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**Pregnancy related telephone consultations to an out-of-hours provider: a retrospective database study.**

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## **Introduction**

There is a marked increase in the number of General Practitioner (GP) organisations across Europe providing out of hours (OOH) emergency primary care services whereby GPs and/or Nurse Practitioners (NPs), provide telephone consultations to patients (Giesen et al., 2007a, McKinstry et al., 2009, Derkx et al., 2009). This has been an important development to manage the rising demand for health care with increasingly scarce resources (Blank et al., 2012, Purc-Stephenson and Thrasher, 2010) and also reduces unnecessary attendance at accident and emergency departments or home visits by GPs (Bunn et al., 2005, Roberts et al., 2008).

There is a wealth of research exploring issues around telephone consultations relating to safety (Huibers et al., 2011) and the appropriateness of advice offered (Blank et al., 2012). The effectiveness of the nurse compared to the GP in telephone triage has also been investigated (Bunn et al., 2005). In addition, issues arising from the use of telephone triage have been explored in specific conditions such as mental health (Sands et al., 2013) and musculoskeletal disorders (Chetty, 2012). However, there has been nothing written about telephone triage in GP OOH services for pregnancy related conditions.

Throughout the UK, and in most high resource countries, telephone consultation by midwives is an integral part of maternity services. Pregnant women who are 'booked in' for maternity care generally have telephone access to community midwifery advice during office hours and emergency advice from the labour ward twenty four hours a day, every day (Cherry et al., 2009). 'Booking' in the UK is recommended to take place by 10 weeks of pregnancy and at the latest is expected to have occurred by 13 weeks (NICE, 2008). In addition, some areas offer alternative telephone triage services with additional focus on consultation (Kennedy, 2007, Cherry et al., 2009, Nolan et al., 2007). However, their provision can be restricted, for example services only for women over twenty weeks' gestation (Nolan et al., 2007) or only providing services during office hours (Kennedy, 2007, Cherry et al., 2009). Despite current service provision, anecdotal evidence suggests that pregnant women also access OOH service providers, but the nature and volume of this contact is not well known.

In this study we describe the characteristics of telephone consultation calls made by pregnant women to an OOH service run by a GP co-operative and also to compare and contrast the differences between the way the calls were handled by GPs and Nurse Practitioners (NPs). The NPs were qualified and registered nurses experienced in primary care or emergency care settings and none were practicing midwives.

## **Methods**

### **Design**

A retrospective database analysis was undertaken on the written summary case notes of calls recorded at an OOH co-operative providing primary care across an area of England and the Welsh borders over a twelve month period (January to December 2011). This service covers approximately 600,000 patients over two counties. The OOH times are typically 18.00 to 08.00 Monday to Friday and all day Saturday, Sunday and Public Holidays. The written records were authored into a dedicated computer system by either the GP or NP who managed the telephone consultation. A computer based clinical decision support system, which is frequently used by nurses (Bunn et al., 2005) was not used in this context. The outcome of the call involved either offering advice or a face-to-face consultation with the on call GP or NP at a health centre or a home visit.

The cases notes were not problem coded, therefore a text search of the case notes was conducted using the key words 'pregn\*' '/40' and excluding 'not pregn\*' - 3371 calls were identified, these were then screened by one of the authors (TS) for relevance (that the call was by, or on behalf of, a woman who was pregnant) and 2022 calls that directly related to pregnancy were analysed.

### **Data Analysis**

Descriptive statistical summaries were calculated using STATA13 and are presented for the variables that were routinely collected in the database including: patient's age, day of the week of the call, duration of call, outcome of the call (advice, base visit or

home visit) and whether the clinician was a GP or a NP. Data were compared using chi squared test. In addition, the summary electronic case notes were coded by gestational age and reason for call.

Ethics approval was granted by the Health Studies Research Ethics Panel at the University of Bradford.

## **Results**

In the twelve month period, January to December 2011, there were 128717 telephone consultations involving 102 General Practitioners (GP) and 36 Nurse Practitioners (NP), of which 2022 calls were directly related to pregnancy (1.6%). On average, there were 167 pregnancy related calls per month, with the most being January (224 calls) and the least in June (140 calls). There was at least one call on almost every day of the year. The majority of calls took place on Saturday or Sunday (29.6% and 24.4% respectively) (*Table 1*).

The majority of the calls, 47.6% (n=963), were from women who were under 13 weeks' gestation. 29.3% (n=593) were from women between 14 to 27 weeks' gestation and 15.5% (n=313) were 28 weeks' gestation or more. In addition, there were 153 calls (7.6%) where the gestation was not recorded, calls handled by GPs were more likely not to have the gestation recorded compared to NPs (9.4% vs 5.5%). Overall, the case notes did not have any systematic or common pattern to them, with a wide range in the degree of detail recorded.

