International Journal of Paramedicine

Published by the National EMS Management Association (USA)

RESEARCH REPORTS

PEER-TO-PEER FEEDBACK AMONG AMBULANCE CLINICIANS: A CROSS-SECTIONAL STUDY IN THE OUT-OF-HOSPITAL SETTING

James Foster*[1]; Brett Williams, PhD[2]

Author Affiliations: 1. NHS London Ambulance Service, London, UK; 2. Department of Emergency Medical Care, College of Applied Medical Sciences, Imam Abdulrahman Bin Faisal University, Dammam, Saudi Arabia.

Recommended Citation: Foster, J., & Williams, B. (2026). Peer-to-peer feedback among ambulance clinicians: A cross-sectional study in the out-of-hospital setting. *International Journal of Paramedicine*. (14). https://doi.org/10.56068/VVSE5211

Keywords: paramedic, emergency medical technician, out-of-hospital, prehospital, feedback, emergency medical services, EMS, paramedicine

Disclosures: The authors declare there are no competing interests related to this study.

Funding: The authors declare there are no funding declarations related to this study.

Received: July 11, 2025
Revised: November 17, 2025
Accepted: December 21, 2025
Pre-Issue Published: March 3, 2026

**Corresponding Author:* james.foster7@nhs.net

ABSTRACT

Feedback is a well-researched and broad concept within healthcare, however, there is a contextual gap concerning peer-to-peer provision in the out-of-hospital environment. Current literature suggests that emergency ambulance clinicians most often receive feedback from their operational peers. Recent literature has identified that out-of-hospital feedback initiatives face long-term implementation and sustainability challenges. Further research is required to support the design and evaluation of feedback interventions.

This study aimed to describe how often emergency ambulance clinicians provided peer-to-peer feedback and its association with various factors.

A 10-question survey was distributed to London Ambulance Service members. Participants were eligible if they were registered or non-registered clinicians working on a frontline operational ambulance vehicle. A Fisher's exact test using Monte Carlo simulations was performed using SPSS for statistical analysis. This research followed STROBE reporting guidelines for observational studies.

A total of 143 responses were included for analysis. Clinicians provided positive feedback more often than constructive or any other type of feedback. There was statistical significance between feedback provision and training (positive feedback $p = 0.006$), organizational culture (positive feedback $p = 0.001$), clinician comfort in provision (constructive feedback $p = <0.001$) and self-rated quality of feedback (any feedback $p = <0.001$). Factors such as experience, clinical grade or gender were not statistically significant.

Out-of-hospital emergency ambulance clinicians provided more positive peer-to-peer feedback and rarely provided no feedback. Clinicians should receive feedback training within curricula to increase exposure and engagement with feedback processes. Training should emphasize the role and benefits of constructive feedback. There is an organizational incentive to promote an honest feedback culture to facilitate learning opportunities. Clinicians felt comfortable and rated their quality of feedback as adequate. Standardizing feedback models in the out-of-hospital environment will reduce feedback inequalities.

Feedback is a broad concept widely researched in healthcare, but research has been limited in the out-of-hospital environment (Wilson, Janes, Lawton, & Benn, 2023b). Early foundational work within medical education describes feedback as necessary, valuable, and requires practice and planning (Ende, 1983). Feedback

is seen as a valuable tool aimed at promoting staff development and learning in contrast to assessment, which focuses on judgement and decision-making (Watling & Ginsburg, 2019). Feedback is flexible as it can occur anywhere, differing from other information transfer processes such as debriefing, which is employed post-incident under specific and controlled circumstances (Tavares et al., 2020). Literature reviews within medicine on feedback and audit suggest it can lead to small but potentially significant improvements in professional practice, however, the effects vary greatly depending on context (Ivers et al., 2012). This is comparable to the limited number of out-of-hospital literature reviews on feedback, which suggest feedback mechanisms for ambulance clinicians often improve clinical performance, although the subsequent benefits to patient outcomes are unknown (Eaton-Williams, Mold, & Magnusson, 2020a; Wilson et al., 2023b). A recent review has suggested that within emergency ambulance services, feedback initiatives are motivated by various factors, but face challenges in long-term implementation and sustainability (Wilson, Janes, Lawton, & Benn, 2023a). Current literature has also highlighted the need for further research to provide the foundations supporting the design and evaluation of feedback interventions in the out-of-hospital environment (Wilson et al., 2023b).

The benefits of feedback translate into the out-of-hospital setting, as it can meet the emotional and professional requirements of emergency ambulance clinicians (Eaton-Williams, Mold, & Magnusson, 2020b; McGuire et al., 2021). Additional benefits include clinical education, clinician self-reflection leading to autonomous practice and motivating clinicians to improve patient care (Cash, Crowe, Rodriguez, & Panchal, 2017; Persse, Key, & Baldwin, 2002). Emergency ambulance clinicians are highly receptive to feedback and may reflect the determination of this group of healthcare professionals to improve colleague and patient outcomes (Eaton-Williams et al., 2020a). It is an essential component of practice, professional identity formation, and actively engaging in feedback processes is included in registered paramedics' professional standards (Health & Care Professions Council, 2023). At a time when emergency ambulance clinicians are in high demand, providing effective feedback mechanisms represents a pathway to improving staff wellbeing and reduce burnout (Morrison, Cassidy, Welsford, & Chan, 2017). Despite the importance of feedback within the out-of-hospital environment, its use and implementation remains poor (Eaton-Williams et al., 2020b). Emergency ambulance staff perceive current feedback mechanisms, particularly through formal routes, as infrequent and of inadequate quality, leading to unresolved personal and professional closure (Wilson, Howell, Janes, & Benn, 2022). There are also existing barriers to feedback provision in the out-of-hospital environment, such as information governance, clinical isolation from the broader healthcare system, and clinical grade (Morrison et al., 2017). These factors are why emergency ambulance clinicians seek alternative sources for their feedback requirements.

Existing literature suggests the most common type of feedback for emergency ambulance clinicians is informal, verbal, and provided by their peers (Cash et al., 2017; McGuire et al., 2021). This source represents an easily accessible and usually trusted source of feedback (Cash et al., 2017; McGuire et al., 2021). Peer-to-peer feedback is underutilized within the in-hospital environment despite being a low-resource method for improving clinical performance (Stockdill, Hendricks, Barnett, Bakitas, & Harada, 2023). As a result, the concept of peer-to-peer feedback amongst emergency ambulance clinicians should be

explored, as it represents the most common source of feedback amongst this group. This is also supported by recent literature, suggesting that further research in this setting should explore the culture around feedback provision, including the prevalence, predictors and effects of feedback using quantitative methods (Wilson et al., 2023a).

Research Questions

- What is the frequency of emergency ambulance clinicians providing peer-to-peer feedback within the last 30 days
- Do factors such as experience, clinical grade, training in feedback provision, comfort in providing feedback or self-rated capability, perceptions of organizational culture or gender affect the provision of peer-to-peer feedback?

Aims

- To describe the frequency of peer-to-peer feedback provided by emergency ambulance clinicians of the London Ambulance Service in the past 30 days
- To determine the statistical significance between the frequency of peer-to-peer feedback provision and experience, clinical grade, training in feedback provision, comfort in providing feedback or self-rated capability, perceptions of organizational culture or gender of emergency ambulance clinicians from the London Ambulance Service in the past 30 days.

Hypothesis

- Most emergency ambulance clinicians will have provided some form of peer-to-peer feedback within the last 30 days
- The provision of peer-to-peer feedback provision will be statistically significant with experience, clinical grade and provision of feedback training.

