NIHR | Applied Research Collaboration Greater Manchester

Salford Primary Care Workforce Data Mapping (SWorDMAP) Project

Final report

Working in collaboration with:

Authors

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Introduction

In 2019, NHS Salford CCG commissioned the NIHR Applied Research Collaboration Greater Manchester (ARC GM) to co-produce and pilot a system of workforce measures tailored to the Salford primary care system, through their Innovation Challenge Fund. Salford CCG had identified a gap in current data concerning general practice roles and found existing datasets to be of limited value.

Background

Since the GP Forward View of 2016[1], the primary care workforce in England has been undergoing rapid changes, with a continued fall in the number of GPs alongside an expansion of the 'new' non-medical professional workforce. The new GP contract[2] seeks to further grow capacity in general practice over the next five years with the expansion of new roles funded through Primary Care Networks (PCNs). Despite the pace of these rapid changes, NHS workforce planning has thus far been 'disjointed' at a local and national level and needs to improve to 'guide and support both day-to-day and strategic workforce decision-making'[3].

Findings from previous National Institute for Health Research (NIHR) Collaboration for Leadership in Applied Health Research and Care Greater Manchester (CLAHRC GM) research, in Salford and GM primary care[4,5,] highlight the difficulties associated with capturing accurate workforce data. While NHS Digital's General Practice Workforce dataset (collected via the National Workforce Reporting System – NWRS) gives the most complete picture available of all staff employed in general practice nationally (including across GM areas), there are well-known issues with data completeness and therefore with data accuracy and representativeness[6].

Qualitative research on the primary care workforce in GM suggests that the data collected via the NWRS is often considered too generic to reflect the general practice workforce and affords little opportunity for practices to differentiate between roles[5]. A local workforce tool trialled in Salford also evoked similar views, as many activities seen as routine in general practice could not be captured, with consequences for the perceived trustworthiness of associated outputs[4]. Both national and local tools therefore appear to be hampered by an inability to go beyond capturing workforce capacity to map the skills, competencies and tasks that are key to the day-to-day functioning of general practice.

Apart from issues of usefulness/relevance, CLAHRC GM projects have also identified a number of cultural barriers that impede workforce data collection (for instance, the extent to which a high degree of trust is required for data sharing)[4,5].

In summary, there is a need to better map current and future workforce requirements in Salford to inform workforce decision-making and, in line with the NHS Long Term Plan, to 'ensure a sustainable overall balance between supply and demand across all staff groups'[3].

Aim

To co-produce and pilot a set of workforce measures tailored to the Salford primary care system, to map roles, competencies and tasks.

The components of the project included:
1) A rapid scoping review of evidence on national, regional and local workforce data measurement systems and approaches
2) Stakeholder engagement to establish a set of meaningful measures to generate workforce data to meet the local needs of the Salford system (through focus groups and an expert panel session)
3) Development of these measures into a data collection instrument for piloting
4) Piloting of the measures in up to two Salford CCG neighbourhoods, capturing detailed feedback from those using the measures via semi-structured interviews
5) Delivery of the piloted instrument to the CCG Business Intelligence (BI) team and final project report, including recommendations and future actions.

The following five chapters of this report present a description of and key findings from each of these five components.

Component 1: Rapid scoping review

Method

We searched the academic and grey literature for studies relating to primary care workforce data collection and measurement. A broad range of academic databases were searched (e.g. health services, medical and social sciences). The grey literature was obtained from governmental, policy and health charity sources. Additionally, 'snowball' searching enabled the identification of other relevant studies from the reference lists of identified papers. Relevant papers were reviewed by two reviewers for: key insights about the workforce measures included; the development and piloting process; and the strengths and limitations of the approaches adopted.

Key findings

This review demonstrated the need for accurate workforce data and the limitations of using secondary data not specifically designed for workforce planning purposes. Despite this need, a focus in the academic literature around the design, methods and acceptability of new workforce data collection is largely absent. Current workforce data in England is considered 'disorganised and overwhelming' and primary care data especially is recognised by stakeholders to include large gaps, both in terms of non/inaccurate completion by practice and lack of detail beyond numbers and demographic profile of staff. The national tool (NWRS) has improved significantly however, in terms of response rates, but at a local level there are concerns about value, relevance and accuracy. The system also has limited use, given that it is not designed to report on demand or need nor can it be used to model hypothetical workforce scenarios. The Apex Insight tool offers more by including dashboard information on appointments, activity, costs and scenario modelling, but still has limitations and is seen by some to be prohibitively expensive and too complex to complete without extensive training. This rapid scoping review also identified two other regional tools which may warrant further exploration, although it should be noted they were designed specifically for those areas and may not be fully applicable elsewhere.

These limitations have led stakeholders to collect new primary care workforce data at local levels, using a variety of approaches. In six of the 10 CCG areas within GM, CCGs or CCGs and GP federations have adopted locally-tailored approaches. These approaches have been facilitated by strong local relationships, commitments on how the data will be used and the provision of direct support for completion. These vary by scope but generally focus on headcount, and typically generate high return rates. A key limitation is that often this is a resource intensive process relying on manual input, meaning that it is difficult to undertake more than once without palpable returns to practices. Issues of scope, administrative burden, challenge of engagement, perceived benefit and replicability merit further attention, and this review has clearly shown that the current academic literature has not examined

stakeholder issues which might affect willingness to provide full and accurate data in any detail. The current absence of a joined-up GM-wide approach is also notable.

A key message from this review is that, regardless of their level of complexity, the design and implementation of workforce data systems, tools and models are all improved by the involvement of expert stakeholders, including those with clinical expertise and practical, local knowledge. This involvement is therefore crucial to ensure that any the design meets the needs of the commissioners, planners, providers and users of that health care system.

The full rapid scoping review report can be found in Appendix 1.

Component 2: Generation of workforce measures - Stakeholder engagement

Method

Focus groups

Focus groups were arranged with CCG strategic leads, PCN clinical directors, former neighbourhood leads and practice managers in Salford. Potential participants were contacted initially by the CCG workforce programme manager and GP workforce lead and expressions of interest were followed up by the ARC research team. All participants were provided with an information sheet about the project and asked for written consent to participate. Focus groups were conducted between August-October 2019 and lasted between 60-90 minutes. All focus groups were audio-recorded with participants' permission and transcribed verbatim and analysed thematically using Template Analysis[7].

The key aim of the focus groups was for participants to discuss and generate a list of items for inclusion in a new workforce data collection instrument. Participants were also asked to consider:

1. How feasible and appropriate it was to collect data for these items;
2. How the data collected might be utilised to help general practice staff reflect on their current workforce and plan for the future;
3. What support practices might require both with data completion and interpretation to inform their future workforce planning;
4. What potential strategies might increase practice engagement with workforce data collection;
5. Experiences of using other workforce data mapping tools and lessons learnt from these.

Expert panel

Once focus group data collection was complete, the items generated through the focus groups, along with additional items identified through the rapid scoping review, were presented to an expert panel. Experts with experience in primary care workforce planning, through their professional role, based in Salford and wider GM were invited to take part. All participants were provided with an information sheet about the project and asked for written consent to participate. The expert panel session was conducted in November 2019 and lasted 90 minutes. The session followed a modified nominal group technique approach[8] with the aim of reaching consensus on the most important measures to include in the new instrument. During the session, participants were presented with 30 pre-generated items and asked to rank these in order of importance from most to least important. The ranking exercise was conducted online, using Lighthouse survey software by Sawtooth and analysis

was conducted in the Stata statistical package. This allowed for results to be presented back to participants during the session for discussion. Discussion was audio-recorded with participants' permission and transcribed verbatim.

Key findings

Four focus groups were conducted, with the following participants:

1. CCG strategic leads (n=5)
2. PCN Directors (n=5)
3. Former neighbourhood clinical leads (n=2)
4. Practice managers (n=4)

CCG Strategic leads

Five CCG strategic leads took part in this group. The key messages include:

- The deployment of roles is not consistent across practices, with the same type of practitioner working differently in different places; it may therefore be beneficial for the instrument to focus on tasks within roles rather than roles alone;
- To avoid confusion, the new instrument will need clear guidance for completion with definitions of terminology and roles;
- It will be important to engage practices by emphasising that this instrument is not about performance management but instead it is an instrument to support their workforce planning;
- Although the instrument is funded by the CCG, PCNs could be owners of the data and an aggregated version of the data (at neighbourhood level) could be shared with the CCG – this may be less threatening for practices and help with engagement and completion rates;
- LMC endorsement will be important to help encourage practices to participate;
- It would be helpful to streamline this instrument with the NHS digital NWRS to avoid duplication of work;
- It will be crucial to engage with practice managers to ensure they are 'on-board';
- It will be important that the data collected does not fall into a 'black hole' and that practices see some benefit from and value to sharing this data;
- From the CCG's perspective having this data will be useful for the primary care workforce group to inform their programmes and could help with targeting resources to training;
- There was general agreement that it would be important to capture information on: vacancies; information on starters and leavers; changing of workforce patterns; retirement intentions; trainees; locums; barriers to recruitment.

PCN Clinical Directors/ former neighbourhood leads

PCN Directors from each of Salford's five health neighbourhoods took part in one focus group. A separate focus group was also conducted with two former neighbourhood clinical leads. Key messages from these groups included:

- Previously, the NHS Digital NWRS and the PA consulting tool (trialled in the area) were considered to have not produced meaningful and useful workforce data;
- There is support amongst PCN Directors for workforce planning tools and workforce planning in general. However, PCNs were said to be currently overwhelmed with many other priorities for the next 5 years, namely relationship building and increasing integration and sharing between practices, which makes workforce planning for general practice difficult to prioritise;
- PCNs were seen to be the best place for general practice workforce planning as they have the local knowledge of practices and populations;
- It was felt that practices were going to have to start trusting each other more within their PCNs, especially related to the sharing of data. Some PCNs were said to be further along than others in relation to trust-building within their networks;
- Who owns the workforce data and whether there is trust in that individual/organisation is key;
- In order to increase buy-in from practices there needs to be an understanding of why the information is required and how it will be used, with consideration given to the fact that practices are independent businesses and may not wish to answer some of the more detailed questions about practice activity due to concerns about performance management/interference from outside;
- Practices were considered to do different things well; an instrument such as this could provide an opportunity for practices to learn from one another and explore what elements of good practice they could adopt from elsewhere;
- There was an understanding that a baseline picture of the workforce was required, but participants also expressed an interest in using the data to forecast what the demand for the workforce might be in the future based on population growth;
- There was also a strong belief that workforce planning needs to start with an analysis of patient population characteristics/demographics as each population requires a different workforce. For example, a practice with a high paediatric population may not need multiple GPs but a mix of GPs and paediatricians;
- There was general agreement that it would be important to capture information on skill mix; retirement/leaving/change in working patterns intentions; recruitment and retention; vacancies; locum use; retention of trainees; and intentions to employ 'new role' professionals.

Practice Managers

Initially 3 practice managers (PMs) and 2 deputy PMs agreed to take part in the focus group; however, 1 PM was unable to attend on the day. The 4 PMs who participated were based in one neighbourhood. The key messages from this group include:

- The NHS digital NWRS is not particularly laborious to complete but it is still another task on a very long list and is not viewed as a priority by PMs;
- PMs never receive any feedback from the workforce data they currently provide or see any benefits – data completion therefore becomes a 'tick-box' exercise;
- In order for a new instrument to be successful, PMs need to understand what the data is being collected for, how it will be used and what benefit and support they will receive for providing the data;
- PMs from this one neighbourhood felt that the practices in their network trusted each other and were comfortable sharing information and data. Practices in this network were happy to talk to each other to find out what works well elsewhere; they felt this was not the case in other neighbourhoods in the area;
- There was some caution expressed regarding sharing practice level data with the CCG without knowing how and what the data was being used for. Providing aggregated data at neighbourhood level to the CCG was considered the best approach;
- The instrument needs to be designed to ensure it is as easy to complete as possible (with drop-down pre-generated options) and only needs to be completed when something changes;
- Suggestions were made that an excel spreadsheet would be the best format, allowing PMs to update as and when required and then upload their data to a portal once a year;
- PMs were also keen to visualise the data in a dashboard – Tableau was suggested as an ideal option;
- The ability to visualise and present the data to provide evidence to practice partners to support any staffing requirement requests was also considered important;
- It was also felt that collecting this data could help identify training and support needs. PMs spoke about the potential to standardise the training of administrative staff across network practices to enable the sharing of staff;
- QOF time (Jan-March) is to be avoided for piloting of the instrument; May was considered a better time for data collection;
- There was general agreement that it would be important to capture information on: absence and sickness patterns; employment of 'new' roles staff; external staff supporting the practice; retirement and leaving intentions; reasons for leaving; qualifications and experiences; tasks carried out; locum use; training and support needs; reasons staff stay/strategies for staff retention.

