Covid-19 and the rapid reorganisation of general practice: Triage, hubs and pathways to care in hospital and the community.

A discussion paper. Version 3. 24/4/20

Introduction
Ensuring patients with, or likely to have, Covid-19 receive optimal care is testing health systems worldwide. In the UK, community and primary care services, and interfaces with admitting hospitals are being rapidly transformed to manage the peak of the pandemic. This article attempts to summarise the key issues that need to be considered in deciding how to reconfigure services, providing practical examples of the range of pathways being considered.

The understanding we aim to capture in this piece was created through initially considering the various clinical presentations, and iteratively generating and testing ideas through existing networks. Patients have not yet been involved. It does not represent the model in Devon, which is still to be decided, or the views of Devon CCG. We recognise the work others are doing and would like to link and share ideas.

The clinical challenge
Hubs and new separated pathways in primary and community care have to respond to patients with respiratory symptoms or confirmed Covid-19 cases with diverse needs: from infants to those living with frailty or multi-morbidity; from those who may be too worried to those who are not worried enough.

The key clinical functions of triage and hubs are:
1. To ensure that those who can most benefit from critical care receive it in a timely way. This is not an easy task because the initial decline in respiratory function seen on presentation (in which oxygen saturation may be above the 93% threshold used in current NHS guidance to assess need for admission[1]) may be followed by a rapid deterioration over several hours to a level where ventilation is required. Initial assessment and follow up are important.
2. To ensure that those who are more frail, who are unlikely to benefit from critical care or who may decide against treatment escalation[2], are provided with compassionate ongoing social, nursing, medical and, if required, end of life care. This group may include some older individuals and/or those with multimorbidity and other risk factors. Some may choose admission knowing they may never see their loved ones again, others will prefer to be looked after at home, or will require care in nursing homes or temporary hospitals. Initial hub-based care may need to include fuller examination to assess the need for supportive care such as antibiotics or to treat other complications of conditions.
3. To identify and respond to people with significant non-Covid-19 illness who have been directed to a 'suspected Covid-19' pathway because of a co-existing new cough, contact with those self isolating, or existing confirmed Covid-19 status.

In the last five weeks, many practices have moved from single 'amber' rooms to dedicated buildings for Covid-19 assessment. Primary Care Networks like Darlington have helpfully shared their working practices. Innovation abounds with drive-up 'in-car' assessments in action and volunteer 'vital signs' home visiting services developed. CCGs are now supporting scaling up. Important decisions are to being made regarding electronic health record (EHR) systems, sites, protective equipment, triage and retriage, hub components, pathways and lead providers, links with 111 and out of hours (OOH) services. Emphasis from NHSE was on managing demand and a joined up whole system approach at the peak of the epidemic, with less focus on continuing care for those with significant illness but not

admitted. After slowing of the pandemic in large conurbations and lower activity in other areas concerns about being overwhelmed are lessening and attention is turning to the task of following up those with moderate disease who may benefit from admission or need alerting about decline.

Key issues
Solving these practical issues has dominated many discussions. We identify examples of issues and emerging solutions below.

Site location and configuration is critical:
- adequate drive in space, places for parking to wait and then drive into 'in-car' assessment spaces, and traffic management
- security – guard on site, management of entrances (not too many) and exits
- enough rooms for double running – doctor in one, cleaner in the other; consider tents/gazebos with sufficient privacy and minimal clean up requirement to reduce viral exposure to staff

Electronic Health Record (EHR) systems and digital solutions:
- interoperability across main GP systems – solutions appear to be emerging so any GP can work via both systems, but this is still cumbersome
- whether to use out-of-hours system – less continuity of data but could overcome interoperability issues – this method does not appear to be taken up widely
- prescribing and access to remote prescriptions (EPS, electronic prescription service)
- need to collect data to monitor activity – understanding numbers of different types of contact and changes over time
- for feedback about those sent into hospitals to enhance rapid learning
- support for video assessment – good camera on PCs, administrators testing with patients before GPs so can go straight into a video and not change half way through consultation
- facility for electronic communication with patients: email/SMS – lots of very helpful standardised messages being developed – instructions for hub or home visits
- potential for initial electronic triage for those who prefer, and more generally at peak of pandemic, if workforce is overwhelmed (e.g. as part of NHSx TOTAL TRIAGE programme)templates for consistency, systems for recall for follow-up, and coding to report and monitor work

