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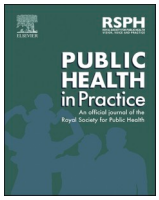

Exploring community level multi-agency communication and collaboration during the emergency response to the covid-19 pandemic

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ABSTRACT

Objectives: This study assesses multi-agency communication and collaboration during the community emergency response to the covid-19 pandemic.
Study design: Qualitative case-study research.
Methods: Semi-structured qualitative interviews were conducted with ten officers from organisations involved in the community response to the pandemic, at strategic or tactical level, within an English local authority (LA) area. Interviews were thematically analysed.
Results: Horizontal (local/regional) communication and collaboration between the multi-agencies was found to be effective. Participants felt multi-agency groups had a sense of shared identity, partly from pre-existing relationships and a sense of shared common fate. The unified command model, with incident management co-chaired by the local authority, fire and police was found to support joint working, bolstering response effectiveness. There was frustration with vertical (national) communication and collaboration. Messages to local responders were often delivered via daily Government briefings to the public, meaning local responders had little time to consider and implement appropriate actions.
Conclusions: The study provides new and impactful insights into the community response in an English MBC area during the Covid-19 pandemic. However, findings apply to any high-or-low-income country if their emergency planning/response considers community level integration with multiple-agencies to improve the public health emergency response. Set against existing international literature, show good command-and-control structures, including leadership, training and positive local culture were important for successful communication and collaboration between the multi-agencies. This study highlights some beneficial practices which support recovery and preparedness for future emergencies.

1. Introduction

The UK Government Resilience Framework focuses upon civil contingency risks and how the country can prepare for, respond to, and recover from such risks. A key element of this is a 'whole of society' approach to resilience, which refers to an ability to quickly recover from or withstand a difficult situation, staying ahead of risks and tackling challenges before they occur [1]. As such, the framework highlights the Civil Contingencies Act (2004) (CCA) [2] which defines how agencies involved in local and community level emergency preparation and response, come together to form a Local Resilience Forum (LRF) to assist in co-operation and co-ordination between responders at a local level [3]. There are 42 LRFs working across England and Wales, based on Police Area boundaries. Responders are split into 2 categories, and the CCA provides a clear set of roles and responsibilities, with different obligations placed on each. Organisations in category 1 include blues light services, National Health Service (NHS) and local authorities (LA) from the LRF area. Category 2 organisations include utility and transport companies, the Health and Safety Executive (HSE) [3].

The CCA and associated regulations require that, via the LRF, responders work together, having *'a collective responsibility to plan, prepare and communicate'*. However, the LRF does not have any power to direct members, nor is it a legal entity. Responders have duties placed on them under the CCA, which can be implemented and discharged via the LRF. For the LRF to successfully function and discharge their duties, high levels of collaboration and co-operation are required between the partner agencies [3].

Different models support multi-agency/organisational collaboration

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during emergencies. In the UK, the Joint Emergency Services Interoperability Programme (JESIP) is used [4]. JESIP was set up in 2012, to improve how category 1 responders work together during major incidents and emergencies [5]. Procedures and tools are provided for response, supporting responders in distinguishing what to do, and how to do it, while working in the multi-agency environment. There are 5 Principles of JESIP [4] – co-locate, communicate, co-ordinate, jointly understand risk, shared situational awareness [6]. The principles support and improve collaboration between different agencies. METHANE is the standard reporting process to share information about an incident (see Fig. 1).

Incident leaders use the Joint Decision Model (JDM) to draw available information together, reconcile objectives and make effective decisions. Focusing on 3 main considerations – situation, direction and action (see Fig. 2).

This study provides insight into the community response of an English Local Authority (LA) area during the covid-19 pandemic. There are 317 local authorities in England, delivering a wide range of services to their local communities [7].

Learning from the study can be applied to other countries, particularly those where emergency response involves multiple agencies which integrate community, government and health system elements, such as the wildfires effecting the Hawaiian island of Maui [8]. Results also apply beyond the pandemic response and can be useful for extreme weather emergencies which have become more intense, frequent, and costly, particularly in the UK, which also necessitate local co-ordination and enhanced situational awareness [9].