Generated ideas for inclusion in the instrument

Table 1 in Appendix 2 draws together the items generated by the focus group participants, along with those items identified through our rapid scoping review (see separate report in Appendix 1).

Ranking of items

15 experts were invited to participate in the session, two declined and a further two accepted but later sent apologies. Eleven experts took part on the day.

Before the ranking exercise, the group were shown a number of core items identified by the ARC team for inclusion in the instrument, which did not form part of the ranking exercise. These included: staff group role, WTE, gender, ethnicity and age band. The participants agreed that all these core items should be included.

During the online ranking exercise, to make the sorting exercise more manageable given the large number of items, participants were asked firstly to sort the 30 items into 3 groups – items that should 'definitely' be included in the instrument, items 'possibly' to be included and finally items they were 'not sure' should be included. Participants were then asked to order the items by preference within each of the three groups. Based on this order each item was assigned a ranking score of 1-30. The total scores for each item were calculated to generate the overall ranking score for the entire group. These scores were calculated during the meeting and presented to the expert panel to enable further discussion. Tables 2 and 3 present the rankings the expert panel assigned to the 30 items. These are separated into the top 15 ranked items and bottom 15 ranked items, respectively.

Table 2: Top 15 ranked items

Item	Score	Rank
Skills and competencies	265	1
Commonly performed tasks	262	2
Training and qualifications	237	3
Work pattern/role intentions	225	4
Training and support needs for staff in these roles?	215	5
No. of vacant posts in this staff role	213	6
Reasons staff remain in the role	199	7
How long worked in the role	196	8
Retirement intentions	188	9
Longest current vacancy - how long has this post been vacant?	182	10
Is the practice facing any barriers to further employment of staff in these roles?	181	11
Date joined the practice	175	12
Have you adopted any strategies in the last 12 months to retain staff in this role?	175	13
Leaver in last 12 months - reason for leaving	174	14
Do you have plans to employ more staff in the next 12 months?	174	15

Table 3: Bottom 15 ranked items

Item	Score	Rank
Do you find it hard to fill posts for this staff role?	171	16
Currently works in a split/portfolio role?	164	17
In the last 3 months how many locum session have you needed for this staff group?	164	18
Sickness absence rate per staff role	158	19
No. of external staff (actual) who support the practice	158	20
Leaver in last 12 months – sector of new role	151	21
AfC band	148	22
Reasons why locum sessions are needed	139	23
New joiner in last 12 months – sector of previous role	134	24
Leaver in last 12 months - date left the practice	125	25
New joiner in last 12 months - did new joiner train at the practice?	119	26
Approx. number of applicants per post	116	27
For this staff role, do you tend to recruit on first advert?	112	28
Leaver in last 12 months – location of new role	108	29
New joiner in last 12 months – location of previous role	87	30

During the discussion time in the session, the panel also raised a small number of queries about items and points of clarification, which the research team captured to incorporate into the design of the instrument. Examples of these included a suggestion not to limit the retirement question only to those over 55 and the need for clarification on the WTE calculation.

Component 3: Development of the SWorDMAP instrument

Method

In consultation with Salford CCG, decisions were made to focus the instrument on the top 15 ranked measures (shown in Table 2 above), to ensure the instrument was not too lengthy and burdensome. Based on the feedback from the Practice Managers focus group, the ARC team developed the instrument in Microsoft Excel. Early on in development however, it became apparent that a simple spreadsheet format would not suffice due to the complexity and number of response options required (e.g. skills and competencies). The team therefore adopted a data entry sheet format designed using Excel Visual basic. This enabled a large amount of information to be entered and viewed for each member of staff.

In line with suggestions from the focus group participants, the majority of questions were designed with drop-down selections to reduce burden. Where applicable, response options were aligned with those from the NHS Digital NWRS. Where existing response option lists were not available, these were generated by the ARC team in consultation with the Salford CCG partners. A GP and practice pharmacist also helped to generate and categorise the skills and competencies and tasks performed lists.

The developed instrument contains seven worksheets that are visible to the respondent:

1. Instructions sheet – also includes data entry for practice name, code and PCN
2. GP staff group sheet – see Figure 1
3. Clinical staff group sheet – includes the same questions as the GP sheet but with the addition of skills and competencies and task questions
4. Clinical support staff group sheet – as above with tailored response categories
5. Managerial/Admin staff group sheet – as above with tailored response categories
6. Vacancies sheet – records details of current vacancies including how long the post has been vacant
7. Retention and Training – questions regarding strategies for retention of staff, plans to employ additional staff, barriers to further employment of staff and training and support needs.

Iterative changes were made throughout the development process and were informed by informal piloting within ARC, Salford CCG and the CCG's BI team.

Following development of the instrument the CCG's BI team designed a Tableau dashboard (Figure 2) to display the data, as suggested by the focus group participants.

Figure 1: Screenshot of GP staff group sheet

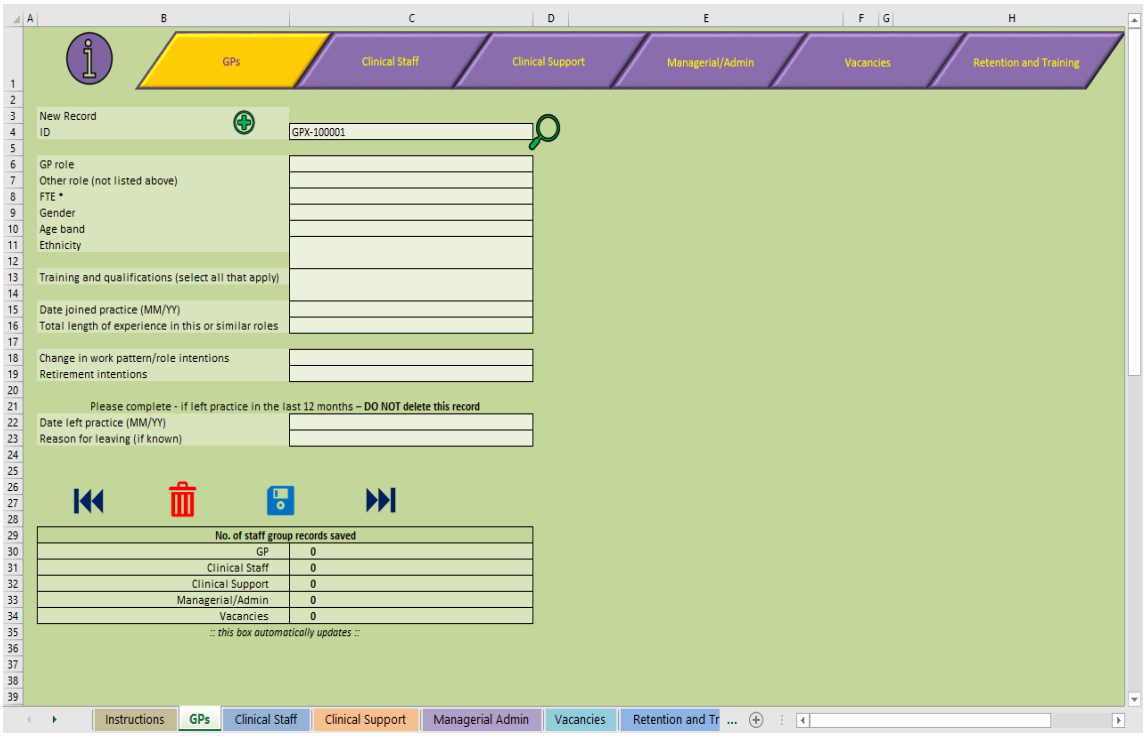
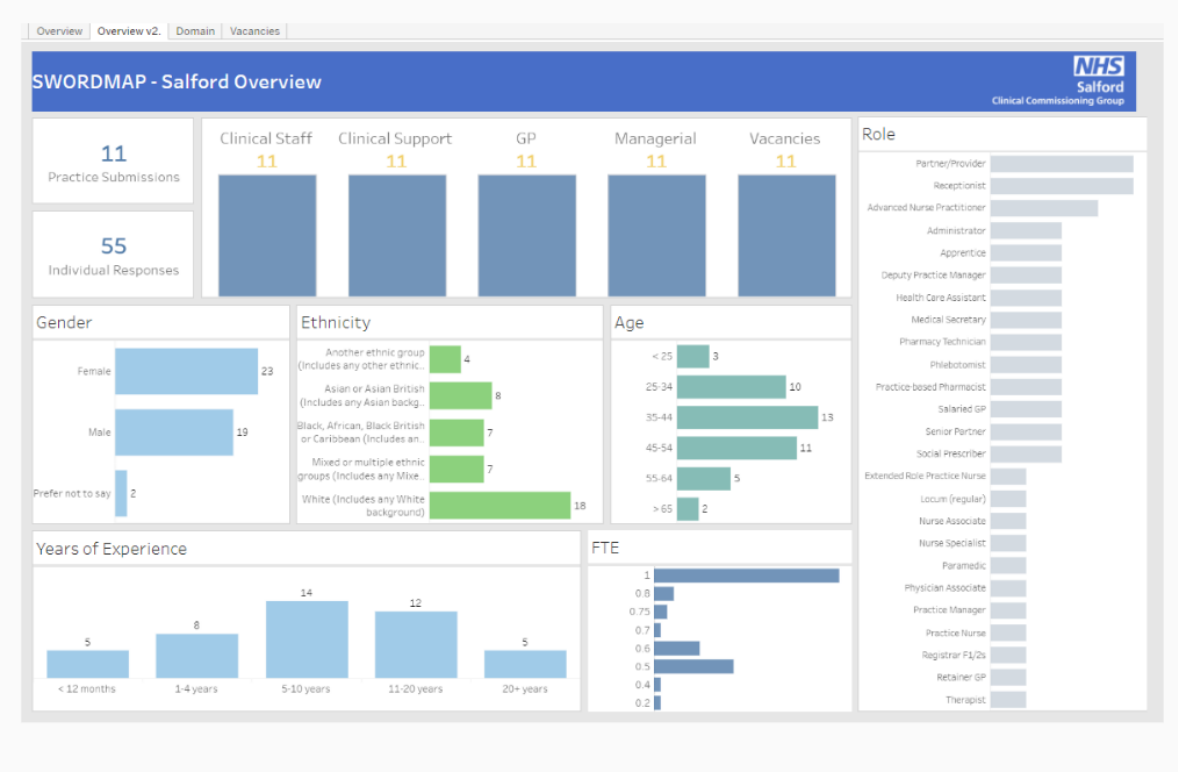


Figure 2: Screenshot of SWorDMAP Tableau dashboard overview (displaying dummy data)



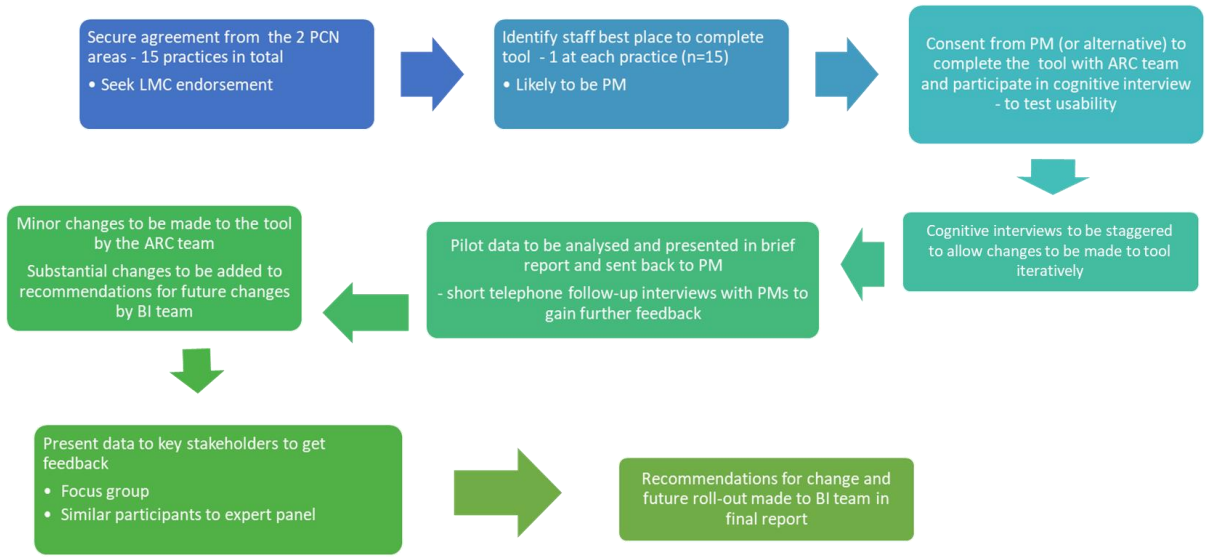
Component 4: Testing the SWorDMAP instrument

Method

Original pilot plan

The focus groups identified a need to alter the original pilot timeline to avoid piloting in general practice during the busy QOF period (Jan-March) and delay this until April 2020, which necessitated a 4-month project extension. However, due to the Covid-19 pandemic it was not possible to start piloting in April. In consultation with Salford CCG, a decision was made to pause piloting and recommence in October 2020, necessitating an additional 6 months extension to the project. The original pilot plan is shown in Figure 3.