METHODS

Setting

Participants were recruited from the London Ambulance Service (LAS), United Kingdom. The LAS is a large metropolitan-based emergency ambulance service and is the busiest UK ambulance service answering around two million emergency calls per year. Clinical grades range from registered healthcare professionals including paramedics to a wide range of non-registered roles including non-emergency transport clinicians to emergency medical technicians. These emergency ambulance clinicians work on either double-crewed emergency ambulances or as solo responders responding to emergency or urgent calls.

Study Design

This was a cross-sectional study and followed STROBE reporting guidelines for reporting observational studies (von Elm et al., 2007).

Survey

An anonymous online survey was distributed to all operational staff in the internal weekly employee bulletin for the LAS. The QualtricsXM platform was used to design and collect the data. An anonymous link was generated to distribute the survey and a front-matter page provided participants with study details which required confirmation

of informed consent. Participant recruitment lasted a total of four weeks and started on the 25th July 2023. The survey was advertised once per week for three weeks in the weekly internal LAS employee bulletin. Participant recruitment ceased one week after the third bulletin was published.

The survey contained a total of 10 questions, including six Likert-style questions, three demographic capture questions, and one dichotomous question. The survey was modelled on the previous work of McGuire (McGuire et al., 2021). This study was chosen as its aims involved emergency ambulance staff receiving feedback and their associating influencing factors. These were similarly aligned with our study however this study explores the concept of emergency ambulance clinicians as feedback providers. Additionally, their sample contained emergency medical staff with comparable clinical grades to UK emergency ambulance services. The survey questions were modified to ask participants to provide feedback instead of receiving it. Questions six, seven, eight, and nine were developed based on the research aims of this paper and areas that literature has identified for future research (Wilson et al., 2023a). The survey underwent one pilot round with a focus group of 10 emergency ambulance clinicians of varying clinical grades and experience. The survey also underwent review from the LAS Clinical Audit and Research Unit. Appendix 1 displays the survey questions.

Eligibility

Participants were eligible to complete the survey if they were a registered or non-registered clinician working on a frontline operational vehicle as part of their job role. Within the LAS, this included double-crewed ambulances or various forms of solo-response such as fast-response vehicles.

Study Size

A G-power calculation was used to calculate the minimum required sample size for contingency tables. We calculated a minimum of 133 participants were required to achieve a power level >0.8 with a P value = 0.05 and an effect size = 0.3. To achieve this sample the survey was kept active for a total of four weeks which was similar to existing studies (Cash et al., 2017; McGuire et al., 2021). There was no upper limit on recruitment numbers.

Statistical Methods

Statistical analysis was completed with SPSS version 29. A Fisher's exact test was performed instead of a chi-square as the data did not reach the required minimum cell counts. It follows the methods of McGuire et al. and is also appropriate for smaller sample sizes (Kim, 2017; McGuire et al., 2021). A Monte Carlo simulation with a 99-percent confidence interval and 10000 simulations was used due to SPSS limitations. The tests were significant if the p-value was <0.05.

Ethics

Ethics approval was acquired through the Monash University Human Research and Ethics Committee (Project ID 38330) and Trust research approval was through the LAS Clinical Audit and Research Unit.

Data Protection

Data was managed in accordance with The National Health and Medical Research Council Management of Data and Information in Research and Monash University guidelines. Data collected through the online survey was stored on the Monash University network (LabArchives) cloud-based storage and password protected. Only the researchers involved had access to these data. Records and data were kept until project completion and files deleted afterwards.

RESULTS

Participants

A total of 148 responses were received for this survey. A total of five responses were removed for being incomplete at various stages in the survey. This resulted in 143 responses included in the statistical analysis. The Table 1 displays the participant demographics in frequency counts and percentages. Table 2 displays the remaining survey responses in frequency counts and percentages. Tables 3, 4, and 5 display the statistical analysis between providing peer-to-peer feedback and survey responses.

Please indicate the years you have worked as an ambulance service clinician.	
2 years or less	24 (16.8)
3 years -10 years	78 (54.5)
11 years -15 years	22 (15.4)
16 years or more	19 (13.3)
Please indicate your current clinical grade.	
ER/FPOS	1 (0.7)
T/AAP	2 (1.4)
AAP	3 (2.1)
T/EMT	6 (4.2)
EMT	31 (21.7)
NQP1	7 (4.9)
NQP2	10 (7.0)
Band 6 Paramedic^	72 (50.3)
Band 7 Paramedic^	11 (7.7)
What is your gender?	
Woman	71 (49.7)
Man	71 (49.7)
Non-binary/gender diverse	1 (0.7)

Key ER/FPOS = Emergency Responder/ First Person On Scene, T/ = Trainee, AAP = Associate Ambulance Practitioner, EMT = Emergency Medical Technician, NQP1 = Newly Qualified Paramedic Grade 1, NQP2 = Newly Qualified Paramedic Grade 2. ^ = Registered paramedic grades post NQP consolidation period.

Table 1. Survey demographic responses (n = 143).

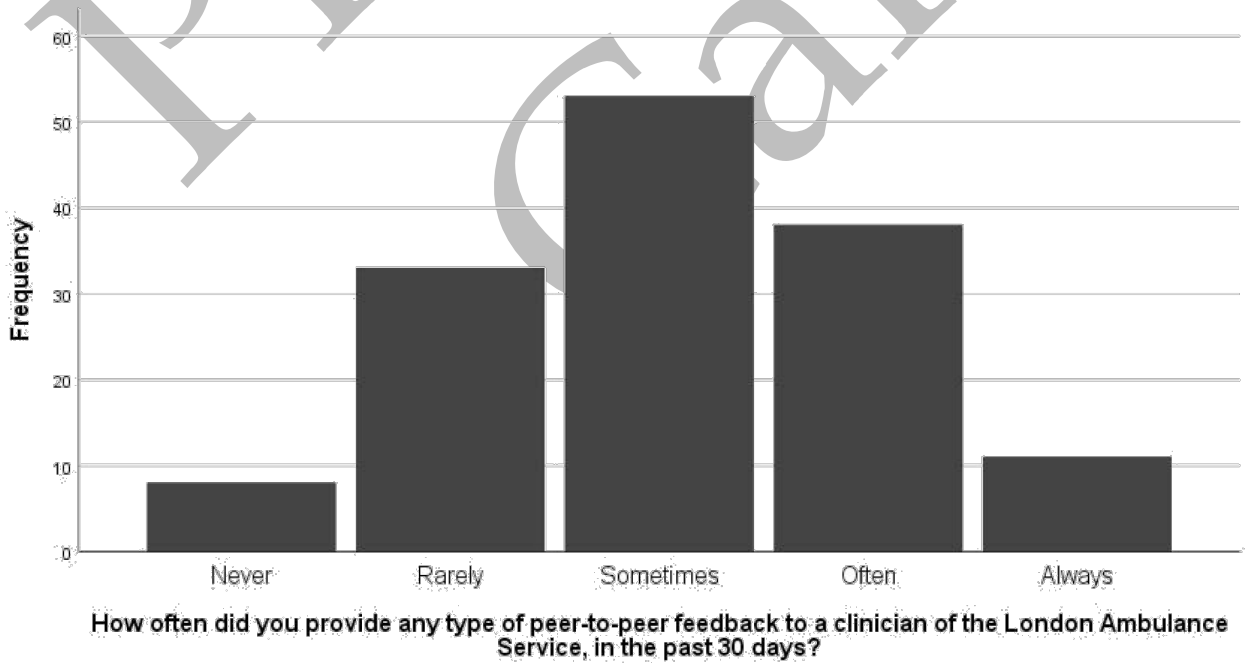

Figure 1. Frequency of providing any peer-to-peer feedback.