### *Reason for contact*

The reasons for contacting the OOH service are summarised in table 2. A number of pregnant women described more than one reason for calling and the themes differed depending on the gestational age of the caller (*Figure 1*).

### *First trimester (<13 weeks' gestation)*

Vaginal blood loss (40% n=388/963) and abdominal pain (39% n=378/963) were the most common reasons for contacting the OOH service in the first trimester. Almost half (46%, n= 175/378) of the women in the first trimester who had abdominal pain

also reported vaginal bleeding. The next most common reason for contacting the service in the first trimester was nausea and/or vomiting (15.4%, n=149/963), 29 of these callers also complained of diarrhoea.

#### *Second trimester (13 -27 weeks' gestation)*

Abdominal pain was also the most common reason for making contact in the second trimester, comprising 23.9% (n=142/593) of calls. Of the women who complained of abdominal pain, 21.1% (n=30/142) also had symptoms of nausea and/or vomiting, 14.1% (n=20/142) reported bleeding, and 12.0% (n=17/142) had urinary symptoms such as dysuria or frequency of micturition. Nausea and/or vomiting accounted for a further 17.2% (n=102/593) of calls and the third most common reason for contacting the service was for symptoms of a cough or cold, such as raised temperature, sore throat or cough at 16.2% (n=96/593)

#### *Third trimester (Greater than 27 weeks' gestation)*

In the third trimester, the most common reason for making contact was for viral symptoms associated with a cough or cold (18.2% n=58/313). This was followed by abdominal pain (15.6% n=50/313) and nausea and vomiting (13.1% n=42/313). Forty eight percent (n=20/42) of callers who had symptoms of nausea and vomiting also had either diarrhoea or viral symptoms.

### **Comparison of GPs versus NPs**

The duration of calls differed depending on whether the call was managed by a GP or NP (GPs 8.8 minutes vs NPs 9.7 minutes,  $p < 0.001$ ) (Table 1). In terms of call outcome, GPs were more likely to offer advice only (GPs 71.0% vs NPs 61.0%,  $p < 0.001$ ), whilst NPs were more likely to arrange a base-visit (GPs 25.7% vs NPs 36.8%) (Figure 2). There was no significant difference in the age of callers by clinician type, nor was there any significant difference in gestational age.

### **Discussion**

#### **Summary of main findings**

This is the first study to describe the nature of pregnancy related calls made to an OOH service. We analysed a large number of telephone consultations over a one year period and found that, in general, the calls reflected the lack of availability of specific maternity services early in pregnancy. However, it also found that some women access the OOH service, with pregnancy related conditions, later in pregnancy when they should have 24 hour access to maternity service consultation. In addition this study adds to the growing evidence that GPs and NPs handle telephone consultations differently, with respect to both the length of call and the disposal of calls.

The majority of calls related to the period in pregnancy when a woman may not yet have been 'booked' with the maternity services and therefore not yet had contact with a midwife. The most common reasons for the calls reflect the main concerns of women at this stage of pregnancy, threatened miscarriage (Saraswat et al., 2010) and morning sickness (Davis, 2004). The proportionally higher number of calls in the first trimester arguably reflects the lack of availability of other sources of support prior to 'booking' with maternity services. Around the UK, early pregnancy units are integrated into gynaecology services within the NHS. However, women cannot generally access these directly, having to be referred by a health professional or via accident and emergency (The Association of Early Pregnancy Units, 2013).

This study found that although many of the calls later in pregnancy were related to general health issues (and therefore appropriate for a primary OOH provider) a substantial number of women called the OOH service with what appeared to be pregnancy related concerns, including abdominal pain and bleeding. By this point, these women should have been 'booked' in for maternity care and informed about specific midwifery telephone consultation services available in their area. These may be midwifery led telephone consultation based in the community or labour ward areas (Cherry et al., 2009), or specific initiatives designed in local areas (Kennedy, 2007, Cherry et al., 2009, Nolan et al., 2007). Once booked, women should therefore have telephone access to midwives twenty four hours a day (Cherry et al., 2009). Despite this, women still appear to phone OOH primary care services rather than accessing specific midwifery services when they experience pregnancy related concerns.

