



ELSEVIER

Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Air Medical Journal

journal homepage: <http://www.airmedicaljournal.com/>

Original Research

A Psychological Resilience Briefing Intervention for Helicopter Emergency Medical Service Observers

Matthew Walton, MA (Cantab) MB BChir¹, Sarah McLachlan, BSc, MSc, PhD^{2,3,*},
 Matthew Nelson, BSc(Hons) MBBS AICSM⁴,
 Petra Skeffington, BA(Hons), MSc, PhD⁵, Laurie Phillipson, MSc DipIMC RCSEd²,
 Michael D. Christian, MD, MSc (Public Health), FRCPC⁶

¹ St George's University Hospitals National Health Service Foundation Trust, London, United Kingdom

² Essex and Herts Air Ambulance, Essex, United Kingdom

³ Anglia Ruskin University, Essex, United Kingdom

⁴ School of Anaesthesia and Intensive Care, Health Education Yorkshire and Humber, Health Education England, Leeds, United Kingdom

⁵ Murdoch University, Murdoch, Western Australia, Australia

⁶ London's Air Ambulance, Royal London Hospital, London, United Kingdom

A B S T R A C T

Objective: Helicopter emergency medical services (HEMS) observers may be at risk of negative psychological effects associated with exposure to traumatic events during shifts. This article describes a quality improvement project for HEMS observers at Essex & Herts Air Ambulance.

Methods: A psychological resilience briefing intervention (PRBi) was developed and delivered during induction training with 60 HEMS observers. The PRBi aimed to raise awareness of traumatic events that observers may experience and provided basic education on 5 domains, including likely forms of trauma exposure, possible psychological reactions, advice on coping strategies and supporting colleagues, and resources that they could use if required. The intervention was intended to bolster resilience and reduce posttraumatic stress disorder symptoms, and to encourage adaptive coping styles in observers.

Results: Observers learned from and valued the PRBi; statistically significant increases were observed in awareness of the 5 domains from pre- to post-delivery, and free-text responses cited a variety of benefits to the observers. There was no indication that the PRBi caused harm.

Conclusion: The PRBi has now been included in the routine induction of observers at Essex & Herts Air Ambulance and has the potential to be repurposed for use in other settings, including medical schools.

© 2022 The Authors. Published by Elsevier Inc. on behalf of Air Medical Journal Associates. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>)

Helicopter emergency medical services (HEMS) routinely attend incidents involving serious injury, critical illness, and sometimes death. Some HEMS offer educational experience to observers through observer shifts. A HEMS observer is similar to a work experience

Essex & Herts Air Ambulance provided all funding. Three of the 6 authors were Essex & Herts Air Ambulance employees. Three authors, including the chief investigator, remain independent of Essex & Herts Air Ambulance, achieving a reasonable balance of objectivity.

The authors thank Professor Neil Greenbury and Dr Guy Harvey (Consultant Psychiatrists).

*Address for correspondence: Sarah McLachlan, Essex and Herts Air Ambulance, Flight House, Earls Colne Business Park, Earls Colne, Colchester, Essex, UK CO6 2NS.

E-mail address: sarah.mclachlan@ehaat.org (S. McLachlan).

student seeking to learn and develop through observation. Often, they are medical students, paramedic students, or physician associates who aspire to work in this field. During observation shifts, observers are also exposed to these incidents. Some are potentially traumatic events (PTEs) that may cause a negative psychological effect,¹⁻³ the nature of which can include anxiety,⁴ depression,^{3,4} moral injury,⁵ and even posttraumatic stress disorder (PTSD).¹⁻⁴

Student observers might be especially at risk because they are more junior. Junior clinicians may be more affected compared with senior clinicians due to less experience, understanding, education, preparedness, and sense of control over incidents.⁶ A psychological resilience briefing intervention (PRBi) was proposed and delivered to observers before their placement. It was hoped that by doing so, any

negative psychological effects of exposure to incidents, such as PTSD, could be reduced.