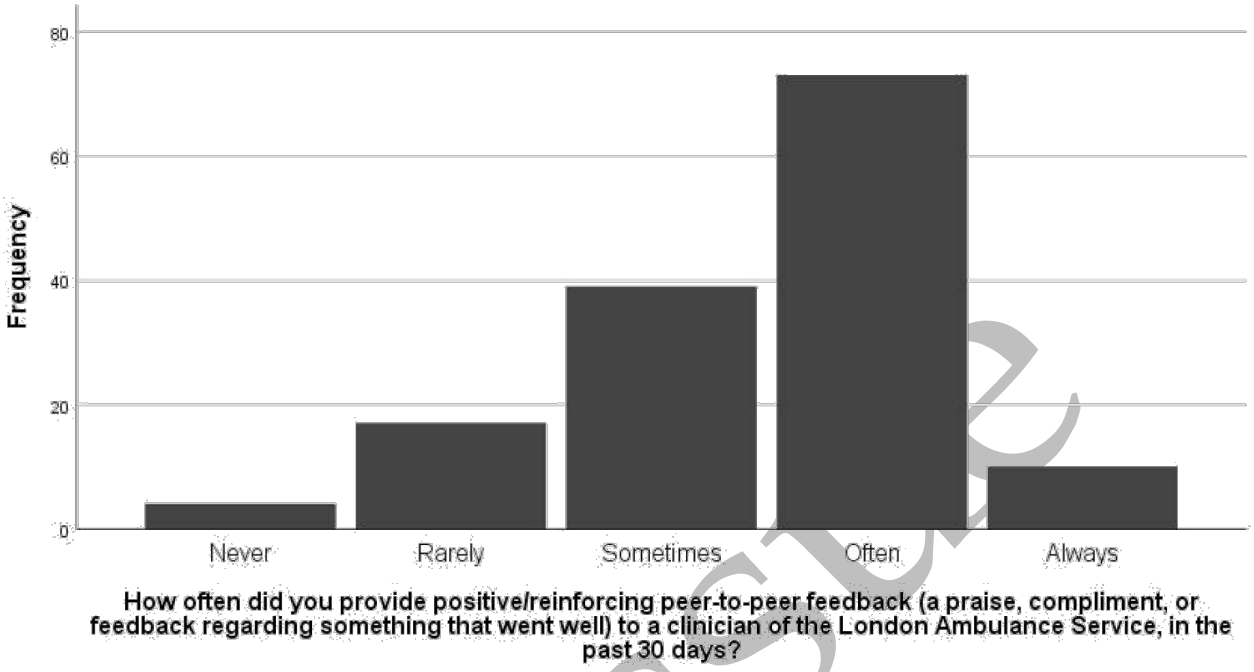

Figure 2. Frequency of providing positive/reinforcing peer-to-peer feedback.

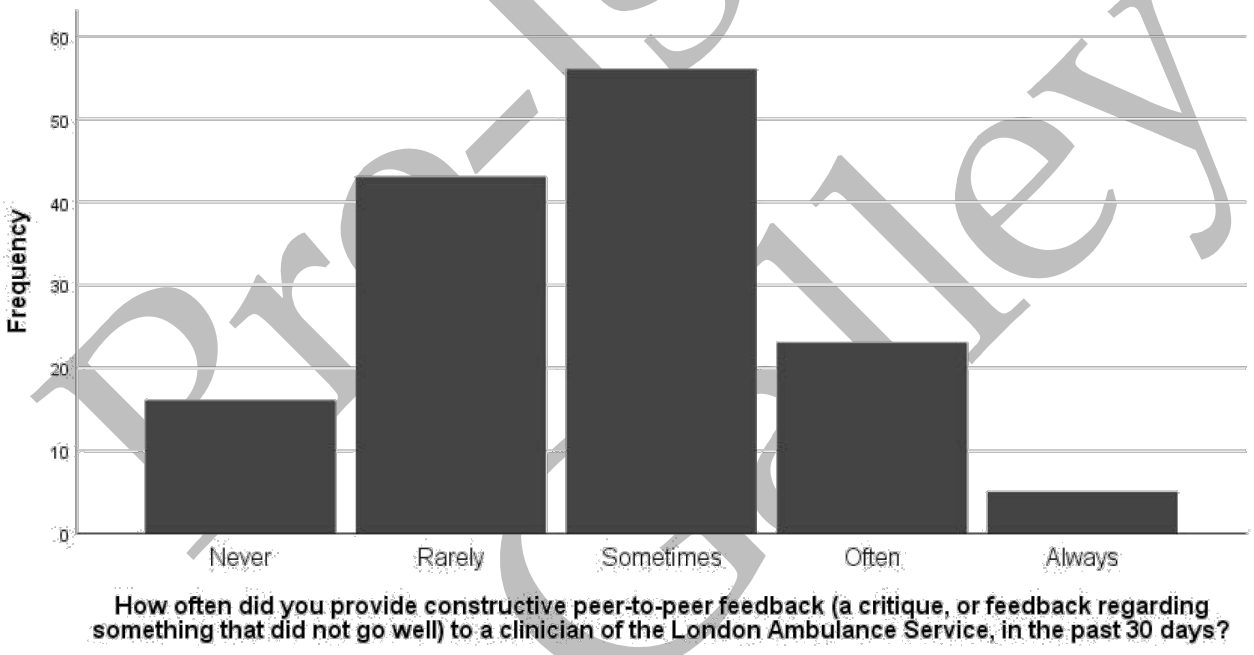

Figure 3. Frequency of providing constructive peer-to-peer feedback.

Clinical Grade Influence on Peer-to-Peer Feedback Provision

There was no statistical significance found between clinical grade and providing any feedback (p-value = 0.073), positive feedback (p-value = 0.497), or constructive feedback (p-value = 0.762).

Years of Experience Influence Peer-to-Peer Feedback Provision

There was no statistical significance between years of experience and providing any feedback (p-value = 0.191), positive feedback (p-value = 0.465), or constructive feedback (p-value = 0.113).

Feedback Training Influence on Peer-to-Peer Feedback Provision

Providing Any Feedback

A higher percentage (47%, n = 32) of clinicians with feedback training provided any form of feedback often or always compared to clinicians without training (23%, n = 17). A higher percentage (37%, n = 28) of clinicians without feedback training provided any feedback rarely or never compared to 19% (n = 12) of clinicians with feedback training. A higher percentage of clinicians without feedback training (40%, n = 30) provided any feedback sometimes compared to clinicians with training (34%, n = 23). P-value = 0.006.

Providing Positive Feedback

A higher percentage of clinicians with feedback training (68%, n = 46) provided positive feedback often or always compared to clinicians with no feedback training (49%, n = 37). More clinicians with no feedback training (n = 17) provided positive feedback rarely or never compared to four clinicians with training. A similar percentage of clinicians with feedback training provided any feedback sometimes (27%, n = 18) compared to clinicians without training (28%, n = 21). P-value = 0.027.

Providing Constructive Feedback

There was no statistical significance between feedback training and providing constructive feedback (p-value = 0.104).

