Research

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Incidence and recurrence of boils and abscesses within the first year:

a cohort study in UK primary care

Abstract

Background
Boils and abscesses are common in primary care but the burden of recurrent infection is unknown.

Aim
To investigate the incidence of and risk factors for recurrence of boil or abscess for individuals consulting primary care.

Design and setting
Cohort study using electronic health records from primary care in the UK.

Method
The Health Improvement Network (THIN) database was used to identify patients who had consulted their GP for a boil or abscess. Poisson regression was used to examine the relationship between age, sex, social deprivation, and consultation and to calculate the incidence of, and risk factors for, repeat consultation for a boil or abscess.

Results
Overall, 164 461 individuals were identified who consulted their GP for a boil or abscess between 1995 and 2010. The incidence of first consultation for a boil or abscess was 512 (95% CI = 509 to 515) per 100 000 person-years in females and 387 (95% CI = 385 to 390) per 100 000 person-years in males. First consultations were most frequent in younger age groups (16–34 years) and those with the greatest levels of social deprivation. The rate of repeat consultation for a new infection during follow up was 107.5 (95% confidence interval [CI] = 105.6 to 109.4) per 1000 person-years. Obesity (relative risk [RR] 1.3, 95% CI = 1.2 to 1.3), diabetes (RR 1.3, 95% CI = 1.2 to 1.3), smoking (RR 1.3, 95% CI = 1.2 to 1.4), age <30 years (RR 1.2, 95% CI = 1.2 to 1.3), and prior antibiotic use (RR 1.4, 95% CI = 1.3–1.4) were all associated with repeat consultation for a boil or abscess.

Conclusion
Ten percent of patients with a boil or abscess develop a repeat boil or abscess within 12 months. Obesity, diabetes, young age, smoking, and prescription of an antibiotic in the 6 months before initial presentation were independently associated with recurrent infection, and may represent options for prevention.

Keywords
abscess; boils; epidemiology; primary care; risk factors.

INTRODUCTION

Skin conditions are a major cause of consultations in primary care with approximately 2.4 million consultations per year in England and Wales.[1] In 2010, based on an estimated UK population of 62 million, there were at least 280 000 primary care consultations for an abscess or boil.[2]

The epidemiology of boils and abscesses in primary care is poorly understood. Suppurative skin infections such as sycosis barbae,[3] impetigo,[4] and furunculosis[5] are more common in patients who are colonised with *Staphylococcus aureus* and there is evidence that boils and abscesses are associated with social deprivation, overcrowding, the use of communal facilities, obesity, diabetes, and impaired immunity.[6–9] Patients consulting primary care with a boil or abscess will be treated either with antibiotics or with surgical incision and drainage,[10] but treatment options for those with recurrent boils is limited beyond addressing any underlying immune disorders and screening for diabetes.[11] Patients can be tested for staphylococcal carriage and decolonised; in the UK this may include screening for the Panton-Valentine leukocidin toxin (PVL).[12,13] However, the effectiveness of such interventions is questionable and they are resource intensive.[14,15]

There is a clear need for guidance on how to manage patients with recurrent disease in the community. The aim of this study was to determine the burden of recurrent disease and identify opportunities for secondary prevention in these patients.

METHOD

The THIN database is a source of anonymised clinical information about 11 million patients in primary care.[16] In the UK, 98% of the population is registered with a GP who provides advice, treatment, prescriptions, and referrals and acts as a gatekeeper to specialist services.[17] Practices that participate in the THIN scheme of data collection enter information on symptoms, diagnoses, treatments, laboratory investigations, and referrals every time a consultation takes place, using a hierarchical system of more than 103 000 Read Codes.[18] Prescriptions are recorded using MULTILEX drug codes that link each formulation of each drug to the *British National Formulary*. Each patient in the database is allocated a Townsend score linked to their postcode (which is a composite measure of social deprivation based on levels of house ownership, overcrowding, car ownership, and unemployment). The practices are broadly representative of UK practices in terms of the age and sex of patients, the practice size and geographical location.[19] Adequacy of death recording is assessed by determining the date at which the practice recorded mortality rates that were comparable to national age and sex standardised mortality rates (AMR date).[20]

