Development of a COVID-19 virtual community of practice in New South Wales

A qualitative study

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Background and objective
In April 2020, a group of general practice leaders in NSW, Australia, established a COVID-19 virtual community of practice (VCoP) to facilitate rapid transfer and implementation of clinical guidance into practice. This research aimed to gain an understanding of the experience and effectiveness of the VCoP from leaders and members.

Methods
The study used a qualitative participatory action research methodology. A framework analysis was applied to focus group discussion, semi-structured interview and open-text written response data.

Results
Thirty-six participants contributed data. In addition to a positive evaluation of the effectiveness of information transfer and support, a key finding was the importance of the role of the VCoP in professional advocacy. Areas for improvement included defining measures of success.

Discussion
This study has reinforced the potential for VCoPs to aid health crisis responses. In future crisis applications, we recommend purposefully structuring advocacy and success measures at VCoP establishment.

ON 30 JANUARY 2020, the Director-General of the World Health Organization announced that the outbreak of a novel coronavirus in China had been declared a Public Health Emergency of International Concern.[1] At the time of that announcement, there were 7834 confirmed cases, 98 of those outside China.[1] By April 5 2020, there were 1,133,758 cases of COVID-19 globally, with 62,784 deaths.[2] At that time, Australia had 5805 COVID-19 notifications and 33 associated deaths.[2]

In the absence of an available vaccine or effective pharmacotherapy for COVID-19 in Australia during 2020, the mainstay of individual case management was prevention of transmission through identification and isolation of cases and, in severe cases, supportive care, including ventilation.[3] Community management was recommended for the approximately 80% of patients with mild disease, provided there was capacity for counselling, isolation, support, monitoring and escalation to hospital-based care in the event of deterioration.[3]

As the principal providers of continuing healthcare for people living in the community, general practice shared community management and monitoring of Australians with COVID-19, in collaboration with public health units, virtual care clinics and hospital-in-the home teams. This was in addition to rapid adaption of practice workflows, implementing telehealth consultations, and testing and management of patients with COVID-like symptoms, with responses to the pandemic shared by primary care services internationally.[4,5] This continuously evolving environment required assimilation and implementation of a very large amount of new and changing clinical guidance. Implementation of new evidence, guidelines or procedures into clinical practice is a challenge, especially where the change is complex with limited external support (such as facilitation) or previous applicable experience.[6] All of these applied to the early stages of the COVID-19 pandemic.

Thus, as a contribution to addressing the COVID-19 crisis in Australia, in early April 2020 a group of general practitioner (GP) leaders in NSW established a COVID-19 GP virtual community of practice (VCoP). Communities of practice (CoPs) and VCoPs have been demonstrated

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to be effective in improving processes and outcomes in education, industry and healthcare.[7] CoPs are defined as 'groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly'.[8]

When a CoP is constructed primarily (although not exclusively) through internet-based interaction, it is termed a VCoP.[7] The goal of the COVID-19 GP VCoP was to facilitate rapid implementation of the necessary changes in general practices through widespread sharing of knowledge (know-what) and experience of the application of that knowledge in practice (know-how). The VCoP leadership collectively initiated the process and provided a position statement concerning the role of general practice within the health system's COVID-19 efforts. The VCoP was conceptualised as a network of networks of GP and general practices (or community of communities) to establish widespread communication channels. A tiered structure was used to facilitate movement of information from centralised authorities out to local networks, and just as importantly, sharing of experience concerning guideline and policy application among the VCoP members. This shared experience provided feedback 'up the chain' in real time to inform government policy and guideline development by central authorities, including having a voice in the politics of the health system. Figure 1 represents the COVID-19 GP VCoP structure.

The aim of the research presented in this article was to gain an understanding of the experience and effectiveness of the COVID-19 GP VCoP from the perspectives of both VCoP leaders and members. We also sought to identify major challenges, important barriers and facilitators, and key learnings for improvement to assist policymakers and clinicians dealing with a disaster or pandemic in the future.

Methods

Participatory action research (PAR) methodology provided an ideal platform to address the study aim and was embedded in the VCoP design.[9] The overall structure of the project involved data collection, analysis, feedback and response. The leaders of the VCoP were involved as part of the research development process. They also reflected on and responded to member feedback, web-usage data and focus group discussion (FGD) findings, and suggested actions in response to any issues raised (Table 1).