No significant benefit of any primary PTSD prevention for emergency service personnel was recorded^{7,8} at the time the PRBi was conceived. Therefore, the PRBi would be unlikely to prevent PTSD, but research suggests that interventions boosting “resilience” may protect individuals against “negative effects of stressors.”⁹ Resilience can be defined as the ability to adapt and cope successfully despite threatening or challenging situations.¹⁰ Although most definitions reference adversity and positive adaptation¹¹ and acknowledge that resilience varies across different contexts over time, a consensus is yet to be reached. Richardson’s metatheory of resilience and resiliency emphasizes protective factors’ influence on responses to adversity, shaping whether individuals return to their baseline, grow stronger, or become acopic.¹²

In the context of HEMS observers, the posttraumatic resilience model is appropriate, extending the work of Richardson’s metatheory by identifying an individual’s coping strategies and styles as a potential vulnerability that could be addressed; coping styles are indicative of the ability to mobilize protective factors (eg, social support, aid, and situational problem-solving). Adaptive coping (as opposed to maladaptive) is inversely related to PTSD symptoms after trauma.¹ They suggest “posttraumatic resilience can be learned” and “implemented through training programs to reduce the effects of traumatic exposure.”¹⁰

The PRBi aimed to encourage this adaptive style; theoretically, this would reduce PTSD symptoms and bolster posttraumatic resilience for observers. This article reports the results of a quality improvement project (QIP) involving the development, implementation, and initial evaluation of the PRBi for observers at Essex & Herts Air Ambulance. It may also contribute to an assessment of randomized controlled trial feasibility in the future.

Methods

This QIP is reported in accordance with the Revised Standards for Quality Improvement Reporting Excellence (SQUIRE 2.0) publication guidelines.¹³

PRBi Development

It was assumed that observers had little or no prior experience of HEMS or resilience training. The PRBi is a single-page information sheet, providing information on 5 domains (Table 1), with an accompanying video resource. The content highlights traumatic events the observer could be exposed to and provides basic education on negative psychological reactions they may experience in response. It also provides advice on adaptive coping strategies and available resources. Table 1 provides further information on the 5 domains covered by the PRBi.

The single-page information sheet (Appendix 1) was formed from readily available, recommended National Health Service resources,^{14,15} and the wording was reviewed by 2 HEMS doctors and 2 Consultant Psychiatrists. The objective was to avoid inflammatory or overly emotive language because there was concern that overemphasizing negative aspects of the placement may cause undue

anxiety for observers, potentially causing harm. Only relevant educational information was provided, avoiding extraneous detail or medicalization.

The accompanying 11-minute video¹⁶ follows the information sheet, outlining an observer’s firsthand experience¹⁷ of attending a traumatic event with a HEMS team. It includes testimony from the senior HEMS staff, detailing and normalizing their psychological reactions and coping strategies. The majority of Essex & Herts Air Ambulance observers are medical students entering the organization for the first time, a group with especially high levels of stigma for mental health conditions.¹⁸ Therefore, the briefing also aimed to reduce stigma.¹⁹ The video narrative seeks to do this by normalizing the experience of negative psychological effects after an incident and encouraging viewers to discuss their experiences with friends and colleagues and access social support.¹⁰ The medical student in the video explains their post-traumatic experience as follows: “would have been scary, had [the senior doctor] not told [them] that it was normal . . . and [they] experienced it too.” The self-disclosure of respected senior clinicians and positive storytelling set a memorable behavioral example.²⁰

The PRBi also needed to be easily accessible; it was free, open access, and digestible within 15 minutes (Appendix 1). The duration of the briefing was intentionally short because longer interventions are difficult to fit into a busy induction schedule.⁷

PRBi Pilot

Before expert editing by HEMS and psychiatric consultants, focused feedback from 4 observers was captured, which refined the information on the written part of the PRBi. The group requested more specific details of “mental health resources and placement contacts,” so website links and their placement director’s telephone number were added.

PRBi Evaluation

Essex & Herts Air Ambulance implemented the PRBi for 2 years, starting in April 2018. It was included in the routine induction schedule of all observers without exception.

The 15-minute delivery was via an electronic tablet toward the end of a pre-existing half-day induction. A repeated measures questionnaire design was used to evaluate the PRBi. Consent was implied if observers voluntarily completed pre- and/or postintervention questionnaires. Written consent was retrospectively obtained for use of anonymized quotations in study outputs.