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How this fits in

Boils and abscesses are a common condition in primary care but there is little information on the burden of and risk factors for recurrent disease. In this study 10% of patients consulting for a boil or abscess developed a second boil or abscess during the following year. Consultations for boils and abscesses are most common in young, socially-deprived females and are associated with smoking, diabetes, obesity, and recent antibiotic use in the prior 6 months. Weight loss, smoking cessation, and reducing unnecessary antibiotic use could represent strategies for secondary prevention.

Patients were eligible for inclusion in the study if they were registered with a participating practice that met acceptable mortality recording (AMR) standards and was fully computerised between 1 January 1995 and 31 December 2011.[21] Individuals were identified if they sought care for a boil, abscess, carbuncle, or furuncle, identified by a Read Code list (Appendix 1). Patients were excluded from the cohort if they were registered with a participating practice for <6 months before the date of first consultation (with the exception of infants aged <1 year), or if they had <1 year of follow-up data from that date. For the multivariate analysis patients with a diagnosis of hidradenitis suppurativa (a condition characterised by repeat boils) were excluded as these individuals were thought to represent a distinct patient group. Patients entered the cohort on the date of their first consultation for a boil or abscess and exited on the first of the following dates: the date of second (repeat) consultation for a boil or abscess; the date of death; the date the patient left the practice; or 31 December 2011.

Outcome was defined as any consultation that resulted in a record of a boil or abscess occurring between 3 weeks and 12 months after the date of first consultation for an abscess or boil. Recurrent boil or abscess was defined as a second consultation for a boil or abscess that occurred a minimum of 21 days after the previous consultation.

Exposure variables were grouped into past medical history, prescription history including antibiotics, treatment at baseline, and health indicators. Patients with a history of skin disease were identified if they had a record that included any of the following terms: 'eczema', 'eczematous', 'atopic eczema', 'psoriasis', 'psoriatic', and 'dermatitis', using the methods described by Davé *et al.*[22] Finally, individuals diagnosed with hidradenitis suppurativa were identified. To identify patients with type 1 or type 2 diabetes a combination of the medical, prescription, and additional health data records was used. Patients with any record corresponding to diabetes were classified as diabetic, even if diagnosis was after the date of first consultation for a boil or abscess, on the assumption that these patients were diabetic at the time of infection.

Therapy records were used to identify patients prescribed oral corticosteroids or antibiotics in the 6 months prior to the date of index consultation. The *British National Formulary* was used for classification. Antibiotic prescriptions in the 30 days before first consultation for a boil or abscess were disregarded in case they represented treatment without a corresponding medical record for a boil or abscess.

Antibiotic treatment at baseline was defined as prescription of any antibiotic within 2 weeks of the date of the first consultation for a boil or abscess.

To define smoking status the record closest to the date of consultation for a boil or abscess was used in the context of the patients' longitudinal record. Body mass index was defined using the record in the additional health data file that was closest to the date of consultation for a boil or abscess.

