National Survey

AACE – Infection, Prevention and Control Survey of the Ambulance Workforce

Report:
National Report

Report Date:
March 2023

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Contents

Acknowledgements

We would like to thank all the bodies involved in commissioning and funding this piece of work: the Association of Ambulance Chief Executives (AACE) members - all UK NHS ambulance services, as well as the Office for Health Improvement & Disparities (England), Public Health Agency Northern Ireland and Health Protection Scotland.

We would also like to thank all contributors, including all staff involved in the design and validation focus groups, as well as every member of staff and ambulance volunteers who took the time to complete the survey and share their views.

Thanks are also passed to the Quality Improvement, Governance & Risk Directors group (QIGARD) who instigated this learning exercise, and all members of the steering group for their advice, direction and support throughout this piece of work, including arranging for staff to attend focus groups and for helping to communicate and share information about the project throughout each trust.

Executive Summary

Aims and objectives: What we set out to achieve

Between December 2021 and March 2022, an online survey was distributed to all staff, volunteers, students and bank staff across the ambulance sector. Questions were designed specifically for the ambulance sector with input from staff, volunteers, students and trade union representatives. The survey explored factors influencing infection, prevention and control (IPC) practice across the sector, considering the impact of the COVID-19 outbreak (March 2020) on compliance with IPC guidance.

The objective was to provide an evidence base that can be used to identify which factors have a significant impact on compliance behaviour, and to explore what mattered most from the perspective of ambulance staff themselves. A series of design focus groups allowed us to identify which measures to include within the survey, while subsequent follow-up focus groups helped to identify actions that staff felt were needed to maximise learning for the ambulance sector nationally.

Background, context and research questions

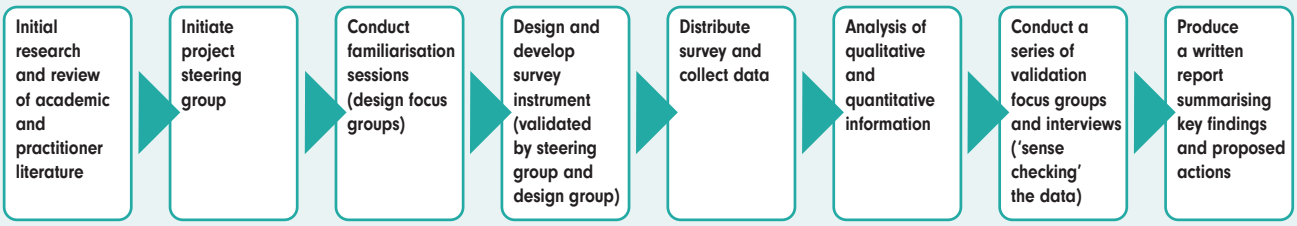
This work was conducted at a time when the importance of IPC was largely recognised by those promoting and researching this field but arguably, among staff in their day-to-day practice, particularly those in non-clinical roles, was not always given as wide acknowledgement as it might have warranted. Since the first outbreak of COVID-19, attitudes towards the importance of IPC have been brought to the forefront, particularly in a healthcare setting. As such, it could be argued that the COVID-19 pandemic has brought into play what can be referred to as a 'teachable moment' in terms of IPC practice: a good opportunity to capitalise on the learning from this event, and to consider how such learning can be maximised and applied more broadly, moving forwards.

Within this context, we completed a substantive piece of research to explore and understand more about the following questions:

1. **What are some of the prominent perceptions, attitudes and beliefs associated with IPC practice among ambulance personnel?**
2. **How have perspectives on IPC practice been influenced as a result of the COVID-19 pandemic?**
3. **How do these perceptions, attitudes and beliefs impact on compliance with IPC guidance now, and intentions to comply in the future?**
4. **What are some of the lessons that can be used to inform IPC policy and/or practice moving forwards?**

Project stages

There were a series of phases involved in this research (summarised below) which allowed us to collect a rich and substantial amount of qualitative and quantitative data.



Key findings: Factors that influence (help or hinder) compliance behaviour

Completed surveys from 3,778 individuals were analysed to help understand the evidence, inform recommendations and guide decision making to strengthen IPC practice. When facilitating factors are present (i.e. those that significantly help/encourage compliance), staff report being more likely to comply with IPC guidance now, and report higher intentions to comply in the future. The research also identified certain barriers which serve to hinder (prevent/block/decrease) compliance behaviour and intentions. In summary, compliance with IPC guidance is more likely to occur when there is/are:

- **Awareness and knowledge of IPC guidance and requirements**
- **Staff satisfaction with training around IPC**
- **Confidence in one's ability to apply IPC guidance in the work environment**
- **A realistic perception of threat from infectious diseases**
- **Good compliance behaviour being demonstrated by others (managers and colleagues)**
- **Positive prompts and reminders that encourage compliance behaviour**
- **More positive attitudes towards the benefits of compliance**
- **Less negative attitudes and fewer perceived barriers towards compliance**
- **A strong belief that the climate/culture of the organisation is focused on staff safety**
- **Higher self-efficacy** (including confidence in: a) knowledge, b) personal protective equipment (PPE), and c) the logistical reality of applying IPC guidance at work).

Personal experiences during the pandemic (e.g. testing positive for COVID-19, having to isolate from family/friends, etc.) were also considered and shown to impact on compliance behaviour.

What does this mean and what actions are recommended?

Strategies for action have been proposed, all of which have been informed by the research and staff who contributed to the feedback focus groups. The full report illuminates what staff feel can be done to ensure learning is taken forwards across the sector.

A 'blanket approach' (where the same methods are applied to all individuals, and we expect them to have a similar effect on everybody) is not advisable and we recommended a more considered and focused look at how to plan and manage the logistics of implementing practicable actions. As part of the ongoing pathway to compliance, our modelling of the data has shown that social norms, confidence and cues to action are critical factors that can influence and impact compliance among both groups. However if we really want to influence low compliers with some of these other strategies, we need to really help them see the benefits and help them to understand what is specifically required of them in their role. By emphasising the positives and making it easier for low compliers to change their mindset to one that is more receptive to receiving some of the other messages, it may become easier to then help the other factors have a beneficial impact.

If people are not complying, it's not enough to just make compliance easier for them to achieve; what matters is really promoting and endorsing the positives and benefits associated with compliance behaviour through education, communication and other targeted actions that can help address these key points.

Reflecting on key messages and learning for the future

When starting this research, there was an intense concern that the business of IPC was only for those who oversee IPC (e.g. IPC leads and other similar roles) within the ambulance trust setting. It is clear to see that IPC is everyone's business and requires a general commitment at all levels of the healthcare system including government, policy makers, leaders/managers, staff as well as from the public who engage with and use the healthcare service/system. As stated by the World Health Organisation (WHO), "IPC is unique in the field of patient safety and quality of care, as it is universally relevant to every health worker and patient, at every healthcare interaction."

When staff were asked directly about organisational learning, the general impression portrayed presented a positive picture of staff's current mindset and perception regarding the impact of the pandemic on individual and organisational learning around IPC. Overall, the data shows that while staff did not tend to think the organisation was especially well prepared at the time the pandemic hit, most felt confident that their organisation had learnt from this experience and would be more prepared in the future. They also felt that overall, personally, their own knowledge and adherence to guidance has been positively impacted by the pandemic, suggesting a positive message in relation to readiness for the future.

Conclusion and next steps

It is important to acknowledge all ambulance sector workers, both non-patient-facing and patient-facing, who continue to work tirelessly to sustain their organisational systems to deliver high quality and lifesaving care. There is a general commitment and loyalty amongst ambulance personnel to their overarching purpose that that is often unrivalled in any other industry/sector. It is important that this level of commitment is now met with open and honest dialogue resulting from this research and it is why we recommend the following as a way forward for sharing the outcomes of this research and to ensuring any learning is converted into something practical and useful.

We recommend AACE, as a membership organisation:

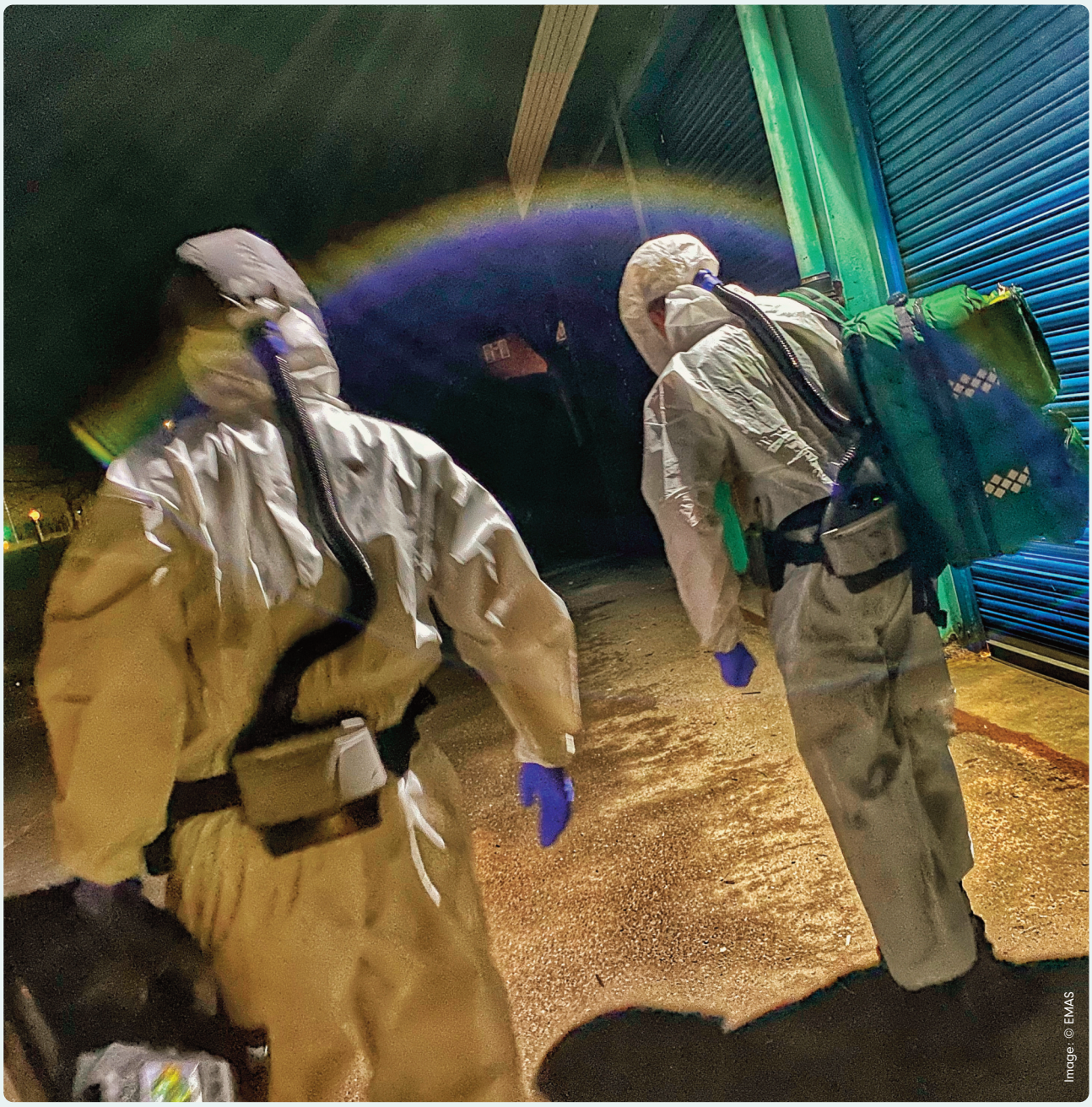
- **Works with representatives from the National Ambulance Communications Leads group (NACOM) and the Quality Improvement, Governance and Risk Directors (QIGARD) group to identify the best ways of sharing and maximising learning.**
- **Ensures the report and any learning gained is made available to all, including the sharing of all recommendations and proposed actions at national, regional and trust level, including public health organisations, Department of Health and Social Care and government, as applicable.**
- **Works with its members to support/help coordinate action planning workshops, ensuring IPC actions are prioritised and learning is continuously shared.**
- **Seeks to understand local examples of best practice at the trust level, and considers how these can be rolled out on a national basis, where appropriate.**
- **Considers steps to monitor and evaluate actions that are taken to assess progress as well as to continually inform and strengthen IPC practice at both local and sector levels.**

It is our hope that by adopting these recommendations, actions taken will lead to meaningful and sustainable results for all concerned.

We recommend that an action planning process is undertaken by those responsible for delivering these outcomes, during which proposed actions will be carefully considered, prioritised and implemented as appropriate.

It is important to recognise that IPC is a matter of importance for everyone, and more specific recommendations are provided in Appendix 1, where they are listed at the various levels: Sector, Trust, Managerial and Individual.

Within the above suggestions, consideration is given to also sharing the recommendations and actions at the national level (i.e. Government/NHS/public health bodies). Although our research is positioned within the context of the ambulance sector, it is important to note that there is a great deal of transferrable learning that applies to staff compliance more broadly across other sectors. As such, it is our recommendation that once action plans have been developed and prioritised at trust and sector levels, a summary of key outcomes should be disseminated at national level so that the transferable messages can be reflected upon by national public health bodies, and consideration be given to how these can be most usefully applied or developed across the NHS and the wider public health remit.



1. Background and introduction

Aims and Objectives

The purpose of the project was to explore the factors that help facilitate good Infection, Prevention and Control (IPC) practice in the ambulance sector, and the things that act as barriers or make things more difficult. These factors were considered in the context of the COVID-19 outbreak (March 2020), considering the impact of the global pandemic on compliance with IPC guidance.

The objective of the survey was to provide an evidence base that can be used to identify which factors have a significant impact on compliance behaviour, and to explore what mattered most from the perspective of ambulance staff themselves.

Background and context

Zeal Solutions conducted this piece of work at a time where the importance of IPC was largely recognised by those promoting and researching this field but arguably, among staff in their day-to-day practice, particularly those in non-clinical roles, has not always been given as wide acknowledgement as it might have warranted. Since the first outbreak of COVID-19, attitudes towards the importance of IPC have been brought to the forefront, particularly in a healthcare setting. As such, it could be argued that the COVID-19 pandemic has brought into play what can be referred to as a 'teachable moment' in terms of IPC practice: a good opportunity to capitalise on the learning from this event, and to consider how such learning can be maximised and applied more broadly, moving forwards.

This has been acknowledged within UK ambulance services, and in the context of this, Zeal Solutions were commissioned by AACE, with additional funding support from some of the UK public health organisations, to conduct a substantial piece of research across the ambulance sector to meet the objectives stated above.

The structure of this report

This report has been structured so that it corresponds to the findings for the entire sample (i.e. rather than being reported at trust level, or broken down by demographic group, etc.) as recommendations and lessons learned are considered applicable across the ambulance sector.

Anyone with further questions or requiring additional support with interpreting the results in this report, please contact us at any time using the details below.

Email: **support@zealsolutions.co.uk**
Reference: **AACE IPC Survey 2022**

Infection, Prevention and Control (IPC) within the Ambulance Sector: A Social Psychological Approach

Psychological theory has helped in providing a theoretical framework with which to guide the research and some of the measures included. This report is not intended to provide a technical level of detail on the measures used (this information can be provided upon written request). However, where relevant we will touch briefly upon key psychological terms and constructs to help explain, interpret and learn from some of the key findings.

Within the field of social psychology, theoretical and empirical evidence advocates the use of social cognitive models (e.g. Health Belief Model, Theory of Planned Behaviour, Theory of Reasoned Action) to improve our understanding of human behaviour, and aspects of behaviour that are susceptible to change. It is not uncommon for such models to be specifically applied to the healthcare setting, to explore how health behaviours can be predicted and subsequently influenced.

Recently, the challenges associated with infection control within the healthcare setting have been considered from this perspective, considering how healthcare workers' compliance with IPC practices can be modified by applying learning from the field of behavioural sciences. The most successful strategies of behavioural change have tended to be those that consider multidimensional factors, including cognitive, social and ecological predictors of behaviour.

Recent research in this area has concluded that more work is needed to explore populations of healthcare workers to assess what determines IPC practice and compliance and to help understand which behaviour promotion strategies and programmes might prove most effective in fostering good IPC practice within such settings. As such, this is a timely piece of work which has the potential to inform both local and national practice, while also demonstrating the value of applying psychological theory to help strengthen workplace systems and behaviours.

Research Questions

Within the context of the above, we set out to conduct a substantive piece of research to explore and understand more about the following questions:

1. **What are some of the prominent perceptions, attitudes and beliefs associated with IPC practice among ambulance personnel?**
2. **How have perspectives on IPC practice been influenced as a result of the COVID-19 pandemic?**
3. **How do these perceptions, attitudes and beliefs impact on compliance with IPC guidance now, and intentions to comply in the future?**
4. **What are some of the lessons that can be used to inform IPC policy and/or practice moving forwards?**

2. Methodology and measures

This section briefly outlines the methodological approach taken to answer the above questions and provides an overview of the measures included in the survey.

Stages of the project

There were a series of phases involved in this research which allowed us to collect a rich and substantial amount of qualitative and quantitative data. These stages can be summarised as follows:

1. **Initial research and review of academic and practitioner literature**
2. **Initiate project steering group**
3. **Conduct familiarisation sessions (design focus groups)**
4. **Design and develop survey instrument (validated by steering group and design group)**
5. **Distribute survey and collect data**
6. **Analysis of qualitative and quantitative information**
7. **Conduct a series of validation focus groups and interviews ('sense checking' the data)**
8. **Produce a written report summarising key findings and proposed actions**

Project steering group and design focus groups

In line with best practice, a project steering group was set up with key stakeholders, to ensure a collaborative approach was taken to every stage of the project. The steering group members came together on a regular basis to plan and co-ordinate various aspects, including the design of the survey instrument, distribution mechanisms, communication strategies to boost participation and the planning of focus groups at different stages of the work.