How often did you provide any type of peer-to-peer feedback to a clinician of the London Ambulance Service, in the past 30 days?	
Never	8 (5.6)
Rarely	33 (23.1)
Sometimes	53 (37.1)
Often	38 (26.6)
Always	11 (7.7)
How often did you provide positive/reinforcing peer-to-peer feedback (a praise, compliment, or feedback regarding something that went well) to a clinician of the London Ambulance Service, in the past 30 days?	
Never	4 (2.8)
Rarely	17 (11.9)
Sometimes	39 (27.3)
Often	73 (51)
Always	10 (7.0)
How often did you provide constructive peer-to-peer feedback (a critique, or feedback regarding something that did not go well) to a clinician of the London Ambulance Service, in the past 30 days?	
Never	16 (11.2)
Rarely	43 (30.1)
Sometimes	56 (39.2)
Often	23 (16.1)
Always	5 (3.5)
Have you received any form of training in providing peer-to-peer feedback?	
Yes	68 (47.6)
No	75 (52.4)
How comfortable do you feel in providing peer-to-peer feedback to a clinician of the London Ambulance Service?	
Very uncomfortable	7 (4.9)
Somewhat uncomfortable	24 (16.8)
Neutral	35 (24.5)
Somewhat comfortable	56 (39.2)
Very uncomfortable	21 (14.7)
How would you rate the quality of peer-to-peer feedback you provide to a clinician of the London Ambulance Service, in relation to improving the recipient's performance?	
Very poor	2 (1.4)
Poor	12 (8.4)
Acceptable	64 (44.8)
Good	52 (36.4)
Very good	9 (6.3)
I have not provided any peer-to-peer feedback	4 (2.8)
How satisfied are you with the overall feedback culture within the London Ambulance Service?	
Very dissatisfied	11 (7.7)
Dissatisfied	57 (39.9)
Neither satisfied or dissatisfied	52 (36.4)
Satisfied	22 (15.4)
Very satisfied	1 (0.7)

Table 1. Remaining survey responses (n = 143).

How often did you provide any type of peer-to-peer feedback to a clinician of the London Ambulance Service, in the past 30 days?	Never	Rarely	Sometimes	Often	Always	p Value
Please indicate the years you have worked as an ambulance service clinician.						
2 years or less	2	4	13	3	2	0.191
3 years -10 years	4	24	26	19	5	
11 years -15 years	0	2	8	10	2	
16 years or more	2	3	6	6	2	
Please indicate your current clinical grade.						
Non-paramedic	4	15	12	8	4	0.073
Paramedic	4	18	41	30	7	
Have you received any form of training in providing peer-to-peer feedback?						
Yes	1	12	23	27	5	**0.006**
No	7	21	30	11	6	
How comfortable do you feel in providing peer-to-peer feedback to a clinician of the London Ambulance Service?						
Very uncomfortable	0	4	1	2	0	**<0.001**
Somewhat uncomfortable	1	12	9	1	1	
Neutral	5	6	19	5	0	
Somewhat comfortable	2	10	21	17	6	
Very comfortable	0	1	3	13	4	
How would you rate the quality of peer-to-peer feedback you provide to a clinician of the London Ambulance Service, in relation to improving the recipient's performance?						
Very poor	0	1	1	0	0	**<0.001**
Poor	2	4	4	2	0	
Acceptable	3	19	29	12	1	
Good	1	7	16	20	8	
Very good	0	1	2	4	2	
I have not provided any peer-to-peer feedback	2	1	1	0	0	
How satisfied are you with the overall feedback culture within the London Ambulance Service?						
Very dissatisfied	1	2	5	2	1	0.057
Dissatisfied	2	16	25	13	1	
Neither satisfied nor dissatisfied	3	13	18	14	4	
Satisfied	2	1	5	9	5	
Very satisfied	0	1	0	0	0	
What is your gender?						
Woman	3	21	23	17	7	0.431
Man	5	12	29	21	4	
Non-binary/gender diverse	0	0	1	0	0	

Table 3. Statistical analysis of providing any feedback.

Clinician Comfort in Providing Feedback Influences Peer-to-Peer Feedback Provision

Providing Any Feedback

A higher percentage of clinicians (28%, n = 40) who were somewhat or very comfortable in providing feedback, provided any feedback often or always compared to 9% (n = 13) of clinicians who rarely or never provided any feedback. A total of 12% (n = 17) of clinicians who were very or somewhat uncomfortable rarely or never provided any feedback and 3% (n = 4) provided any feedback often or always. A higher percentage of clinicians who sometimes provided any feedback were somewhat or very comfortable (17%, n = 24) compared to very or somewhat uncomfortable (7%, n = 10). A total of 13% (n = 19) of clinicians who felt neutral provided any feedback sometimes compared to rarely or never (8%, n = 11) or often or always (4%, n = 5). P-value = <0.001.

How often did you provide positive/reinforcing peer-to-peer feedback (a praise, compliment, or feedback regarding something that went well) to a clinician of the London Ambulance Service, in the past 30 days?	Never	Rarely	Sometimes	Often	Always	p Value
Please indicate the years you have worked as an ambulance service clinician.						
2 years or less	0	2	8	10	4	0.465
3 years -10 years	2	13	20	39	4	
11 years -15 years	1	0	6	14	1	
16 years or more	1	2	5	10	1	
Please indicate your current clinical grade.						
Non-paramedic	2	7	9	23	2	0.497
Paramedic	2	10	30	50	8	
Have you received any form of training in providing peer-to-peer feedback?						
Yes	0	4	18	42	4	**0.027**
No	4	13	21	31	6	
How comfortable do you feel in providing peer-to-peer feedback to a clinician of the London Ambulance Service?						
Very uncomfortable	1	3	0	3	0	**0.002**
Somewhat uncomfortable	0	5	9	10	0	
Neutral	3	6	12	13	1	
Somewhat comfortable	0	3	15	32	6	
Very comfortable	0	0	3	15	3	
How would you rate the quality of peer-to-peer feedback you provide to a clinician of the London Ambulance Service, in relation to improving the recipient's performance?						
Very poor	0	0	1	1	0	**0.009**
Poor	1	4	5	1	1	
Acceptable	2	8	20	33	1	
Good	1	3	10	32	6	
Very good	0	0	2	5	2	
I have not provided any peer-to-peer feedback	0	2	1	1	0	
How satisfied are you with the overall feedback culture within the London Ambulance Service?						
Very dissatisfied	2	2	6	1	0	**0.001**
Dissatisfied	1	8	19	27	2	
Neither satisfied nor dissatisfied	0	6	12	29	5	
Satisfied	1	1	1	16	3	
Very satisfied	0	0	1	0	0	
What is your gender?						
Woman	1	11	18	36	5	0.781
Man	3	6	21	36	5	
Non-binary/gender diverse	0	0	0	1	0	

Table 4. Statistical analysis of providing positive/reinforcing feedback.

Providing Positive Feedback

A higher percentage of clinicians who were somewhat or very comfortable provided positive feedback often or always (39%, n = 56) compared to never or rarely (2%, n = 3). A lower percentage of clinicians who were very or somewhat uncomfortable rarely or never provided positive feedback (6%, n = 9) compared to often or always (9%, n = 13). A higher percentage of clinicians who sometimes provided positive feedback were somewhat or very comfortable (13%, n = 18) compared to very or somewhat uncomfortable (6%, n = 9). A total of 8% (n = 12) of clinicians who felt neutral provided any feedback sometimes compared to rarely or never (6%, n = 9) or often or always (10%, n = 14). P-value = 0.002.