Figure 3: Original piloting plan



Revised pilot plan

The planned re-start of the pilot in October 2020 was further affected by the Covid pandemic second wave and vaccination rollout. In consultation with the CCG and Salford Primary Care Together (SPCT - a Community Interest Company that supports GP practices working together across Salford and provides GP services), it was agreed that the original pilot plan would not be feasible nor appropriate due to practices' increasing workload pressures. It was agreed that the pilot plan should be scaled-back to focus on seeking feedback from a small number of experts. SPCT agreed to help identify and approach these individuals.

Semi-structured interviews

Expert participants for the feedback interviews were identified based on their professional role and experience of primary care workforce issues, as well as their availability during the Covid response. CCG and SPCT partners initially approached potential participants and further details, including a participant information sheet and consent form, were sent to these individuals by the research team. Once potential interviewees had agreed to participate, the SWorDMAP instrument was sent by email with instructions to complete at least one record for each staff group along with the vacancies and recruitment and retention questions, prior to the interview. Interviews were arranged at a time convenient for participants and were conducted via Microsoft Teams. An interview topic guide was used, based on cognitive interviewing techniques[9], which focused on retrieval (how easy it was to retrieve a piece of information); judgement (how confident the respondent was on their given answer); response (whether their 'true' answer fitted the responses provided); functionality (how easy the instrument was to use and navigate); and acceptability (whether the instrument was feasible to complete and whether the respondent felt uncomfortable answering any questions). The topic guide was tailored for each interview, depending on the information interviewees had provided in their completed instrument.

Interviews were audio-recorded with participants' permission, transcribed verbatim and analysed thematically using Template Analysis[7]. Interviews lasted between 20 and 40 minutes and took place during December 2020.

Focus group

A focus group was also arranged to include members of a local and regional primary care workforce expert group. In order to reduce the additional burden on participants, this was planned during their regular 2-hour meeting slot. The focus group was conducted via Teams by the ARC research team and included a demonstration of the SWorDMAP instrument, followed by a feedback session. During the feedback session group members were asked for their general thoughts on the instrument; suggestions for improvement; feasibility of completion by Practice Managers; and barriers to completion. This was followed by a demonstration of the associated Tableau dashboard by the CCG's BI team and a further feedback session capturing thoughts on functionality; preferences for training on the dashboard; thoughts on what data levels (PCN, Practice or CCG) would be most useful; and how the dashboard might be used in their professional role for workforce planning.

The focus group was audio-recorded with participants' permission, transcribed verbatim and analysed thematically using Template Analysis[7]. The focus group lasted 67 minutes and took place in January 2021.

Key findings

Three individuals participated in the interviews (2 practice managers (PMs) and 1 GP) and 9 in the focus group (with varied roles including GPs, PCN managers and strategic leads at CCG, local area and GM level).

General thoughts on the instrument

Overall, both interview and focus group participants were positive about the look, design and usability of the instrument. Participants commented that it was straightforward and simple to use:

> *…it's really, really easy to use, honestly, I filled [7 staff entries] in the time it would take me to put one person in on the [NHS Digital] Workforce Analysis Tool. (PM 1, Interview 6)*

> *It looks great…I don't think it could be any more simple. (GP 1, Interview 7)*

> *…it's really good. I was really impressed with it actually and I've not seen anything like it. It's just the richness of data, you know. For the first time we're just going to get everything in one place. (PM 2, Interview 8)*

Suggested improvements to the instrument

Table 4 details the main suggestions for improvement provided by interview and focus group respondents, along with any action taken or recommended by the ARC research team as result of the feedback provided.

Overall, the majority of suggestions for improvement focused on three questions: 1) skills and competencies, 2) tasks performed and 3) training and qualifications. Several participants felt that the tick-box/drop-down response lists for these questions were not comprehensive enough. Following this feedback, response lists were revised further by the ARC team, with input from the interviewee and focus groups participants, including a nurse, GP and PM.

There was some debate regarding the need to include both a question on skills and competencies and a question on commonly performed tasks. Some participants were unclear about the difference between these and felt that those completing the instrument would select the same answers for both lists, i.e. if a staff member has a skill they would also report that they used that skill to perform a task. Other participants felt that there was an important distinction between the two variables and that it would be useful to collect data on both for future planning and identification of training needs:

> *I think there's probably an important distinction as well between skills and tasks in the fact that a task is just a thing you carry out, whereas your skills and competencies, that's where our broader*

knowledge and I think if you only had tasks or defined everything within tasks, you end up being a little bit reductionary about what that profession is. (R7, Focus group)

…I think it's important to have both, because a lot of people have skills which they can do but they don't do, do they?...So some of our nurses don't have any training in asthma but we need them to do QOF reviews, so we've had to train them up, you see? And then some of them have got the training but they don't feel confident enough to use it but they might need to if people go off sick. So I think it's good to have the two, to be honest. (R1, Focus group)

During the earlier expert panel session, skills and competencies was the highest ranked item for inclusion, with commonly performed tasks the second highest ranked item. Due to these high rankings of importance, the ARC team does not recommend excluding one of these lists in favour of the other, or consolidating the two lists, but recognises that completion of both lists by users in the current format is somewhat lengthy and burdensome. In order to aid understanding of why data recording for both questions is important, the ARC team has strengthened the explanatory text for these questions. In the future, if the format of the instrument is changed, the BI team may want to explore the possibility of using some pre-population elements, i.e. if the respondent selects a task, the associated skill/competency pre-populates. This would have to work on the assumption that if an individual performs a task regularly they are, in fact, 'competent' performing that task.

Thoughts on who should complete the instrument

Most participants felt that PMs were the 'right' people to complete the instrument. There were different opinions concerning whether PMs would be able to answer the skills and competencies and tasks performed questions comprehensively; it was felt that this was likely to depend on how long the PM had been working at the practice and how well they knew the staff. Participants advised that in cases where the PM did not possess this knowledge, it might be necessary for PMs to co-ordinate the completion of these questions directly by the staff members themselves.

Another option raised by interviewees and focus group members was for PCN managers or support officers to co-ordinate the completion of the instrument for the practices in their network, to reduce the burden on PMs.

Feedback on the Tableau dashboard

Focus group participants were positive in their responses to the Tableau dashboard developed by the CCG's BI team:

…it looks great, it's exactly what we need, just to have the visual data. (R6, Focus group)

The ability to view the instrument data in visual form was felt to be particularly useful at practice level to help identify, confirm or dispel workforce provision issues:

…I think [the dashboard] will concentrate people's minds because it's all very well toddling along and thinking that you've got all the staff you need or thinking I've got a big gap here, but unless it's actually there in front of you so that you can actually see that, no, actually we're well-provided with some staff in this area, we're overprovided in this other area, and can we swap them around, I think unless it's in front of you sometimes you can be fooled into thinking you are understaffed or overstaffed or adequately staffed when you're not. (R11, Focus group)

The capability to view data at different levels – practice, PCN and local area – was also felt to be valuable, in relation to retirement intentions and the identification of vacancies and potential staffing solutions:

…if we're starting to think about roles across PCNs, it would let people look at their vacancies again more at a system level across their PCN. We could also…if we look at the vacancies across all five PCNs, is there any commonality in roles or duplications, so if you've got 0.3 of a practice nurse in one PCN and 0.6 somewhere else, there might be some value in looking more across a system or a PCN. (R10, Focus group)

When asked about potential training needs and guidance for using the dashboard, focus group participants' overall preference was for both a guidance document and an online demonstration. It was recommended that a demonstration video on YouTube that users could watch at their convenience, rather than a scheduled session, would be preferable.

How could the information be used and by whom?

Participants proposed several ways that the information collected by the instrument and displayed through the dashboard could be used. Data on skills and competencies were felt to be particularly useful. At practice level, participants suggested that access to this information could help practices consider skill-mix requirements more thoroughly when recruiting staff:

…if a particular person leaves like a practice nurse or a GP, you tend to replace them with the same person but having this tool, looking at what skills and competencies…it might make you recruit someone different and that's the whole point, isn't it? It's about having the right skill mix. (R1, Focus group)

Knowledge on the current skills and competencies of the workforce was considered particularly useful for Ms and it was suggested that this information could be shared at the Salford CCG's Practice Manager's Forum. This information was also thought to be potentially useful at commissioner level to help to inform whether further investment in training might be required:

…that will also identify any training needs for the, to the CCG and workforce. So then obviously you can then start thinking about, as a city, you know, when you're commissioning services, it's really powerful information for a commissioner…if you're going to commission a minor surgery service, for example, have you got people who can do minor surgery? (PM 2, Interview 8)

Several participants thought that the data and dashboard could have the most potential to aid workforce planning if adopted and used by PCNs. This highlights the importance of further engagement and consultation with PCNs concerning their potential role as owners or co-ordinators of the instrument and associated datasets:

> *…I don't know how useful it would be or what [GPs] would use it for, on a practice level...it would give PCNs a bit of a better footprint, and the CCG a bit of a better footprint, to know where staff are, and if they could be shared in the future…'cause I guess that's the way it's going really. (GP 1, Interview 7)*

> *…this needs to sit at PCN level… it's in their interests to get this done because as a PCN…it feeds into so much, workforce strategy, you know, training, learning and development…they're the ones that are having to, going to get all this money for additional workforce and do things differently, so that's where it should sit. (PM 2, Interview 8)*

Overcoming barriers to engagement/completion

Similar messages to those expressed in the earlier stakeholder engagement focus groups (Component 2) regarding barriers to engagement also emerged in the piloting focus group and interviews.

Concerns about data sharing and competition

One of the main barriers to completion identified by participants was a concern about data sharing. The majority of participants did not express this concern themselves and stated that they would be happy to share this data, but also felt that this could be an issue for some:

> *There's always people that have reservations about sharing anything. But, I don't know, it's anonymous, I don't know what the real issue would be with it…I'm sure people will have issues with it, but why they would have those issues, I don't know…I mean, for me, it is a bit like, 'Oh God, you know, I don't want to know if someone's got more staff than me really'. But, I don't mind people knowing in a way, do you know what I mean?...I think we've got to get used to working on a bigger footprint and sharing and being less competitive. (GP 1, Interview 7)*

The focus group revealed some interesting insights regarding perceptions of data sharing and competition between practices. Several participants felt that the competition potentially generated between practices as a result of sharing this data would be healthy and help drive improvement. Whereas others were concerned that it might be perceived as unhealthy competition and a step too far for practices:

> *I think you do have to be careful, I mean, yes, competition is great because it does bring us all up, you know, if we can see another area is doing a lot better in a certain area, we pull our socks up, but I do think you have to be careful with comparisons. So I think it's fine to share within the PCN, and I think it's probably fine to share between PCNs in an anonymised form, rather than being completely exactly comparable from one practice to another...I don't think a practice would be particularly happy to be compared to a practice in another PCN, identified as such. (R11, Focus group)*

I think we've got to strike while the iron's hot, when we've got options like this where we're doing it in dashboards and we're already showing each other's flu data, smear data, everything else, then things like this for me should be absolutely out there for everybody to look, because I do think that healthy competition actually makes such a difference, (R6, Focus group)

These findings demonstrate an identified need for further consultation with stakeholders regarding the acceptability of data sharing at certain levels.

Time pressures

An overriding barrier identified was increasing workload pressures faced by PMs, which were exacerbated further due to the Covid-19 pandemic.