Questionnaires (Appendix 2) were designed to evaluate observers’ level of awareness for the information contained in the PRBi. A 1 to 5 Likert scale was devised to assess the change in awareness of the 5 domains (Table 1) pre- and post-PRBi. Holistic free-text feedback was then recorded for the PRBi and video part specifically; thus, areas of potential improvement could be identified, and insight could be gained into observers’ perception of the experience.

Participants

Observers comprised medical students, registered paramedics, paramedic students, and physician associate students all voluntarily

Table 1
The 5 Psychological Resilience Briefing Intervention Domains

Information	Aim
HEMS callouts	To educate on the likely forms of trauma exposure ⁶
Possible psychological effects	To normalize and destigmatize ¹ posttraumatic psychological effects
Coping strategies	To encourage adaptive coping ¹⁰
Advice on supporting colleagues	To encourage peer support ¹⁰
Details of mental health resources and local placement contacts	To facilitate and encourage help-seeking behavior ^{1,10}

HEMS = helicopter emergency medical services.

undertaking a HEMS placement of 4 to 6 weeks' duration with Essex & Herts Air Ambulance.

Ethical Approval

Ethical approval was not required for this QIP.

Data Protection

Questionnaires were completed using a General Data Protection Regulation-compliant²¹ online service (Survey Hero; enuvo GmbH, Pfäffikon, Switzerland²²), and responses were password protected. One named investigator transferred anonymized responses into a local spreadsheet for QIP analysis by the team.

Data Analysis

Respondents were classified by clinical qualification in the following order of seniority: registered paramedic, medical student, paramedic student, and physician associate student. Respondents were secondarily classified by level of study or qualification to assess the stage of their training. In order of seniority, classification categories were practicing clinicians (currently employed in a clinical role), "senior" students (within 2 years of qualification), and "junior" students (more than 2 years from qualification). When a respondent held 2 roles, their most senior classification was assigned. Because of the largely homogenous cohort (predominantly "senior" students), these 2 classifications were not carried into statistical analyses.

Whether respondents had received any resilience training previously was captured in free-text boxes. Responses were graded into no information, information from informal or unknown sources, and information from formal teaching. Respondents' awareness of the 5 different domains was analyzed using the Wilcoxon signed rank test. Only respondents who had submitted both pre- and post-PRBi

responses were included in the comparative analysis of change, but all responses were included in the analysis of unpaired responses.

Free-text open-ended feedback was analyzed using thematic analysis following the principles of Braun and Clarke²³ by 2 researchers for increased rigor. Any discrepancies were discussed and resolved. After open coding of the data, codes were organized into higher-level themes that best represented the code clusters. Themes were compared between respondents with varying levels of study or qualification. Anonymized quotes from the data are used to illustrate themes.

Results

After 2 years of evaluation, enrollment finished in April 2020. Because of the coronavirus disease 2019 pandemic, this was 14 days earlier than anticipated; the observer program was put on hold because of infection prevention and control measures. Overall, 60 observers completed the PRBi, but only 56 questionnaire responses were received because of technical difficulties.

Three responses were removed; 1 was empty, 1 later became an investigator, and 1 had already been exposed to the PRBi. Of the remaining 53 respondents, 3 submitted duplicate responses for their pre- or post-PRBi surveys. When quantitative answers differed between duplicates, a mean was taken, and duplicates were amalgamated into 1 record. Seven respondents only submitted a single form; 4 were missing pre-PRBi responses, and 3 were missing post-PRBi responses.

Quantitative

On primary classification, 42 (79.2%) respondents were medical students, 3 (5.7%) were paramedic students, 3 (5.7%) were registered paramedics, 1 (1.9%) was a physician associate student, and 4 (7.5%) of the pre-PRBi submissions (where demographic information was

Table 2
Respondents' Prior Information About Potentially Traumatic Events (PTEs) and Coping Strategies Pre–Psychological Resilience Briefing Intervention

