 2)	Bladder: ICD-10 C67 Kidney: ICD-10 C64
One-year survival	1-year survival for patients with bladder or kidney cancers diagnosed	-

6.2 GP attendances

Key messages

The first national campaign in 2013 led to an increase in the number of GP attendances recorded for blood in pee during the campaign period, and possibly in the following months. This increase was seen in those aged under 50 years of age as well as in the target age group (50 years and over). In the 2014 campaign there was a significant increase in GP attendances for all ages, while the 2016 campaign had no effect on GP attendance.

Introduction

Visible haematuria (blood in pee) is an alarming symptom for most patients prompting early presentation. However, it is recognised that delayed presentation occurs in some groups particularly women (13). This chapter describes attendance at GP surgeries and compares those with visible haematuria to the presentation of mainly unrelated symptoms including headache or migraine; knee, shoulder or neck pain and urinary tract infection. It is intended to focus on the at-risk age group (over 50 years of age) but also includes data from younger patients.

Changes in the number of patient attendances at a GP surgery may indicate a change in behaviour and is the metric most likely to change in response to a public health campaign. However, the media is also very influential in driving public opinion, in 2018 there was a marked and sustained national rise in referral for suspected prostate cancer thought to be related to media stories surrounding Bill Turnbull (14) and Stephen Fry (15). Hence local or national media stories may contribute to changes in attendance which could either mask or inflate the apparent effect of a public health campaign.

Method

For the first National campaign (15 October to 20 November 2013) data on GP attendances for blood in pee and control symptoms (headache or migraine; knee, shoulder or neck pain and urinary tract infection) was collected from 265 GP surgeries for nine defined periods between August 2011 and January 2014. These periods were the 8-week pre–campaign period, the 6-week campaign period and the 8-week post–campaign period, and the same weeks in the previous two years. The relevant dates are shown in Figure 11. For analysis purposes the campaign period is defined as 15 October to 25 November 2013. Data was adjusted to account for bank holidays and the number of weeks in each period.

Methodology for the second and third campaigns was similar; data was sourced from The Health Improvement Network (THIN) database. The number of GP surgeries submitting data each week decreased from 431 to 290 practices and 327 to 194 for the second and third campaigns respectively. This data allowed calculation of the average number of attendances per practice per week. For the second campaign the analysis considered 3 periods; a 10-week pre-campaign period (4 August 2014 to 12 October 2014), an 8-week campaign period (13 October 2014 to 7 December 2014) and a 10-week post-campaign period (8 December 2014 to 15 February 2015). For the third campaign the corresponding periods were; a 12-week pre-campaign period (23 November 2015 to 14 February 2016), a 9-week campaign period (15 February 2016 to 17 April 2016) and a 12-week post-campaign period (18 April 2016 to 10 July 2016).

Analysis compared the average number of GP attendances per practice per week during these periods for all three campaigns.

GP engagement was organised by local commissioning groups, practices volunteered to provide data for this project in return for a fixed payment. Compared to all practices nationally, practices submitting data had a similar age-sex population structure but a slightly less deprived population.

Results

First campaign

During the 2013 campaign period there were 1,576 attendances for blood in pee amongst people aged 50 years and over. This was significantly higher than the average number of attendances for all other periods combined (1,329.9 attendances after adjustment, p<0.001).

The average number of attendances at GP practices per week per practice for blood in pee during the campaign period was 16% higher (statistically significant, p<0.001) than during the corresponding period in 2012 (0.99 compared with 0.86 attendances per week per practice, Figure 11). The number of attendances was even larger in the post–campaign period at 1.05 attendances per week per practice. In comparison, there was a smaller, but significant 6% increase (p<0.001) in the average number of attendances per week per practice for control symptoms during the campaign period (10.93) compared to the same period in 2012 (10.27).

When comparing the 2013 campaign period to all the other eight periods combined, there was also a statistically significant (p<0.001) increase in the number of attendances for blood in pee in those aged under 50. For this age group, there was a statistically significant 34% increase in attendances during the campaign period compared with the corresponding period in 2012 (p<0.001), indicating that the campaign appears to have impacted on younger people as well as those aged 50 years and over.

Similarly, there were increases in the number of attendances for blood in pee for both sexes, with a larger increase for men of 23% (p<0.001) compared to 10% for women (p=0.059), for those aged 50 and over (only statistically significant for men).

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Source: The Health Improvement Network

Figure 5: Average number of GP attendances for blood in pee per week per practice (adjusted for bank holidays) for people aged 50 and over during the pre, campaign and post-campaign periods compared with corresponding periods in the previous two years

Second campaign

The average number of GP attendances per practice per week for blood in pee peaked during the first BiP campaign and appears to have remained higher during 2014 than before this campaign (Figure 6). It peaked again during the second national BiP campaign; there was a statistically significant increase of 24.7% (p<0.001) compared with the same period in 2012 (from 0.63 visits per practice per week in 2012 to 0.79 visits per practice per week in 2014).

Attendance was also significantly higher in the pre-campaign and post-campaign periods in comparison with 2012/13, with an increase of 10.4% and 15.5% respectively. In contrast, results for the control symptom (back pain) showed a small increase which was not statistically significant (0.7% increase, p=0.41), from 10.67 visits per GP practice per week in 2012 to 10.74 visits per practice per week. The number of attendances for people aged 50 and over for blood in pee symptoms showed a statistically significant increase of 17.3% (p<0.001).



Figure 6: Average number of GP attendances, per practice per week, for blood in pee, 2 July 2012 to 15 February 2015, all ages

Third Campaign

During the 2016 campaign period, the number of attendances for all ages for blood in pee slightly increased by 1.9%, when compared with the same period in 2015 (from 0.72 visits per practice per week in 2015 to 0.73 visits per practice per week in 2016), but this change was not statistically significant (p=0.61), (Figure 7). There were no statistically significant changes in attendance for either the pre- or post-campaign periods. Attendance for control symptoms (back pain) decreased by 7.2% (p<0.001), from 10.8 visits per GP practice per week in 2015 to 10.0 visits per practice per week.



Figure 7: Average number of GP attendances, per practice per week, for blood in pee, 6 October 2014 to 10 July 2016, all ages

Conclusions

There was a statistically significant increase in the number of GP attendances for blood in pee for the first and second campaigns for all ages. There was also a significant increase in attendance for a few months after the first national BiP awareness campaign. The third campaign had no clear impact on attendance, though it may have slowed a general decreasing trend over time in attendances.

The first and second campaigns appeared to have a significant impact on GP attendance with blood in pee. It is surprising that this effect was not seen in the third campaign. Figure 6 shows a marked rise in GP attendance prior to the 2014 campaign, this cannot be explained by the campaign. The THIN database only includes a sample of practices hence smaller numbers than the whole English population so differences in attendance are more difficult to confirm. Attendances in the third campaign appeared to have more week to week variability than the first two campaigns; this may have been due to smaller numbers of GP practices included in the analysis (Figure 7). Finally, the baseline level of attendance in late 2015 is similar to the increased rate of attendance during the second campaign, suggesting that the campaigns may have reached a saturation point.

6.3 Urgent GP referrals for suspected urological cancer

Key messages

The first BiP campaign appears to have led to an increase in the number of urgent GP referrals for suspected urological cancers during the campaign period and the weeks that followed, and there was a sustained impact into 2014. Similarly, the second campaign appears to have led to an increase in the number of urgent GP referral for suspected urological cancer. The third campaign may have had some impact on the number of urgent GP referral for suspected urological cancer, although the evidence is not clear, as the changes seen in the number of referrals appear similar to those for other suspected cancer referrals.

Introduction

This chapter uses data exclusively from the Cancer Waiting Times dataset (CWT) to measure changes due to the campaign in the number of urgent GP referrals for suspected urological cancer. CWT aggregates all urological cancer together as it is a database designed to measure cancer waits by service and not referral rates for individual cancers or symptoms. The predominant patients in CWT for urological cancer are those with prostate cancer which usually presents without visible haematuria. Hence the results shown below need to be assessed in that context. However, the results for women are not affected by the inclusion of prostate cancer and may reflect the real change in referrals with visible haematuria.

Method

This metric assesses the impact of the national BiP awareness campaigns on the number of urgent GP referrals for suspected urological cancer, often referred to as twoweek wait (TWW) referrals. It uses data from the National Cancer Waiting Times Monitoring Data Set, provided by NHS England, presented by month first seen. The analysis compares the campaign and post–campaign periods (October 2013 to April 2014) with the same months one year earlier for the first campaign. For the second campaign, the campaign and post–campaign period (October to December 2014) period was also compared with the same three months in 2012 to avoid including impact from the first campaign. Similarly, for the third campaign, the campaign and post–campaign period (February to April 2016) was compared with the same three months in 2015.

Results

The results for all three campaigns are summarised in Table 2.

Table 2: Number of urgent GP referrals for suspected urological cancer, for each campaign

Campaign		Suspected urological cancer	Comparison group*
	Comparison period October 2012 to December 2012	36,563	149,945
First	Campaign period October 2013 to December 2013	46,003	170,112
	Percentage change	26% p<0.001	13% p<0.001
	Comparison period October 2012 to December 2012	36,551	28,651
Second	Campaign period October 2014 to December 2014	49,105	35,466
	Percentage change	34% p<0.001	24% p<0.001
	Comparison period February 2015 to April 2015	47,673	167,902
Third	Campaign period February 2016 to April 2016	52,570	186,323
	Percentage change	10% p<0.001	11% p<0.001

* For the first and third national campaigns the comparison group was urgent GP referrals for other suspected cancers (excluding urological, testicular, lower GI, lung and breast cancers). For the second campaign the comparison group was urgent GP referrals for head and neck cancer.

