Supporting Information

Indicators

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Indicator 1: Emergency Cancer Admissions

Indicator definition

The crude rate per 100,000 persons of all emergency admissions with an invasive, in-situ, uncertain or unknown behaviour, or benign brain cancer (ICD-10 C00-C97, D00-D09, D33, and D37-48) present in any of the first three diagnostic fields (HES inpatient database) per patients on the practice register.

Data source

Public Health England: National General Practice Profiles (https://fingertips.phe.org.uk/profile/general-practice).

Methodology

The number of inpatient or day-case emergency admission multiplied by 100,000 divided by the number of persons in the practice list, expressed as a rate per 100,000 persons.
All emergency admissions with an invasive, in-situ, uncertain or unknown behaviour, or benign brain cancer (ICD-10 C00-C97, D00-D09, D33, and D37-48) present in any of the first three diagnostic fields were extracted from the inpatient HES database.

Time period

Financial year 2014/2015.

Interpretation

The number and crude rate per 100,000 persons of emergency in-patient or day-case admissions, sourced from HES data, with a diagnosis that includes cancer. These may occur at any stage of the cancer pathway and will include persons diagnosed with cancer in prior years. This indicator may be

expected to be higher in practices with an unusually high fraction of persons of 65+ years of age, due to the higher incidence of cancer at these ages.

Nearest 99 (N99) method

The 99 most similar practices were identified in terms of cancer prevalence, Index of Multiple Deprivation (IMD), Income Deprivation Affecting Children Index (IDACI), Income Deprivation Affecting Older People Index (IDAOPI), practice size, gender, age, patients' knowledge about the out of hours GP services, rates of long lasting health conditions, unemployment levels, life expectancy, rates of nursing home patients and smoking prevalence. The weighted features by importance (the amount of **Emergency Cancer Admissions** variance that each of the above factors explains) were taken into account when the distances between GP practices were computed and the nearest 99 practices were identified.

Further technical description is available upon request.

Deciles

N99: "Emergency Cancer Admissions" deciles were calculated by ranking the GP practices from highest to lowest values and dividing them into 10 equal groups. GP practices in decile 1 fall within the highest 10% "Emergency Cancer Admissions" of GP practices within their nearest 99 group of practices, and GP practices in decile 10 fall within the lowest 10% "Emergency Cancer Admissions" of GP practices within their nearest 99 group of practices.

Indicator 2: Emergency Cancer Presentations

Indicator definition

The crude rate of persons diagnosed with cancer via an emergency route divided by the number of persons in the practice list, expressed as a rate per 100,000 persons.

Data source

Data source

Public Health England: National General Practice Profiles

(https://fingertips.phe.org.uk/profile/general-practice).

Methodology

Each person with an inpatient HES record containing a cancer diagnostic code (ICD-10 C00- C97 excluding C44) in one of the first three diagnostic fields is identified. This cohort is de-duplicated by matching to previous years' HES records and cancer registration records. Any duplicates are

removed and the remaining patients can be considered an estimate of the members of the cohort of patients diagnosed with a new cancer in the period of interest. The numbers by practice are counted by allocating the patients to a practice according the practice as recorded by inpatient HES. The emergency status of the diagnostic episode is taken from the ADMETH field.

Time period

Financial year 2014/2015.

Interpretation

Emergency presentation is linked to lower short term survival in newly diagnosed patients. However it is strongly affected by case-mix: more emergency presentations can be expected in older practice populations and the mix of tumour types is also highly significant (for example, lung cancers have a higher fraction of emergency presentations while breast cancers have a low fraction of emergency presentations). More emergency presentations can therefore be expected in practices with an older or more deprived population.

This indicator is based on smaller numbers than many other indicators in the profiles. As such the random-chance variation is higher and the indicator should be interpreted with caution. Examination of the variation of this indicator over time is encouraged.

Nearest 99 (N99) method

The 99 most similar practices were identified in terms of cancer prevalence, Index of Multiple Deprivation (IMD), Income Deprivation Affecting Children Index (IDACI), Income Deprivation Affecting Older People Index (IDAOPI), practice size, gender, age, patients' knowledge about the out of hours GP services, rates of long lasting health conditions, unemployment levels, life expectancy, rates of nursing homes patients and smoking prevalence. The weighted features by importance (the amount of "**Emergency Cancer Presentations"** variance that each of the above factors explains) were taken into account when the distances between GP practices were computed and the nearest 99 practices were identified.

Further technical description is available upon request.

Deciles

N99: "Emergency Cancer Presentations" deciles were calculated by ranking the GP practices from highest to lowest values and dividing them into 10 equal groups. GP practices in decile 1 fall within the highest 10% "Emergency Cancer Presentations" of GP practices within their nearest 99 group of practices, and GP practices in decile 10 fall within the lowest 10% "Emergency Cancer Presentations" of GP practices within their nearest 99 group of practices.

Indicator 3: Other Cancer Presentations (Non-Emergency)

Indicator definition

The crude rate of persons diagnosed with cancer via a non-emergency route divided by the number of persons in the practice list, expressed as a rate per 100,000 persons.

Data source

Public Health England: National General Practice Profiles (https://fingertips.phe.org.uk/profile/general-practice).

Methodology

Each person with an inpatient HES record containing a cancer diagnostic code (ICD-10 C00-C97 excl. C44) in one of the first three diagnostic fields is identified. This cohort is de-duplicated by matching to previous years' HES records and cancer registration records. Any duplicates are removed and the remaining patients can be considered an estimate of the members of the cohort of patients diagnosed with a new cancer in the period of interest. The numbers by practice are counted by allocating the patients to a practice according the practice as recorded by inpatient HES. The emergency status of the diagnostic episode is taken from the ADMINMETH field.