2. Effective collaboration and communication during emergencies

2.1. Multi-agency collaboration

As explained already, during an emergency incident in England, several agencies come together, forming an LRF. Collaboration across

Fig. 1. METHANE: Standard process to report incidents [4].

Fig. 2. Joint decision model (JDM) [4].

multiple agencies involved in managing emergencies and disasters is key to success [10], and when agency/organisational networks have poor communication and collaboration, this results in poor outcomes in disaster management [11]. The response to Hurricane Katrina, a large, fierce hurricane, which caused significant devastation and loss of life, provides an example of poor collaboration during a major disaster [12]. During which, a delay in response and lack of situational awareness resulted from poor communication between local and federal agencies [13,14]. Help and support was further delayed due to the inflexible command and control configuration [13].

Following a review of thirty-two major incidents occurring between 1986 and 2010, the JESIP principles [4], introduced earlier, were developed. The review concluded collaboration between the multiple response agencies was a persistent problem [15].

Typically, there are three main challenges to collaboration among multiple-agencies at the community level during an emergency: 1) communicating within/across emergency-agencies, 2) inter-organisational understanding, along with 3) establishing/maintaining shared situational awareness [16,6].

Poor collaboration can result in negative outcomes for society, as correct actions are less likely to be taken quickly [17,18]. The pandemic situation was fast-moving, requiring swift action and high levels of collaboration between agencies [9].

Components assisting multi-agency working include effective leadership and pre-existing relationships. Components hindering multi-agency working include agencies having no previous knowledge of structures, poor communication and sharing information from national government to local responders. It is easier for emergency responder agencies to work together where there is shared identity between those agencies. During the pandemic shared identity was entrenched due to pre-existing relationships. There was *'a shared sense of common fate … (facilitating) group working'* early in the pandemic [19]. Shared identity relates to different agencies understanding each agency/organisation's roles and responsibilities, having shared goals and trust, confidence and respect towards each other [20].

2.2. Effective working and communication

Furthermore, during the pandemic communication between LRFs and National Government was challenging [21]. Daily Government public briefings were often the primary way information was communicated to local responders. This caused difficulty providing a quick local response due to inadequate time to understand and suitably

respond. Reasons for information being communicated this way included preventing information from being leaked, speed which decisions were being made and the impact of delay in responding. Although vertical communication challenges existed later in the pandemic, LRFs were employing a more local response, sharing ideas and best practice. Agility in command-and-control structures during the pandemic was determined as key to success [9,22].

2.3. Research question and aims

During the pandemic, how effective was multi-agency communication and collaboration at local, regional and national levels?

To identify.

- if and how communication and collaboration could have been improved between the multiple agencies working on the response to the pandemic.
- if there was any adaptive learning and changes by community partners during the response as the pandemic progressed.
- any lessons that could be learned for future community emergency response.

The question and aims were decided after reviewing existing literature and the personal experience of the lead author who had a direct role in the community response to the covid-19 pandemic.

3. Methods

This study answers the research question by investigating experiences of participants involved in the community response to the covid-19 pandemic through a qualitative case-study methodology. Purposive sampling was used to find and choose participants who would be rich in information about the subject area [23], i.e., those who had personally been involved in the response.

The recruitment criteria for the (participants) sample population [24] in the single case-study were.

1) participants worked for a Category 1 responder organisation, (the LA, NHS or UK Health Security Agency (UKHSA)), and
2) they had been involved in community pandemic response at strategic or tactical level, in the LA area.

The setting was a local authority (LA) within the north of England and its category 1 responder organisations, working together within the structure of an LRF to enact a community response to the covid-19 pandemic. Participants were identified for recruitment by having attended strategic/tactical command and other outbreak related meetings in the LA area. Ethical approval for the study was obtained from the University of Sheffield.

