

Nurse practitioners in Swiss family practices as potentially autonomous providers of home visits: an exploratory study

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Abstract

Background Swiss primary care is challenged by impending shortages of general practitioners (GPs) in rural areas and decreasing number of GP home visits. In Anglo-Saxon and many other countries, nurse practitioners (NPs) have been implemented and provide high quality, patient-centred home visits autonomously. In Switzerland, the NP role is new and there are currently only a handful of ongoing pilot projects in family practices. Hence, studies are lacking and data collection is challenging as NPs are not yet registered providers who could be identified in billing or health insurance data. Our aims were to gain insights in the frequency of home visits by NPs in Swiss family practices, and to determine their autonomy based on the required level of GP supervision during consultations.

Methods We used consultation data from two pilot practices in rural Switzerland. In “Practice A”, the NP was in postgraduate education and data was gathered electronically between August 2017 and 2018. In “Practice B”, the NP had completed her education, and had two years of work experience as a NP when data was collected manually between April and June 2018. We used a coding system based on five levels of GP supervision to identify NP consultations and home visits, and to determine the NPs’ autonomy in each consultation.

Results We analysed data from 1375 consultations. The share of home visits in all NP consultations was 17% in Practice A and 51% in Practice B. Both NPs had a higher share of autonomously conducted consultations during home visits than in the office. In Practice A, the proportion of consultations in which the NP was autonomous increased from 0% in the first month of her employment to 19% after 13 months of GP supervision. In Practice B, the NP was autonomous in about three-quarters of her consultations.

Conclusions After completing postgraduate education with clinical supervision by GPs, and few years of practical experience in their role, NPs can reach a relatively high degree of autonomy and might pose a potential solution to the decreasing numbers of GP home visits in Swiss primary care.

Background

Swiss primary care is challenged by impending shortages of general practitioners (GPs) in rural areas and consequently decreasing number of GP home visits (syn. house call) [1-3]. These visits at patient’s home and in nursing homes are an important part of primary care and highly valued by frail, elderly patients [4]. The rationales for conducting home visits are diverse, and range from routine follow-up to emergency or palliative care visits [5]. Home visits appear to be cost-effective, improve access to care, and can reduce mortality as well as hospitalizations [6-8]. In the Swiss Canton of Vaud, Mueller et al. [5] found that GP home visits decreased by 40% between 2006 and 2015 and proposed that new models of care should address the demand for home visits and reconsider the GP’s role in home care delivery. They identified home visits as a task that could be performed by other health professionals such as nurse practitioners (NPs) who work in family practices.

NPs are nurses with a master's degree and clinical skills and competencies to provide direct patient care, mostly in primary care settings [9]. The NP role was first introduced in the USA and Canada in the 1960s and has subsequently been implemented globally in order to address provider shortages, today's demographic developments, and to improve quality of care by delivering patient education and empowerment [10]. In the US, NPs represent the largest type of "full time house call providers" (i.e. >1000 visits per year), and show a high level of autonomy [11, 12]. Studies indicate that they are able to deliver patient-centred, high quality of care to homebound elderly resulting in reduced numbers of rehospitalizations and emergency department visits [13]. However, international literature suggests that mentoring by preceptors who provide clinical supervision is crucial for novice NPs to develop the skills and competencies required to provide health services such as home visits autonomously and with high quality [14]. Preceptors are defined as role models and experienced teachers in clinical settings [15].

Switzerland is in the early stages of introducing nurse practitioners. There are working groups developing a regulatory framework but for now, the exact role, tasks and responsibilities are not legally defined or recognized. In terms of education, there are various master's programs and postgraduate continuous educations [16]. Initially, the curricula focused on research and leadership rather than clinical content. Only in recent years, some programs have integrated structured preceptorships with supervised clinical hours during internships or in case of part-time working students at their current workplace. The clinical supervision is mostly done by medical doctors due to the lack of experienced NPs for the time being [16]. As of today, most nurses with a master's degree work in hospitals, and provide leadership, quality management or specialized care [17, 18]. There are only a handful of ongoing pilot projects in family practices with NPs who provide counselling, physical examination, clinical reasoning and treatment in the office and during home visits. Due to the low number, there are only few, mostly conceptual studies or discussion papers regarding the NP role in Swiss family practices [16]. Given the early stage of role development and regulation, NPs are not yet registered providers and currently use the GP's identification number. Therefore, the NPs' activities are not readily identifiable in health insurance data or data from electronic medical records (EMR) which poses a challenge for systematic data collection. As a result, it is still unclear how frequently NPs provide home visits, how autonomously they work in daily practice, and whether they might be a potential solution to the decreasing numbers of GP home visits in Switzerland.