Time period

Financial year 2014/2015.

Interpretation

Emergency presentation is linked to lower short term survival in newly diagnosed patients. However it is strongly affected by case-mix: more emergency presentations can be expected in older practice populations and the mix of tumour types is also highly significant (for example, lung cancers have a higher fraction of emergency presentations while breast cancers have a low fraction of emergency presentations). More non-emergency presentations can therefore be expected in practices with less deprived populations.

This indicator is based on smaller numbers than many other indicators in the profiles. As such the random-chance variation is higher and the indicator should be interpreted with caution. Examination of the variation of this indicator over time is encouraged.

Nearest 99 (N99) method

The 99 most similar practices were identified in terms of cancer prevalence, Index of Multiple Deprivation (IMD), Income Deprivation Affecting Children Index (IDACI), Income Deprivation Affecting Older People Index (IDAOPI), practice size, gender, age, patients' knowledge about the out of hours GP services, rates of long lasting health conditions, unemployment levels, life expectancy, rates of nursing homes patients and smoking prevalence. The weighted features by importance (the amount of "**Other Cancer Presentations (Non-Emergency)"** variance that each of the above factors explains) were taken into account when the distances between GP practices and the nearest 99 practices were identified.

Further technical description is available upon request.

Deciles

N99: "Other Cancer Presentations (Non-Emergency)" deciles were calculated by ranking the GP practices from lowest to highest values and dividing them into 10 equal groups. GP practices in decile 1 fall within the lowest 10% "Other Cancer Presentations (Non-Emergency)" of GP practices within their nearest 99 group of practices, and GP practices in decile 10 fall within the highest 10% "Other Cancer Presentations (Non-Emergency)" of GP practices within their nearest 99 group of practices.

Indicator 4: New Cancer Cases Treated

Indicator definition

The proportion of new cancer cases treated who were referred through the Two Week Wait referral route. This is calculated as the number of new cancer cases treated in the year who were referred through the Two Week Wait referral route divided by the total number of patients registered at the practice who have a date of first treatment in the financial year on the Cancer Waiting Times system.

Data source

Public Health England: National General Practice Profiles (https://fingertips.phe.org.uk/profile/general-practice).

Methodology

Patient level Cancer Waiting Times (CWT) data (including patient identifiers) were downloaded from the NHS England Cancer Waiting Times Database. Each patient was traced to a GP Practice using the Open Exeter Batch Tracing Service. New cancer cases treated were identified as those with a first

treatment (i.e. with 'Cancer Treatment Event Type' of 01 (First definitive treatment for a new primary cancer) or 07 (First treatment for metastatic disease following an unknown primary)). These patients were identified as having been referred by the Two Week Wait referral route if they had a 'Referral Priority Type' of '3' (Two Week Wait) but had not been referred for non-cancer breast symptoms (those with a 'Cancer Referral Type' of '16' (non-cancer breast symptoms)).

Time period

Financial year 2014/2015.

Interpretation

This indicator shows the proportion of new cancer cases treated that were first diagnosed following a two week wait referral. This varies by cancer type and so will depend on the case-mix of cancers diagnosed in persons registered at the practice.

This indicator is based on smaller numbers than many other indicators in the profiles. As such the random-chance variation is higher and the indicator should be interpreted with caution. Examination of the variation of this indicator over time is encouraged.

Nearest 99 (N99) method

The 99 most similar practices were identified in terms of cancer prevalence, Index of Multiple Deprivation (IMD), Income Deprivation Affecting Children Index (IDACI), Income Deprivation Affecting Older People Index (IDAOPI), practice size, gender, age, patients' knowledge about the out of hours GP services, rates of long lasting health conditions, unemployment levels, life expectancy, rates of nursing homes patients and smoking prevalence. The weighted features by importance (the amount of "**New Cancer Cases Treated"** variance that each of the above factors explains) were taken into account when the distances between GP practices were computed and the 99 nearest practices were identified.

Further technical description is available upon request.

Deciles

N99: "New Cancer Cases Treated" deciles were calculated by ranking the GP practices from lowest to highest values and dividing them into 10 equal groups. GP practices in decile 1 fall within the lowest 10% "New Cancer Cases Treated" of GP practices within their nearest 99 group of practices, and GP practices in decile 10 fall within the highest 10% "New Cancer Cases Treated" of GP practices within their nearest 99 group of practices.

Indicator 5: Cancer Review within 6 months

Indicator definition

The percentage of patients with cancer, diagnosed within the preceding 15 months, who have a patient review recorded as occurring within 6 months of the date of diagnosis. NICE ID: NM62.

Rationale

Most practices will see patients with a new cancer diagnosis following assessment and management in a secondary or tertiary care setting. Whilst the indicator suggests that this should occur within six months of receiving confirmation of the diagnosis, good practice would suggest that a review should occur between three to six months.

A cancer review is an opportunity to cover the following issues:

- The patient's individual health and support needs (this will vary with e.g. the diagnosis, staging, age and pre-morbid health of the patient and their social support networks)
- The co-ordination of care between sectors.

Data source

Public Health England: National General Practice Profiles (https://fingertips.phe.org.uk/profile/general-practice).

Time period

Financial year 2014/2015.