My only concern is that obviously how our practice is going to, you know, find the time to do it. And that's where, you know, trust me, how can I put it? Some will get it and some will find the time and some will complain, not be happy about it. (PM 2, Interview 8)

Suggestions to help alleviate this pressure included outsourcing the co-ordination of the completion to PCN managers or support officers (as discussed above); providing clarity of how long completion of the instrument might take and how frequently it would need to be updated; and the potential alignment of the instrument with the NHS Digital workforce data collection (NWRS)

Alignment with NHS Digital NWRS

Although not within the scope of the current project, an aspiration considered and discussed between ARC and Salford CCG partners throughout the project was the potential for alignment with the NHS Digital workforce data collection in the future, to ensure that users only have to complete one data collection exercise. This was also recommended in the earlier consultation focus groups in Component 2. The completion of both types of data return was considered a significant barrier to future engagement with SWorDMAP:

…it was just so much easier to fill out than that [NHS Digital] workforce tool [but] I think you might struggle with engagement with practice managers because things are put on them and they're told that they have to do this and have to do this… That would be the pushback, that we're already doing this and it's taking us ages to do it, so why do we have to do this as well? (PM 1, Interview 6)

…when I was doing it, I actually did also go on the Workforce, the NHS national one…because I was wanting to see what information we put in there. This is a lot more in-depth than that, but there is a lot of duplication. (PM 2, Interview 8)

The ARC team recommends that Salford CCG continues to work towards the possibility of alignment in the future:

…if we can make it so that from a system point of view they're only filling in this tool rather than this and the NHS Digital one and the two…so one feeds into the other, they would hopefully see the value of this tool because it gives them a visual representation and it takes away the work of having to do the NHS Digital one. (R10, Focus group)

Incentivisation

Incentivisation to complete the instrument was raised by many respondents. Monetary incentives were cited as useful, but also dismissed as unfeasible. However, the key incentive, repeatedly raised by participants, was the importance of having a clear succinct message that explains the importance and value of the instrument and dashboard to potential users. This was also cited as the key to engagement by those taking part in the earlier stakeholder consultation (Component 2). Another suggestion included the use of scenarios and/or real-life examples as a powerful way of demonstrating the potential use of the instrument and dashboard:

…if there is a big enough carrot for them to realise that this is a really good thing and that it's emphasised to them that this is what they will get out of completing this, you're more likely to get more people doing it…[maybe] it's just bullet-points that if you do this, these are the advantages that you will get from having completed it, I think that would probably increase the number of people that actually are prepared to do it properly. (R11, Focus group)

…What are we trying to achieve? What's the benefit? Do you know what I mean?...And I think we need to do a bit of comms and correspondence as to draw that out, to kind of just paint the picture…just look at the Coronavirus pandemic, do you know what I mean? Had we got this information in one place, you can quickly see actually how many of this and how many of that… There's so much you can do with this data, but that needs to be explained with real examples as to why we need it… (PM 2, Interview 8)

Lessons can be learned from the NHS Digital workforce data collection exercise – which has faced criticism for a lack of explanation concerning the purpose of data collection and use of this data – to ensure that the SWorDMAP instrument is not viewed in the same vein:

…we don't understand the use of the national tool because we get nothing back from it, it doesn't tell us anything. It's just a data input exercise. (PM 1, Interview 6)

Table 4: Participants' suggestions for improvement and actions/recommendations made by the ARC team

Sheet	Question	Feedback	Actions/recommendations
Retention and Training	Barriers to further employment of staff	Current drop-down list not comprehensive enough	'Other' category added
All staff groups	Retirement intentions	May not be known by a PM and they would perhaps need to ask the staff member. Question was left blank by some respondents either because they did not know whether an intention had been expressed or the staff member was too young for retirement.	Added 'not applicable' option for those too young to retire and 'Not known' for PMs that do not know whether staff member has expressed intention
All staff groups	Role	Should the instrument capture non-practice roles as well? How to capture PCN level roles	'Currently works in a split/portfolio role?' was ranked outside the top 15 by the expert panel. Could be included in the future Recommendation for future inclusion
All staff groups	Training and Qualifications	• More qualifications needed for GPs, not comprehensive enough • Standards for student supervision and assessment (SSSA) missing for nurses • Probably needs an 'other' category and free-text box for those not listed or to add details of speciality • List is not specific for each role	• List of qualifications has been revised with input from PM, nurse and GP • 'Other' category and free-text box added • List re-ordered for each staff group with most relevant at the start of list
GP		Whether GP trained at the practice	'New joiner in last 12 months - did new joiner train at the practice?' was ranked outside the top 15 by the expert panel. Could be included in the future

Sheet	Question	Feedback	Action
Managerial/Admin	Skills and Competencies Tasks performed	List is focused on operational skills and tasks not management/development/leadership	List has been revised with PM input
Clinical support	Skills and Competencies Tasks performed	ECG recording is missing. Care navigation needs a description	ECG recording and a description of care navigation added
All staff groups (except GPs)	Skills and Competencies Tasks performed	Pop-up descriptions are difficult to keep in view – could they work on a right-click instead?	Not possible in current Excel format Future recommendation for BI team if format of instrument is changed
All staff groups (except GPs)	Skills and Competencies Tasks performed	Some debate over whether both lists are required. Majority felt that there was a need to collect both, because staff may have particular skills that they don't necessarily use in their role. Suggestion to strengthen the explanation provided about why these lists are different	Additional explanations added to skills and competencies and tasks performed question Future recommendation for BI team – if format of instrument is changed it could incorporate some pre-population elements to reduce burden
All staff groups (except GPs)	Skills and Competencies Tasks performed	Should there be some guidance/instructions on who should complete these sections – the PM or individuals themselves? May be much quicker for the individual to complete these questions themselves?	As PM knowledge of staff may differ at each practice, decision how to best complete these questions should be left to PM. Further guidance on this may be required in the future once further testing of the instrument has been carried out
Vacancies		Confusion around whether the vacancy information relates to a newly created role or replacement role Instructions needed on what to do when a vacancy has been filled; should record be deleted?	Added additional drop-down responses: 'new post', 'replacement post' or 'replacement post with additional hours'

Component 5: Conclusions and recommendations

Summary

This report details the co-development of a set of bespoke primary care workforce measures for the NHS Salford CCG area. Appropriate workforce measures were identified through a rapid scoping review of existing literature and workforce measurement tools in combination with local stakeholder consultation focus groups. Identified measures were then prioritised and ranked by primary care workforce experts from the Salford and wider GM area and developed into a Microsoft Excel data entry instrument. Following a small-scale pilot with potential users, the instrument has been refined further. This final section of the report details the ARC teams' future recommendations for the instrument.

Future improvements to the instrument

Format of the instrument

The focus of the SWorDMAP project was to develop and pilot a set of primary care workforce measures appropriate for the Salford area. In order to test and pilot these it was necessary to design a simple and usable data entry instrument and Microsoft Excel was the preferred choice among the stakeholders consulted. It was agreed with Salford CCG partners that following the hand-over to the CCG's BI team at the end of the project, the format of the instrument could be revisited depending on future funding allocations. Maintenance and development of the current instrument requires knowledge of Excel Visual Basic, which is not necessarily widespread. The ARC team recommends that the CCG and BI team explore the possibility of transferring the instrument into Tableau in the future, especially as the associated dashboard is already in this format. This may enable more efficient and rapid changes to be made to the instrument, whilst also retaining a greater level of stability and reliability.

Additions and changes to consider

Table 4 above outlines several potential future additions, identified through the small-scale pilot, for further consideration by the CCG and BI team. These include:

1) Whether to include:
    - PCN-level roles
    - Trainees that remain at the practice
    - Non-practice roles

2) Provision of instruction/guidance on who should complete the instrument (or particular questions) once further testing has informed this.

3) If the format of the instrument is changed in the future, the skills and competencies and tasks questions could include some pre-population elements to reduce burden on the user and pop-up definitions may be easier if they worked on a right-click.

Hand-over guidance

Following completion of the SWorDMAP project, responsibility for the development and maintenance of the instrument is being handed over to the CCG's BI team. As described above, the ARC team recommends that the format of the instrument be revisited in the future. In the meantime, the ARC team will produce written guidance for the BI team to help support making changes within the current format.

Engagement with practices

Communication and messaging

An overriding theme emerging from all qualitative data elements of this project is the importance of communication with users regarding the purpose and value of workforce data collection. The ARC team highly recommends that the future roll-out of the SWorDMAP instrument is accompanied by clear and succinct messaging about why the exercise is being carried out and how the data collected might be used and by whom. The findings of this project indicate that the following may help to promote user-engagement:

- Clarity on purpose and value – short text (bullet points) outlining the main purpose and value of completion, either placed at the start of the instrument or the accompanying documents/guidance.
- Draw on PMs who have already participated and tested the instrument to act as champions to help promote engagement, by sharing their thoughts - on the simplicity of the instrument and how it could help their workforce planning - with other PMs in the area.
- The provision of examples/scenarios of how the data might be used, again drawing on the expertise of PMs as described above. The CCG could also generate some examples or scenarios of how they might use the data in the future to support practices and identify and address staff training needs, which could alleviate concerns over monitoring or benchmarking.
- If PCN ownership and support for the instrument can be secured this would add legitimacy to the instrument and help promote further engagement and trust amongst potential users.
- A YouTube demonstration of the Tableau dashboard could help promote the value and usability of the dashboard and consequently could help encourage completion of the instrument.

The nature and delivery of any communication and messaging should also be informed by a further testing stage as proposed below.

It should also be noted that GP practices' readiness for data sharing and transparency widely varies, as these findings have revealed. Whilst the suggestions outlined above may help to address some concerns, organisational culture change requires sustained effort, leadership and time.

Scale-up and sustainability

Further testing

The SworDMAP instrument was received positively by those involved in the small-scale pilot but the ARC team recommends that, prior to wider roll-out, the instrument is tested more widely. It would be advisable to follow a plan similar to the original piloting plan for this project (shown in Figure 3) covering two PCN areas, which was scaled-back due to the impact of the Covid-19 pandemic. This pilot should also strongly focus on collecting data that could help inform the future communication and messaging requirements to help promote engagement, i.e. exploring examples of how data could be used; what time-commitment is acceptable to stakeholders; what support they may need to complete; and thoughts on data sharing and anonymity. It would also be beneficial to explore views on who is the most appropriate person to complete certain questions (e.g. training and qualifications, skills and competencies and tasks) and who else could support PMs with completion.

There would also be value in exploring the role of PCNs in the future rollout, in terms of readiness to and acceptability of PCNs to take ownership of the instrument, dashboard and datasets and their potential role in the co-ordination and promotion of data collection.

Alignment with NHS Digital collection

As described in Component 4, the ARC team highly recommends that Salford CCG continues to work towards the possibility of alignment with the NHS Digital NWRS in the future to help promote practice engagement and reduce burden.

Future possibilities

Following wider rollout and in the longer term, it may be valuable for Salford CCG partners to explore how the SWorDMAP data could be used to model future workforce requirements based on available measures of local health care demand and need. The skills and competencies and tasks data collected by the instrument could also be employed for skill-mix modelling and role substitution modelling. The rapid scoping review in Appendix 1 provides further details and a critique of existing workforce modelling approaches.

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Appendices

Appendix A – Rapid Scoping Review

NIHR | Collaboration for Leadership in Applied Health Research and Care Greater Manchester

NOT FOR CIRCULATION

Approaches to primary care workforce data mapping and planning

A rapid scoping review

Working in collaboration with:

NHS
Salford
Clinical Commissioning Group

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Contents

Introduction

This report aims to provide an overview of current approaches to primary care workforce data collection and measurement for the purposes of workforce mapping and planning. This work was completed to inform the development of an instrument to describe the current primary care workforce in the Salford Clinical Commissioning Group (CCG) area, to identify current gaps and plan future recruitment to inform a stronger primary care workforce designed to meet the specific needs of their population.

This report comprises two sections:

- A rapid review of academic and grey literature focused on approaches to primary care workforce data collection and measurement
- An overview of primary care workforce data measurement systems/tools:
  a) currently being used or previously adopted by general practices in England, and
  b) developed locally in the Greater Manchester area by CCGs and/or GP providers

Methods

Rapid literature review

We searched the academic and grey literature for studies relating to primary care workforce data collection and measurement. A broad range of academic databases were searched (e.g. health services, medical and social sciences). The grey literature was obtained from governmental, policy and health charity sources. We searched for literature published over a 10 year period from 2009-2019, to ensure the literature identified was relevant to the current primary care picture, in terms of workforce shortages and increasing patient demand and need. Additionally, 'snowball' searching enabled the identification of other relevant studies from the reference lists of identified papers. Appendix 1 outlines the search terms used, databases/sources searched and inclusion criteria.

Titles and/or abstracts of all identified papers were scanned for relevance. Twenty-two papers and reports were identified, with an additional three papers emerging from citations within these papers, as relevant for full-text review. Relevant papers were reviewed by two reviewers for key insights about the workforce measures included, the development and piloting process, and the strengths and limitations of the approaches adopted.

Overview of primary care workforce data systems/tools

National and regional level

This overview was informed by findings and information gathered for other CLAHRC research projects, including 1) the *Salford Primary Care Workforce Study: Contribution to a Safer Salford*[1] and 2) *Addressing Long-Term Workforce Challenges in General Practice in Greater Manchester: The Greater Manchester primary care workforce study* (ongoing).

In both projects, we spoke to commissioner and provider stakeholders who described their experiences of the NHS digital data collection system and other nationally available tools. For the latter project we also analysed NHS digital workforce data for each GM CCG, which provided insight into data quality and usability. We have supplemented and expanded this evidence through internet searches to identify other relevant nationally available measurement tools.

Greater Manchester - local level

This section draws on data collected for the ongoing CLAHRC project *Addressing Long-Term Workforce Challenges in General Practice in Greater Manchester: The Greater Manchester primary care workforce study*. Interviews with commissioners and providers from across the 10 GM areas conducted for this study provided insights into the approaches to general practice workforce data collection adopted in several areas in the region.

Rapid literature review

Overview of relevant literature

Overall 25 papers were included as eligible for the rapid review. Table 1 summarises these papers by key theme.