Our aims were to gain insights in the frequency of home visits by NPs in Swiss family practices, and to determine their autonomy based on the required level of GP supervision during consultations.

Methods

This is an exploratory, descriptive study using quantitative consultation data from two pilot projects in Swiss family practices.

Setting

One project (“Practice A”) was initiated in a top-down approach by the local health department of a rural, German-speaking Canton. It started in August 2017 with the employment of a part-time working (50%) novice NP, and took place in a small family practice owned by two elderly GPs. In order to improve her clinical skills, the NP simultaneously started a two-year postgraduate continuous education with the clinical supervision provided by the two GPs as preceptors. The NP had no previous experience in primary care and both GPs were not familiar with the NP role beforehand. The other project (“Practice B”) was initiated in a bottom-up approach by two middle-aged GPs and owners of an interprofessional group practice in a remote area of north-eastern Switzerland in spring 2016. In this project, the NP had already completed her postgraduate education when she started working part-time (50%) in this practice. The GPs were more familiar with the NP role as this NP had done a practicum in this practice during her postgraduate education. The two projects were chosen because data could be collected as part of larger, ongoing evaluations in these practices [19].

Data collection & analysis

In Practice A, data was collected directly from EMR between August 2017 and August 2018 by participation in the FIRE (family medicine ICPC research using EMR) project. The FIRE project established a network of GPs exporting their anonymized medical routine data on a regular basis for quality and research purposes [20]. To identify NP consultations and to separate them from those of the GPs, the NP typed in a code for each of her patient encounters. In Practice B, data was collected manually between April and June 2018. The EMR provider of this practice did not support the export-tool of FIRE; hence, an automatic, electronic data transfer was not possible. Nonetheless, the NP used the same codes, but over a shorter period, as data collection was more laborious.

The codes indicated the location (home visit or in-office) and the NPs’ autonomy during each consultation. To measure their autonomy, the NPs were instructed to apply an adapted version of the different levels of supervision in the continuing education of GP trainees, which are widely used and accepted among Swiss doctors [21]. The first level (“observing”) was applied when the NPs was observing the GP, the second (“being observed”) when they were being observed by the GP during a consultation. The third level (“asking before decision”) was applied if they had to consult the GP before discharging the patient, e.g. to ask about the dosage of a drug. The fourth level (“reporting periodically”) was applied when they reported about their activities or decisions at a later point (e.g. in the evening). The fifth level (“autonomous”) was applied when they did not need any support from the GP. The coding system and the different levels of supervision are illustrated in table 1.

We measured the total number of NP consultations and calculated the share of home visits in all NP consultations. Further, we measured the NPs’ autonomy during consultations, and looked at the proportion of the different levels of GP supervision over time. To analyse the data, Stata 15.0 and Microsoft Excel 2016 were used.

Table 1: Coding system and corresponding levels of GP supervision

In-office consultation	Home visit	Levels of supervision: NP was...
105	205	observing
104	204	being observed
103	203	asking before decision
102	202	reporting periodically
101	201	autonomous

GP = General Practitioner; NP = Nurse Practitioner

Methodological considerations

Autonomy can be measured with different methods and on different levels. Most evidence about autonomy and supervision in nursing is based on qualitative research methods such as interviews and focus group discussions [22]. Few studies have used quantitative approaches. Bahadori et al. [11] used the Dempster Practice Behavior Scale (DPBS), a 30-item questionnaire with a five-point Likert scale, to measure the autonomy of NPs in US primary care. This questionnaire-based approach provides cross-sectional data at a practice or provider level (meso). Other studies [23, 24] have measured the autonomy of NPs and resulting outcomes based on registers and current legislation (macro). Given the pioneer setting with low numbers of NPs and the challenges of obtaining data at a larger scale, we focused on the autonomy of NPs at the level of single consultations (micro). This gave a more detailed picture of their daily practices, and allowed for continuous monitoring. A similar method of measuring autonomy was used in a study by van der Biezen et al. [25].