How often did you provide constructive peer-to-peer feedback (a critique, or feedback regarding something that did not go well) to a clinician of the London Ambulance Service, in the past 30 days?	Never	Rarely	Sometimes	Often	Always	p Value
Please indicate the years you have worked as an ambulance service clinician.						
2 years or less	3	8	10	2	1	0.113
3 years -10 years	8	28	31	8	1	
11 years -15 years	1	3	10	8	0	
16 years or more	4	4	5	5	1	
Please indicate your current clinical grade.						
Non-paramedic	6	12	15	9	1	0.752
Paramedic	10	31	41	14	4	
Have you received any form of training in providing peer-to-peer feedback?						
Yes	4	17	33	12	2	0.104
No	12	26	23	11	3	
How comfortable do you feel in providing peer-to-peer feedback to a clinician of the London Ambulance Service?						
Very uncomfortable	2	2	2	1	0	**<0.001**
Somewhat uncomfortable	3	13	7	1	0	
Neutral	8	12	12	3	0	
Somewhat comfortable	2	14	29	9	2	
Very comfortable	1	2	6	9	3	
How would you rate the quality of peer-to-peer feedback you provide to a clinician of the London Ambulance Service, in relation to improving the recipient's performance?						
Very poor	1	1	0	0	0	**<0.001**
Poor	2	8	2	0	0	
Acceptable	9	23	28	4	0	
Good	2	9	22	16	3	
Very good	0	0	4	3	2	
I have not provided any peer-to-peer feedback	2	2	0	0	0	
How satisfied are you with the overall feedback culture within the London Ambulance Service?						
Very dissatisfied	3	3	3	2	0	0.281
Dissatisfied	6	20	24	6	1	
Neither satisfied nor dissatisfied	5	15	21	10	1	
Satisfied	1	5	8	5	3	
Very satisfied	1	0	0	0	0	
What is your gender?						
Woman	7	25	27	9	3	0.745
Man	9	18	28	14	2	
Non-binary/gender diverse	0	0	1	0	0	

Table 5. Statistical analysis of providing constructive feedback.

Providing Constructive Feedback

A higher percentage of clinicians who were somewhat or very uncomfortable never or rarely provided constructive feedback (14%, n = 20) compared to often or always (1%, n = 2). A higher percentage of clinicians who were somewhat or very comfortable provided constructive feedback often or always (16%, n = 23) compared to never or rarely (13%, n = 19). A higher percentage of clinicians who sometimes provided constructive feedback were somewhat or very comfortable (24%, n = 35) compared to very or somewhat uncomfortable (6%, n = 9). A total of 8% (n = 12) of clinicians who felt neutral provided constructive feedback sometimes compared to rarely or never (14%, n = 20) or often or always (2%, n = 3). P-value = <0.001.

Self-rated Quality of Feedback Influence on Peer-to-Peer Feedback Provision

Providing Any Feedback

A higher percentage of clinicians who rated their quality of feedback provision as good or very good provided any feedback often or always (24%, n = 34) compared to rarely or never providing any feedback (6%, n = 9). A higher percentage of clinicians who rated their quality of feedback provision as poor or very poor provided any feedback rarely or never (5%, n = 7) compared to often or always (1%, n = 2). A higher percentage of clinicians who sometimes provided any feedback rated their feedback quality as good or very good (13%, n = 18) compared to poor or very poor (4%, n = 5). A total of 20% of clinicians (n = 29) that rated their quality of feedback as acceptable gave any feedback sometimes compared to rarely or never (15%, n = 22) or often or always (9%, n = 13). P-value = 0.002.

Providing Positive Feedback

A higher percentage of clinicians who rated their quality of feedback provision as good or very good provided positive feedback often or always (31%, n = 45) compared to never or rarely (3%, n = 4). A similar percentage of clinicians who rated their quality of feedback provision as poor or very poor provided positive feedback rarely or never (3%, n = 5) or often or always (2%, n = 3). A higher percentage of clinicians who sometimes provided positive feedback rated their feedback quality as good or very good (8%, n = 12) compared to poor or very poor (4%, n = 6). A total of 14% of clinicians (n = 20) that rated their quality of feedback as acceptable gave positive feedback sometimes compared to rarely or never (7%, n = 10) or often or always (24%, n = 34). P-value = 0.009.

Providing Constructive Feedback

A higher number of clinicians who rated their quality of feedback provision as very poor or poor provided constructive feedback rarely or never (8%, n = 12) compared to zero clinicians (n = 0) providing it often or always. A higher percentage of clinicians who rated their quality of feedback as good or very good provided constructive feedback (17%, n = 24) compared to never or rarely (8%, n = 11). A higher percentage of clinicians who sometimes provided constructive feedback rated their feedback quality as good or very good (18%, n = 26) compared to poor or very poor (1%, n = 2). A total of 20% of clinicians (n = 28) that rated their quality of feedback as acceptable gave constructive feedback sometimes compared to rarely or never (22%, n = 32) or often or always (3%, n = 4). P-value = < 0.001.

Satisfaction With Feedback Culture Influence on Peer-to-Peer Feedback Provision

Providing Any Feedback

There was no statistical significance between satisfaction with feedback culture and providing any feedback (p-value = 0.057).

Providing Positive Feedback

A higher percentage of clinicians who were satisfied or very satisfied with the organizational feedback culture provided positive feedback often or always (13%, n = 19) compared to rarely or never (1%, n = 2). A higher percentage of clinicians who were

dissatisfied or very dissatisfied provided positive feedback often or always (21%, n = 30) compared to rarely or never (9%, n = 13). A higher percentage of clinicians who provided positive feedback sometimes were dissatisfied or very dissatisfied with the organizational feedback culture (18%, n = 25) compared to satisfied or very satisfied (1%, n = 2). A total of 8% of clinicians (n = 12) that were neither satisfied or dissatisfied with the organizational feedback culture gave positive feedback sometimes compared to never or rarely (4%, n = 6) or often or always (24%, n = 34). P-value = 0.001.

Providing Constructive Feedback

There was no statistical significance between satisfaction with feedback culture and providing constructive feedback (p-value = 0.281).

Gender Influence on Peer-to-Peer Feedback Provision

There was no statistical significance between gender and providing any feedback (p-value = 0.431), positive feedback (p-value = 0.781), or constructive feedback (p-value = 0.745).

DISCUSSION

Our results add to the out-of-hospital literature base by describing how often emergency ambulance clinicians provided peer-to-peer feedback and the statistical significance between various factors. Emergency ambulance clinicians provided positive peer-to-peer feedback more frequently than constructive or other types. The frequency of peer-to-peer feedback was associated with factors such as training, perceptions of organization culture, quality of feedback provided, and how comfortable emergency ambulance clinicians felt in providing feedback. Our results show no statistical significance between the frequency of emergency ambulance clinicians providing peer-to-peer feedback and experience, clinical grade, or gender.

Although over half of our sample set did not receive any training in providing peer-to-peer feedback, this is comparable to other healthcare settings where most clinical teachers in medicine receive little or no instruction in providing feedback (Cantillon & Sargeant, 2008; Joyce, Cantillon, & Geoghegan, 2022). Having trained feedback facilitators promotes active engagement from clinicians and is heavily integrated as part of Crew Resource Management to increase system safety (Hunter, 2016). Peer-to-peer feedback is not emphasized in training programs, leaving staff underequipped to provide or recognize feedback, and engage with feedback processes (Joyce et al., 2022). Feedback training is primarily aimed at managers or mentoring staff to deliver feedback through formal mechanisms such as performance reviews. However, there should be consideration for not limiting feedback training to managerial levels, as all emergency ambulance clinicians commonly desire feedback (Eaton-Williams et al., 2020b; McGuire et al., 2021; Morrison et al., 2017; Wilson et al., 2022). Clinicians perceive existing formal feedback mechanisms as inadequate and providing them with effective training on giving peer-to-peer feedback represents an opportunity for organizations to reduce this perceived feedback gap by increasing rates through informal means (Cash et al., 2017; Persse et al., 2002). This clinician curiosity for this domain should prompt organizations or education providers to include training in feedback provision within the hard curricula for personal and professional development. This should emphasize the wider contextual benefits before clinicians engage with professional normalization and integration of the hidden

curricula. Our results indicate that in the absence of feedback training, rates of constructive feedback decrease. When constructive feedback is not provided to correct behaviors, clinicians often rely on guesswork, potentially at the expense of patients, thus creating a risk to patient safety (Cantillon & Sargeant, 2008). However, providing peers with constructive feedback contains barriers and risks to the provider and recipient if not appropriately delivered.

