



# Evaluation of an unscheduled care model delivered by advanced nurse practitioners in a primary-care setting

**Calum F Leask** 

Aberdeen City Health and Social Care Partnership, Aberdeen, UK  
Health Intelligence Department, NHS Grampian, Aberdeen, UK

**Heather Tennant**

Aberdeen City Health and Social Care Partnership, Aberdeen, UK

## Abstract

**Background:** Considering new models of delivery may help reduce increasing pressures on primary care. One potentially viable solution is utilising Advanced Practitioners to deliver unscheduled afternoon visits otherwise undertaken by a General Practitioner (GP).

**Aims:** Evaluate the feasibility of utilising an Advanced Nurse Practitioner (ANP) to deliver unscheduled home visits on behalf of GPs in a primary care setting.

**Methods:** Following a telephone request from patients, ANPs conducted unscheduled home visits on behalf of GPs over a six-month period. Service-level data collected included patient-facing time and outcome of visits. Practice staff and ANPs participated in mind-mapping sessions to explore perceptions of the service.

**Results:** There were 239 accepted referrals (total visiting time 106.55 hours). The most common outcomes for visits were 'medication and worsening statement given' (107 cases) and 'self-care advice' (47 cases). GPs were very satisfied with the service (average score 90%), reporting reductions in stress and capacity improvements. Given the low referral rejection rate, ANPs discussed the potential to increase the number of practices able to access this model, in addition to the possibility of utilising other practitioners (such as paramedics or physiotherapists) to deliver the same service.

**Conclusions:** It appears delivering unscheduled care provision using an ANP is feasible and acceptable to GPs.

## Keywords

advanced and specialist practice, community, evaluation research, home care, innovation and improvement

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## Corresponding author:

Calum F Leask, Aberdeen City Health and Social Care Partnership, Marischal College, Broad Street, Aberdeen AB10 1AB UK.  
Email: [calum.leask@nhs.net](mailto:calum.leask@nhs.net)

## **Background**

Globally, there is an increasing ageing population, with the United Nations recently projecting a 56% growth in individuals over the age of 60 between 2015 and 2030 (United Nations, 2015). This is particularly resonant in Scotland, with more recent estimates showing increases in the 45–64 and over-75 age groups (10% and 16% respectively) over the last decade (National Records of Scotland, 2018). The association between an ageing society and disease prevalence is well established, with one in two Scots having a minimum of one morbidity by the age of 50 (Barnett et al., 2012). The result of this is increased pressure on primary care, particularly in General Practice, where these issues are escalated through challenges retaining General Practitioners (GPs). Indeed, the proportion of GPs between the ages of 55 and 64 leaving General Practice doubled from 2005 to 2014 (Baird et al., 2016). Therefore, there is a need to test new ways of delivering primary care to address these challenges.

The recently published general medical services contract in Scotland outlined priorities to transform how services are delivered in primary care and highlighted urgent care services as an area of opportunity (Scottish Government, 2018). Unscheduled care models, that utilise an Advanced Practitioner resource as the initial response for home visiting, have shown promise in several pilot sites across Scotland. For example, a newly implemented Paramedic support service in Inverclyde demonstrated a 60% reduction of home visits completed by GPs, therefore increasing their capacity to conduct other tasks within General Practice, ultimately reducing the pressures on primary care (Scottish School of Primary Care, 2018). As a result, it may be valuable to consider other approaches to delivering unscheduled care in order to understand the impact these may have in a localised context.

This paper describes the evaluation of a new model of delivering unscheduled primary care in Aberdeen City.

## **Method**

### *Design*

The ‘West Unscheduled Care’ project was launched in November 2017 as part of Aberdeen City Health & Social Care Partnership’s programme of activity to transform services in the city. Following a patient request for a home visit, their GP triaged the call to the Grampian Medical Emergency Department (G-MED), who would either accept or reject referrals. Prior to the commencement of this service, GPs would typically visit patients themselves. Here however, patients would be visited by an Advanced Nurse Practitioner (ANP) based within G-MED, with a driver transporting the ANP to patients’ homes. The ANPs were highly experienced professionals educated to Masters’ Level in Advanced Practice. All had a minimum of 10 years’ experience before joining G-MED through a mix of both community and acute backgrounds. As clinical leaders, they could prescribe medications in addition to managing referrals, admissions and discharge of appropriate cases. A recent systematic review found that ANPs demonstrate equal or better outcomes than Physicians for indicators including cost, patient satisfaction and physiological measures (Swan et al., 2015). Following the home visit, the ANP would contact the GP if required (for example in case of a hospital admission) and complete all necessary caseload documentation (described in the service descriptive data section).