Preventing staff illness and PPE:
In our discussions, concerns over exposure and becoming ill understandably repeatedly emerged as an underlying theme, exacerbated by concerns about supply and national guidance specific to new hubs. Some pointers include:
- keep distance when possible; use visors as an option; minimal gloved touch for clinical assessments and complete consultations at a safe distance or by phone/video.
- check the Covid-19 status of family members, or those transporting people to hubs
- ask all within-hub patients to wear masks during examination; use scrubs that can be changed following direct exposure not prevented by standard PPE; have shower on site to both be and feel clean after a shift
- scaling up of both 'in-car' hub-based assessments and 'at-door' visits for those who need it, where oxygen saturation is the key new clinical information
- where no one in the household can drive do not ask non household members to drive individuals in
- 'double-triage' so that the examining clinician always carries out virtual consultation prior to any face-to-face contact at the hub

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- two experienced clinicians discuss any home visits including the visiting GP (or another GP in case of 'vital signs' visit
- when testing of staff is approved and validated deploy staff who are likely to be immune (the issue of testing for immunity is a fast-moving field at the moment)
- consider an upper age limit for staff doing face-to-face work in view of increased risk (i.e. not just those with long-term conditions and over 70 being exempt)
- looking out for each other very actively and having a personal wellbeing plan
- actively discussing cases where clinicians feel upset about morality of decisions not to admit and providing support after witnessing single or serial traumatic events

Practicalities of each potential point of assessment/pathway:
Detailed protocols are required for each step/component. Pointers for each step include:
- efficient running of video consultations; including having the video link with the patient set up in advance(potentially done by reception/administrative staff)
- asking most patients to come for 'in-car' assessments (pulse oximeter through window, respiratory rate, 'eye-ball' assessment) - informing ahead to minimize false expectations
- making 'in-hub' face-to-face consultations as brief as possible, while providing compassionate shared decision making when needed – tent based examination can minimize distance for transfer from car and reduce viral load – drive into tent for in-car and if needed in-tent examination has been found to be an efficient use of space and time
- when no transport is available for hub visits, set up a 'vital signs visiting service': 2 GPs authorizing each visit, collecting vital observations (pulse oximetry, RR) and video link – mostly/only 'at-door' oximetry without entering dwelling – these have developed around the country and include cycle couriers, taxis and volunteers
- support for those who find access to standard services such as those requiring interpreting alongside video
- for those who are homeless - provision of walk is possible as an exception with initial video consultation with GPlinks with ambulance service: inform re existence of hub; set up pathways of care for those attended by ambulance who need onward care
- need for on-site oxygen and resuscitation kit for those waiting at hub for admission
- clear pathway to continuing care and community palliative care provision if unsuitable for admission/critical care – proactive ongoing care including advanced care plan (ACP) partly remotely via video, and support from community nurses, social care and own GP. Guidance for configuration of such teams is also lacking, although general evidence on how care planning, interoperable IT and multi-professional approaches can help is likely to be applicable[4]. Guidance on Community Palliative, End of Life and Bereavement Care in the COVID-19 pandemic has recently been released[5].
- Related to the above; consideration of the approach to advanced care planning and development of TEPs; there may be some groups who could be prioritized for TEP conversations, given limited time to have these discussions.

Whole system issues also need to be considered. Data on activity can be aggregated. This can be examined against real time and future staff capacity. Modelling might be helpful for predicting numbers per week and numbers of weeks the hot cold split will need to continue for. Changes in system capacity at local and whole system can be created through changes in pathways (e.g. switching phone diverts on and off for practices with sudden loss of staff) and changes in deployment of staff.

