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A blueprint for learning: How NHS England (London) learned during its response to the Covid-19 pandemic

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ABSTRACT

Identification and sharing of lessons is a key aspect of emergency preparedness, resilience and response (EPRR) activity in the national health service (NHS) in England (NHS England, 2022). The overall intent of the lessons identification and implementation process is to improve readiness and response to future major incidents and emergencies, such that, wherever possible, patient harm is minimised and staff well-being is maximised.

In this commentary, we draw on international literature to outline some of the major challenges in healthcare organisations to learning from major incidents and emergencies. We describe our experience of identifying lessons and set out the approach used by NHS England (London) to identifying lessons from the NHS response to the Covid-19 pandemic in the capital. We describe the knowledge garnered in our organisation about learning methods during the Covid-19 pandemic. The commentary considers the different approaches to identifying lessons, and the subsequent challenges of learning and implementation. This paper places its focus on the learning processes followed rather than what was learned as a result. It also explores whether the learning process undertaken by NHS England (London) demonstrates the hallmarks of a learning organisation.

What this study adds

- The paper outlines a systematic approach for learning, utilising different methods of identifying and implementing lessons, and codifying the hallmarks of a learning organisation. Healthcare systems can adapt this approach to ensure they continually improve service delivery to patients and support to staff during and after major incidents or crises.
- The paper highlights the significance of learning in the context of patient care, touching on the reduction of inequalities. It demonstrates how NHS England (London) identified and prioritised lessons that benefitted patient care and aligned with strategic objectives, further exemplifying the alignment of learning with the NHS values.
- The paper draws upon international literature and responses to health emergencies. We believe by sharing learning, the global community can develop preparedness strategies which would save lives in a future event.

Implications for policy and practice

- Healthcare policies should support a systematic approach for identifying and implementing lessons identified. This study endorses quadruple loop learning, which goes beyond simply correcting operational errors to understanding how existing policies and procedures influence decision-making by forming a comprehensive and continuous learning process incorporating past experience, political and social contexts.
- Future policies and procedures should involve education and guidelines surrounding the identification and recording of lessons. This will ensure good practice in that lessons are written clearly, making them easier to analyse and track their implementation.
- Policies and procedures should encourage organisations to openly share learning experiences and lessons. Commitment to transparency fosters trust, which supports a culture of learning across healthcare organisations.

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1. Introduction

The Covid-19 pandemic exposed the vulnerabilities of many national and global healthcare systems. There is a challenge in not just identifying such lessons from the pandemic (so vast was the impact across every person, organisation and community) but perhaps more importantly in implementing the lessons identified into practice to improve future health system resilience [1]. Failure to implement lessons identified can result in failure to improve a future response to a similar scenario, or lead to repeat occurrences of poor practice, and ultimately potentially cause harm to patients and the wider public [2–4].

While the impact of Covid-19 on the UK health service and population is far from over, National Health Service (NHS) organisations in the UK are clear of their shared task to embed and scale lessons identified so that the health system is ready for future emergencies, including pandemics [5,6]. Governments, private-sector industries and international organisations must work together to strengthen collaboration and keep sharing of learning uppermost in their minds [7]. This type of international collaboration will help the global community to develop preparedness strategies and put in place measures which would save lives in a future event [6,8].

Identification and implementation of learning and lessons from major incidents and emergencies is an essential aspect of ensuring all healthcare organisations can continually improve support to patients and staff wellbeing in disruptive situations. Throughout the Covid-19 pandemic, NHS England (London) (alongside the NHS and our partners in London) made time for a continuous cycle of reflection and action across individual, team and organisational levels to identify learning, emphasising movement from lessons *identified* to lessons *learned*. By reviewing the data we collected, it became apparent that NHS organisational learning is critical because it not only improves patient care, but it also ensures focus on inequalities, and identifies and replicates good practice. It allows us to change things that did not go well and fosters trust by being open, transparent and showing accountability. This paper focuses on the process of learning rather than the substance of what was learned. It also explores whether the learning process undertaken by NHS England (London) demonstrates the hallmarks of a learning organisation.