This service was available to seven General Practices within the West Locality of Aberdeen City. The rationale for this was twofold: (a) it contains a higher proportion of

elderly patients compared to the other localities within the city; and (b) it has a large geographical catchment area (approximately 140 square miles), meaning home visits would require a considerable amount of travel time to complete. Inclusion criteria were patients unable to attend the surgery; home visit was requested between 1300–1730 hours; patient's clinical condition was suitable to be managed by an ANP; and the patient agreed to being seen by an ANP. Exclusion criteria included patients with illness related to pregnancy; psychiatric symptoms and other complex patients that may be more effectively handled by GPs.

Funding was obtained from the Aberdeen City Integration Joint Board to deliver the project.

### *Data collection and analysis*

*Service descriptive data.* Following each patient visit, ANPs recorded a variety of data, including referring practices; reason for referral; time spent with patient and the outcome of the visit. These data were then uploaded to a database for the purposes of storage, confidentiality and analysis by the authorship team using Microsoft Excel. Analysis included number of referrals per practice, average and total patient-facing time and financial savings associated with GP time.

*GP experience of service.* GP experience was assessed using a mind-mapping process. Mind-maps are diagrams used to represent topics or several areas of focus around a central point of interest. Here, the central point of interest was the GPs' experience of this service, with topics explored including: perceived project benefits; perceived project drawbacks; implementation barriers and future recommendations. This method was chosen based on previous recommendations, whereby mind-mapping has been advocated as a valuable strategy to adopt within healthcare service settings to provide a pragmatic yet detailed approach to data collection (Burgess-Allen and Owen-Smith, 2010).

Mind-mapping exercises were conducted in March–May 2018. Practice Managers were contacted to arrange a one-hour slot where these could be carried out in their practice. Attendees from each practice were dependent on the time and availability of practice staff. Attendees were reminded of the purpose of the evaluation and that their responses would be anonymised so their involvement would not jeopardise them in any way. Mind-mapping sessions were facilitated by the lead author, with the second author taking fieldnotes on a wall-mounted mind-map as a reference point during discussion. Once all the key themes were explored, these were member checked with attendees to ensure that a truthful version of events had been captured.

After all seven mind-mapping processes had been completed, findings were coded using NVivo software (Version 11; QSR International, Melbourne) and used as a basis to generate themes in relation to the key topics explored. This process also allowed for other important perspectives to be highlighted that were not initially considered prior to beginning data collection. Once completed, data were synthesised and restructured to provide a summary of key topics from across the attendees.

*ANP experience of service.* A similar process was used with the ANPs to understand their experience of the project. Here, three ANPs participated during their staff meeting and the mind-mapping process was conducted as a group activity. The same key topics were explored, and these sessions were also led by the authorship team. Once the session was

**Table 1.** West Locality General Practice characteristics.

Practice	Practice population	Number of GPs
1	10,509	9
2	1694	4
3	7148	5
4	10,092	12
5	6830	6
6	5829	5
7	8020	6
Average	7160	6.7

completed, the topics were refined and synthesised into key themes and restructured into a refined mind-map.

## Results

### *GP practice information*

The GP practices, practice population and number of GPs attached to each practice are visible in Table 1. Both practice population (1694–10,509) and number of GPs (4–12) vary widely across the seven practices.

### *Visits overview*

In the six-month period from 7 November 2017 to 7 May 2018, 241 visits were referred to the service, with 239 accepted. However, as rejections were only documented if GPs referred after discussion with G-MED colleagues who were receiving the call, these figures may be slightly higher than reported.

The characteristics of these patients visited are visible in Table 2. The reasons for being referred to the service varied, however those frequently reported were: vomiting, chest infections, abdominal pain, urinary tract infections and falls.