Nearest 99 (N99) method

The 99 most similar practices were identified in terms of cancer prevalence, Index of Multiple Deprivation (IMD), Income Deprivation Affecting Children Index (IDACI), Income Deprivation Affecting Older People Index (IDAOPI), practice size, gender, age, patients' knowledge about the out of hours GP services, rates of long lasting health conditions, unemployment levels, life expectancy, rates of nursing homes patients and smoking prevalence. The weighted features by importance (the amount of "**Cancer Review within 6 months"** variance that each of the above factors explains) were taken into account when the distances were computed between the GP practices and the 99 nearest practices were identified.

Further technical description is available upon request.

Deciles

N99: "Cancer Review within 6 months" deciles were calculated by ranking the GP practices from lowest to highest values and dividing them into 10 equal groups. GP practices in decile 1 fall within the lowest 10% "Cancer Review within 6 months" of GP practices within their nearest 99 group of practices, and GP practices in decile 10 fall within the highest 10% "Cancer Review within 6 months" of GP practices within their nearest 99 group of practices.

Indicator 6: Record of Alcohol Consumption for Mental Health Patients

Definition

The percentage of patients with schizophrenia, bipolar affective disorder and other psychoses who have a record of alcohol consumption in the preceding 12 months.

Rationale

Substance misuse by people with schizophrenia is increasingly recognised as a major problem, both in terms of its prevalence and its clinical and social effects. The National Psychiatric Morbidity Survey in England found that 16 per cent of people with schizophrenia were drinking over the recommended limits of 21 units of alcohol for men and 14 units or alcohol for women a week. Bipolar affective disorder is also highly comorbid with alcohol and other substance abuse.

Data source

Public Health England: National General Practice Profiles (https://fingertips.phe.org.uk/profile/general-practice).

Time period

Financial year 2015/2015.

Nearest 99 (N99) method

The 99 most similar practices were identified in terms of mental health prevalence, index of multiple deprivation (IMD), practice size and smoking prevalence. The weighted features by importance (the amount of "**Record of Alcohol Consumption for Mental Health Patients"** variance that each of the above factors explains) were taken into account when the distances between GP practices were computed and the 99 nearest practices were identified.

Further technical description is available upon request.

Deciles

N99: "Record of Alcohol Consumption for Mental Health Patients" deciles were calculated by ranking the GP practices from lowest to highest values and dividing them into 10 equal groups. GP practices in decile 1 fall within the lowest 10% "Record of Alcohol Consumption for Mental Health Patients" of GP practices within their nearest 99 group of practices, and GP practices in decile 10 fall within the highest 10% "Record of Alcohol Consumption for Mental Health Patients" of GP practices within their nearest 99 group of practices.

Indicator 7: Record of Blood Pressure Check for Mental Health Patients

Definition

The percentage of patients with schizophrenia, bipolar affective disorder and other psychoses who have a record of blood pressure in the preceding 12 months.

Rationale

People with schizophrenia have a mortality of between two and three times that of the general population and most of the excess deaths are from diseases that are the major causes of death in the general population. A recent prospective record linkage study of the mortality of a community cohort of 370 people with schizophrenia found that the increased mortality risk is probably life-long, and it suggested that the cardiovascular mortality of schizophrenia has increased over the past 25 years relative to the general population. The NICE clinical guideline on bipolar disorder also states that the standardised mortality ratio for cardiovascular death may be twice that of the general population but appears to be reduced if patients adhere to long term medication.

Hypertension in people with schizophrenia is estimated at 19% compared with 15% in the general population. A cross-sectional study of 4310 patients diagnosed with bipolar disorder in 2001 receiving care at veterans' administration facilities found a prevalence of hypertension of 35%. There is evidence to suggest that physical conditions such as cardiovascular disorders go unrecognised in psychiatric patients. A direct comparison of cardiovascular screening (blood pressure, lipid levels and smoking status) of people with asthma, people with schizophrenia and other attendees indicated that practices were less likely to screen people with schizophrenia for cardiovascular risk compared with the other two groups.

Recording (and treating) cardiovascular risk factors are therefore very important for people with a serious mental illness.

Data source

Public Health England: National General Practice Profiles (https://fingertips.phe.org.uk/profile/general-practice).

Time period

Financial year 2014/2015.

Nearest 99 (N99) method

The 99 most similar practices were identified in terms of mental health prevalence, index of multiple deprivation (IMD), practice size and smoking prevalence. The weighted features by importance (the amount of "**Record of Blood Pressure Check for Mental Health Patients"** variance that each of the above factors explains) were taken into account when the distances between the GP practices were computed and the 99 nearest practices were identified.

Further technical description is available upon request.

Deciles

N99: Record of Blood Pressure Check for Mental health Patients deciles were calculated by ranking the GP practices from lowest to highest values and dividing them into 10 equal groups. GP practices in decile 1 fall within the lowest 10% "Record of Blood Pressure Check for Mental health Patients" of GP practices within their nearest 99 group of practices, and GP practices in decile 10 fall within the highest 10% "Record of Blood Pressure Check for Mental health Patients" of GP practices within their nearest 99 group of practices.

Indicator 8: Percentage of Mental Health Female Patients who had Cervical Screening Test

Definition

The percentage of patients (aged from 25 to 64 years in England and Northern Ireland, from 20 to 60 years in Scotland and from 20 to 64 years in Wales) with schizophrenia, bipolar affective disorder and other psychoses whose notes record that a cervical screening test has been performed in the preceding 5 years.

Rationale

A recent report by the Disability Rights Commission based on the primary care records of 1.7 million primary care patients found that women with schizophrenia were less likely to have had a cervical sample taken in the previous five years (63%) compared with the general population (73%). This did not apply to patients with bipolar affective disorder. This finding may reflect an underlying attitude that such screening is less appropriate for women with schizophrenia.