Alongside the steering group, we also ran a series of staff focus groups during the design stages of the project. The staff focus groups allowed us to speak to staff and volunteers across trusts in different roles, to identify the issues that they felt were impacting on IPC compliance behaviour. By talking to them about the things that help and hinder compliance, we were able to identify core themes and issues that were relevant to staff, and to ensure that we tapped into these issues through the survey items. Staff participation in these design focus groups was co-ordinated through the project steering groups. Efforts were made to ensure that staff from all trusts had the opportunity to attend, and that a representative sample of staff (in terms of key demographics) were involved, including non-clinical staff, ambulance volunteers, student paramedics who had been on placement during the pandemic, and trade union representatives. A total of four focus groups were held and were attended by 28 staff.

Measures

Within the survey, many factors were measured and assessed, across a number of categories. These measures were designed based on both the information gleaned from the focus groups and also following an extensive review of the academic and practitioner-based literature on compliance behaviour, to ensure the scope of possible influencing factors could be properly addressed and included (whilst bearing in mind that the length of the survey needed to be practical from a completion perspective). Items were reviewed and adapted/edited based on various discussions and iterations with the project steering group and piloted according to best practice principles before the final version was produced. The final survey included a total of 173 questions and, based on an extensive piloting process, staff were asked to allow between 20 to 30 minutes to complete all questions. Table 1 provides an overview of the key measures included.

Table 1: Key measures included in the survey

Category of measure (alpha α[1] provided for scales)	Scales/brief description	Example item
Personal experiences during COVID-19[2]	Experiences during the pandemic	Have you personally tested positive for COVID-19?
Awareness and knowledge of IPC guidance and regulations	Awareness	Reflecting on the current situation (i.e. in your current day-to-day working life), how would you rate your level of awareness of IPC precautions required for your role now?
	Knowledge	How much do you know now about the IPC precautions that are required for your job/role?
Compliance	Compliance over time and intentions to comply in future	How much do you comply with the IPC precautions that are required for your role now?
Perceptions of vulnerability/ threat from infections *(α 0.94)*	Perceived susceptibility	Overall, how worried are you about becoming infected with any sort of infectious disease?
	Perceived severity/seriousness	Overall, how worried are you about the impact of infections on your personal physical health?
Attitudes towards IPC guidance and compliance **Benefits** *(α 0.88)* **Barriers** *(α 0.87)*	Evaluation of perceived benefits (positive beliefs)	If I follow IPC precautions, I will protect myself from infection.
	Evaluation of perceived barriers (negative beliefs)	I feel I am expected to follow too many IPC procedures despite seeing little evidence of their value in practice.
Attitudes towards training	Training	How satisfied are you now with the level/amount of training you have received on the IPC precautions that are required for your role at the current time?
Self-efficacy (confidence) *(α 0.94)*	General self-efficacy	Overall, how confident are you now in your ability to apply the required IPC precautions to your job/role?
	Confidence in PPE	Feeling uneasy about whether or not you were wearing the correct level of personal protective equipment (PPE) at work.
	Confidence in knowledge	Feeling that you did not always know what was required to safely apply IPC precautions.
	Confidence in logistical reality	Finding that your workload/work demands make it hard for you to comply with IPC precautions.
Social norms **Managers** *(α 0.86)* **Colleagues** *(α 0.82)*	Social norms of managers/leaders	Working for a line manager/supervisor who demonstrates exemplary behaviour when it comes to applying IPC precautions.
	Social norms of colleagues/peers	I work with colleagues who consistently comply with IPC procedures.
Cues to action *(α 0.89)*	Positive prompts that facilitate action	Receiving regular communication from your ambulance trust that helped remind you about IPC precautions.
Safety Climate / Culture *(α 0.92)*	Safety climate (learning)	Lessons from accidents/untoward incidents are used to improve things in the future.
	Safety climate (blame)	There is a blame culture in my organisation which prohibits people from reporting untoward incidents or non-compliance with safety procedures.
Perceptions of organisational learning *(α 0.86)*	Learning about IPC practice from COVID-19	The COVID-19 pandemic has really opened my eyes to the importance of good IPC practice.

[1]Cronbach's alpha (α) is a measure of internal consistency and helps us to assess the reliability of our measures from a psychometric perspective. This essentially tells us how closely related a set of items are in any single scale. An alpha of 0.70 and above is considered good, an alpha of 0.80 and above is better and an alpha of 0.90 is considered best practice. Each of the scales designed for inclusion in this survey had an alpha that well exceeded 0.70, as can be seen in column 1, above.

[2]Alphas are provided for scales only, not for single item measures

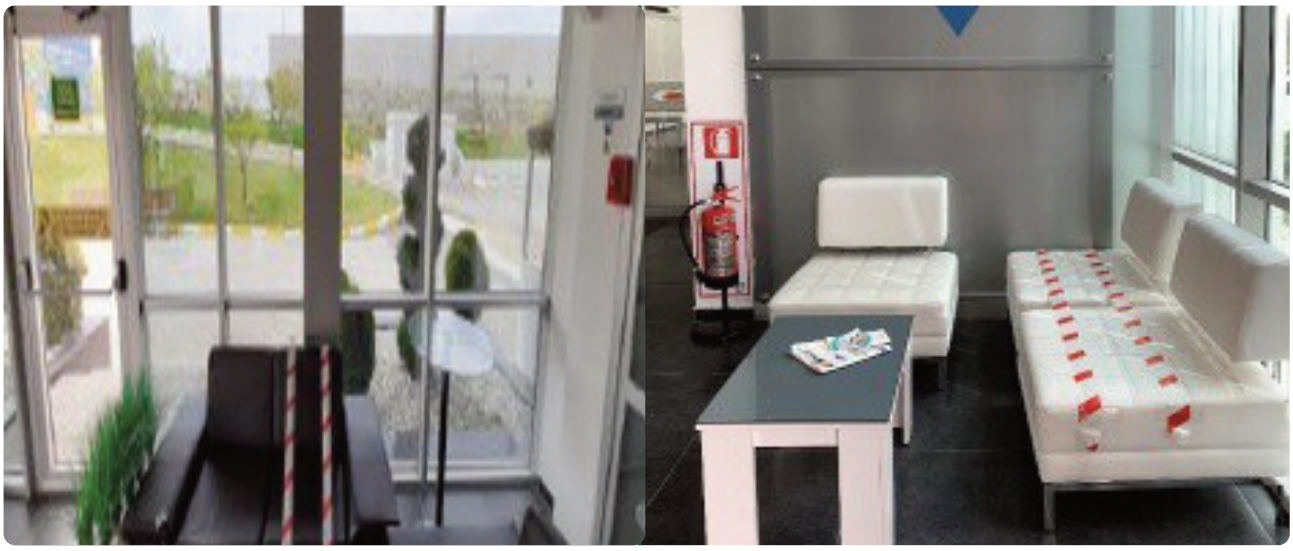
Distribution methods and summary of responses

The survey was distributed to all ambulance personnel across all staff groups and levels within all UK ambulance services, between December 2021 and March 2022. Distribution was managed electronically using a distribution list from each individual trust, inviting all staff members to register online to securely complete and submit their responses. Before the survey was launched to ambulance staff, appropriate checks and local and national approval was provided in terms of any associated ethical and GDPR considerations. The tables below offer a summary of the responses to this survey. The analysis presented in this report is based on the data from the completed surveys only (i.e. this does not include any of the partially completed responses). It is worth noting that a 5% response rate is in line with average response rates for large scale national surveys, particularly in light of the number of questions and the level of information obtained in this survey, and also is considered an appropriate level of response to allow meaningful statistical analysis, modelling and interpretation of the data.

Overall	Invited	Completed	Partialy Completed	Response Rate
Overall Sample	70,173	3,778	2,440	5.4%

Table 2: Key measures included in the survey

Table 3 below shows how many staff members from each ambulance service trust completed the survey and the local response rates. This table also shows the percentage of respondents from each trust within the final sample. For example, we received a response rate of 10.3% from South Central Ambulance Service (SCAS), and responses from this trust made up 13.8% of the survey data, whereas 9.2% of the survey sample came from East Midlands Ambulance Service (EMAS), who as a trust had a response rate of 8.4%.



Ambulance Service Trust	Completed	Response rate	Percentage of survey sample
South Central Ambulance Service	523	10.3%	13.8
East Midlands Ambulance Service	347	8.4%	9.2
Isle of Wight Ambulance Service	20	8.1%	0.5
South Western Ambulance Service	397	6.9%	10.5
Scottish Ambulance Service	356	6.1%	9.4
North West Ambulance Service	422	5.7%	11.2
Welsh Ambulance Service	243	5.5%	6.4
Yorkshire Ambulance Service	349	5.1%	9.2
Northern Ireland Ambulance Service	82	5.0%	2.2
South East Coast Ambulance Service	189	4.0%	5.0
West Midlands Ambulance Service	294	4.0%	6.4
London Ambulance Service	268	3.8%	7.1
North East Ambulance Service	112	3.6%	3.0
East of England Ambulance Service	176	2.7%	4.7
Total	3,778	5.4%	100.0

Table 3: Demographics – ambulance service trust and response rates (ordered by local response rate, highest to lowest).

From a statistical perspective, it is considered good practice to aim for a 95% **confidence level** (which means we can be 95% certain that the values/data we have collected are accurately representing our given population). There will always be some degree of error in any such measurement, but it is generally accepted that the **margin of error** should not be greater than 5% for us to have a meaningful level of certainty about the accuracy of our data.

For a population the size we had (70,173), in order to get a 95% confidence level with a 5% margin of error, we would have needed a minimum of 383 completed responses in our sample. As depicted in Table 4, with 3,778 responses, we can report back with confidence on the statistical significance of our findings (as our confidence level was 99% and margin of error only 2%).

Population size (distributed to 70,173 staff)	Confidence level	Margin of error	Sample size
Best practice requirement	**95%**	**5%**	**383** responses required
Actual outcome based on response rate	**99%**	**2%**	**3,778** responses obtained

Table 4: Response rates – how our response rate compares to best practice recommendations.

The key message here is that although a 5.4% response rate may instinctively sound low, we have obtained a good and representative sample of responses and are able to confidently analyse and interpret meaning from these.

Certain personal experiences were considered relevant to compliance behaviour, and were also measured as part of the survey. These experience variables were collected as an extension of the demographics, to help understand more about the sample and the people responding to the survey. The impact of these factors on compliance behaviour is presented in Section 12, in Summary Table 5.

Appendix 2 contains further demographic information of the sample of staff completing this survey, alongside frequency data to demonstrate that the sample included people with a range of different experiences during the COVID-19 pandemic.

Analytical strategy and use of statistical tests

The use of a wide range of statistical procedures underpins the evidence presented in this report. However, to facilitate the comprehension of the report by the non-statistician, the details of these procedures are kept to an absolute minimum.

For the 'lay reader', what matters in weighing up the evidence presented in this report is not so much the fine detail underpinning the statistical procedures employed as the appreciation of the rationale behind the use of statistical reasoning. This is relatively simple and straightforward: it is to demonstrate the robustness and reliability of any 'effects' reported. Where, for example, relationships are found between any of the factors measured and compliance with IPC guidance, the key question to ask is 'could this association have been found by chance'? Put another way, is it a 'real' and meaningful relationship between the variables measured, or could it be a fluke?

Statistical reasoning gives us a means of answering these questions by establishing the probability that any observed association between responses could indeed have been found by chance. When this probability is equal to or less than one in twenty (or five in a hundred), then statistical convention decrees that the 'fluke' or chance explanation can be rejected, i.e. we are left with a 'statistically significant' result. Where an observed difference in scores does not meet this 5% probability criterion, then it is said to be a 'nonsignificant' result. Throughout this report, where relationships between variables are evidenced, or where differences are said to be statistically significant, then these findings have met or fallen well below the 5% probability criterion.

3. Understanding compliance behaviour

As part of the aim to understand the notion of compliance, staff were asked to self-report on their own compliance behaviour, in terms of how much they felt they complied with IPC guidance[3] at different time points throughout the pandemic. This included consideration of compliance a) prior to the COVID-19 pandemic; b) during the first wave of the pandemic; c) 'now' (at the period of time when the survey was completed – between December 2021 and March 2022); and d) future compliance (focusing on how much people intended to comply with the guidance in the future). Compliance was measured on a five-point Likert scale to measure how often people believed themselves to comply/have complied with the IPC precautions required for their role at the above timepoints, from 1 (never) to 5 (always).

Although self-reported compliance was not independently verified, our focus within this project was to consider the psychological components influencing compliance behaviour. This self-report measure serves the purpose of understanding how people perceived their compliance levels, allowing us to explore their personal views regarding what influenced and affected it.

Responses showed that individuals' compliance before the COVID-19 pandemic was, on average, falling between sometimes and often. However, when the pandemic hit during the first wave, there was a significant increase in reported compliance behaviour, with the average response increasing towards the 'always' side of the scale. Over time, in line with what we would expect from human behaviour, compliance has declined again – despite not returning to pre-COVID-19 levels, we can certainly see that there is a significant tendency for compliance to waver off over time. This is depicted graphically in Chart 1.[4] The difference between each time point is statistically significant, with intentions to comply in the future remaining at the current ('compliance now') levels.

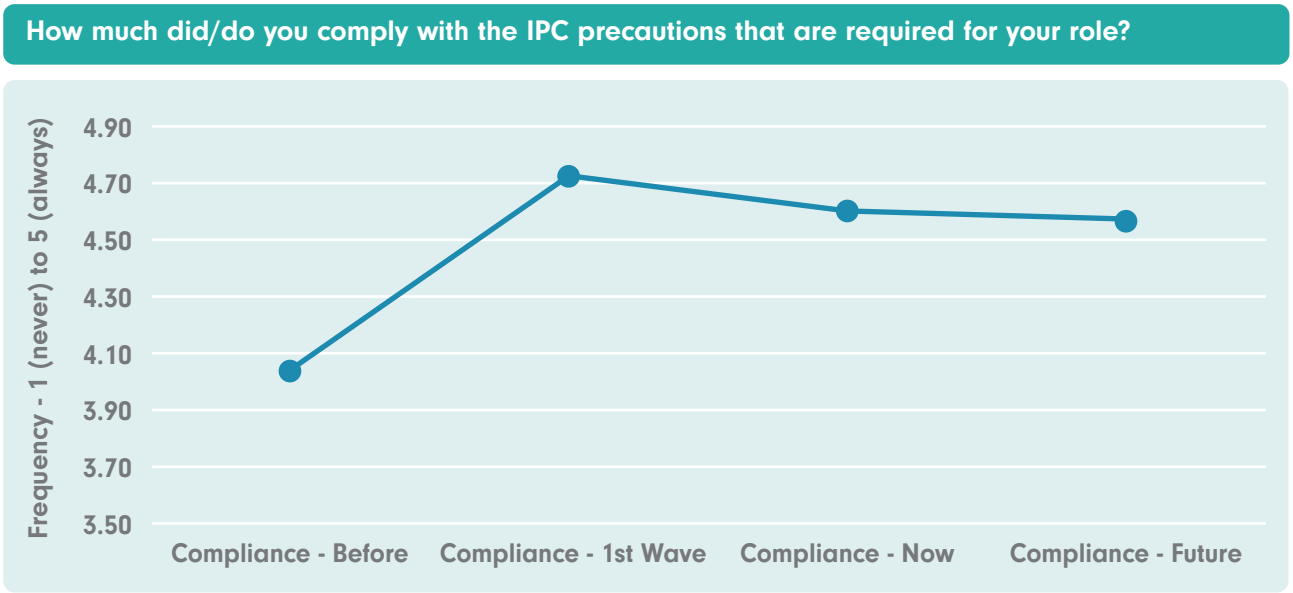


Chart 1: Ambulance staff's self-rated compliance with IPC guidelines at different timepoints relative to the COVID-19 pandemic.

[3] The IPC guidance was defined in the survey as "the measures necessary to reduce the risk of transmitting infectious agents from both recognised and unrecognised sources of infection across all providers of NHS services."
[4] The chart is presented so that it shows the top end of the scale on the y axis (from 3.5 to 4.9 on the 5 point scale). This is to show the reader the visible difference in scores at each timepoint.

What did staff say about compliance changing over time?

Staff were asked whether they believed their compliance levels had changed at different timepoints over the course of the pandemic, and if so, whether they felt this could be attributed to any particular reason. It is useful to consider these descriptive comments to understand how staff described their perceptions of how and why compliance may have changed over time, and to see whether these can help to explain the pattern of results shown in Chart 1 above.[5]

Some comments focused on the belief that compliance before and at the very start of the pandemic was low and that protocols were not necessarily adhered to in the way they should have been.

> **"At the start of COVID the PPE was extremely poor, government stated one protocol, the ambulance service did it their way.[6]"**

> **"IPC cleaning was generally poor prior to C19 in relation to general cleaning and deep cleaning due to the lack of time, staff and vehicles and pressure to meet demand."**

> **"Prior to COVID there was not much publicity or instruction to Community First Responders about IPC. I understood it in more detail because I used to get involved with IPC audits on stations and in vehicles, but many CFRs didn't understand it!"**

Many commented that after the first wave of COVID-19, people generally began taking the guidelines and precautions far more seriously, endorsing the findings of the quantitative data presented in Chart 1 above, to show that the impact of the pandemic itself has led to an increase in compliance.