First, Poisson regression was used to investigate the relationship between initial consultations for a boil or abscess, age, sex, and social deprivation. Subsequently, a cohort was selected from the full dataset to study factors associated with recurrent boil or abscess. The baseline characteristics of this cohort were summarised using descriptive statistics. For variables where >5% of patients lacked a record (for body mass index [BMI] and smoking status), patients with missing data were compared to those with a complete case record. Provided those with a missing record were not systematically different from those with a complete record, missing records were reclassified as within the normal range on the assumption that this was why they lacked a record, for example smoking status is rarely recorded in non-smokers. Poisson regression was used to calculate the incidence of repeat consultation for a boil or abscess taking the denominator as the total number of person-years contributed by patients in the sample population. Univariate analyses were performed to identify factors associated with repeat consultation for a boil or abscess. The multivariable analysis was
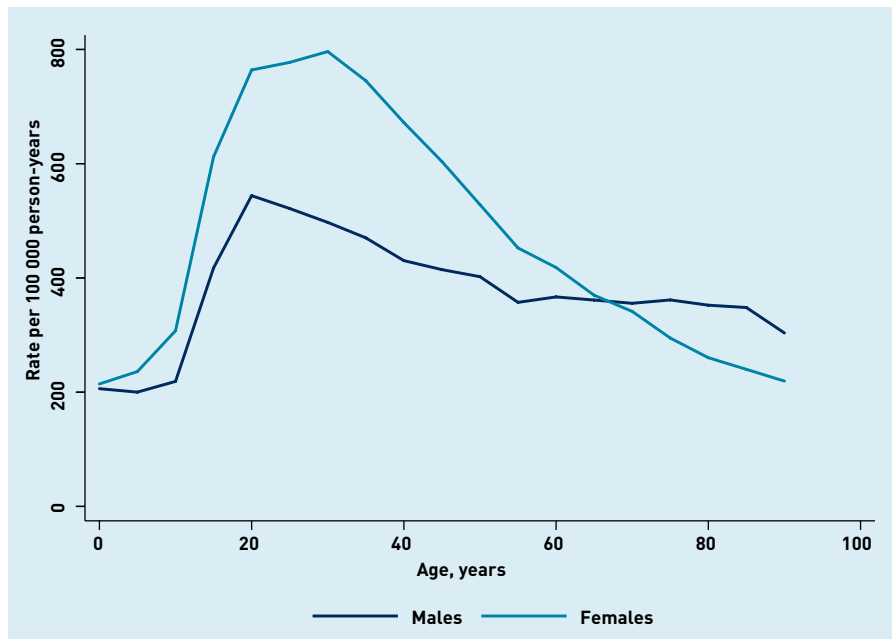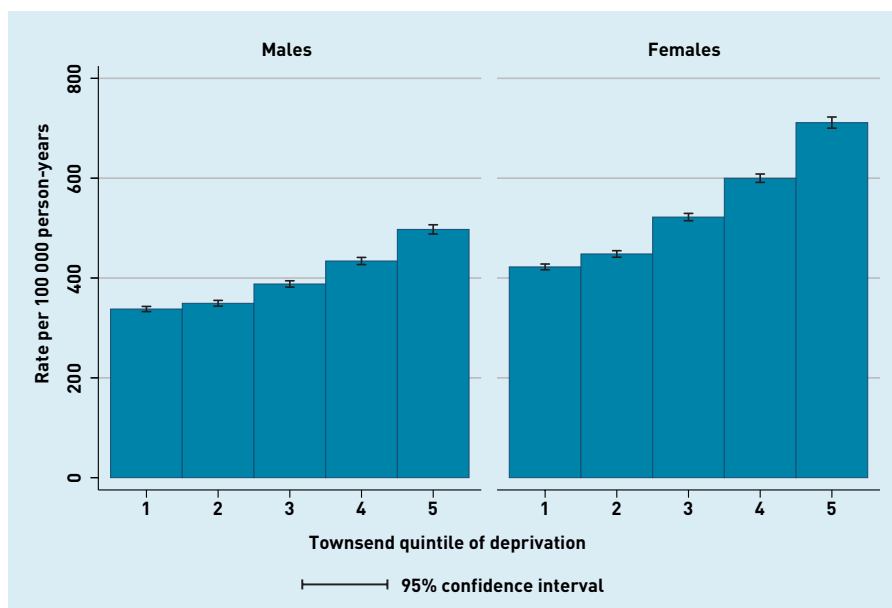
Figure 1. The relationship between age and consultation rate for a boil or abscess in male and female patients.