2. Learning in a global crisis

In the field of emergency preparedness, the "lessons-learned" approach stands on the assumption that learning from experience, whether it be from real events or simulations, improves practice and minimises avoidable deaths and negative economic and social consequences of disasters [9]. Many organisations have adopted formal procedures for identifying, documenting and disseminating lessons from previous responses to emergency situations and simulations. Evidence shows that learning from failure can determine whether an organisation is crisis-prepared or crisis-prone; research by Carmeli and Schaubroeck outlines that if adverse events prompted participants to learn new behaviours, they would avoid crises in the future [10].

Countries that have previously faced major outbreaks of infectious diseases, such as Lassa fever, Ebola, MERS or SARS were able to learn from these rare events and therefore change their protocols for dealing with pandemics. Lee et al. suggest that South Korea can be regarded as one of the most successful countries in the fight against Covid-19 largely based on its ability to learn from past experiences in the MERS crisis and quickly introduce contact-tracing for Covid-19 [11]. Moreover, South Korea's experience of the SARS outbreak led to the formation of Emergency Outbreak Centres. These repositories for learning and knowledge have been identified as important factors supporting South Korea's response to Covid-19 [8]. Nigeria used experience from responding to Lassa fever to inform their response to Covid-19 [6]. Between 2016 and 2019, the Nigerian Centres for Disease Control (NCDC) responded to three large Lassa fever outbreaks, which led to some key developments that benefitted the Nigerian response to Covid-19. This included establishing the NCDC as the lead agency for public health emergencies, enhancing the resources of Nigeria's state governments for outbreak preparedness and response, and transforming the public health response from "reactive" to "prepared" with guidelines, protocols, and a real-time, web-based platform for outbreak and epidemic surveillance [6].

Since the onset of the Covid-19 pandemic in late 2019, organisations throughout the world have been tasked to deal with ambiguity under a global crisis. Both private and public sector organisations were affected by this environmental jolt [12]. Military organisations across the globe have been asked to take on unfamiliar tasks while maintaining a state of readiness under fluid and uncertain conditions, for example to support civilian health facilities and workforce, and logistics such as the transportation of medical supplies [13].

The events since December 2019 were challenging, but they also offered the opportunity to learn, adapt, and overcome a major trial of military readiness. Before going back into the status quo, the military community use after-action-reviews (AARs) to consolidate lessons learned and prepare for future shocks to the global environment. In a military environment, an AAR provides critical data to a unit commander, who will then incorporate that data into improving unit performance and, ultimately, securing victory on the battlefield. An AAR includes feedback from all participants—from the senior leaders to the individual soldiers—whose observations are often just as critical to the success of the unit mission [14]. Non-military sectors are increasingly using the AAR approach to identifying learning, and similarly, in the 'battle' against Covid-19, NHS England (London) and partnership organisations used AARs to create a real-time loop for learning. Also, in line with the military model, AARs in NHS England (London) heard the voices from staff at all levels of the organisation, democratising learning and speeding up dissemination and implementation.

Despite the obvious benefits of organisational learning, studies have highlighted how failures to learn often result in the same repeated findings from different inquiries [15,16]. Pollock identifies that organisations fail to institutionalise previously identified lessons due to organisational barriers to learning [16]. He lists key components necessary to embed organisational learning and describes a learning organisation as one that facilitates change, empowers organisational members, promotes collaboration and sharing of information, creates opportunities for learning, and promotes leadership development. Garvin et al. [17] outline the three building blocks required for creating learning organisations:

(i) a supportive environment
(ii) concrete learning processes,
(iii) and leadership that reinforces learning.

A 'true' lessons-learned document, therefore, provides evidence of change as a result of the learning and includes mention of functional and dysfunctional features. The functional features include improved policy that yields improved performance; the dysfunctional features involve aspects that impede learning, or that would, for whatever reason, prevent what was learned from being put into practice [15].