### *GP practice usage of service*

Figure 1 shows the number of visits per practice each month, in addition to the total number of monthly visits. The total number of visits per month varied, with April 2018 seeing 52 referrals to the service, the largest across the duration. The most and least frequent practices referring to the service over the six-month period had 68 and 7 referrals respectively. It is important to note that November and May were incomplete months, thus skewing the data.

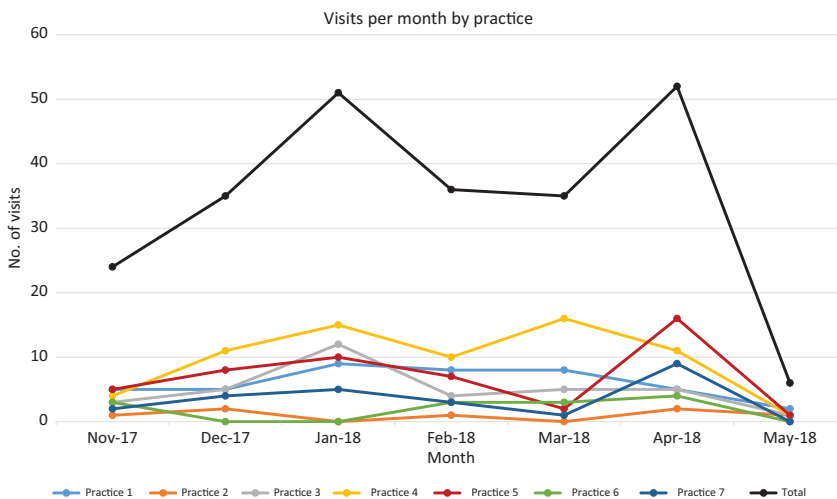
### *Time allocation of referrals and visits*

Table 3 shows the time associated with referrals and visits. On average, the ANP would arrive with a patient 43 minutes after G-MED received the referral. The total patient-facing time was 106.55 hours, with large variance between the minimum (8 minutes) and the maximum

**Table 2.** Demographic characteristics of patients visited ( $N = 239$ ).

Characteristic	<i>N</i>
Age, mean (range)	79 years (24–97)
Female (%)	156 (65)
Practice 1 referrals	42
Practice 2 referrals	7
Practice 3 referrals	35
Practice 4 referrals	68
Practice 5 referrals	49
Practice 6 referrals	13
Practice 7 referrals	24

Note: one referral practice not reported.

**Figure 1.** Overview of visits per month by practice.

(113 minutes) length of visit. Longer visits were typically associated with patients being admitted to hospital.

### Outcome of visits

Figure 2 shows the outcome of ANP visits. Providing ‘medication and worsening statement given (WSG)’ was attributable for almost half of the visits (107 cases). ‘Self-care advice’ was the outcome for 47 cases, with 28 cases resulting in a hospital admission.

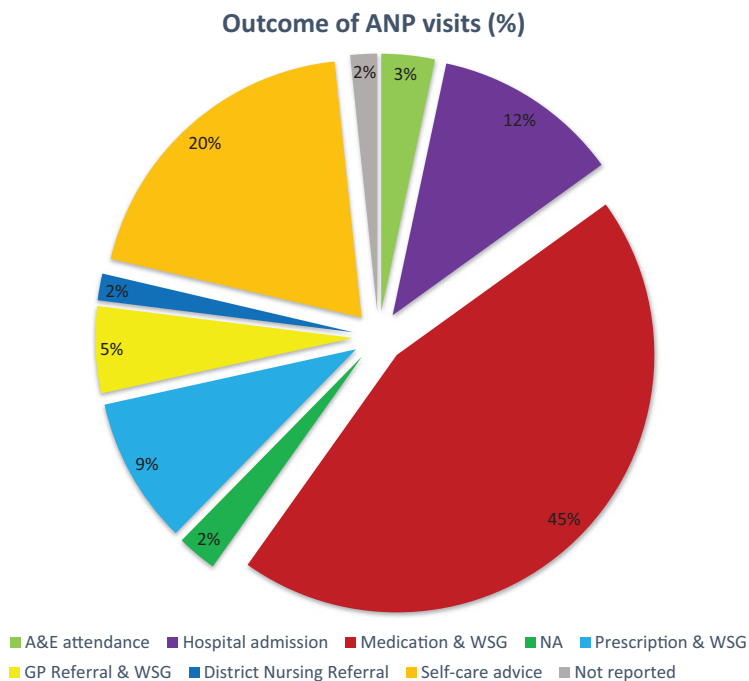
### GP experience

To ensure anonymity, each practice was assigned a unique practice number. The attendees, service satisfaction scores and whether participants would recommend the service, are shown