Figure 2. Relationship between social deprivation and consultation for a boil or abscess by sex.

restricted to adults aged >16 years with a first consultation after 1995 because factors such as BMI were more likely to be recorded in adults and data were sparse before 1995. Multivariable Poisson regression was used to identify factors associated with recurrent boil accounting for age and sex. Variables identified from the univariate analysis and from knowledge of the literature were sequentially added to the model, assessing for interaction with age. Antibiotic treatment at diagnosis was added as a binary variable to the final model. However, antibiotic treatment was not considered as a potential risk factor, but rather as a marker of disease severity, because individuals with a severe infection are more likely to be treated with an antibiotic. Lastly, the final model was compared with and without a random effects term to assess whether there was evidence of clustering and to adjust precision estimates accordingly.

RESULTS

Between 1 January 1995 and 31 December 2010, 164 461 people had at least one consultation for a boil or abscess. The overall incidence of consultation for a boil or abscess was higher in females compared to males at 512 (95% confidence interval [CI] = 509 to 515) versus 387 (95% CI = 385 to 390) per 100 000 person-years respectively. However this relationship was age-dependent and males aged ≥65 years had higher rates of consultation compared to females (Figure 1). The rate of consultation increased rapidly from adolescence, peaking in male 20–24-year-olds and female 30–34-year-olds, and declining thereafter (Figure 1). Consultations were most frequent in individuals with the highest levels of social deprivation and this relationship was more marked for females than males (Figure 2).

In total, 122 473 had a consultation for a boil or abscess at least 6 months after they registered and with at least 1 year of follow-up. The mean age at infection was comparable for both males and females at 41 years (Table 1). Twelve per cent (14 388/122 473) of the cohort had a recorded diagnosis of diabetes and less than one-fifth (22 804/122 473) had a record of an underlying skin condition such as psoriasis, eczema, or dermatitis. Diagnosis of hidradenitis suppurativa was rare, recorded in <1% (429/51 986) of males and 2.5% (1751/70 487) of females consulting for a boil or abscess. Twenty-eight per cent (34 316/122 473) had been prescribed at least one antibiotic in the 6 months before they were diagnosed with their first abscess or boil and approximately one-third were current smokers (35 754/122 473). At diagnosis 71% (86 427/122 473) of patients consulting for a boil or abscess were prescribed an antibiotic and 6% (7609/122 473) had a record of surgical incision and drainage (Table 2). Flucloxacillin was the most commonly-prescribed antimicrobial, prescribed in over half of all cases (66 879/122 473). Mupirocin and chlorhexidine were rarely prescribed to eradicate *S. aureus* carriage (<2%).

Nine per cent (4762/51 986) of males and 11% (7550/70 487) of females had at least one repeat consultation for a boil or abscess

Table 1. Baseline characteristics of cohort

Characteristic	Males, *N* = 51 986	Females, *N* = 70 487
Mean age, years, (SD)	41 (20.1)	41 (19.0)
Follow-up time, person-years	302 257	416 556
Townsend score, *n* (%)[a]		
1 (least deprived)	12 582 (24.5)	15 991 (23.0)
2	10 554 (20.6)	13 768 (19.8)
3	10 482 (20.4)	14 465 (20.8)
4	10 024 (19.5)	14 167 (20.4)
5 (most deprived)	7714 (15.0)	11 195 (16.1)
Not recorded	630 (1.2)	901 (1.3)
Body mass index, *n* (%)[b]		
Mean (SD)	27.3 (5.3)	28.0 (6.7)
Not recorded	7979/46 438 (17.2)	4977/64 245 (7.8)
Diabetes, Yes, *n* (%)	6260 (12.0)	8128 (11.5)
Skin condition, Yes, *n* (%)	8568 (16.5)	14236 (20.2)
Hidradenitis suppurativa, *n* (%)	429 (0.83)	1751 (2.5)
Steroid prescription, *n* (%)	1231 (2.4)	2221 (3.2)
Antibiotics in prior 6 months, *n* (%)		
1 course	9806 (18.9)	16 820 (23.9)
>1 course	2670 (5.2)	5020 (7.1)
Smoking status, *n* (%)[b]		
Non-smoker	9841 (22.9)	16 259 (26.3)
Current smoker	15 225 (35.4)	20 529 (33.2)
Ex-smoker	17 934 (41.7)	25 035 (40.5)
Not recorded	3438 (7.4)	2422 (3.8)

