**Estimating primary care attendance rates for fever in infants after meningococcal B vaccination in England using national syndromic surveillance data.**

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**Highlights**

* Small significant rise in fever consultations in vaccine-eligible infants post 4CMenB
* Estimate an additional 1,825 fever consultations annually across England post-4CMenB
* Example of using syndromic surveillance data to assess impact of vaccine programmes

**ABSTRACT**

**Background:** In September 2015, the United Kingdom became the first country to introduce the multicomponent group B meningococcal vaccine (4CMenB) into a national infant immunisation programme. In early clinical trials 51-61% of infants developed a fever when 4CMenB was administered with other routine vaccines. Whilst administration of prophylactic paracetamol is advised, up to 3% of parents may seek medical advice for fever following vaccination. We used research-level general practitioner consultations to identify any increase in attendances for all-cause fever in vaccine-eligible infants following 4CMenB introduction in England.

**Methods:** Consultations for infant all-cause fever in the year following the vaccine introduction were identified from The Phoenix Partnership (TPP) ResearchOne general practice database using Read (CTV3) codes. Average daily consultation rates and incidence rate ratios (IRRs) were calculated for vaccine-eligible age groups and compared to the two years preceding vaccine introduction. The difference between pre- and post-vaccine all-cause fever consultations was estimated.

**Results:** All-cause fever consultations in vaccine-eligible 7-10 week olds were 1.6-fold higher (IRR, 1.58; 95% CI, 1.22-2.05) compared to the two previous years and 1.5-fold higher (IRR 1.47; 95% CI, 1.17-1.86) in 15-18 week-olds. There were no significant differences in 0-6 or 11-14 week-olds. Applying the difference between pre- and post-vaccine consultation rates to the 4CMenB vaccine-eligible age groups across England estimated 1825 additional fever consultations in the year following 4CMenB introduction.

**Conclusions:** We found a small but significant difference in all-cause fever consultation rates in vaccine-eligible infants who would have received 4CMenB with other vaccines.

1. **Introduction**

In September 2015, the United Kingdom (UK) became the first country to introduce the multicomponent group B meningococcal (MenB) vaccine (4CMenB; GSK Biologicals, Rixensart, Belgium) into a national, publicly-funded infant immunisation programme [1-3]. 4CMenB is licensed to protect against MenB, which is the major capsular group causing invasive meningococcal disease (IMD) in infants, young children and adults in Europe and other industrialised countries[1,4,5]. Approximately 600 people a year in England are diagnosed with invasive MenB disease, with around half the cases occurring in children under five years of age, especially infants under one year of age [3].

The UK infant 4CMenB programme was implemented as a two-dose schedule at 2 and 4 months of age, with a booster at 12 months. An opportunistic catch-up programme was also implemented, whereby infants attending for their routine three-month and four-month primary immunisations were offered the vaccine at a 3-4-12 and 4-12 month schedule, respectively. Infants born before 01 May 2015 were not eligible to receive 4CMenB [6,7]. The 4CMenB vaccination has been reported to have been well-accepted with high uptake. Preliminary estimates of vaccine coverage evaluated at the end of July 2017 indicated high uptake with 95.7% coverage for one dose and 87.7% for two doses by six months of age [8].

4CMenB has now been shown to be highly effective, with MenB cases halving in vaccine-eligible infants within 10 months of the programme [9]. However, early clinical trials revealed that 51-61% of infants developed a fever over 38°C after 4CMenB was administered with other routine infant vaccines [10]. Consequently, parents are advised to administer three doses of prophylactic paracetamol after primary immunisation, with the first dose given at the time of vaccination, followed by two additional doses at 4-6 hour intervals [11]. In clinical trials, prophylactic use of paracetamol has been shown to halve the rates of post-vaccination fever without affecting immune responses to any of the vaccine antigens [12].

UK-based studies from Belfast [13], Scotland [14] and Oxford [15] demonstrated an increased risk of attendance at emergency departments for adverse effects, including fever, following 4CMenB vaccination and despite the administration of prophylactic paracetamol [13]. The Scottish study estimated an additional 1,430 annual hospitalisations in the UK as a result of 4CMenB vaccination [14]. In Quebec, Canada, where this vaccine was given with recommendations for prophylactic paracetamol to all children as part of a regional MenB outbreak control campaign, up to 3% of parents still sought medical opinion for fever after 4CMenB [16]. Given that 776,000 infants in the UK are vaccinated with two primary immunisation doses every year [17], this rate of healthcare seeking behaviour reported in Quebec could potentially result in up to 47,000 additional medical attendances for fever per year.