Information About PTEs and Coping Strategies (Total Number)	Number of Respondents (% of All Responded at This Level of Study)	Level of Study/Qualification (Total)
No information (18)	7 (70)	Junior students (10)
	11 (31)	Senior students (36)
	0 (0)	Practicing clinicians (3)
Information from informal/unknown sources (21)	0 (0)	Junior students (10)
	19 (53)	Senior students (36)
	2 (67)	Practicing clinicians (3)
Information from formal sources (9)	2 (20)	Junior students (10)
	6 (17)	Senior students (36)
	1 (33)	Practicing clinicians (3)
Missing responses (5)	1 (10)	Junior students (10)
	0 (0)	Senior students (36)
	0 (0)	Practicing clinicians (3)

Table 3
Average Domain Awareness Pre- and Post–Psychological Resilience Briefing Intervention (PRBi)

Domain	Pre-PRBi	Post-PRBi	Change
Examples of PTE	3.15	4.34	+1.09 ^a
Normal emotional responses to PTEs	3.11	4.52	+1.42 ^a
Individual coping strategies after PTEs	3.16	4.34	+1.17 ^a
Advice for helping others after PTEs	2.51	4.36	+1.83 ^a
Useful contacts for helping others after PTEs	2.72	4.11	+1.33 ^a

PTE = potentially traumatic event.

Five represents "complete awareness."

^a $P < .001$.

captured) were not completed. Secondary classification yielded 36 (67.9%) senior students, 10 (18.9%) junior students, 3 (5.7%) practicing clinicians, and 4 (7.5%) pre-PRBi submissions that were not completed.

Twenty-one (39.6%) respondents had received resilience information from informal or unknown sources, 18 (34.0%) had no previous exposure, 9 (17.0%) respondents had received information from formal teaching, 4 (7.5%) pre-PRBi submissions were not completed, and 1 (1.9%) respondent failed to complete this question. [Table 2](#) outlines the responses by level of respondents by classification. [Table 3](#) details the relative change in responses pre- and post-exposure to the PRBi for each of the 5 domains and the statistical significance.

Free-Text Responses

Thirty-four respondents gave feedback on the PRBi, and 29 respondents provided feedback specifically on the video. Feedback covered both written and video PRBi elements; therefore, data were pooled across the 2 questions for analysis.

Feedback was very positive; respondents felt that the PRBi was informative, well thought-out, and easily digestible. The video was felt to be an effective way of introducing this topic; its emotive nature was “hard-hitting” and “memorable.”

The PRBi seemed particularly useful for those with limited prior experience of pre-hospital emergency medicine (PHEM); several practicing clinicians reported some prior exposure to similar training, although this had been restricted by workload. Several themes were identified in the data regarding the perceived value of the PRBi.

Providing Reassurance of an Open Culture

Respondents reported feeling reassured by the video’s portrayal of an open culture to talk about the impact of PTEs, suggesting that this may previously have generated some apprehension.

“I feel much more comfortable knowing that there is now such an open culture to talk about these things within HEMS.” (R3, fourth-year medical student)

Several respondents felt that it was particularly helpful to see senior clinicians relaying their experiences. This resulted in a greater sense of willingness among respondents to talk about their reactions to PTEs, including with more senior colleagues.

“... really good to see senior clinicians and paramedics being open to the fact that these scenarios still play on their mind, and it is ok to continuously talk about them if need be.” (R29, fifth-year medical student)

“Useful to know that even the most experienced members of staff can still be affected regularly by a particular incident, and not to be afraid to speak to them about it.” (R48, fifth-year medical student)

The featuring of a medical student in the video was also viewed positively, making content more relevant and relatable to student respondents.

“... very real life, so nice for us that it included the medical student and was clearly very well made and [contained] practical tips!” (R11, sixth-year medical student)

Normalizing Emotional Reactions

A number of respondents felt the PRBi helped them realize and normalize the impact of PTEs. One respondent felt it was useful that the briefing did not “medicalize” emotional reactions to stressful situations. Another emphasized the importance of the message that “it is ok to not be ok.” Normalization was linked to the openness of the clinical team in discussing their experiences.