[a]In the full THIN dataset 27% of the population are in Q1, 22% Q2, 21% Q3, 18% Q4, 12% Q5. [b]BMI and smoking status only included for adults aged ≥16 years. BMI = body mass index. Q = quintile. SD = standard deviation.

in the 3 weeks to 12 months following their first consultation and 3% (3622/122 473) had two or more repeat consultations, separated by at least 3 weeks. The overall rate of repeat consultation for a boil or abscess during follow-up was 107.5 (95% CI = 105.6 to 109.4) per 1000 person-years.

In the multivariable analysis there was no evidence of a clinically-relevant interaction between age and sex (Table 3). Obesity (relative risk [RR] 1.3, 95% CI = 1.2 to 1.3), diabetes (RR 1.3, 95% CI = 1.2 to 1.3), smoking (RR 1.3, 95% CI = 1.2 to 1.4) and an antibiotic prescription in the prior 6 months (RR 1.4, 95% CI = 1.3 to 1.4) were all independently associated with a repeat

Table 2. Treatment of patients with first presentation for a boil or abscess

Treatment of first abscess or boil	Males, *N* = 51 986, *n* (%)	Females, *N* = 70 487, *n* (%)
Surgical incision and drainage	3976 (7.7)	3633 (5.2)
Proportion treated with antibiotic	36 394 (70.0)	50 033 (71.0)
Flucloxacillin	29 085 (56.0)	37 794 (53.6)
Macrolide	4900 (9.4)	8235 (11.7)
Fusidic acid	2989 (5.8)	4869 (6.9)
Tetracycline	1011 (1.9)	1274 (1.8)
Mupirocin	817 (1.6)	1246 (1.8)
Chlorhexidine	759 (1.5)	1003 (1.4)

consultation for an abscess or boil. The rate of repeat consultation was highest in individuals aged 16–34 years and declined with increasing age. Antibiotic treatment and surgical treatment were not assessed as independent risk factors for recurrence because of the risk of confounding by disease severity (those at greatest risk of recurrent severe disease are more likely to be treated). Furthermore, the estimated rate ratios were not affected by inclusion of antibiotic treatment in the model as a binary variable, as a marker of disease severity. Inclusion of social deprivation (Townsend score) or year of first consultation did not impact on the estimated rate ratios.

DISCUSSION

Summary
In this large study of patients attending primary care, 10% reconsulted for a boil or abscess at least once within 1 year of diagnosis. Infections were more common in female patients but followed a marked age-distribution in both sexes, with the greatest burden of disease in socially-deprived young adults. Factors independently associated with repeat consultation for boil or abscess were obesity, diabetes, chronic skin disease, current smoking, and antibiotic use in the 6 months prior to the initial consultation.

Strengths and limitations
This study's strengths lie in its scale and the fact that the dataset is broadly nationally representative, containing the medical records of approximately 6% of the UK population.[17] The limitations relate to the fact that data were recorded for patient management and not research. Read Codes were used to identify patients consulting for a boil or abscess. However, some GPs may prescribe an antibiotic without recording a diagnostic code, thereby underestimating incidence.

The actual incidence of recurrent disease in the community may have been higher because patients with a boil or abscess could attend an urgent care centre or go directly to accident and emergency for treatment. First recurrence was measured only and some patients will have multiple episodes of recurrent boil. By using an arbitrary cut-off value of 3 weeks to distinguish between people with a second (recurrent) infection and those with a prolonged first infection, some patients may have been misclassified, potentially biasing estimates of the recurrence rate.