The table demonstrates that the majority of papers identified focused on the modelling aspects of workforce planning in primary care. The research identified was primarily based in the UK, Australia, Canada and the Netherlands.

Table 1: Summary of reviewed papers by broad theme

	Number included in review
Workforce modelling	10
Literature review	3
Analytical/planning framework	2
Secondary data analysis	2
Policy/guidance report	2
Cross-national comparison	2
Skill mix analysis tool	1
Cross-sectional survey	1
Opinion piece	1
Study protocol	1

The modelling papers identified in this review focused on the following workforce groups: GPs only (n=7), GPs and nurse practitioners (n=1), nursing care team (n=1) and doctors, nurses and midwives (n=1).

Approaches to primary care workforce measurement

Level of analyses

We identified papers which approached workforce measurement at cross-national, national and local/regional levels. Cross-national measurements (usually for comparison or benchmarking purposed)[2;3] were hampered by the heterogeneity of the evidence collated, such as the quality and variability of the data and data sources, differing definitions of roles and different units of measurements (e.g. overall headcount compared to estimates of full-time equivalent staff).[4] So, whilst cross-national comparisons can be useful for benchmarking, these indicators cannot provide setting-specific policy recommendations or options.[2]

A small number of papers focused on national level workforce measurement and modelling.[5;6] National analyses, however, can mask differences between regions, such as a surplus of resources in some areas and a shortfall in others.[4] For example, Teljeur et al.

estimated a national GP shortfall of around 6% in Ireland by 2021, and tested four policy interventions to determine how these may affect future supply. They conclude however, that, due to the lack of regional level data available, they could not determine whether this shortfall would be consistent across settings or whether there would be differences between the experiences of urban and rural areas.[5] Using regional level data and adapting their model to regional demographic differences, Laurence et al. were able to demonstrate a predicted surplus of GPs in Southern Australia compared with a predicted shortfall in Western Australia.[7-9] If the national picture does not accurately describe the local situation this could lead to less relevant or effective workforce planning decision-making. Thus for these reasons, developing workforce measures at the local (or sub-national level) can assist in workforce planning that is accurate and relevant to its population.[10]

Measurement approaches

The majority of papers identified in this review focused on modelling supply and demand predictions for the purposes of future workforce planning and utilised existing data sources. The modelling approaches adopted ranged in sophistication from basic supply-demand models to more complex models incorporating needs. Most models were deterministic in the sense that the model would always deliver the same result with the same input.[11] Stochastic modelling, which introduces random changes in an attempt to replicate uncertainty was limited to two modelling examples.[5;12] Curson et al. in their review of the area conclude that, on the whole, the modelling and forecasting skills in the UK health care sector are not sophisticated, in comparison to some other high income countries, and tend to focus more on benchmarking exercises rather than forecasting.[13]

The models identified tended to focus on one or more of the following measures:[11]

1) Supply: a measure of workforce stock (headcount, FTE) and flow (entrants and exits from the workforce)
2) Demand: this is often based on current service utilisation data (number of appointments/consultations, patient visits) mapped onto population characteristics
3) Need: measures taking account of demography, disease prevalence and epidemiology

Establishing appropriate measures of demand and need is considered conceptually difficult,[11] with the concepts of *need, demand* and *utilisation* often used interchangeably by authors.[4] An example of this conceptual confusion can be seen in the Centre for Workforce Intelligence's (CfWI) report[6] on the GP workforce modelling they conducted in 2014. They state that their overall approach to workforce modelling is informed by *need*s-based approaches. The final model, however, is based on *utilisation* data and is described as measuring *demand*. Tomblin-Murphy et al., in reviewing the evidence for workforce measurement in high-income countries, point out that some authors consider demand to be the equivalent of service utilisation, others view utilisation as the intersection between supply and demand and that demand is not independent of supply, whilst some emphasise

that need, demand and utilisation are distinct concepts and one cannot be considered a measure for the other.[4;14]

Demand-based approaches

As described above, predicting primary care demand to aid workforce modelling is complex. Most commonly, observed health utilisation rates are used and applied to future projections of the population's profile to estimate demand. This approach does have limitations as utilisation reflects patient activity rather than actual demand and patient activity is constrained by the number of appointments/consultations offered and available.[15] Teljeur et al.'s study is an example of this approach. They used current population estimates alongside GP consultation rates by age and sex to generate estimates of demand for GP services in Ireland. These rates were then applied to population projections (2009-2021) to estimate the predicted shortfall in GPs compared to demand (5.7%).[5]

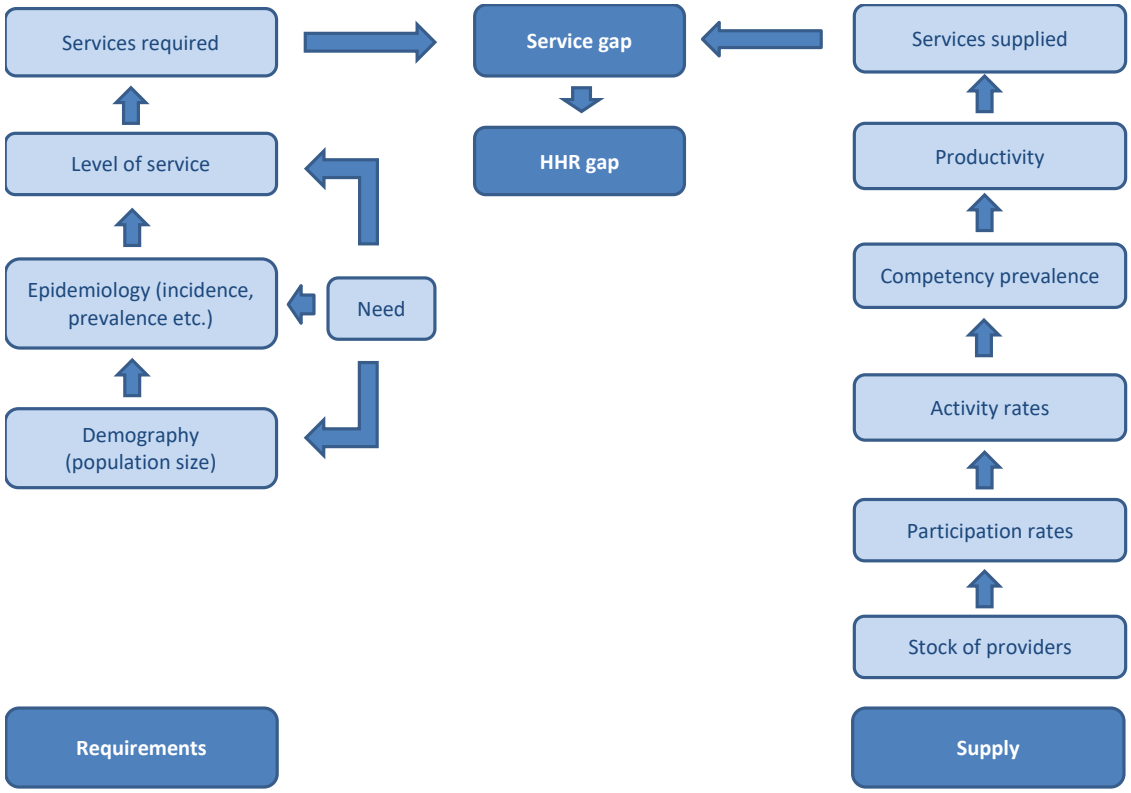
Identifying which patient characteristics might predict demand is also complex. Simple models based on age only have been shown to lead to an overestimation of the level of health care need. This is due to generational health improvements which mean that successive cohorts are getting healthier.[16] One approach, adopted by De Graaf-Ruizendaal et al. in the Netherlands, was to firstly identify the strongest predictors of GP utilisation using national data and then apply these to local population estimates. In this way, locally relevant conclusions were able to be drawn, with low levels of urbanisation, high levels of single-living, low income and older age being identified as key predictors of higher demand. Across the Netherlands they estimated a shortage of one FTE GP or more was prevalent in about 19% of the postcode areas with more than1,000 inhabitants. Shortages were mostly based in rural regions.[17]

In both examples, assumptions are made that GP consultation/utilisation rates will remain stable over time. However, one research team in England, through retrospective analysis of Clinical Practice Research Datalink (CPRD) data, demonstrated a 10.5% increase in annual GP consultation rates per patient between 2007-13.[18] The same team also examined factors associated with GP and nurse consultation rates during 2013-14, focusing on age, sex, ethnicity and smoking status at the individual level, and practice characteristics such as area deprivation quintile, urban/rural status and Quality and Outcomes Framework performance. For both GP and nurse consultation types, consultation rates increased with age, deprivation level, females consulted more than males, and Asian patients consulted more than other ethnic groups.[15] They did not incorporate these findings into a workforce model, but they conclude that identifying these predictors of consultation rates will aid more sophisticated workforce planning in the future.

Needs based approaches

Birch et al. argue that need is not indicated by utilisation, demand or supply and recommend that workforce planners move away from supply-demand models that focus on the number of health care professionals needed, towards an approach of "*how many providers are required to do what, how, for whom and under what circumstances."*[14] Figure 1 outlines Birch et al's needs-based analytical framework.

Figure 1: Birch et al's 'Needs-Based Analytical Framework'[14] as depicted by Tomblin Murphy et al.[4]



Selecting an appropriate measure of need and the availability of data is an important consideration for this type of modelling. Possible measures of need could include measures of health risk, morbidity, mortality and self-reported subjective health status, although there are very few needs-based models that have been designed for primary care.[7] One model has looked at the GP workforce in Australia by adopting a needs based approach using incidence and disease prevalence data. By looking at projections of those suffering with chronic diseases in the future, rather than simply the numbers in each demographic category, Laureance et al. were able to estimate a target workforce size for Southern Australia, for which they subsequently modelled different policy scenarios to meet the potential GP shortfall, with this work replicated for Western Australia.[7-9]

Segal and colleagues[19] outline a framework for workforce planners to assess the needs of certain patient populations. Their workforce evidence based (WEB) planning framework was derived from existing literature, appraisal of clinical guidelines and consensus elicitation techniques with a clinical expert panel in Australia. The framework attempts to outline distinct patient attributes that require unique clinical competencies to enable workforce planners to address and plan for these needs; they use diabetes as a case exemplar. However, given the breadth of causes people access primary care for, as well as the complexity of co-morbidities (i.e., how to estimate service use when the patient may see a GP to discuss more than one illness at a time) as well as unexpected demand for services (e.g., through a severe weather event), Segal et al.'s approach may, in practice, prove too time-consuming and detailed for effective workforce planning.

Policy scenarios

Most of the models identified for this review attempted to model a variety of policy scenarios to indicate the effect these would have on bridging the gap between workforce supply and demand. These included factors such as changes to; working hours of health care professionals[20;21]; immigration levels[21]; international medical graduate recruitment; adjustments to number of training places [6;22]; innovation and reform measures to increase productivity and efficiency[20;21]; staff and skill-mix [21;22]; and increased substitution.[20]

Examples include Teljeur et al's study in Ireland, where the authors modelled the impact of four potential policy responses, including increasing training places for doctors, recruiting more foreign GPs, encouraging the deferment of retirement and substituting GPs with practice nurses to undertake certain tasks. In this case, GP substitution was found to be the policy option most likely to address the future general practice shortfall, demonstrating how data can be used to provide clear directives for policymakers at the national level.[5] Laurence and Karnon modelled the outcome of policy options for Southern Australia, with nurse substitution found to be most likely to lead to a surplus of GPs.[7]

As with most workforce modelling, assumptions were made in order reach conclusions, and the authors highlight the need to make clear the limitations of any such models.

Changing staff and skill-mix

In addition to the studies modelling the substitution of GPs with other healthcare professionals as a policy scenario, Basu et al. developed a simulation model to estimate the effects of substituting a nurse practitioner for a part-time physician on practice revenue, costs and utilisation. They conclude that the simulation model may help policy makers and practice managers to assess the financial implications of workforce composition changes.[12] This US-based study benefited from a detailed dataset that is infrequently available in other countries. Maier et al., in a cross-national review, found that few countries had incorporated skill-mix changes into their workforce planning. They conclude that workforce planning models that include mid-level providers (such as nurse

practitioners and physician assistants) reveal considerable differences compared with physician-only models, with the latter models tending to overestimate the extent of physician shortages.