“It is reassuring to hear firsthand about the normality of emotions and to know that if things are troubling to you, that is a normal response.” (R50, sixth-year medical student)

“Great to have the personal perspective of the clinical team involved in the incident, and see them speaking openly about what

they have experienced to reinforce that these reactions are normal.” (R45, fifth-year medical student)

Increasing Preparedness for Training

The PRBi was perceived as valuable in increasing respondents’ preparedness for their training. Respondents felt that access to the PRBi at the beginning of their HEMS placement or even before their arrival was important. They benefitted from information on how they might feel after an incident and ways of responding, including coping strategies. One respondent felt that the PRBi helped them to be mindful of the potential psychological impact of attending PTEs, which could otherwise have become lost in their excitement about the placement.

“I feel more prepared for the coming weeks of my placement and anything I might see.” (R3, fourth-year medical student)

“It is so important to focus on this part of the job, especially when you are a young student that is spellbound by blue lights, adrenaline and pre-hospital care.” (R16, fifth-year medical student)

Identification of Wider Need

Several respondents identified a wider need and application for the PRBi in other settings, including medical schools and clinicians’ experiences on hospital wards. Another reflected on the missed opportunity to have exposure to this information at an earlier stage of medical training.

“Really well done, four years of medical school and I wish I had this a little earlier!” (R36, fourth-year medical student)

A practicing paramedic highlighted the need for further training on emotional response to PTEs and resilience within the ground ambulance service. Despite some reference by respondents to prior exposure to similar briefings, a wider need to facilitate discussion on this topic clearly remains.

“Road ambulance staff need to do more of this. I do participate in similar de-briefing however we sometimes do not have the time to do them due to call volume.” (R51, Health and Care Professions Council paramedic)

“It touches into a field of medicine, and pre-hospital care in particular, that is often overlooked.” (R50, sixth-year medical student)

Suggestions for Improvement

Although the PRBi was very well received, several respondents offered suggestions for improvement, including providing details of contacts for support and further resources, more specific advice on helping others who have experienced an adverse reaction to a PTE, and evidence on which strategies are most effective for coping with psychological trauma. Observers did not report any negative impacts of the PRBi.

Discussion

Qualitative feedback on the PRBi was overwhelmingly positive. Observers reported that they were reassured of an open culture, had their emotional reactions normalized, and felt increased preparedness for their placement.

The majority of respondents over the 2 years were medical students with minimal prior PHEM experience or resilience training. Lesser experience, understanding, education, and sense of control/preparedness over the incidents mean⁵ they might be at particular risk¹ of negative psychological effects after PTEs.

However, this risk could also be associated with the density of exposure in such a short placement. Although most individuals experience at least 1 PTE in their lifetime,²⁴ observers usually experience multiple, many of which will meet the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* criterion A²⁵ for a “possible PTSD triggering event.” There is a strong correlation between the frequency and severity of PTE exposure and the development of PTSD.¹⁰

The completion of this project generated the following difficult question and debate: Could observers be significantly psychologically harmed while on placement as a result of PTE exposure?

The benefits of involving observers to both individuals and HEMS are widely acknowledged. Observers receive immense educational benefit and invaluable insights into career options; HEMS receive opportunities to teach, build relationships with other organizations, and inspire the clinicians of tomorrow. There is a shared understanding that there is inherent risk; the PHEM workplace is dynamic and sometimes unpredictable, so observers are given strict and clear instructions regarding aviation and scene safety.

Acknowledging a clear and present risk of negative psychological effects, however variable and difficult to quantify, must be the next step in this risk-benefit analysis. Although not measured, it was clear that the PRBi improved awareness not only of the individual observer but also the organization; signposting where help could be sought became everyone's responsibility. This shared appreciation is surely the foundation of psychological risk modification.

Observers are a well-educated, self-selecting group of individuals who have often taken an extra-curricular interest in PHEM; most will have a good understanding of incidents they may attend. Providing individuals with the knowledge to make an informed decision about their involvement is paramount. Further research to quantify the risk of PTSD in observers would help organizations prepare and support their learners.

However, there is concern that overemphasizing pathology (ie, PTSD) causes undue worry and harm. *Moral injury*⁵ is an alternative term found helpful by observers to explain their own lived experience, and its inclusion in future PRBis would be an improvement. Once the concept and measurement of moral injury matures, it could be a useful future paradigm to evaluate the PRBi's effectiveness.