> **"I believe we have become better at complying with IPC as the pandemic has progressed. Previous to the pandemic the attitude in the control centre was somewhat 'laissez-faire' and people did not care much whether the work station was wiped down between users, now it is expected."**

> **"I feel I have taken IPC to another level since COVID, cleaning everything we may touch prior to the shift, cleaning every surface in between patients and not wanting to touch anyone/anything I don't have to."**

[5] This report specifies the quantitative questions used to measure various items. However, it should be noted that for each section, staff were also invited to provide free text and offer more rich, qualitative data if they wished to. Illustrative examples of this qualitative text are included throughout the report to exemplify and add richness to some of the quantitative findings.
[6] Quotations included in Sections 3-12 of this report have been extracted from the qualitative comments included by ambulance staff who completed the survey.

In relation to the finding that the patterns of compliance appear to be decreasing again, it is important to consider why this might be happening. Naturally, some people will continue to demonstrate high compliance across all time periods. Others however openly acknowledged that compliance has started to drop significantly over time.

> **"I have and still do comply with the IPC precautions, whether my crew mate does or doesn't that is up to them, they have to explain why they don't wear it (PPE) to the patient or their relatives."**

> **"My compliance levels have dropped significantly because I am sick to death of it all! We do not work in clinical environments yet we are deemed to act as if we do! I'm all for the use of IPC precautions when required but COVID is beyond a joke now and we need to accept it like we do the flu and move on with our lives!"**

> **"Compliance with Level 3 PPE has reduced - when cardiac arrest aetiology is clearly cardiac and a non respiratory cause - level 3 PPE has sometimes not been worn due to the now low risk of becoming seriously ill with COVID."**

Compliance now and **intentions to comply** in the future are two measures of key interest and require closer consideration. With this in mind, the report now turns to focus more closely on the factors that influence and affect these two outcomes. In the following sections, information will be presented on the factors that impact compliance behaviour. For each one, an explanation will be given as to why the factor was measured; how it was measured; what the survey data shows in relation to that factor; and what this means in terms of recommendations moving forwards.

4. Knowledge and awareness

Why was it important to measure knowledge and awareness?

If people are unaware of IPC guidance, or do not understand what it is that they are expected to do in order to comply with it, they will naturally not be able to comply nor have intentions to do so in the future. It follows that the more detailed and accurate a person's knowledge is in relation to that topic, the more able they will be to know what they need to do to comply with it. It does not necessarily follow that they will comply of course; this is a far more complicated matter. However, in line with both the literature and what we know from both common sense and the findings of our exploratory focus groups, it became clear that both awareness and knowledge of the IPC guidelines were considered likely to be important and significant in influencing compliance behaviour. Therefore, these variables were measured in the survey.

Awareness of IPC guidance was measured by asking staff to reflect on their day-to-day working life, and to rate their level of awareness of IPC precautions required for their role. This was assessed on a Likert scale ranging from 1 (very poor) to 5 (very good).

Knowledge of IPC guidance was measured by asking staff to state how much they felt they know about the IPC precautions required for their job/role. This was assessed on a Likert scale ranging from 1 (nothing) to 5 (a great deal).

What does the evidence reveal in relation to knowledge and awareness?

Focusing on the timepoint at which people completed the survey, the large majority of staff reported feeling both very aware and highly knowledgeable about the IPC requirements for their role, with many more describing their understanding as 'fair'. As anticipated, knowledge and awareness of IPC guidelines at the time that COVID-19 first hit was lower, demonstrating an increase in awareness and knowledge over time.

> **"I am now more aware than ever about IPC issues and my responsibilities to others."**

Responses to the awareness and knowledge questions were shown to be significantly and positively associated with compliance behaviour. In line with expectations, the more awareness people had, the more likely they were to say that they complied and to intend to comply in the future. Similarly, the more knowledgeable they described themselves as being in relation to their understanding of the guidance, the more they reported that they complied and intended to comply in the future.

What does this mean?

Although it may not be surprising to learn that this association exists, it highlights the importance of communicating and explaining policies regularly to all staff groups, and to ensure that those messages are being communicated at all levels and to everyone, across all job roles. Awareness itself is critically important, but deeper than this, it is necessary to ensure that people understand those requirements in terms of the realities of how they apply to their own individual roles. For example, it is worth noting that at the time of completing the survey almost all respondents (94%, 3,527 members of staff) rated their awareness levels as either 'good' or 'very good', demonstrating a very high level of awareness. However, at this time there were still 10.5% of respondents (388 staff members) who rated their knowledge on the mid to low end of the five-point scale, suggesting they did not consider their knowledge to be 'good' or 'very good.' This suggests that although knowledge and awareness overall now look to be high, there is still some work that could be done ensuring that staff truly understand the information provided to them. The content of that information will be explored further in the next section.

As knowledge and understanding of the guidance increases, the chances of subsequent compliance and intentions to comply in the future also become higher. This links directly to the importance of communication of policies and also to training and education, discussed below.

5. Training and education

Why was it important to measure training and education?

Leading on from the above, it was clearly important to understand more about staff perceptions related to the IPC training and education they receive. More specifically, exploring whether staff feel satisfied with the training (both in terms of the quality and quantity received) and do they feel it is delivered in a way that allows them to retain and implement the necessary knowledge and skills required for their role. Gathering information from staff about the sufficiency of training was therefore highly important within the survey, as well as including a number of qualitative questions to allow staff to speak freely about their experiences of training.

Satisfaction with IPC training and education was measured by asking staff how satisfied they felt with the level/amount of training they have received on the IPC precautions that are required for their role at the time of completing the survey. This was assessed on a Likert scale ranging from 1 (very dissatisfied) to 5 (very satisfied).

An additional qualitative question was included to discover more about this. Staff were invited to reflect on the IPC training they had received in their job, whether this was before the outbreak of COVID-19 or since the initial outbreak. They were asked if they had any additional comments about how valuable this training was, and/or whether they felt it has been sufficient. If there were any particular areas in which they felt training had been valuable, or had been lacking or insufficient, we provided an opportunity for staff to share this information.

What does the evidence reveal in relation to training and education?

Analyses revealed that the more satisfied staff were with the level and amount of training they had received, the more likely they were to comply with the IPC guidance and to intend to comply in the future. Qualitative data revealed additional information within this area. Some acknowledged the efforts and value of training, and where high training scores had been given, there were comments addressing the effectiveness and suitability of training.

> **“ Extremely valuable. ”**

> **“ I was trained sufficiently. ”**

For others however, a consistent message was fed back that there was not enough training, or even that no training had been offered at all in certain areas (e.g. related to certain items of PPE). There was inconsistency regarding the training offered not only between different trusts, but also between staff members at different sites from within the same trust, as was picked up during a number of sense checking focus groups. This calls for a need for a more consistent, national approach to training that covers all groups of staff,[7] including volunteers and bank staff.

[7] Naturally, training content will need to be tailored appropriately to specific staff groups (e.g. clinical or non-clinical staff). However, staff within each of these groups should be receiving a consistent programme of training.

> “I believe the training has been pretty insufficient. There was a large written section on IPC as part of my apprenticeship but we spent very little time on learning practical IPC procedures and there was little promotion of the different IPC equipment available.”

> “IPC training is virtually non-existent. Most training is delivered peer to peer and that is very much based on the person delivering the trainings personal knowledge, no-one seems to have any formal qualifications in either IPC or delivering training. I think the ambulance support teams are not being used as effectively as they could in providing a clean clinical environment.”

> “There was no training during the first wave of COVID - just staff emails circulated as communication and then equipment such as respirator hoods started appearing on vehicles with no face-to-face training on how to wear / use it properly.”

> “Unfortunately I have never received any form of IPC training in regards to my job... some form of IPC training would have been beneficial to us, to ensure that we were protected effectively.”

> “Quite simply, there was no training.
>
> Each time, a poster was printed off and put on the wall.....that was all the training we had.”

> “To be honest we haven't really received much extra training, only a few videos and posters online.”

There was a great deal of feedback that focused on the amount of training that is delivered online, with many people expressing dissatisfaction over their perceived inadequacy of online training methods and the resources not being deemed as fit for purpose.

> “Online training is not an effective replacement for training in a practical skill.”

> “Online training is a mere tick box exercise and does not allow intervention or assessment of ability (it is a practical skill, so multiple choice assessment demonstrates a lack of understanding of training).”

> “Online training is difficult to access at work, particularly for PTS (patient transport services) crews whose work is often planned to completely fill the day.”

Some expressed desire for more engagement and interaction of training materials (e.g. the ability to ask questions and discuss topics), and others raised concerns that the training doesn't sufficiently consider the practical realities of the role (especially frontline staff). Some suggested that training can be a 'tick box' exercise and is rushed without sufficient consideration of content or transfer of training.

> **"Inconsistent idealistic best world scenarios often difficult to maintain in real world when family and bystanders are pushing to get you to a patient."**

> **"All training has been online and the expectation that you understand and comply with it without asking questions if you don't understand."**

Another theme in the data was around the difficulties of keeping training content up-to-date and relevant in a continuously changing environment. There were concerns raised over how the content could be kept up-to-date more effectively so that time is not wasted on information that quickly becomes irrelevant. There were also concerns raised over the potential skill decay experienced after any initial training sessions, and the need for more refresher training was also mentioned.

> **"Further refresher training maybe required to halt skill decay. Perhaps debriefing and lessons learned."**

> **"It has been difficult to get non-biased information from reputable sources. Even government advice seems to be biased towards scaring the living daylights out of everyone, rather than an open and transparent discussion."**

Some non-clinical staff also felt that they needed to be considered more in the training plans, as it was felt that most of the current attention is given only to frontline staff.

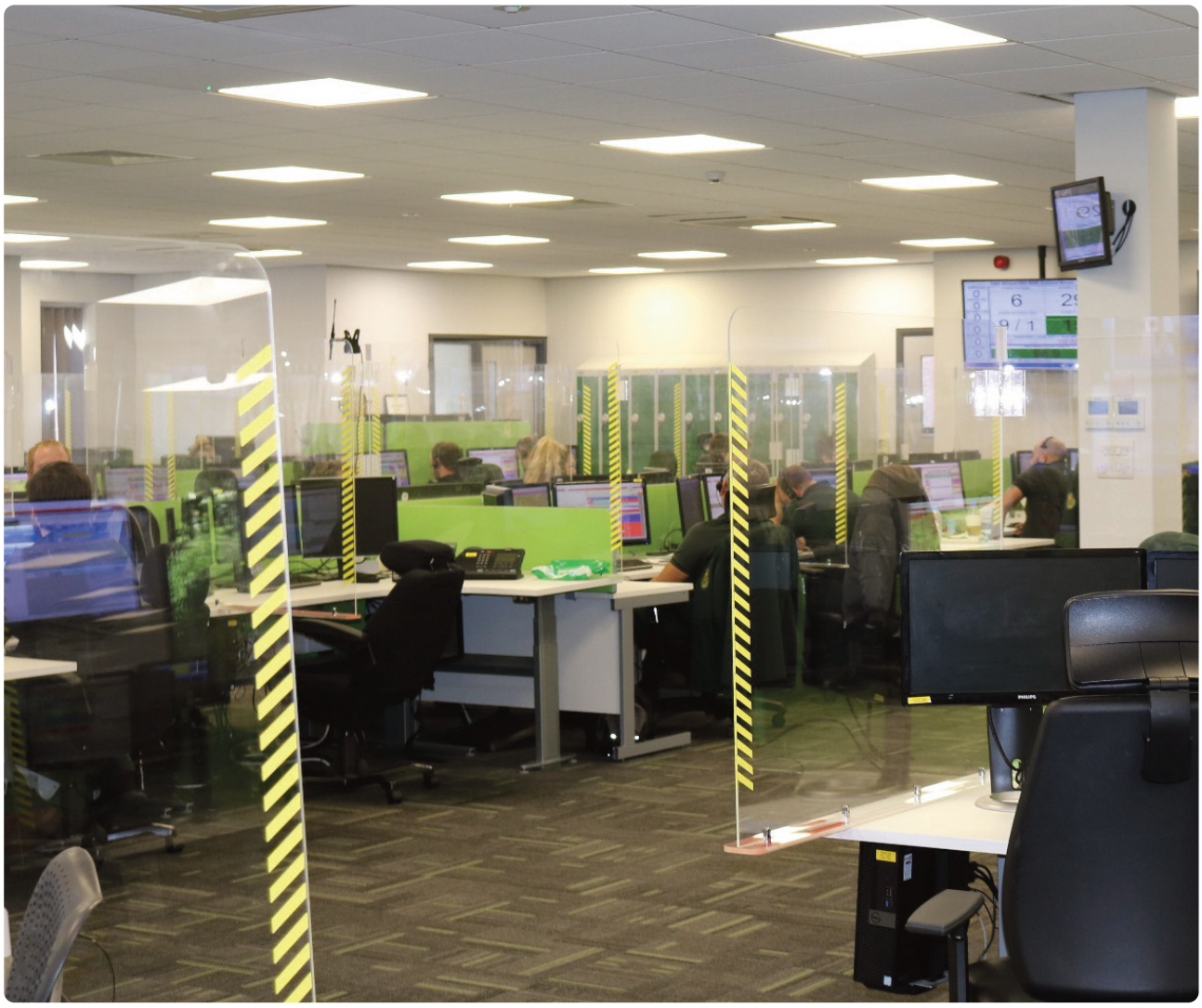
> **"I have real concerns about the apparent lack of training for non-clinical staff, especially for those that mix with clinical, frontline staff. I have not seen a single piece of work, or offers of any training for these staff, and that is simply not acceptable."**

> **"Frontline staff are obviously the most important, but without support staff doing their roles, frontline staff don't get to carry out their roles, simple. Updates and training should be across the board, with team leaders, managers and senior staff all setting good, positive examples."**

What does this mean?

The data shows that training has a big role to play in influencing IPC compliance behaviour. Suggestions in this area include the sharing of best practice and learning from trusts where feedback on training is good, or where examples of best practice have been cited. This existing good work and good practice needs to be noticed, recognised and embraced wherever possible.

It would be beneficial to review training schedules and to ensure that national plans are set up to standardise what is offered to different staff groups. Key here will be the identification of any barriers to training delivery that might help explain why there is an inconsistency in how training is currently being rolled out. It seems there are some areas in which the delivery method also needs to be looked at, ideally allowing for more engagement and interaction, whilst making sure the focus is on real-world situations that better account for the day-to-day realities of working in the ambulance environment.
A challenge appears to be how to ensure the content is updated regularly and delivered as a refresher course to prevent skill decay. The integration of IPC information into other training packages is also something that has been recommended, to help ensure IPC is one part of an integrated approach and not taught in isolation.



6. Confidence in ability to comply

Why was it important to measure confidence in ability to comply?

Focus groups revealed that confidence in ability to comply ('self-efficacy') was considered extremely important to staff's compliance levels. Self-efficacy is all about a person's perceived ability to successfully perform a behaviour; in this case, their perception that they are able to comply with the guidance if and when they choose to. In order to have confidence that one can do this, it is important that the individual has control over that particular behaviour.

Confidence in ability to comply was measured directly by asking staff how confident they felt in their ability to apply the required IPC precautions to their job/role. This was assessed on a Likert scale ranging from 0 (no confidence) to 10 (completely confident).

It is known that a person's self-efficacy (self belief in one's own ability) is domain specific rather than a generalised term, and the focus group discussions revealed that there were a number of different areas that seemed to tap into confidence to comply, suggesting that this issue warranted further exploration over and above this single item question.

Domain specific aspects of confidence were presented as items that represented barriers and facilitators to compliance, and staff were asked how frequently they experienced these barriers/facilitators within their role. This was measured on a scale ranging from 1 (never) to 5 (always). A factor analysis of the subsequent data revealed that these could be neatly broken down into three categories:

- **Confidence in knowledge and understanding of the IPC guidance: Believing that relevant, accurate information was made available in a way that could be easily interpreted.**
- **Confidence in the PPE provided to allow staff to follow the guidance: Believing that the PPE provided was of a sufficient quality, could be readily accessed and was at the appropriate level to provide sufficient protection.**
- **Confidence in the logistical/practical reality of following the guidelines at work: Believing that the expectations set out in the guidance were realistic in line with the demands of the job role, performance targets and any unexpected events likely to occur as part of the job.**

What does the evidence reveal in relation to confidence/self-efficacy?

When looking at self reported confidence in complying with the guidelines, responses revealed that the more confident staff were in their ability to comply, the more likely they were to report complying at the time of completing the survey, and that they intended to comply in the future. Over time (from when the COVID-19 pandemic began to the point in which the survey was administered), confidence in ability to comply increased significantly, and this was reflected in the qualitative comments staff added to this

section. Many people who reported feeling high levels of confidence commented on the improvements that have arisen since the onset of the pandemic.

> **"I have and still feel confident in applying the required precautions and I feel better when wearing my mask."**

> **"As time has gone on my confidence has improved."**

> **"It [confidence in IPC] has massively increased since becoming familiar with IPC and PPE wearing during the pandemic – now it's normal practice done daily."**

When considering self-efficacy in a more domain specific way, the same pattern could be seen across all three aspects of self-confidence (i.e. higher confidence was significantly associated with higher compliance and higher intentions to comply across all three categories). Of these three domains, the factor having the greatest impact on compliance was confidence in the logistical and practical reality of following the guidelines at work.