Results

Number of NP consultations and share of home visits

Over the whole data collection period, the NP of Practice A had 1247 consultations. The mean number of consultations per month was 96 (SD 47.9). Overall, 209 (16.8%) of all her consultations were home visits. In May 2018, she had the highest share of home visits with 34.8% (39 out of 112 consultations), and in October 2017 the lowest with 5% (11 out of 221 consultations). In Practice B, the NP recorded 128 consultations with a mean of 43 (SD 8.7) per month, and 65 (50.9%) of all her consultations were home visits. The total numbers of all NP consultations and the share of home visits per month are illustrated in figure 1.

Figure 1: Share of home visits in the total numbers of NP consultations per month

Solid line = Practice A (NP in postgraduate continuous education); Dotted line = Practice B (NP with completed postgraduate education)

NP autonomy during consultations

Overall, the NP of Practice A was autonomous in 6.1% of her consultations. In 50.5% of patient encounters, she consulted the GP before discharging the patient. In 7% of her consultations, she was being observed, and in 36.4%, she was observing the GP. In Practice B, the NP was autonomous in 74.2% of her patient encounters. In 18.8% of all her consultations, she reported at a later point, and in 6.3%, she asked one of the GPs before discharging the patient. In one single occasion, she was in the role of an observer. An overview of the shares of each level of supervision separated by practice and location (in-office or home visit) can be found in figure 2.

Figure 2: Shares of the different levels of supervision during consultations by practice and location

Red = NP observed the GP; Orange = NP was observed by the GP; Yellow = NP asked the GP before deciding; Blue = NP reported periodically; Green = NP was autonomous

Regarding the shares of the different levels of supervision over time, the NP of Practice A was observing the GP in 83.9% of all her consultations during the first three months. In the same period, she was being observed by the GP in 11.2% of her patient encounters, and in 4.9% of consultations, she asked the GP before discharging the patient. Autonomy was not reported during the first three months. Between December 2017 and August 2018, the most common level of supervision was “asking before decision”. On average, it was reported in 80.4% of consultations. The share of consultations done completely autonomous by the NP reached its high of 19% in August 2018, the last month of the data collection period. The level “reporting periodically” never occurred in Practice A. The shares of the different levels of supervision over time of Practice A and B are depicted in figure 3.

Figure 3: Shares of the different levels of supervision in all NP consultations per month

Solid lines = Practice A (NP in postgraduate continuous education); Dotted lines = Practice B (NP with completed postgraduate education); Red = NP observed the GP; Orange = NP was observed by the GP;

Yellow = NP asked the GP before deciding; Blue = NP reported periodically; Green = NP was autonomous

Discussion

Main findings

The share of home visits in all NP consultations was 17% in Practice A and 51% in Practice B. Both NPs had a higher share of autonomously conducted consultations during home visits than in the office. In Practice A, the NP was completing her continuous postgraduate education, and the proportion of consultations in which she was autonomous increased from 0% in the first month of her employment to 19% after 13 months of GP supervision. In Practice B, the NP had completed her postgraduate education and had been working for two years as a NP before data was collected. On average, she was autonomous in about three-quarters of her consultations.

Home visits

In the 1940s, home visits accounted for 40% of GP consultations in the US whereas nowadays, this proportion has decreased to less than 1% [26]. In Switzerland, most GPs still provide home visits, but the total numbers are relatively low compared to other European countries and have declined in recent years [3, 27]. Mueller et al. [5] found that home visits accounted for 2.5% of all GP consultations in the Canton of Vaud between 2006 and 2015. Our results showed that home visits represented 17% and 51% respectively of all NP consultations. This might indicate the potential of NPs to counter the decreasing numbers of GP home visits in Switzerland. This assumption is supported by data from countries at a more advanced stage of NP role implementation. In the US, for instance, around 3300 NPs performed over one million home visits (accounting for 22% of all visits) to Medicare beneficiaries and thus more than the physicians did in 2013 [12].