Data source: NCRAS

For the first campaign there was a 26% increase in the number of urgent GP referrals for suspected urological cancer for England (p<0.001) (Figure 8). In comparison, there was a 13% increase in the number of urgent GP referrals for other suspected cancers (excluding urological, testicular, lower GI, lung and breast cancers).

A post-campaign period, comparing January to April 2014 to January to April 2013, revealed a 23% increase (p<0.001) in the number of urgent GP referral for suspected urological cancer, compared to an 18% increase (p<0.001) in referrals for other

suspected cancers. For both periods, there were increases for both males and females, and for all age groups.

In the second campaign there was a 34% increase (p<0.001) in the number of urgent GP referrals for suspected urological cancer in England, from 36,551 to 49,105 referrals (Figure 8). In comparison, there was a 24% increase over the same period in referrals for suspected head and neck cancers.



Source: NCRAS, PHE. Cancer Waiting Times data provided by NHS England and NHS Digital

Figure 8: Monthly number of urgent GP referrals for suspected urological cancers, January 2012 to December 2014, England

In the third campaign there was a 10% increase in the number of urgent GP referrals for suspected urological cancer nationally. However, between the same periods, the increase in the number of urgent GP referrals for other suspected cancers (excluding urological, testicular, lower GI, lung and breast cancers) was similar at 11%. The trend chart of the number of urological cancer referrals shows a spike in referrals during the campaign (Figure 9), but there was also a similar spike in the number of referrals for other suspected cancers.

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Source: NCRAS, PHE. Cancer Waiting Times data provided by NHS England and NHS Digital

Figure 9: Monthly number of urgent GP referrals for suspected urological cancers, January 2014 to April 2016, England

For all three campaigns there were statistically significant increases in referrals across all age groups and in both sexes.

Conclusions

The first BiP campaign was associated with a 26% in increase in the number of urgent GP referrals for suspected urological cancer. There was also evidence of a sustained impact for a few months following the campaign. The second campaign also had an impact on the number of urgent GP referrals for suspected urological cancer; there was a 34% increase in these referrals. The third BiP campaign showed little evidence of a change in the number of urgent GP referral for suspected urological cancer nationally. While there was a rise in the number of urgent GP referral for suspected urological cancer nationally.

It is worth emphasising that the second campaign used head and neck cancer referrals as a comparator whereas the first and third campaigns used other cancers not involved in the Be Clear on Cancer campaigns (BCoC). Head and neck cancers was used as it was not affected by any known awareness campaigns that ran in the same year as the second campaign. GP referral is a metric which would be expected to be influenced by the BCoC campaigns through patient education and perhaps heightened awareness among GPs. The first and second campaigns clearly suggest an increase in referrals while the third campaign did not. The NICE guideline 'Suspected cancer: recognition and referral' (20) was published in June 2015. This made recommendations in haematuria (blood in pee) which raised the threshold for urgent GP referral for suspected urological cancer. Hence it is likely that this guideline influenced referral patterns in the third campaign and may explain the similarity between urological referrals and the comparator referrals.

The data presented are for urological cancer, the majority of cancer diagnoses in this group are prostate cancer which is twice as common as bladder and kidney cancer combined. Hence there is a risk that rising referral for suspected prostate cancer rather than referral for blood in pee could be responsible for the changes seen.

6.4 Cancer diagnoses resulting from an urgent GP referral for suspected cancer and conversion rate

Key message

First campaign

There is some evidence that the first BiP campaign had an impact on the number of bladder, kidney and urological cancer diagnoses resulting from an urgent GP referral for suspected urological cancer, particularly for bladder cancer. The campaign appears to have led to a decrease in the urological cancer conversion rate

Second campaign

For the second BiP campaign, the number of bladder, kidney and urological cancer cases resulting from an urgent GP referral for suspected urological cancer, as well as the conversion rate, appeared consistent with long-term trends.

Third campaign

The third BiP campaign may have had a small impact on the number of bladder cancer cases resulting from an urgent GP referral for suspected urological cancer, particularly for those aged 70-79, but did not appear to affect the number of kidney cancers. It had no measurable effect on conversion rates.

Introduction

This chapter describes the impact of the three BiP campaigns on two related metrics: First the number of new diagnoses of bladder, kidney or urological cancer that resulted from an urgent GP referral for suspected urological cancer.

Second the percentage of urgent GP referrals for suspected urological cancer resulting in a diagnosis of bladder, kidney or urological cancer (conversion rate).
Method

Data was taken from the National Cancer Waiting Times Monitoring Data Set, provided by NHS England. Results are presented by month first seen. For both metrics, the analysis compared the campaign period (October to December 2013, October to December 2014, and February to April 2016 for the first, second and third national campaigns) with the same three months in 2012, 2012 and 2015 respectively. The analysis considers how changes in bladder (ICD-10 C67), kidney (ICD-10 C64–65) and all urological cancers (ICD-10 C60–61, C63–68) may differ.

Results

These are summarised for all three campaigns in Table 3.

		Bladder cancers diagnosed resulting from an urgent GP referral	Bladder cancer conversion rate	Kidney cancers diagnosed resulting from an urgent GP referral	Kidney cancer conversion rate	Urological cancers diagnosed resulting from an urgent GP referral	Urological cancer conversion rate
First compairs	October 2012 to December 2012*	1,545	4.2%	536	1.5%	6,682	18.3%
(15 October 2012 to	October 2013 to December 2013**	1,672	3.6%	652	1.4%	7,619	16.6%
20 November 2013)	%-Point Change	8.2%	-0.6%	21.6%	0.0%	14.0%	-1.7%
	P-value	p=0.025	p<0.001	p<0.001	p=0.564	p<0.001	p<0.001
Coord compoint	October 2012 to December 2012*	1,546	4.2%	546	1.5%	6,696	18.3%
Second campaign	October 2014 to December 2014**	1,547	3.2%	712	1.4%	7,281	14.8%
23 November 2014 (0	%-Point Change	0.1%	-1.1%	30.4%	0.0%	8.7%	-3.5%
	P-value	p=0.986	p<0.001	p<0.001	p=0.598	p<0.001	p<0.001
Third compoign	February 2015 to April 2015*	1,466	3.1%	640	1.3%	7,148	15.0%
(15 February 2016 to 31 March 2016)	February 2016 to April 2016**	1,547	2.9%	703	1.3%	7,574	14.4%
	%-Point Change	5.5%	-0.1%	9.8%	-0.0%	6.0%	-0.6%
	P-value	p=0.140	p=0.220	p=0.086	p=0.943	p<0.001	p=0.009
*Comparison period	**Analysis period	d Data	source: NCRA	S			

 Table 3: Cancers diagnosed resulting from an urgent GP referral and conversion rate, all ages, England

6.4.1 Cancer diagnoses resulting from an urgent GP referral for suspected cancer

For the first campaign there was a rising trend in the numbers of kidney and urological cancer diagnoses resulting from an urgent GP referral for suspected urological cancer (Figure 16), and there was a peak in urological cancer diagnoses around the time of the campaign. Whereas for bladder cancer diagnoses, a clear peak in diagnoses following the campaign contrasts with a generally decreasing long-term trend.

Comparing the campaign period (October to December 2013) to the same months in 2012, the number of bladder cancer diagnoses increased by 8% (p=0.025), the number of kidney cancer diagnoses increased by 22% (p<0.001) and the number of urological cancer diagnoses increased by 14% (p<0.001).

For the second campaign the campaign period (October 2014 to December 2014) was compared to the same months in 2012. The number of urological cancers resulting from an urgent GP referral for suspected urological cancer increased by 9% (p<0.001), from 6,696 to 7,281 in England. For bladder cancer, there was no evidence of an increase; while for kidney cancer, there was an increase of 30% (p<0.001). These numbers appeared consistent with long-term trends during the campaign period (Figures 10 and 11).

The third campaign (comparing February to April 2015 to February to April 2016 for England) found no significant changes in the number of bladder and kidney cancer diagnoses resulting from an urgent GP referral for suspected urological cancer. However, there was a statistically significantly 6% increase in urological cancers from 7,148 to 7,574 cases. This increase appears consistent with long-term trends; there were no changes clearly associated with the campaign (Figure 11).

The numbers of bladder cancer diagnoses resulting from an urgent GP referral for suspected urological cancer were higher in March and April 2016 than in any months in 2014 or 2015, which may reflect a small impact of the campaign.

For those aged 70 to 79, there appeared to be above-trend increases in the number of bladder and urological cancers resulting from an urgent GP referral for suspected urological cancer with 20% (p=0.004) and 13% (p<0.001) increases respectively, for February to April 2016, compared to the same period in 2015.



Source: NCRAS, PHE. Cancer Waiting Times data provided by NHS England and NHS Digital

Figure 10: Monthly number of bladder, kidney and urological cancer diagnoses resulting from an urgent GP referral for suspected urological cancers, January 2012 to December 2014, England



Source: NCRAS, PHE. Cancer Waiting Times data provided by NHS England and NHS Digital

Figure 11: Monthly number of bladder, kidney and urological cancer diagnoses resulting from an urgent GP referral for suspected urological cancers, January 2014 to April 2016, England

6.4.2 Conversion rate

For the first campaign the bladder cancer conversion rate decreased from 4.2% to 3.6% (p<0.001) and the urological cancer conversion rate from 18.3% to 16.6% (p<0.001) from October to December 2012 to October to December 2013. Although the conversion rates have been gradually decreasing over time, there was a clear drop in the urological cancer conversion rate from November 2013 (Figure 12) as might be anticipated since there was an increase in the number of urgent GP referrals for suspected cancer during the campaign.