What does this mean?

This evidence shows that the more staff feel enabled and confident in their own ability to comply with the rules they are given, the more likely they will be to comply. There are naturally many things that impact upon those feelings of confidence and breaking down the areas of self-efficacy that are shown to be important here can allow us to be a little more focused in terms of recommending actions.

First of all, rather than simply knowing what the guidance says (as discussed earlier), there is a differential impact on compliance depending how confident staff feel in their levels of knowledge and understanding. Naturally this links to the training, education and resources that staff have available to them, and how effective and efficient this information is deemed to be – the more that can be done to enhance these areas and make people feel more confident in their own knowledge, the more positive the impact on compliance is likely to be.

> **"It has been difficult to get non-biased information from reputable sources."**

> **"I have good access to our IPC team and managers, so I am confident that if I need information, I will know who to approach."**

With regards to the provision of PPE, the survey data has shown that simply providing equipment and resources are not enough to ensure compliance; these must be shown to be sufficient, and the evidence to support this must be clearly communicated to staff by a credible and appropriate source. Many qualitative comments were presented on the topic of PPE and these presented a range of views consistent with these messages.

> **“Less concerned now about availability of PPE, but now concerned about quality (poorly performing and ill fitting).”**

> **“In the first wave – there was not enough PPE available and now it is of inferior quality.”**

> **“I have felt confident that my measures have protected me from catching COVID. However, I have had to modify my procedures due to poorly performing / ill fitting PPE. Thus far it has worked.”**

> **“I found myself very anxious about my abilities. I could not understand/didn’t trust the guidance about the level of necessary PPE required, particularly as previous guidance for PPE for simple bronchitis included the use of a fit tested mask. I couldn’t rationalise how a respiratory virus that had potentially more serious consequences was not being treated cautiously in terms of PPE required.”**

Some of these comments were focused on a lack of availability of PPE and the fact that compliance is somewhat contingent on this, although limited availability was most commonly associated with the earlier stages of the pandemic, rather than representing a current problem or one that people were overly concerned about for the future.

> **“It’s hard to be compliant when you’re not issued with FFP3 masks until well into the first wave. All our half-face respirators were out of date before the pandemic started.”**

> **“My compliance is dependent on available equipment.”**

> **“The initial lack of equipment, or failure to be able to locate it without being sent to jobs without the basic protection, meant it was highly unlikely you could comply, even with the watered down standards of protection offered. I, like many of my colleagues, located protective equipment outside of the ambulance service.”**

Despite this, there were some who perceived availability of PPE to be an issue and still felt they were not given the necessary equipment and consumables to do their job. In particular, some people who worked in clinical roles as volunteers commented that they were not prioritised for receiving PPE in the same way as permanent staff were.

> **"Generally CFRs are the bottom of the pile – decent masks – PPE3, were never for the likes of us!"**

> **"I don't think we currently have enough IPC equipment and consumables. I don't have an issue with my own abilities, but I do with what I'm given."**

Finally, it is absolutely critical that the guidelines produced are seen to apply directly to the ambulance sector. Where guidance is seen to have been created or intended for the healthcare sector more generally, but is perceived as being unrealistic or inappropriate with the ambulance setting, staff are shown to have significantly less confidence in their ability to comply.

> **"I try my hardest to comply, but in the end patient staff welfare will always come first. I can wash my uniform /self isolate etc after giving emergency treatment, but cannot get back the time for vital interventions if IPC equipment is getting in the way, nor reverse accidents caused by IPC guidelines hampering staff movements /communication. Known serious harm or death will always be worse than potential future infections."**

> **"One episode during cardiac arrest when eye protection needed had to remove it due to misting making it difficult to see monitor / defib screen."**

> **"These guidelines have been set up by people who will never work in the environments we do in the PPE they expect of us."**

> **"Aprons are counter-intuitive. I don't recall the last time I saw a non-private crew wearing one and with good reason. Logic should follow and the mandatory use for all patients should be dropped."**

> **"It's hard to comply when we don't have correct PPE and I'm not fit tested, and managers make us sign for each mask and justify its use!"**

Each of these aspects individually was shown to have a significant and differential impact on compliance behaviour, and therefore actions to encourage future compliance need to somehow address the fundamental need to ensure staff feel confident and able to comply with whatever guidance is set. A great deal of this is about communicating with staff in an effective way to help them understand and feel on board with the requirements, rather than just making statements about what is needed that lack explanation or buy-in from staff themselves.

7. The impact of others on compliance

Why was it important to measure social norms?

Humans are social beings by nature, and it is therefore not surprising that people are generally highly influenced (both consciously and sub-consciously) by the behaviour of those around them. This is just as true in a work environment as in any other setting/situation. If the people we work with are seen to push and promote a certain behaviour in a particular direction, this can have a big impact on whether we also choose to exhibit that same behaviour. With regards to IPC compliance, it was therefore not surprising to hear staff in the focus groups stating that the behaviour of their peers/colleagues and managers/leaders had an impact on whether they would choose to comply. With this in mind, items were designed to tap into the behaviours of managers and peers, which we term as 'social norms' to reflect the social behaviour that is considered 'normal' in a particular environment or domain.

Social norms were measured using items that tapped into both colleague/peer and management behaviours by asking staff their beliefs about the social perceptions of managers/leaders related to compliance behaviour. All these items were measured on a five-point Likert scale, some of which asked about the frequency with which certain things happened (ranging from 1 (never) to 5 (always)) and others asking how much the individual agreed or disagreed with a particular statement (ranging from 1 (strongly disagree) to 5 (strongly agree)).

What does the evidence reveal in relation to social norms?

Responses revealed that the more the people around them were seen to comply, the more staff themselves were likely to report complying and intending to comply in the future. Where managers were perceived as being strong role models for compliance behaviour, staff seemed to feel more ready and willing to comply themselves. The same was true for peer behaviour. While the associations between compliance and social norm behaviour were statistically significant in relation to both manager/leader behaviour and colleague/peer behaviour, it is interesting to note that the associations were strongest for peer behaviour.

> **"Compliance among colleagues is incredibly low, making it difficult to continue to apply the correct precautions. Pressure is applied not to follow proper practice, particularly in relation to the wearing of PPE items."**

> **"As an IPC practitioner being a role model is of great importance to me. If I don't do it, then nobody else will!"**

> **“ Behavioural and peer pressure – culture change needed to keep the momentum up for continuing to practice good IPC. ”**

> **“ My main concerns centre around colleagues who don’t use PPE and who fail to properly clean the vehicles. I have not found management supportive in this. ”**

What does this mean?

It is a well established fact that people in general are influenced by the behaviour and actions of those around them. Whilst this is not surprising, the evidence in this case shows us that the more individuals could see the people they work with following the IPC guidelines, the more influenced they seemed to be to also comply themselves. What was not necessarily anticipated from these results, was the finding that colleague behaviour seemed to be influencing staff actions more than management behaviour.

Whilst it might have been assumed that leaders would have a more influential role over staff, it appears that actually, those who work alongside staff (i.e. peers rather than leaders) have more of an impact on their workmates than managers in this respect. This may be related to the fact that ambulance staff will generally see their peers/colleagues more regularly during their day-to-day working life than they will their managers, and therefore it logically follows that these are the people most likely to influence or impact their behaviour. This highlights the importance of creating social norms at work that encourage compliance behaviour, and ensuring that where staff are not complying, some sort of action is visibly taken to enhance and encourage the required behaviour from staff. If this is not taken, there could be a negative impact across the workplace.

8. Positive prompts and cues to action

Why was it important to measure cues to action?

Cues to action refer to the positive prompts and endorsements that help to remind people of what they need to do. In psychological terms, cues to action are a stimulus that can act as an important trigger in the decision-making process; it can be these triggers that allow a person to accept or follow a recommended action. The key to providing effective cues to action lie in the clarity of messages that are conveyed by these cues; the methods with which the cues are communicated; and the frequency with which they are received over time. During the design focus group sessions, many staff commented on the impact of specific cues to action in encouraging compliance, both in terms of the communication and encouragement received from their trust, and the usefulness of various tools, campaigns and posters in spreading key messages about IPC compliance over the course of the COVID-19 pandemic. As such, it became important and necessary to understand the impact such cues to action might be having on compliance behaviour.

Cues to action were measured using items that tapped into the various facilitators of action towards compliance behaviour, and asked staff to comment on how frequently steps were taken within their trust that endorsed and encouraged such positive prompts. These items were assessed on a Likert scale ranging from 1 (never) to 5 (always).

An additional qualitative question asked staff to add comments related to any particular sources of information that they had turned to for information or advice about IPC precautions since the outbreak of the pandemic, and whether any of these sources had proven especially useful.

What does the evidence reveal in relation to cues to action?

Responses revealed that the more trusts utilised and endorsed positive cues to action, compliance behaviour was significantly higher. Encouragement and positive prompting of compliance behaviour over time was associated with higher levels of current compliance, as well as intentions to comply in the future. This was supported through qualitative comments, in which many staff commented on the cues to action that had proven to be especially effective for them during the pandemic.

> **“There was a short space of time when I too stopped wearing aprons because crews told me it was not necessary. A bulletin from [my trust] changed my opinion about this and so I started wearing aprons again and do so every time.”**

> **“Information in emails, poster campaigns and media reports. Research of NHS England papers relating to COVID-19.”**

> **“ WHO, NHS, NHS Employer, gov.uk, HSE, Unison TUC website. ”**

> **“ Excellent local IPC team who worked incredible hours and were always available for advice. ”**

> **“ Our team and organisation was exceptional in the production of regular, factual and reassuring information, presented in the best way possible and answering any questions our colleagues had as quickly as we could, both directly and then sharing with the wider organisation. ”**

What does this mean?

Cues to action are of high importance when it comes to encouraging and reminding people to comply with guidance in their day-to-day working life. The transfer of what one knows or understands theoretically to the application of this knowledge on the job is far more likely to happen if key prompts and reminders are issued strategically and provided at relevant moments in time. The higher the quality of the content and delivery of the information provided, the more effective these are likely to be in terms of how they will impact compliance behaviour.

> **“ Compliance has changed due to better information received. ”**

Those who believe they are at low risk or who do not currently comply with regulations, may require more intense cues to action. In contrast, those with high compliance levels at the current time may rely less on such cues as they are already intrinsically motivated to comply. However, over time, reminders and refreshers are seen to be important across all groups of staff, and therefore regular communication strategies should be planned and the methods of communicating with staff to ensure that all groups are effectively reached become important.

> **“ Work emails, posters on stations in all areas, IPC posters, stickers in the saloons of ambulances as reminders to crews and members of the public. Donning stations at every entrance and exit of every health establishment. ”**

Remaining mindful of individual differences, it of course follows that not all staff are receptive to the same types of cues, and different individuals will be motivated by different messages, both in terms of their content and the way in which they are presented (e.g. tools, campaigns, posters, etc).

The cues/reminders themselves need to be seen as part of a broader information sharing process. As part of this, receiving clear expectations from the trust about what is expected with regards to IPC precautions, and receiving sufficient training and education to be able to safely carry out the role are critically important. It is also imperative that staff know where to turn when seeking accurate information about IPC procedures, and this information should be provided alongside the prompts/triggers. Many of the qualitative comments offered in this section touched upon how difficult it was to know where to turn for reliable, consistent, accurate information, so this is certainly an area to look at improving and learning from in the future. With COVID-19 being a new and emerging pandemic, and guidance changing at a national and international level on a regular basis, many felt that it was a great challenge to keep up to date with what was happening and what was being recommended.

“ It was difficult to find the most relevant email, and people also had different interpretations of each guideline. ”

“ The short-notice national changes to the regulations have been exhausting at best and reckless at worst. It was especially difficult during the phase where different areas were at different levels, and then in the past 4/5 months with all the national changes to lateral flow testing and isolation, often as a reaction to distract from stories about the government and leaders of this country ignoring the rules which we were all so carefully abiding by. [The trust] has done everything it can to support and reassure staff. The government seems to have done everything it can to make it confusing. ”

Two key areas of contention and confusion were consistently raised – these were around not knowing whether to wear Level 2 or Level 3 PPE, and around the definition and classification of aerosol generating procedures (AGP's). Both these issues have been mentioned repeatedly and consistently in focus groups and within the survey data, and therefore the communication of information around these two issues are areas worth reflecting on, when considering lessons learned. The data suggested that much of the confusion generated here was thought to be related to conflicting messages from different expert groups at national level, as well as the way in which messages were then communicated and enforced locally.

“ The discrepancy between different sources and what action requires different levels of PPE – e.g. is CPR level 2 or level 3? ”

“ There has been almost too much information on the differing levels required for 'known COVID positive / suspected COVID positive / use of AGPs '. Different rules for each and AGPs are still contentious to us all. The trust advised that nebulisers were not an AGP for instance and therefore level 3 not required initially. Other organisations defined it as one. ”

9. Perceptions of threat and vulnerability

Why was it important to measure perceptions of threat and vulnerability?

It became instantly apparent within the focus group sessions that many people reported being motivated to comply based on the level of risk they believed themselves to be experiencing as a result of the pandemic (or of catching any other infectious disease at work). The risk was sometimes mentioned in relation to one's own personal risk of becoming unwell, but more often was expressed in terms of worry for the health and safety of loved ones, particularly vulnerable or older members of the family. Additionally, many talked about having a responsibility for maintaining the health and safety of patients and for others within the work environment (e.g. colleagues/peers) and how everyone has a responsibility to keep themselves safe through compliance with the IPC guidance, to help protect others. The survey therefore considered how vulnerable ambulance personnel felt in terms of their risk of infection from infectious diseases, at different time points across the pandemic.

Perceptions of threat were assessed using seven items in total. These were spread across two separate sub-scales, each of which was measured on a 5-point Likert scale from 1 (not at all worried) to 5 (extremely worried).

- **Perceived susceptibility: how worried they were about the risk of becoming infected with any sort of infectious disease.**
- **Perceived severity: worry about the various possible consequences or impacts of becoming infected. These included the risk to one's own physical and mental health, including the risk of becoming seriously ill/dying and also the risk of transmitting the infection to others, including those in the workplace and family/loved ones.**

What does the evidence reveal in relation to perceptions of threat and vulnerability?

The data clearly shows that staff felt less susceptible and less concerned about infectious diseases in general before the pandemic, with concern rising significantly during the first wave of COVID-19. Although levels of worry and vulnerability had lowered again significantly by the time of completing the survey, levels of concern were still seen to be significantly higher than their baseline (pre-COVID-19) level, showing that vulnerability and concern remain higher than they did pre-COVID-19.

Perceptions of threat were shown to significantly impact upon compliance behaviour, such that the more vulnerable or at risk a person felt from the risk of infection, and the more they worried about the impact of this, the more likely they were to report compliance with IPC guidance, both now and in terms of their intentions to comply in the future. This pattern of results was seen independently for each of the sub-scales and also when the scales were combined to form an overall measure of perceived threat and vulnerability.

A key theme that came from the qualitative data on factors that influence compliance more broadly, was this idea of protection from threat and risk. People talked a lot, both in focus groups and in the survey, about protection of oneself and others being a driving force behind compliance behaviour.

> **"My compliance levels varied with the perceived threat level and likelihood of catching COVID."**

Some qualitative statements taken from the survey are included below to illustrate protection of self, protection of family/loved ones and protection of others in the work environment. It should be noted that a very large number of the qualitative comments addressed these points, especially in relation to protecting loved ones; this certainly appeared to be a key theme of critical importance and at the forefront of many people's minds when considering whether or not to comply with the IPC guidance.

> **"COVID definitely increased my compliance with IPC. It made me more aware of how easily certain diseases can spread. This is particularly true for cardiac arrest patients, where guidance on wearing masks whist managing an airway were almost never followed, now I can't imagine ever feeling comfortable not wearing a mask in this sort of setting, or indeed any setting where a patient has a potentially transmissible disease."**

> **"My compliance has been total. I do not want COVID and I have several medically vulnerable members of my family who definitely don't want it."**

> **"I am personally very afraid of infectious diseases due to my chronic asthma, so I continue to wear protection despite the government telling us to get on with it. I still stay home and only visit the supermarket. I no longer socialise unless outside."**

> **"I have family who are clinically extremely vulnerable and some that have contracted COVID and some that have died so I am acutely aware of complying with IPC precautions."**

What does this mean?

Whilst we do not want staff to feel unnecessarily or overly vulnerable or concerned, it is clear that having some level of concern or worry about the threats posed by infectious diseases can have a beneficial impact on compliance behaviour. So long as the level of concern is not at a worrying level, but rather, is kept realistic and in line with actual threat posed by the realities of the situation, it seems as though being aware of the possible negative consequences of infection are important in helping to ensure that staff will comply with the recommendations and guidance.

When considering the content and level of information to include in communications materials and prompts/reminders that are created to support IPC compliance, this highlights the benefits of including information related to possible consequences of not complying and/or endorsing the benefits of complying with specific reference to reduction of threat/vulnerability.

10. Attitudes towards compliance behaviours

Why was it important to measure attitudes towards compliance behaviours?

There is a very well-established link between attitudes and behaviour, with attitudes being a key driver of subsequent actions. The more positive someone feels about an action (i.e. the more potential positive aspects they associate with it) the more likely they will be to carry it out in practice. Conversely, the more negative aspects they associate with the behaviour, the less likely they will be to carry it out. It was therefore important to understand how people felt about compliance behaviour and to understand whether certain beliefs/attitudes were influencing compliance at work.