Training in feedback provision should emphasize the provision of constructive feedback to remove some of the personal discomfort experienced (Kelly & Richards, 2019). Peer-to-peer feedback is often positively skewed, which is also reflected in our results, and is attributed to a reasonable unwillingness of clinicians to upset colleagues (Joyce et al., 2022; Subha Ramani et al., 2017; Stockdill et al., 2023; Tham, Burr, & Boohan, 2017). A clear position of positive intent should be established early in any feedback process to reduce the likelihood of constructive feedback being interpreted as a personal attack, or not being recognized as feedback (Cantillon & Sargeant, 2008; Joyce et al., 2022; Kelly & Richards, 2019). This is relevant in the out-of-hospital environment as emergency ambulance clinicians often work in close-knit teams and upsetting the crew dynamic by incorrectly providing constructive feedback could reduce the ability to form cohesive teams in high-stress environments (Patterson et al., 2012). There is a balance of providing constructive feedback based on context because clinicians often have a finite capacity to deal with feedback, and not all events require feedback (Brown et al., 2019). Our results indicate that emergency ambulance clinicians rarely provide no feedback at all, reinforcing the existing literature they are supportive of their peers and want to provide at least some degree of feedback or support (Eaton-Williams et al., 2020b; Wilson et al., 2022). This study did not explore the delivery methods of how clinicians provided peer-to-peer feedback. However, existing methods may not be suitable in the out-of-hospital environment.

Within healthcare, some well-rehearsed examples of feedback models include informal feedback, the feedback sandwich, the Pendleton model, and reflective feedback conversations (Cantillon & Sargeant, 2008; Pendleton, 1984; Sargeant, Mann, van der Vleuten, & Metsemakers, 2009). These feedback methods have been widely implemented across other healthcare settings and often form feedback frameworks in the out-of-hospital environment. However, they were developed within a medical education context and may not fully address the needs of the unique out-of-hospital environment (Wilson et al., 2023b). Providing a standardized feedback process has been shown to improve emergency ambulance clinician compliance with documentation and interventions through modifying behaviors (Choi et al., 2014; Landman et al., 2013; O'Connor & Megargel, 1994; Persse et al., 2002). As a result, either a bespoke or tailored model based on existing frameworks for the out-of-hospital environment should be implemented to improve consistency and reduce the feedback inequalities commonly experienced by emergency ambulance clinicians (Eaton-Williams et al., 2020b; Tham et al., 2017; Wilson et al., 2022). Our results also indicate that emergency ambulance clinicians generally feel comfortable and perceive their feedback as adequate quality. However, the feedback content and model used, if any, were not explored in this study. It is recognized that feedback should be delivered promptly in a controlled setting, however, this is only sometimes possible due to the unique out-of-hospital environment (Eaton-Williams et al., 2020b; Kelly & Richards, 2019). Appropriate content compliments the timing of feedback and should be

specific, describe actions, and prompt self-reflection of the recipient to improve future performance (Cantillon & Sargeant, 2008; Lyon, Clarke, Milligan, & Clegg, 2012; Watling & Ginsburg, 2019). The credibility of the person providing the feedback is essential, as senior paramedic training officers highly value structured feedback from higher sources of clinical authority (Avery, Thompson, & Cowburn, 2023; Bing-You et al., 2017). However, this historic top-down feedback approach within healthcare should be challenged. Feedback frameworks should encourage a bi-directional system where all grades and experience levels are encouraged to engage in peer-to-peer feedback and share individual perspectives of an event (Joyce et al., 2022). Alongside appropriate content and feedback models, the underlying organizational culture can influence how feedback frameworks are developed (Berger, Stalmeijer, Marty, & Berendonk, 2023).

Organizations should be encouraged to establish their feedback culture aligned with the institutional and staff needs (Brown et al., 2019). Our results show that most clinicians are dissatisfied with the organizational feedback culture despite high peer-to-peer feedback rates. Interestingly, there was a statistically significant association between dissatisfaction with organizational culture and providing positive feedback. This suggests emergency ambulance clinicians still wish to provide higher rates of positive feedback because of the sheer willingness regardless of factors, or clinicians are frustrated with the culture and wish to invoke positive changes from within their practice. However, promoting a culture of niceness does not always facilitate honest feedback and being overly polite tends to avoid peers providing constructive feedback, which may be reflected in this study (S. Ramani, Könings, Ginsburg, & van der Vleuten, 2019; Subha Ramani et al., 2017). Consequently, there is an opportunity for organizations to promote an open and honest feedback culture where each instance of feedback is reinforced as an everyday learning opportunity (Hunter, 2016; Stretton, 2020; Tham et al., 2017). This honest or 'just' culture should also emphasize an underlying principle of trust between peers because clinicians should feel safe in their environment to proactively seek feedback from their peers without fear of reprimand (S. Ramani et al., 2019). Organizations, however, generally provide quantitative feedback with varying success when staff are not meeting expected performance against expected quality assurance benchmarks (O'Connor & Megargel, 1994; Persse et al., 2002). There is an opportunity for a cultural shift to increase the availability of personalized qualitative feedback developed around the recipient and provided with context (Brown et al., 2019). This is supported by out-of-hospital qualitative studies that identified emergency ambulance clinicians strongly value targeted feedback despite its labor-intensive process and describe it as an essential aspect of personal, emotional, and professional development (Eaton-Williams et al., 2020b; Morrison et al., 2017; Wilson et al., 2022). Modern healthcare systems now employ a diverse range of staff and the effects of demographics on feedback provision should not be discounted.

Although we found no statistical significance in this study, the role of experience, skill grade, and gender may still influence feedback provision. Higher clinical grades often provide more feedback as they are more likely to receive feedback and have higher exposure to feedback processes (Cash et al., 2017). Consequently, the importance of implementing feedback systems for all clinicians, and not ones limited to having clinical responsibility should be emphasized. Our results indicated that experience was not an associated factor in providing peer-to-peer feedback and contrasted existing out-of-hospital feedback literature where clinicians with less than two years of experience or with

higher clinical grades were more likely to receive feedback (Cash et al., 2017; McGuire et al., 2021). Senior emergency ambulance clinicians are often overlooked, however, it is noted that this group of staff may not recognize when feedback is being delivered due to their experience and seniority (Cash et al., 2017). Most clinicians in our study had similar years of experience and clinical grade and were perhaps more comfortable in providing feedback to their equivalent peers. At a professional and organizational level, it should be emphasized that feedback is a continuum provided throughout the clinician's career rather than condensing into key learning or consolidation periods (van de Ridder, McGaghie, Stokking, & ten Cate, 2015). In contrast to previous studies, we had an equal gender split, while similar studies had higher male response rates (Cash et al., 2017; McGuire et al., 2021). Although we did not examine the exact recipient of peer-to-peer feedback, the role of biases could have influenced the type of feedback amongst peers because there is a documented negative bias against women and non-white staff within healthcare (Gopal, Chetty, O'Donnell, Gajria, & Blackadder-Weinstein, 2021). Additionally, each clinician's interpretation of feedback and their own beliefs and experiences would have influenced any peer-to-peer feedback provided.