Public Health England (PHE) coordinates a suite of national syndromic surveillance systems including daily consultation data from general practitioners (GPs) [18]. This study aimed to use research-level GP data from this national syndromic surveillance system to identify whether there had been an increase in GP attendances for all-cause fever in infants following 4CMenB introduction in England.

1. **Methods**

Fever consultations were identified using Read (CTV3) codes, a concept-based clinical coding system used by UK GPs [19,20]. Seventy-two Read codes describing fever, pyrexia and febrile convulsions were compiled by the multi-disciplinary research team and used to search GP consultation records (Supplementary Table S1).

The number of daily consultations with any of the pre-defined fever Read codes, by week of age, for children aged under one year for the twelve month period following the introduction of the vaccine (September 01, 2015 to August 31, 2016) was obtained from The Phoenix Partnership (TPP) ResearchOne GP database [21]. The ResearchOne database consists of pseudonymised clinical and administrative data drawn from electronic patient records held on the TPP SystmOne clinical management system (a system used by approximately 2700 (34%) GP practices across England) [22]. Historical data on the number of daily all-cause fever consultations for the twelve month periods (September to August) of the previous two years (2013-14 and 2014-15) were also extracted for comparison. Approval to use these data for this study was obtained from the TPP ResearchOne Project Committee.

We defined specific age-groups of vaccine-eligible and non-eligible infants (Table 1). The catch-up cohort of infants born in May and June 2015 would have been eligible for their first dose at 16 weeks and 12+16 weeks of age, respectively, during September 2015 only (i.e. during one of the 12 months across the 2015-16 surveillance year).

(Suggested position of **Table 1**)

Average daily all-cause and fever consultation rates per 100,000 registered practice population were calculated for these designated age groups for the twelve-month period (September 01, 2015 to August 31, 2016) and the corresponding historical comparison periods.

Incidence rate ratios (IRRs) were calculated using Stata (v13) [23] to compare the all-cause fever consultation rate (by age group) for the twelve month period of September 01, 2015 to August 31, 2016 with the same twelve month periods of the previous two years combined (2013-14 plus 2014-15).

To assess the representativeness of the study population, the age/sex profile of all children aged under five years in the ResearchOne dataset in 2015 was compared to the 2015 mid-year estimated England age /sex profile [17] (Supplementary Fig. S1). The proportion of infants/children in each single year of age was broadly similar between the dataset population and the England population. The ResearchOne dataset infant population was therefore considered generally representative of the England population. This was used to estimate changes in all-cause fever consultations extrapolated to England pre- and post-4CMenB by age group and total all-cause fever consultations in the year following 4CMenB introduction.

1. **Results**
   1. **Study population**

The number of GP practices in the study dataset increased from 358 on September 01, 2013 to 388 on August31, 2016 and the registered practice population of infants (<1 year-olds) increased from 32,181 to 33,831. Infant all-cause daily consultations during September 01, 2013 to August 31, 2016 were consistent, with clear seasonal peaks during each winter period (Fig. 1).

(Suggested position of **Fig. 1**)

* 1. **All-cause fever consultations**

Over the 3-year study period, there were 2,149,987 all-cause infant consultations of which 5,593 were recorded as fever (0.26%). Of these fever consultations, 1,029 (18.4%) were for infants aged 0 to 18 weeks. In this age group, the most frequently recorded clinical diagnoses were “Pyrexia” and “Fever symptoms”, accounting for 44.7% of the fever consultations.

During the year following 4CMenB introduction, there were 414 fever consultations in 0-18 week-olds (0.10% of total, all-cause consultations), with an average of 1.9 daily fever consultations. The average daily all-cause fever consultation rate in 2015-16 was 11.18 per 100,000, higher than in the same periods of 2013-14 and 2014-15 (9.55 per 100,000 and 7.58 per 100,000 respectively) (Fig. 2).

(Suggested position of **Fig. 2**)

* 1. **Incidence Rate Ratios**

In the year following 4CMenB introduction, all-cause fever consultation rates in 7-10 week olds were 1.6-fold higher (IRR 1.58, 95% CI 1.22 to 2.05, p<0.05) compared to previous years and 1.5-fold higher (IRR 1.47, 95% CI 1.17 to 1.86, p<0.05) in 15-18 week-olds, but we found no significant differences in 0-6 or 11-14 week-olds (Table 2).