Virtual wards and follow up for oxygen saturation

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NHSE London and respiratory network guidance[3] suggests follow-up for those with moderate symptoms every 12- 24 hours. There is a clear clinical rationale for monitoring oxygen saturations. Hubs provide the potential for ongoing continuity for episode of care. The following could be considered:

- clarity about who would be suitable for self-monitoring and call back as required (higher saturation and good capacity of self care or a proficient household carer)
- and those needing careful monitoring – days 4-10 of illness, accompanying long term conditions, saturations 93-97 but not admitted
- set timescales and criteria for scheduling proactive review by hub. Automated texts may be helpful (AccuRx bow have a questionnaire including saturation)
- the role of symptom checkers in self-monitoring remains unclear and rapid evidence review may be needed, and may be superseded by oxygen monitoring
- scaling up of daily in-car and at-door monitoring
- loaning of saturation monitors if available can allow three times a day checks for those able to read meters (likely to be cost effective even with significant losses)
- having one virtual ward/hospital combining individuals from ED and discharges as well as hub

Professional education and learning:
Primary care professionals have clear educational needs so guidance is useful as well as an understanding that 'feeling' confident in new context may take time. Areas for education and/or guidance development include:

- Covid-19 clinical trajectory; this is unusual and involves gradual respiratory compromise with pneumonitis for some, and sudden deterioration and need for ITU/critical care for a few (not always with increased shortness of breath)
- guidelines for admission and monitoring decisions based on clinical parameters (respiratory or whole system compromise), frailty (likelihood to benefit) and preferences for location of care (taking account that admission will mean separation from loved ones) are likely to be helpful; London NHSE and respiratory network have created comprehensive guidance for primary care[3]
- Support and education around diagnostic reasoning could promote conscious decision-making and increase confidence in using clinical judgement in new and uncertain situations
- admissions may be affected by increasing sensitivities and media reporting around availability of critical care resource – guidance and support for primary care around the approach to shared decision making in this climate may be helpful
- virtual and video consultation are new – emerging guidance based on rapid review of evidence is helpful[6], role play, training, and pointers on preparing for, and holding sensitive conversations remotely may be useful
- GPs have been less involved in palliative care recently and helpful new guidance and adequate supplies will assist in guiding hub based and onward care

Patient education:
Patient support and information has so far focused on mild symptoms and self-isolation advice. The following needs have been identified and more will follow as we start to work with patients:

- patient information to support shared decision making around admission decisions for those less likely to benefit from admission or critical care; there are likely to be increasing sensitivities in handling these conversations (see above)
- support and advice for family members and unpaid carers – especially those choosing to support ongoing care at home

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- need for a self help guide providing accurate useful knowledge for monitoring progress, avoiding both false reassurance and increased anxiety (NHS 111/Choices is not specific enough about monitoring to support identification of those needing admission)
- mental health and practical support

Rarely discussed, but understood as central to care, was the need to apply the best of general practice care to these constrained new scenarios: person-centred approaches, choice of place of care, shared decision making, multi-professional team working. Guidance developed by local ITU consultants on how to apply shared decision making to admission and critical care decisions, by taking frailty and choice into account, is seen as invaluable (personal communication). There is also recognition of the importance of staff looking after each other emotionally in the face of making admission judgements based on likelihood of benefit, as well as witnessing trauma.