Attitudes towards compliance behaviour were measured using a number of attitudinal items. The scale was developed based on the comments that staff had made during focus groups, while also considering some of the key findings from an extensive literature review. This was to ensure that the attitudes we measured within the survey were realistic and representative of the feelings staff expressed as being relevant to their own job role. A subsequent factor analysis of the items identified a number of key statements that had the greatest impact on compliance, which fell into two key categories:

- **Positive attitudes towards compliance behaviour - Beliefs about the potential positive aspects of complying with IPC guidelines**
- **Negative attitudes towards compliance behaviour - Beliefs about the potential negative aspects of complying with IPC guidelines**

Both sub-scales were measured on a 5-point Likert scale from 1 (indicative of high levels of disagreement with the statement) to 5 (indicative of high levels of agreement with the statement).

What does the evidence reveal in relation to attitudes towards compliance?

As anticipated, those holding more positive attitudinal beliefs about compliance were more likely to report complying at the time of completing the survey, and more likely to intend to comply in the future. Where negative attitudes were held by staff, these individuals were less likely to report complying or intending to comply in the future.

What does this mean?

The survey data supports the notion that attitudes are especially powerful in impacting on compliance behaviours, and certain actions are likely to help here in terms of both endorsing and encouraging positive actions, whilst also discouraging and preventing the more negative and damaging attitudes.

Perceived benefits to compliance

In terms of what can be done to increase the benefits, the data emphasises the importance of ensuring that staff believe in the relevance and applicability of what the guidelines are telling them to do, in the sense that they are fundamentally effective in reducing the transmission of healthcare infections. When individuals believe that the precautions will help protect them and will reduce the risk of infection, they are far more likely to comply with them. Additional motivation to comply with the guidelines can be attributed to the belief that the precautions will protect other people at work (colleagues and/or patients), and/or loved ones outside of the work environment (friends/family members). This has been addressed in more detail above (in Section 9).

> **"I'm more worried about catching things which I then pass to loved ones."**

> **"I have elderly vulnerable parents so have always ensured I comply at all times with all recommended IPC policies."**

> **"I have always cleaned for my protection and that of my loved ones."**

When the IPC precautions are viewed positively as something that can actually reduce stress and anxiety that might otherwise be associated with coming to work, then people are much more likely to comply. Therefore it is recommended that cues to action and communication materials focus on emphasising these types of positive messages to staff.

> **"The constant poster, verbal and e-learning has reinforced my IPC knowledge and made me and my crew mates better at all aspects of IPC."**

Perceived barriers to compliance

There are certain perceived barriers that seem to be more pervasive than others and that act in a negative way, such that they prevent, limit or constrict compliance behaviour. One key barrier to compliance is when people feel that following the IPC guidelines in some way makes it more difficult for them to do their job. In fact, some people felt that they could justify non-compliance if they felt it allowed them to do their job more easily or to a better standard.

> **"When I have driven to the job, my colleague sometimes rushes into a patient's house and I am delayed putting PPE on. As I am the Paramedic I am meant to be in charge, but this becomes difficult."**

> **“I have stopped wearing the ambulance aprons as I believe they provide very little protection and may, at times, pose an increased risk to me as I feel they could put infected droplets onto my face if the apron blows up in the wind.”**

Specifically related to this, some felt that the amount of PPE they were told to wear was not proportionate to what they personally felt was needed, which is another area that could benefit from increased rationale and explanation regarding the logic and reasons for the recommendations being set at the level they are.

> **“Aprons were discarded - again no scientific evidence - having said that, you do not need to be a scientist to know they are pointless. Why staff cannot risk assess for themselves I do not know. It has been clear that people catch the virus and spread the virus and none of these measures have stopped it.”**

When considering what it is that makes the job more difficult, some felt that the precautions did not take into consideration the weather conditions that might make compliance more difficult (e.g. hot environments with no air conditioning), whereas others felt that clinical staff in particular are unable to communicate sensitively and compassionately with patients when complying with the guidelines.

> **“The ability to apply the correct level of PPE depends on the suitability of the job. Outdoors in rain and wind an apron can hinder my ability to care for patients.”**

> **“It can be difficult to comply when dealing with patients who lip read to communicate effectively, often meaning I have to adapt and try to communicate through a mask that my face cannot be seen in.”**

A commonly held belief among those endorsing the negative attitudinal statements was that the procedures essentially add unnecessary complications and demands to the day-to-day requirements of the role. Another thing influencing attitudes and exacerbating this issue, was where people felt they could not see any evidence of the value of IPC procedures in practice, and therefore felt that the expectations to follow procedures were not justified. This lends itself to a suggestion that more communication and information to show how the implementation of guidelines can have a positive impact may help to actively remove harmful attitudinal barriers that would otherwise prevent compliance.

> **“ Compliance from many staff has dropped because the science behind it is flawed. Surgical masks, cloth masks have been proven to do nothing which staff knew at the beginning but followed the guidance as we didn't know, even government reports have shown the evidence is inconclusive. ”**

> **“ Prior to COVID and during the first wave of COVID I will admit I was very stringent in myself to always wear the correct PPE in the correct environment. However this being said I still caught COVID just at the end of the first wave prior to having any vaccines. ”**

> **“ Sometimes I feel we are going over the top with PPE. ”**

Related to this, some suggested through further qualitative comments that staff had, over time, started to experience 'PPE fatigue', where people were tired of the continued rules and regulations that felt and seemed less necessary than they did at the initial outbreak of the pandemic.

> **“ It is becoming exhausting wearing the full L2 PPE when so many of the public aren't even bothering with face masks now. ”**

> **“ Compliance levels have changed, both as a demand/requirement and as a result of staff fatigue. ”**

> **“ We need to get on with life as we know it! ”**

> **“ Compliance levels have reduced due to being completely fed up with it. ”**

One additional item included in the scale of negative attitudes is that for some people, concern about following IPC practices closely was reduced due to advances in the COVID-19 vaccination programme. It seems as though the positive perception of the impact of vaccinations caused some people to think that guidelines no longer needed to be adhered to at the same level as they needed to before this.

> **“ I have confidence in the vaccine programme and hope it will reduce our need for such extreme PPE. ”**

> **“ Compliance reduced as most crew members are vaccinated, and especially wearing masks in ambulance cabs/around stations has lapsed because government guidance says we do not have to socially distance outside of work, and outside of work we can meet up together without social distancing and without masks? Seems pointless wearing masks for the duration of a shift to protect each other, but then not having to wear masks outside of work e.g. going out for a drink/meal. ”**

> **“ I am not convinced that the requirement to wear a face mask during a meeting in NHS facility is necessary when we are all fully vaccinated and have neg. LFT [lateral flow test]. ”**

> **“ I do feel that as vaccinations have come about, I have become a little less concerned around my colleagues although still comply 100% when patient facing. ”**

To help address this attitude, it seems possible that some clear statements about the need to comply despite advances in vaccination programmes may need to be added to staff communications, and the importance of following procedures within a healthcare setting are somehow communicated to staff. What seems important here is that any statements and information directed at staff are backed up clearly with evidence and justification, are seen as coming from a credible source, and are presented in a clear and succinct way.

11. Organisational culture and psychological safety

Why was it important to measure organisational culture and psychological safety?

It is important to remember that all individual workplace experiences take place within a broader context, shaped by the organisational culture. An individual's perception of the culture in which they work shapes their overall sense of the way things are done within the organisation, and what they can expect to experience and feel as part of that culture. A key element to this is whether or not they perceive themselves as existing in a 'safe' environment, i.e. whether they feel both physically and psychologically safe when they come to work. It is our sense of safety that influences our ability to function, perform and participate in the world as proactive human beings. When people do not feel psychologically safe, it is often because they do not trust. When people do not trust they are likely to hold back, hesitate, and, often, choose not to speak up when speaking up could lead to significant negative outcomes or even avoid serious negative or even life-altering consequences.

Organisational culture (safety climate) was measured using our validated scale which assesses whether the organisation is perceived to embrace learning and takes safety issues seriously, and also the level to which a blame culture might exist, where staff may feel unable or unwilling to report or act upon any non-compliance with safety procedures. The eleven items that make up this scale were measured on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree).

In addition to this, staff were also asked whether there are any other steps that the organisation has taken to help staff feel safe/protected by IPC practices during the pandemic, or other steps that they felt the organisation should have taken. For these additional questions, staff were given the opportunity to add any qualitative comments to describe/explain their perceptions.

What does the evidence reveal in relation to organisational culture and psychological safety?

Statistical analysis of the impact of psychological safety on compliance behaviour, illustrates that high levels of psychological safety (a culture dedicated to learning rather than blame) are associated with increased compliance with IPC guidance, both at the time of completing the survey and in terms of behavioural intentions for future compliance.

With regards to the qualitative information provided around psychological safety, a number of positive comments were made regarding the systems and practices that have already been implemented across the sector, with many local examples of best practice being referred to.

> “Promotion of the Freedom To Speak Up channel and others in place to allow staff to report concerns and incidents in a safe environment. Learning from Event sessions open to all staff to allow reflection on incidents that went well and those where things could have been done better.”

> “Virtual Conversation Cafe staff engagement sessions and regular articles in E-news talking about the developing culture and sharing results from things like the staff opinion survey and other engagement that help evidence where progress is being made in this respect.”

> “I think the routines for infection prevention/control are well established within the service and are of a high standard.”

> “Knowing the serious incident stats are reported at the Trust Board meetings held in public also supports a transparent and open approach.”

> “The organisation has communicated regularly with members of staff about all aspects of IPC practices, pre and during COVID-19. There have been many QA sessions and drop-in sessions provided for employees and those of us that could not attend where updated by email etc.”

> “A daily huddle is carried out and emailed to all staff before their rostered shifts. They are made aware of any "need to know issues" and reminded of PPE standards.”

> “Conversation cafes where staff can speak directly to a senior manager.”

> “Regular communication to staff re changes to IPC regulations.”

> “Regular stock takes to ensure adequate IPC supplies.”

What does this mean?

This evidence tells us that when people do not feel psychologically safe, they are less likely to comply with IPC guidance. When they perceive that the organisation as a whole does not take safety concerns seriously, or are not willing to take action to deal with non-compliance in relation to IPC guidance, people are less likely to comply with that guidance themselves or to intend to comply in the future. When the organisation is seen to be a place that takes the lead on safety issues, learning from any negative incidents and carrying that learning forwards to make positive changes, people are more likely to report compliance and have a more positive attitude towards the guidance in general. This highlights the importance of the need for the culture and climate to encourage feelings of psychological safety and learning, rather than instilling a blame culture.

It is key to highlight how much the organisation's cultural context matters. The ambulance sector is an environment that works within different levels of systems; the trust itself operates in a particular way, and this is all part of a broader national system. This macro-environment is really important to shaping how people feel about the context that they work in on a day-to-day basis. Within this context, staff need to have faith that the necessary systems are in place to keep them safe. This applies at all times – both in a crisis situation, when things are not going well, and in general day-to-day practice. This is why it is important to ensure that positive actions from this work are targeted at different levels, including establishing national and standardised systems of safety that can be implemented across all trusts across the sector more broadly.

12. Summary - factors that help and hinder compliance

In summary, is clear that there are a number of factors seen to significantly either help (encourage) compliance with IPC guidance, and there are some things that can actively hinder (prevent or block) this behaviour. When facilitating factors are present, ambulance staff report being more likely to comply, and more likely to intend to comply in the future. Similarly, the presence of barriers to compliance has the opposite effect and acts to hinder (decrease) compliance. Table 5 on the next page summarises the impact of each of the key factors on compliance behaviour.

Scale	Description of scale (Response scale range)	Scale Mean (SDev)	Compliance now	Intentions to comply in the future
Awareness of IPC guidance	Level of awareness of IPC guidance at the time of completing the survey. *'Very poor' (1) to 'Very good' (5)*	**4.54** (0.69)	↑	↑
Knowledge of IPC guidance	Level of knowledge about the IPC precautions that are required for the job/role. *'Nothing' (1) to 'A great deal' (5)*	**4.44** (0.78)	↑	↑
Satisfaction with training	Satisfaction with the level/amount of training received on the IPC precautions required for the role. *'Very dissatisfied' (1) to 'Very satisfied' (5)*	**3.68** (0.98)	↑	↑
Confidence in ability to apply IPC guidance	Confidence in ability to apply the required IPC precautions to job/role *'No confidence' (1) to 'Completely confident' (10)*	**8.25** (1.79)	↑	↑
Perception of threat	Perceived susceptibility to and severity of infection from any infectious diseases. *Scale range from 7 (no threat) to 35 (extremely high)*	**20.54** (7.38)	↑	↑
Self-efficacy (knowledge, PPE and logistics)	Belief in capacity to execute compliance behaviour. Confidence in one's ability to control the behaviour. *Scale range from 15 (very low) to 75 (very high)*	**51.70** (10.68)	↑	↑
Social norms (managers and colleagues)	Norms based on the behaviour of others in the work environment (managers/leaders and colleagues). *Scale range from 10 (negative) to 50 (positive)*	**35.94** (7.34)	↑	↑
Cues to action	Influences/positive prompts that facilitate a person to take action towards compliance behaviour. *Scale range from 6 (negative) to 30 (positive)*	**23.76** (4.63)	↑	↑
Positive attitudes towards compliance	Belief in the benefits of compliance, e.g. "If I follow IPC precautions, I will protect myself from infection." *Scale range from 6 (negative) to 30 (positive)*	**22.72** (4.64)	↑	↑
Negative attitudes towards compliance	Belief in the barriers to compliance, e.g. "Applying IPC precautions makes it hard for me to do my job." *Scale range from 8 (negative) to 40 (positive)*	**22.65** (6.52)	↓	↓
Safety climate/culture	Belief in positive safety climate, e.g. "In general, my organisation takes safety concerns raised by staff seriously." *Scale range from 11 (low safety) to 77 (high safety)*	**51.41** (12.67)	↑	↑
Personal experiences during the pandemic *(Each experience was measured with single item).*	Various experiences included to demonstrate different personal experiences (e.g. having a positive COVID result, suffering from effects of long COVID). *'No, not experienced' (1) to 'Yes, have experienced' (2)*	Varied by item[8]	↑	↑

Notes on how to interpret this table: Higher numbers mean a positive outcome in all except for 'negative attitudes towards compliance.' Mean = average score, SDev = the standard deviation, offers an idea of spread of scores.

Table 5: A summary of the factors that can positively or negatively influence compliance with IPC guidance in ambulance staff.

[8] See Appendix 2b for breakdown of personal experience variables and frequency data for each individual item.

The combined impact of the influencing factors

Naturally, understanding human behaviour is a very complex task and one that can not be too heavily simplified. Although we can never fully explain all the different factors that can influence behaviour, we are able to combine knowledge from existing theoretical models with data analysis techniques that help us to understand which elements are important and significant in influencing behaviour, and in helping us to know where and why attention and focus is best directed towards certain areas. In understanding this, it is important to remember that while individual factors are important, these factors do not work entirely independently and there is some overlap between the different areas we have discussed. For example, cues to action can be used as a way of strengthening positive beliefs and removing negative attitudinal barriers.

It is definitely useful to look at and understand the individual associations with compliance presented above, but it is also important to look at the combined impact of different factors on different groups. A 'blanket approach' (where we apply the same methods to all individuals and expect them to have a similar effect on everybody) is not likely to be the best method here. Instead, it is imperative that we take a more considered and focused look at how best to plan and manage the logistics of implementing practicable actions.

Understanding the impact of different variables on those with different levels of compliance

To understand this further, the data was divided into those who currently had 'high' levels of compliance and those who had 'low' levels of compliance and looked at this information to understand whether different actions are likely to have more or less impact on these different groups.

It became clear that current compliance behaviour (i.e. whether people reported themselves as being highly compliant at the time of completing the survey), was predictive of future compliance behaviour for both these groups. This is in keeping with what we know of human behaviour more broadly; that past or current behaviour is often one of the strongest predictors of future behaviour. This holds true in a range of circumstances, and the data suggests that compliance with IPC guidance is no exception to this rule. This was supported through some of the qualitative comments made by those who considered themselves to be high on compliance behaviour.

"I have always been compliant, and intend to continue to be, but I feel I may go beyond what is required now and get frustrated when others are not so careful."

"I have always complied with the rules and have been confident in pointing out to others when I felt they were not compliant."

"I have always complied with IPC precautions as it's part of my job role, COVID-19 has just highlighted how important compliance is to protect others at work and at home."

> "I've always understood the importance of IPC."

> "I will always follow the rules because my seniors put them in place and would hardly waste thousands or even millions of pounds on PPE if it was useless. It's just not perfect, but then what is."

> "I have always been stringent in my adherence to IPC practices."

For those with higher current compliance	For those with lower current compliance
Perception of threat	Perception of threat
Knowledge	Knowledge
Perceived barriers (negative attitudes)	Perceived benefits (positive attitudes)

Table 6: Overview of the 'top three' factors critical to compliance among high and low compliers.

It is interesting to note that for the **lower compliance** group, maximising and 'selling' the positive messages, showing how and why compliance behaviour is beneficial and helpful, is more important than for those who already comply. This is possibly because those with higher compliance are already on board with this key message and have bought in more whole-heartedly to the idea of compliance behaviour being beneficial. Therefore whilst endorsing positive messages to the high compliance group certainly won't do any harm, it may not be as impactful here as it will be with the lower compliance group, who are likely to be more influenced by and more in need of these positive reinforcers.