(Suggested position of **Table 2**)

Applying this difference to the 4CMenB vaccine-eligible age groups (7 to 10 weeks and 15 to 18 weeks) across England would estimate an additional 1,825 (95% CI 628 to 3088) all-cause fever consultations in the vaccine-eligible cohort (Table 3).

(Suggested position of **Table 3**)

1. **Discussion**

We used research-level GP data to examine trends in infant all-cause fever consultations in primary care in the year following the introduction of 4CMenB into the national immunisation programme in England. When compared to the two years prior to vaccine introduction, we found a 1.6-fold increase (IRR 1.58, 95% CI 1.22 to 2.05, p< 0.05) in all-cause fever rates in infants eligible for their first dose of 4CMenB vaccine (7-10 weeks) and a 1.5-fold increase (IRR 1.47, 95% CI 1.17 to 1.86, p< 0.05) in infants aged 15 to 18 weeks eligible for their second routine dose. We found no significant difference in infants too young to be immunised, and those who would have been eligible for their routine three-month vaccinations without 4CMenB. Using our data, we estimate an additional 1,825 (95% CI 628 to 3088) GP consultations for all-cause fever across England in the year following the introduction of the vaccine.

Our results add to the recent reports of increased emergency department attendances in infants following 4CMenB vaccination [13-15]. Analysis of linked routinely collected healthcare data in Scotland found a 10-fold increased risk of hospitalisation in the three days after the first and third infant vaccination dose, with a smaller 2-fold increased risk after the second dose [14]. In Northern Ireland, 86% of infant (n=30) presentations to a regional paediatric emergency department occurred during the period after the first dose of 4CMenB[13]. Our study observed 1.6-fold and 1.5-fold increases in GP all-cause fever consultations in infants eligible for their first dose and third immunisations doses, when they would have received 4CMenB alongside their other routine immunisations.

Our results also fit with pre-licensure clinical trials that reported high rates of post-vaccination fever following 4CMenB administration in infants, particularly when co-administered with other routine vaccinations, with 51-61% infants experiencing a fever >38° C after vaccination [10,12,24]. Prophylactic paracetamol, with the first dose given around the time of vaccination followed by two further doses at 4-8 hour intervals, has been shown to be highly effective in reducing the intensity and duration of post-immunisation fever and other vaccine-associated reactions [25]. There have, however, been concerns that prophylactic paracetamol may impair immune responses to some vaccine antigens [26], although whether this impairment is sufficient to lower protection against disease has not been demonstrated [25]. With 4CMenB, however, a recent prospective randomised controlled clinical trial reported that prophylactic paracetamol was well-tolerated and well-accepted, and significantly reduced the rates of fever and other vaccine-related reactions in infants receiving 4CMenB alongside routine immunisations, without affecting immune responses to any of the vaccine antigens [12].

Consequently, prophylactic paracetamol was recommended for all UK infants receiving their primary immunisations with 4CMenB. Public campaigns and information material were developed for parents and health professionals promoting the benefits of MenB vaccination and advising of the potential side-effects when administered with other routine infant vaccines. These materials included posters, leaflets and web-based information, and recommended prophylactic paracetamol to manage and reduce post-vaccination fever, with parental advice on when to seek medical advice after vaccination [6,11,27].

Although the UK was the first country to introduce 4CMenB into the national immunisation programme, a one-off large, regional MenB immunisation campaign was also implemented in Quebec, Canada in 2014, in response to a higher MenB incidence due to a single MenB strain [16]. Overall, 9% of the vaccinees (aged 2 months to 20 years) experienced fever in the first 48 hours following immunisation [16]. Fever was higher in <2 year-olds (14-15%) and in those who received 4CMenB with other routine vaccinations. The probability of fever within the first 48 hours was reduced by approximately 50% in those who had taken prophylactic antipyretics, particularly among infants who received 4CMenB with other routine immunisations. During this campaign, however, the medical consultation rate was 3% among 2-11 month-olds [16].