Comparison with existing literature
Boils and abscesses are generally thought to

Table 3. Poisson regression model of the relationship between clinical and demographic risk factors and consultation for recurrent boil or abscess, 1995–2011

Factors associated with recurrent diagnosis	Crude rate per 1000 person-years (95% CI)	Unadjusted analysis IRR (95% CI)	Adjusted analysis[a] IRR (95% CI)
Mean age, years (SD)	41 (20.1)	41 (19.0)	
Follow-up time, person-years	30 2257	416 556	
Age, years			
16–24	122.2 (116.4 to 128.3)	1	1
25–34	127.6 (122.8 to 132.6)	1.0 (1.0 to 1.1)	1.0 (0.9 to 1.1)
35–44	121.6 (117.2 to 126.2)	1.0 (0.9 to 1.1)	0.9 (0.9 to 1.0)
45–54	106.9 (102.2 to 111.9)	0.9 (0.8 to 0.9)	0.8 (0.8 to 0.9)
55–64	89.2 (84.2 to 94.4)	0.7 (0.7 to 0.8)	0.7 (0.7 to 0.8)
65–74	78.0 (72.4 to 84.0)	0.6 (0.6 to 0.7)	0.6 (0.6 to 0.7)
75–89	65.9 (59.7 to 72.8)	0.5 (0.5 to 0.6)	0.6 (0.5 to 0.6)
Male	97.3 (94.6 to 100.1)	1	1
Female	115.1 (112.5 to 117.7)	1.2 (1.1 to 1.2)	1.1 (1.0 to 1.1)
BMI, kg/m²			
<30	100.9 (98.6 to 103.2)	1	1
≥30	133.2 (128.8 to 137.6)	1.3 (1.3 to 1.4)	1.3 (1.2 to 1.3)
Diabetes			
No	104.7 (102.7 to 106.7)	1	1
Yes	128.9 (122.9 to 135.2)	1.2 (1.2 to 1.3)	1.3 (1.2 to 1.3)
Skin disease			
No	105.4 (103.3 to 107.5)	1	1
Yes	116.7 (112.2 to 121.5)	1.1 (1.1 to 1.2)	1.1 (1.0 to 1.1)
No prior antibiotics	95.2 (93.1 to 97.4)	1	1
1 course	133.7 (129.1 to 138.4)	1.4 (1.4 to 1.5)	1.4 (1.3 to 1.4)
>1 course	162.0 (152.7 to 171.8)	1.7 (1.6 to 1.8)	1.6 (1.5 to 1.7)
Smoker			
No	97.1 (94.8 to 99.5)	1	1
Yes	135.0 (131.1 to 139.1)	1.4 (1.2 to 1.4)	1.3 (1.2 to 1.4)
P-value (LRT[a])			<0.0001

[a]LRT comparing simple model (age, sex and bmi) to final model. BMI = body mass index. IRR = incidence rate ratio. LRT = Likelihood ratio test

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be more common in males, although there is little published data to support this.[10] This study found that females aged <65 years were much more likely to consult for a boil or abscess than males, with a reversal of this trend in older age groups. This may be partly explained by the increased tendency of female patients to consult their GP,[23] but it is striking that the increased rate of consultation starts in puberty and declines with increasing age and decreasing fertility. This suggest hormonal changes may be important, not only in adolescence but throughout a female's reproductive years.[7] Alternatively behavioural factors such as hair removal through waxing or shaving of non-facial sites could underlie the increased rate of consultation in females. In both sexes increased social deprivation was associated with an increased rate of consultation, and this may indicate that predisposing behaviours and other risk factors such as obesity are socially stratified.

This study found that a substantial proportion of patients re-consult their GP for a further episode of boil or abscess within 1 year of first diagnosis. This is unlikely to represent ongoing treatment of a single infection because consultations were separated by a minimum of 3 weeks. In the UK, the mainstay of treatment for patients with recurrent boils or abscesses if they are colonised with *S. aureus* is decolonisation therapy, based on guidance from the National Institute for Health and Care Excellence (NICE).[10] This treatment to eradicate *S. aureus* carriage has been used effectively in settings such as surgical wards to reduce the risk of postoperative infection.[24] More recently, community studies from the US have shown decolonisation may reduce the risk of recurrent boils and abscesses, particularly when an entire household is treated simultaneously.[14,15] However there is little consensus on how decolonisation should be undertaken in the community or how to manage patients with recurrent boils who remain persistently colonised despite treatment.