Context and recruitment

The VCoP leaders and members were distributed across metropolitan, regional and rural areas in NSW and the ACT. As the key informants for the research, VCoP leaders and members were invited to participate in FGDs or a survey by email from the research officer on the project team. A web-based survey with the FGD questions (Step 2) enabled participants to be involved in the study by written responses. All FGD participants returned signed consent forms, while completion of the survey implied tacit consent.

Data collection

Data were collected between June and October 2020. VCoP members participated in one FGD, while the leaders participated in two (one at the beginning and the second at the end of the project in response to member data). Participants who could not attend a member FGD were offered individual interviews. Surveys captured perspectives from further VCoP members with open-ended survey questions based on the FGD guide (Table 1). All FGDs were by videoconference on the Zoom platform, and interviews were by telephone. FGDs and interviews were digitally recorded and transcribed verbatim by a professional transcriptionist. All participants were allocated pseudonyms, differentiating leader FGDs, member FGDs, and interview or survey respondents.

Analysis

Framework analysis was used to analyse the data, using the VCoP framework developed by Barnett et al. to code the data under the following headings: objectives and goals, champion and support, facilitation, a broad church, supportive environment, technology and community, measurement benchmarking and feedback.[7,10]

Five members of the research team individually coded two FGD transcripts. The rest of the data were coded by two members of the research team. The coding process and subsequent themes were refined by re-reading, group discussion and consensus within the research analysis team in an iterative fashion. The dataset was coded using NVivo 12. We engaged reflexively throughout the research process, and were aware that our backgrounds and personal experiences shaped our interpretation of the data.[11]

The study was approved by the Human Research Ethics Committee (reference number 2017/057).

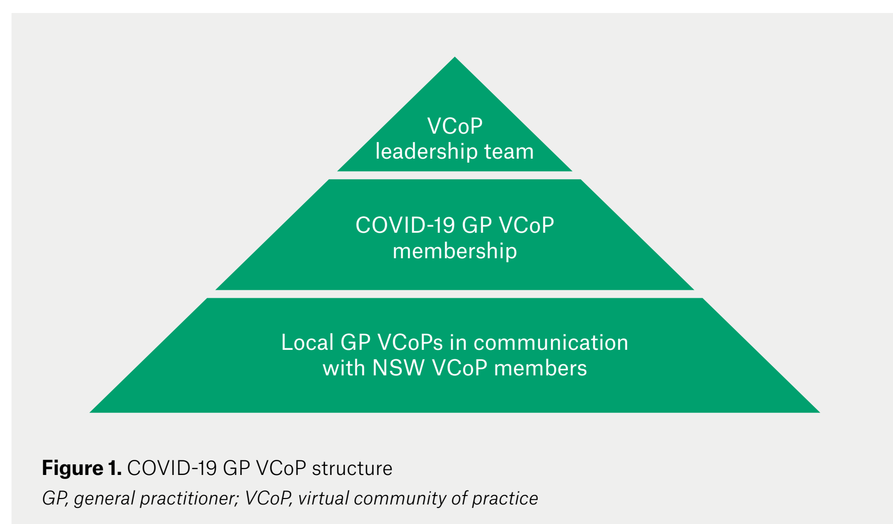

Figure 1. COVID-19 GP VCoP structure
GP, general practitioner; VCoP, virtual community of practice

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Results

The VCoP grew from initially 40 members to over 150 during the first 10 months of activity. Data were collected from a total of 36 participants (four leaders and 32 members). Two leader FGDs were held (two participants in each group) at the beginning of the study, and one post FGD with four leaders in the group. Two member FGDs (two participants in one group and five in the other) were held at the beginning of the study. We also conducted two individual interviews, and 23 survey respondents (14 females and nine males) answered open-ended questions based on the FGD guide (Table 1).

The participant sample in Table 2 shows variation by interview type, sex, age, years in medical practice, remoteness and socioeconomic status of practice area,[12,13] and includes member and leaders. The leader group comprised two males and two females with senior roles in The Royal Australian College of General Practitioners (RACGP), academia and medical education.

