Continuous Dispatch Education and Service Improvement

Linden Horwood

Corresponding Author:
Linden Horwood
Emergency Operations Centre
Yorkshire Ambulance Service
Fairfields, Shipton Road
Skelton
York
YO30 1XW.
08451241241

Keywords:
EMD, Emergency Medical Dispatcher, CDE, Continuous Dispatch Education, Service Improvement, Staff Motivation, Compliance

Citation:
Horwood L. Continuous Dispatch Education and service improvement. Annals of Emergency Dispatch & Response. 2016;4(1):14-21.

ABSTRACT

Introduction: Continuous Dispatch Education (CDE) is ongoing training for Emergency Dispatchers, Quality Improvement Specialists and Emergency Telecommunicators (ETC). Yorkshire Ambulance Service (YAS) wanted to improve current compliance performance to the Medical Priority Dispatch System™ (MPDS®) utilizing CDE. This study reports on the effectiveness of CDE efforts and staff motivation in completing CDE.

Objectives: The primary objectives in this study were to establish if structured CDE improved calltaker performance and to gather information about staff perceptions of CDE. The secondary objectives were to establish the ratio of voluntary to mandatory CDE intake and to evaluate what influenced improved performance.

Methods: This was a retrospective study to review quantitative data from audits carried out on the EMDs using the MPDS. Month-on-month comparisons were also carried out. EMDs were asked to participate in a web-based survey to gather their opinions on the CDEs they had undertaken and were encouraged to take part in a post-survey interview to enhance their answers.

Conclusion: Structured CDE improves service improvement, as do mandatory CDE and maintaining a structured non-compliance and action plan process.

INTRODUCTION

Yorkshire Ambulance Service (YAS) is a single-discipline service triaging medical emergency calls using the Medical Priority Dispatch System® (MPDS, version 12.2, ©IAED, 2012 release). YAS covers a population of over 5 million people across almost 6,000 square miles of rural, urban, and coastal regions, receiving 795,000 emergency calls per annum (www.yas.nhs.uk) and is an International Academies of Emergency Dispatch™ (IAED)-Accredited Center of Excellence (ACE). Emergency calls are triaged by Emergency Medical Dispatchers (EMDs) who are also IAED-certified. The MPDS allows EMDs to assign a response level to the patient and to provide Dispatch Life Support (DLS) instructions to help the patient until a Health Care Professional (HCP) arrives on the scene.

EMDs receive extensive training in the first instance and must pass an examination in order to be certified. To maintain their license, EMDs must recertify every two years by completing a multiple choice assessment and completing 24 hours of Continuous Dispatch Education (CDE). In other words, "CDE is to recertification what initial training is to certification."[1]

As a condition of IAED's license agreement with YAS, EMDs are audited on a regular basis, and their performance is measured. These audits involve trained Emergency Dispatch Quality Assurance (ED-Q) personnel listening to and reviewing recorded calls against set standards. Any trends in underperformance are addressed through CDE. This helps the EMDs develop a better understanding of their responsibilities and roles so that skills can be enhanced and patient care improved.

In 2012, YAS aspired to be recognized by the IAED as an ACE. The Quality Audit Team (consisting of ED-Q specialists) wanted to ensure that compliance was suitably above the targets set by the IAED. According to continuing audits, however, the Case Entry protocol compliance was only marginally above the 95%

Month Implemented	CDE Title	Type	Explanation
December 2012	AMPDS Board Verification Quiz	Voluntary	An image and caption based display was put on a notice board for all EMD's to view. This contained information about verification with a Christmas theme and had a voluntary quiz.
January 2013	AMPDS Board Freelance & Enhancement	Voluntary	A caption based display was put on the notice board explaining what clarifiers, enhancements, freelance, and leading questions are. This was accompanied with a fact sheet and a detailed voluntary quiz.
April 2013	AMPDS Update Verification Special	Mandatory	A newsletter was put together explaining what constitutes correct verification, with CAD screen shots. A compulsory quiz for all EMD's accompanied this and a training package was put together for EMD's who had particularly difficulty in this area.
November 2013	Verification Email notification	Emailed to all EMDs	An email was sent to all EMDs reminding them to verify the address. Advice about how to control the call was included to help EMDs ascertain the information.
November 2012 to date	Non-Compliance Feedback and Action Plans	Mandatory (but on a case by case basis)	Any Non-Compliant audits highlighting verification as an issue were fed back within 72 hours to the EMD by an ED-Q. Three instances of incorrect verification within a rolling five week period resulted in an action plan and additional training and monitoring.