However, modelling involving the substitution of one practitioner for another, assumes a degree of equivalence between practitioners' roles, skills and competencies, which may not reflect reality.[5] In their literature review of health workforce planning, Dubois and Singh recommend a need to go beyond a 'staff-mix' approach which looks primarily at headcount. They conclude that a focus on staff-mix can overlook the impact of upskilling workers and that skill development (role enhancement and role enlargement) and skill flexibility (role delegation and role substitution) should also be included in workforce models. They argue that approaches also need to take account of the organisational context and institutional factors that influence how staff members work.[23] Using analysis of the consultation records of GPs and Physician Associates, Halter et al. developed a classification of case-mix to inform the differences in the behaviours of the two roles for future comparison, which may have potential for future workforce modelling.[24]

The need for accurate primary care workforce data

Several of the modelling papers identified cite the limitations of the data used in their simulation models, with the predictions made being only as good as the data available. In most cases, the secondary data used was not designed for prediction modelling[7], and in others, estimates were derived from combining multiple data sources, for example where survey data were used to supplement the available registration data.[20]

Highlighting the importance of human resources for health (HRH) being supported by accurate data, Tomblin-Murphy et al.[4] state:

> *"If a particular jurisdiction's HRH stakeholders deemed the data available to them inadequate to fully inform planning, then investments should be made in improving the quality of the available data rather than in further entrenching the use of intrinsically flawed models. To that end, the identification and assessment of the data required to inform HRH planning should be based on the question of how many of what type of HRH are required to perform what services, for whom, and under what circumstances*."

In terms of the picture in England, Kelley-Patterson et al. expressed the view that workforce planning in England is challenged by "disorganised and overwhelming" data.[25] In reviewing the evidence for England, The King's Fund also reported large data gaps in relation to the primary care workforce at present which can impact the accuracy of workforce planning measures.[26]

Collecting workforce data

Where feasible, new and relevant data collection is beneficial in ensuring that workforce measurement tools are as relevant to their respective populations as possible. However, the majority of papers identified in this area relied on secondary data sources, with little consideration given to the collection of new primary care workforce data which could improve planning and modelling.

Only two studies identified in the review involved primary data collection. In the UK, Fletcher et al. surveyed GPs in South West England to assess their career intentions, including potential retirement and taking career breaks and found that morale was an important predictor of career break intentions.[27] Von Eitzen-Strassel et al. in the Netherlands developed and piloted a tool for use at practice level. Data could be entered by GPs or practice managers (population, workforce, consultation data), in addition to providing answers rated on a Likert-scale regarding current workload and eligible funding sources for new staff, as well the types of staff who may be suitable to address the current staffing shortfall.[10] The contents of the tool were influenced by expert consultation, with a pre-piloting tool presented to focus groups before the pilot version was released. The literature search conducted for this work concluded that no other published methods were appropriate for assessing skill mix in general practice.

In terms of the views of stakeholders regarding the collection and utilisation of primary care workforce data, a dearth of literature was identified. Only one opinion piece provided anecdotal reports of some resistance by primary care providers in England to supplying data for workforce measurement, on the basis of a belief that these measures would be used for performance management rather than overall service improvement.[25]

Stakeholder and expert consultation

In several cases, the tools and models identified in the review were developed through a process of literature review supplemented by expert consultation through interviews and focus groups.[10;19] Experts were used to identify sub-populations with a specific disease (diabetes)[19] and to provide guidance in tool development.[10] Bloom et al. also utilised expert consultation, and highlighted a need to make transparent any assumptions underlying favoured policy options, as well as challenges with the data used in the model.[22] The CfWI developed their policy scenarios through extensive consultation with experts using a Delphi panel to reach consensus[6] and Laurence et al. conclude that in the absence of better quality data, expert consideration is required to inform appropriate policy responses.[9]

Conclusion – key points

- Most of the literature identified in the review focused on the development of mathematical models to predict whether workforce supply would meet future projected demand and/or need
- These models range from basic supply-demand models to more sophisticated needs-based models
- Demand based approaches suffer from a range of limitations, including the use of service utilisation data as a proxy for demand (utilisation data represents activity rather than actual demand) and assumptions that the utilisation of services by a patient population will remain stable over time
- Needs-based modelling may be more sophisticated but is reliant on the availability and quality of incidence and disease prevalence data or self-reported health data; there are few examples of this approach in primary care

- The majority of papers identified in the review utilised secondary data sources which had not been collected for modelling purposes; the predictions made can only be considered as good as the data available
- There is limited literature focused on collecting new and accurate baseline workforce data
- Some literature emphasises the importance of collecting data beyond headcount and the importance of measuring skills and competencies
- There is little discussion in the identified literature around stakeholder views on the collection and utilisation of primary care workforce data, apart from some anecdotal reports of local resistance

- Many of the studies included in this review supplemented the evidence they reviewed with expert consultation, which in many cases aided the creation of locally relevant measures. This is important when translating existing evidence between settings due to differences in population, exposure to determinants of health and local nuances in healthcare delivery.
- Local, practical knowledge is important to ensure tools are relevant and not created detached from the setting in which they will be used, which is why this was an important part of the process in some of the papers reviewed
- Many papers also reported conducting some form of evidence synthesis before concluding that there was a not an instrument in place that fulfilled the needs of their specific population.

Primary care workforce data systems/ tools

Overview of identified systems/tools - National and regional level

We identified six key systems/tools currently used. Two of these (NWRS and Apex Insight) were used at the national level and four (WRaPT, VWIS, Wessex and Healthy London Partnership) were developed at a regional level.

National Workforce Reporting System (NWRS)[1]

Developed and maintained by: NHS Digital
Purpose: To provide national workforce data from primary care. The reporting module allows practices to download a range of reports and graphs
Data Measured/Captured: The NWRS collects a series of mandatory data and desirable data, on a quarterly basis. Mandatory data forms the workforce Minimum Data Set (wMDS) and includes individual level data on: Staff group (GPs, nurses, direct patient care and Admin/non-clinical staff), job role, contracted hours, date of joining/termination, reason for leaving, absences and vacancy data, and infrequent locum usage. Desirable data includes: gender, ethnicity, registered/special interest, contract type, source of recruitment, destination upon leaving.[2]
Format of tool(s): Online
Availability and cost: Requirement for all practices to upload mandatory data to complete the workforce Minimum Data Set (wMDS)

Summary: From 1 April 2019, primary care data entry moved into the NWRS. The NWRS is comprised of two modules:

1. Data entry module: is where general practices complete their workforce information.
2. Reporting module: a suite of reports containing published, non-identifiable data based on the workforce data returns.

Individual level data is not shared with other organisations (HEE, NHE and practice's CCG) unless practices authorise NHS Digital to do so. NHS Digital produces an experimental statistics quarterly report which provides pseudonymised individual level data on staff group, job role, country of qualification (GP only), age, gender (if known) and FTE. The reporting module allows practices to track their workforce data over time and compare

[1] https://digital.nhs.uk/data-and-information/areas-of-interest/workforce/national-workforce-reporting-system-nwrs-workforce-census-module
[2] https://digital.nhs.uk/binaries/content/assets/website-assets/data-and-information/areas-of-interest/workforce/nwrs-data-entry-module-user-guidance-v1.0.docx

their workforce to a parent organisation (CCG). It does not adjust for differences in patient demographics or allow the practice to track or forecast changes in demand or need,

Previous systems: Prior to 1 April 2019, data was collected via the Primary Care Web Tool (PCWT). Some areas in England, including the North West, submitted their data via Health Education England's (HEE) Workforce Repository and Planning Tool (WRaPT) instead and HEE submitted their data to NHS digital on their behalf. These arrangements are no longer in place, the last collection including data from HEE tools was December 2018, and the new NWRS subsumes both previous tools.

GM experience: We know from our analysis of NHS digital workforce data for other CLAHRC projects that the validity of the dataset has been hampered by issues of non-completion and missing data. Methodology previously adopted by NHS Digital resulted in practice returns for entire staff groups being treated as incomplete and removed if job role data was missing. NHS Digital has since changed their methodology which has reduced the level of incomplete data and completion rates by practices have generally increased over the last three years. For the latest March 2019 return, 99.5% of practices in England supplied valid data.[3]

Interviews with GM commissioners and providers, conducted prior to the introduction of the new NWRS, described a perception by practices that the old tool was too laborious, and in a time-pressured environment, this led to practices completing the bare minimum. There was a sense that the data collected did not accurately reflect what staff do in general practice and thus there was little benefit to completion. Interviewees also revealed that some practices had expressed concern over how the information might be used (e.g. for performance management) and were uncomfortable sharing what might be commercially-sensitive information.

Workforce Repository and Planning Tool (WRaPT)[4]

Developed and maintained by: Health Education England.
Purpose: To enable the repository and modelling of workforce data across health and social care organisations. The tool is not specific to the primary care environment. The tool is composed of two modules 1) The Workforce Repository and 2) Scenario modelling.
Data Measured/Captured: The tool utilises three types of data 1) Workforce (headcount and FTE) 2) Activity (bespoke to each project) and 3) Drivers (e.g. time taken per activity)
Format of tool(s): Online
Availability and cost: Freely available

Summary: The WRaPT project was commissioned by HEE (North West) in 2013 and delivered by a team at Lancashire Care NHS Foundation Trust in partnership with GE Healthcare Finnamore. A new version of the WRaPT tool was launched in 2018. The tool

[3] https://files.digital.nhs.uk/ED/E85A85/GPW%20DQStatement.pdf
[4] https://wrapt.org.uk/

aims to collate data from different health and social care organisation to enable planners to examine a workforce baseline and model future scenarios. In particular it has been used to map and model the workforce across new care models and integrated organisations. Once the initial data is collected, the WRaPT team can provide support to organisations for wider data collection and analysis. The whole WRaPT process[5] can include:

1. Workforce baseline report – Staff group, role, pay band, age profile
2. Demand analysis and forecasting – using activity data (through Tableau software)
3. Creating scenario models – through stakeholder engagement
4. Conducting a skill matrix analysis

Use in primary care: Prior to the introduction of the NRWS (see above), general practices in the North West submitted their wMDS data via the WRaPT tool; this data was then submitted to NHS Digital on their behalf. This arrangement is no longer in place and the NRWS is now the only system for submission of this data. Exemplars provided by the WRaPT team demonstrate use of the tool in hospital, community and cross-economy settings, but provide limited examples of use in primary care. The tool uses a pre-set template for uploading workforce data which is similar and less detailed than that used by the NRWS and therefore suffers from the same data limitations.

GM experience: In 2016, HEE (North West) engaged the WRaPT team to support the Salford Vanguard programme. The project delivered a baseline workforce report across Greater Manchester Mental Health NHS Trust and Salford Royal NHS Foundation Trust and included the staff transferred into the Integrated Care Organisation from Salford Council. Primary care data for the baseline report was drawn from the NHS Digital data and not validated locally, meaning it suffered from the same data limitations discussed above. The report provided high level demographic staff data and a broad overview of role type.

Apex Insight Tool[6]

Developed and maintained by: PA Consulting and Edenbridge.
Purpose: To provide an informatics dashboard for general practices to help plan their workforce and activity.
Data Measured/Captured: Apex connects to the practices' GP clinical management system and further baseline data is added by the practice to enable workforce planning.
Format of tools: Software
Availability and cost: £1295 per practice per year.

Summary: ***Apex*** is a software package developed by Edenbridge focussing on practice activity, productivity and workload. ***Insight*** is a software package developed by PA

[5] https://wrapt.org.uk/wp-content/uploads/2018/04/Entire-Process.pdf

[6] https://assets.digitalmarketplace.service.gov.uk/g-cloud-10/documents/92452/406390556437816-service-definition-document-2018-05-23-1432.pdf
https://www.digitalmarketplace.service.gov.uk/g-cloud/services/406390556437816

Consulting to support workforce planning and to assess the workforce implications of new models of care. The two products have been piloted and PA and Edenbridge have formed a joint team to offer the combined Apex Insight offer. The Apex insight tool is an informatics dashboard for the GP practice or 'enterprise'. The tool was created for Health Education England for purposes of workforce modelling. The tool has four key sections:[7]

1. Population Health – Underlying patient data.
2. Improving Access - Analysis of planned appointment capacity.
3. Improving Efficiency – e.g. Total number of appointments offered, providing a trend analysis based on actual historical data.
4. Workforce Planning - current workload demands within GP Practices.

GM experience: Several areas in GM have piloted the Apex Insight tool with a mixed response. The cost of proprietary software was described by two areas as prohibitive. Another area, with a high proportion of administrative and non-clinical staff found the tool did not capture non-clinical activity and thus could not provide a holistic approach for workforce planning in their area. Complexity of completing the tool was also cited as an issue, with practice managers reporting that initial training was soon forgotten and they faced difficulty using the tool several months later.