Argyris [18] outlines two types of organisational learning. Single-loop learning refers to changes made to correct errors within an organisation yet does not address the causes of problems [19]. Birkland proposes most organisations display single loop learning, as most post-disaster reports tend to primarily focus on operational changes [11]. Double-loop learning goes further, by also changing governing values [19]; the aim of the process is to question assumptions and seek new solutions if necessary. However, it has been suggested that double-loop learning is also limited in that it only occurs within the organisation and does not fully reflect changes in the wider environment. To address this, Tosey, Visser, and Saunders proposed triple-loop learning, emphasising the significance of active organisational responses

Table 1
Methods used by NHS England (London) to identify lessons during the Covid-19 pandemic.

Method	Description	Benefits
Incident debriefs	A structured process following an exercise or event that reviews the actions and decisions taken by all involved.	Debriefing allows teams to discuss and learn from recent events. It is important to capture as much detail about the incident and the experiences of those involved as soon as is reasonably practicable. It is a powerful tool for information sharing, problem-solving, decision-making and performance management.
After Action Review (AAR)	An interactive discussion for participants to decide what happened, why it happened, and how to improve or sustain collective performance in future projects or events.	An AAR seeks to understand the expectations of all those involved and provides insight into events and behaviours in a timely way with the learning leading to personal awareness and recommendations for action. It is an effective method to achieve collective learning and continuous operational improvement in healthcare delivery.
Workshops	A meeting at which a group of people engage in intensive discussion and activity on a particular subject or project.	Effective workshops actively engage participants and provide opportunities to assess or evaluate past or current planning and decision making. They produce reliable data and allow identified learnings to be made around future planning.
Surveys	An inexpensive method for collecting qualitative or quantitative information about an event.	An effective method of collecting large quantities of highly representative data in one hit, the results of which can often be quickly analysed and summarised. Surveys also offer people time to reflect and respond at a time convenient to them.
Reflective interviews	One-to-one key informant conversations allowing the participant time to reflect, revisit assumptions and identify new paths, thus increasing learning.	A powerful tool allowing participants the opportunity to learn, make sense of problems, and find new solutions. This method may provide a deeper granularity of reflection than a group/team AAR.

and adaptations to changes in the dynamic external environment [20]. This triple-loop learning is reflected in recent WHO activity with regards to health systems [6]. Lee et al. [11] goes even further by suggesting quadruple-looped learning which happens when the nature of the new problem, the context, and past experiences jointly influence the organisation while they are searching for solutions to an emerging problem such as the Covid-19 pandemic.

All staff should be encouraged to take ownership of, and be involved in, the learning process. Lessons must link explicitly to future actions, and leaders must hold everyone, especially themselves, accountable for learning [18]. Indeed, leaders who foster a sense of shared purpose among staff can help to create the ideal organisation with a continuous learning environment [22].

3. Our story

The UK's national health service is a large and complex meta organisation, composed of many individual bodies, each with their own Board and Chief Executive, commissioning or providing publicly funded healthcare free of charge at point of need to their communities. This includes primary-, acute-, secondary-, tertiary-, mental health-, community- and emergency-care [23].

The NHS EPRR Framework outlines that "NHS-funded organisations are required to share lessons identified through exercising or incident response across the wider NHS, using a common process coordinated by the Local Health Resilience Partnerships (LHRP)." [24]. Furthermore, that "learning from exercises is central to developing a method that supports personal and organisational goals and must be part of an annual plan validation and maintenance programme." [24]. The Covid-19 pandemic has presented a timely opportunity to review and reflect on our learning processes.

The process described in this paper reflects that undertaken by NHS England (London), the pan-London commissioning body that coordinated the response to Covid-19 in the capital. Lessons from healthcare providers and local commissioners in London also fed into the process as part of the regional responsibility to share lessons between organisations [24]. The NHS does not prepare for or respond to emergencies alone, and is part of a wide, multi-agency partnership composed of other public sector, private and voluntary sector organisations [25]. Sharing lessons and learning across the multi-agency partnership is as important and valuable as sharing within the NHS and is part of the ongoing UK Covid-19 public inquiry.

The project described in this commentary reviewed the totality of lessons identified by NHS England (London) during the Covid-19 response, not just policy-level learning. Decisions regarding real-time operational changes were made dynamically throughout the pandemic in response to the ever-changing situation. These decisions were made with approval from the Gold Command team and/or the London Clinical Advisory Group (which consists of clinical leaders across London). In a few circumstances, temporary changes to policy were made which were appropriate to the pandemic response but these were quickly reversed outside of the response window.