**Table 3.** Time allocation of visits and referrals.

Characteristic	Time (minutes)
Visit time	
Mean (SD)	27 (14.2)
Median	24
Minimum	8
Maximum	113
Total visiting time (hours)	106.55
Time from G-MED referral to ANP arrival	
Mean (SD)	43 (32.8)
Median	32
Minimum	8
Maximum	224

Note: 15 visits did not report the total duration of ANP visits, in which case the average visit duration was calculated and applied to these visits to derive a total visiting time.

**Figure 2.** Outcome of ANP visit.

in Table 4. In total, five out of seven practices attended mind-mapping sessions, with one practice providing feedback electronically and one practice declining to participate. Overall, satisfaction was high (average 9/10), with all attendees recommending this service to other practices across the city. The synthesised themes from the mind-mapping processes are shown in Figure 3.

**Table 4.** Attendees, usage and satisfaction scores during mind-mapping process.

Practice number	Mind-mapping attendees	Satisfaction score	Recommend? (Y/N)
1	1 × GP	8	Y
2	1 × GP	10	Y
3	1 × GP 1 × Practice Manager	7.5	Y (with changes)
4	n/a	10	Y
5	1 × GP	9.5	Y
6	1 × GP	9	Y
7	–	–	–
Average		9	



**Figure 3.** Synthesised mind-map of key practice themes.

*Project benefits*

GPs. There were a multitude of benefits identified from this project. For GPs, six practices reported time being saved, particularly through not having to leave the surgery and the associated travel time required for home visits:

“If we start our afternoon surgery and a request for a house call comes in, it’s very disruptive either to leave what we’re doing and leave the patient sitting for us to go and come back or leave the patient at home and delay the home visit ‘til after surgery” (GP, Practice 1).

The service was also reported to reduce stress, particularly on the Duty Doctor, and also increase their capacity to complete other pressing tasks, for example emergency consultations and patient call-backs.

**Patients.** For visited patients, five practices specifically referenced the high-quality of care provided by the ANP. One GP went as far to say that they would prefer to be visited by an ANP than a GP due to their skillset and conscientiousness:

“They’re incredible [ANP]. So if I was unwell I might be looking to see an ANP rather than a GP ... they’re good all round practitioners and they’re good at assessing things” (GP, Practice 5).

Having the ANP resource available also decreased the length of time patients had to wait to be seen and it was also suggested seeing a different health professional could provide a fresh perspective on how best to treat patients. Benefits were also highlighted for other patients too, for example getting faster access to care by having less disruption when visiting surgeries.

**Practice working.** In terms of the wider practice working, the main benefit was improving efficiencies, as practice staff did not have to wait until the Duty Doctor returned to the surgery to answer specific questions regarding other patients. This was also reported to reduce the pressure on practice staff:

“It’s less stressful for the staff because they’re not thinking ‘oh god where’s he? Where’s she [Duty Doctor]? How long are they going to be before they come back? Can this message wait for them or not? Do I interrupt a Doctor who’s not Duty Doctor who’s seeing a patient?’ So these are potential stresses for the staff” (GP, Practice 2).

### *Project drawbacks*

**GPs.** There were very limited drawbacks identified through this project and even fewer regarding the logistics of the service itself. Instead, drawbacks highlighted included that the service may not continue into the future, along with uncertainties of the capacity of the service (i.e. if all visits would be accepted).

“The difficulty is that I now need to go and phone someone else, I don’t know if they’re [G-MED] going to accept the visit, I don’t know when the service is going to come. So I’ve got to go through all of this and the patient is then left hanging wondering: ‘what’s actually happening?’” (GP, Practice 3).