Participants were then recruited by phone or e-mail and provided with an overview of the purpose of the research. Once participants agreed to take part, an interview was booked, with participant information sheets and consent forms sent electronically. One-to-one semi-structured interviews were conducted [25], with the interview schedule informed by Oxburgh et al. [26], using *'productive'* [27] open questions. Before interviews started, the consent form was read out, advising participants of their rights, including their right to withdraw at any time. Participants signed the form to confirm they were happy to continue. Ten interviews were conducted (see Table 1) either face to face or online, recorded with a Dictaphone, and later transcribed for data analysis by the authors.

4. Data analysis

Interview transcripts were analysed using thematic coding [28], following Braun and Clarke's stages of thematic analysis [29]. The authors read each transcript line-by-line. This inductive analysis enabled the generation of theoretical ideas about processes and patterns, and any similarities or differences in the data, leading to the generation of an initial code book. Both authors then reviewed the code book independently, and began identifying where initial codes could be collapsed, allowing themes and sub-themes to be identified. Then holding a discussion, including around some data that did not fit well into existing codes, leading to revision of codes, or shifting data to a more relevant code. Finally, authors reviewed the identified themes before agreeing on the final thematic elements for inclusion in the findings.

Table 1
Interview Participants - showing participants, the organisation they worked for and their strategic command level.

Participant Number	Organisation	Strategic or Tactical
PN1, 2, 3	LA	Tactical
PN4, 6, 8	LA	Strategic
PN5	NHS	Tactical
PN7	NHS	Tactical & Strategic
PN9	UKHSA	Tactical & Strategic
PN10	LA	Tactical & Strategic

5. Results

Results are described based on qualitative analysis of community level response to the covid-19 pandemic. Thematic coding is presented in Table 2, indicating each of the major themes and sub-themes discovered.

5.1. Structure

All participants recognised the importance of having an overarching structure to the emergency response. The LRF and the structure it provides was found to be instrumental in guiding the emergency response. Key elements of structure were identified including a framework for command-and-control, leadership and the provision of training.

5.1.1. Command and control

The LRF uses JESIP as the response model. Participants confirmed this was mirrored by the LA during in-house strategic and tactical meetings. PN4 stated the command-and-control structure was important

Table 2
Qualitative Coding Table to Identify Themes and Sub-Themes Identified during Thematic Analysis – as explained above.

Raw Data/	Sub-Themes	Theme
'… clear command-and-control structure in place' (PN4)	Command & Control	Structure
'Leadership roles … clearly defined' (PN2)	Leadership	
'Pre-pandemic training … excellent' (PN3)	Training	
'I already had strong relationships with … people I was working with' (PN6)	Relationships	Local Culture
'It was about working together, supporting each other … doing what we needed to do' (PN1)	Shared Fate and Supporting Each Other	
'Teams meetings worked really well' (PN8)	Remote/Online working	Communication
'Data coming through, was … weeks old' (PN7)	Data sharing not quick enough	
'We found out what was going on in the daily briefings … ' (PN8)	Info from Central Government	
'There was a national shortage of PPE' (PN2)	Personal Protective Equipment	Collaboration
'It took 3 weeks to set the … site up' (PN10)	Testing and vaccination site set-up	
'We helped businesses with payments and advice on restrictions' (PN3)	Support for businesses	

and helped *'to keep meetings focused.'* Participants broadly agreed this approach was successful. However, PN8 also commented *'it was a bit inflexible'* as *'it made the meeting structure too rigid'*.

The LRF opted for a co-chair model between a LAs, the Police and Fire Service. Participants felt this unified command model supported joint working. This was mirrored in the Tactical Co-ordination Group (TCG) which was co-chaired by the LA and Police. Participants felt sharing the responsibility for command among several organisations was positive.

5.1.2. Leadership

All participants praised LRF co-chairs for leadership provided to guide the emergency response. PN4 found co-chairing responsibilities: *' … created common purpose and shared identity for partner-agencies.'*

Participants confirmed leaders reiterated the purpose of meetings at the start, demonstrating command of the situation, providing common purpose helping to build trust among the multi-agencies. PN3 observed:

> 'At the start of the TGC (we) … stated the purpose of meeting … so everyone … understood what we were trying to achieve … helping build … trust … '

Collective terms such as 'we' and 'us' were used helping bind groups together. PN2 stated:

> ' … meetings were made up of colleagues from different organisations, use of 'we' and 'us' made us feel part of the same team.'