The lower conversion rates persisted during 2014, with some further decreases for the second campaign. The bladder cancer conversion rate decreased from 4.2% to 3.2% (p<0.001) and the urological cancer conversion rate decreased from 18.3% to 14.8% (p<0.001) from October to December 2012 to October to December 2014. Conversion rates for urgent GP referral for suspected urological cancer have been falling since at least January 2012, and changes during the campaign appear consistent with these long-term trends. The second campaign did not appear to have an impact on any of the conversion rates.



Source: NCRAS, PHE. Cancer Waiting Times data provided by NHS England and NHS Digital

Figure 12: Monthly bladder, kidney and urological cancer conversion rates for urgent GP referrals for suspected urological cancers, January 2012 to December 2014, England

The third campaign demonstrated no evidence of any changes in the conversion rates for bladder or kidney cancers in England. For urological cancers, the conversion rate decreased by 0.6% (statistically significant). However, these changes appeared to be in line with long-term trends (Figure 13).



Source: NCRAS, PHE. Cancer Waiting Times data provided by NHS England and NHS Digital

Figure 13: Monthly bladder, kidney and urological cancer conversion rates for urgent GP referrals for suspected urological cancers, January 2014 to April 2016, England

Conclusions

There is some evidence that the first BiP campaign had an impact on the number of bladder, kidney and urological cancer diagnoses resulting from an urgent GP referral for suspected urological cancer, although for kidney and urological cancers these changes may partly reflect long-term trends. The campaign appears to have led to a decrease in the urological cancer conversion rate.

The second BiP campaign does not appear to have had an impact on urological cancer diagnoses or conversion rate resulting from an urgent GP referral for suspected urological cancer.

The third national campaign had no clear impact on the number of kidney or urological cancer diagnoses resulting from urgent GP referral for suspected urological cancer, although it may have had a small impact on the number of bladder cancer diagnoses particularly for those aged 70-79. It does not appear to have had an impact on the bladder, kidney or urological cancer conversion rates from urgent GP referral for suspected urological cancer.

It should be noted that the definition of kidney cancer in this chapter differs from other chapters. Here both cancer of the renal parenchyma (C64) and cancer of the collecting system (C65) are included. It is noteworthy that the more marked increases in cancer diagnoses from urgent GP referrals were in urological (predominantly prostate cancer) cancer. Urological cancers present much less commonly with blood in pee than bladder cancer. Therefore, the effects seen are less likely to be only due to the BiP campaigns.

6.5 Cancer diagnoses recorded in the Cancer Waiting Times database and detection rate

Key message

There is some evidence that the first BiP campaign had an impact on the number of kidney and urological cancer diagnoses recorded in the Cancer Waiting Times (CWT) database, although these changes may reflect long-term trends. The first BiP campaign does not appear to have had an impact on the number of bladder cancers recorded in the CWT database or the cancer detection rate for bladder, kidney or urological cancer. In contrast there was a 11.6% increase in the number of kidney cancers and a 10% increase in urological cancers recorded in the CWT database.

The second BiP campaign does not appear to have had an impact on the number of urological cancers recorded in the CWT database or the urological cancer detection rate.

The third campaign does not appear to have had an impact on the number of bladder cancer diagnoses, but there were small increases in kidney cancer and urological cancer diagnoses consistent with long-term increases in incidence. There were small but significant increases in the detection rate for urological cancer for the whole group and for those aged 70-79.

Introduction

This chapter describes the impact of all three BiP campaigns on bladder, kidney or urological cancer diagnoses recorded in the Cancer Waiting Times (CWT) database. It also assesses the impact of the three campaigns on detection rate, a derived metric from the CWT data.

The CWT database includes patients referred urgently with suspected cancer by their GP, patients upgraded by a consultant team due to suspected cancer and those awaiting cancer treatment referred by any route. It forms a unique dataset measuring

the cancer journey of patients referred to secondary care. It also gives an estimate of those patients treated in secondary care.

Detection rate is defined as the percentage of new CWT database recorded diagnoses which resulted from an urgent GP referral for suspected urological, bladder or kidney cancer. It is the proportion of patients with urological, bladder or kidney cancer in the CWT database referred urgently with suspected cancer by their GP (commonly referred to as the two-week wait and 62-day target). In practice this reflects the proportion of patients who present to their GP with symptoms suggestive of cancer who are then referred to secondary care urgently.

The number of patients recorded in the CWT database reflects cancer incidence to a considerable extent. A comparison of incidence between years is a straightforward comparator where the incidence is stable. However, the incidence of bladder cancer is falling while that of kidney cancer and prostate cancer (the main component of urological cancers) is rising. Therefore, comparisons of incidence from year to year need to be interpreted with caution.

This chapter differs from section 5.4 as it refers to all cancers treated in the CWT database rather than just those referred urgently, however it does not include patients with cancers who were not treated in an NHS trust.

Method

Data was taken from the National CWT Monitoring Data Set, provided by NHS England. Results are presented by month of first treatment. Taking into consideration the average interval from date first seen to treatment start date, the analysis considers the impact of all three national campaigns for these two metrics with data from November 2013 onwards. The analysis compared a 3-month period in the campaign year with 3-month comparison period one or two years earlier; the dates are listed in Table 4. The comparison period for the second campaign was two years earlier to avoid overlap with the first campaign. The analysis compares patient numbers and detection rate in bladder (ICD-10 C67), kidney (ICD-10 C64–65) and all urological cancers (ICD-10 C60– 61, C63–68) in the campaign and comparison periods.

Results

The results for all three campaigns are summarised in Table 4.

Table 4: Cancer diagnoses recorded in the CWT database, all ages, England

		Bladder cancer diagnoses recorded in the CWT database	Bladder cancer detection rate	Kidney cancer diagnoses recorded in the CWT database	Kidney cancer detection rate	Urological cancer diagnoses recorded in the CWT database	Urological cancer detection rate
- '	November 2012 to January 2013*	2,525	61.1%	1,566	38.1%	11,880	55.7%
First campaign	November 2013 to January 2014**	2,569	63.3%	1,747	38.4%	13,059	57.7%
(15 October 2013 to 20 November 2013)	%-Point Change	1.7%	2.1%	11.6%	0.2%	9.9%	2.0%
	P-value	p=0.538	p=0.121	p=0.002	p=0.892	p<0.001	p=0.002
Second campaign	November 2012 to January 2013*	2,525	61.1%	1,566	38.1%	11,880	55.7%
(13 October 2014 to	November 2014 to January 2015**	2,295	64.8%	1,809	39.0%	12,243	57.7%
23 November 2014)	%-Point Change	-9.1%	3.7%	15.5%	0.9%	3.1%	2.0%
	P-value	p<0.001	p=0.008	p<0.001	p=0.590	p=0.019	p=0.002
Third campaign (15 February 2016 to 31 March 2016)	March 2015 to May 2015*	2,289	65.1%	1,712	40.9%	12,364	59.1%
	March 2016 to May 2016**	2,314	66.2%	1,843	40.9%	12,734	61.2%
	%-Point Change	1.1%	1.1%	7.7%	0.0%	3.0%	2.1%
	P-value	p=0.713	p=0.445	p=0.028	p=0.983	p=0.020	p<0.001
*Comparison period **Analysis period Data source: NC							

6.5.1 Cancer diagnoses recorded in the CWT database

First campaign

There were significant increases in the number of kidney and urological cancers recorded in the CWT database for England (Figure 14). The number of kidney cancers increased by 12% (p=0.002) and the number of urological cancers increased by 10% (p<0.001). However, these increases are consistent with long-term trends (Figure 14), with no clear peaks following the campaign. Over the same period, there was no statistically significant change in the number of bladder cancers recorded in the CWT database (p=0.538).



Source: NCRAS, PHE. Cancer Waiting Times data provided by NHS England and NHS Digital

Figure 14: Monthly number of bladder, kidney and urological cancers diagnoses recorded in the CWT database, January 2012 to January 2015, England

Second campaign

Comparing the campaign period with the comparison period two years earlier the number of bladder cancers recorded decreased by 9% (p<0.001), from 2,525 to 2,295 and the number of kidney cancers recorded increased by 16% (p<0.001), from 1,566 to 1,809. However, both changes appeared to be in line with long-term trends, with no particular change in the trend following the campaign (Figure 15).



Source: NCRAS, PHE. Cancer Waiting Times data provided by NHS England and NHS Digital

Figure 15: Monthly number of bladder, kidney and urological cancer diagnoses recorded in the CWT database, January 2014 to May 2016, England

Third campaign

There was a statistically significant increase of 3% in the number of urological cancer diagnoses. Similarly, there was an 8% increase in the number of kidney cancer diagnoses. However, for kidney and all urological cancers, the numbers of diagnoses for the campaign months appear in line with the general trend with no clear change due to the campaign (Figure 15). There were no significant changes in the number of bladder cancer diagnoses.

6.5.2 Detection rate

First campaign

The detection rate for urological cancers increased significantly from 55.7% to 57.7% for England (p=0.002), but there were no statistically significant changes in the bladder or kidney cancer detection rates (Figure 16).