**Patients.** Potential drawbacks identified to patients were all hypothetical, as no complaints had been received regarding the quality of care from the ANPs. These included lack of care continuity (such as not seeing the same health professional) and length of appointments (it was generally felt that ANPs would spend longer with patients, however patients may not necessarily deem this as a positive).

“It depends on the patient. Others will think ‘why are you taking 20 minutes, it only takes you two minutes to do what you need to do?’ So some patients will like it [longer appointments with the ANP], some will not” (GP, Practice 3).



*Practice working.* One practice reported that this project had a small increase in workload for Receptionists and due to the project being a test of change, they were unable to plan other activities to do in practice time if referrals were not accepted:

“They [Receptionists] take the call, request the house call and then it comes to the GP to deal with it, so if anything it might give them a bit more work to do because they have to do the emailing of the information ... but it’s one very small task they have to do as part of their workflow” (GP, Practice 1).

*Implementation considerations.* Practices were generally unanimous that implementation of the service was smooth. Practices spoke positively about the ease of referral to the service, in addition to receiving clear communication from the G-MED team and the ANPs when appropriate. The barriers highlighted in implementing this service in practices were all deemed to be minimal. For example, issues around remembering to contact the service and understanding of the ANPs’ skillset, were all accepted to be inevitable and diminished over time. Initial IT difficulties in sending home visit summaries to the project team were alleviated by investing in new equipment. Additionally, two practices admitted to being sceptical whether the service would run successfully, however this also decreased over time:

“It was a culture change, you know? I’ve been in General Practice for way too long now and that’s always been the case. Years and years ago in another practice a Nurse Practitioner was out, and then gradually they came in and the GPs were like ‘okay, this works, this is great’, so the role expanded ... and gradually the confidence builds” (Practice Manager, Practice 3).

*Future considerations.* The most commonly requested revision of this service was to extend the hours of service up until 1800 hours. However, other requests were also provided around improving the service for the future, for example extending it to an all-day service. Interestingly, two practices highlighted the opportunity for a multi-disciplinary unscheduled visiting team that could include other Allied Health Professionals and Care Managers:

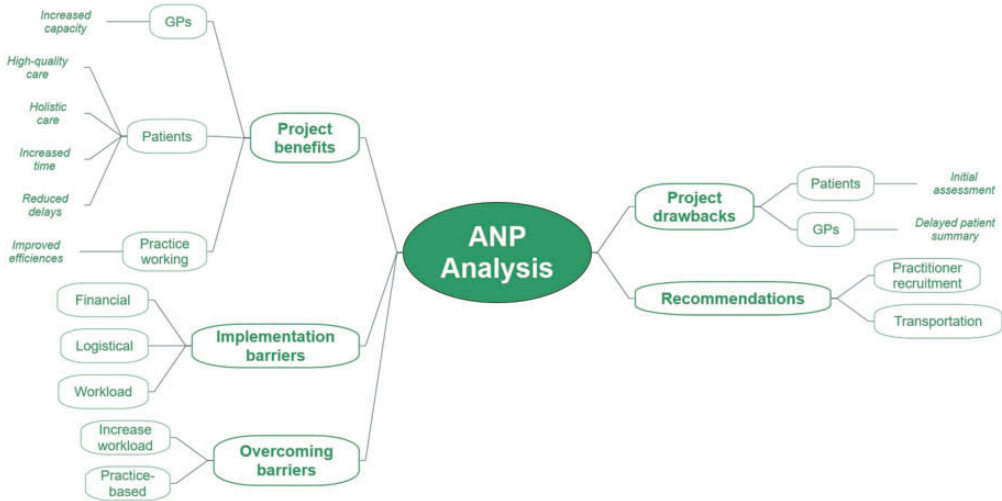
“Might the service in the future look like a team that had a selection of different professionals ... the ability for a patient to be requesting directly rather than always having to go through the GP to get things going, that would be a huge advantage” (GP, Practice 6).

There were two large concerns that were consistently stressed across participants: (a) a feeling that scaling the service city-wide could dilute the effectiveness of the service that they receive; (b) anxieties around funding for the service would not continue in the future:

“My concern is more in terms of what happens in the future ... and that’s to do with my experience of over a couple of decades of fantastic sounding pilot projects that are pump-primed only to not recur ... so I have to be allowed a certain amount of cynicism about that” (GP, Practice 6).