Around 776,000 UK infants are eligible for 4CMenB with other routine vaccinations annually [17]. If 3% of parents sought medical advice for fever following 4CMenB vaccination at the recommended 8 or 16 weeks of age, this would translate to 47,000 additional medical attendances per annum. There would also be excess pressures on secondary care, with the potential to overwhelm emergency and urgent care services (especially during periods of existing winter pressures), impacting on waiting times for assessment and treatment for all patients. The current national guidelines for the assessment and initial management of fever in children under 5 years of age recommends that febrile young infants should be thoroughly assessed, with blood cultures and/or lumbar punctures, and receive empiric intravenous antibiotics for suspected sepsis [28]. Therefore, due to this low threshold for interventions in febrile infants, an increased number of infants presenting to emergency departments with fever would be subjected to invasive and costly investigations and treatments in addition to increased hospitalisations and longer in-patient stays [13].Taken together, however, the recently-published rates of emergency department attendances and our estimates of GP attendances are substantially lower than those reported in the Quebec mass immunisation programme. This may be due to the extensive awareness campaigns for new parents and healthcare professionals when 4CMenB was introduced, along with the willingness of parents to administer prophylactic paracetamol with the routine infant immunisations [29], but this is only speculative.

In clinical trials there were very small numbers of infants who experienced febrile convulsions triggered by post-vaccination fever [10,12]. In the three-year period of our study, there were only 12 cases of febrile convulsions recorded for infants aged 0 to 18 weeks accessing GP services. By definition, febrile convulsions are diagnosed between 6 months and 3 years of age. Additionally, parents of infants experiencing convulsions are more likely to attend hospital emergency departments than access primary care services.

Our study analysed data extracted retrospectively from the ResearchOne database, which consists of pseudonymised clinical and administrative data drawn from electronic patient records held on the TPP SystmOne clinical management system. SystmOne is used by approximately 2,700 (34%) GP practices across England. Whilst our dataset consisted of data drawn from 388 practices we found that it was broadly representative of the England population aged under 5 years when compared to the estimated 2015 England population. We therefore felt confident that our results could be extrapolated to a larger population to estimate additional all-cause fever GP consultations. However, inevitably using a sample of GP practices reduces the number of cases available and therefore increases the uncertainty involved in estimating confidence intervals for changes in all-cause fever rates.

Whilst we have found a small increase in all-cause fever consultations following the introduction of 4CMenB, fever in infants may be due to many common infections including upper respiratory tract, gastrointestinal and urinary tract infections, which can be influenced by seasonal variation. We have tried to control for such factors by evaluating vaccine-eligible cohorts over complete 12-month periods. However, there is likely also to be some variation between seasons, for instance influenza severity amongst infants may be higher in some seasons than others. The increased consultation rates may also be due to a heightened threshold of concern given limited experience with the new programme introduction; analysis of additional years post-vaccination, when available, may be useful to determine whether the increased all-cause fever rates reported here continue in later years.

We used Read codes to define fever presenting to primary care. Whilst we used the experience of the study group to select the most appropriate codes for inclusion, GP’s may use other codes to record fever. We are confident, however, our code list encompasses the majority of codes used to record fever presentations. We did not include codes describing post-vaccination adverse reactions as there were none identified which specifically described the symptom of fever. Therefore, it should be emphasised that our study observed an increase in all-cause fever consultations due to a lack of specificity for vaccine reactions.

We have based our analysis on the clinical coding of the finding of fever during the consultation. However, we recognise that fever may not have been the original concern prompting the parent to seek advice. Other symptoms/conditions may also have been present and recorded; however, if the clinician identified and coded a fever, this will have been included in our analyses. This study lacks the ability to interrogate any narrative content in the patient record to assess the purpose of the consultation. There is a reliance on GP coding behaviour, outside of criteria on which they are incentivised to code by payment systems, and it remains unclear how well infant consultations for fever are coded.

Over the period running up to the study guidance has changed regarding GP recording practice; original guidance published in May 2007 was updated in May 2013 [28]. This proposed the traffic light system for identifying risk of serious illness in feverish children, and suggested four data items should always be recorded – temperature, heart rate, respiratory rate, and capillary refill time. The guidance also specifies age-related rates for each variable within the traffic light system. This has led to more systematic monitoring and detection of fever and a progressive change in practice over the period of this study, with new GPs almost universally adopting this approach and a progressive uptake by established practitioners.