5.1.3. Training

Participants who attended emergency response training pre-pandemic felt it beneficial during pandemic. They felt better able to provide an effective response. PN4 who attended the Multi-Agency Gold Incident Command (MAGIC) course, described it as *'brilliant'* and *'the best training I have ever been on'*.

5.2. Local culture

Cited by all participants, local culture was an emerging theme and found to be a moderating factor contributing to an effective response. PN6 highlighted:

> '*a can and will do culture across all organisations … led to successful collaboration and delivered successful outcomes for … communities.'*

PN1 added: *'We have a positive, professional, friendly culture.'*

Responses indicated the positive culture came from individual and organisational desire to support communities.

5.2.1. Relationships

Most participants had pre-existing relationships with those they worked with during the pandemic. This was mainly due to having responded to emergencies in the past, working within the same LRF structure. This aided communication and collaboration. PN6 said:

> 'We … had pre-existing relationships across the system and within communities … things were easier to set up in a friendly, caring collaborative way.'

However, PN5 was new to the LA when the pandemic hit, while PN9 started in the LA area/system mid-pandemic. These participants did not experience the same level of pre-existing relationships as others. However, neither felt this was a barrier. PN5 found, *'communication and collaboration was open and easy regardless of previous relationships.'* PN9 stated '*I was welcomed into the system.'* PN9 also confirmed that working with some organisations was completely new and it took time to build those relationships.

5.2.2. Shared fate and supporting each other

All participants agreed there was a *'sense of shared fate'* (PN10), *'community spirit'* (PN3) and *'willingness to pull together'* (PN1). Although working remotely, they felt supported. PN5 said:

> *'I always felt supported … part of the team.'*

5.3. Communication

Participants identified positive aspects of, and barriers to communication.

5.3.1. Remote/online working

Participants highlighted in the initial lockdown, organisations were not prepared for the scale of remote/online working. Different systems for online working were used. This improved after a few months as organisations caught up. PN8 remarked:

> 'There was a challenge early on … When everyone got Microsoft Teams, communication improved.'

Several participants described the early stages of the pandemic as *'full on'* and *'24-h'*. To help overcome this, WhatsApp groups were set up. PN2 found:

> ' … information was quickly shared around the multi-agencies … for quick response'.

5.3.2. Data sharing was not quick enough

Delays in data being shared was cited by most participants. Making determining the correct course of action difficult. PN9 felt:

> 'Data sharing should have been quicker … there were delays relating to cases and exposures, so delays … making a swift response.'

5.3.3. Information from Central Government (vertical communication)

All participants cited frustration with vertical communication. There was some understanding of this, but they felt this could have been better. PN8 was:

> *'Not sure things were set up Nationally for … two-way communication'* feeling *'decision making was … centralised and didn't benefit from LA's local knowledge'*, and appointment of regional convenors was *'helpful'*.

Along with other participants, PN6 confirmed:

> 'Government guidance contradicted legislation … leading to confusion and frustration for partners and the public.'

Comments showed frustration when responders would only discover the latest Policy update during daily briefings and contradictory advice/interpretation from different Government Departments.

Participants felt later in the pandemic, local responders were less reliant on information from the Government. PN2 stated:

> ' … rather than wait for government direction, we worked together, crafted plan and made the appropriate response.'

5.4. Collaboration

All participants were positive about achievements during the pandemic, e.g., offering advice to businesses, setting up testing/vaccination centre - made possible by multi-agency collaboration. The subthemes identified are not an exhaustive list of good examples of collaboration, they are the ones most frequently cited in interviews. PN6 said:

> 'Knowing our communities and colleagues from partner agencies … facilitated successful local collaboration and successful outcomes.'