Source: NCRAS, PHE. Cancer Waiting Times data provided by NHS England and NHS Digital

Figure 16: Monthly detection rates for bladder, kidney and urological cancers diagnoses, January 2012 to January 2015, England

Second campaign

The detection rate for bladder cancer increased by 4% (p<0.01) and 2.0% (p = 0.002) for urological cancer. However, these changes appear to be broadly in line with the long-term trends (Figure 17). There was no statistically significant change in the detection rate for kidney cancer.



Source: NCRAS, PHE. Cancer Waiting Times data provided by NHS England and NHS Digital

Figure 17: Monthly detection rates for bladder, kidney and urological cancer diagnoses, January 2014 to May 2016, England

Third campaign

The detection rate for urological cancers (all ages) increased by 2.1% (p<0.001) and for those aged 70-79 by 4% (p=0.003) (Figure 17). There was no evidence of change in the detection rates for bladder and kidney cancers. This data is consistent with long-term trends.

Conclusions

There is some evidence that the first national blood in pee awareness campaign had an impact on the number of kidney and urological cancer diagnoses recorded in the CWT database, and on the urological cancer detection rate.

The second campaign recorded a significant fall in bladder cancer incidence and a rise in kidney cancer incidence though the campaign did not appear to have a major impact on incidence or detection rate as these changes were in line with long-term trends. Therefore, there was no clear impact from the campaign.

The third campaign recorded increases in urological and kidney cancers and a small increase in detection rates for urological cancers, particularly for men in their seventies. However, these changes are largely consistent with long-term trends hence there was no clear impact from the campaign.

The three campaigns had some influence on kidney and urological cancer, but little effect on bladder cancer. Bladder cancer usually presents with blood in pee, however this is much less common for kidney cancer and urological cancer. Most patients with urological cancer have prostate cancer. If the three campaigns had had a major influence on the number of cancers recorded, we would expect the change to be most obvious in bladder cancer. Hence the changes seen are likely to be due to long-term rises in the incidence of kidney and prostate cancer.

Changes in detection rate are seen in one campaign for bladder cancer and two campaigns for urological cancer. The incidence of bladder cancer is falling in the long-term and there are few patients where the presentation is incidental. Hence the rise in detection rate is likely to be due to an increased proportion of symptomatic patients being referred by the urgent GP referral for suspected urological cancer route. In contrast in prostate cancer (the majority of urological cancer) there is a large reservoir of undiagnosed asymptomatic patients. We know the incidence is rising and so an increasing enthusiasm to refer patients with a raised prostate-specific antigen (PSA) after publication of the NICE GP referral guideline (21) is likely to explain this change.

6.6 Emergency presentations

Key Messages

No changes in the proportion of patients presenting as an emergency were found for any of the three national campaigns.

Introduction

Emergency presentation is associated with poor survival (16). It is likely that a component of the poor survival is due to patients with advanced disease presenting in this manner, however complications of cancer also present in the emergency setting and earlier presentation in this group may improve survival overall. Hence the emergency presentation metric aims to measure a change in the proportion of patients presenting in the emergency setting due to the campaign. It should be noted that this metric included bladder cancer T1 or more but excluded Ta and carcinoma in situ^b. It also included renal cell carcinoma (all stages) and carcinoma of the renal pelvis and ureter (T1 or more but excluded Ta and carcinoma in situ).

^b T1 –T4 is defined as bladder cancer. However, the same appearance where the tumour has not penetrated the inner wall of the bladder is not counted in the figures for bladder cancer

Data from all three national campaigns are discussed in this chapter.

Method

The HES derived emergency presentation metric is calculated from inpatient data and uses the methodology set out in the cancer outcomes metric specification (17). It measures the proportion of patients diagnosed with kidney or bladder cancer who first presented as an emergency.

Data was extracted for people admitted during the 2012–13 and 2013–16 financial years, resident in England with a primary diagnosis of bladder cancer (ICD-10 C67) or kidney cancer (ICD-10 C64-C66, C68). Numbers do not include people diagnosed via other non-inpatient routes, for example outpatient or general practice settings.

For each month, the proportion was calculated as the number of first inpatient admissions with bladder or kidney cancer presenting through an emergency route, divided by the total number of first inpatient admissions with these cancers, multiplied by 100. Binomial confidence intervals were calculated using the Wilson score method. Results for the 2013–14 financial year (FY), which includes the campaign and post–campaign period, were compared to the previous FY (2012–13), on a month by month basis with a focus on the months during and shortly after the campaign.

Results

Bladder cancer

There were 16,516 patients with bladder cancer admitted in FY 2012-13 and 1,356 were diagnosed through emergency presentation. The number of bladder cancer diagnoses and emergency presentations for all three campaigns are shown in Table 5.

 Table 5: Emergency presentation as a proportion of bladder cancer diagnoses, all three campaigns

Campaign	Year	Total number of bladder cancer diagnoses	Total number	Proportion of emergency presentations % (95%CI)	
			presentations	First month of campaign	Second months
First campaign (15 October 2013 to 20 November 2013)	Comparison (April 2012 – March 2013)	16,516	1,356	7.1% (5.9-8.5)	8.0% (6.7-9.5)
	Campaign (April 2013 – March 2014)	16,938	1,333	8.7% (7.4-10.3)	7.5% (6.2-9.0)
Second campaign (13 October 2014 to 23 November 2014)	Comparison (April 2012 – March 2013)	16,516	1,356	7.1% (5.9-8.5)	8.0% (6.7-9.5)
	Campaign (April 2014 – March 2015)	17,069	1,314	8.3% (7.0-9.8)	7.7% (6.4-9.2)
Third campaign (15 February 2016 to 31 March 2016)	Comparison (January - December 2015)	17,832	1,440	7.6% (6.4-9.1)	6.7% (5.6-8.1)
	Campaign (January - June 16)	8,957	725	8.0% (6.7-9.5)	9.1% (7.7-10.7)

Data source: NCRAS

Overall there were no differences in emergency presentation of bladder cancer for any of the three campaigns when compared to the comparison period.

The proportion of bladder cancer patients presenting as an emergency are shown in Figures 18 to 20 for the three campaigns; there is month to month variability but no clear trend.



Figure 18: Proportion of emergency presentations and 95% confidence intervals for bladder cancer by month, first national campaign - England, 2012 to 2013 & 2013 to 2014



Source: NCRAS Cancer Analysis System & the PHE Admitted Patient Care HES database

Figure 19: Proportion of emergency presentations and 95% confidence intervals for bladder cancer by month, second national campaign - England, 2012 to 2013 & 2014 to 2015



3rd national BiP campaign 15 Feb – 31 Mar 2016 Source: NCRAS Cancer Analysis System & the PHE Admitted Patient Care HES database

Figure 20: Proportion of emergency presentations and 95% confidence intervals for bladder cancer by month, third national campaign - England, 2015 and up to June 2016

Kidney cancer

In 2012-2013, 6,568 patients presented with kidney cancer, of these 1285 (19.5%) presented as an emergency. Table 6 shows the number of new cases and those presenting as an emergency for the comparison and all three campaign years, with the comparison and analysis periods for kidney cancer in all three campaigns; there were no significant differences found for any of the three analysis periods compared to the comparison period.

 Table 6: Emergency presentation as a proportion of kidney cancer diagnoses, first and second campaign

Campaign	Year	Total number of kidney cancer diagnoses	Total number of emergency	Proportion of emergency presentations % (95%CI)		
			presentations	First campaign month	Second campaign month	
First campaign (15 October 2013 to 20 November 2013)	Comparison (April 2012 – March 2013)	6,568	1,285	17.9% (15.0-21.2)	19.8% (16.7-23.2)	
	Campaign (April 2013 – March 2014)	7,058	1,341	18.0% (15.3-21.2)	18.1% (15.2-21.3)	
Second campaign (13 October 2014 to 23 November 2014)	Comparison (April 2012 – March 2013)	6,568	1,285	17.9% (15.0-21.2)	19.8% (16.7-23.2)	
	Campaign (April 2014 – March 2015)	7,448	1,342	18.3% (15.6-21.4)	14.8% (12.2-17.8)	
Third campaign (15 February 2016 to 31 March 2016)	Comparison (January – December 2015)	7,967	1,420	15.7% (31.1-18.8)	16.9% (14.3-19.9)	
	Campaign (January – June 2016)	3,950	671	15.7% (13.6-19.6)	14.9% (12.4-17.8)	

Data source: NCRAS

The proportion of kidney cancer patients presenting as an emergency are shown in Figures 21 to 23 for the three campaigns; there is month to month variability but no clear trend.



Source: NCRAS Cancer Analysis System & the PHE Admitted Patient Care HES database

Figure 21: Proportion of emergency presentations and 95% confidence intervals for kidney cancer, first national campaign - England, 2012–13 and 2013–14



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Figure 22: Proportion of emergency presentations and 95% confidence intervals for kidney cancer by month, second national campaign - England, 2012–13 & 2014–15



Figure 23: Proportion of emergency presentations and 95% confidence intervals for kidney cancer by month, third national campaign - England, 2015 and up to June 2016

Conclusions

It is noteworthy that there is a large difference in the proportion of patients presenting as an emergency when bladder cancer (around 8%) is compared to kidney cancer (around 18%). Bladder cancer presents with visible haematuria in the large majority of cases and for most patients there is a rapid access urgent referral pathway which negates the need for emergency admission except for those with severe bleeding. In kidney cancer, visible haematuria is less common and presentation with either unrelated symptoms (for localised disease) or non-specific symptoms (for advanced disease) is common. Hence localised disease may be discovered as a chance finding during an emergency admission for another illness while those with insidious non-specific symptoms often come to attention when symptoms become acute and hence lead to emergency admission.