The rate of recurrent infection was strongly associated with an antibiotic prescription in the 6 months before the patient's first consultation for a boil or abscess, which may reflect that individuals who are immunosuppressed are more likely to be prescribed an antibiotic. Alternatively, prior antibiotic treatment may actually increase an individuals' subsequent risk of infection. Previous research has linked recent antibiotic use to community-MRSA (Methicillin-resistant *Staphylococcus aureus*),[25] and it is plausible that antibiotics may encourage carriage of drug-resistant or virulent strains because antibiotics place selective pressure on antibiotic-susceptible bacteria. A further explanation is that individuals with prior antibiotic treatment have a lower threshold for consultation in general, and are therefore more likely to reconsult for a further infection, potentially introducing a spurious association between antibiotic treatment and the rate of repeat consultation. However, the fact that this analysis is restricted to those who had consulted at least once for a boil or abscess decreases the likelihood of this being a major effect.

Implications for research and practice

Boils and abscesses are a common problem and the management of recurrent disease is difficult. There is a clear need for treatment guidance in this area. Modifiable risk factors such as obesity, smoking, and antibiotic overuse are common in the general population and may represent targets for the secondary prevention of boils and abscesses in primary care.

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Appendix 1. Read Code lists for boils and abscesses

Read Code lists were developed to identify a patient with an abscess or boil using a three-stage process. First a word-search was performed on the Read Code dictionary using the terms 'abscess', 'boil', 'furuncle', 'carbuncle' and 'staphylococcal skin'. Next Read Codes identified in the word-search were included as search terms to identify additional codes. Finally, unwanted codes were manually excluded and reviewed and the code list was finalised with all research collaborators including a GP familiar with Vision. Codes were excluded where the diagnosis of boil or abscess was mixed with a diagnosis of cellulitis, as were codes for parionychias and perionychias because patients with these conditions tended to be older and did not reflect the target population of young and healthy individuals with community-onset disease. Read Code lists for boils and abscesses are included.

Read Code	Description
7303100	Drainage of abscess of external ear
7G25011	Drainage of abscess of head or neck
7G25012	Drainage of boil of skin of head or neck
7G25111	Drainage of abscess NEC
7G25112	Drainage of boil of skin NEC
7G25211	Incision of boil of skin of head or neck
7G25311	Incision of boil of skin NEC
7G25700	Incision and drainage of abscess
F4G0200	Orbital abscess
F501111	Abscess external ear
F506.00	Abscess of external ear
H1y1000	Nasal septum abscess
H1y1011	Boil in nose
K310.11	Abscess breast non puerperal
K310400	Acute nonpuerperal breast abscess
K310500	Chronic nonpuerperal breast abscess
K310600	Chronic subareolar nonpuerperal abscess
K318.00	Breast abscess
L450.11	Abscess of nipple — obstetric
L451.00	Obstetric breast abscess
L451000	Obstetric breast abscess unspecified
L451100	Obstetric breast abscess — delivered
L451200	Obstetric breast abscess — delivery with postnatal complication
L451300	Obstetric breast abscess with antenatal complication
L451400	Obstetric breast abscess with postnatal complication
L451z00	Obstetric breast abscess NOS (not otherwise specified)
M00..00	Carbuncle
M000.00	Carbuncle of face
M000000	Carbuncle of ear
M000100	Carbuncle of face (excluding eye)
M000200	Carbuncle of nasal septum
M000300	Carbuncle of temple region
M000z00	Carbuncle of face NOS
M001.00	Carbuncle of neck
M002.00	Carbuncle of trunk
M002000	Carbuncle of chest wall
M002100	Carbuncle of breast
M002200	Carbuncle of back
M002400	Carbuncle of umbilicus
M002500	Carbuncle of flank
M002600	Carbuncle of groin
M002700	Carbuncle of perineum
M002z00	Carbuncle of trunk NOS
M003.00	Carbuncle of upper arm and forearm
M003000	Carbuncle of shoulder
M003100	Carbuncle of axilla
M003200	Carbuncle of upper arm
M003300	Carbuncle of elbow
M003400	Carbuncle of forearm
M003z00	Carbuncle of upper arm and forearm NOS
M004.00	Carbuncle of hand
M004000	Carbuncle of wrist
M004100	Carbuncle of thumb
M004200	Carbuncle of finger