The difference between the two NPs included in our study most likely reflects their unequal level of training and experience. The numbers might also be influenced by the different approaches and stages of the two projects and the demand for home visits. In a study from the Netherlands, Dierick-van Daele et al. [28] found that the extent to which NPs could focus on home visits was influenced by the needs of the individual family practice as well as financial incentives. Moreover, the attitudes of patients, GPs and nursing home staff towards the NP role may have affected the numbers. Literature shows that patients usually report high satisfaction with NP home visits and care [4, 29, 30]. However, the acceptance of the NP role among health professionals can be ambivalent, especially in the early stages, when role clarification is not yet achieved and the NP might be perceived as a threat that could take over tasks traditionally attributed to other established professionals [31, 32].

Mueller et al. [5] also found that about 85% of GP home visits were routine follow-up visits to people aged 65 years and older, a group of patients who often suffer from multiple chronic diseases. In a systematic

review, Martinez-Gonzalez et al. [33] reported that nurses in advanced roles in primary care are able to provide at least equivalent care for patients with chronic conditions compared to doctors. A Swiss study from Imhof et al. [34] showed that home visits to elderly people (age 80+) provided by nurses in advanced roles appear to be effective and could lower the number of falls, acute events, and hospitalization. However, the nurses included in this intervention study received a specific training to provide in-home consultations and stem from different health care settings (e.g. home care, nursing homes).

Autonomy

In Practice A, clinical supervision was provided by the two GPs as part of the structured preceptorship in the NP's postgraduate education. In this context, the proportion of the different levels of supervision over time could be interpreted as a learning curve. The initial period of three months, in which the NP was mainly observing and being observed, might reflect the lack of her experience in primary care as well as the unfamiliarity of the GPs with her role. After this initial phase, the NP's autonomy increased more or less steadily but in most cases, she still consulted the GP before making a final decision. Consulting the GP before discharging the patient may have various reasons. It is possible that the NP wanted the GP to confirm her findings ("second look") or to teach her a certain procedure or examination as she was still in training. This level of supervision may have also appeared due to legal restrictions in the NP's scope of practice. For instance, Swiss NPs are not (yet) allowed to prescribe drugs independently without consulting a GP. In this regard, Barnes et al. [23] found that restrictive state regulations in terms of scope of practice as well as reduced reimbursement rates decrease NP participation in primary care.

In Practice B, the NP showed greater autonomy compared to Practice A. On average, she was autonomous in about three-quarters of all her consultations. This might be because the NP was more experienced as she had been working as a NP in this family practice for two years when the data was collected. Furthermore, the GPs were used to working with other non-medical health professionals and to handing over tasks. In this practice, the NP often did not consult the GP directly during the consultation but at an earlier or later point and reported about several patients collectively. This appears as a more efficient and less direct approach of GP supervision. The results from Practice B show the potential autonomy of a well-trained, more experienced and well-integrated NP in a Swiss family practice despite lacking regulations.

The NPs in our study showed higher autonomy during home visits compared to office-based consultations. This might be because direct GP supervision on home visits is more difficult and requires additional effort; time- and site-wise. It is also possible that many of the home visits were routine follow-up visits to chronically ill elderly, as opposed to consultations in the practice, where younger people with acute, purely medical problems may show up. Lastly, it is worth mentioning that a share of 100% autonomous consultations is neither realistic nor desirable as the exchange between health professionals appears to be important in complex cases [35].

Limitations

There are several limitations in our study. The NPs collected data on their own activities; hence, we cannot exclude self-report bias. Our results might not be generalizable as we only gathered data from two practices. Furthermore, we could not differentiate between home visits at patient's home and in nursing homes, and we did not collect data about patient characteristics or the content of these visits. It was also not possible to identify the reasons why which level of GP supervision was applied in which occasion. Lastly, the duration of data collection in Practice B was much shorter compared to Practice A.

Implications

In this pioneering phase, our method allowed to get first data on NP home visits and autonomy. Yet, separate identification numbers (or global location numbers) for NPs could help to conduct studies on a bigger scale. In countries in which NPs are well-established and registered providers, studies on NPs are usually based on billing or health claim data [12, 23, 24, 36]. In order to promote the NP role in Swiss primary care, educational programs need to include preceptorships with sufficient numbers of supervised, clinical learning hours. This requires closer collaboration with family practices and might need additional efforts from the GPs. However, NPs could help reducing the GPs' workload, e.g. by offering time-consuming home visits to multimorbid elderly. In any case, more research is needed in order to explore patient characteristics and content of NP consultations, and to specify the NP role in Swiss family practices. Lastly, the safety and quality of care provided by NPs has to be addressed by looking at specific health outcomes.