For all three campaigns there were no significant differences in the proportions of patients with bladder or kidney cancer diagnosed via emergency presentation in the analysis periods compared to the comparison periods.

6.7 Diagnostics in secondary care

Key message

There were no statistically significant changes in the number of kidney and bladder ultrasound scans carried out during or following the three national BiP campaigns.

Introduction

This chapter describes the impact of the three national BiP campaigns on the number of imaging tests conducted by the NHS. These include ultrasound tests conducted for suspected kidney and bladder cancer and other medical conditions.

Method

This metric compares the difference in the monthly number of ultrasound scans between the analysis periods and comparison periods for all three national BiP campaigns. The data on the total number of kidney and bladder ultrasound scans (hereafter referred to as ultrasound scans) was obtained from the Diagnostic Imaging Dataset (DID) held on NHS Digital's iView system (18). The data contains details of referrals by GPs, consultants and other referral types.

The monthly numbers of ultrasound scans for all three national campaign analysis and campaign periods are shown in Table 7.

Results

First Campaign

For the first campaign (comparing the months October 2013 to January 2014 with October 2012 to January 2013) there was a 2.9% increase in the number of ultrasound scans for individuals aged 50 and over, and a 0.1% decrease in the number of ultrasound scans in all ages.

Second Campaign

In the second campaign (comparing the months October 2014 to January 2015 with October 2013 to January 2014) there was a 0.1% decrease in the number of ultrasound scans for individuals aged 50 and over, and a 0.2% increase in the number of ultrasound scans in all ages.

The third campaign (comparing the months February 2016 to May 2016 with the same period in 2015) was associated with a 7.0% increase in the number of ultrasound scans for individuals aged 50 years and over, and a 4.3% increase in the number of ultrasound scans in all ages.

Table 7: Number of ultrasound scans recorded for all three BiP national campaigns in analysis and comparison periods

	Age	Comparison period	Analysis period	Percentage change
Firet		October 2012 to January 2013	October 2013 to January 2014	
Campaign	50 and over	42,390	43,620	2.9
	All ages	76,805	76,750	-0.1
Second Campaign		October 2013 to January 2014	October 2014 to January 2015	
	50 and over	43,620	43,580	-0.1
	All ages	76,750	76,940	0.2
Third campaign		February 2015 to May 2015	February 2016 to May 2016	
	50 and over	41,140	44,020	7.0
	All ages	75,590	75,695	4.3

Data source: NCRAS

However, the changes in the number of ultrasound scans were not statistically significant for any of the three campaigns. The trends in ultrasound use are shown for the three campaigns in Figures 24 to 26. They demonstrate stable activity across all three campaigns.



a) 50 and over





b) all ages



Figure 24: Monthly number of ultrasound scans in September 2012 to December 2014, England a) 50 and over b) All ages

a) 50 and over



Source:iView (https://iview.hscic.gov.uk/Home/MyData)



b) all ages



Figure 25: Monthly number of ultrasound scans in January 2013 to December 2015, England a) 50 and over b) All ages

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a) 50 and over



Source:iView (https://iview.hscic.gov.uk/Home/MyData)

b) all ages





Conclusions

The national BiP campaign did not have a measurable impact on the number of kidney and bladder ultrasound scans carried out. However, this data is for ultrasound activity, a measure of capacity, rather than demand. Ultrasound capacity is relatively fixed hence it would be surprising if there were major changes in activity due to the campaigns. It is more likely that an increase in demand would be dealt with by displacing non-urgent patients with the more urgent group of patients with blood in pee, resulting in longer waits for non-urgent patients (data for waiting lists is unavailable).

6.8 Cystoscopy

Key Messages

There was no evidence that the three national campaigns influenced the number of cystoscopies performed.

Introduction

Cystoscopy (endoscopy of the urethra and bladder) is the key diagnostic test for bladder cancer. This analysis considers whether any of the three national BiP campaigns had an impact on the number of cystoscopies performed by the NHS.

Method

Data (sourced from the NHS Monthly Diagnostic Waiting Times and Activity dataset as published on 9 March 2017) for the number of cystoscopies was available for the weeks immediately following the campaign for all three national campaigns. This was compared to data for the same period 1 year earlier, apart from the second campaign which was compared to data from 2 years earlier as the first BiP campaign ran over the same months in 2013.

Data on the total number of cystoscopies performed during the relevant periods was recorded. The relevant OPCS codes are shown in Table 8.

OPCS 4.7 Code	Description of Test / Procedure
M45.1	Diagnostic endoscopic examination of bladder and biopsy of lesion of bladder NEC (not elsewhere classified)
M45.2	Diagnostic endoscopic examination of bladder and biopsy of lesion of prostate NEC (not elsewhere classified)
M45.3	Diagnostic endoscopic examination of bladder and biopsy of lesion of bladder using rigid cystoscope
M45.4	Diagnostic endoscopic examination of bladder and biopsy of lesion of prostate using rigid cystoscope
M45.5	Diagnostic endoscopic examination of bladder using rigid cystoscope
M45.8	Other specified diagnostic endoscopic examination of bladder
M45.9	Unspecified diagnostic endoscopic examination of bladder

Data source: https://www.england.nhs.uk/statistics/wp-content/uploads/sites/2/2013/08/DM01-guidance-v-5.32.doc

Results

First Campaign

Comparing the months October to December 2013 with October to December 2012, there was no significant difference in the average number of cystoscopies per month. The average number of cystoscopies per month decreased by less than 1% from

24,648 in 2012 to 24,481 in 2013. Figure 27 shows that the trend for the number of cystoscopies was stable from January 2012 to December 2014.



Figure 27: Monthly number of cystoscopies, first national campaign, January 2012 to December 2014, all ages, England.

Second campaign

Comparing the months October to December 2014 with October to December 2012, there was no significant difference in the average number of cystoscopies per month. The average number of cystoscopies per month increased by 4% from 24,648 in 2012 to 25,636 in 2014.

Figure 28 shows that the trend for the number of cystoscopies was stable from July 2012 to June 2015.

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Figure 28: Monthly number of cystoscopies, second national campaign, July 2012 to June 2015, all ages, England.

Third campaign

Comparing the months February to April 2016 with February to April 2015, there was no significant difference in the average number of cystoscopies per month. The average number of cystoscopies per month increased by 3% from 24,428 in 2015 to 25,228 in 2016.

Figure 29 shows that the trend for the number of cystoscopies was stable from January 2014 to December 2016.



Figure 29: Monthly number of cystoscopies, third national campaign, January 2014 to December 2016, all ages, England

To summarise, cystoscopy usage decreased by less than 1% for the first campaign, increased by 4% in the second campaign and increased by 3% for the third campaign. None of these changes were statistically significant. The crude number of cystoscopies is shown in Table 9.

Table 9: Average number of cystoscopies per month, analysis period and comparison
period, all ages, England, for three national campaigns

National Campaign	Comparison Period	Analysis Period	Percentage change
First	October to December 2012 24,648	October to December 2013 24,481	0.7
Second	October to December 2012 24,648	October to December 2014 25,636	4.0
Third	February to April 2015 24,428	February to April 2016 25,228	3.3

Data source: NCRAS

Conclusions

There is no evidence to suggest that any of the three national BiP campaigns had an impact on the number of cystoscopies carried out during or following the campaign. However, data from the regional pilot did show a small significant increase in activity.

Overall the three campaigns made no significant difference to the number of cystoscopies performed per month. The 3% increase in cystoscopy seen in the regional pilot (section 5.2) is consistent with the small changes seen in the three national campaigns. In contrast the changes seen in the regional pilot were statistically significant.

The total number of cystoscopies may not be the best measure of new activity, since a large proportion of these will be done either for conditions unrelated to visible haematuria or for the follow up of treated bladder cancer. Hence it is likely that the number of cystoscopies generated by the campaigns will have been diluted by the large number being performed for other indications. In addition, a large number of additional cystoscopies for visible haematuria could have been done simply by making the waiting list longer for non-urgent patients. The metric used was cystoscopies performed, a measure of capacity, rather than a measure of demand. It is likely that demand increased to a greater extent than the metric can demonstrate, which would be consistent with reports of a large rise in demand from urologists (21) and their management teams.

The use of cystoscopy is partly sensitive to changes in health policy. In February 2015 the NICE bladder cancer guideline (19) recommended that follow up cystoscopy should be limited to one year in patients with low risk disease. Similarly, in June 2015 NICE published guidelines on the referral of suspected cancer (20) which recommended a more restricted group of patients with haematuria should be referred urgently using the two-week rule compared to the past. It is likely that both policy changes will have made only a small difference to cystoscopy numbers; however, the effect of both would be to reduce the number of cystoscopies, which may have hidden a genuine change in the use of cystoscopy over time.

6.9 Cancers diagnosed

Key messages

The first and second national BiP campaigns appear to have had an impact on the number of bladder and kidney cancers diagnosed for persons aged 50 years and over, and all ages combined. The third campaign had a similar effect on the number of bladder cancer diagnoses but no measurable effect on the number of kidney cancers. Introduction

This chapter describes the impact of all three national BiP campaigns on the number of newly diagnosed cases of bladder cancer (ICD-10 C67) and kidney cancer (ICD-10 C64). The definition of kidney cancer was C64 only, in contrast to sections 6.1 and 6.4, as C65 (carcinoma of renal pelvis) was included in section 6.4 and an even wider definition was used in section 6.1°.