Appendix 1 continued. Read Code lists for boils and abscesses

Read Code	Description
M004z00	Carbuncle of hand NOS
M005.00	Carbuncle of buttock
M005000	Carbuncle of anus
M005100	Carbuncle of gluteal region
M005z00	Carbuncle of buttock NOS
M006.00	Carbuncle of leg (excluding foot)
M006000	Carbuncle of hip
M006100	Carbuncle of thigh
M006200	Carbuncle of knee
M006300	Carbuncle of lower leg
M006400	Carbuncle of ankle
M006z00	Carbuncle of leg (excluding foot) NOS
M007.00	Carbuncle of foot
M007000	Carbuncle of foot unspecified
M007100	Carbuncle of heel
M007200	Carbuncle of toe
M007z00	Carbuncle of foot NOS
M00y.00	Carbuncle of other specified site
M00y000	Carbuncle of head (excluding face)
M00yz00	Carbuncle of other specified site NOS
M00z.00	Carbuncle NOS
M01..00	Furuncle — boil
M010.00	Boil of face
M010000	Boil of ear
M010100	Boil of face (excluding eye)
M010200	Boil of nasal septum
M010300	Boil of temple region
M010400	Boil of external nose
M010z00	Boil of face NOS
M011.00	Boil of neck
M012.00	Boil of trunk
M012000	Boil of chest wall
M012100	Boil of breast
M012200	Boil of back
M012300	Boil of abdominal wall
M012400	Boil of umbilicus
M012500	Boil of flank
M012600	Boil of groin
M012z00	Boil of trunk NOS
M013.00	Boil of upper arm and forearm
M013000	Boil of shoulder
M013100	Boil of axilla
M013200	Boil of upper arm
M013300	Boil of elbow
M013400	Boil of forearm
M013z00	Boil of upper arm and forearm NOS
M014.00	Boil of hand
M014000	Boil of wrist
M014100	Boil of thumb
M014200	Boil of finger
M014z00	Boil of hand NOS
M015.00	Boil of buttock
M015000	Boil of anus
M015100	Boil of gluteal region
M015z00	Boil of buttock NOS
M016.00	Boil of leg (excluding foot)
M016000	Boil of hip
M016100	Boil of thigh
M016200	Boil of knee
M016300	Boil of lower leg
M016400	Boil of ankle
M016z00	Boil of leg (excluding foot) NOS
M017.00	Boil of foot

Appendix 1 continued. Read Code lists for boils and abscesses

Read Code	Description
M017000	Boil of foot unspecified
M017100	Boil of heel
M017200	Boil of toe
M017z00	Boil of foot NOS
M01y.00	Boil of other specified site
M01y000	Boil of head (excluding face)
M01yz00	Boil of other specified site NOS
M01z.00	Boil NOS
M01z.11	Recurrent boils
M01z.12	Boils of multiple sites
M01z000	Multiple boils
M020100	Finger pulp abscess
M03..11	Abscess of skin area excluding digits of hand or foot
M034011	Abscess of dorsum of hand
M034012	Abscess of palm of hand
M03y011	Abscess of scalp
M03z100	Abscess NOS
M09..00	Cutaneous abscess
M090.00	[X]Abscess of face
M091.00	[X]Abscess of neck
M092.00	[X]Abscess of trunk
M092000	[X]Abscess of buttock
M093.00	[X]Abscess of buttock
M094.00	[X]Abscess of limb
M094000	[X]Abscess of axilla
M095.00	Skin abscess