A variety of methods were used to identify learning from NHS England (London)'s response to the Covid-19 pandemic, as summarised in Table 1 and the teams involved were careful to select the most appropriate approach for their situation and group structure. Learning was not a top-down process therefore the learning loop was rapid as it did not require hierarchical communication.

During May 2020–December 2021, NHS England (London) undertook a variety of learning events. Providers and commissioners of NHS funded care in London also undertook their own learning exercises during this period, and some of this was reflected into the regional process described in this paper. Fig. 1 illustrates the learning identification timeline for the NHS in London.

A small sub-group composed of members of the NHS England (London) Covid-19 Public Inquiry Team and the EPRR team was formed to review the learning identified from the methods in Fig. 1. The lessons were entered into a single excel database that we term our learning 'dashboard' which underwent an iterative development process, with many stages of cleansing, categorising and stratifying the data. Some entries were aggregated, and duplicates were removed through data cleansing; the remaining lessons were rephrased where necessary to form clear standalone learning statements. Recurring learnings were identified and noted. Lessons were categorised by the NHS England (London) directorate responsible for implementation to allow later follow-up. The implementation status of each lesson was assessed as either 'identified and implemented' or 'identified but requiring further action'.

Lessons were thematically assigned to one of ten mutually exclusive and collectively exhaustive (MECE) categories [26]. As Fig. 2 illustrates, the highest number of identified lessons in this project fell into the MECE categories of collaboration/partnership working and data/information flow/communication which illustrates the emphasis the organisation placed on joint working with internal teams and external partners to provide a unified 'one London' response across the capital and highlights the importance of information sharing when working in partnership. Unsurprisingly, lessons relating to staff wellbeing, training, and workforce resourcing also ranked highly, followed closely by lessons relating to policies and procedures, and governance and decision making.

Benefits and/or disbenefits (i.e. barriers to implementation) for each lesson were identified to facilitate prioritisation of those requiring further action. The highest priority benefits were those related to