Once people are on board with the positives (e.g. those who are already positioned in the **higher compliance** group), dealing with the barriers and addressing the negative issues become more important. Essentially, these individuals seem to already understand and believe in the positive consequences of the behaviour, but the thing that may be preventing this group from complying at this stage seems to be more about the 'blockers'; the things that make it harder for them to comply. As such, Table 6 (above) can be used to help guide the recommended actions to be addressed among those with different levels of compliance.

The ongoing pathway to compliance

When interpreting the information presented above, there are certain points that should be remembered. Firstly, some actions are likely to be important across the board (e.g. perception of threat, knowledge and awareness). Similarly, as part of the ongoing pathway to compliance, our modelling of the data has shown that social norms, confidence and cues to action are critical factors that can influence and impact compliance among both groups. However what we can see from the information presented in Table 6 (above) is that if we really want to influence low compliers with some of these other strategies, we need to really help them see the benefits and help them to understand what is specifically required of them in their role.

By emphasising the positives and making it easier for low compliers to change their mindset to one that is more receptive to receiving some of the other messages, it may become easier to then help the other factors have a beneficial impact. Essentially, getting people on the right track and in a positive frame of mind is a first step that can then encourage the positive impacts of helping them see, for example, that others around are also aligned to compliance and that steps are being taken to make compliance possible. If people are not complying, it's not enough to just make compliance easier for them to achieve; what matters is really promoting and endorsing the positives and benefits associated with compliance behaviour through education, communication and other targeted actions that can help address these key points.

It therefore becomes important to look more closely at the specific type/s of actions that staff themselves feel are likely to help within the categories mentioned above. For example, when we say that actions to address 'social norms' can help, what does this mean in practice? What do staff think will help encourage an environment that promotes more positive social norms? It is to this that the report now turns, by presenting back the information that we gathered during staff validation sessions, in which we sought to find practicable actions that staff suggested they would want to see in place to help encourage compliance with IPC guidance in the future.

13. Action planning - a participative approach

Overview

Following the analysis of the results from the survey, staff were invited to participate in a series of action planning workshops and data validation sessions. Ten workshops were facilitated by our team of Business Psychologists from Zeal Solutions Ltd, between the 7th July and the 19th August 2022. In addition to these, three more targeted feedback sessions were run with some of the AACE national director groups and sub-groups to ensure that participation from various key people was maintained throughout the project, namely with the IPC Leads, the trade union representatives and the Communications Leads. The survey results were also communicated during an oral presentation at the Ambulance Leadership Forum (ALF) Conference in September 2022, which provided an additional opportunity to gain feedback and input from conference delegates. Additional validation of the key findings was subsequently received through both a formal question and answer session, and through ad hoc discussions with attendees following this presentation.

A total of 45 staff members of ambulance service staff participated in the validation focus group sessions. Participants were also encouraged to complete a proforma which ensured that everybody had the opportunity to disclose their views if they did not feel comfortable sharing them in the group setting, and to help ensure that all thoughts were captured in one way or another, whether that be through the discussion or via the proforma itself. 33 of the 45 staff members who attended returned their completed proformas. Participant views from both the proformas and the validation workshops were captured to provide the information that forms the basis of this section of the report.

How to use this information

The information presented here is intended to help provide a thorough overview of what staff feel can be done to ensure learning from the survey is taken forwards in a meaningful way across the sector. This is an amalgamation of what has been fed back within the survey data itself, and more focused strategies for action that have been postulated during the sense checking process. At this stage, this represents what staff have said, rather than a reflection of what is going to necessarily happen next. Following the processing of this information, we recommend that an action planning process is undertaken by those responsible for actioning these outcomes, during which proposed actions will be carefully considered, prioritised and implemented as appropriate.

When it comes to the point of action planning, our team of Zeal facilitators can offer more information, and help to guide conversations in a way that considers an integrated approach to action, in which you consider what will be done before, during and after the implementation of each action that you prioritise. For now, it is advisable to read through the proposed actions and then to reflect upon the recommendations for next steps presented in the subsequent sections of the report.

The validation focus groups

Analysis of the survey data led to the identification of some key areas of focus, and these formed the basis of the validation ('sense checking') focus groups that were subsequently held. During those workshops, staff confirmed that they understood and related to the key findings of the survey, and were asked to provide their views as to what actions they would like to see taken moving forwards, to help address the key issues and to ensure lessons are learned. The purpose of this section of the report is to outline the actions that were proposed and put forward by staff members during those workshops, and to give an overview of the top level recommendations for action.

Of those who attended the sessions, 24 were male (53%) and 21 were female (47%). Staff included full-time, part-time, bank staff, volunteers and student paramedics, as well as a mixture of those in management positions and those in non-managerial positions. Representation during the focus group sessions was provided from the following organisations:

- **Association of Ambulance Chief Executives (AACE)**
- **East of England Ambulance Service**
- **East Midlands Ambulance Service**
- **GMB (Union)**
- **Isle of Wight Ambulance Service**
- **London Ambulance Service**
- **North East Ambulance Service**
- **Northern Ireland Ambulance Service**
- **North West Ambulance Service**
- **College of Paramedics**
- **Scottish Ambulance Service**
- **South Central Ambulance Service**
- **South East Coast Ambulance Service**
- **South West Ambulance Service**
- **UNISON**
- **Welsh Ambulance Service**
- **West Midlands Ambulance Service**
- **Yorkshire Ambulance Service**

Staff from the following job roles were included in the focus groups:

- Advanced Paramedic
- Ambulance Care Assistant
- Ambulance Head of Quality Governance
- Ambulance Practitioner
- Ambulance Technician
- Bank PTS Staff
- CFR (volunteer)
- CFR Co-ordinator
- Chief Executive
- Clinical Safety Navigator
- Communications Manager
- Community First Responder
- Community First Responder Volunteer
- HART Training Manager
- Head of Infection, Prevention and Control (IPC)
- Investigation Manager
- IPC Practitioner
- National Ambulance Specialist Advisor - IPC
- National Officer
- NHS 111 Call Handler
- Paramedic
- Performance Analyst
- Security Management Specialist
- Senior ICT Engineer
- Senior Paramedic
- Student Paramedic/Emergency Medical Technician
- Teacher/Community First Responder
- Team Leader
- Volunteer
- Volunteer Ambulance Car Service
- Volunteer Community First Responder
- Workforce Planner

Factors that influence compliance with IPC guidance

The areas of focus presented below are based on the factors associated with compliance with the IPC guidance and intentions to comply with IPC guidance in the future. The four areas of focus mirror the discussions that were held during the focus group sessions themselves and include a summary of the key themes that emerged from those sessions. To facilitate the actioning of the recommendations presented here, Appendix 1 provides a summary of all recommended actions, as proposed during the staff focus groups, categorised by role/level. National/sector level actions are presented, followed by actions for localised teams within trusts, then actions for managers and individual staff members.[9]

The proforma that staff were asked to complete was also divided into the same four sections. Detailed responses from the proformas have been presented to the steering group members in a confidential, anonymised supplementary report, in case they would like to be immersed in the detail that has helped generate the summary below. Although the proforma information contained in that supplementary report includes verbatim text, it has been aggregated into core themes and any potentially identifiable information has been extracted, in line with best practice and to protect the anonymity of those involved in the sessions.

[9] In places there will be some overlap between the actions recommended at different levels, because some recommendations are relevant to staff across different levels.

Area of focus 1:
The impact of the behaviour of others on compliance ('social norms')

We know that the behaviour of the people around us influences our own behaviour. In terms of whether or not people comply with the IPC guidance (both now and intentions to comply in the future), the survey showed that the behaviour of managers and colleagues/peers is particularly important. By creating an atmosphere at work in which social norms are seen to encourage and promote compliance with IPC guidance (i.e. where the influential people around us are endorsing compliance behaviour), individuals themselves become increasingly likely to see the value in complying. For this reason, section 1 of the proforma tapped into identifying actions that helped endorse social norms that encourage compliance behaviour.

Actions: What needs to happen?	Illustrative quote/s (from focus group discussions)
Role modelling: The critical importance of role modelling by managers at all levels of seniority needs to be made clear. Educate managers with regards to the critical role they play.	**"We need to be managed and led properly by the people at the top. It needs to be a top down approach."** **"You're getting told to do something, but you go into the manager's office and they're not wearing a mask themselves, facing each other, not being compliant with masks. It undermines everything, even if you have masks and no shortages of PPE. Processes and equipment were there, but it wasn't properly led by example."**
Dealing with staff who do not comply: Team leaders to be enforcing compliance locally with their teams; sometimes they seem reluctant to do so.	**"It's then about managers not being frightened of challenging non-compliance with what's been set out as the expected norm."**
Management training around IPC and what is required: Support the managers in this. Managers often don't know/aren't clear about what is expected of them in relation to IPC, so they don't know how to educate staff.	**"If a staff member is promoted to operational team leader role, they don't get any training in what they need to do, it's just word of mouth. So when it comes to IPC audits, they haven't got a clue of how to do it, what it means and what it entails."**
More consistency is needed in managers' approach to IPC: Endorsing key messages over time in a consistent way across a national setting.	**"For colleagues, there is a massive variety, it depends on which station you are on."**
Demonstrate respect and empathy: Staff want to feel as though their managers empathise with them and understand why compliance can, at times, be difficult.	**"They ended up telling you off like a naughty child which then makes you go 'well I'm not gonna do that.' If they tell you something rather than explaining why something should be done and the benefits for it."**
Provide rationale: To help explain and justify why decisions are made.	**"It needs to become much more of a social norm to discuss this. IPC is currently just considered to be hand washing. They need to explain what it is and explain why we have to do it, otherwise there won't be any compliance around it."**
Be seen as more visible/available: Enhancing visibility, availability and accessibility of managers and leaders.	**"We rarely saw any managers during COVID, they were all in "ivory towers" so we didn't really have any contact with them."**

Table 7: Social norms: actions related to managers and leaders.

Actions: What needs to happen?	Illustrative quote/s (from focus group discussions)
All staff need to take more personal accountability for IPC compliance.	**"There needs to be a change in the way we do things, and everybody needs to get involved."**
Staff should feel able to challenge those who are non-compliant: Change the culture to enable them to feel they can do so.	**"If you feel uncomfortable about the way a colleague is using PPE, we need an environment where we need to be able to challenge, either at the time or later. For example, we should be able to talk to ambulance service management and ask questions."**
Seek to better understand why some people are not complying	**"We need to understand what makes the staff member actually comply such as self/family/patients protection as everyone has different motivations to comply."**
Change the language around IPC – make it easier to understand	**"IPC needs to have a clearer language around it. What is it we're actually asking them to comply with? Need to break down the language with it."**
Praise those who do things the 'right' way	**"More should be done to thank and praise colleagues for helping keep themselves, patients and other workers safe when good compliance is observed."**

Table 8: Social norms: actions related to colleagues and peers.

Area of focus 2: Enhancing feelings of capability and confidence ('self-efficacy')

In order for staff to comply with guidance of any kind, they of course must feel capable of doing so, and confident in their own ability to comply. The results of the survey showed that self-efficacy is important here in relation to three separate domains (which have been defined earlier in the report):

1. **Confidence in one's knowledge and understanding**
2. **Confidence in the PPE provided**
3. **Confidence in the logistical/practical reality of being able to follow the IPC guidelines at work**

Proposed actions in this area fell largely into two key categories: those associated with enhancements to training provision and transfer of training to the work environment; and those associated with ways of increasing staff confidence in the provision of PPE. These are summarised in Tables 9 and 10 (below).

Actions: What needs to happen?	Illustrative quote/s (from focus group discussions)
Integrate IPC training into other training packages – it should be part of everything, not seen as a standalone issue.	**"Getting the education teams on board and IPCand ANTT [Aseptic Non-Touch Technique] integrated into other teaching such as cannulation, so IPC is not seen in a silo."**
Provide more consistency in messages and policies	**"We need consistent policies and training across all areas of the trust and across all trusts. There should be a national training package for CFR/ volunteers and a national training package for PTS."**
Allow staff protected time to focus on IPC training	**"These initiatives always fail when the staff are not afforded protected time to be taught."**
Ensure the training provided is relevant to the role/specific staff groups	**"Our service should be recognised for the challenges – this is one way to get staff on side. Frequently people say they cannot meet that standard and are set up to fail from the outset, so there needs to be some education around that."**
Make training accessible (and make managers accessible to help with issues around training)	**"There is very little training. The last time I did training was when I first signed up and did PTS training 13 years ago...I actually had to find my own training through NHS England."**
Involve engaged experts and passionate people in the design and delivery of training. Involve Union Reps and Health and Safety Reps in local training to allow messages to be better cascaded to workforce.	**"The Health and Safety angle and the IPC angle don't always quite line up. So need to provide a lot more extensive training on site at a local level rather than a national level and allow union reps to be involved in that so that they understand the IPC side of things as well."** **"Union Representatives can facilitate compliance by receiving training and acting as champions."**
Listen to staff feedback and feed this back into policies/procedures	**"Actually take an interest in the other issues of the staff and listen to them. Try to understand how it feels to wear PPE on hot or wet days."**
Provide different modes of training	**"I think they could use videos to supplement the training rather than sending out emails with a list of guidance. It would be useful to see videos of how PPE should be worn and when it should be worn and how it's not to be worn – that would be helpful – especially to me as a volunteer driver who never comes into contact with the people who send out the instructions other than when I go into hospitals."**
Reminders and refreshers are essential	**"When people first join the Service they do a course on IPC which is rarely covered again after that – maybe a refresher course?"**
Monitor compliance and discipline/challenge non-compliance	**"Every now and again get mass emails about a certain incident, e.g. a needle sharps injury or a bad practice, and we do sit there and go 'who the hell did that? And why aren't they being educated, and even disciplined? They shouldn't be on the road if they're doing that sort of thing."**

Actions: What needs to happen?	Illustrative quote/s (from focus group discussions)
Training and guidance to be introduced in a timely way	"Some training was done but we were already into the pandemic and it wasn't early doors. It's something I felt we should have been on top of, because we faced this stuff before COVID and we will face it again after COVID, so it's not something that should be neglected."
Make training bite sized	"Training should be done as video or online training that is bite-sized. If you can't do it face to face, it's better to provide people with something that's short, max 10 mins, they can do it and get it signed off. It encourages people to just do it as it's quick, and means it's not constantly getting cancelled."
Include training as part of the induction process	"I think it should be a part of the company induction when joining, but also mandatory training through ESR [electronic staff record] - on an annual basis you have to undertake IPC training."
Local CPD events	"IPC training at the moment, across all staff, is a workbook. It isn't face-to-face, you do key skills training but even just having half an hour session here and there, such as CPD [continued professional development] sessions at the station face-to-face here and there would help. A workbook once a year doesn't help anyone."
Improved content of training evaluations	"Sometimes we get too task focused – e.g. say we have 95% compliance when actually all we are doing is just ticking a box. However, we don't want to just tick a box, we want to ensure that both staff and patients are safe."

Table 9: Self-efficacy - actions related to confidence in knowledge and ability to apply knowledge at work.

Actions: What needs to happen?	Illustrative quote/s (from focus group discussions)
Improvements needed in the quality, relevance and availability of PPE (for all staff, including volunteers)	"Our initial aprons were also short and the thickness of tissue paper. They then changed them to longer ones which were more suitable but if you're a short person and can't see where your feet are going that's not helpful either."
Rigorous quality control checks and testing of PPE	"Rigorous testing of PPE equipment to make sure it is fit for purpose - this should be done in the working environment if possible, and if not then in a mock up of the working environment. Someone putting on an apron in an office and posing for their colleagues does not constitute testing."
Specific training for PPE	"There needs to be more specific training for all PPE requirements."
Leaders/managers to take PPE concerns seriously and listen to staff views around this	"When decisions get made by higher ups, it needs to come down to the ground level and they need to see the reality of it – e.g. you try wearing an apron down a set of stairs, you wear a mask all shift that digs into the back of your ears while dealing with a patient, you show me how to clean that blood-soaked blood pressure cuff. It's all good telling us these rules but they need to appreciate the realities on the ground."
Better communication/explanation around PPE	"Not treating us like children but having actual research based evidence to why things should be done this way because we should all be at a level of education that can understand this."
IPC champions to support PPE decisions	"Having policies that have the rationale for the guidance so that staff understand the why; we need IPC champions to support colleagues in practice... We would need more investment in IPC teams to enable this to happen."
Make information about PPE readily available to all staff	"The information that is sent across to us is written in jargon, it doesn't hit you. We need to consider making this information more concise, to the point and be easier to understand and engaging."
Suitable work environments	"The ambulances, the cab is the most disgusting and dirty place. Every time I get in a truck, I disinfect the steering wheel, and where I sit etc. I never see any deep cleaning of the trucks – but this is where the infected patients are going."

Table 10: Self-efficacy - actions related to confidence in PPE provision and suitability.

Area of focus 3:
Providing positive prompts to encourage behaviour ('cues to action')

The provision of positive prompts are essentially ways of reminding people of what they need to do. For any behaviour to be sustainable over a period of time, it is important to ensure that the required behaviours remain in the forefront of people's minds. One way of helping to do this is to provide effective 'cues to action', in the form of providing information at key points in time, and also providing encouragement from others to help remind, refresh and sustain the desirable behaviour. Recommendations for action in this area are therefore focused on things that can enhance good daily practice, and learning from any specific tools, campaigns, posters or other such triggers that have proven effective in encouraging compliance.

When considering the actions below, it is worth noting that much reference was made during the validation groups to things that have been done particularly well in this regard already. For example, the AACE guidance that included a lot of information specific to the ambulance sector was mentioned as something that was very beneficial and should be used as an indicator of good practice.