This indicator therefore encourages practices to ensure that women with schizophrenia, bipolar affective disorder or other psychoses are given cervical screening according to devolved national guidelines.

Data source

Public Health England: National General Practice Profiles (https://fingertips.phe.org.uk/profile/general-practice).

Time period

Financial year 2014/2015.

Nearest 99 (N99) method

The 99 most similar practices were identified in terms of mental Health prevalence, smoking prevalence, index of multiple deprivation (IMD), income deprivation affecting children index (IDACI), income deprivation affecting older people index (IDAOPI), unemployment rates, life expectancy, knowledge about out of hours service, rate of nursing home patients, age and gender. The weighted features by importance (the amount of "**Mental Health Female Patients who had Cervical Screening Test"** variance that each of the above factors explains) were taken into account when the distances between the GP practices were computed and the 99 nearest practices were identified.
Further technical description is available upon request.

Deciles

N99: Mental Health Female Patients who had Cervical Screening Test deciles were calculated by ranking the GP practices from lowest to highest values and dividing them into 10 equal groups. GP practices in decile 1 fall within the lowest 10% "Mental Health Female Patients who had Cervical Screening Test" of GP practices within their nearest 99 group of practices, and GP practices in decile 10 fall within the highest 10% "Mental Health Female Patients who had Cervical Screening Test" of GP practices within their nearest 99 group of practices.

Indicator 9: Newly Diagnosed Patients with Depression who had a Review

Definition

The percentage of patients aged 18 or over with a new diagnosis of depression in the preceding 1 April to 31 March, who have been reviewed not earlier than 10 days after and not later than 56 days after the date of diagnosis, NICE ID: NM50

Rationale

The rationale for such follow-up measurement is derived from the recognition that depression is often a chronic disease, yet treatment is often episodic and short-lived. The change to the wording of this indicator, from 5 – 12 weeks to 4 – 12 weeks, recognises that in clinical practice most prescriptions or follow-up appointments are given for one, two or four weeks at this stage in the illness. If treatment with antidepressants is initiated, patients should be followed-up regularly for several months. The NICE clinical guideline 90 recommends that 'for people started on antidepressants who are not considered to be at increased risk of suicide, normally see them after two weeks. See them regularly thereafter, for example at intervals of two to four weeks in the first three months and then at longer intervals if the response is good. 'Early cessation of treatment is associated with a greater risk of relapse. The guideline also suggests that a person who has benefited from taking an antidepressant should continue medication for at least six months after remission of an episode of depression. However, one study showed that only up to one-third of patients prescribed antidepressants were still receiving medication at four to six months. Analysis of the GP Research Database for the years 1993 to 2005 has confirmed this finding: more than half of patients treated with antidepressants for a new diagnosis of depression during those years received prescriptions for only one or two months of treatment, and that this pattern had not changed over the 13 year period. If drug treatment is not started after the initial diagnosis, patients should in any case be reassessed to see whether their symptoms have resolved or worsened to the point where treatment becomes advisable. Recent research into the use of severity measures has shown that patients whose GPs used the measures for follow-up in addition to initial assessment valued having repeated scores to help monitor their progress and assess the effectiveness of treatment. Most of the GPs interviewed for the same study believed that there was value in repeating the score as a way of monitoring patients' progress. The nine item Patient Health Questionnaire (PHQ-9) has been shown to be a responsive and reliable measure for gauging response to treatment in individual patient care.

Data source

Public Health England: National General Practice Profiles
(https://fingertips.phe.org.uk/profile/general-practice).

Time period

Financial year 2014/2015.

Nearest 99 (N99) method

The 99 most similar practices were identified in terms of index of multiple deprivation (IMD), income deprivation affecting children index (IDACI), income deprivation affecting older people index (IDAOPI), disease prevalence (combining several domains which were weighted on the basis of predictive power towards the indicator), smoking prevalence, unemployment rates, life expectancy, knowledge about out of hours service, age, gender and practice size. The weighted features by importance (the amount of "**Newly Diagnosed Patients with Depression who had a Review"** variance that each of the above factors explains) were taken into account when the distances between the GP practices were computed and the 99 nearest practices were identified.
Further technical description is available upon request.

Deciles

N99: "Newly Diagnosed Patients with Depression who had a review" deciles were calculated by ranking the GP practices from lowest to highest values and dividing them into 10 equal groups. GP practices in decile 1 fall within the lowest 10% "Newly Diagnosed Patients with Depression who had a review" of GP practices within their nearest 99 group of practices, and GP practices in decile 10 fall within the highest 10% "Newly Diagnosed Patients with Depression who had a review" of GP practices within their nearest 99 group of practices.

Indicator 10: Dementia Care Reviewed

Definition

The percentage of patients diagnosed with dementia whose care has been reviewed in a face-to-face review in the preceding 12 months**.**

Rationale

The face-to-face review should focus on support needs of the patient and their carer. In particular the review should address four key issues:

1. An appropriate physical and mental health review for the patient

2. If applicable, the carer's needs for information commensurate with the stage of the illness and his or her and the patient's health and social care needs

3. If applicable, the impact of caring on the care-giver communication and co-ordination arrangements with secondary care (if applicable).

A series of well-designed cohort and case control studies have demonstrated that patients with Alzheimer-type dementia do not complain of common physical symptoms, but experience them to the same degree as the general population. Patient assessments should therefore include the assessment of any behavioural changes caused by:

- Concurrent physical conditions (e.g. joint pain or intercurrent infections)
- New appearance of features intrinsic to the disorder (e.g. wandering) and delusions or hallucinations due to the dementia or as a result of caring behaviour (e.g. being dressed by a carer)

Depression should also be considered since it is more common in patients with dementia than those without.