The ResearchOne dataset is fully anonymised and for reasons of confidentiality we did not have access to dates of 4CMenB vaccinations and were unable to specifically link 4CMenB vaccination as the cause of fever consultation in individual infants. Additionally, we did not have information on prophylactic paracetamol use in the vaccine-eligible cohorts. It would be useful to determine whether this group presented to their GP with fever despite receiving the recommended prophylactic paracetamol doses after vaccination, whether parents were not aware of the recommendations or opted not to give the medication. This would be possible to explore using a consented cohort study.

In our study population, one group of infants in the catch-up cohort (those born in June 2015) would have been eligible for their first 4CMenB dose at 12 weeks of age in September 2015. These infants would fall into the 11-14 week age group in our results, when they would not routinely have received the vaccine. Since this only represented one out of the 12 months of surveillance for 11-14 week-olds, it is difficult to assess any increased GP attendances in this small catch-up cohort.

In this study we only explored routine GP services: in England, urgent, non-emergency health care advice can be accessed from a range of services including the NHS 111 telephone healthcare advice line; from GP out-of-hours services; community pharmacies; walk-in centres and from hospital emergency departments (EDs) [30]. Some parents of infants with fever following 4CMenB vaccination may seek healthcare advice from this wider range of services. Our estimates of additional fever consultations attending routine GP services are therefore an underestimate of the overall burden of post-vaccination health-care seeking behaviour but are consistent with recent studies showing small but significant increases in emergency department attendances for infants following 4CMenB vaccination [13-15] . Additionally, our study is a further example of how syndromic surveillance data can be used in the assessment of vaccination programmes [31].

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**Conflicts of interest:** The authors declare that they have no conflicts of interest.

**Ethics approval:** Not required.

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**Table 1** Vaccine eligible and non-eligible age groups included in the study

|  |  |
| --- | --- |
| Age group (weeks) | 4CMenB vaccine eligibility |
| 0 to 6 | Pre-vaccination infants |
| 7 to 10 | Eligible for first routine dose |
| 11 to 14 | Eligible for second routine immunisations (should not include 4CMenB) |
| 15 to 18 | Eligible for third immunisations (should include second 4CMenB dose in the routine cohort) |

**Table 2** Fever consultation incidence rate ratios (IRR) for the period September 01, 2015 to August 31, 2016 compared to the two year period September 2013 to August 2015

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Age group (weeks) | Fever consultations | | Population | | Incidence Rate Ratio (95% CI) |
| Pre-vaccine a | Post-vaccine b | Pre-vaccine c | Post-vaccine c |
| 0 to 6e | 158 | 80 | 58095 | 30186 | 0.97 (0.74, 1.28) |
| 7 to 10f | 137 | 113 | 59789 | 31130 | **1.58d (1.22, 2.05)** |
| 11 to 14g | 145 | 86 | 61855 | 32359 | 1.13 (0.86, 1.49) |
| 15 to 18h | 175 | 135 | 62355 | 32625 | **1.47 (1.17, 1.86)** |
| 0 to 18i | 615 | 414 | 242094 | 126300 | **1.29 (1.14, 1.46)** |

a September 2013 – August 2015.

b September 2015 – August 2016.

c Sum of average populations.

d Significant results shown in bold text (p<0.05).

e Pre-vaccine (not eligible for vaccination).

f Eligible for 1st 4CMenB routine dose.

g Not eligible for vaccination.

h Eligible for 2nd 4CMenB routine dose.

i Sum of age groups.

**Table 3** Difference between pre- and post-vaccination fever consultation rates in the study population and estimated additional fever consultations in England vaccine-eligible population pre- and post-vaccination introduction

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Age group (weeks) | Fever consultation rate per 100,000a | | | England population | Daily difference c | Total differenced |
| Pre- | Post- | Difference b |
| 0 - 6e | 9.19 | 8.77 | -0.42 | 49910 | -0.21 | -76 (-436, 470) |
| 7 - 10f | 7.64 | 12.54 | 4.90 | 51081 | 2.50 | 915 (314, 1501) |
| 11 - 14g | 7.93 | 9.09 | 1.16 | 52828 | 0.61 | 224 (-215, 751) |
| 15 - 18h | 9.49 | 14.16 | 4.67 | 53167 | 2.48 | 909 (314, 1587) |
| 7-10 + 15-18i | 17.13 | 26.70 | 9.57 | 104248 | 4.99 | 1825 (628, 3088) |

a Average daily fever consultation rate.

b Difference in average daily fever consultation rate between pre- and post-vaccine period.

c Difference in average daily fever consultation extrapolated to England population.

d Total difference in fever consultations post vaccine period extrapolated to England population (95% CI estimated using IRR CI).

e Pre-vaccine – not eligible for vaccination.

f Eligible for 1st 4CMenB routine dose.