Table 1. Continuous Dispatch Education (CDE) implemented to improve Case Entry deviations from November 2012-2013

target at 95.75% (unpublished data). YAS needed to establish which areas of the protocol were lowering the Case Entry compliance, create CDE specific to these trends, and then reassess compliance. What types of CDE motivated the EMDs to improve in protocol compliance also needed to be studied. The outcome would allow future CDE within YAS and other ambulance services to be specifically designed to improve performance and would enhance IAED CDE protocols.

Objectives

The primary objectives of this study were to establish whether structured CDE improved service performance and what types of CDE were most helpful, to identify whether the EMDs perceived their non-compliance as skill, knowledge, or behavior-based, and to determine whether the EMDs understood why they needed to comply with the subject matter. The secondary objectives were to establish the ratio of voluntary to mandatory CDE undertaken, to evaluate what influenced EMDs to improve performance, and to identify and collate any comments and opinions of the EMDs regarding their own performance.

METHODS

Design and setting

This was a retrospective study involving the review of quantitative data produced by the Advanced Quality Assurance (AQUA®) software used for auditing emergency calls. This software was used to analyze both overall data for YAS's Emergency Operation Centers (EOC) and the most common Case Entry deviations.

The review period was November 2012 to November 2013, during which time IAED's Performance Standards version 9 was used to audit the emergency calls. 1% of YAS's calls were audited each month (601 calls in a 30-day month; 20 per date). Using the Agency Performance Report (an AQUA® report), an assessment was made to see which Case Entry areas required focus. The report data were converted into percentages and recorded in a spreadsheet as a table and as a graph. CDE was then designed to improve the protocol areas with the lowest compliance levels. Applying this method to a month-on-month comparison of the Agency Performance Report, YAS was able to track improvements over a year. This assessed whether the CDE had improved compliance and whether further areas of development were required.

Compliance evaluation process

The main Case Entry compliance evaluation process assessed the following areas: obtaining the address, verifying the address, obtaining the telephone number, verifying the telephone number, establishing the patient's age, establishing if the patient is awake, asking the awake status as scripted, establishing if the patient is breathing, asking the breathing status as scripted, and avoiding freelance questions.

The Quality Audit Team created CDE specific to these areas, and over the following months the trends were monitored and additional CDE put in place as necessary (Table 1). Using the Agency Performance AQUA® report, the effects of the additional CDE on performance were compared each month over the annum from November 2012.

The survey

Following analysis of the quantitative data produced by

Date	Address Verification (%)	Telephone Verification (%)	Freelance questions (%)
Nov-12	10	2	4
Dec-12	11	3	3
Jan-13	9	2	2
Feb-13	10	4	2
Mar-13	9	3	4
Apr-13	7	2	3
May-13	6	2	2
Jun-13	7	2	4
Jul-13	5	2	2
Aug-13	4	2	2
Sep-13	3	1	2
Oct-13	7	2	2
Nov-13	2	3	4

Table 2. AQUA Agency Performance Reports highlighting the percentage of Case Entry deviations each month.

AQUA, a web-based survey was conducted in September 2014 asking EMDs to reflect on CDE from November 2012 to the present in order to better understand how CDE encouraged staff to improve performance. EMDs were asked to reflect on the CDE undertaken, to highlight which support they found most helpful, and to note what motivated their change in performance.

Research has demonstrated that qualitative inquiry is a tool that can potentially help improve the description and explanation of complex, real-world phenomena, which are very pertinent to health services research.[2,3] Therefore, it is imperative for health services researchers to gain a greater understanding of the processes of qualitative data analysis. This knowledge can be helpful for the researchers as they use these methods themselves or collaborate with qualitative researchers from a wide range of disciplines.

The survey was carried out on a small number of test subjects, and the question wording was refined to ensure maximum understanding of the objective of each question. The questionnaire consisted of closed questions, a series of statements, and an open-ended summary question to gather further views.