The following provides an overview of the key themes identified within the seven VCoP framework headings and descriptors developed by Barnett et al.[7]

Table 1. Overall structure of the project

Step 1	Focus group questions
The leadership group participated in a baseline FGD to capture their initial intents in forming the VCoP and its intended function	What were the motivations for establishing the VCoP? What are your expectations of the rollout of the VCoP? What do you perceive as the key facilitators? What do you perceive the major challenges will be? What do you perceive will be some of the key lessons?
Step 2	**Focus group/interview/survey questions**
The VCoP member FGDs, individual interviews and surveys occurred three months after initiation of the VCoP, and enabled sufficient time for practical experience in the VCoP to consolidate and enable reflective discussion	What were your motivations in joining the VCoP? What were your expectations? What do you see as the key benefits of the VCoP? What do you see as the key challenges/areas for improvement of the VCoP? What outcomes have you observed from the VCoP? Do you see the VCoP as sustainable? Why/why not?
Step 3	**Focus group questions**
Preliminary findings (from Steps 1 and 2) were presented to the leadership group for reflection. This was followed by a second leadership FGD to capture the content of the reflections and intended actions to improve the VCoP	What have been the key facilitators/major challenges? Have these changed over time? If so, in what way? What outcomes have you observed from the VCoP? What have been the key lessons? What are your reflections on the feedback from VCoP members? What actions will you take in response to the feedback?

FGD, focus group discussion; VCoP, virtual community of practice

Objectives and goals

VCoP leaders perceived that their responsibilities were to provide advocacy and support, and to share information, including evidence-based information, with their members. These views were shared by the members, many of whom were motivated to join the VCoP to gain timely access to evidence-based information and up-to-date guidelines that they could implement in their own practices and share within their own local groups and networks. Some members were also motivated to join because of their previous experiences with VCoPs, while others believed that it would provide them with much needed support, including mental health support, during the stressful COVID-19 period.

Champion and support

VCoP leaders and members recognised that the VCoP was a conduit that could

Table 2. Demographic characteristics of participants

Interview type	Sex	Age	Year of medical school graduation	Remoteness of practice location (AGSC-RA)	SEIFA decile	State
FGDs (n = 5): 11 participants Interviews: 2 participants Survey: 23 participants	24 females 12 males	Median age: 49 years (range: 32–69 years) *Missing data: 3 participants*	Median year of graduation: 1996 (range: 1980–2016) *Missing data: 3 participants*	RA 1: 23 participants RA 2: 11 participants *Missing data: 2 participants*	SEIFA 1–5: 18 practice locations SEIFA 6–10: 15 practice locations *Missing data: 3 participants*	NSW: 32 participants ACT: 2 participants *Missing data: 2 participants*

AGSC-RA, Australian Statistical Geographical Classification – Remoteness Area; FGD; focus group discussion; SEIFA, Socio-Economic Indexes for Areas (decile 1 most disadvantaged; decile 10 least disadvantaged)

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be used to tap into statewide, regional and local knowledge, and to share this knowledge among relevant healthcare providers and agencies (eg RACGP, NSW Ministry of Health, Australian Medical Association [AMA], academics, politically active GPs and local health districts [LHDs]). The members trusted and respected their VCoP leaders, whom they saw as committed, driven and approachable stakeholder champions who gave GPs a voice by advocating for them across the health sector – that is, supporting members' legitimate role in the health system.

Facilitation

To help promote engagement and maintain standards, the leaders suggested that, as part of the VCoP set-up, it was important to consider leader and member expectations. They recognised the time and resource commitment needed to ensure member engagement. However, they acknowledged that the COVID-19 crisis had been an enabler and facilitator for the VCoP to be set up quickly and effectively engage members. In addition, both the leaders and the members felt that the VCoP facilitated communication between themselves and other key stakeholders about what worked, what did not work and how they were feeling.

A broad church

VCoP leaders and members appreciated that the VCoP included a diverse group of members with differing levels of seniority and additional expertise beyond mainstream general practice. They believed this to be advantageous because it helped connect and promote communications between GPs and multiple providers from across the state, which included Health Pathways (online guidance for GPs around pathways of care), LHDs, primary health networks (PHNs) and the aged care sector. Refer to Table 3 for exemplar participant quotes.

Supportive environment

The members commented that the VCoP provided a positive, supportive environment that encouraged networking and participation. Members described feeling a sense of togetherness, being listened to, and feeling reassured that they were all in it together and pulling in the same direction to achieve better outcomes for everyone. All of these aspects contributed to the positive nature of the VCoP.

Technology and community

The VCoP leaders noted that the selection of Basecamp software for the VCoP's IT platform was based on its user-friendliness and ease of access.[14] These sentiments were echoed by many of the members who found Basecamp to be a functional and practical platform for accessing and sharing information. They also appreciated that the Basecamp set-up provided them with flexibility in their level of engagement with the VCoP, depending on their availabilities and different stress levels throughout the pandemic. However, several members described being overwhelmed with the amount and organisation of information on Basecamp, and suggested investigating an alternative, more intuitive platform.