LIMITATIONS

The study has a low response rate of approximately three percent, which may limit the generalizability of results. However, this aligns with previous research, where a national EMS feedback study in the USA yielded a five percent response rate (Cash et al., 2017). A higher proportion of experienced, qualified paramedics participated in this survey, which is comparable to existing studies and may not represent the broader emergency ambulance service (McGuire et al., 2021). This study was conducted in a busy metropolitan ambulance service that may have different feedback requirements from other emergency ambulance settings. Participants may have experienced recall bias because the survey asked about feedback provision within the last 30 days. Self-selection bias may be present as those who were more interested in feedback would respond. This paper only reports if the results were significant and further analysis including effect sizes, odds-ratio or relative-risks, would have strengthened the results. The term 'feedback' is a broad topic within healthcare and was not defined in this study. As a result, it relied on the clinician's interpretation of what feedback entailed and may not capture all feedback instances.

PRACTICAL IMPLICATIONS

While individualized feedback is often resource-intensive, peer-to-peer feedback represents a low resource and practical method to promote on-the-job learning opportunities. Organizations and education providers should provide feedback provision training within the hard curricula to all clinical grades and experience brackets to improve recognition and engagement with feedback processes. The negative connotations of constructive feedback should be addressed as this type of feedback is essential for patient safety and personal and professional development. A standardized feedback framework will improve consistency and help reduce feedback inequalities.

FUTURE RESEARCH

Future longitudinal studies should explore the effects of providing emergency ambulance clinicians with training in peer-to-peer feedback provision. Further studies should

also acquire the method and content of peer-to-peer feedback provision alongside the specific requirements desired from feedback. Emergency ambulance clinicians' input should be gathered to develop an out-of-hospital feedback framework.

CONCLUSION

Out-of-hospital emergency ambulance clinicians tended to give higher rates of positive peer-to-peer feedback compared to other types of feedback and scarcely provided no feedback at all. There was a statistical significance between feedback provision and training, organizational culture, clinician comfort in the provision, and self-rated quality of feedback. There is an organization incentive to promote an honest feedback culture to address personal and professional feedback requirements. All emergency ambulance clinicians should receive feedback training to increase engagement with the feedback process and there is opportunity for training to be built into education curricula to increase awareness of the benefits of constructive feedback. Clinicians felt comfortable providing peer-to-peer feedback and rated their quality of feedback as adequate. Developing a standardized out-of-hospital feedback framework should reduce feedback inequalities. Associated factors for peer-to-peer feedback, such as experience, clinical grade, or gender, were not statistically significant.

REFERENCES

Avery, P., Thompson, C., & Cowburn, P. (2023). Training the trainers: Improving the quality of education delivered to paramedics through a simulation-debrief model. *British Paramedic Journal, 7*(4), 51–56. https://doi.org/10.29045/14784726.2023.3.7.4.51

Berger, S., Stalmeijer, R. E., Marty, A. P., & Berendonk, C. (2023). Exploring the impact of entrustable professional activities on feedback culture: A qualitative study of anesthesiology residents and attendings. *Academic Medicine, 98*(7), 836–843. https://doi.org/10.1097/acm.0000000000005188

Bing-You, R., Hayes, V., Varaklis, K., Trowbridge, R., Kemp, H., & McKelvy, D. (2017). Feedback for learners in medical education: What is known? A scoping review. *Academic Medicine, 92*(9), 1346–1354. https://doi.org/10.1097/acm.0000000000001578

Brown, B., Gude, W. T., Blakeman, T., van der Veer, S. N., Ivers, N., Francis, J. J., et al. (2019). Clinical performance feedback intervention theory (CP-FIT): A new theory for designing, implementing, and evaluating feedback in health care based on a systematic review and meta-synthesis of qualitative research. *Implementation Science, 14*(1), 40. https://doi.org/10.1186/s13012-019-0883-5

Cantillon, P., & Sargeant, J. (2008). Giving feedback in clinical settings. *BMJ, 337*, a1961. https://doi.org/10.1136/bmj.a1961

Cash, R. E., Crowe, R. P., Rodriguez, S. A., & Panchal, A. R. (2017). Disparities in feedback provision to emergency medical services professionals. *Prehospital Emergency Care, 21*(6), 773–781. https://doi.org/10.1080/10903127.2017.1328547

Choi, B., Tsai, D., McGillivray, C. G., Amedee, C., Sarafin, J. A., & Silver, B. (2014). Hospital-directed feedback to emergency medical services improves prehospital performance. *Stroke, 45*(7), 2137–2140. https://doi.org/10.1161/STROKEAHA.114.005679

Eaton-Williams, P., Mold, F., & Magnusson, C. (2020a). Effective clinical feedback provision to ambulance clinicians: A literature review. *Journal of Paramedic Practice, 12*(3), 109–117. https://doi.org/10.12968/jpar.2020.12.3.109

Eaton-Williams, P., Mold, F., & Magnusson, C. (2020b). Exploring paramedic perceptions of feedback using a phenomenological approach. *British Paramedic Journal, 5*(1), 7–14. https://doi.org/10.29045/14784726.2020.06.5.1.7

Ende, J. (1983). Feedback in clinical medical education. *JAMA, 250*(6), 777–781. https://jamanetwork.com/journals/jama/article-abstract/387652

Gopal, D. P., Chetty, U., O'Donnell, P., Gajria, C., & Blackadder-Weinstein, J. (2021). Implicit bias in healthcare: Clinical practice, research and decision making. *Future Healthcare Journal, 8*(1), 40–48. https://doi.org/10.7861/fhj.2020-0233

Health & Care Professions Council. (2023). *The standards of proficiency for paramedics.* https://www.hcpc-uk.org/standards/standards-of-proficiency/paramedics

Hunter, L. A. (2016). Debriefing and feedback in the current healthcare environment. *Journal of Perinatal & Neonatal Nursing, 30*(3), 174–178. https://doi.org/10.1097/jpn.0000000000000173

Ivers, N., Jamtvedt, G., Flottorp, S., Young, J. M., Odgaard-Jensen, J., French, S. D., et al. (2012). Audit and feedback: Effects on professional practice and healthcare outcomes. *Cochrane Database of Systematic Reviews, 2012*(6), CD000259. https://doi.org/10.1002/14651858.CD000259.pub3

Joyce, J., Cantillon, P., & Geoghegan, R. (2022). Peer feedback in graduate training: A phenomenological investigation of possibilities. *Medical Teacher, 44*(12), 1362–1367. https://doi.org/10.1080/0142159X.2022.2094229

Kelly, E., & Richards, J. B. (2019). Medical education: Giving feedback to doctors in training. *BMJ, 366*, l4523. https://doi.org/10.1136/bmj.l4523

Kim, H. Y. (2017). Statistical notes for clinical researchers: Chi-squared test and Fisher's exact test. *Restorative Dentistry & Endodontics, 42*(2), 152–155. https://doi.org/10.5395/rde.2017.42.2.152

Landman, A. B., Spatz, E. S., Cherlin, E. J., Krumholz, H. M., Bradley, E. H., & Curry, L. A. (2013). Hospital collaboration with emergency medical services in the care of patients with acute myocardial infarction: Perspectives from key hospital staff. *Annals of Emergency Medicine, 61*(2), 185–195. https://doi.org/10.1016/j.annemergmed.2012.10.009

Lyon, R. M., Clarke, S., Milligan, D., & Clegg, G. R. (2012). Resuscitation feedback and targeted education improves quality of pre-hospital resuscitation in Scotland. *Resuscitation, 83*(1), 70–75. https://doi.org/10.1016/j.resuscitation.2011.07.016

McGuire, S. S., Luke, A., Klassen, A. B., Myers, L. A., Mullan, A. F., & Sztajnkrycer, M. D. (2021). It's time to talk to prehospital providers: Feedback disparities among ground-based emergency medical services providers and its impact on job satisfaction. *Prehospital and Disaster Medicine, 36*(4), 486–494. https://doi.org/10.1017/s1049023x21000601

Morrison, L., Cassidy, L., Welsford, M., & Chan, T. M. (2017). Clinical performance feedback to paramedics: What they receive and what they need. *AEM Education and Training, 1*(2), 87–97. https://doi.org/10.1002/aet2.10028

O'Connor, R. E., & Megargel, R. E. (1994). The effect of a quality improvement feedback loop on paramedic skills, charting, and behavior. *Prehospital and Disaster Medicine, 9*(1), 35–39. https://doi.org/10.1017/s1049023x00040814

Pendleton, D. (1984). *The consultation: An approach to learning and teaching.* Oxford University Press.