The survey was available over a six-week period to cover each team's full set of shift rotations. The approach allowed each team the opportunity to access the survey on their pre-planned training days, giving as many of the 180 EMDs as possible the opportunity to complete the survey. The survey was extended to a three-month period due staff absence during the initial period.

The survey was distributed via email and Team Leaders were encouraged to monitor their staff's completion to allow as many EMDs to complete the survey as possible. EMDs were also asked if they were willing to participate in a further interview to enhance their answers.

RESULTS

The percentage of deviations decreased considerably in April from the previous month's figures: from 9% to 7% for address verification and from 3% to 2% for telephone verification. This occurred after the "AMPDS Update Verification Special" was distributed to all EMDs as a mandatory read-and-sign document (Table 2).

The address verification deviations decreased again considerably in July, from 7% to 5%, when the Case Entry verification order was altered on a trial basis (Fig. 1). This was due to YAS attempting to improve its response times to the most critical patients requiring the fastest response. YAS did this by verifying the address and telephone number after asking "Okay, tell me exactly what happened," in an attempt to highlight to the Dispatchers which patients required the fastest responses at the earliest opportunity.

Due to slower response times, YAS reverted back to the original MPDS question sequence in early October 2013. The percentage of deviations subsequently increased significantly from 3% to 7%. In response to this, a "Verification Email Notification" was issued to all EMDs at the start of November. Address verification deviations decreased again significantly from 7% to 2% during November, although telephone verification deviations increased marginally from 2% to 3%. Feedback regarding freelance questions was addressed through regular audit reports,

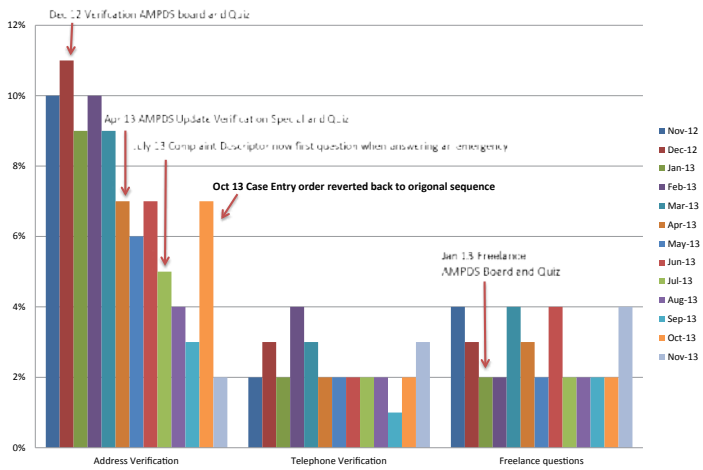

Figure 1. Case Entry Deviation Trends

Measure	Question	N	Survey response: n (%)			
			Agree	Neutral	Disagree	NA*
CDE EMDs found helpful to improve specific areas of low compliance.	Found the verification information on the AMPDS Board Dec 2012 (Christmas/Santa board) and associated quiz helpful.	25	14 (56.0)	9 (36.0)	2 (8.0)	18 (41.9)
	The AMPDS Update Verification Special April 2013 and associated quiz was not beneficial.	25	8 (32.0)	8 (32.0)	9 (36.0)	18 (41.9)
	I have had a non-compliance fed back to me for verification and found it supportive.	32	14 (43.75)	10 (31.25)	8 (25.0)	13 (28.8.9)
	I have been on an Action Plan for verification but did not find it helpful.	17	9 (52.94)	3 (17.65)	5 (29.41)	27 (63.36)
Types of training material EMDs found most beneficial	I find visual based CDE with pictures and captions helpful	43	24 (52.9)	3 (17.7)	5 (29.4)	
	I do not learn from text book based CDE	43	16 (37.2)	14 (32.6)	13 (30.2)	
	Information hand-outs are useful	43	33 (76.8)	6 (14.0)	4 (9.3)	
	I find face-to-face support helpful	43	37 (86.0)	6 (14.0)	0 (0)	
	Quizzes do not help me learn	43	12 (27.9)	9 (20.9)	23 (51.2)	

* Not Applicable—selected if respondent did not read the board, did not read the AMPDS Update or complete the quiz, had not had non-compliance for verification, or had not been on an Action Plan for verification.