Data source

Public Health England: National General Practice Profiles

(https://fingertips.phe.org.uk/profile/general-practice).

Time period

Financial year 2014/2015.

Nearest 99 (N99) method

The 99 most similar practices were identified in terms of weighted multiple deprivation (combining several domains which were weighted on the basis of their predictive power towards the indicator), weighted multiple disease prevalence (combining several domains which were weighted on the basis of predictive power towards the indicator), knowledge about out of hours service, rates of long lasting health conditions, age, gender and practice size. The weighted features by importance (the amount of "**Dementia Care Reviewed"** variance that each of the above factors explains) were taken into account when the distances between the GP practices were computed and the 99 nearest practices were identified.

Further technical description is available upon request.

Deciles

N99: "Dementia Care reviewed" deciles were calculated by ranking the GP practices from lowest to highest values and dividing them into 10 equal groups. GP practices in decile 1 fall within the lowest 10% "Dementia Care reviewed" of GP practices within their nearest 99 group of practices, and GP practices in decile 10 fall within the highest 10% "Dementia Care reviewed" of GP practices within their nearest 99 group of practices.

Indicator 11: Broad Spectrum Antibiotics Prescribed

Definition

The percentage of broad spectrum items prescribed in primary care settings accounted for by the following antimicrobials: cephalosporin, fluoroquinolone and co-amoxiclav. Data presented as percentage of items prescribed in a sub set of the British National Formula (BNF) 5.1 category. Data presented by primary care provider.

Rationale

It is a target to reduce the proportion of broad spectrum antibiotics consumed. Using this indicator, individuals will be able to see the respective proportion of broad spectrum prescribing and monitor the trend of the proportion over time. The number presented is the percent, and the higher the number, the larger the proportion of broad spectrum items.

Policy

The consumption of antibiotics is a major driver for the development of antibiotic resistance in bacteria. AMR is a serious and growing global public health concern with implications for every Government and the populations they serve. The emergence and spread of infections caused by bacteria that are resistant to treatment by current antibiotics strikes at the heart of modern medical and veterinary practice. The indicator quantifies the proportion of prescribing that is made up of broad-spectrum antibiotics.

AMR is a key public health issue. The government released a 5 year antimicrobial resistance strategy in 2013 (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/385733/UK).

Data source

Public Health England: National General Practice Profiles (https://fingertips.phe.org.uk/profile/general-practice).

Methodology

The percentage of broad spectrum antibiotic in a sub-set of the BNF 5.1 category. Total consumption of cephalosporin, fluoroquinolone and co-amoxiclav divided by the total of the subset of antibiotics.

Time period

2015.

Caveats

Drugs are only included in the numerator if they have a British National Formulary (BNF) 5.1 code. The figures produced in this indicator are raw and unadjusted for the confounding effects of both age and sex on antimicrobial prescribing. For that reason comparison between different areas needs to be treated with caution. Total number of antibiotic items per STAR-PU makes the necessary adjustment for these variables.

Missing primary care data can occur for various reasons. The provider may have merged with another provider, changed name or failed to meet the minimum number to conform with HSCIC rules on confidentiality.

The denominator of this indicator uses the same sub set of the BNF chapter 5.1 that is currently used in the NHS BSA and does not include all antibiotic items in this chapter.

Nearest 99 (N99) method

The 99 most similar practices were identified in terms of weighted multiple deprivation (combining several domains which were weighted on the basis of predictive power towards the indicator), weighted disease prevalence (combining several domains which were weighted on the basis of predictive power towards the indicator), age, life expectancy, unemployment levels, and smoking prevalence. The weighted features by importance (the amount of "**Broad Spectrum Antibiotics Prescribed"** variance that each of the above factors explains) were taken into account when the distances between the GP practices were computed and the 99 nearest practices were identified. *Further technical description is available upon request.*

Deciles

N99: "Broad Spectrum Antibiotics Prescribed" deciles were calculated by ranking the GP practices from highest to lowest values and dividing them into 10 equal groups. GP practices in decile 1 fall within the highest 10% "Broad Spectrum Antibiotics Prescribed" of GP practices within their nearest 99 group of practices, and GP practices in decile 10 fall within the lowest 10% "Broad Spectrum Antibiotics Prescribed" of GP practices within their nearest 99 group of practices.

Indicator 12: Prescribed Antibiotics per STAR-PU

Definition

Annual total number of prescribed antibiotic items per Specific Therapeutic group Age-sex weightings Related Prescribing Units (STAR-PU) by primary care provider across England. STAR-PUs are weighted units to allow comparisons adjusting for the age and sex distribution of patients of each practice. The weightings are derived from an anonymised random sample of approximately 800,000 patients registered with about 90 General Practices. They are calculated by extracting and analysing the cost or volume of prescribing by specific age groups and gender.

Data are extracted as a quarterly snapshot in time from the GP Payments system maintained by the Health and Social Care Information Centre (HSCIC).

Primary care level data are released in single year of age (SYOA) and 5-year age bands, both of which finish at 95+, split by gender and aggregated (see Caveats below).

Rationale

In order to fully appreciate antimicrobial prescribing, it is necessary to take into consideration demographic characteristics of the population as they may influence levels of prescribing. For that reason STAR-PU data is adjusted for both age and sex.

STAR-PU is an adjusted rate that removes confounding effects of age and sex in the comparison of prescribing between different areas. This method allows for more accurate comparison of prescribing. In this specific indicator, a higher value is associated with increased prescribing.