Patterson, P. D., Weaver, M. D., Weaver, S. J., Rosen, M. A., Todorova, G., Weingart, L. R., et al. (2012). Measuring teamwork and conflict among emergency medical technician personnel. *Prehospital Emergency Care, 16*(1), 98–108. https://doi.org/10.3109/10903127.2011.616260

Persse, D. E., Key, C. B., & Baldwin, J. B. (2002). The effect of a quality improvement feedback loop on paramedic-initiated nontransport of elderly patients. *Prehospital Emergency Care, 6*(1), 31–35. https://doi.org/10.1080/10903120290938742

Ramani, S., Könings, K. D., Ginsburg, S., & van der Vleuten, C. P. M. (2019). Twelve tips to promote a feedback culture with a growth mind-set: Swinging the feedback pendulum from recipes to relationships. *Medical Teacher, 41*(6), 625–631. https://doi.org/10.1080/0142159x.2018.1432850

Ramani, S., Post, S. E., Könings, K., Mann, K., Katz, J. T., & van der Vleuten, C. (2017). "It's just not the culture": A qualitative study exploring residents' perceptions of the impact of institutional culture on feedback. *Teaching and Learning in Medicine, 29*(2), 153–161. https://doi.org/10.1080/10401334.2016.1244014

Sargeant, J. M., Mann, K. V., van der Vleuten, C. P., & Metsemakers, J. F. (2009). Reflection: A link between receiving and using assessment feedback. *Advances in Health Sciences Education, 14*(3), 399–410. https://doi.org/10.1007/s10459-008-9124-4

Stockdill, M., Hendricks, B., Barnett, M. D., Bakitas, M., & Harada, C. N. (2023). Peer observation of teaching: A feasible and effective method of physician faculty development. *Gerontology & Geriatrics Education, 44*(2), 261–273. https://doi.org/10.1080/02701960.2021.2019030

Stretton, P. (2020). The 'just culture': Why it is not just, and how it could be. *British Journal of Nursing, 26*(11), 304–310. https://doi.org/10.12968/bjhc.2020.0058

Tavares, W., Eppich, W., Cheng, A., Miller, S., Teunissen, P. W., Watling, C. J., et al. (2020). Learning conversations: An analysis of the theoretical roots and their manifestations of feedback and debriefing in medical education. *Academic Medicine, 95*(7), 1020–1025. https://doi.org/10.1097/acm.0000000000002932

Tham, T. C., Burr, B., & Boohan, M. (2017). Evaluation of feedback given to trainees in medical specialties. *Clinical Medicine, 17*(4), 303–306. https://doi.org/10.7861/clinmedicine.17-4-303

van de Ridder, J. M., McGaghie, W. C., Stokking, K. M., & ten Cate, O. T. (2015). Variables that affect the process and outcome of feedback, relevant for medical training: A meta-review. *Medical Education, 49*(7), 658–673. https://doi.org/10.1111/medu.12744

von Elm, E., Altman, D. G., Egger, M., Pocock, S. J., Gøtzsche, P. C., & Vandenbroucke, J. P. (2007). Strengthening the reporting of observational studies in epidemiology (STROBE) statement: Guidelines for reporting observational studies. *BMJ, 335*(7624), 806–808. https://doi.org/10.1136/bmj.39335.541782.AD

Watling, C. J., & Ginsburg, S. (2019). Assessment, feedback and the alchemy of learning. *Medical Education, 53*(1), 76–85. https://doi.org/10.1111/medu.13645

Wilson, C., Howell, A.-M., Janes, G., & Benn, J. (2022). The role of feedback in emergency ambulance services: A qualitative interview study. *BMC Health Services Research, 22*(1), 296. https://doi.org/10.1186/s12913-022-07676-1

Wilson, C., Janes, G., Lawton, R., & Benn, J. (2023a). Feedback for emergency ambulance staff: A national review of current practice informed by realist evaluation methodology. *Healthcare (Basel), 11*(16). https://doi.org/10.3390/healthcare11162229

Wilson, C., Janes, G., Lawton, R., & Benn, J. (2023b). Types and effects of feedback for emergency ambulance staff: A systematic mixed studies review and meta-analysis. *BMJ Quality & Safety, 32*(10), 573–588. https://doi.org/10.1136/bmjqs-2022-015634

APPENDIX

Survey questions

1. How often did you provide any type of peer-to-peer feedback to a clinician of the London Ambulance Service, in the past 30 days?
   A. Never
   B. Rarely
   C. Sometimes
   D. Often
   E. Always
2. How often did you provide positive/reinforcing peer-to-peer feedback (a praise, compliment, or feedback regarding something that went well) to a clinician of the London Ambulance Service, in the past 30 days?
   A. Never
   B. Rarely
   C. Sometimes
   D. Often
   E. Always
3. How often did you provide constructive peer-to-peer feedback (a critique, or feedback regarding something that did not go well) to a clinician of the London Ambulance Service, in the past 30 days?
   A. Never
   B. Rarely
   C. Sometimes
   D. Often
   E. Always
4. Please indicate the years you have worked as an ambulance service clinician
   A. 2 years or less
   B. 3 years – 10 years
   C. 11 years – 15 years
   D. 16 years or more
5. Please indicate your current clinical grade
   A. ER/FPOS
   B. NETS
   C. T/AAP
   D. AAP
   E. T/EMT
   F. EMT
   G. NQP1
   H. NQP2
   I. Band 6 paramedic
   J. Band 7 paramedic
   K. Other: please specify
6. Have you received any form of training in providing peer-to-peer feedback?
   A. Yes
   B. No

7. How comfortable do you feel in providing peer-to-peer feedback to a clinician of the London Ambulance Service?
   A. Very uncomfortable
   B. Somewhat uncomfortable
   C. Neutral
   D. Somewhat comfortable
   E. Very comfortable
8. How would you rate the quality of peer-to-peer feedback you provide to a clinician of the London Ambulance Service, in relation to improving the recipient's performance?
   A. Very poor
   B. Poor
   C. Acceptable
   D. Good
   E. Very good
   F. I have not provided any peer-to-peer feedback
9. How satisfied are you with the overall feedback culture within the London Ambulance Service?
   A. Very dissatisfied
   B. Dissatisfied
   C. Neither dissatisfied nor satisfied
   D. Satisfied
   E. Very satisfied
10. What is your gender?
   A. Woman
   B. Man
   C. Non-binary / gender diverse
   D. My gender isn't listed. I identify as (please type below):
   E. Prefer not to say