A number of studies have shown that telephone consultation is not only safe, but time efficient and cost effective (Pinnock, 2003, Lattimer et al., 1998) and there has been a burgeoning of this form of health care provision. There is, however, other evidence which suggests that aspects of telephone consultation are not always safe, with concerns that the urgency of cases can be underestimated and a time delay can negatively influencing outcome (Huibers et al., 2011). In particular, there appears to be a low incidence of patients phoning who are high risk and require urgent care. Consequently, there may not be the expertise to recognise these patients (Huibers et al., 2011). Blank et al. (2012) undertook a systematic review of 54 studies, examining the effectiveness and appropriateness of telephone triage decisions. A median of 77% of telephone triage decisions were found to be appropriate in relation to the advice offered or referral to the right level of service in a timely manner. This suggests that 23% of calls were inappropriate and potentially unsafe.

The findings from this study suggest that NPs and GPs triage in a different way with nurses offering more follow up visits and GPs more advice. Giesen et al. (2007a) undertook a study examining a GP co-operative OOH service in the Netherlands and found that nurses providing telephone triage could potentially be less safe than doctors. In addition, a patient evaluation of the same service found lower levels of satisfaction with some aspects of the nurse consultation; the effectiveness of the advice or the reassurance offered (Giesen et al., 2007b). **In contrast, other studies have shown greater satisfaction and high quality of care with NP consultations, suggesting that there are benefits in expanding the role of NPs within primary care as whole (Seale et al., 2005, Horrocks et al., 2002).** The skills required for effective telephone consultation in the health context are considered to be clinical expertise and communication skills essential for a role where no visual cues are available (Purc-Stephenson and Thrasher, 2010) as well as assessing clinical urgency and history taking (Nolan et al., 2007). **Although many of these skills are generic, there is no current evidence on whether NPs need specific skills when handling pregnancy related telephone consultations.**

This study found that the case notes did not have any systematic or common pattern to them which may suggest that the calls were not handled in a structured way. Derkx et al. (2009) assessed the quality of communication skills of telephone

consultants working in 17 OOH centres in the Netherlands. They found that calls were often handled in an unstructured way, omitting considerations such as patients' personal situations or expectations. Advice was frequently offered without checking for patient understanding and agreement. They concluded that a structured approach focusing on active listening would improve the effectiveness and safety of the service. Other studies have shown that when a decision support system and/or structured approach is taken, then telephone consultations are both an efficient and safe alternative to face to face review (Lattimer et al., 1998, Thompson 1999). There are computer based clinical decision support systems available which facilitate the user to structure a telephone consultation (Bunn et al., 2005) and may be valuable for OOH primary care services.

### **Strengths and limitations**

Our study provides a summary of the main reasons for pregnant women contacting OOH services from a large cohort. It also provides a valid comparison between how GPs and NPs handle such calls. As the case notes were not problem coded and a text search was conducted, it is not certain that all pregnancy related entries were captured. As we were unable to determine the outcome of the pregnancy, it was also not possible to assess the appropriateness of the outcome of the consultations. There were no the data to determine patient satisfaction of the consultation.

### **Implications for research and/or practice**

There is no universal access to direct pregnancy related support in early pregnancy, even though the evidence suggests that, where they exist, these services are well received and cost effective (Kennedy, 2007). An expansion of 24 hour maternity telephone services, or greater links between primary care providers and maternity services during the first trimester, may provide improved care and experience for women during this vulnerable time.

There is a clear need for women in the latter stages of pregnancy to be fully informed of the availability of 24 hour advice and support from specialist maternity services. There are safety implications for women contacting a generalist service with acute

pregnancy related problems such as vaginal bleeding, abdominal pain or reduced fetal movements.

More research is required to determine the safety of OOH telephone consultations, in particular in relation to the differences in call handling by GPs and NPS. It would be useful to be able to link the calls to ongoing clinical outcomes. Further analysis of the skills required by nurses prior to performing telephone consultations with pregnant women would be beneficial.

## **Conclusions**

The majority of OOH pregnancy consultations relate to the first trimester of pregnancy and reflect the fact that women do not have access to 24 hour maternity services in early pregnancy. Calls later in pregnancy, suggest that women need to be made more aware of the availability of 24 hour maternity service advice and support. GPs and NPs conclude calls differently; it remains unclear whether these differences impact on clinical outcome.