Policy

The consumption of antibiotics is a major driver for the development of antibiotic resistance in bacteria. AMR is a serious and growing global public health concern with implications for every government and the populations they serve. The emergence and spread of infections caused by bacteria that are resistant to treatment by current antibiotics strike at the heart of modern medical and veterinary practice.

AMR is a key public health issue. The government released a 5 year antimicrobial resistance strategy in 2013 (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/385).

Data source

Public Health England: National General Practice Profiles (https://fingertips.phe.org.uk/profile/general-practice).

Time period

2015.

Caveats

STAR-PU data are inappropriate to use at any smaller level than total prescribing i.e. individual drug class level.

STAR-PU data only include antibiotics that are administered orally. Orally administered derivatives of BNF 5.1 codes account for more than 99.8% of all prescribed items.

Missing primary care data can occur for various reasons. The provider may have merged with another provider, changed name or failed to meet the minimum number to conform with HSCIC rules on confidentiality.

Drugs are only included in the denominator if they have a British National Formulary (BNF) 5.1 code.

Figures will vary if compared to similar indicators at different geographical levels as they are separate and have different criteria for inclusion and exclusion.

Nearest 99 (N99) method

The 99 most similar practices were identified in terms of weighted multiple deprivation (combining several domains which were weighted on the basis of their predictive power towards the indicator), multiple weighted disease prevalence (combining several domains which were weighted on the basis of their predictive power towards the indicator), smoking prevalence, practice size, rates of nursing home patients, life expectancy, employment, and long standing health condition rates. The weighted features by importance (the amount of variance on the "**Prescribed Antibiotics per STAR-PU"** value that each of the above factors explains) were taken into account when the distances between GP practices were computed and the 99 nearest practices were identified.

Further technical description is available upon request.

Deciles

N99: "Prescribed Antibiotics per STAR-PU" deciles were calculated by ranking the GP practices from highest to lowest values and dividing them into 10 equal groups. GP practices in decile 1 fall within the highest 10% "Prescribed Antibiotics per STAR-PU" of GP practices within their nearest 99 group of practices, and GP practices in decile 10 fall within the lowest 10% "Prescribed Antibiotics per STAR-PU" of GP practices within their nearest 99 group of practices.

Indicator 13: NIC on antidepressant drugs

Definition

Average NIC (£) on antidepressant drugs per depression registered patient.

Data sources

Prescribing by GP practice data (http://content.digital.nhs.uk/gpprescribingdata?tabid=3).

QOF (http://content.digital.nhs.uk/catalogue/PUB18887).

Methodology

The sum NIC per practice on antidepressant drugs (BNF 4.3) from 01/04/2014 to 31/03/2015 divided by the number of patients on the Depression register 2014-2015.

Time period

Financial year 2014-2015.

Caveats

This metric should be regarded as an estimated NIC average per treated person. Only patients who had a diagnosis of depression followed by a review within a certain period of time are included on the depression register. However, prescriptions of antidepressants drugs might not be limited to those patients.

Nearest 99 (N99) method

The 99 most similar practices were identified in terms of multiple deprivation index (IMD) and depression prevalence. The weighted features by importance (the amount of variance on the "**NIC on antidepressant drugs"** value that each of the above factors explains) were taken into account when the distances between GP practices were computed and the 99 nearest practices were identified.

Further technical description is available upon request.

Deciles

N99: "NIC on antidepressant drugs" deciles were calculated by ranking the GP practices from highest to lowest values and dividing them into 10 equal groups. GP practices in decile 1 fall within the highest 10% "NIC on antidepressant drugs" of GP practices within their nearest 99 group of practices, and GP practices in decile 10 fall within the lowest 10% "NIC on antidepressant drugs" of GP practices within their nearest 99 group of practices.

Indicator 14: NIC on antiepileptic drugs

Definition

Average NIC (£) on antiepileptic drugs per epilepsy registered patient.

Data sources

Prescribing by GP practice data (http://content.digital.nhs.uk/gpprescribingdata?tabid=3).

QOF (http://content.digital.nhs.uk/catalogue/PUB18887).

Methodology

The sum NIC per practice on antidepressant drugs (BNF 4.8) from 01/04/2014 to 31/03/2015 divided by the number of patients on the Epilepsy register 2014-2015.

Time period

Financial year 2014-2015

Caveats

This metric should be regarded as an estimated NIC average per treated person. Prescriptions of antiepileptic drugs might not be limited to patients who were included on the Epilepsy register.

Nearest 99 (N99) method

The 99 most similar practices were identified in terms of multiple deprivation index (IMD) and epilepsy prevalence. The weighted features by importance (the amount of variance on the "**NIC on antiepileptic drugs"** value that each of the above factors explains) were taken into account when the distances were computed between the GP practices and the 99 nearest practices were identified.

Further technical description is available upon request.

Deciles

N99: "NIC on antiepileptic drugs" deciles were calculated by ranking the GP practices from highest to lowest values and dividing them into 10 equal groups. GP practices in decile 1 fall within the highest 10% "NIC on antiepileptic drugs" of GP practices within their nearest 99 group of practices, and GP practices in decile 10 fall within the lowest 10% "NIC on antiepileptic drugs" of GP practices within their nearest 99 group of practices.

Indicator 15: Total NIC of prescribed drugs

Definition

Average NIC (£) on prescribed drugs per registered person.

Data sources

Prescribing by GP practice data (http://content.digital.nhs.uk/gpprescribingdata?tabid=3).

QOF (http://content.digital.nhs.uk/catalogue/PUB18887).