Table 3. Assessing how helpful the EMDs found the CDE aimed to improve specific areas of low compliance, and types of training material EMDs found most beneficial.

and compliance in this area had stabilized at 2% but increased again to 4% in November.

Table 3 shows that a significant majority of EMDs found CDE helpful, although an Action Plan specifically for verification was not as helpful as the CDE. While handouts and quizzes are helpful, face-to-face support was the preferred method of support for all EMDs.

Table 4 shows that voluntary CDE may be more likely to be completed if it was an area EMDs have difficulty with. Mandatory CDE was more likely to be completed than voluntary (while deemed "mandatory" by the Quality and Training department, the completion of this CDE was actually still dependent on staff availability, EOC workload, and management discretion). The results highlight that the CDE was beneficial, as the majority of EMDs advised that they no longer found it difficult to verify the address or telephone number, although they do continue to find the process of verification awkward when they have had difficulty obtaining the information initially.

Table 5 highlights that almost everyone understood the risk of not verifying the address or telephone number. They also understood that having the caller repeat the information rather than having the EMD state it was more likely to ensure that accurate information was obtained. The EMDs also understood the importance of verification, and while they are concerned about being put on an Action Plan, they do strive for protocol compliance.

DISCUSSION

Quantitative analysis of the Agency Performance Report indicated that CDE does improve service performance. This validates the requirement for CDE as part of the IAED EMD recertification process and its use in improving patient care. The majority of EMDs who completed the survey agreed that they found CDE helpful. This suggests that not only does CDE improve quantitative performance, but it is welcomed and understood by EMDs as being of benefit to them.

Four EMDs took part in additional interviews, during which they were asked to expand upon their survey answers. Each EMD advised that face-to-face feedback on a non-compliant audit was positive, as it helped them to improve their knowledge—and in some instances their confidence as well.

EMDs stated that a report of non-compliance is more helpful than an Action Plan for improving verification. YAS' Action Plan process involves feeding back non-compliant audits, putting any required support/development in place, having review meetings to confirm development was completed, auditing four post-development review calls to see if performance has improved, and initiating Performance Management if the same types of non-compliance reoccur following support.

Action Plans received mixed response. During the interview, one EMD advised that the only person who could help them with improving verification was themselves and

Measure	Question	N	Survey response: n (%)		
			Agree	Neutral	Disagree
Mandatory to voluntary CDE	I am more likely to complete voluntary CDE if the topic is an area I know I have difficulty with	41	17 (41.5)	17 (41.5)	7 (17.1)
	I am more likely to complete CDE if it is mandatory	41	23 (56.1)	12 (29.3)	6 (14.6)
	I have insufficient stand-down time to complete voluntary CDE	41	30 (73.2)	5 (12.2)	6 (14.6)
	I am given sufficient stand-down time to complete mandatory CDE	41	13 (31.7)	7 (17.1)	21 (51.2)
	Most of my CDE is completed between taking calls	41	27 (65.9)	7 (17.1)	7 (17.1)
EMDs' understanding of the need for the verification training material and its benefits	I did not associate the "confirm address" pop-up box in the CAD with when to verify the address	41	6 (14.6)	11 (26.8)	24 (58.5)
	I did not understand what information constitutes correct verification	41	2 (4.9)	4 (9.8)	35 (83.4)
	I did not know why I should verify	41	1 (2.4)	1 (2.4)	39 (95.1)
	I thought it was unnecessary to verify the information when I believe I have selected it correctly	41	5 (12.2)	4 (9.8)	32 (78.1)
	I felt awkward verifying the information when it has been difficult and/or time consuming to obtain	41	33 (51.1)	4 (9.8)	14 (34.1)
	I still find it difficult to correctly verify	41	2 (4.9)	4 (9.8)	35 (85.4)

Table 4. Comparing mandatory to voluntary CDE, and assesses the EMDs understanding of the need for the training material and its benefits.

for this reason stated that they did not find the Action Plan helpful. This indicates that they believed the cause of their non-compliance was behavior-based and that the additional knowledge was not helpful as a result. Another EMD reported that in terms of verification, they knew where they went wrong and couldn't change the existing non-compliant call; therefore they didn't need reminding of the non-compliance. They did not, therefore, find the Action Plan particularly helpful or unhelpful. The EMDs did find Action Plans helpful for other issues (other than verification), stating that it reduced their knowledge gap. This indicates that the type of protocol deviations addressed can have an impact on how supportive EMDs find Action Plans. The majority of Action Plans are successful in improving performance, and in repeated areas of poor performance they are an important tool for both the EMDs and management.