Virtual Workforce Information System (VWIS)

Developed and maintained by: Greater Manchester Health and Social Care Partnership (GMHSCP)
Purpose: To amalgamate existing workforce data into a single platform to provide an overview of the workforce that make up the Greater Manchester Local Care Organisations (LCOs).
Data Measured/Captured: Baseline workforce data is being captured from several sources. For those working in NHS organisations workforce data is being drawn from the Electronic Staff Record (ESR). For local authority staff HR records are being utilised. For primary care, NHS Digital data (from the NWRS) is being used (see section above).
Format of tools: Bespoke design within Tableau software
Availability and cost: System is due to be piloted in Manchester and Bolton prior to a phased roll-out.
Summary: The VWIS pilot commenced in February 2019 and runs for 12 months. The aim is to provide a baseline picture of the Greater Manchester health and social care workforce to enable workforce leads to gain a better understanding and knowledge of the various teams working across health and social care. The system is to be piloted in two areas in Greater Manchester, although it has so far faced delays due to information governance issues. In terms of primary care data, the system relies on existing NWRS data and there are no current plans to capture any new data for primary care under the VWIS project. In comparison, the data available for NHS staff through the ESR is considered to be more

[7] https://www.edenbridgehealthcare.com/products/apex-practice

detailed than the current primary care data available through NWRS. Future plans for the system include the potential to model and forecast using age data (retirement) and absence trends.

GM experience: System is still in development

Wessex Tools - The Wessex Primary Care Project

Developed and maintained by: Wessex Academic Health Science Network and Wessex Local Medical Committees Ltd
Purpose: Tools designed to show i) which of the tasks in general practice could be undertaken by other healthcare professionals (non-GPs), ii) how many appointments other professions could cover in place of the GP and iii) to highlight requirements for replacing staff approaching retirement.
Data Measured/Captured: Prior to tool development a questionnaire was created to identify the numbers of GP consultations that could have been undertaken by another healthcare professional. Practices input workforce data to use tool.
Format of tools: Web based
Availability and cost: Freely distributed to practices in Wessex region.

Summary: As part of the Wessex Primary Care Project (2017), the Academic Health Science Network has developed three web-based tools, which have been made available for practices within a GP web-portal. The tools were developed based on feedback and results from a survey of GPs to examine how many patients could be seen by other professionals. The three tools are described below:

1. **The Skills Matrix** – a matrix showing which of the tasks in general practice can be undertaken by other healthcare professionals.
2. **The Workforce Tool** - show how many appointments other professions could cover in place of a GP. It calculates the whole-time equivalent required of each staff group and the likely employment costs.
3. **The Age and Sessions RAG (red/amber/green) rating tool** - tool highlights requirements for replacing staff in two and five years by flagging shortfalls in sessions and by assuming that staff will retire by the time they are 60.

An updated and publically available skill mix matrix is made available by Wessex Local Medical Committees Ltd. https://www.wessexlmcs.com/skillsmatrix

GM experience: We are aware of one GM area that has utilised the Wessex skills matrix in conjunction with their workforce data collection tool. Provider stakeholders were invited to a presentation of the workforce data and the skills matrix was used during these meeting to stimulate discussion and consideration by practices about the possibility of changing their skill mix and employing other health care professionals to address GP vacancies.

Healthy London Partnership: Primary care workforce modelling[8]

Developed and maintained by: Healthy London Partnership (collaboration of 32 London CCGs).
Purpose: To provide CCG and practice level workforce calculators to help plan workforce.
Data Measured/Captured: Practices are required to enter data on workforce and activity into the spreadsheet.
Format of tools: Excel Spreadsheet
Availability and cost: The spreadsheet is freely available but specific to London.

Summary: The CCG and practice level workforce calculators use a range of data that contribute to supply and demand. Practices input supply related data on number of staff, hours worked per day, days worked per year, proportion of time with patients vs. admin tasks and demand related information on population and healthcare need are already contained within the spreadsheet from Office for National Statistics and Greater London Authority data sources. The spreadsheet calculates demand and supply FTE[9], as well as a forecast into 2020. Activity and workforce is benchmarked against London and England averages.

GM experience: Not applicable

Overview of identified systems/tools – Local GM level

Six of the 10 GM areas have attempted to collect some general practice workforce data for their areas. The approaches adopted have differed by site and by degree of sophistication. In some areas data collection has been led by the CCG; in others this is a joint undertaking between the CCG and Federation. Overall, across GM as a region there appeared to be little discussion, collaboration or sharing of knowledge between areas regarding data collection and tool development.

Types of measures

Most areas have focused on collecting baseline information about the workforce. Example measures used by some of the areas are highlighted in Table 2.

[8] https://www.healthylondon.org/resource/primary-care-workforce-modelling/
[9] https://www.healthylondon.org/wp-content/uploads/2017/11/The-Primary-Care-Model-The-approach.pdf

Table 2: Example workforce measures adopted by some GM areas

Measures	
Headcount and FTE	
Planned headcount and FTE	
Duties and skills associated with roles	Duties, skills, banding
Non-medical prescriber	
Vacancies – headcount and FTE	
Age profile of staff	
Career intentions	e.g. intentions to retire, intentions to go part-time
Planned retirement date	
Number of leavers in last year	
Leaver details	Age profile and destination
Number of joiners/new starters in last year	Date joined, place of previous employment

Formats used

Most areas appear to have collected data using a spreadsheet format, such as Excel. Feedback from CCG/providers involved in designing these tools indicates that this is the preferred format of many practice managers. One area has designed their own web-based tool, which had the advantage of being hosted on a secure platform as well as the ability to extract data from GP clinical systems.

Use of data

One area hosted neighbourhood meetings to present their data for consultation and gain feedback. They then re-presented the data to demonstrate the challenges each neighbourhood faced and used the Wessex Skills Matrix (as described above) to stimulate discussion on the potential utilisation of new roles in general practice to address some of these challenges. This is also the only GM area that we know of that has attempted some modelling involving projected service utilisation based on estimated population growth.

Other areas had collected baseline information and were keen to conduct some modelling for future projections. They hoped to link this with GM-level work but soon found there was little progress made in this area, during which time their baseline data became outdated and unusable. Other areas were in the process of data collection or had just finished data collection but did not reveal future plans for analysis, use and presentation. Overall most areas indicated that the data they had collected was a ‘one-off’ and unlikely to be repeated annually.

Response from practices

In those areas that had completed data collection, response rates were reported to be high at around 90-100%. In one area, data collection was led by the Federation and it was felt that this approach had alleviated practices' concerns about how the data might be used and for what purposes. Other CCGs had recruited well-respected local GPs to help lead data collection, building on existing relationships and trust, again to allay practice concerns. One CCG had made data return a stipulation of local practice standards which was linked to reimbursement – this area received 100% response. Another CCG did not build on existing GP relationships but assigned a dedicated CCG staff member to visit each practice and sit one-to-one with practice managers to help them complete the tool. This more resource-intensive approach led to 98% response.

However, the challenge of replication was raised by many respondents. Providers and commissioners alike expressed concern that they may not achieve such high response rates if data collection was repeated in the future. There were concerns that it may appear excessive to practices to repeat the exercise too frequently and that they may become frustrated if local tools appear to be duplicating the national NHS digital data collection and creating additional work. Failure to demonstrate to practices that the data had been used in a beneficial way was also considered a threat to successful practice engagement in the future. Bearing in mind that some areas, as described above, were unsure how to analyse and apply the data collected in a meaningful way, GP disengagement with the process in the future may be a real possibility.

Conclusion – key points

- Nationally, NHS digital workforce returns have historically suffered from low returns and/or incomplete data. Data completion and thus usability has improved in recent returns
- However, feedback from GM suggests users see little benefit to completion of the national return and many suggest the data does not accurately represent what the workforce actually does
- The Apex Insight tool was perceived to have some advantages but cost and complexity of completion were described as prohibitive. The focus on the clinical workforce only was found to be a disincentive to adoption in areas with high levels of administrative workforce
- The WRaPT tool has the potential for scenario modelling, but the workforce baseline data utilised is focused mostly on headcount and FTE and thus suffers the same limitations as NHS digital data. VWIS is also utilising the same NHS Digital data for primary care.
- The Wessex and Health London Partnership tools may warrant further exploration

- Lessons from local data collection in the GM area indicate that several areas have designed their own bespoke data collection tools. However there appears to be little

collaboration or sharing of knowledge regarding the development of these tools across areas

- Response rates to local initiatives have generally been high and may be explained by being federation/GP led; building on existing relationships, developing trust as to the uses of such data, and through the provision of dedicated one-to-one support for completion
- Areas generally did not have immediate plans to collect data on a rolling or continuous basis, often due to the resource-intensive nature of data collection. This was also related to concerns about practice commitment in the future unless some benefit was shown from the previous exercise and/or tools were considered not to duplicate NHS digital data collection and create work.
- Overall plans for data application and analysis were vague, and very few areas had attempted to use their data for workforce modelling or forecasting.

Summary and discussion

This review has provided a broad overview of existing models, measures, methods and tools for mapping the primary care workforce, internationally, nationally, regionally and locally – consolidating academic and grey literature alongside local knowledge. Whilst we have attempted to be as comprehensive as possible, as with any rapid review, there may be additional literature and existing tools we have not identified.

This review has demonstrated the need for accurate workforce data and the limitations of using secondary data not specifically designed for workforce planning purposes. Despite this need, focus in the academic literature around the design, methods and acceptability of new workforce data collection is largely absent. Current workforce data in England is considered 'disorganised and overwhelming' and primary care data especially is recognised by stakeholders to include large gaps, both in terms of non/inaccurate completion by practice and lack of detail beyond numbers and demographic profile of staff. The national tool (NWRS) has improved significantly however, in terms of response rates, but at a local level there are concerns about value, relevance and accuracy. The system also has limited use, given that it is not designed to report on demand or need nor can it be used to model hypothetical workforce scenarios. The Apex Insight tool offers more by including dashboard information on appointments, activity, costs and scenario modelling, but still has limitations and is seen by some to be prohibitively expensive and too complex to complete without extensive training. This rapid review also identified two other regional tools which may warrant further exploration, although it should be noted they were designed specifically for those areas and may not be fully applicable elsewhere.

These limitations have led stakeholders to collect new primary care workforce data at local levels, using a variety of approaches. In six of the 10 CCG areas within GM, CCGs or CCGs and GP federations have adopted locally-tailored approaches. These approaches have been facilitated by strong local relationships, commitments on how the data will be used and the provision of direct support for completion. These vary by scope but generally focus on headcount, and typically generate high return rates. A key limitation is that often this is a resource intensive process relying on manual input, meaning that it is difficult to undertake more than once without palpable returns to practices. Most use Excel for data collection but one area has developed a web-based tool which can extract data from practice systems. This area also adopted a consultative approach, sharing data collected to stimulate discussion and attempting to model service utilisation based on population growth. Issues of scope, administrative burden, challenge of engagement, perceived benefit and replicability merit further attention, and this review has clearly shown that the current academic literature has not examined stakeholder issues which might affect willingness to provide full and accurate data in any detail. The current absence of a joined-up GM-wide approach is also notable.

Primary care workforce planning adopts various approaches to model supply and demand to inform workforce planning, with some of the most advanced being developed in Australia and the Netherlands. Modelling and forecasting skills in the UK primary health care sector are not sophisticated however. This review has demonstrated that models in this area either take a supply, demand or needs based approach. There is conceptual confusion and inconsistencies around the use of these terms, however, and the validity of the data selected to measure these concepts is questionable. For example, service utilisation data, which is a measure of activity and dependent on supply, is often used as a measure of demand. However, in the absence of more accurate data and greater conceptual clarification on how demand can actually be measured, compromises using the best available data will need to made. Needs based approaches are considered more advanced but require disease incidence and prevalence data or self-reported health status. They also require calculations to be made about the level of service, consultation time or clinical skills that would be required for individuals with different health conditions. Such approaches may therefore be more precise but may be too complex and time-consuming for effective workforce planning.

The literature in this area is beginning to recognise the need to incorporate skill-mix into workforce modelling, although this is still in its infancy. Substitution of doctors with nurses was modelled as a scenario in some workforce tools, but does assume that skills and competencies are equivalent. The Wessex skills matrix warrants further consideration as a potential tool for use alongside other workforce mapping systems, to examine and compare which members of the primary care team could provide certain services, along with the costs of each staff member. One area in GM had utilised the tool following workforce mapping and reported it to be beneficial.

This review has demonstrated an array of different approaches to primary care workforce data mapping and planning, ranging in complexity. A key message from this review is that, regardless of their level of complexity, the design and implementation of workforce data systems, tools and models are all improved by the involvement of expert stakeholders, including those with clinical expertise and practical, local knowledge. This involvement is therefore crucial to ensure that any the design meets the needs of the commissioners, planners, providers and users of that health care system.