Conclusions

After completing postgraduate education with clinical supervision by GPs, and few years of practical experience in their role, NPs can reach a relatively high degree of autonomy and might pose a potential solution to the decreasing numbers of GP home visits in Swiss primary care.

Abbreviations

NP = Nurse Practitioner; GP = General Practitioner; EMR = Electronic Medical Record; FIRE = Family medicine ICPC Research using EMR

Declarations

Ethics approval and consent to participate

According to the local ethics committee of the Canton of Zurich, data collected within the FIRE Project do not fall under the scope of the law on human research and therefore no ethical consent is necessary (BASEC-Nr. Req-2017-00797). Both practices gave written consent to participate in this study as part of the ongoing evaluations.

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

SG, IB, CM and SE were involved in the conception and design of the study. SG and RM analysed the data. The results were discussed with all authors. All authors carefully reviewed drafts and approved the final manuscript.

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Figures

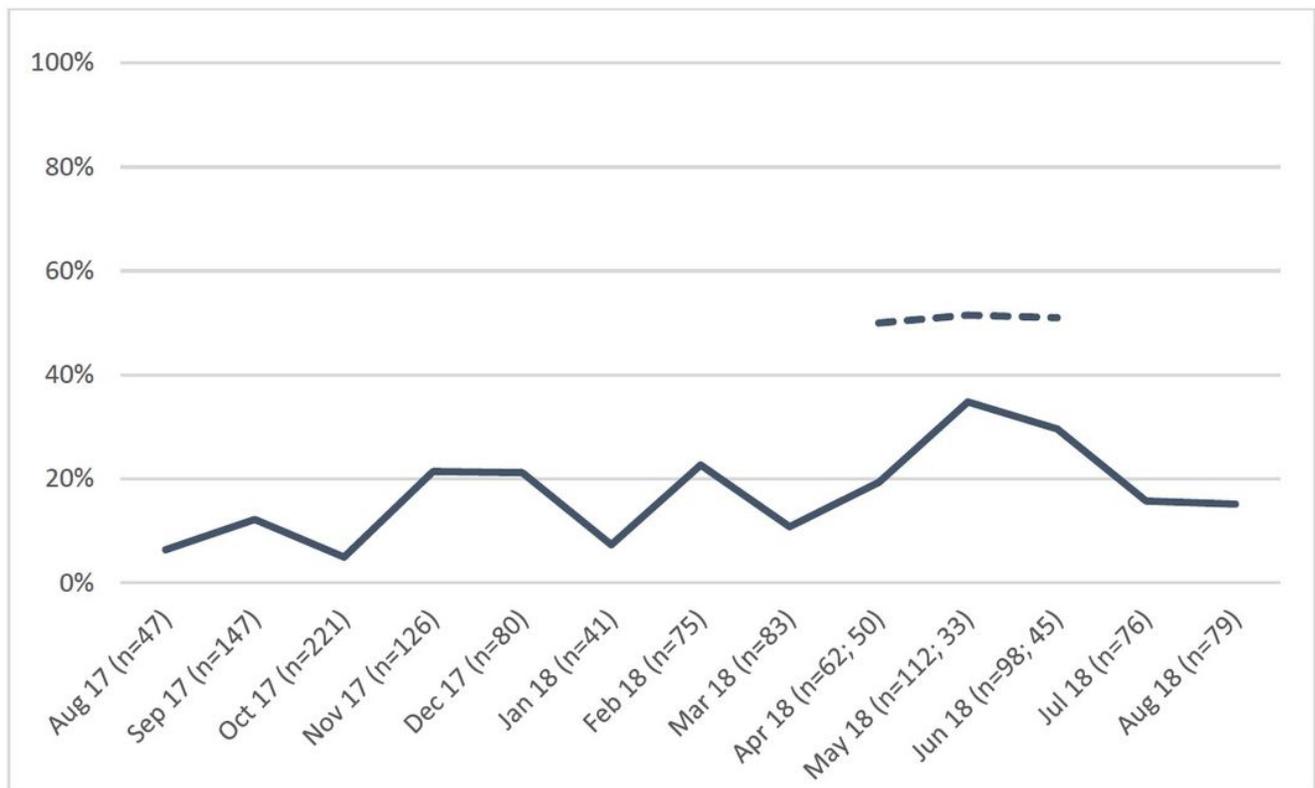


Figure 1

Share of home visits in the total numbers of NP consultations per month Solid line = Practice A (NP in postgraduate continuous education); Dotted line = Practice B (NP with completed postgraduate education)

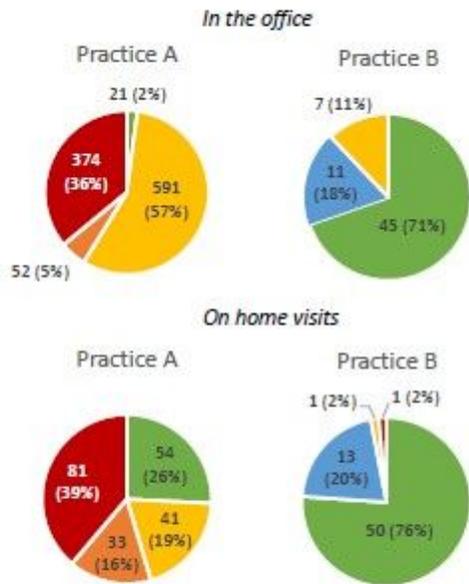


Figure 2

Shares of the different levels of supervision during consultations by practice and location Red = NP observed the GP; Orange = NP was observed by the GP; Yellow = NP asked the GP before deciding; Blue = NP reported periodically; Green = NP was autonomous

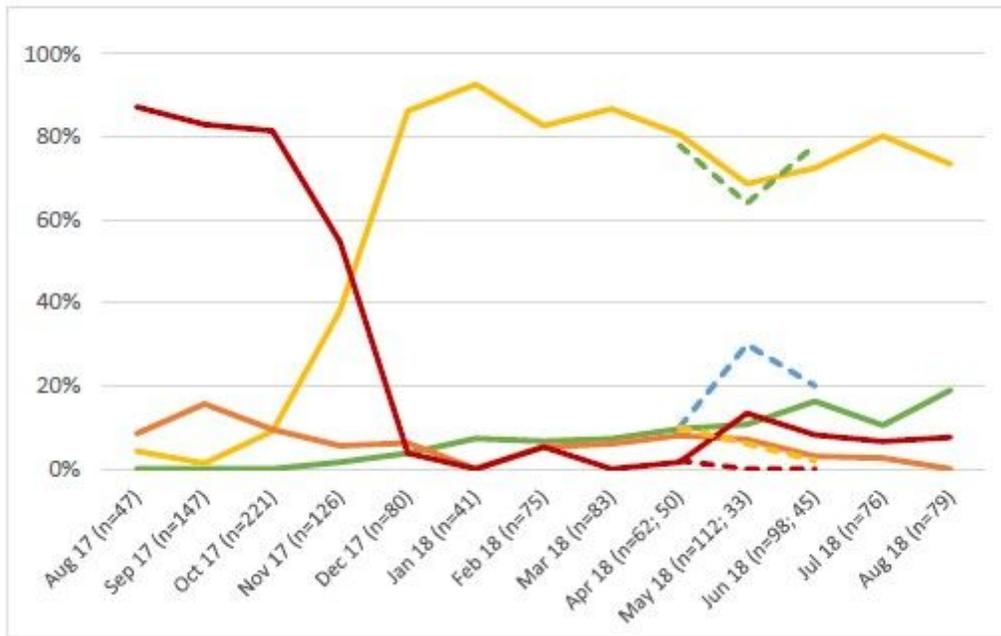


Figure 3

Shares of the different levels of supervision in all NP consultations per month Solid lines = Practice A (NP in postgraduate continuous education); Dotted lines = Practice B (NP with completed postgraduate education); Red = NP observed the GP; Orange = NP was observed by the GP; Yellow = NP asked the GP before deciding; Blue = NP reported periodically; Green = NP was autonomous