Several limitations were identified. Observers were asked limited questions without an externally validated measure. Scores on all Likert domains from the information sheet showed improved awareness immediately post-briefing, but the risk of demand characteristics or response bias must be acknowledged. These data may not necessarily reflect any long-term retention of knowledge or how the induction briefing may have influenced coping behavior or any posttraumatic experience. However, it evidences that observers are well-informed before proceeding with their placement.

An interesting suggested improvement was adding clarity on post-incident debriefing. One observer mentioned their lack of understanding of debriefing best practice. Although not mentioned in the written element, the PRBi video resource features a performance-based debrief and demonstrates that a debrief can also be a gesture of psychological support in itself, allowing the opportunity to ask questions, receive education or signposting, and arrange follow-up. This is advocated after a PTE and does not appear to worsen PTSD,⁷ although 1:1 psychologically focused debriefing is not advised.²⁶ Future PRBi revisions could include explicit written debriefing guidance.

Another observer recommended PRBi delivery in all medical schools. Existing research shows that shorter briefings, such as this, are more feasibly implemented.¹⁸ Its written format and specifics could easily be adapted to other, similar services with limited editing, and the resource could be further strengthened by commissioning a tailored video resource, such as the mountain rescue-specific film *Resilience—The Avalanche*.²⁷ The briefing is applicable to a plethora of organizations, including fire brigade, police, military, and medical and paramedic schools. To maximize medical professional exposure, already established nationwide resuscitation guidance would be a good candidate for similar intervention.

This project informs the feasibility of future work to rigorously evaluate the PRBi. Measuring a score for PTSD,²⁸ coping (COPE),²⁹ and the Connor Davidson Resilience Scale³⁰ at various time points pre- and post-briefing could be of value. This could support the

hypothesis that well-supported, graded, or controlled exposure leads to resilience growth. Qualitative interviews would shed light on the true, lived experience of observers, complementing current research into moral injury and perhaps identifying benefits, even if post-exposure scoring is unchanged. These elements could also aid in assessing anxiety and concerns regarding trauma exposure, evaluating any potential harm posed by the briefing. Does emphasizing the negative effects of PTEs outweigh the benefit of the education?

Further research is also needed to define "normal" negative psychological responses to PTEs and how we can best protect individuals from developing pathology.

Conclusion

The PRBi increased HEMS observer awareness for 5 domains: trauma exposure, post-incident negative psychological effects, strategies for coping, supporting colleagues, and mental health resources. The resource was reviewed positively by all observers, most of whom had little to no prior resilience training. Observers felt reassured of an open culture, that their emotional reactions were normalized, and that they were more prepared for their placement. Findings indicate that there is no reason to discontinue the use of the PRBi within induction processes at Essex & Herts Air Ambulance. Formal research is required to provide more rigorous evaluation. Following its success, the PRBi continues to be included in the Essex & Herts Air Ambulance observers' placement induction process.

Appendix 1. Psychological Resilience Briefing Intervention Information Sheet

Psychological Resilience Briefing

Organisation: Helicopter Emergency Medical Services (HEMS)

Individual: Observer

Based upon the nature of our work, during your time with HEMS you are likely to observe a potentially traumatic event (PTE). A PTE can be defined as 'any event that may cause powerful psychological reactions in those who are exposed'. This information has been produced to assist you to understand the possible reactions that you may have and some useful coping strategies.

Real PTE examples - Typical HEMS dispatches for adults and children:

- Animal Attack (Dog)
- Assault (Penetrating Trauma)
- Serious Burns
- Cardiac Arrest
- Hanging and Drowning
- Electrocutation
- Extreme Fall/Jump (>30ft)
- Road Traffic Accident (Possible death at scene)
- In addition to the above, there are many other incidents that you may find shocking or upsetting.

It is important to remember that the impact of a PTE is subjective to the individual experiencing it and not everyone will react in the same way. There are many factors involved in whether an incident is in fact traumatic for an individual. Whilst many people do not have a strong and sustained reaction to a PTE many strong, resilient and tough people will experience strong reactions.