Actions: What needs to happen?	Illustrative quote/s (from focus group discussions)
Communications: Setting up the initial messages - the way policies are communicated needs to be clearer.	**"IPC needs to have a clearer language around it. What is it we're actually asking them to comply with? Need to break down the language with it. Needs to become much more of a social norm to discuss this. It's currently just considered to be hand washing. Need to explain what it is and explain why we have to do it, otherwise there won't be any compliance around doing it."**
Keep the policy and procedure short and sweet to keep it simple.	**"The information that is sent across to us is written in jargon, it doesn't hit you. We need to consider making this information more concise, to the point and be easier to understand and engaging."**
Guidance needs to be simple, with pictures relevant to the sector.	**"The PPE guidance that AACE produced with the pictures for donning and doffing was so simple and really easy for everybody to understand. There were different versions for respirators and for hoods for Level 3, which was also important because the guidance that came out centrally was very care home and hospital centric. So interpreting it for the ambulance sector was a massive challenge."**
Clear messages from the top, cascaded down, with clear guidance on non-compliance.	**"What worked well for us was that we had very clear messages that were very specific about what the organisation expected from its staff, and those messages were very frequently reinforced by the Executive team."**
Consider how to sustain messages over time: The use of a legitimate source to endorse key messages (maintained over time). Should include endorsement from IPC specialists, not just senior leaders.	**"With anything like that, if you're expecting anything to become a social norm, it has to be laid out by the Chief Executive and reinforced by them initially, where that can then be cascaded down throughout all of the management structure."**

Actions: What needs to happen?	Illustrative quote/s (from focus group discussions)
Learn lessons from existing best practice - E.g. weekly webinars with Chief Executive; Other forums and national meetings (e.g. National IPC group); workshops for staff to share stories, views and experiences.	**"Webinars were really useful. All staff were invited to dial in for 1 hour or 1 and a half hours, with medical director sometimes, people could join if they were free, with key messages from the Chief Exec. They gave clear messages about decisions about support services working from home and so on. They provided the rationale and justification for such decisions. They communicated and explained what was done throughout these weekly briefings."**
Continued reinforcement of key messages in a simple, clear way	**"Clear communications, setting out what the organisation expects from its staff, that are frequently reinforced by the executive team, including any changes to practice."**
More accountability for IPC from all staff	**"It [IPC compliance] has got to be everybody's and everybody's got to be empowered that it is their responsibility."**
Face-to-face discussions at shift changes	**"Get staff involved such as face to face discussions at change on shift with regards to sharps disposal and clinical waste disposal make this positive rather than punitive."**
Good, supportive management	**"We need more visual aids and we need to feel like the manager's 'got your back.'"**
Avoid overload of communication/information – quality over quantity	**"Don't overload us with information – too many emails with the same heading will just be ignored!"**
Publicise the positives of compliance behaviour	**"I suspect there are a lot less colds amongst staff. Confirm if this is true and publish results."**
Regular and improved communications/updates	**"It would be good to have regular updates, maybe the use of video, or whatever to communicate. Relying only on emails comes across very bureaucratic and threatening."**
IPC champions	**"We should make better use of IPC champions and link staff."**

Table 11: Cues to action - actions related to communication of key messages, reminders and prompts.

In addition to the actions above, key recommendations were provided about specific types of tools and mediums that could be utilised for effective communication. For example, advertisements, use of social media, tips about things that do and don't work about certain poster displays, etc. More specific detail about these things is provided in the appendices and can be expanded upon and learnt from during the action planning process.

Area of focus 4:
Creating and sustaining psychological safety at work ('safety culture')

All of the above things can have an impact on helping to create and sustain a work environment in which people feel safe. When people feel as though their welfare is considered important and that their well-being is prioritised, this has a number of additional benefits, as people will feel psychologically safe and more able to challenge behaviour that is not acceptable (e.g. where people are not complying with the required guidance). Many of the steps to achieve this have already been listed above. However, staff did pick up on some broader issues when discussing the creation of a 'safe' culture at work, with the majority believing that changes were needed to improve the safety culture of their current workplace. Notable actions here are around the need for everyone to take some responsibility and accountability for IPC issues, and the need for ownership of these issues by everyone (not just the IPC leads themselves). There was specific acknowledgement of the excellent role of the IPC teams and how much they have achieved throughout the COVID-19 pandemic, so this is also worth mentioning here.

Staff were also asked, if they could pick one single thing that they could do to help enhance compliance behaviour, what would it be and why. Responses tended to echo those made earlier (above), and therefore will not be repeated.

Actions: What needs to happen?	Illustrative quote/s (from focus group discussions)
Accountability and responsibility for IPC is everybody's and needs to be seen as such.	**"We can't leave it that IPC is the responsibility of the IPC team, because it's too big."** **"That's my frustration...that it is just seen as the IPC Lead's responsibility and it can't be; it's got to be everybody's and everybody's got to be empowered that it is their responsibility."** **"IPC compliance should be the bedrock of our work in a healthcare setting."**
Need more ownership of IPC locally - more investment needs to be made in IPC teams. Too much currently rests on the shoulders of too few people.	**"Investment in IPC with proper educational framework... we are talking about front-line staff but there are many other people within the AS that need a level of competence for IPC who could inadvertently influence other people as well. So for me it's going right back to the drawing board and I would like to see it all joined up nationally."** **"IPC is poorly invested in and it always has been because it's not a 'sexy' part of the NHS."**
Acknowledge and recognise all the good work done by IPC leads with the immense task they have faced during the pandemic.	**"It is important to remember all the good work done by IPC leads with the task they had during this time. I personally saw what this process took out of IPC leads with the difficulties of changing guidance etc."**

Table 12: Culture - actions related to the way IPC is generally perceived, both locally and nationally.

14. Close and lessons learned from the pandemic

In closing this report, we felt it was important to reflect not only on the evidence reported here about IPC practice across the ambulance sector but also on the teachable (learning) moments in terms of IPC practice that have been afforded as a result of the COVID-19 pandemic.

The more general arguments of the importance and benefit of IPC within healthcare settings is well established and can be seen in other seminal reports and publications. Aligned to this research (and illustrated in Section 3), effective IPC requires vigilance and constant action. When starting this research, there was an intense concern that the business of IPC was only for those who oversee IPC (e.g. IPC leads and other similar roles) within the ambulance trust setting. It is clear to see that IPC is everyone's business and requires a general commitment at all levels of the healthcare system including government, policy makers, leaders/managers, staff as well as from the public who engage with and use the healthcare service/system. As stated by the World Health Organisation (WHO), "IPC is unique in the field of patient safety and quality of care, as it is universally relevant to every health worker and patient, at every healthcare interaction."

Whilst understanding the approach to IPC by service users was beyond the scope of this research, our approach here was to learn about human behaviour in the context of general IPC practice. Therefore, and by extension, the findings identified throughout this research are equally applicable to patients and other healthcare service users. For example, and in line with the findings here, action to raise awareness of the importance of good IPC practice (e.g. hand hygiene) as well as the perception of threat posed by COVID-19 infections was an approach that was utilised very well by the Government during the pandemic. Furthermore, the publication of simple guidelines and the translation of these guidelines into practical, easy to follow instructions (e.g. washing hands and singing happy birthday to ensure an appropriate amount of time was spent performing the behaviour) was also a marker of success for this campaign. This type of approach not only serves to educate, but it also strengthens confidence and the belief to change and sustain desired IPC behaviours. The lessons identified throughout this research point to the need to continuously raise and maintain awareness of IPC within the sector as well as to offer simple and practical guidelines and easy to follow steps for applying these practices/principles. It may be beneficial if there were to be refresher messaging from the Government to include information on how to minimise day-to-day transmission of infections such as the common cold, norovirus and flu, to recognise that behaviours associated with IPC are important at all times, not just in the event of a pandemic.

The evidence has highlighted the importance of reducing barriers to enable 'good' IPC practices and behaviours to be sustained. It has also identified the need to promote the positives as this has been shown to encourage others who have yet to engage or be convinced by the benefits of IPC practice. Overall, it seems that IPC compliance is strengthened by supporting staff through a process of responsible autonomy and meaningful choices. The evidence illustrates that those who chose to comply with IPC practices do so because they have willingly enrolled on to the pathway to comply and have not joined it out of fear. In essence, they are regulating their own IPC behaviour because of a fundamental belief in the value and importance of it.

The evidence has also demonstrated the importance of cultivating a culture whereby effective IPC practice just becomes part of everyday business and where continuous learning, a sense of psychological safety and not blame, is at the heart of it. Culture is a group-based phenomenon which has a technical and social component to it. At the technical level, as has been shown throughout this report, cultivating a culture where IPC practice is part of everyone's business requires focus on the provision of adequate resources, processes, procedures, guidelines, communication and education along with other (i.e. technology and organisational) systems that allow behaviour to be prompted, guided and sustained. This also applies to the interaction and alignment between various organisations and stakeholder groups. At the social level, this research has highlighted the role of establishing strong social norms and the importance of relationships between leaders and their co-workers as well as between co-workers themselves. For example, where leadership behaviour was recognised as supportive and where co-workers role-modelled positive IPC practice and positively challenged poor practices, more positive attitudes towards IPC practice and higher levels of IPC compliance were identified.

As noted above, a goal of this research was also to establish any teachable 'learning' moments for IPC practice resulting from the pandemic. In our view, the pandemic was a test of resilience at all levels and whilst our focus here is at the sector level, the pandemic made evident our unique and human capability to adapt quickly to what was a volatile, uncertain, complex and often ambiguous situation. Indeed, we have gathered numerous pieces of evidence and heard many stories of how individuals, teams and trusts adapted to the ongoing and unfolding events of the pandemic. This information served as backdrop to ensure the research also captured any general perspectives from staff about their own organisation's learning. In closing, it is therefore beneficial to reflect more directly upon what ambulance staff thought their organisation had learned as a result of the pandemic.

Organisational learning was measured using seven items, each of which addressed a different aspect of lessons learned from the COVID-19 pandemic. These items were measured on a five-point Likert scale of agreement from 1 (strongly disagree) to 5 (strongly agree). These items considered whether people felt the organisation was prepared when COVID-19 first hit, as well as whether the organisation would be better prepared for the future. For example, staff were asked whether they thought the organisation had learnt from what had happened and had increased adherence to IPC guidance overall, and whether they personally had increased their own knowledge and recognition of IPC practice in general. These findings are presented graphically below and can be broken down further upon request. As can be seen, this data presents a positive picture of staff's current mindset and perception regarding the impact of the pandemic on individual and organisational learning around IPC.

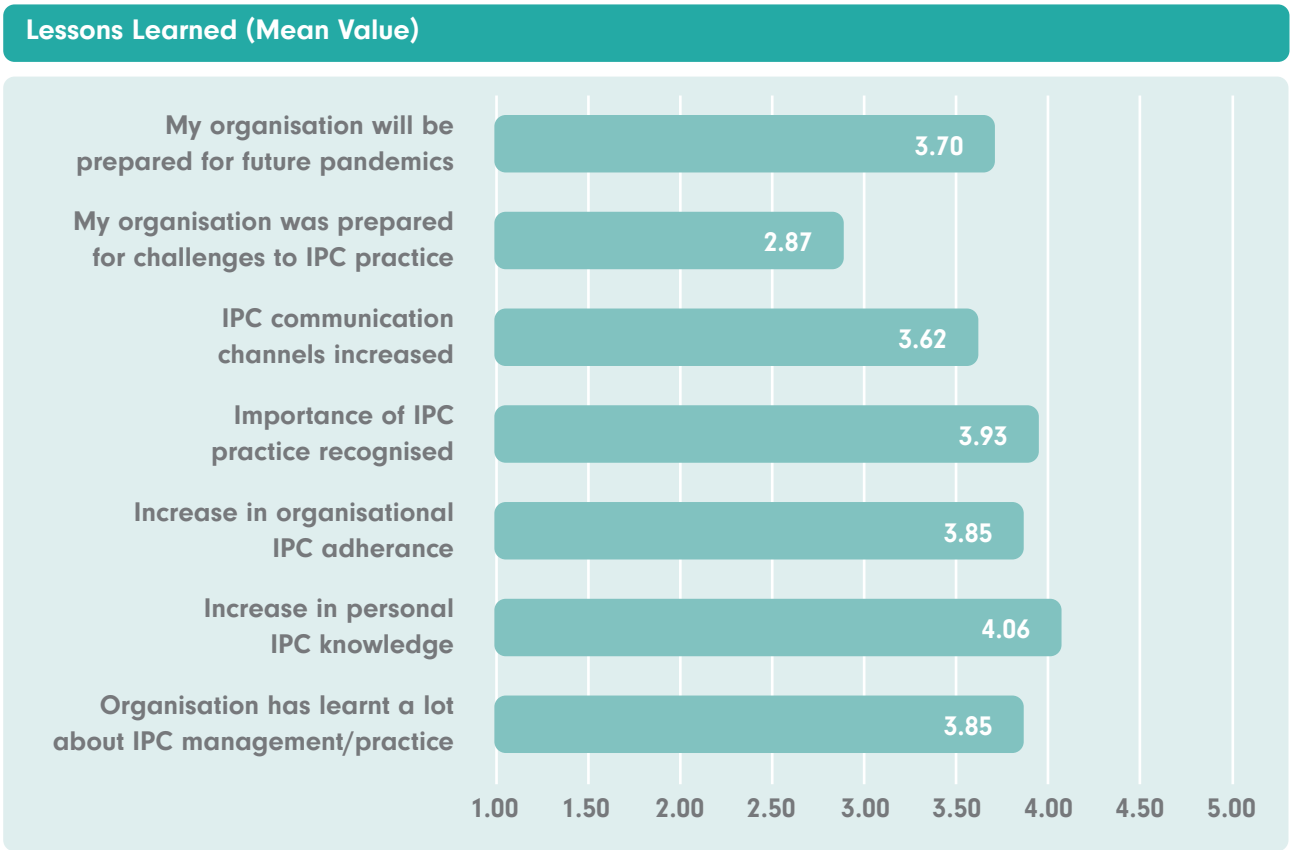


Chart 2: Staff perceptions of individual and organisational lessons learned as a result of the COVID-19 pandemic. Based on a scale from 1 (strongly disagree) to 5 (strongly agree).

Broadly speaking, these results show that while staff did not tend to think the organisation was especially well prepared at the time the pandemic hit, most felt confident that their organisation had learnt from this experience and would be more prepared in the future. They also felt that overall, personally, their own knowledge and adherence to guidance has been positively impacted by the pandemic, suggesting a positive message in relation to readiness for the future.

Learning is a critical aspect of resilience as it supports the process of adaptation. This process of adaptation involves 3 elements:

- 1) the need to **anticipate**. For example, evidence was collected that demonstrated how groups within the trusts convened before the pandemic took hold to run through scenarios and to consider the potential impact of the pandemic (e.g. tabletop exercises and scenario-based discussions).
- 2) the need to **address** the unfolding situation. For example, trusts were required to update IPC guidance on a regular basis, in line with the ever-changing information and guidance that was issued centrally by the government.
- 3) the need to **adjust**. For example, trusts were seen to go through a process of adjustment with the assistance and guidance of various groups (e.g. quality assurance and IPC groups continuously working to adjust practices by improving education and conducting research into IPC), all of which supported the ongoing effort to ensure IPC practice also remains resilient.

In closing this report, it is important to acknowledge all ambulance sector workers, both non-patient-facing and patient-facing, who continue to work tirelessly to sustain their organisational systems to deliver high quality and lifesaving care. There is a general commitment and loyalty amongst ambulance personnel to their overarching purpose that that is often unrivalled in any other industry/sector. It is important that this level of commitment is now met with open and honest dialogue resulting from this research and it is why we recommend the following as a way forward for sharing the outcomes of this research and to ensuring any learning is converted into something practical and useful. It is our hope that by adopting these recommendations, actions taken will lead to meaningful and sustainable results for all concerned.

We recommend AACE, as a membership organisation:

- **Works with representatives from the National Ambulance Communications Leads group (NACOM) and the Quality Improvement, Governance and Risk Directors (QIGARD) group to identify the best ways of sharing and maximising learning.**
- **Ensures the report and any learning gained is made available to all, including the sharing of all recommendations and proposed actions at national, regional and trust level, including public health organisations, Department of Health and Social Care and government, as applicable.**
- **Works with its members to support/help coordinate action planning workshops, ensuring IPC actions are prioritised and learning is continuously shared.**
- **Seeks to understand local examples of best practice at the trust level, and considers how these can be rolled out on a national basis, where appropriate.**
- **Considers steps to monitor and evaluate actions that are taken to assess progress as well as to continually inform and strengthen IPC practice at both local and sector levels.**

It is important to recognise that IPC is a matter of importance for everyone, and more specific recommendations are provided in Appendix 1, where they are listed at the various levels: Sector, Trust, Managerial and Individual.

Within the above suggestions, consideration is given to also sharing the recommendations and actions at the national level (i.e. Government/NHS/public health bodies). Although our research is positioned within the context of the ambulance sector, it is important to note that there is a great deal of transferrable learning that applies to staff compliance more broadly across other sectors. As such, it is our recommendation that once action plans have been developed and prioritised at trust and sector levels, a summary of key outcomes should be disseminated at national level so that the transferable messages can be reflected upon by national public health bodies, and consideration be given to how these can be most usefully applied or developed across the NHS and the wider public health remit.