Recognising that communities are more likely to share knowledge when there is a mixture of online activities, in addition to Basecamp, the VCoP leaders noted the importance of having

Table 3. Participant quotes: Part 1

Objectives and goals and motivators: Clear objectives provide members with responsibilities and motivate them to contribute more actively
It was about the knowledge sharing … advocacy … the support roles and … trying to collate information from various authoritative sources. [Leader FG1,P1]
The motivation was … the social networking – communication channels for GPs, particularly in leadership positions across New South Wales … to channel concern from the coalface through to the policymakers and initiators of change at New South Wales Health. [Leader FG2,P2]
To find out more information about issues regarding the COVID-19 response in a more rapid fashion … for application in our local setting. [Survey P2]
Champion and support: The network needs to have an initial stakeholder champion, with stakeholder support
We have a voice there, whereas we never did before. [Leader FG2,P2]
It's been a great opportunity for GPs to have direct input into management and feedback … especially in taking the issues raised upwards … It's been fantastic to see the people who've been enthusiastically involved actually getting a great response from people who need to respond to them and take their issues forward. [Interview 2]
Facilitation: Facilitators promote engagement and maintain community standards
I think that one of the prime facilitators is the GPs desire for information. And very much the early meetings, the information that [name] was able to provide that was really hot off the press, or current information, or perhaps tips about where the government might be moving, I think that was one of the really strong facilitators. [Leader FG2,P1]
It's nice to be in an environment where there seems to be a very common goal and expectation and behaviour. [Member FG2,P5]
A broad church: Consider involving different, overlapping but not competing, professional groups, different organisations and external experts. However, make sure the church is not too broad
The initial concept (of the VCoP) … was with breadth and depth…it was about knowledge gradients … with expertise across a whole lot of things, such as disaster responses, rural and regional issues, health pathways … and different GP positions. [Leader post FG1,P2]
It has been positive in getting some interaction happening around aged care … we have had some involvement with the lead of aged care services in our region. [Interview 2]

FG, focus group; GP, general practitioner; P, participant; VCoP, virtual community of practice

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synchronous engagement by including regular videoconference meetings. These meetings were appreciated by the VCoP members who perceived them to be community building and more personal than just receiving information via Basecamp.

Measurement benchmarking and feedback

As part of this study, member feedback was provided to the VCoP leaders by the research team. However, it was acknowledged by the leaders that the VCoP was difficult to benchmark; in particular, the difficulty in ascertaining whether the VCoP facilitated the implementation of COVID-19-related guidelines and evidence within practices. They therefore suggested that potential benchmarking could be considered as a future strategy that could include advocacy activity as a measurement tool; member feedback regarding the ease of usability of the VCoP software and the information that was being provided; and a predefined measure of success, which could include member engagement. Refer to Table 4 for exemplar participant quotes.

Discussion

Overall, the findings demonstrated that the NSW COVID-19 GP VCoP was highly valued by the leaders and the members involved in the study. It helped to bring sections of the GP community together from different parts of the state to engage in dialogue and information exchange to address the challenges posed by the COVID-19 pandemic. In keeping with previous research, members concurred that timely access to relevant and useful, evidence-based, up-to-date information was a key driver for joining the VCoP.[15,16] Also, in congruence with the literature, members expressed a sense of togetherness and support in delivering outcomes for the community.[17] The virtual nature of the CoP (both synchronous and asynchronous) as a key supporting tool enabling knowledge sharing across communities has been previously reported.[17,18] Beyond the well-described potential for knowledge sharing, participants expressed that the communication channels, developed with a broad range of stakeholders, gave GP members an advocacy voice across the health sector. The two-way dissemination of information was a critical feature. Information was not only dispersed from top to bottom, but from grassroots to health sector leaders, allowing member perspectives to be available for consideration in health system and professional organisation responses to the pandemic. Thus, the VCoP empowered its members within the health system, a process facilitated by the feedback and reflection intrinsic to the PAR process.[19] As opposed to an educational activity, the reciprocal nature of the VCoP information exchange blurred power relationships; the members were empowered to have their voices heard, and the leaders' advocacy functions were empowered by the immediacy of the members' communication. This research describes an advocacy role for purposefully constructed health VCoPs that has not been widely articulated previously in the literature, particularly in general practice. Web-based forums are ubiquitous, and there are examples of professional group-based forums established specifically to assist with the COVID-19 response, including general practice in the UK.[20] In addition, CoPs have been established to support the COVID-19 response in public health in the USA,[21] data sharing in the Asia Pacific[22] and clinical craft groups in NSW, Australia.[23]