Methodology

The sum NIC (£) on prescribed drugs per practice from 01/04/2014 to 31/03/2015 divided by the practice size 2014-2015.

Time period

Financial year 2014-2015.

Nearest 99 (N99) method

The 99 most similar practices were identified in terms of weighted multiple deprivation (combining several domains which were weighted on the basis of their predictive power towards the indicator), weighted multiple disease prevalence (combining several domains which were weighted on the basis of their predictive power towards the indicator), gender, age, rate of nursing home patients, life expectancy, unemployment, long standing health condition rate and smoking prevalence. The weighted features by importance (the amount of variance on the "**Total NIC of prescribed drugs"** value that each of the above factors explains) were taken into account when distances between practices were computed and the 99 nearest practices were identified.

Further technical description is available upon request.

Deciles

N99: "Total NIC on prescribed drugs" deciles were calculated by ranking the GP practices from highest to lowest values and dividing them into 10 equal groups. GP practices in decile 1 fall within the highest 10% "Total NIC on prescribed drugs" of GP practices within their nearest 99 group of practices, and GP practices in decile 10 fall within the lowest 10% "Total NIC on prescribed drugs" of GP practices within their nearest 99 group of practices.

Indicator 16: Emergency Admissions for 19 Ambulatory Care Sensitive Conditions

Definition

The number of Emergency Admissions for 19 Ambulatory Care Sensitive Conditions per 1,000 population.

Rationale

Ambulatory Care Sensitive Conditions (ACS) account for one in every six emergency hospital admissions in England. This shows the number of admissions for ambulatory care sensitive conditions per 1,000 patients on a GP practice list. ACS conditions are a group of conditions where care could be effectively managed outside hospital, therefore a high rate of admissions for these conditions may indicate that there is inadequate support to manage these conditions in the community, although other factors such as social and living conditions, poor community support services, and non-response to medication may also result in high levels of admissions.

Methodology

The number of Emergency Admissions for 19 Ambulatory Care Sensitive (ACS) conditions divided by the number of patients registered at the GP Practice/1,000 practice population.

Data source

CQC Intelligent Monitoring (http://www.cqc.org.uk/content/monitoring-gp-practices).

Time period

2014.

Nearest 99 (N99) method

The 99 most similar practices were identified in terms of weighted multiple deprivation (combining several domains which were weighted on the basis of their predictive power towards the indicator), weighted multiple disease prevalence (combining several domains which were weighted on the basis of their predictive power towards the indicator), life expectancy and age. The weighted features by importance (the amount of variance on the "**Emergency Admissions for 19 Ambulatory Care Sensitive Conditions"** value that each of the above factors explains) were taken into account when distances between practices were computed and the 99 nearest practices were identified.

Further technical description is available upon request.

Deciles

N99: "Emergency Admissions for 19 Ambulatory Care Sensitive Conditions" deciles were calculated by ranking the GP practices from highest to lowest values and dividing them into 10 equal groups. GP practices in decile 1 fall within the highest 10% "Emergency Admissions for 19 Ambulatory Care Sensitive Conditions" of GP practices within their nearest 99 group of practices, and GP practices in decile 10 fall within the lowest 10% "Emergency Admissions for 19 Ambulatory Care Sensitive Conditions" of GP practices within their nearest 99 group of practices.

Indicator 17: Reported vs. Expected CHD

Definition

The ratio of reported versus expected prevalence for Coronary Heart Disease (CHD).

Rationale

The Coronary Heart Disease National Service Framework (CHD NSF) and now the new (General Medical Services) GMS contract state that general practitioners and primary care teams should develop a register of CHD patients, through which they can review medication, offer advice on diet and lifestyle, and maintain the necessary contact with patients most at risk of suffering renewed heart problems.

Methodology

The Coronary Heart Disease (CHD) register divided by the by the expected prevalence (as adjusted by practice list and disease register).

Denominator is the modelled number of patients in the practice estimated to have coronary heart disease. Practice List, modelled estimated disease register, and percentage. For information on the estimated prevalence model, the data used in the model, and methodology behind it, please go to the Public Health Observatories' website: http://www.apho.org.uk/DISEASEPREVALENCEMODELS.

Practice level results published for 2008-09 have been applied to the 2011-12 practice list information from QOF to determine expected prevalence for 2011-12. These estimates are then rebased to current list size, Expected prevalence = ([2011/12 expected divided by 2011/12 list size] X 2015 list size).

Data sources

QOF (http://content.digital.nhs.uk/catalogue/PUB18887).

Public Health Observatories (http://www.apho.org.uk/DISEASEPREVALENCEMODELS).

CQC Intelligent Monitoring (http://www.cqc.org.uk/content/monitoring-gp-practices).

Time period

Financial year 2014/2015.

Caveats

The expected prevalence rate is based on the 2011 prevalence model which is out of date. No updated version of this prevalence data is currently available. Prevalence was directly adjusted by age and gender from the practice list but indirectly adjusted for other social statuses e.g. smoking, deprivation etc. by local population. Therefore the prevalence rate may not fully reflect practices with atypical populations e.g. with large percentages of young people such as university practices etc.

Nearest 99 (N99) method

The 99 most similar practices were identified in terms of unemployment rates, life expectancy and rates of nursing home patients. The weighted features by importance (the amount of variance on the "**Reported vs. Expected CHD"** value that each of the above factors explains) were taken into account when distances between practices were computed and the 99 nearest practices were identified.

Further technical description is available upon request.