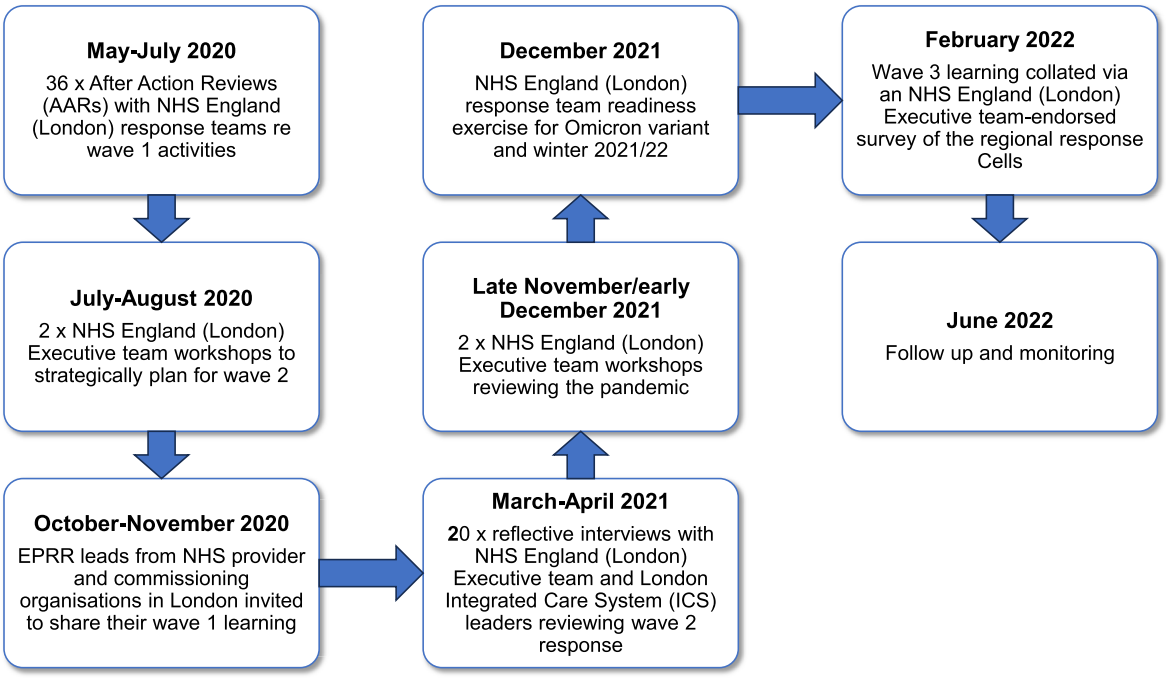

Fig. 1. NHS England (London) Covid-19 learning timeline.

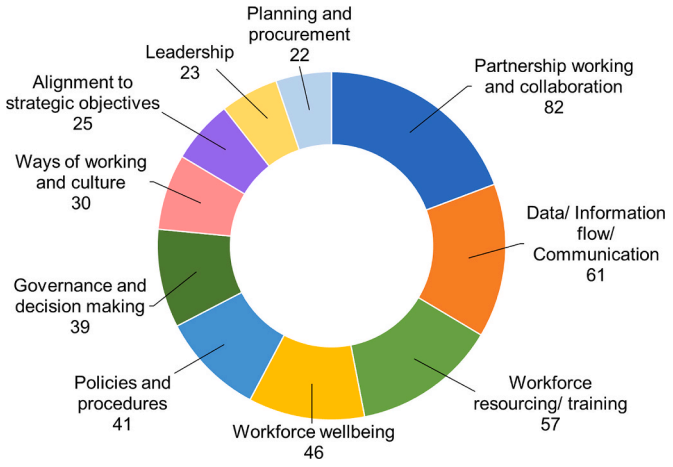

Fig. 2. Categorisation of Covid-19 lessons identified by NHS England (London) in this process.

patients, strategic organisational objectives (such as the reduction of inequalities), workforce and partnership working [27], all of which link strongly with the values of the NHS [28]. Only two disbenefits were apparent: the complexity of the stakeholder landscape to implement the lesson and financial impact/value for money; both of which could present an insurmountable barrier to implementing the lesson. However, the risks involved in not implementing learnings must always be considered.

Reports identifying and summarising learnings, and progress to implement them, were sent to the NHS England (London) Executive team on a six-monthly basis to encourage ownership and support delivery progress. Extracts of the dashboard were sent to NHS England (London) directorate leads to provide an implementation update or advise why the learning would not be implemented (e.g. if the disbenefits outweighed the benefits).

To further embed the importance of learning lessons, a series of learning webinars outlining the learning blueprint and including a case study from the London Covid-19 Legacy and Equity Partnership were held in October 2022 for NHS England (London) colleagues.

4. Moving from crisis-prone to crisis-prepared

At the point of identifying and recording lessons into the database, we found that the majority had already been implemented in real time during the Covid-19 pandemic response and often ahead of the formal identification processes set out in Fig. 1. In line with Darling et al. who state that leaders must hold everyone, especially themselves, accountable for learning [21], the lessons team, with executive support, worked to translate all remaining outstanding lessons identified into lessons learned wherever feasible.

The collection and analysis of our Covid-19 learning was not the intended goal of our process, but instead is an ongoing activity to monitor the changes that took place as a result of the initial learning. Moreover, the range of methods used to gather learning and our monitoring of subsequent implementation and changes to procedures over an extended period after the initial wave of the pandemic, reinforces this process as a true lessons learned approach. This supports Lee et al.'s concept of quadruple-loop learning [11] as NHS England (London)'s methods of identifying and learning lessons to address the ever-changing environment during the pandemic did not seek simply to correct operational errors. Instead, it formed a comprehensive and continuous learning process incorporating past experience, political and social contexts, and the specific characteristics of a novel virus whilst trying to find ongoing healthcare solutions. This could be seen as going beyond the current WHO-described best practice of triple-loop learning [6].