The EMDs who were interviewed reported varying responses to different modes of CDE as well. Face-to-face support is the EMDs' preferred method of CDE. Information handouts and visual/caption-based CDE are also highly preferred, with approximately half the number of EMDs reporting that they find quizzes helpful. While only half found quizzes beneficial, quizzes are helpful tools for trainers to demonstrate learning. A minority of EMDs indicated that they learn well from text books. During the interview, one EMD stated that quizzes keep them active and made them think. This person stated that caption-based visual CDE is helpful but that it could be confusing if it looked too "busy." It is therefore important that information boards are not over-loaded with too much information. This interviewee also found handouts useful to keep as a reference point. The second EMD interviewed stated that they preferred face-to-face CDE as well and that they would have to read textbooks a few times and write the information out in order to learn from it. This respondent agreed that handouts were useful if they were "well laid out, bright, colorful, and eye-catching." The third interviewee learned better from visual data rather than reading information. The fourth EMD interviewed said that visual CDE with pictures and captions was "punchy and to the point," but that they personally don't learn from textbooks. They found information handouts useful as a quick way to receive updates but expressed that it was important to have the information explained to them as it was handed out. This EMD advised that if the handout was just distributed on the desk with no verbal support, EMDs were less likely to read or understand it.

All four EMDs interviewed, like the majority of those surveyed, exclaimed how beneficial they found face to face support. The interviews also revealed that if training was in an area they knew they had difficulty with, the EMDs felt motivated to learn rather than continue to struggle, although one admitted to preferring CDE for something they don't have difficulty with, as it was easier.

The majority of EMDs were more likely to complete mandatory CDE, although this was not always possible due to circumstances within the EOC (such as workload/staff availability). Mandatory CDE helps ensure that EMDs who

Measure	Question	N	Survey response: n (%)		
			Agree	Neutral	Disagree
EMDs opinion of the protocol area for which compliance needs to be improved	Verification is important to ensure there is no delay in contacting/attending the patient	41	39 (95.1)	1 (2.4)	1 (2.4)
	Not verifying could potentially result in delay or detriment to the patient	41	37 (90.2)	2 (4.9)	2 (4.9)
	I don't believe we should need to verify the address/telephone number if I know I have entered it correctly	41	4 (9.8)	6 (14.6)	31 (75.6)
	I believe it makes no difference if I repeat the information to the caller or if the caller repeats it to me	41	4 (9.8)	8 (19.5)	29 (70.7)
EMDs feelings towards protocol compliance and the processes in place to improve it	I wanted to understand why I needed to correctly verify	41	15 (36.6)	12 (29.3)	14 (34.2)
	I wanted to understand how to correctly verify	41	21 (51.2)	12 (29.3)	8 (19.5)
	I do not agree with the verification process but I don't like receiving a non-compliant audit	41	8 (19.5)	4 (9.8)	29 (70.7)
	I strive for protocol compliance	41	38 (92.7)	3 (7.3)	0 (0.0)
	I am concerned I will be put on an action plan	41	25 (61.0)	8 (19.5)	8 (19.5)
	I believe that verification ensures the information is correct	41	37 (90.3)	3 (7.3)	1 (2.4)

Table 5. Assessing the EMD's opinion of the protocol area for which compliance needs to be improved, and EMDs' feelings towards protocol compliance and the processes in place to improve it.

are not aware they have difficulty in an area will benefit from the CDE, and it also targets those who are reluctant to complete the CDE because they find the subject difficult.

The majority of EMDs stated that insufficient stand-down time is given for CDE, although mandatory CDE is more likely to be allotted stand-down time, reinforcing the benefits of issuing CDE as mandatory.