Table 4. Participant quotes: Part 2

Supportive environment: Health VCoPs should promote a supportive and positive culture that is both safe for members, and encouraging of participation
It has broken down a whole lot of silos of communication. So a whole lot of people that weren't previously communicating have been brought together … that is extraordinary. [Leader FG2,P2] *I find the whole thing quite emotionally supportive.* [Member FG2,P4] *Everyone seems to be pulling in that same direction and everything is improvement focused and reflective … It ticked boxes I didn't know even know I had boxes to tick.* [Member FG2,P5]
Technology and community: Online CoPs should ensure ease of use and access, along with asynchronous communication. Communities are more likely to share knowledge when there is a mixture of online and face-to-face meetings, members self-select, and both passive and active users are encouraged
It has actually been a lot easier than I had anticipated … there's been very little complaint about the technology. [Leader FG1,P1] *Keeping up with vast amount of discussion takes significant amounts of time … Basecamp is a reasonable platform for the discussion, although I wonder if there are other platforms that would be more intuitive to navigate.* [Survey P8] *I've found them (Zoom meetings) quite good actually for personalising it all …That's been really very inclusive and I've enjoyed those Zoom meetings.* [Member FG2,P1]
Measurement benchmarking and feedback: Health VCoPs should consider measurement as a factor in their design, including benchmarking and feedback
Really hard to know what outcomes (implementation of evidence-practice guidelines) have been achieved … I don't really have a sense of whether the VCoP facilitated that or not. The other one though is the advocacy, and I get a sense that it's been reasonably successful. [Leader FG1,P1] *It would be quite nice to be able to feedback … to the (VCoP) community … This is how often people are using it. This is how many posts and views and all that kind of stuff … I think sometimes that just helps people to have some sense of buying into the success of community or not.* [Leader FG1,P2]

CoPs, communities of practice; FG, focus group; GP, general practitioner; P, participant; VCoP, virtual community of practice

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This description of the NSW COVID-19 GP VCoP provides a unique insight into a pandemic-specific VCoP sitting alongside, and simultaneously interacting with, existing organisational structures, such as the RACGP, NSW Ministry of Health, AMA, PHNs and LHDs.

The uptake of the VCoP appeared to be facilitated by an external, urgent need in the rapidly changing work environment generated by the COVID-19 pandemic. While enhancing the growth of the VCoP, the rapid design and set-up contributed to weaknesses identified as part of the research process. In the leadership group reflection FGD, the main areas identified for improvement of the VCoP were in benchmarking and feedback to members. This was partly due to difficulty in deriving usage data from the software selected, but also due to not defining objective success markers at the VCoP set-up. Barriers identified included the need to assimilate the very large amount of information that the VCoP generated and some technical limitations in the software platform.

Previous research has identified that the success of VCoPs is reliant on the availability and time commitment of the leaders.[24] This raises concerns for the sustainability of this online community, which is maintained on a volunteer basis. However, given that the VCoP has maintained member engagement over a period extending to 12 months, it could be argued that it has been an effective way for GPs to communicate during a crisis when need and motivation were high. The extent to which it has enabled GPs to implement and comply with best evidence information and guidelines is not known.

The findings from the study need to be interpreted in light of its limitations. The data are based on one VCoP based in NSW/ACT and might not be broadly translated to other jurisdictions. It is also possible that enthusiastic participants in the VCoP were more likely to undertake FGD, interviews or surveys, providing a biased account of experiences. Nonetheless, the study provides a useful description of a rapidly deployable and scalable means of bi-directional knowledge translation during a health crisis. It is anticipated that context-specific health VCoPs will be deployed in the future at times of significant need for rapid adaptation and information transfer. Indeed, the VCoP continues to provide a mechanism for aiding implementation of the rollout of COVID-19 immunisation in NSW general practices. In addition to previously well-described attributes of successful VCoPs,[7] our study suggests that building an effective political advocacy role for a VCoP contributes to the uptake and participation by members. We also recommend establishing effective means of feedback to members concerning VCoP activity, benchmarking the usefulness for implementation of evidence into practice and definitions for success at the establishment phase of a VCoP. Future research is required to understand the extent to which such VCoPs are instrumental in gaining advocacy outcomes, enhance clinical practice or foster resilience among members during a health crisis. The findings also highlight the need for further research into the role of networks in addressing power relations within the structural organisation of the health system and primary care.

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