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Appendices

Appendix 1 – literature review search strategy

Table 3: Literature review search strategy

DATABASE	SEARCH TERMS
Academic sources	
Pubmed/MEDLINE	'workforce data' OR 'workforce planning' AND 'primary care' OR 'primary health care' OR 'primary healthcare' OR 'family practice' OR 'general practice'
PsychINFO;	
PROSPERO	
ASSIA;	
CINAHL	
Cochrane Library	
Scopus	
HMIC	
AMED	
Web of Science	
EMBASE	
NICE – NHS Evidence Search	
Google Scholar	
Grey sources	
NIHR journals library	As above
King's Fund	
Nuffield Trust	
Health Foundation	
Inclusion criteria	
Language	English
Published	2009-2019

Appendix 2 – screenshots of national and regional tools

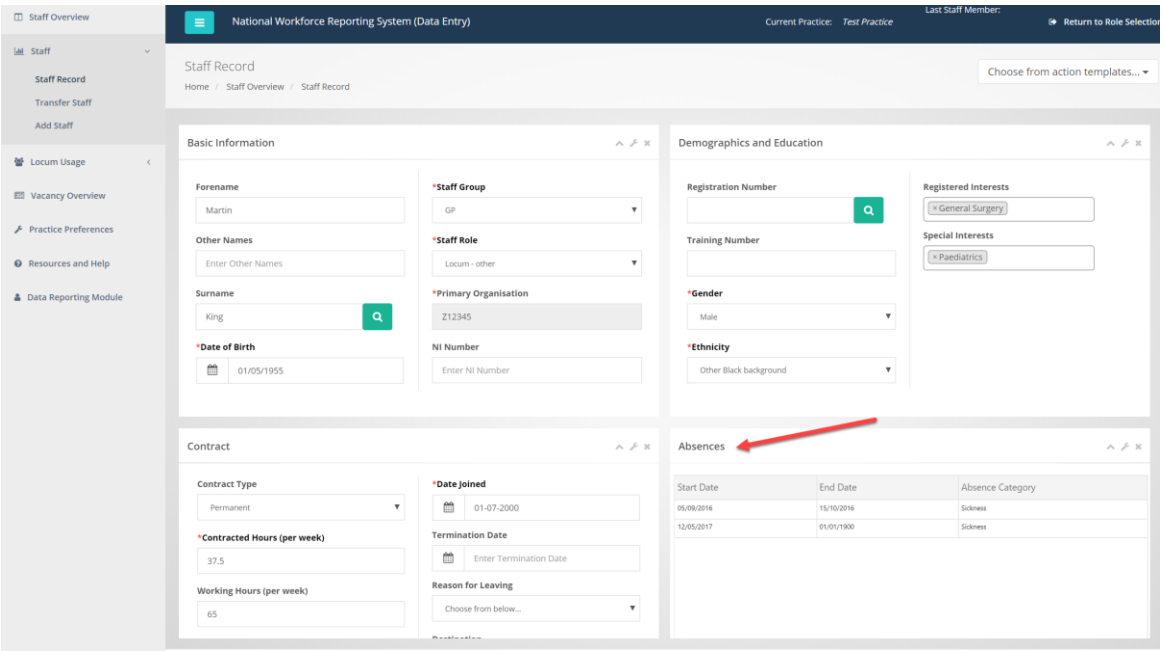

Figure 2: Screenshot from NWRS Data Entry Tool (NHS Digital)

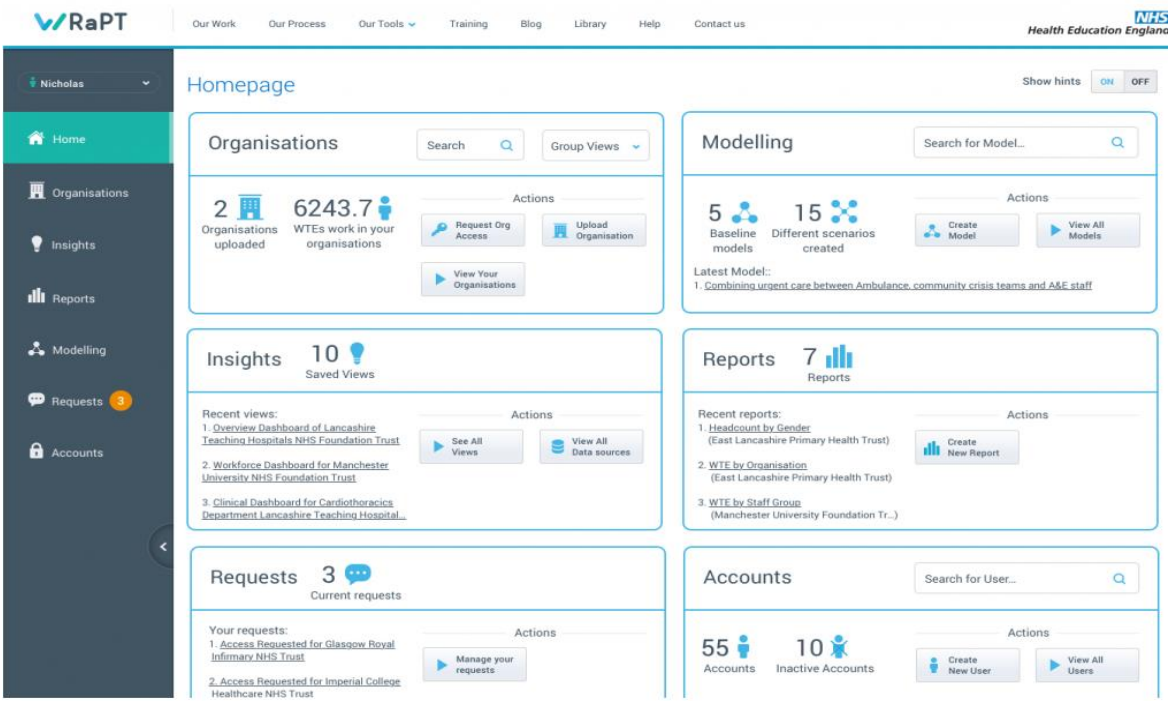

Figure 3: Screenshot from WRaPT (HEE)

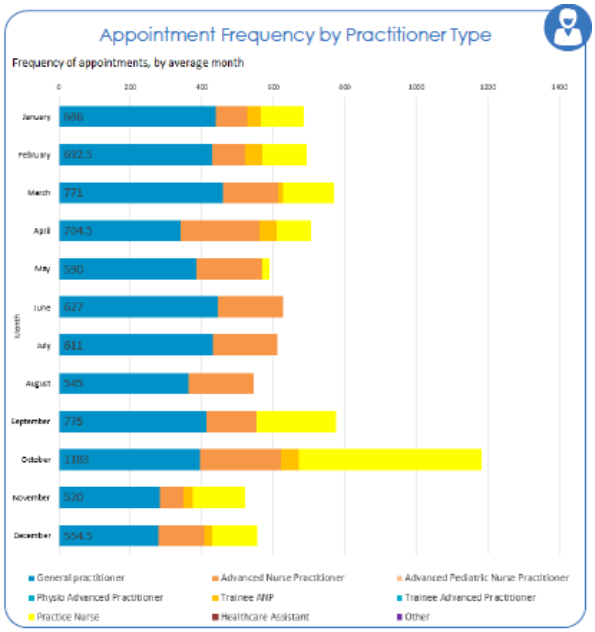

Figure 4: Screenshot from Insight Dashboard (PA Consulting)

Multidisciplinary Framework Costings

Key:

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SKILLS & COSTINGS		Care Navigator	Apprentice	HCA	Nursing Associate HCA	GPN Level 1	GPN Level 2	GPN Level 3 NMP	Physicians Associate (PAs)
	Bands		Band 2	Band 3	Band 4	Band 5	Band 6	Bands 6-7	Band 7
The timings of each activity represent the average from data provided by PMs/GPNs	Potential Annual Full Time Salary (mid band)		£17,787	£19,122	£21,582	£25,934	£31,121	£34,403	£37,161
It is acknowledged that much more than a 'specific task/activity' takes place in any consultation	Hourly Rates @ 18/19 AFC Scales (mid band)		£9.12	£9.81	£11.07	£13.30	£15.96	£17.64	£19.06
The list below provides a 'snap shot' of the most common activities. It is not a full list.	Rate per Minute (rounded up/down)		£0.15	£0.16	£0.18	£0.22	£0.27	£0.29	£0.32
Prescribing									
Use of PGDs									
Referral Radiology									
Full Clinical Assessment & Decision Making									
Referral to Secondary Care									
Full MSK Assessment									
Leadership									
Clinical Teaching									
Research/Audit									
Home Visits incl Travel & Documentation	60					£13.30	£15.20	£17.64	£19.06
Same Day Access	10						£2.66	£2.94	£3.18
ANNUAL REVIEW									
Learning Disabilities Review	30						£7.98	£8.82	£9.53
Medication Review	10					£2.22	£2.66	£2.94	£3.18
Mental Health Review	10						£2.66	£2.94	£3.18
LIFE STYLE									
Diet - Weight Control & Lifestyle Advice	15		£2.28	£2.45	£2.77	£3.32	£3.99	£4.41	£4.76
MGMT Of PRESENTATIONS									

Figure 5: Screenshot of Wessex Multidisciplinary Framework for General Practice v22

HLP London Primary Care Workforce Calculator

This sheet is the basis for the model behind the workforce calculator tool.

This sheet seeks information about your practice and your current ways of working to help us understand the time allocations at your specific practice. Once you have completed the entire workbook this sheet will illustrate a practice level workforce capacity view

Workforce information

Please identify your practice: E84069 (select practice code from the drop down list)

If you do not know your practice code: #N/A (select practice name from the drop down list)

Please tell us here how many patients are currently registered in your practice? 11437

Do you intend for the practice to grow its list in the coming 5 year period? If so, by how much? 6% (% growth over 5 years)

Please help us understand how activity is split between GPs and other roles in your practice

What % of appointments would the GP typically see?	GP	65% %
What % of appointments would the Nurse typically see?	Nurse	20%
What % of appointments would Other DPC roles typically see?	DPC	15% %

Practice workforce	(FTE)
GPs	8.3
Nurse	1.3
DPC	1.6
Admin	5.9

On average, how many appointments per patient per year does your practice fulfill? 5 (number to nearest 0.5)

Figure 6: Screenshot from Practice level workforce calculator (Healthy London Partnership)

Produced by Collaboration for Leadership in Applied Health Research and Care (Greater Manchester), July 2019
The information in this report/brochure is correct at the time of printing.

Appendix B

Table 1: List of generated items (from focus groups and rapid scoping review)

Individual level items *(asked for each member of staff across all staff groups):*

Item	Example response categories
Commonly performed tasks	e.g. medication review, wound care, prescription queries, vaccinations
Skills and competencies	e.g. prescribing, clinical assessment; differential diagnosis; care navigation; leadership
Training and qualifications	e.g. independent prescribing; advanced practitioner qualification
AfC band	
How long worked in the role	<1 yr; 1-5 yrs; 5-10 yrs; 10-20 yrs; 20 yrs +
Date joined the practice	month and year
New joiner in last 12 months – sector of previous role	Primary care; outside primary care; none – new starter/newly qualified
New joiner in last 12 months – location of previous role	Within Salford; outside Salford within GM; outside GM
New joiner in last 12 months - did new joiner train at the practice?	Yes, No
Leaver in last 12 months - date left the practice	
Leaver in last 12 months – sector of new role	Primary care; outside primary care; none; not known
Leaver in last 12 months – location of new role	Within Salford; outside Salford within GM; outside GM
Leaver in last 12 months - reason for leaving	If known from exit interview, e.g. work-life balance; retirement; leaving the profession, personal circumstances; promotion
Retirement intentions (if over 55)	e.g. expressed an intention to retire and not return; retire and return to work on reduced hours; not expressed intention
Work pattern/role intentions	e.g. expressed an intention to reduce working hours; increase working hours; change role/responsibilities; not expressed intention
Currently works in a split/portfolio role?	yes, no, don't know

Staff group level items *(asked at aggregated staff group level)*

Item	Example response categories
In the last 3 months how many locum sessions have you needed for this staff group?	
Reasons why locum sessions are needed	e.g. planned cover; parental/adoption leave; sickness; vacant post

Staff role level items *(asked at aggregate staff role level not individual level)*

Item	Example response categories
Sickness absence rate per staff role	use appropriate calculation
No. of vacant posts in this staff role	WTE
Longest current vacancy - how long has this post been vacant?	Months
For this staff role, do you tend to recruit on first advert?	Yes/No
Do you find it hard to fill posts for this staff role?	Yes/No
Approx. number of applicants per post?	
Have you adopted any strategies in the last 12 months to retain staff who were thinking about leaving?	e.g. re-training; pay rise; promotion; new role creation; job re-design; flexible working; reducing hours; increasing hours
Reasons staff remain in the role	if known – suggestion from PMs that this could be linked to staff surveys conducted by
Do you have plans to employ more staff in the next 12 months?	Details of which role, number and WTE
Is the practice facing any barriers to further employment of staff in these roles? If yes, what are these	e.g. recruitment issues; cost; space
Training and support needs for staff in these roles?	Possibly free-text

Practice level items

Item	Example response categories
No. of external staff (actual) who support the practice	e.g. NIPPS pharmacists; IMT facilitators

For more information, please contact fay.bradley@manchester.ac.uk
Produced by NIHR Applied Research Collaboration (Greater Manchester), March 2021
The information in this report/brochure is correct at the time of printing.