Figure 1. Covid-19 HUB – Generic Model

Covid-19 Hub – Version 3 28 3 20
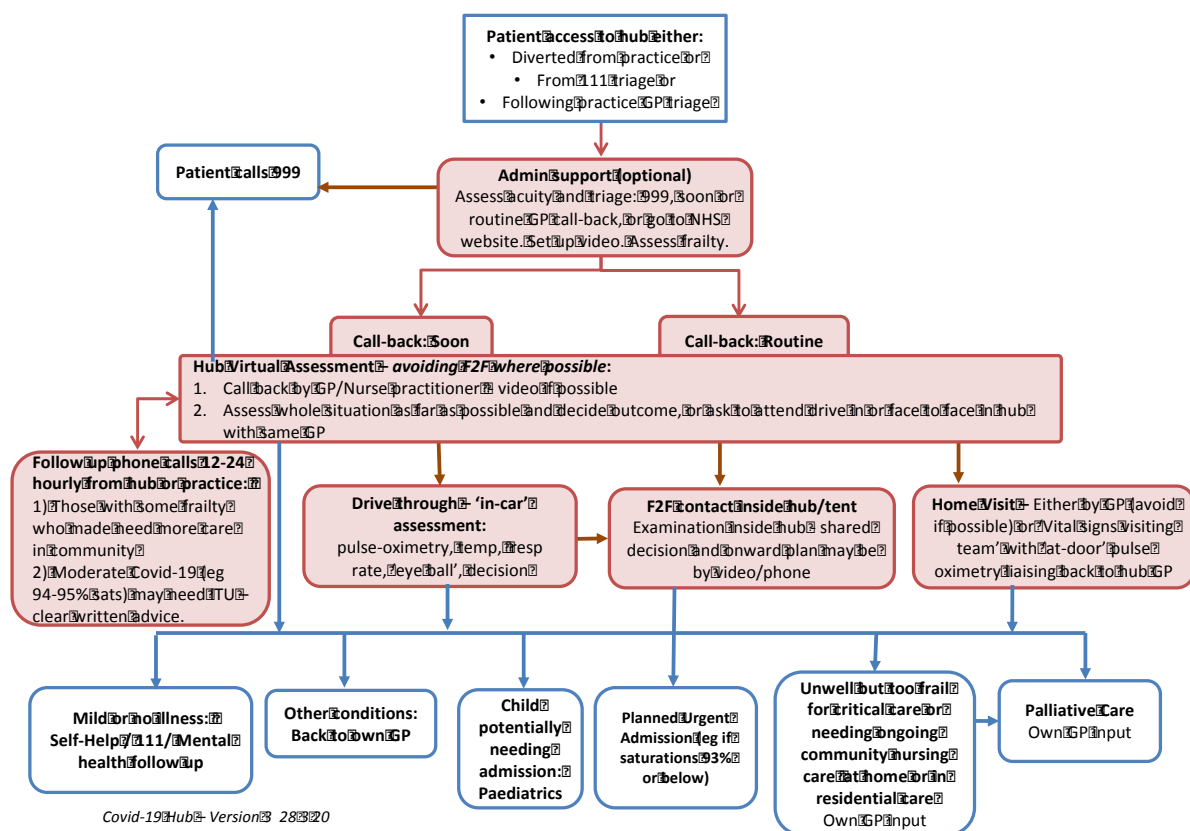
Integration from practices, through hubs to strong links with 111 and out of hours providers.
NHSE rightly have an ambition to ensure that the three levels of care beyond practices are joined up: PCN, hospital system and wider CCG. Three competing models in terms of pathways and hubs were initially envisaged. We now see these as complementary with the potential to merge and flex during peak pandemic period

A. **PCN based with GPs in practices**. Carrying out first line triage/decision making for those meeting the possible case definition criteria (e.g. new coughs or fevers), sending those needing to be examined to a dedicated site (often a practice or part of practice) for in-car or within-building clinical assessment. These have got up and running quickly with minimal outside support, use their regular EHR and GPs can do virtual routine non-Covid-19 work

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while on location. For areas with low population density and low numbers of new cases PCN based hubs may need to have lower staffing with perhaps twice daily shorter sessions.

B. **A locality (system around the hospital) hub(s).** A single or several hubs would receive referrals for an initial telephone/video assessment (second triage) from practices in the area. Calls could be taken by on, or preferably off site, receptionists, who could assess frailty, ability to be driven in (household car?) and set up video link before then GPs/nurse practitioners have a virtual consultation. This would allow decision making about whether further physical examination is needed (e.g.' in-car', or 'in-hub', 'at-door' home visit for vital observations only or home visit by GP), or whether advice for self-care can be given (e.g. self-care or self-care plus follow up from hub). Links with teams in hospital (medical admissions and paediatrics) and community (ongoing nursing care) should be developed. There is potential for a locality oxygen saturation follow up system taking individuals from the wards and ED as well as hub. Figure 1 encapsulates this model most closely.