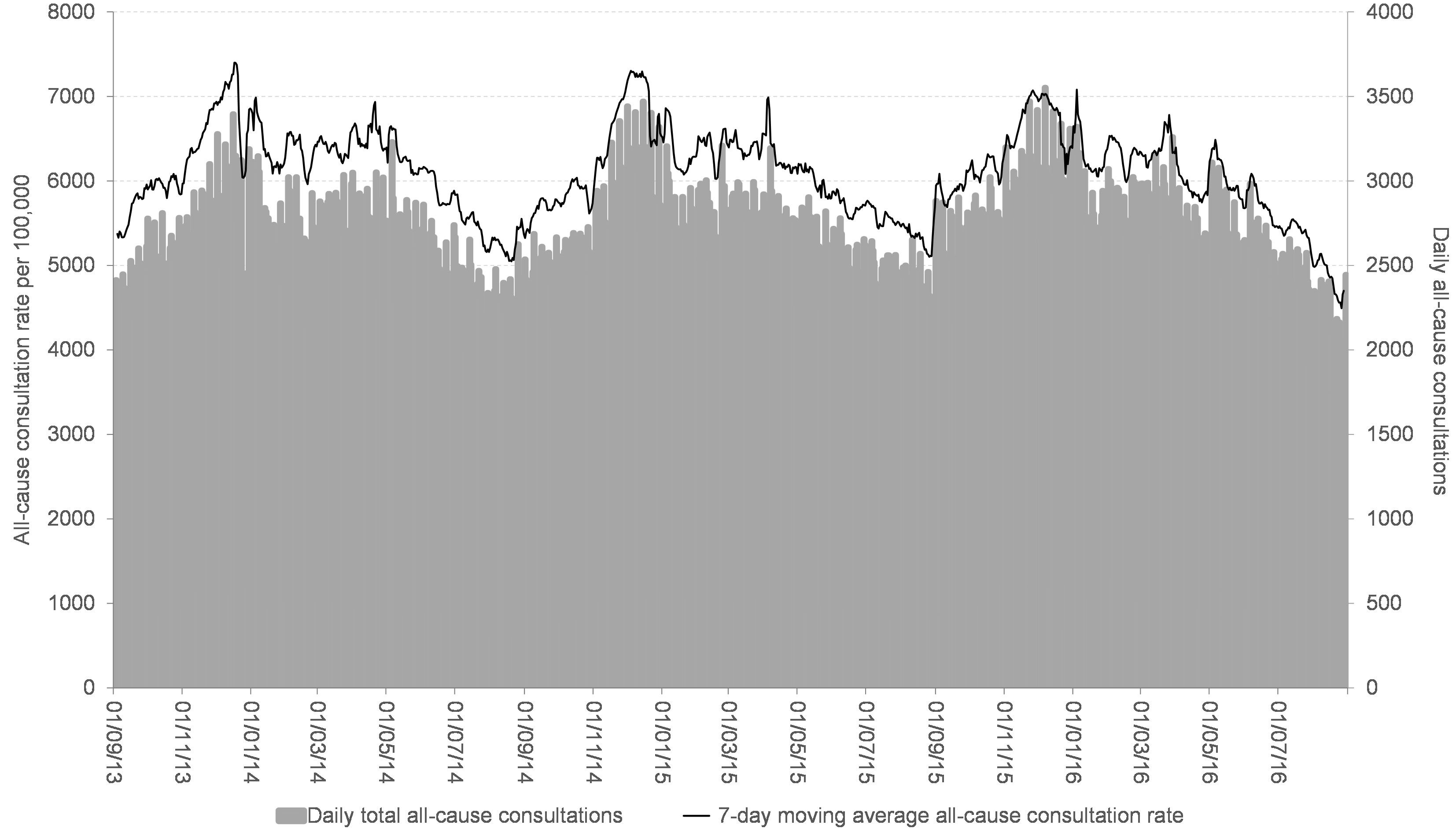
g Not eligible for vaccination.

h Eligible for 2nd 4CMenB routine dose.

i Sum of vaccine eligible age groups.