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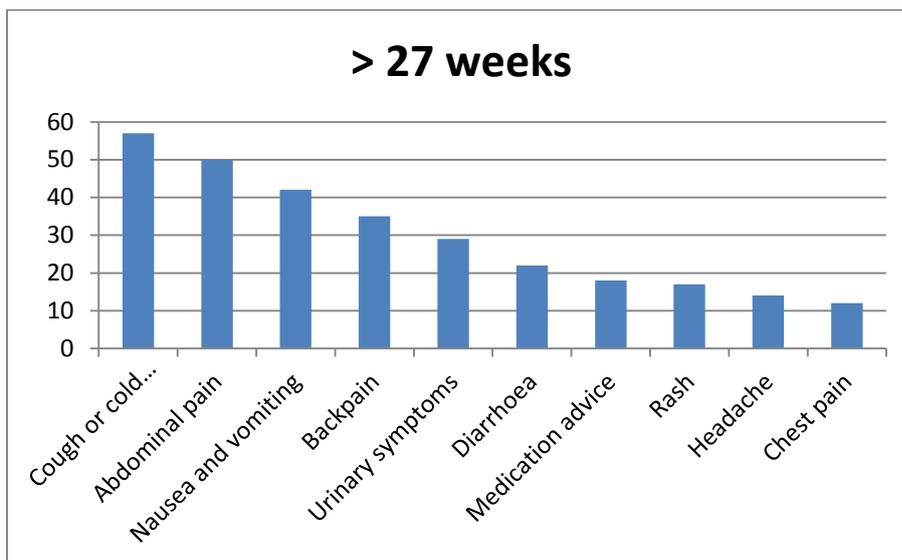
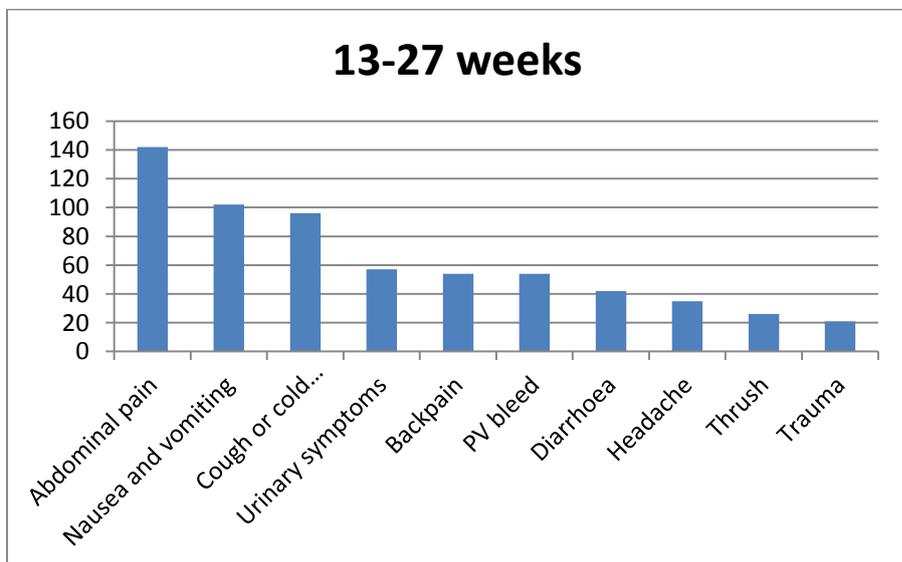
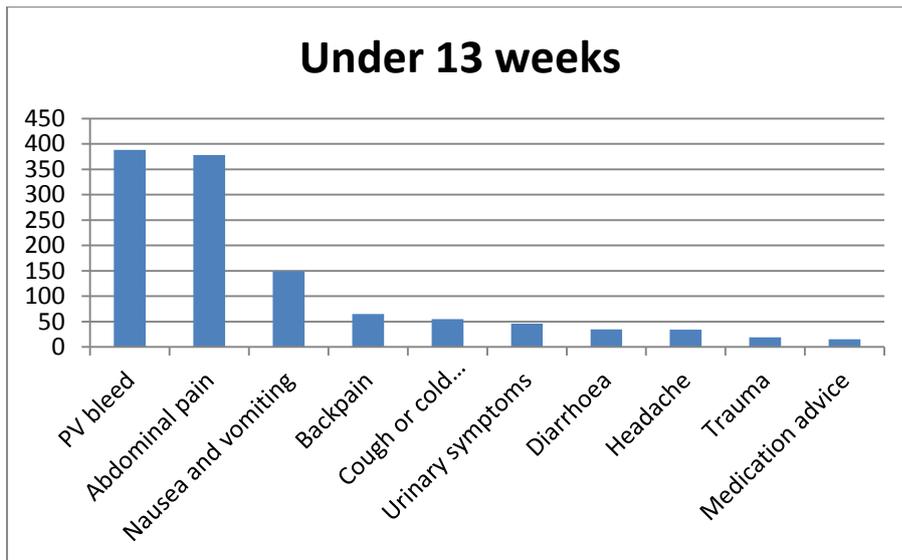
## Tables