Deciles

N99: "Reported vs. Expected CHD" deciles were calculated by ranking the GP practices from lowest to highest values and dividing them into 10 equal groups. GP practices in decile 1 fall within the lowest "Reported vs. Expected CHD" of GP practices within their nearest 99 group of practices, and GP practices in decile 10 fall within the highest 10% "Reported vs. Expected CHD" of GP practices within their nearest 99 group of practices.

Indicator 18: Reported vs. Expected COPD

Definition

The ratio of reported versus expected prevalence for Chronic Obstructive Pulmonary Disease (COPD).

Rationale

Clinicians in primary care have the skills to assess patients' symptoms for COPD and the adequacy of their control, monitor progression of their disease, and identify the development of complications and the need for referral to secondary care or other specialists. Failure to identify cases early in the progression of the disease will impact on sensitivity to treatment, increase secondary care requirements and reduce quality of life.

Methodology

The Chronic Obstructive Pulmonary Disease (COPD) register divided by the by the expected prevalence (as adjusted by practice list and disease register).

Denominator is the modelled number of patients in the practice estimated to have Chronic Obstructive Pulmonary Disease. Practice List, modelled estimated disease register, and percentage. For information on the estimated prevalence model, the data used in the model, and methodology behind it, please go to the Public Health Observatories' website: http://www.apho.org.uk/DISEASEPREVALENCEMODELS.

Practice level results published for 2008-09 have been applied to the 2011-12 practice list information from QOF to determine expected prevalence for 2011-12. These estimates are then rebased to current list size, Expected prevalence = ([2011/12 expected divided by 2011/12 list size] X 2015 list size).

Data sources

QOF (http://content.digital.nhs.uk/catalogue/PUB18887).
Public Health Observatories (http://www.apho.org.uk/DISEASEPREVALENCEMODELS).
CQC Intelligent Monitoring (http://www.cqc.org.uk/content/monitoring-gp-practices).

Time period

Financial year 2014/2015.

Caution when interpreting this indicator

High values are good. However, extremely high values may be indicative of over diagnosis or misdiagnosis.
The expected prevalence rate is based on the 2011 prevalence model which is out of date. No updated version of this prevalence data is currently available. Prevalence was directly adjusted by

age and gender from the practice list but indirectly adjusted for other social statuses e.g. smoking, deprivation etc. by local population. Therefore the prevalence rate may not fully reflect practices with atypical populations e.g. with large percentages of young people such as university practices etc.

Nearest 99 (N99) method

The 99 most similar practices were identified in terms of patients' knowledge of out of hours GP services, rates of long standing health condition, rates of caring responsibility, employment status, life expectancy and rates of nursing home patients. The weighted features by importance (the amount of variance on the "**Reported vs. Expected COPD"** value that each of the above factors explains) were taken into account when distances between practices were computed and the 99 nearest practices were identified.

Further technical description is available upon request.

Deciles

N99: Reported vs. Expected COPD deciles were calculated by ranking the GP practices from lowest to highest values and dividing them into 10 equal groups. GP practices in decile 1 fall within the lowest 10% Reported vs. Expected COPD of GP practices within their nearest 99 group of practices, and GP practices in decile 10 fall within the highest 10% Reported vs. Expected COPD GP practices within their nearest 99 group of practices.

Indicator 19: Total QOF points

Definition

The percentage of all QOF points achieved across all domains as a proportion of all achievable points.

Data source

Public Health England: National General Practice Profiles (https://fingertips.phe.org.uk/profile/general-practice).

Time period

Financial year 2014/2015.

Nearest 99 (N99) method

The 99 most similar practices were identified in terms of weighted multiple deprivation (combining several domains which were weighted on the basis of their predictive power towards the indicator), smoking prevalence, gender, age and unemployment rates. The weighted features by importance (the amount of variance on the "**Total QOF points** value that each of the above factors explains) were taken into account when distances between practices were computed and the 99 nearest practices were identified.

Further technical description is available upon request.

Deciles

N99: "Total QOF points" deciles were calculated by ranking the GP practices from lowest to highest values and dividing them into 10 equal groups. GP practices in decile 1 fall within the lowest 10% "Total QOF points" of GP practices within their nearest 99 group of practices, and GP practices in decile 10 fall within the highest 10% "Total QOF points" of GP practices within their nearest 99 group of practices.

Indicator 20: Percentage of People who would recommend their Practice

Definition

People were asked: "Would you recommend your GP surgery to someone who has just moved to your local area?". The indicator value is the percentage of people who answered this question with either "Yes, would definitely recommend" or "Yes, would probably recommend".

Data source

Public Health England: National General Practice Profiles (https://fingertips.phe.org.uk/profile/general-practice).

Time period

Financial year 2014/2015.

Nearest 99 (N99) method

The 99 most similar practices were identified in terms of multiple weighted deprivation (combining several domains which were weighted on the basis of their predictive power towards the indicator), multiple weighted prevalence (combining several domains which were weighted on the basis of their

predictive power towards the indicator), smoking prevalence, gender, age, unemployment rates, life expectancy, rates of long lasting health conditions, knowledge about out of hours services, rates of nursing home patients, rates of caring responsibility and practice size. The weighted features by importance (the amount of variance on the "**Percentage of People who would recommend their Practice"** value that each of the above factors explains) were taken into account when distances between practices were computed and the 99 nearest practices were identified.
Further technical description is available upon request.

Deciles

N99: "People who would recommend their Practice" deciles were calculated by ranking the GP practices from lowest to highest values and dividing them into 10 equal groups. GP practices in decile 1 fall within the lowest 10% "People who would recommend their Practice" of GP practices within their nearest 99 group of practices, and GP practices in decile 10 fall within the highest 10% "People who would recommend their Practice" of GP practices within their nearest 99 group of practices.