This section describes all relevant cancers, including those not managed in NHS trusts. This contrasts with the preceding section which includes only patients treated in an NHS trust.

Method

Data was extracted from the national cancer analysis system for the three diagnosis periods between June 2012 and September 2016. The analysis periods were defined as two weeks after the start of the campaign (week 44 of 2013 and 2014 and week 9 of 2016) to two months after the end of the campaign (week 4 of 2014 and 2015 and week 22 of 2016) for the first, second and third BiP campaigns respectively. The numbers of cases diagnosed per week in the analysis period were compared with the overall median cases per week for June 2013 to May 2014, June 2014 to May 2015 and October 2015 to September 2016. The campaign was considered to have had an impact if a) the numbers of cases per week were the same or higher than the median for five or more consecutive weeks and b) this sustained period started during the analysis period.

^c The bladder and kidney cancer definitions used in each metric were based on definitions used in relevant published cancer metric indicators and National Statistical Bulletins

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Results

Bladder cancer

Following the first campaign the numbers of bladder cancers diagnosed were the same as or higher than the 2013 to 2014 median (Figure 30) from week 45 in 2013 to week 3 in 2014 for individuals aged 50 and over, and all ages combined. During this 11-week period, an additional 168 cases were diagnosed compared with the expected number based on the weekly median (1,925 cases in 11 weeks) for all ages combined. An additional 172 cases were diagnosed compared to the expected number (1,870 cases in 11 weeks) in those aged 50 and over.

240 200 Number of cases 160 BiP campaign 120 80 First national 40 0 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 3 11 13 15 17 19 21 1 5 7 9 Aug Sep Nov Dec Feb May Jun Jul Oct Jan Mar Apr Week and Month 2012-13 2013-14 ----- England median 2013-14

a) 50 and over

Source : Cancer Analysis System February 2016


Figure 30: Number of newly diagnosed cases of bladder cancer by week, England, June 2012 to May 2014, a) 50 and over and b) all ages

Similarly, in the second campaign the numbers of bladder cancer cases diagnosed were the same as or higher than the 2014 to 2015 median (Figure 31) from weeks 48 in 2014 to week 1 in 2015 for individuals aged 50 and over, and all ages combined. Numbers were also higher from weeks 3 to 9 in 2015 for persons aged 50 and over, and from weeks 4 to 9 in 2015 for all ages combined. Across these two periods, 121 more cases than the expected number (2,158 cases in 11 weeks) were diagnosed in the group aged 50 and over. An additional 115 cases were diagnosed compared with the expected number (2,052 cases in 11 weeks) for all ages combined.



a) 50 and over







Figure 31: Number of newly diagnosed cases of bladder cancer by week, England, June 2013 to May 2015, a) 50 and over and b) all ages

In the third campaign the number of bladder cancer cases were the same as or higher than the 2015 to 2016 median (Figure 32) from weeks 11 to 22 in 2016 for those aged 50 and over, and for all ages combined. 244 extra cases were diagnosed compared with those expected (1,944 cases in 11 weeks) for the group aged 50 and over. An additional 277 cases were diagnosed compared with the expected number (1,980 cases in 11 weeks) for all ages combined.



a) 50 and over

Source : Cancer Analysis System December 2017



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b) all ages

Figure 32: Number of newly diagnosed cases of bladder cancer by week, England, October 2014 to September 2016, a) 50 and over and b) all ages.

(There was a week 53 in 2015 but not in 2014, hence the gap in the blue line for 2014-2015)

Kidney cancer

Following the first campaign the numbers of kidney cancers were higher than the 2013 to 2014 median from week 47 to week 51 in 2013 (Figure 33). During this five-week period, an additional 73 cases were diagnosed (expected 888 cases) for all ages combined. An additional 68 cases were diagnosed compared with the expected number based on the median (795 cases) for those aged 50 years and over.



Source : Cancer Analysis System February 2016





Figure 33: Number of newly diagnosed cases of kidney cancer by week, England, June 2012 to May 2014, a) 50 and over and b) all ages

Analysis of the second campaign demonstrated a similar effect. The numbers of kidney cancer cases were the same as or higher than the 2014 to 2015 median (Figure 34) from week 46 to week 51 in 2014 for individuals aged 50 and over, and all ages combined. Numbers were also higher than the median from week 1 to week 6 in 2015 for persons aged 50 and over. For the six-week period between weeks 46 to 51 of 2014, an additional 119 cases were diagnosed for those aged 50 and over compared with the expected number (967 cases). For the six-week period between weeks 46 to 51 of 2014, an additional 119 cases were diagnosed compared with the expected number (967 cases). For the six-week period between weeks 46 to 51 of 2014, an additional 119 cases were diagnosed compared with the expected number (1,092 cases) for all ages combined.

a) 50 and over



Source : Cancer Analysis System February 2016



Figure 34: Number of newly diagnosed cases of kidney cancer by week, England, June 2013 to May 2015, a) 50 and over and b) all ages

In the third campaign there were no sustained periods where the numbers of kidney cancers were the same as or higher than the 2015 to 2016 median (Figure 35).



Source : Cancer Analysis System December 2017



Source : Cancer Analysis System December 2017

Figure 35: Number of newly diagnosed cases of kidney cancer by week, England, October 2014 to September 2016.

(There was a week 53 in 2015 but not in 2014, hence the gap in the blue line for 2014-2015)

Conclusions

All three national BiP campaigns were associated with an increase in the number of bladder cancers diagnosed in individuals aged 50 and over, and all ages combined. The first two campaigns had a similar effect on kidney cancers diagnosed but the third campaign produced no measurable change in kidney cancer incidence. Cancer incidence is a robust measure and unlike some of the metrics it is not a surrogate. The effect on the incidence of bladder and kidney cancer is consistent across all three campaigns.

In this chapter the definition of kidney cancer was ICD C64, so unlike some of the other metrics cancer of the renal pelvis C65 is excluded. This will have a relatively small effect on the overall numbers as C65 is much rarer than C64.

6.10 Early stage at diagnosis

Key Messages

For bladder cancer the second and third campaigns were associated with a shift in stage towards diagnosis at stage 1. For kidney cancer only the first campaign was associated with a shift in stage towards diagnosis at stage 1 and 2.

Introduction

This chapter assesses the impact of the three national BiP campaigns on the proportion of bladder (ICD-10 C67) and kidney (ICD-10 C64) cancers that were diagnosed at an early stage, for men and women aged 50 and over, and all ages combined. For kidney cancer, early stage was defined as stages 1 or 2. For bladder cancer, early stage was defined as stage 2 bladder cancers are muscle invasive. It should be noted that the earliest stage bladder tumours (stage pTa and carcinoma in situ transitional cell carcinoma) were not included in this analysis as they are not captured in the C67 code. Caution should be applied with the interpretation of these results, due to almost a third of bladder and kidney cases having missing stage information.

Method

Data was extracted from the national cancer analysis system for the three diagnosis periods between June 2012 and September 2016. The analysis periods were defined as two weeks after the start of the campaign (week 44 of 2013 and 2014 and week 9 of 2016) to two months after the end of the campaign (week 4 of 2014 and 2015 and week 22 of 2016) for the first, second and third BiP campaigns respectively.

The proportion of early staged cases per week during the analysis period was compared with the overall median proportion for the comparison period. To calculate the proportion of early stage cases, the numerator was the number of early stage cases and the denominator was the total number of staged cases. For bladder cancer, stage 1 was considered early stage, whilst for kidney cancer stage 1 and 2 was considered early stage. The campaign was considered to have had a possible impact if a) the proportion per week was the same or higher than the median for five or more consecutive weeks and b) this sustained period started during the analysis period.

Results

Bladder cancer

During the first campaign analysis period, there were no sustained periods where the proportion of early stage bladder cancer was higher than the comparison periods (Figure 36).





Source : Cancer Analysis System February 2016



Source : Cancer Analysis System February 2016

Figure 36: Proportion of bladder cancer diagnosed at stage 1 by week, England, first national campaign a) 50 and over and b) all ages

For the second campaign the proportion of early staged bladder cancer was the same as or higher than the 2014 to 2015 median from week 50 in 2014 to week 2 in 2015 (Figure 37) for people aged 50 years and over. During this five-week period, an additional 16 cases were diagnosed at an early stage compared to the expected number based on the median (336 cases).







Source : Cancer Analysis System February 2016

Figure 37: Proportion of bladder cancer diagnosed at stage 1 by week, England, Second national campaign a) 50 and over and b) all ages

During the third campaign the proportion of early staged bladder cancer was higher than the 2015 to 2016 median from week 13 to week 21 in 2016 (Figure 38) for persons aged 50 and over, and all ages combined. During this nine-week period, an additional 53 cases were diagnosed at an early stage compared to the expected number based on the median (663 cases) for persons aged 50 and over. There were an additional 53 bladder cancer cases diagnosed at an early stage for all ages combined compared with the median (683 cases).



Source : Cancer Analysis System December 2017



Source : Cancer Analysis System December 2017

Figure 38: Proportion of bladder cancer diagnosed at stage 1 by week, England, third national campaign

(There was a week 53 in 2015 but not in 2014, hence the gap in the blue line for 2014-2015)

Kidney cancer

In the first campaign, the proportion of early stage kidney cancer was the same as, or higher than, the 2013 to 2014 median for weeks 45 to 49 of 2013, for all ages combined (Figure 39). During this five-week period, an additional 84 cases of kidney cancer were diagnosed as early stage compared to the expected number based on the median (368 cases). There was a sustained period where the weekly proportions were higher than the median for people aged 50 and over but this period started before the campaign began.

a) 50 and over



Source : Cancer Analysis System February 2016

b) all ages



Figure 39: Proportion of kidney cancer diagnosed at stage 1 or 2 by week, England, first national campaign, a) 50 and over and b) all ages

In the second campaign there were no sustained periods where the proportion of early staged kidney cancer was the same as or higher than the 2014 to 2015 median (Figure 40).