### *ANP experience*

Three ANPs participated in the mind-mapping session. A summary of their synthesised responses is shown in Figure 4.



**Figure 4.** Synthesised mind-map of key ANP themes.

### Project benefits

**Patients.** The ANPs felt that patients were receiving a high-quality service. This, in part, may have been due to ANPs having more time to spend with patients than GPs, providing them the opportunity to gain important additional pieces of information:

“We have a quick swizz at the surroundings, so you maybe pick up other things when you’re there, whereas a GP, time management wise, it’s really difficult for them to do that. We can pick up other things that we can highlight to the GPs” (ANP 2).

ANPs also described the holistic care that they provided to patients. For example, they would not necessarily solely treat the specific problem that patients had, but instead provide additional support depending on need:

“If we went to see somebody and they couldn’t get to the toilet we’d just take them to the toilet whilst we were there ... yes we’re Advanced Nurse Practitioners and when we’re going in we’re doing more of a GP role but at the end of the day, you still see yourself as a Nurse” (ANP 1).

**GPs and practice working.** The ANPs were in agreement that completing home visits would reduce the GPs’ workloads and therefore increase their capacity to “concentrate on other things that they might not always have time to do” (ANP 2). Furthermore, they would carry a range of supplementary equipment that a GP may not, therefore potentially providing a more efficient service to patients, in addition to reducing workload for other practice staff:

“We’ve got everything in the boot. If we think someone needs an ECG we can do it. We can do bloods as well, that’s things that you’d need an appointment with a Phlebotomist maybe 2/3 days down the line ... so you’re helping other services within the practice as well” (ANP 3).

*Project drawbacks.* Very few drawbacks were identified, with those highlighted being emphasised as minimal. The two that were identified were: (a) most of the patients were new to the ANPs, meaning they may not have had the same rapport as the GP, however, it was agreed that this did not negatively impact the quality of care patients received; (b) occasional postponements in receiving patient summaries from GPs, meaning that ANPs could visit patients with no prior knowledge:

“We do get the email beforehand that gives us their ECS and stuff, but sometimes there’s been a delay in getting that email. So you’ve gone in, you’ve not got the email through and you’ve had to spend a wee bit of time saying to the patient ‘what’s your past medical history?’ ... things you wouldn’t necessarily need to ask if you had that information in front of you” (ANP 2).

*Implementation considerations.* Whilst there were limited barriers identified to implementing this test of change, the attendees did highlight three areas needing adaption that could jeopardise the scaling of this project should they not be addressed. Firstly, the ANPs typically worked out-of-hours (1800 hours onwards) at an enhanced hourly rate, whereas this project involved them working earlier in the day (1400–1800 hours). Whilst the majority of their hours were accumulated out-of-hours, meaning their pay enhancement still applied, they stressed that this was vital if they were to continue:

“The way we had to do our shift pattern was so we didn’t lose our enhancements ... if we just did the day time we would be losing quite a lot of money which, for us, you think well what’s the benefit to us, because we’re providing you [the GPs] with a really, really good service but we’re actually losing money” (ANP 2).

ANPs suggested the possibility of being practice-based as a solution to increasing their workload, in addition to reducing pressure on practice staff.

*Recommendations.* Two clear recommendations were provided to move this project forward. Firstly, the ANPs noted how valuable the function of the driver was in this service, allowing them to review medical history and write up patient summary notes in between visits. Also, due to the volume of equipment they carried to home-visits, it was more practical to keep this within the G-MED cars, as opposed to using their own vehicles.

Further, the issue of practitioner recruitment was also highlighted. Whilst it was acknowledged that hiring ANPs could be challenging, the attendees suggested that other professionals, including Paramedic Practitioners and District Nurses, could be trained up to deliver this service:

“I think some of them are frustrated [District Nurses] that they don’t get to utilise those skills ... I think a lot of them would want to do something different” (ANP 1).

## Discussion

This report describes the evaluation of a new unscheduled care service delivered through an ANP resource. Given the increasing pressures on primary care, it is important to consider how innovative models of service delivery can be utilised to reduce this pressure. Over a six-month period, ANPs completed a total of 239 visits on behalf of GPs, saving almost 107 hours of their time in the process.