5.4.1. Personal protective equipment (PPE)

Responses indicate that LRF partner agencies pulled together early in the pandemic when there was a shortage of PPE, sharing supplies across the region.

PN2 remarked on support from:

'*other LAs, NHS and military to get stocks where they were needed.*'

5.4.2. Testing/vaccination site

A testing, then vaccination site was set up at the local leisure centre, supported by staff who had been furloughed. PN10:

'The … site took 3 weeks to set up, with logistical support and expertise from the military. We had high case rates … testing centres helped identify a-symptomatic cases, so people could isolate.'

5.4.3. Business support

Participants revealed the LA swiftly made business support payments, with a supportive approach to enforcing the business restrictions legislation.

PN8 stated:

'We proactively engaged with businesses, providing financial support and regulatory advice.'

PN4 added:

'For consistency … regulators worked with Police interpreting … legislation … supporting businesses to comply.'

6. Discussion

Results are discussed and show the research question has been answered and considered alongside international literature on effective communication and collaboration in emergency response.

The research question, *'during the pandemic, how effective was mutiagency communication and collaboration at local, regional and national level?'*, has been answered. Results indicated that local and regional level communication was good, however, there were problems with national communication. Results are now considered in more detail starting with the concept of structure, it was felt LRFs brought good structure to the overall response.

6.1. Structure

Hill et al. [9] were also complimentary about LRF roles and structures yet highlighted similar limitations with the vertical communication to and from central government. Radburn et al. [22] agreed and this was supported by O'Brien et al. [6], around local organisations understanding what's going on, and sharing situational awareness at the local and regional levels [16]. Participant comments support Jung and Song [30] that maintaining some structure between multi-agencies is important to successfully support community response to and recovery from emergencies.

The response structure provided by the LRF played an important role bringing agencies together, helping create a common purpose. Participants confirmed the meeting purpose was re-iterated at the start of the meeting, and common language used. This is supported by the concepts of *'shared identity'*, and *'re-stating shared goals'* highlighted by Davidson et al. [19](10). The co-chaired LRF was seen as a major asset for response co-ordination. Research conducted during the pandemic response in the Canadian health system found the use of multiple incident commanders, known as a unified command style [31], were valuable because of their ability to deal with complexity, which was prevalent during the pandemic [32].

Moreover, the value of the LRF to provide structured training to LA and its partners was helpful for the response. Research suggests responders who receive emergency response training felt they benefited from it, finding it useful during the pandemic response [32,33].

6.2. Local culture

Culture has been described as *'the way we do things around here'* [34] and was an emergent theme. Participants described the culture as positive and friendly and found it contributed to an effective emergency response. This finding is supported by Takada and Yokota [35] who found companies with a positive culture *'better able to affect a coordinated response to an emergency.'*

Those with pre-existing relationships found them beneficial. Where relationships were new, it did take time to build trust, supporting Davidson et al. [19] which described how pre-existing relationships are useful to assist multi-agency working. However, two participants newest to the system, did not feel this was a barrier. Results showed participants felt a sense of shared fate, community spirit, and people supported each other. Again, supporting Davidson et al. [19], that multi-agency working was supported by *'shared sense of common fate'*.

6.3. Communication and collaboration

Several participants felt early in the pandemic, data sharing was not quick enough. They also felt vertical communication was poor. While there was some understanding of reasons for this, they felt frustrated at not being fully informed. This supports O'Brien et al. [6] around successful coordination relying on local agencies knowing *'what is going on'* at a national level.

Results also reflect findings of Hill et al. [9], including on information flow through *'large bureaucratic organisations'* which can lead to *'miscommunication'*. These results support Cigler [17] and Kettl [18], around negative consequences for society due to poor collaboration as corrective actions don't happen quick enough.

7. Practitioner points

Results from the study of the community response to the covid-19 pandemic in an LA area, show four recommendations to improve future community emergency response, and can be applied internationally, particularly where emergency response includes a community element.

First, training, including simulated exercises involving community partners is key to preparedness for those likely to be involved in the response. Training sessions should involve all multi-agency partners to build familiarity and help establish connections between the organisations involved in responding before any emergency occurs.