Source : Cancer Analysis System February 2016







Figure 40: Proportion of kidney cancer diagnosed at stage 1 or 2 by week, England, second national campaign, a) 50 and over and b) all ages

For the third campaign there were no sustained periods where the proportion of early staged kidney cancer was the same as or higher than the 2015 to 2016 median (Figure 41).







Figure 41: Proportion of kidney cancer diagnosed at stage 1 or 2 by week, England, October 2014 to September 2016, a) 50 and over and b) all ages

(There was a week 53 in 2015 but not in 2014, hence the gap in the blue line for 2014-2015)

Conclusions

The first national BiP campaign appears to have had an impact on the proportion of kidney cancer diagnosed at an early stage for all ages combined. There was no impact on the proportion of bladder cancer diagnosed at an early stage.

The second national BiP campaign may have had an impact on the proportion of bladder cancer diagnosed at an early stage for people aged 50 years and over. There was no impact on the proportion of kidney cancer diagnosed at an early stage.

The third national BiP campaign may have had an impact on the proportion of bladder cancer diagnosed at an early stage for people aged 50 years and over, and for all ages combined. There appears to be no impact on the proportion of kidney cancer diagnosed at an early stage.

Bladder cancer incidence is decreasing, but that observation would not be expected to influence early stage at diagnosis. In contrast, the incidence of kidney cancer is increasing; much of the increase appears to be due to the diagnosis of incidental lesions on imaging. Therefore, we anticipate an increase in the proportion of early stage kidney cancer diagnoses over time. The analyses in this chapter may have been influenced by this long-term trend due to the use of historical controls.

Overall two campaigns appeared to influence the proportion of stage 1 bladder cancer while one appeared to influence the proportion of early stage kidney cancer.

6.11 One-year survival

Key Findings

There were no significant differences in one-year overall survival for kidney or bladder cancer as a result of any of the national BiP campaigns.

Introduction

One-year survival is often used as a marker of late presentation and rapidly advancing cancer. One-year survival has been a key measure of outcome for national cancer policy.

For bladder cancer this is likely to be a reliable measure as there is relatively little undiagnosed asymptomatic disease in the community (21). Data on bladder cancer survival before 2001 cannot be compared to data after this since non-invasive disease was excluded from bladder cancer diagnosis around that period. This had the effect of making bladder cancer survival appear worse as good prognosis patients were excluded from the C67 ICD code for bladder cancer.

For kidney cancer the diagnosis of asymptomatic disease is commonplace (22) during imaging for unrelated symptoms. These asymptomatic patients usually have prolonged survival and so reduce the proportion of patients who die within one year. In the past, kidney cancer had the worst survival of all urological cancers; in recent years bladder cancer is the urological cancer with the worst survival, likely to be due to the increasing proportion of kidney cancer diagnosed incidentally at an early stage.

Method

This chapter considers whether the first, second and third national BiP campaigns had an impact on one-year overall survival for men and women, aged 50 to 99. It includes patients with their first bladder (ICD-10 C67) or kidney (ICD-10 C64) cancer diagnosed during and following the campaign, compared with the rest of the year.

Data was extracted from the national cancer analysis system. Patients were followed up until December 2016 to obtain their last known vital status. The analysis periods were defined as two weeks after the start of each campaign to two months after the end of the campaign (1 November 2013 to 31 January 2014 for the first campaign, 1 November 2014 to 31 January 2015 for the second campaign, and 29 February to 12 May 2016 for the third campaign). One-year age specific net survival was calculated using the methodology outlined in the Office for National Statistics: Cancer Survival Statistical Bulletins (23). Net survival refers to the probability of surviving cancer accounting for other causes of death. The one-year survival for those diagnosed in the analysis period was compared with those diagnosed from 1 January 2013 to 31 October 2013 (first campaign), 1 January 2014 to 31 October 2014 (second campaign) and 1 January 2016 to 28 February 2016 and 13 May 2016 to 31 December 2016 (third campaign).

Results

There were no significant differences in one-year net survival for patients aged 50 to 99 years diagnosed with bladder or kidney cancer comparing the analysis period to the comparison period.

Bladder cancer

One-year net survival for patients diagnosed with bladder cancer during the first campaign analysis period was 71.1% compared with 71.1% for those diagnosed in the comparison period (Table 10). The corresponding data for the second campaign was 73.7% and 70.6%, and for the third campaign it was 69.6% and 69.5%. During all three national campaigns, one-year net survival from bladder cancer was statistically significantly higher for men compared to women.

Table 10: One-year net survival (%) for men and women aged 50 and over diagnosed with bladder cancer during the analysis and comparison periods

Bladder cancer one-year net survival						
	First campaign		Second campaign		Third campaign	
	Comparison	Analysis	Comparison	Analysis	Comparison	Analysis
	period	period	period	period	period	period
	% (95% CI)	% (95% Cl)	% (95% Cl)	% (95% Cl)	% (95% Cl)	% (95% Cl)
Men	75.1%	74.5%	73.9%	76.3%	75.1%	73.6%
	(73.8 - 76.4)	(72.2 - 76.9)	(72.6 - 75.3)	(73.9 - 78.6)	(71.8 - 78.4)	(70.9 - 76.3)
Women	60.5%	61.3%	61.1%	66.4%	54.8%	58.8%
	(58.1 - 62.8)	(57.1 - 65.5)	(58.7 - 63.5)	(62.1 - 70.6)	(48.0 - 61.6)	(54.1 - 63.5)
Persons	71.1%	71.1%	70.6%	73.7%	69.5%	69.6%
	(70.0 - 72.3)	(69.0 - 73.1)	(69.4 - 71.7)	(71.6 - 75.8)	(66.4 – 72.5)	(67.2 - 71.9)

Source: Cancer Analysis System, September 2016 and 2017, and December 2018

Kidney cancer

For the first campaign, one-year net survival for patients diagnosed with kidney cancer during the analysis period was 76.8% compared with 75.2% for those diagnosed in the comparison period (Table 11).

Similarly, for the second campaign one-year net survival was 75.5% (analysis period) and 75.1% (comparison period).

For the third campaign, one-year net survival for patients diagnosed with kidney cancer during the analysis period was 76.7% compared with 77.0% for those diagnosed in the comparison period.

Table 11: One-year net survival (%) for men and women aged 50 and over diagnosed
with kidney cancer during the analysis and comparison periods

Kidney cancer one-year survival						
	First campaign		Second campaign		Third campaign	
	Comparison	Analysis	Comparison	Analysis	Comparison	Analysis
	period	period	period	period	period	period
	% (95% CI)	% (95% Cl)	% (95% CI)	% (95% Cl)	% (95% CI)	% (95% CI)
Men	75.2%	77.5%	76.0%	76.3%	78.3%	77.3%
	(73.9 - 76.5)	(75.1 - 79.8)	(74.7 - 77.3)	(73.9 - 78.6)	(75.7 – 80.9)	(74.5 – 80.1)
Women	75.3%	75.6%	73.6%	74.3%	74.8%	75.5%
	(73.6 - 77.0)	(72.6 - 78.6)	(71.9 - 75.3)	(71.3 - 77.4)	(71.9 - 77.7)	(71.7 – 79.3)
Persons	75.2%	76.8%	75.1%	75.5%	77.0%	76.7%
	(74.2 - 76.2)	(74.9 - 78.6)	(74.1 - 76.1)	(73.7 - 77.4)	(75.0 – 79.0)	(74.4 - 78.9)

Source: Cancer Analysis System, September 2016 and 2017, and December 2018

Conclusions

None of the three national BiP campaigns appear to have influenced one-year net survival for patients aged 50 years and over diagnosed with bladder or kidney cancer. The finding of a gender difference in survival for bladder cancer is consistent with previous data and is not fully explained (13).

It is disappointing that survival was not influenced by the BiP campaign. There is strong evidence to show that both presentation and referral of patients with visible haematuria is often delayed, particularly in women which is thought to influence survival. However, survival is dependent on multiple factors in a patient journey of which speed of presentation is only one. The analyses compared the first 10 months of the year with the subsequent three months and the second comparison period overlapped with the first analysis period. Therefore, if there is seasonal variation in bladder cancer survival an effect of the campaign could have been overlooked. Similarly, if there were a significant influence of the campaign on survival then the effect of the first campaign could have continued into the comparison period for the second campaign.

7. Discussion and conclusions

Introduction

Cancer survival in the UK is improving, but lags behind that seen in similarly wealthy European countries. The BiP campaign was introduced to educate patients to present early with symptoms suggestive of bladder or kidney cancer in order to promote early diagnosis, which could potentially manifest itself in other improved clinical outcomes.

Limitations of the data

The evaluation of the BiP campaigns has been done using existing nationally collected data from NCRAS. This has the major advantage that there is already a comprehensive data source which is therefore much less expensive and likely to be more complete than the alternative of setting up a bespoke data collection process. However, the disadvantage is that many of the data sets were not designed to specifically answer the questions asked in the evaluation.