Characteristic	N (%) of ALL calls	N (%) of GP calls	N (%) of NP calls	p-value
Number of calls	2022	1062	961	
<b>Age of caller</b>				
Age <20	240 (12%)	124 (12%)	1116 (12%)	p=0.352
Age 20-34	1508 (75%)	783 (72.4%)	725 (74.7%)	
Age 35 +	274 (14%)	155 (15%)	119 (12%)	
<b>Gestational age of caller</b>				
Less than 13 weeks gestation	963 (47.6%)	498 (46.9%)	465 (48.4%)	p=0.005
13-27 weeks' gestation	593 (29.3%)	294 (27.7%)	399 (31.2%)	
Greater than 27 weeks gestation	313 (15.5%)	170 (16.0%)	143 (14.9%)	
Gestation unknown	153 (7.6%)	100 (9.4%)	53 (5.5%)	
<b>Timing of call</b>				
Weekend	1093 (54.1%)	596 (56.1%)	497 (51.8%)	p=0.109
Week day after hours	738 (36.5%)	368 (34.7%)	370 (38.5%)	
Public holiday	191 (9.5%)	98 (9.2%)	93 (9.7%)	
Mean Duration of call in minutes (SD)	8.8 (4.8)	8.0 (4.5)	9.6 (5.0)	p<0.001
<b>Call outcome</b>				
Advice Only	1340 (66.3%)	754 (71.0%)	586 (61.0%)	p<0.001
Base visit	626 (31.0%)	273 (25.7%)	353 (36.8%)	
Home visit	56 (2.8%)	35 (3.3%)	21 (2.2%)	

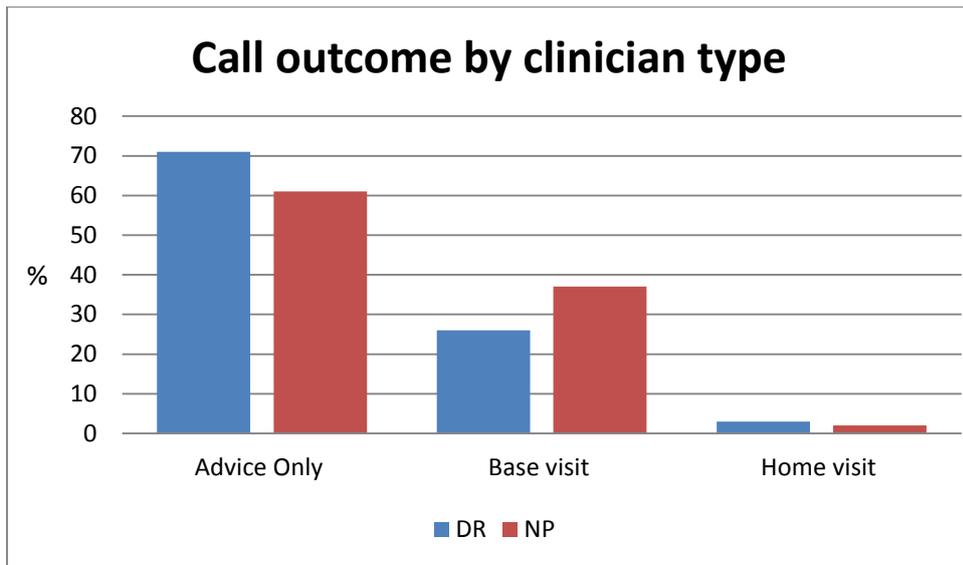
**Table 1** Characteristics of callers to the OOH service and differences between GP and NP response.

Reason for call	Number of calls				
	All	<13 weeks	13-27 weeks	>27 weeks	Gestation unknown
Abdo pain	612	378	142	50	42
PV bleed	483	388	54	8	33
Nausea and vomiting	313	149	102	42	20
Cough or cold symptoms	222	55	96	57	14
Backpain	160	65	54	35	6
Urinary symptoms	136	46	57	29	4
Diarrhoea	102	35	42	22	3
Headache	86	34	35	14	3
Medication advice	63	15	15	18	15
Trauma	55	19	21	10	5
Thrush	46	10	26	7	3
Rash	45	7	16	17	5
Advice (other than medication)	33	15	7	7	4
Dizzy/faint	31	6	19	3	3
Constipation	27	16	5	3	3
Mental health	26	6	11	3	6
Chest pain	22	2	7	12	1
Leg pain	22	3	11	7	1
Shortness of breath	18	2	9	7	0
Reduced movements	13	0	6	6	1

**Table 2** 20 most common reasons for calling the OOH, by trimester



**Figure 1** Ten most common reasons for calling, by gestational age



**Figure 2** Call outcome by clinician type