Common psychological reactions after a PTE:

- Fear, Anger or irritability
- Sadness

- Guilt or helplessness
- Numbness or detachment
- Increased alertness for danger
- Fatigue
- Intrusive thoughts or images of the event
- Avoidance of reminders of the event
- Nightmares
- Anxiety
- Memories of previous traumas

It is important to understand that these reactions are common and they vary in severity between individuals. Whilst they can be distressing in most cases they are likely to reduce over time. However, if these reactions are strong and persistent it is worthwhile you speaking to someone about them. Ideally, you'll feel able to speak to your GP or another healthcare professional to make them aware of your situation and ask their view on how you are doing. However, if you only feel comfortable speaking to a close friend, colleague or family member that's OK too. The message is if you have a persistent reaction to a PTE and it's affecting your life on a day to day basis, you should seek help, much like you should seek help if you have a persistently painful back, knee or shoulder.

There are some ways that you can try and bolster your ability to cope. For instance:

- Share your feelings with others you trust (friends, family, colleagues) and at your own pace.
- Let feelings out (it's OK to cry, shout or sigh); evidence shows that most of us do not do well if we fail to acknowledge how we feel even if we do so in private at first.
- Educate your friends and family so they understand your need for emotional support.
- Try to spend time doing something you enjoy that makes you feel good.
- Return to your usual routines and habits and look after yourself (eat, sleep, exercise, relax).

Helping others after a PTE:

- Give them the opportunity to talk and be willing to listen.
- Be consistent and reassuring, let them know you want to understand what they have been through and where appropriate validate their feelings. Be aware that some people take time to accept initial offers of help to them.
- Continue to keep usual routines and activities.
- Follow up with a simple 'check in' message.

Contacts:

- Colleagues, friends and family
- Placement Director – [name and telephone number redacted for publication]
- Mental Health Charity Resources:
 - Blue Light Program (mind.org.uk)
 - Lifelines (lifelinescotland.org)
 - Samaritans (Samaritans.org) Available to listen in complete confidence no matter what the problem.
- Your GP

Please now watch this real life example of a HEMS team following a PTE: <https://youtu.be/DY60ZOWBvDc>

Information sources: NHS, CISM Wiki, GOV.UK and editing by Professor Neil Greenburg.

Appendix 2. Questionnaire Content

Pre-PRBi Questionnaire	Format
E-mail contact	Validated free text
Type and year of study	Free text
Details of prior resilience training	Free text
Awareness of the 5 information sheet domains	1-5 Likert-type scale, anchored by 1 = not familiar, 5 = very familiar
Post-PRBi Questionnaire	Format
Confirmation of completion of both elements of the PRBi	Boolean
Awareness of the 5 information sheet domains	1-5 Likert-type scale, anchored by 1 = not familiar, 5 = very familiar
Induction briefing feedback	Free text
Video-specific feedback	Free text

PRBi = psychological resilience briefing intervention.