The evaluation only considered ICD C67 bladder cancer and hence missed the opportunity to count the approximately 9,000 cases per year of pTa and carcinoma in situ transitional cell carcinomas which generally present with blood in pee and which urologists regard as bladder cancer.

The definition of kidney cancer varies throughout the report. The best definition (when looking for outcomes of blood in pee) would be to include ICD C64 – C66 hence including cancer of the renal parenchyma, renal pelvis and ureter. The variability in this definition is shown in Table 12.

	ICD-10 C64	ICD-10 C64–65	ICD-10 C64-C66, C68
Anatomical site	Renal Parenchyma	Renal parenchyma and renal pelvis	Renal parenchyma, renal pelvis, ureter and other unspecified organs
Metric			
Emergency presentation			x
Cancer diagnoses from urgent referral		Х	
Cancers diagnosed	Х		
Early stage at diagnosis	Х		
One-year survival	Х		

Table 12: Variation in definition of kidney cancer

The measurement of urological cancer (C61 and C64-68) as an outcome measure is flawed by the fact that there are 71,264 urological cancers and of these 47,151 (66%) are prostate cancer which rarely presents with blood in pee. Hence differences seen in urological cancer numbers are likely to reflect the marked rise in incidence seen in prostate cancer rather than an effect of the campaigns. A more bespoke data collection system may have been better at finding definite changes but runs a real risk of having incomplete data. It would be valid to measure the changes in urological cancer in women, but the number of cases recorded nationally is small making statistical analysis unreliable. Therefore, the numbers of urological cancers are unreliable both as an outcome of the campaign and as a comparator.

In this report there are many figures showing longitudinal effects, most of these show wide week to week variation, hence it is difficult to define a baseline with which to compare any effect of the campaign.

Kidney cancer incidence is rising worldwide, the cause is unclear. One major contributor is the increasing use of imaging which diagnoses small renal masses which are usually incidental. For example, up to 14% of CT colograms detect a renal mass (22). Only a small proportion of kidney cancers treated with surgery present with blood in pee (27.5%), therefore caution needs to be exercised in attributing changes in the incidence of kidney cancer to the campaign.

The incidence of bladder cancer is decreasing, probably related to decreases in smoking. The large majority of patients with bladder cancer present with blood in pee. Hence rises in the incidence of bladder cancer are likely to be significant and can be more easily attributed to the campaign.

Blood in Pee in context

Public health campaigns are a major part of government policy and have been used commonly for over 70 years. Evidence suggests that such campaigns can produce small to medium scale changes in a population. For cancer, there is evidence of short-term increases in attendance for screening in cervical and breast screening when campaigns were run in the setting of an organised screening service and augmented by reminder letters (24). The Australian SunSmart campaign has been effective in changing attitudes and behaviour to sun exposure over a 15-year period and has been associated with a fall in the incidence of melanoma particularly in younger people (25). In recent years there have been marked increases in patient presentation related to celebrity media stories including the death of Jade Goody (26) from cervical cancer and the diagnosis of Stephen Fry (15) and Bill Turnbull (14) with prostate cancer. These increases in patient presentation appear much larger than those generated by well-designed public health campaigns, however the effect of these media stories may be short lived (27).

A small number of studies have attempted to assess the impact of the BCoC national campaigns using local data. Several investigated the effect of the BCoC bowel cancer campaign; one reported increases in referral, investigations and cancers detected while reducing emergency presentation (28). The remaining studies reported an increase in referral but no increase in diagnoses or survival (29), (30), (31), (32). One demonstrated an improvement in awareness (30) and another showed that the increase in referral was predominantly among the less deprived (32). Similarly, a breast study suggested an increase in referral but not biopsy or cancer diagnoses (33). Two studies in upper gastrointestinal symptoms reveal an increase in referral and investigations (34), (35). A single study (36) attempted to assess the BiP campaign; this suggested that there was an increase in referral and demand for cystoscopy, but no significant change in bladder or kidney cancer diagnoses. Data from the national campaigns appear to show significant effects in some metrics compared to the majority of assessments made at regional and local level.

Summary of outcomes: local, regional and national Blood in Pee campaigns

Overall for kidney, bladder and urological cancer there was an increase in referrals but no apparent increase in cancer diagnosis in the local pilot.

In the regional pilot there was an improvement in patient knowledge and intent to present early as well as increases in GP attendance and referral. There were also increases in the number of urological cancers and cystoscopies performed. This was sufficiently promising for the national campaigns to be initiated.

One of the aims of these campaigns was to improve public awareness of haematuria (blood in pee) as a symptom of cancer. This was not measured directly except in the regional campaigns. However, metrics which relate to GP attendance suggest that patients have become more aware of BiP and its relevance. The subsequent metrics which relate to referral and then diagnoses are at least partly explained by an increase in public awareness but could also be explained by a change in GP behaviour.

The impact of the three national campaigns was mixed. There was no measurable effect on emergency presentation, the number of cystoscopies and ultrasound scans performed or on one-year survival. There was an impact on GP attendance, although not in the third campaign. There was an impact on GP referral for urological cancer mainly in the first two campaigns. There was evidence of an increase in cancer diagnoses, mainly in bladder cancer, following urgent referral in the first and third campaigns. In contrast for all cancer patients referred to secondary care, the only changes seen were in kidney and urological cancer, and only in the first and third campaign. The number of newly diagnosed bladder cancers appeared to increase following all three campaigns while kidney cancer incidence increased following the first two campaigns. There was some evidence of a stage shift to an earlier stage at presentation in both kidney cancer (first campaign only) and bladder cancer (second and third campaigns only).

Commentary on outcomes

The failure to influence emergency presentation is surprising at face value, however this route of presentation is a heterogeneous group of patients who are predominantly elderly and are likely to present with advanced stage disease often due to symptoms of metastases or advanced localised cancer. For kidney cancer, emergency presentation will include a significant proportion of patients with incidental kidney cancer, presenting due to investigation of an entirely unrelated disease.

The lack of a detectable change in the use of cystoscopy and ultrasound scans is not surprising as the capacity of the NHS to perform these procedures is relatively fixed and

it is likely that many NHS trusts will have coped with the rising demand (36), (34) by displacing non-urgent patients.

The increase in both GP attendance and GP referral were expected outcomes of the campaigns. However, the lack of effect in the third campaign is surprising. Taken together these findings show a clear effect on patient behaviour related to the campaign.

The increase seen in bladder cancer incidence both overall and in those referred urgently with a suspicion of cancer is a major success of the campaigns. That there were no changes seen in bladder cancer but that changes were seen in kidney and urological (a surrogate for prostate cancer) cancers from the CWT data is not consistent with the other data on incidence; the lack of effect on bladder cancer is difficult to explain. The increased incidence in kidney and urological cancer is in line with longterm trends. However, neither of these groups present commonly with blood in pee which suggests that these changes are less likely to be related to the campaign.

The changes in stage at presentation for kidney cancer is not surprising and is likely to reflect long-term changes in the stage at presentation due to the ever-increasing discovery of incidental small renal masses (22). The changes seen in bladder cancer are very likely to be the direct result of the campaign.

Lack of change in one-year survival is disappointing, however many of those who survive less than one year will present as an emergency, which was unaffected by the campaign. It is likely that moving patients from stage T2 or T3 to T1 at presentation will affect three- or five-year survival rather than one-year survival.

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9. Appendix

Table 13: List of blood in pee campaign related symptom Read codes

Visible haematuria				
Code	Description			
14D5.00	H/O: haematuria			
1A45.00	Blood in urine - haematuria			
1A45.11	Blood in urine – symptom			
1A45.12	Haematuria – symptom			
4625.00	Urine: red – blood			
K032100	Recurrent benign haematuria syndrome			
K0A2.00	Recurrent and persistent haematuria			
	Recurrent and persistent haematuria, dense deposit			
K0A2600	disease			
K197.00	Haematuria			
K197.11	Traumatic haematuria			
K197.12	Essential haematuria			
K197000	Painless haematuria			
K197100	Painful haematuria			
K197300	Frank haematuria			
K197400	Clot haematuria			
Backpain				
Code	Description			
16C00	Backache symptom			
16C2.00	Backache			
16C3.00	Backache with radiation			
16C4.00	Back pain worse on sneezing			
16C5.00	C/O - low back pain			
16C6.00	Back pain without radiation NOS			
16C7.00	C/O - upper back ache			
16C8.00	Exacerbation of backache			
16C9.00	Chronic low back pain			
16CA.00	Mechanical low back pain			
16CZ.00	Backache symptom NOS			
1D24.11	C/O - a back symptom			
N12.13	Acute back pain - disc			
N141.11	Acute back pain - thoracic			
N142.11	Low back pain			
N142.13	Acute back pain - lumbar			
N143.11	Acute back pain with sciatica			

N145.00	Backache, unspecified
N145.00	Backache, unspecified
N145.11	Acute back pain - unspecified
N145.12	Back pain, unspecified

Table 14: DID Imaging code list used in the analysis of the impact on diagnostic imaging

List of ultrasounds codes for bladder and kidney

- UDRNB US Doppler renal Both
- UDRNL US Doppler renal Lt
- UDRNR US Doppler renal Rt
- UKIDB US Kidney Both
- UKIDL US Kidney Lt
- UKIDR US Kidney Rt
- UBLAD US Urinary bladder
- CABPEC CT Abdomen and pelvis with contrast
- CCHAPC CT Thorax abdomen pelvis with contrast
- CCHESC CT Thorax with contrast
- XCHES XR Chest