The qualitative findings from both GP practices and ANPs about their experience of the service were predominantly positive. GPs were able to provide examples of additional tasks they had been able to complete due to ANPs carrying out home visits (such as patient call-backs and administrative tasks) and there was a self-reported reduction in stress of all practice staff. Given the problems previously highlighted regarding GP retention, in addition to considering that 37% of GPs do not pursue full-time clinical work due to work-related stress, this service may play an important role in reducing staff turnover (and the associated costs) in primary care (Baird et al., 2016).

The skillset and knowledge of the ANPs was regularly advocated by GPs. This is reinforced by a recent systematic review showing that substituting Physicians for nurse-led care may have positive effects on mortality, patient satisfaction and improved disease-specific outcomes (Laurant et al., 2018). However, GPs were also mindful that, depending on the reasons for referral, a variety of different professionals could also be incorporated into this model, including Physiotherapists and Occupational Therapists. Such a multi-disciplinary team would dovetail with other initiatives including hospital-in-the-home models that utilise a variety of professionals to care for individuals in a homely setting (Lee et al., 2017).

From a practice perspective, the implementation of the project was well executed. In particular, mind-mapping participants commented on the ease of the referral process and clear communication with G-MED and ANPs when necessary. Initial implementation challenges of staff forgetting about the service were quickly overcome through increased familiarity, with one practice holding a briefing session with staff to alleviate this potential barrier. The most consistent improvement that was suggested across practices was to increase the service duration until 1800 hours, to provide additional cover for the final proportion of the working day. This may help improve the sustainability of General Practice by alleviating pressures associated with late unscheduled calls, for example for practice staff with childcare needs.

There are some limitations to consider. First, the mind-mapping strategy implemented is unlikely to have captured all experiences as accurately as other methods may have, for example audio recorded interviews and subsequent thematic analysis. Although desirable, time and resource constraints did not allow this level of detail to be captured. Despite this, the consistent reporting from clinicians of the high levels of satisfaction of this service cannot be overlooked. Further, this study did not conclude whether this new model is more cost-effective than usual care, however it should be noted that this was not the primary aim.

## **Conclusion**

It appears that it is feasible to use ANPs to conduct unscheduled home visits instead of a GP. Future work should look to embed this model on a larger scale and determine its cost-effectiveness compared to the traditional model.

### **Key points for policy, practice and/or research**

- It is feasible to use ANPs to conduct unscheduled visits instead of a GP.
- Utilising ANPs is a practical solution to reduce the pressure on primary care.
- GPs report reduced stress and improved capacity as a result of having unscheduled visits met.

## Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Ethics

As the data collection methods utilised fall under the categorisation of a service evaluation, ethical approval was not required.

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## ORCID iD

Calum F Leask  <https://orcid.org/0000-0002-8011-2541>

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**Calum Leask** obtained a BSc (Hons) in Sport and Physical Activity from the University of Strathclyde 2013, followed by a PhD in Public Health from Glasgow Caledonian University in 2016. Currently he works as the Research & Evaluation Manager for Aberdeen City Health and Social Care Partnership and leads the evaluation of new integrated models of health and social care being piloted in the region. Dr Leask also worked as a Researcher and Lecturer for Glasgow Caledonian University and has taught on a variety of programmes, from undergraduate Physiotherapy to Postgraduate Master's in Research Methods. His current research areas of interest include the co-creation of public health interventions and he has delivered training nationally to colleagues looking to implement this approach. Previously he has published both qualitative and quantitative research predominantly in the field of active ageing, including co-authoring a chapter in the recently published *Sedentary Behaviour and Epidemiology*.

**Heather Tennant** joined the Aberdeen City Health and Social Care Partnership as Transformation Programme Manager in September 2018. Heather graduated from Robert Gordon University with a Degree in Adult Nursing in 1997, she specialised in critical care nursing and occupied various specialist nurse roles. Following a change of direction in her career Heather undertook further study and attained an MSc in Health Improvement and Health Promotion from Robert Gordon University in 2014. Heather has been leading a number of health and social care transformation and strategic implementation projects over the last six years.