The EMDs advised that most CDE is completed between calls. Further interview questions were asked to establish whether this is a problem and whether it depends on the type of CDE. One EMD interviewed found that high call volume and staffing is an issue, meaning that they don't always have time to check e-mails for procedural updates and audits. They stated that they wanted more time to concentrate in a quiet environment so they wouldn't make as many mistakes on quiz answers and would absorb the information more effectively. Another EMD highlighted that there were inconsistencies across teams as to whether EMDs are given time away from answering calls to complete voluntary CDE, but that mandatory CDE was managed well. They did not find it a problem completing CDE between calls as it gave them something to do and that it stopped them from anticipating the next call (in a positive way). A third EMD mentioned that sometimes mandatory CDE was delivered by staff who were not fully conversant with the subject material. This EMD was not more likely to complete mandatory than voluntary CDE, as they felt they would still benefit from the training. They found that workload and staffing could prevent stand-down time for voluntary CDE and that sufficient stand-down time for mandatory CDE was dependent on the Team Leader on duty. This EMD further felt that completing CDE between call-taking was not adequate, as it did not provide enough time to learn. They also suggested that Team Leaders do the CDE first so that they could gain an understanding of it and monitor its completion more effectively. The fourth EMD interviewed felt it was irrelevant whether they were more likely to complete mandatory CDE, as it was compulsory. This EMD also noted that regular CDE was more motivational than sporadic, and that the type of CDE was a prevalent factor when deciding whether it was difficult to complete CDE between calls.

To gain a better understanding of the cause of some noncompliance, EMDs were observed prior to the study to see what processes they were following. These observations suggested that EMDs were not associating the "confirm location" pop-up with verification. This prompted the AMPDS Update Verification Special. Results from the survey suggest, however, that the majority did associate the box with verification. The very low percentage who said they did not understand what constituted verification therefore does not account for the large percentage of those who were not verifying. In other words, the pop-up does not seem to have caused the verification noncompliance problem. Rather, although almost everyone understood why they should verify, just over half reported that they felt awkward verifying when they'd had difficulty and/or found it time consuming to obtain the information initially. A very low minority still find it difficult to verify.

The interviews uncovered varied responses to verification. One EMD stated that they strongly disagreed that they felt awkward verifying the address and/or telephone number when it had been difficult to obtain. This EMD stated that it was important to ensure the information was correct and that utilizing the right customer service by explaining actions ensured they were confident in asking for the information. Another EMD, however, felt that it was not necessary to verify the information, as they had confidence in their ability to obtain the address correctly in the first instance. They felt verification would be perceived by the caller as not paying attention. The third interviewee found it could sometimes be awkward verifying the information if the caller was anxious or irate. The EMDs stated that they had improved in managing this situation by using suitable customer service, giving an action with a reason, and putting the focus on the importance of the EMD to get the information right for the caller. These findings indicate that the issue was largely behavioral, as a majority already understood how and why to verify. Coupled with the improvement over the year, this highlights that CDE can benefit some aspects of behavioral noncompliance by reinforcing what is expected and why it is expected (knowledge and skill). This finding is evidenced by the 85.4% who now do not find it difficult to correctly verify information.

The interview feedback highlights the importance of Customer Service in enhancing EMDs' abilities to manage a situation to improve performance. Almost everyone surveyed understood the risk of not verifying information in terms of patient care and delays. The majority of EMDs agree they believe they should still verify information even if they believe the correct details have been entered. The majority also agree that it makes a difference whether the caller repeats the information to the EMD or the EMD repeats it to the caller. Further interview questions aimed to establish whether the EMDs are aware of what that difference is. All four interviewees explained they understood that the process of having the caller repeat the information was to ensure they weren't agreeing to inaccurate information. Those surveyed were approximately evenly divided as to whether they agree/strong agree, disagree/strong disagree, or neither in response to the question about whether they wanted to understand why they needed to correctly verify information. This was contrary to the approximately half of the surveyed participants who wanted to understand how to correctly verify information. In other words, EMDs were focused on the skill of knowing how to correctly verify but were split in terms of the importance knowing why. This is interesting when compared to the 85.65% who advised they did understand how to verify. Even though 4.88% didn't understand what correct verification was, the large percentage were still interested in ensuring they understood the process. Thus, giving the EMDs the rationale for the area of protocol compliance is essential to improving performance.