C. **Pan-CCG model based around 111 and the 'out of hours' (OOH) provider. Initially a fully integrated model** across all hospital footprints within the CCG, for all potential Covid-19 related calls was envisaged. All patients with or potentially with Covid-19 diverted to an adapted OOH provider triage and assessment system. An extension of in-hour 111 algorithm to include additional clinical assessment would be possible. In-car assessments could be similar. Visits would be through an extended OOH visiting service. It would operate in and out of hours and could be managed centrally in terms of workforce through existing rostering systems, and home visiting.

Instead an approach based on *complementary assets and capacities* is developing. Practices should be first line during the day, also seeing individuals who have been through the 111 algorithm, hopefully reviewing some 111 overload. OOH services may use the hub premises as a hot site. The extent to which 111 capacity will be extended to incorporate experienced clinicians is unclear, as is the capability to provide an in-hours visiting service.

Various hybrids for these are possible. Practice based initial triage/care could be part of B and C as well. Practice based initial triage/care could be dominant initially to help as many GPs as possible become confident and ensure continuity, but be diverted to a hub (B) or OOH provider (C), as the peak is reached, or individual practices have workforce problems. The pan-CCG OOH provider model could be adapted (and perhaps made more resilient) with operational management focused on 'hospital footprint' and key locality interfaces; and by implementing practitioner-led initial triage rather than using automation or protocols.

In time as systems settle in and interfaces are developed, flexibility in the whole system could be enhanced by detailed collation of data on demand and capacity at all levels. Visits could be moved across localities, and when practices were struggling to do first level triage/management patients could be diverted via a telephone system ("press 1 if you have a new cough") to 111 (direct rather than via practices) or direct to a hub.

Analysis and action

There is little or no evidence to draw on as to which system would be most effective in ensuring best outcomes. Instead, theoretical advantages, disadvantages and mitigations can be hypothesized for each option and components:

1. Practice based triage allows all GPs to become more skilled early over the next few weeks prior to the anticipated peak. This model encourages ownership, but could suffer from workforce fluctuation – unless flexibility allows it to be turned on and off. It may also encourage more variability in practice (and potentially concerns about over- and under-referral). In terms of economies of scale, a visiting service may not be viable at PCN level, but could be provided for a locality. This model is more likely to be flexible and reduce transactional inefficiencies.

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2. Locality/hospital system approaches could encourage better links with the hospital and local community. They may be able to gain local GP ownership more easily than system approaches, but less so than mature PCNs. Centralising initial triage/decision may encourage consistency. They may be more able to generate efficient 'in-car' and visiting systems, but could, like a pan-CCG model, also be liable to burdensome inefficient and inflexible protocols.
3. Advantages of a Pan-CCG model are likely to include the existing management and clinical structures and systems and integration of in and out of hours services. It is not clear as to whether automated or protocolised triage is more efficient than GP led triage, but automation may be vital during GP shortages. This model may be better placed to overcome workforce challenges due to existing communication routes and rotas, and centralised systems for bringing in returning practitioners.

Lastly, making things happen quickly is critical. There are clear tensions between centralised planning; in which one organization takes control, and bottom up development of a network through bringing together emergent PCN action supported by guiding principles and sharing protocols. There is possible value in using evidence and experience about how to scale and adapt together. These may include rapid understanding of organizational systems and attitudes in relation to any changes, identifying key enablers and blockers. In the limited timescales available, it is also unclear whether and how rapid evaluation (based on narrative and quantitative data) to inform system improvement is feasible and helpful; we are currently exploring this. Likewise, modelling future capacity requirements based on service data from current epicentres and abroad may be helpful. Predicting and planning for an end to hot/cold general practice split is currently not on our to-do list.

What has been clear is that relentless networking though existing trusted colleagues, old friends and those you don't yet know, 'cold' (not just diarised) phone calls, use of multiple forms of social media including WhatsApp groups, as well as more traditional email and planned video conferences have been key to both creating emerging consensus and understanding differences which need resolving. Informality, kindness and humour have been vital, tempered by rigor and a willingness to question everything.

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