Second, during response, maintain a mix of face-to-face and remote meetings/situation management with teams from across the multiagency response. Remote meetings save time and can be organised quickly. Third, a unified command model enhances response effectiveness, where the incident command is co-chaired by multiple individuals, shared from across the partners.

Finally, in the case of a national response, aim to build closer relationships with representatives from Central Government, to highlight and promote the value of a local perspective and situational awareness, making the local response within communities more effective and knowledge shared more widely. Conversely, centralised policies, for example public health interventions like heat-health alerts, must leverage local knowledge to ensure they have enough information about local populations. Fundamentally, scenario planning and interventions for emergencies require a local articulation which LRFs and their partners are well positioned to handle due to their enhanced shared situational awareness and understanding of need in their communities [36].

8. Strengths and limitations

Study limitations include blue light responders not being included in

the study. They would have provided data from across a wider field of Category 1 responders. However, Davidson et al. [19] provided blue light responder experiences of multi-agency working in the UK during the pandemic. Pragmatically, conducting more interviews during the study period was not possible, but it could have strengthened (or challenged) the findings.

Study strengths include use of a face-to-face interviews, with ten people involved in the covid-19 response at a strategic or tactical level within an LA area. Open ended questions allowed the participants to speak freely.

Further research in this area - studying different LAs, local blue light responders or health care professionals.

9. Conclusion

The study offers new and impactful insights into communication and collaboration of the multi-agencies involved in the community response to the covid-19 pandemic. Findings can be applied to any high-or-low-income country where emergency planning/response considers community level integration with multiple agencies to improve the public health emergency response.

Qualitative data was collected via 10 semi-structured interviews being conducted with Category 1 responders from the LA, NHS and UKHSA. Interviews were then thematically analysed [29] to identify themes/patterns.

Set against existing international literature, results show good command-and-control structures, including leadership, training and positive local culture were important for successful communication and collaboration between the multi-agencies. This study highlights some beneficial practices which support recovery and preparedness for future emergencies.

Ethical approval

University of Sheffield, ScHARR Ethics Review Procedure.

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Declaration of competing interest

We have no interests to declare.

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Appendix B. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.puhip.2023.100443.

Appendix A

Interview Schedule

PN: (Enter Participant Number Here).

Introduction, to be read to participants:

Thank-you for meeting with me and agreeing to take part in the interview. The purpose of the interview is to obtain information which will help determine how effective multi-agency communication and collaboration was in the Local Authority Area.

Research Question **Reminder for Interviewer Only:**

During the Covid-19 Pandemic, how effective was multi-agency communication and collaboration at local regional and national levels?

Aims.

- To identify if and how communication and collaboration could have been improved between the multiple agencies working on the response to the pandemic.
- To identify if there was any adaptive learning and changes by community partners during response as the pandemic progressed
- To identify any lessons that could be learned for future community emergency response.

Interview Questions.

1. What role did you play in the community response to the covid pandemic? What is your job role? What groups did you attend? (Did you chair any of these groups)?
2. What organisations did you work with during the pandemic? Was this on the groups you've outlined above? If not, please outline how you worked with these organisations (formal or informal capacity)
3. Were any of these pre-existing relationships? How did this affect communication and collaboration?
4. What are your thoughts on communication and collaboration between the different agencies during the pandemic? At:
   - Local
   - Regional
   - National Level

   Was it good, or not so good? How could things have been improved? Were these things implemented over time during the pandemic?
5. How did you feel about the communication from Central Government to local authorities and others involved in the frontline community response? Please explain how effective and appropriate it was?
6. Tell me about any barriers to communication? If there were any, what, if any measures were put in place to overcome these?
7. How was communication between the frontline organisations delivering the community response?
8. What emergency response training had you received pre-pandemic? How did you find this? Tell me if this was useful during the pandemic? Were you able to apply the learning?
9. Is there anything else you'd like to add? Are there any points you would like to re-visit/go back over?

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