The *systematic* and *supportive* way in which lessons were gathered and identified by NHS England (London), the *sharing of lessons* between teams and partners, the timing and rate of lessons identified being translated into lessons learned throughout the pandemic, and the support received from the NHS England (London) Executive team in pushing forward implementation of outstanding lessons clearly illustrates that Pollock's description of a learning organisation [16] and Garvin et al.'s three building blocks [17] have been achieved and thus confirms that NHS England (London) does indeed, constitute a learning organisation.

NHS England (London) has consequently adopted five 'hallmarks' of a learning organisation:

- *Sustained* – learning takes place continually over time and at frequent intervals.
- *Systematic* – learning uses a variety of approaches and has a clear process to embed lessons.
- *Supported* – learning has oversight and endorsement at Executive level.
- *Supportive* – learning takes place in a psychologically safe space for staff.
- *Shared* – learning is shared across teams and within the organisation.

Learning lessons in this way actively drives up the quality of patient care [29] but that is not the only benefit. Our study, together with qualitative input from participants at our subsequent learning webinars, also reinforces the intent that the NHS in London keeps the reduction of inequalities as a central tenet in the provision of care. Furthermore, by learning lessons the organisation can not only identify and replicate good practice and change things that do not go well but can also foster trust amongst staff and patients by sharing learning openly and transparently. In this study, we can go further by asserting that in identifying and recording lessons we are also capturing the full story of the pandemic response in London, which will, in turn, help us to support the Covid-19 Public Inquiry and, ultimately, will ensure the experience of staff and patients is honoured.

In 2023, NHS England launched NHS IMPACT (IMproving PAtient Care Together) to support all NHS organisations, systems and providers at every level, including NHS England, to have the skills and techniques to deliver continuous improvement [30]. This will contribute further to our learning environment.

5. A call to arms

This paper contributes to the legacy of the pandemic by sharing NHS England (London)'s continuous learning journey. By sharing the operational aspects of the lessons project between the EPRR and Covid-19 Public Inquiry teams at NHS England (London) a connectivity developed between lessons identified and learned, and the regional office's preparedness for future waves of Covid-19 (or new pandemics) and the Covid-19 Public Inquiry. Furthermore, this project is helping to create a resume of our learning to share with colleagues, as well as ensuring NHS England (London) is genuinely a learning organisation. The project described in this paper to collate and review the totality of lessons identified by NHS England (London) during the Covid-19 response was undertaken towards the end of the pandemic, starting it earlier and undertaking it alongside the lessons identification process could have yielded richer information and insight in real time that could have influenced the ongoing response. Despite this factor, NHS England (London) can be considered to have demonstrated quadruple-loop learning as per Lee et al. [11].

This paper does not describe specifics of individual lessons, other than setting out the ten MECE categories in Fig. 2. However, aspects have been shared internally and with partners, and most have been implemented and incorporated already.

The global shift towards urbanisation is bringing people closer together in often crowded cities, increasing opportunities for infectious diseases to be introduced and outbreaks to affect large numbers of people and spread quickly [31]. We need to work collaboratively and globally to build resilience and strengthen preparedness and response capacity for the next worldwide threat. Successful organisations and countries can use prior learning to anticipate opportunities and challenges and to quickly adapt to novel situations. This was particularly important during the response to Covid-19 where radical organisational changes were necessary across multiple areas of healthcare.

Indeed, *sustained, systematic, supported, supportive* and *shared* learning from past pandemics and sharing of national and international lessons – what went right and what went wrong – can positively influence proactive and reactive strategies. Health and care organisations need to be prepared to learn, adapt and change to thrive and survive in an ever-changing environment. In the case of Covid-19, implementing and learning lessons from the pandemic should not wait for Public Inquiries to conclude. Timely collaboration and the sharing of lessons collectively by organisations around the world will enable staff across the global health and care system to modernise and up-scale so that we are globally ready for any potential new Covid-19 variants, future pandemics, and the impact of other global challenges such as the climate crisis.

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The authors received no funding for this work and have no competing interests in relation to the content of this article. All were involved in facilitating the process of identifying lessons, of categorising lessons, and supporting their implementation. All contributed to revisions of the drafting of the paper.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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