**FigureS**

**Fig. 1.** Daily all-cause general practitioner consultations and all-cause consultation rate per 100,000 registered population (shown as a 7 day moving average adjusted for bank holidays) for infants aged under 1 year, September 01, 2013 to August 31, 2016.



**Fig. 2.** Average daily all-cause fever consultation rates (per 100,000 registered population aged 0 to 18 weeks) September 01, 2015 to August 31, 2016 compared to the same twelve month periods over 2013-14 and 2014-15.

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**Supplementary material**

**Supplementary Fig. S1.** Study dataset (TPP ResearchOne GP database) population under 5 age/sex profile compared to England population under 5 age/sex profile (Office for National Statistics) by single year of age, 2015.

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**Supplementary Table S1.** CTV3 Read codes used to define fever consultation.

| **CTV3 Code** | **Code description** |
| --- | --- |
| 2827. | O/Ea - febrile convulsion |
| 2E1.. | O/E - fever - general |
| 2E12. | O/E - fever examination – NADb |
| 2E13. | O/E -pyrexia of unknown origin |
| 2E1Z. | O/E - fever - general NOSc |
| 2E3.. | O/E level of fever |
| 2E34. | O/E - temperature elevated |
| 2E35. | O/E - hyperpyrexia - greater than 40.5 degrees Celsius |
| 2E3Z. | O/E level of fever NOS |
| 2E4.. | O/E - character of fever |
| 2E41. | O/E - fever - acute rise |
| 2E42. | O/E - fever - gradual rise |
| 2E43. | O/E - fever - continuous |
| 2E44. | O/E - fever - remittent |
| 2E45. | O/E - fever - intermittent |
| 2E46. | O/E - staircase fever |
| 2E47. | O/E - fever - irregular |
| 2E4Z. | O/E - fever character NOS |
| 2EZ.. | O/E - fever NOS |
| dp... | Febrile convulsions |
| Q4740 | Newborn dehydration fever |
| Q4743 | Transitory fever of newborn |
| R0030 | [D]d Convulsions, febrile |
| R006. | [D]Fever of unknown origin |
| R0060 | [D]Chills with fever |
| R0061 | [D]Hyperpyrexia NOS |
| R0062 | [D]Fever NOS |
| R0063 | [D]Persistent fever |
| R006z | [D]Pyrexia of unknown origin NOS |
| X006h | Familial febrile convulsions |
| X76Df | Has a temperature |
| X76Di | Pyrexia |
| X76Dk | Pyrexia symptoms |
| X76Dl | Fever symptoms |
| X76Dq | Pattern of fever |
| X76Dr | Phase of fever |
| X76Ds | Rising phase of fever |
| X76Dt | Plateau phase of fever |
| X76Dv | Prolonged fever |
| X76Dw | Slightly remittent fever |
| X76E4 | Biphasic fever |
| X76E5 | Swinging fever |
| X76EA | Spiking fever |
| X76EC | Fever defervescence |
| X76EE | Central fever |
| Xa3DL | High temperature |
| Xa9sd | Low grade pyrexia |
| Xaa6X | H/Oe: fever |
| XaB1J | Recurrent febrile convulsion |
| XaBf3 | Pyrexia postprocedure |
| XaIO1 | Cough with fever |
| Xalew | H/O: febrile convulsions |
| XaNSo | Green traffic light - low risk of serious illness (Feverish illness in children 2007) |
| XaNVy | Amber traffic light - intermediate risk of serious illness (Feverish illness in children 2007) |
| XaNVz | Red traffic light - high risk of serious illness (Feverish illness in children 2007) |
| XE1gR | [D]Fever NEC |
| XE1iC | Examination of fever |
| XE1je | Febrile convulsion (& O/E) |
| XE1kG | O/E - hyperpyrexia (& > 40.5 o CEL) |
| XM03l | Febrile convulsion |
| XM05S | Pyrexia of unknown origin |
| XM05T | Acute rise of fever |
| XM05U | Gradual rise of fever |
| XM05V | Continuous fever |
| XM05W | Remittent fever |
| XM05X | Intermittent fever |
| XM05Y | Staircase fever |
| XM05Z | Irregular fever |
| XM09q | O/E - fever |
| XM0yv | Pyrexia [D] |
| XM0yw | Hyperpyrexia [D] |
| XM11j | O/E - hyperpyrexia |

a On examination

b Nothing abnormal detected

c Not otherwise specified

d Diagnostic code

e History of