References

1. Tortella-Feliu M, Fullana M, Pérez-Vigil A, et al. Risk factors for posttraumatic stress disorder: an umbrella review of systematic reviews and meta-analyses. *Neurosci Biobehav Rev.* 2019;107:154–165.
2. Forman-Hoffman VL, Bose J, Batts KR, et al. Correlates of lifetime exposure to one or more potentially traumatic events and subsequent posttraumatic stress among adults in the United States: results from the Mental Health Surveillance Study, 2008-2012. 2021. Available at: <https://pubmed.ncbi.nlm.nih.gov/27748101/>. Accessed June 25, 2021.
3. Overstreet C, Berenz E, Sheerin C, Amstadter A, Canino G, Silberg J. Potentially traumatic events, posttraumatic stress disorder, and depression among adults in Puerto Rico. *Front Psychol.* 2016;7:469.
4. Overstreet C, Berenz E, Kendler K, Dick D, Amstadter A. Predictors and mental health outcomes of potentially traumatic event exposure. *Psychiatry Res.* 2017;247:296–304.
5. Murray E, Krahé C, Goodsman D. Are medical students in prehospital care at risk of moral injury? *Emerg Med J.* 2018;35:590–594.
6. Spencer S, Nolan J, Osborn M, Georgiou A. The presence of psychological trauma symptoms in resuscitation providers and an exploration of debriefing practices. *Resuscitation.* 2019;142:175–181.
7. Skeffington P, Rees C, Mazzucchelli T, Kane R. The primary prevention of PTSD in firefighters: preliminary results of an RCT with 12-month follow-up. *PLoS One.* 2016;11:e0155873.
8. Skeffington P, Rees C, Kane R. The primary prevention of PTSD: a systematic review. *J Trauma Dissociation.* 2013;14:404–422.
9. Fox S, Lydon S, Byrne D, Madden C, Connolly F, O'Connor P. A systematic review of interventions to foster physician resilience. *Postgrad Med J.* 2017;94:162–170.
10. Agaibi C, Wilson J. Trauma, PTSD, and resilience. *Trauma Violence Abuse.* 2005;6:195–216.
11. Fletcher D, Sarkar M. Psychological resilience. *Eur Psychol.* 2013;18:12–23.
12. Richardson G. The metatheory of resilience and resiliency. *J Clin Psychol.* 2002;58:307–321.
13. Ogrinc G, Davies L, Goodman D, Batalden P, Davidoff F, Stevens D. SQUIRE 2.0 (Standards for QUality Improvement Reporting Excellence): revised publication guidelines from a detailed consensus process. *BMJ Qual Saf.* 2016;25:986–992.
14. United Kingdom Home Office. Helpline and support: victims of terrorism. Available at: <https://www.gov.uk/government/publications/mental-health-support-in-the-first-4-weeks-victims-of-terrorism/nhs-mental-health-support-victims-of-terrorism>. 2017. Accessed June 25, 2021.
15. NHS. Overview - post-traumatic stress disorder (PTSD). NHS choices. 2019. Available at: <https://www.nhs.uk/conditions/post-traumatic-stress-disorder-ptsd/>. Accessed June 25, 2021.
16. Walton M. Resilience - one team's trauma. YouTube; Available at: <https://www.youtube.com/watch?v=DY60ZOWBvD>. Accessed February 10, 2021.
17. Walton M. Processing trauma: resilience may not lie within individuals, but between individuals. 2018. Available at: <https://blogs.bmj.com/bmj/2018/05/15/processing-trauma-resilience-may-not-lie-within-individuals-but-between-individuals/>. Accessed June 25, 2021.
18. Dunn L, Iglewicz A, Moutier C. A conceptual model of medical student well-being: promoting resilience and preventing burnout. *Acad Psychiatry.* 2008;32:44–53.

19. Jones N, Campion B, Keeling M, Greenberg N. Cohesion, leadership, mental health stigmatisation and perceived barriers to care in UK military personnel. *J Ment Health*. 2016;27:10–18.
20. El-Farargy N, Walker G. A Line of defence: using stories in healthcare education. *Med Sci Educ*. 2017;27:805–814.
21. Intersoft Consulting. General Data Protection Regulation. 2021. Available at: <https://gdpr-info.eu>. Accessed June 25, 2021.
22. SurveyHero. Privacy policy/GDPR. 2018. Available at: <https://www.surveyhero.com/privacy>. Accessed June 25, 2021.
23. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol*. 2006;3:77–101.
24. Bonanno G, Mancini A. The human capacity to thrive in the face of potential trauma. *Pediatrics*. 2008;121:369–375.
25. Guha M. Diagnostic and Statistical Manual of Mental Disorders: DSM-5 (5th edition). *Ref Rev*. 2014;28:36–37. <https://doi.org/10.1108/r-10-2013-0256>.
26. NICE. Post-traumatic stress disorder, guidance. 2018. Available at: <https://www.nice.org.uk/guidance/ng116/chapter/Recommendations>. Accessed June 25, 2021.
27. Walton M. *Resilience - The Avalanche* [videotape]. 2018. Available at: <https://www.youtube.com/watch?v=qabCvFwmNyo>. Accessed February 10, 2021.
28. U.S. Department of Veterans Affairs. National Center for PTSD. The PTSD Checklist for DSM-5 (PCL-5). 2019. Available at: www.ptsd.va.gov. Accessed June 25, 2021.
29. Carver S. COPE inventory. Measurement Instrument Database for the Social Sciences. 2019. Available at: <http://www.midss.org/content/cope-inventory>. Accessed June 25, 2021.
30. CD-RISC. The Connor-Davidson Resilience Scale. 2016. Available at: <http://www.connordavidson-resiliencescale.com>. Accessed June 25, 2021.