Action Plans and noncompliant reviews drove much of their response to CDE. 19.5% advised that they don't agree with verification process but don't like receiving a noncompliant review. This indicates that they were aiming for compliance regardless of their belief of the protocol itself. However, nearly everyone stated they strive for protocol compliance, and no one said they don't strive for it.

Nearly two thirds EMDs are concerned they will be put on an Action Plan, and they had concerns with the Action Plan process. During the interviews, one of the EMDs advised that sometimes Action Plans were not confidential, since due to the layout of the Emergency Operations Centre (EOC) feedback had to be given at desks close to other EMDs. This could be embarrassing, and they would like to see Action Plans discreetly given in a separate room. Another EMD mentioned during the interview that they understood the necessity of Action Plans to address non-compliance and fulfil knowledge gaps. They advised, though, that the support needed to be constructive and positive rather than a disciplinary tool. A further EMD advised that they were concerned they would be put on an Action Plan, as the role of EMD can be high pressure. They advised that it makes them focus on what they got wrong, and they were concerned that an Action Plan would lead to Performance Management. Another EMD agreed with the concern that Action Plans would trigger Performance Management, as they had a bad experience with this in the past.

Finally, some EMDs interviewed highlighted the importance of receiving feedback and support by persons who were qualified (ED-Q), had experience delivering feedback, and were knowledgeable about the AMPDS. They explained that sometimes there were inconsistencies in these areas among staff and that this could make the feedback process a negative experience. The EMDs interviewed found more supportive CDE (such as workshops) very beneficial, as they encouraged staff engagement and thus increased moral.

Limitations

High staff turnover and absence at the time of survey reduced the number of EMDs available to reply. 43 people answered the first few questions, and 41 answered the majority. Some EMDs were not employed by YAS when the earlier CDE was undertaken. This has been accounted for in the first question by adding a not applicable option. Due to the EMDs' sharing computers, the survey was set up so it could be answered multiple times on one computer. To ensure the survey remained anonymous, it was not possible to monitor how many times each EMD responded to the survey.

CONCLUSION

The study demonstrated a direct correlation between CDE and improved performance in each of the desired areas. Structured CDE improves compliance performance,

particularly when it is mandatory for all staff. Frequent and varied CDE in an area with initially slow improvement can continue to have a positive effect on protocol compliance, as evidenced by the improvement in address verification. Varied CDE also accommodates an array of learning styles to support as many EMDs as possible. Having a structured non-compliance and action plan process in place motivates staff to improve, creates expectation of what is required, provides support, and sets out the consequence of what will happen if expectations are not met.

ACKNOWLEDGEMENTS

The author acknowledges the support of Tracey Barron, Research and Studies Officer, International Academies of Emergency Dispatch for facilitating the initial research of the quantitative data; Peter Mortimer, Research and Development Manager, Yorkshire Ambulance Service who assisted with research papers governance proposals; Christopher Olola Ph.D., Director of Biomedical Informatics and Research, International Academies of Emergency Dispatch for proof reading/reviewing the paper; and Jayne Whitehouse, Service Delivery Manager, Yorkshire Ambulance Service for supporting me the completion of this research. The author also acknowledges all the EMDs at Yorkshire Ambulance Service NHS Trust who participated in the study, and the Quality Audit Team for the creation and distribution of CDE.

Sources of funding: Not Applicable

Conflict of interest: The author is employed by Yorkshire Ambulance Service and certified by the International Academies of Emergency Dispatch as an Emergency Dispatch Quality Assurance (ED-Q) specialist.

Ethics approval: Not required

REFERENCES

1. Clawson JJ, Dernocoeur KB, Rose B. Quality Management. In: Principles of Emergency Medical Dispatch. 4th Ed. Salt Lake City, UT, USA: Priority Press. 2008: 3.9-10, 12.5-12.6.
2. Bradley EH, Curry LA, Devers KJ. Qualitative data analysis for health services research: developing taxonomy, themes, and theory. *Health Serv Res*. 2007; 42(4): 1758-1772.
3. Kumar R, Lightner R. Games as an Interactive Classroom Technique: Perceptions of Corporate Trainers, College Instructors and Students. *International Journal of Teaching and Learning in Higher Education*. 2007; 19(1): 53-63.