15. Appendix 1 – Summary of recommended steps for action (categorised by role)

The four tables that follow present a summary of recommended actions, as proposed during the staff focus groups, categorised by role/level. National/sector level actions are presented, followed by actions for localised teams within trusts, then actions for managers and individual staff members. In places there will be some overlap between the actions recommended at different levels, because some recommendations are relevant to staff across different levels.

Summary table of national/sector level actions	
Social norms: actions related to setting shared standards of acceptable behaviour	
N1	**Challenging non-compliance** - set national standards. Seek to endorse a culture that enables staff to believe in the benefits/importance of compliance.
N2	**Praise those who do things the 'right' way** - set up national systems of reward and recognition.
N3	**Management training around IPC** - provide national standards to clarify expectations and standardised requirements.
N4	**More consistency is needed in managers' approach to IPC** - endorse key messages over time in a consistent way across a national setting.
N5	**Provide rationale** - to help explain and justify why decisions are made.
Self-efficacy: actions related to confidence in knowledge, PPE provision and suitability and ability to apply knowledge at work	
N6	**Oversee provision of a consistent model of IPC training** - from staff induction, to full training packages, reminders/refreshers and CPD opportunities.
N7	**Systems of training evaluation** - set standards on a national level.
N8	**Oversee the integration of IPC training into other training programmes** - it should be part of everything, not seen as a standalone issue.
N9	**PPE criteria and requirements** - implement systems to regularly review and check the quality, relevance and availability of PPE (for all staff, including volunteers and students).
N10	**Standards of quality control and quality assurance** - to include rigorous quality control checks/testing of all PPE, with training for specific items of PPE.
N11	**Suitable work environments** - ensure deep cleaning procedures for all places of work (including vehicles).
N12	**Listen to staff feedback** - ensure that systems exist to receive and address staff perceptions, and feed this back into policies/procedures.

Summary table of national/sector level actions (Continued)	
Cues to action: actions related to communication of key messages, reminders and prompts	
N13	**Learn lessons from existing best practice** - be aware of what is happening in the sector (e.g. weekly webinars with Chief Executive). Use other forums and national meetings (e.g. National IPC group) effectively to share information; attend workshops for staff to share stories, views and experiences. Set up national discussion forums between IPC leads, with a working group of 'champions' within each trust to share best practice nationally.
Cues to action: actions related to communication of key messages, reminders and prompts	
N14	**Accountability and responsibility for IPC is everybody's** and needs to be seen as such.
N15	**Need more ownership of IPC locally** - more investment needs to be made in IPC teams. There is a perception that too much currently rests on the shoulders of too few people, and that budgetary decisions should consider the amount of investment required to make the necessary changes.
N16	**Acknowledge and recognise all the good work done by IPC leads** with the immense task they have faced during the pandemic.

Table 13: Summary of national/sector level actions

Summary table of trust level actions	
Social norms: actions related to setting shared standards of acceptable behaviour	
T1	**Role modelling** - senior management teams need to understand the critical role they play and the impact their behaviours can have on others. This message should be cascaded down through the management structure, with all leaders acknowledging the critical role they play.
T2	**Challenging non-compliance** - dealing with staff who do not comply by setting localised rules/regulations/procedures, in line with national policies.
T3	**Praise compliance** - set up local systems of reward and recognition to acknowledge staff who do things the 'right' way.
T4	**Training for managers on expectations around IPC** - roll out training programmes and deliver sessions to clarify exactly what is required of managers.
T5	**Provide rationale** - be accountable for all decisions, explain and justify why choices are made and why things need to be a certain way at a local level.
Self-efficacy: actions related to confidence in knowledge, PPE provision and suitability and ability to apply knowledge at work	
T6	**Communications Teams/IPC Leads: Ensure consistency in IPC messaging** - to oversee a consistent approach to the sharing of policy information/guidance.

Summary table of trust level actions (Continued)

T7	**Communications Teams/IPC Leads: Oversee and ensure consistency in messages and policies around PPE** - to include a focus on better communication and explanation around PPE, making sure that information is readily available to all staff and volunteers.
T8	**Communications Teams/IPC Leads/Training Teams:** Plan and consider timing and content of reminders and refreshers for IPC content.
T9	**Training Teams: Training integration** - IPC training should be integrated into other training packages, so it is seen as part of everything, not as a standalone issue. There should also be specific training for individual items of PPE.
T10	**Training Teams: Training relevance** - ensure content is relevant to each role/staff group; to be considered in conjunction with staff consultation and volunteers.
T11	**Training Teams: Training accessibility** - ensure and enhance accessibility of training for everyone, keeping information 'bite sized' and manageable.
T12	**Training Teams: Modes of training** - provide different modes of training in recognition of individual differences in learning styles.
T13	**Training Teams: Scheduling of training** - ensure that training and guidance is introduced in a timely way and available when it is most needed (e.g. induction).
T14	**Training Teams: Training evaluations** - to design and implement effective evaluation processes, including the actioning of any feedback received.
T15	**Collaborative approach between IPC Leads/Communications Teams/Training Teams/Union Members/Health and Safety Teams: Involve engaged experts in the design and delivery of training** - involve passionate people in local training and to act as 'Champions' to allow messages to be better cascaded across the workforce.
T16	**IPC Champions** - to be set up locally and allowed to demonstrate support for IPC decisions, e.g. helping explain rationale around PPE, etc.
T17	**Quality Assurance Teams: Ensure rigorous quality control** checks and testing of all PPE equipment and resources.
T18	**Quality Assurance Teams: Maintenance of work environments** - oversee deep cleaning procedures for all places of work (including vehicles).
T19	**Quality Assurance Teams:** Put into place systems to oversee the quality, relevance and availability of PPE - (for all staff, including volunteers).
T20	**Management Teams: Local CPD events** - to plan and roll these out; to be set up within each trust and delivered locally.
T21	**All Local Teams: Listen to staff and volunteer feedback** - and feed this back into policies/procedures.

Summary table of trust level actions (Continued)	
Cues to action: actions related to communication of key messages, reminders and prompts	
T22	**Communications Teams/Governance Leads:** Presentation of initial messages - the way policies are communicated needs to follow a clear structure. Establish a clear programme of policy communication.
T23	**Communications Teams:** Work alongside staff to produce guidance staff can engage with. Focus on making guidance, policies and procedures simple and short, with pictures relevant to the sector. Consider setting up a working group of staff to look at how to simplify messages across roles.
T24	**Communications Teams:** Share the continued reinforcement of key messages in a simple, clear way, e.g. through regular and improved updates. Avoid overload of information, focusing on quality over quantity.
T25	**Communications Teams:** To actively publicise the positives of compliance behaviour.
T26	**Executive Team:** To send clear messages from the top, cascaded down, with clear guidance on non-compliance.
T27	**Communications Teams/IPC Leads (and other specialists as appropriate):** To consider how to sustain messages over time: The use of a legitimate source to endorse key messages (maintained over time).
T28	**IPC Leads together with a working group of 'champions' from each trust:** To share lessons from existing best practice. Use other forums and national meetings (e.g. National IPC group) to share lessons; hold workshops for staff to share stories, views and experiences.
T29	**IPC Leads/Champions/Specialists (e.g. Health and Safety representatives):** To be brought in to assist with sharing of key messages.
T30	**All Staff and volunteers:** To take more personal accountability for IPC.
Culture: actions related to the way IPC is generally perceived, both locally and nationally	
T31	**Accountability and responsibility for IPC is everybody's** and needs to be seen as such.
T32	**Acknowledge and recognise all the good work done by IPC leads** with the immense task they have faced during the pandemic.

Table 14: Summary of trust level (local team) actions.

Summary table of managerial level actions

Social norms: actions related to setting shared standards of acceptable behaviour

M1 **Role modelling** - managers need to understand and acknowledge the critical role they play and the impact their behaviours can have on others.

M2 **Challenging non-compliance** - enforce compliance locally within teams.

M3 **Praise compliance** - recognise those who do things the 'right' way.

M4 **Management training around IPC and what is required** - attend training and engage fully within that training.

M5 **Demonstrate consistency** - in managerial approach to IPC. Display key messages and expectations around IPC and apply this consistently across all staff.

M6 **Show respect and empathy** - demonstrate an understanding with staff over why compliance can, at times, be difficult and empathise with them.

M7 **Provide rationale** - help explain and justify to staff and teams, explaining why decisions are made and why things need to be a certain way.

M8 **Be available to staff and volunteers** - Enhancing visibility, availability and approachability wherever possible.

Self-efficacy: actions related to confidence in knowledge, PPE provision and suitability and ability to apply knowledge at work

M9 **Allow staff protected time to focus on IPC training** - wherever possible, allocate protected time for staff to dedicate to IPC training.

M10 **Seek to be available to staff** - make it clear that staff can approach and query, question or discuss issues related to training or IPC more broadly.

M11 **Involve engaged experts/champions in the design and delivery of training** - include Union Reps and Health and Safety Reps in local training.

M12 **Listen to staff and volunteer feedback and feed this back into policies/procedures** - collate and share formal and informal feedback to more senior levels.

M13 **Reminders and refreshers are essential** - managers to support the spread and sharing of key messages.

M14 **Monitor compliance** - stay alert and aware and discipline/challenge non-compliance in a consistent, fair and standardised manner.

M15 **Support and encourage staff and volunteer development** - allow them the opportunity to attend local CPD events where these are relevant to the role.

M16 **Obtain regular feedback on PPE** - from all staff (including volunteers) around quality, relevance and availability of PPE.

Summary table of managerial level actions (Continued)	
M17	**Address concerns over PPE** - take any concerns seriously and listen to staff views around this.
M18	**Effective communication/explanation around PPE** - take an active role in communicating and explaining decisions; listening and responding to queries.
M19	**Suitable work environments** - oversee ongoing and day-to-day maintenance of deep cleaning procedures for all places of work (including vehicles).
Cues to action: actions related to communication of key messages, reminders and prompts	
M20	**Cascade national and local messages** - ensure these get shared locally whilst portraying clear guidance on expectations and requirements.
M21	**Learn lessons from existing best practice** - participate in opportunities to learn about best practice and to share best practice from one's own team.
M22	**Continued reinforcement of key messages** - in a simple, clear way, leading by example and consistently reinforcing messages in day-to-day.
M23	**Take personal accountability for IPC** - this is the responsibility of all staff and volunteers, including managers, who also need to ensure their staff are being accountable.
M24	**Face-to-face discussions at shift changes** - encourage communication between staff as part of regular practice, to act as a reinforcer/cue to action.
M25	**Demonstrate ongoing supportive management** - allow staff to stay informed by providing regular and improved communications and updates.
Culture: actions related to the way IPC is generally perceived, both locally and nationally	
M26	**Accountability and responsibility for IPC is everybody's** - and needs to be seen as such.
M27	**Acknowledge and recognise all the good work done by IPC leads** with the immense task they have faced during the pandemic.

Table 15: Summary of managerial level actions.

Summary table of individual level actions	
Social norms: actions related to setting shared standards of acceptable behaviour	
In 1	**Role modelling** - all staff need to take more personal accountability for IPC compliance. Staff and volunteers need to view themselves as role models for each other.
In 2	**Challenging non-compliance** - staff and volunteers should feel able to challenge those who are non-compliant. They should use the channels and mechanisms that are created when doing so, and should know that they are able to do so without being reprimanded for doing so.

Summary table of individual level actions (Continued)	
In 3	**Praise compliance in others** - recognise those who do things the 'right' way.
In 4	**Demonstrate respect and empathy** - seek to understand why some people are not complying. Consider offering support, not blame/punishment.
Self-efficacy: actions related to confidence in knowledge, PPE provision and suitability and ability to apply knowledge at work	
In 5	**Attend IPC training** - engage fully and enter into training with an open mind and willingness to learn.
In 6	**Attend IPC reminders and refresher training** - engage fully and enter into training with an open mind and willingness to learn.
In 7	**Make oneself aware of messages and policies** - read/listen to the information provided.
In 8	**Raise awareness of any problems through appropriate channels** - if something is missing, feels inappropriate or unclear, seek it out or ask questions.
In 9	**Attend local CPD events where available** - show a willingness and keenness to learn and participate to enhance awareness and capability.
In10	**Feedback/report any issues or perceived problems with PPE** - using appropriate channels to highlight problems in a timely way to allow a response.
In11	**Suitable work environments** - take accountability for one's own role in creating and maintaining the environment (e.g. regular cleaning, etc).
Cues to action: actions related to communication of key messages, reminders and prompts	
In12	**Keep informed** - seek out communication and read and engage with it. If there is a problem or something is lacking, offer constructive feedback.
In13	**Share and learn from existing best practice** - where things are working particularly well, engage and co-operate with this. Share ideas.
In14	**Face-to-face discussions at shift changes** - communicate and co-operate with other staff and volunteers to keep information and awareness flowing.
Culture: actions related to the way IPC is generally perceived, both locally and nationally	
In15	**Accountability and responsibility for IPC is everybody's** and needs to be seen as such.
In16	**Acknowledge and recognise all the good work done by IPC leads** with the immense task they have faced during the pandemic.

Table 16: Summary of individual level actions.

15. Appendix 2a – Summary of demographic data

Below are the demographic details of the sample of staff who participated in this survey.

Gender	Frequency	Percentage
Male	2080	55.4
Female	1586	42.2
Prefer not to say	80	2.1
Prefer to self-describe	12	0.3
Total	3758	100.0

Table 17: Demographics – Gender.

Employment Status	Frequency	Percentage
Substantive	3292	89.2
Bank worker	97	2.6
Volunteer	253	6.9
Student	49	1.3
Total	3691	100.0

Table 18: Demographics – Employment status.

Age	Frequency	Percentage
16-20	10	0.3
21-30	408	10.9
31-40	666	17.8
41-50	1031	27.5
51-65	1498	40.0
66+	130	3.5
Total	3743	100.0

Table 19: Demographics – Age.

Tenure (healthcare sector)	Frequency	Percentage
Less than 1 year	136	3.6
1-2 years	321	8.6
3-5 years	550	14.7
6-10 years	668	17.9
11-15 years	499	13.4
More than 15 years	1559	41.8
Total	3733	100.0

Table 20: Demographics – Tenure working in healthcare sector.

Tenure (Ambulance Service Trust)	Frequency	Percentage
Less than 1 year	232	6.2
1-2 years	519	13.9
3-5 years	776	20.8
6-10 years	679	18.2
11-15 years	409	10.9
More than 15 years	1121	30.0
Total	3736	100.0

Table 21: Demographics – Tenure working in current ambulance service trust.

Job role	Frequency	Percentage
Front Line A&E Responder	2189	60.7
Emergency Operations Centre (EOC - control centres)	385	10.7
PTS	353	9.8
Corporate/Enabling Services	11.5	18.8
Total	3691	100.0

Table 22: Demographics – Job role.

Ethnicity	Frequency	Percentage
White British	3309	89.1
White Irish	60	1.6
Any other white background	115	3.0
Mixed White & Black Caribbean	13	0.4
Mixed White & Black African	3	0.1
Mixed White & Asian	11	0.3
Any other mixed background	11	0.3
Asian or Asian British - Indian	29	0.8
Asian or Asian British - Pakistani	13	0.4
Asian or Asian British - Bangladeshi	4	0.1
Any other Asian background	13	0.4
Black or Black British - Caribbean	17	0.5
Black or Black British - African	13	0.4
Any other Black background	4	0.1
Chinese	4	0.1
Any other ethnic group	16	0.4
Prefer not to say	76	2.0
Total	3711	100.0

Table 23: Demographics – Ethnicity.

Recognised as having a management/leadership role	Frequency	Percentage
Yes	1184	31.8
No	2544	68.2
Total	3728	100.0

Table 24: Demographics – Management/leadership status.

15. Appendix 2b – Summary of personal experiences during the pandemic

As part of the survey, respondents were asked questions about their personal experiences during the COVID-19 pandemic that were thought to have a possible impact on compliance behaviour. The frequency data from these variables is presented below, to demonstrate the range of experiences of those who completed the survey. The impact of these experiences on compliance has been considered and presented in Section 12.

Worked in healthcare sector during previous pandemic (e.g. swine flu, bird flu, SARS, Ebola, etc.)	Frequency	Percentage
Yes	1763	47.2
No	1974	52.8
Total	3737	100.0

Table 25: Experiences – worked in healthcare during previous pandemic.

Tested positive for COVID-19	Frequency	Percentage
Yes	1779	47.2
No	1988	52.8
Total	3767	100.0

Table 26: Experiences – personally tested positive for COVID-19.

Friend or family member tested positive for COVID-19	Frequency	Percentage
Yes	3267	86.8
No	497	13.2
Total	3728	100.0

Table 27: Experiences – friend/family member tested positive for COVID-19.

Suffered/suffering from long COVID	Frequency	Percentage
Yes	756	20.1
No	3003	79.9
Total	3759	100.0

Table 28: Experiences – suffered from or still suffering from effects of long COVID.

Had to isolate/quarantine from friends and family	Frequency	Percentage
Yes	1779	47.2
No	1988	52.8
Total	3767	100.0

Table 29: Experiences – had to isolate/quarantine from friends and family.

Unable to take leave due to workload	Frequency	Percentage
Yes	1312	34.9
No	2452	65.1
Total	3764	100.0

Table 30: Experiences – unable to take annual leave/planned holidays due to staff shortages and/or workload pressures.

AACE – Infection, Prevention and Control Survey of the Ambulance Workforce

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www.zealsolutions.co.uk
Email: enquiry@zealsolutions.co.uk

Zeal Solutions Ltd
15 Beck Street
Nottingham
NG1 1EQ