Recognising and referring children exposed to domestic abuse: a multi-professional, proactive systems-based evaluation using a modified Failure Mode and Effects Analysis (FMEA)

Laura Ashley[1] PhD, Gerry Armitage[2] PhD, Julie Taylor[3] PhD

[1] School of Social, Psychological and Communication Sciences, Faculty of Health and Social Sciences, Leeds Beckett University, Leeds, UK

[2] Faculty of Health Studies, University of Bradford, Bradford, UK & Bradford Institute for Health Research, Bradford Teaching Hospitals NHS Foundation Trust, Bradford, UK

[3] School of Nursing, Institute of Clinical Sciences, University of Birmingham, and Birmingham Children's Hospital, Birmingham, UK

Corresponding author

Professor Julie Taylor

School of Nursing

Institute of Clinical Sciences

University of Birmingham

Edgbaston

Birmingham B15 2TT

T: +44 121 414 8671

E: j.taylor.3@bham.ac.uk

Abstract

Failure Modes and Effects Analysis (FMEA) is a prospective quality assurance methodology, increasingly used in health care, which identifies potential vulnerabilities in complex, high risk processes and generates remedial actions. We aimed, for the first time, to apply FMEA in a social care context to evaluate the process for recognising and referring children exposed to domestic abuse within one Midlands city safeguarding area in England. A multi-disciplinary, multi-agency team of ten front line professionals undertook the FMEA, using a modified methodology, over seven group meetings. The FMEA included mapping out the process under evaluation to identify its component steps, identifying failure modes (potential errors) and possible causes for each step, and generating corrective actions. In this paper we report the output from the FMEA, including illustrative examples of the failure modes and corrective actions generated. We also present an analysis of feedback from the FMEA team and provide future recommendations for the use of FMEA in appraising social care processes and practice. Although challenging, the FMEA was unequivocally valuable for team members and generated a significant number of corrective actions locally for the safeguarding board to consider in its response to children exposed to domestic abuse.

Keywords

Bullet Points

What is known about this topic

- Failure Modes and Effects Analysis (FMEA) is a prospective quality assurance methodology increasingly used in health care to identify potential vulnerabilities in complex, high risk processes and generate remedial actions.

- FMEA has not to date been used to evaluate and improve the quality and safety of social care processes.

What this paper adds

- First study to explore the feasibility and utility of using a modified FMEA methodology to evaluate an aspect of a child safeguarding social care process (recognising and referring children exposed to domestic abuse).

- Reports a summary of the FMEA output, evaluative feedback from the FMEA team, and recommendations for using a prospective systems approach in appraising social care processes and practice.

Introduction

Domestic abuse is a universal public health concern (Garcia-Moreno & Watts 2011). Worldwide, almost one third of all women who have been in a relationship have been physically and/or sexually assaulted by an intimate male partner (World Health Organisation (WHO) 2013). As well as leading to significant long-term damage to women's health and wellbeing (Garcia-Moreno & Watts 2011, WHO 2013), children who live with domestic abuse can experience fear and anxiety, low self-esteem and difficulties at school, and are at a greatly increased risk of experiencing abuse and maltreatment themselves (McGuigan & Pratt 2001, Buckley *et al*. 2007, Holt *et al*. 2008). The impact of domestic abuse can endure for children long after measures have been taken to ensure their safety (Holt *et al*. 2008), and numerous studies have shown that adverse childhood experiences, such as directly or indirectly experiencing violence, are significantly associated with health and social problems in adulthood (Anda *et al*. 2010, Nelson *et al*. 2012). The economic cost of domestic abuse to countries has been estimated at billions yearly (Walby 2009). Despite its prevalence and harmful impact on women and children, studies continue to show that domestic abuse is underreported and under-recorded (Lazenbatt *et al*. 2009, Bradbury-Jones *et al*. 2014).

Serious Case Reviews (SCRs), undertaken in the UK to learn lessons from serious child maltreatment cases highlight the co-occurrence of domestic abuse and child maltreatment together with the grave outcomes that can occur when professionals fail to recognise and respond when children are exposed to violence (Cardiff LSCB 2013). It is acknowledged universally that child protection work is intrinsically difficult and high-risk, and that professionals from all agencies face numerous challenges and complex decisions in recognising and responding to children who are exposed to domestic abuse and maltreatment (Gilbert *et al*. 2009, Munro & Hubbard 2011). Despite this, child protection failures reinforce

the pressing need to find effective ways to appraise and improve the quality and safety of child safeguarding practices and the complex systems within which they reside.

This century has seen a growing recognition in health care of the prevalence and inevitability of health care error, and a shift in approaches to appraising and improving the quality and safety of patient care processes (Plsek & Greenhalgh 2001, Armitage 2009). There has traditionally been a tendency to attribute the principal causes of errors to the failings of individual clinicians and to undertake reactive investigations following particular adverse incidents (analogous to SCRs). However, in the last 20 years there has been a shift towards a systems approach to safety which recognises that errors result from the failings of complex systems. In healthcare, the emphasis on a systems approach has also led to a more proactive form of risk management and improving safety before errors occur (Coles *et al*. 2010, Lawton *et al*. 2015). A systems approach and indeed prospective safety evaluation have industry origins and have long been used in high-risk industries such as aviation and nuclear power. There are now calls for the adoption of a systems approach to evaluating and improving the quality and safety of social care practice and processes, both retrospectively in the review of particular adverse incidents, as well as prospectively prior to and unrelated to specific incidents (Munro & Hubbard 2011, Armitage *et al*. 2012). In common with health care, social care processes and systems are often and increasingly multi-professional and multi-agency, fast-paced and socio-technical; such parallels suggest that the systems and proactive approaches now espoused in health care could be usefully applied to social care. However, there are also clear differences between health and social care which has led to inevitable questions about the feasibility and utility of systems approaches for evaluating social care processes (Rawlings *et al*. 2014); for example, social care is less protocol-driven than health care, and professional judgements are more dependent on factors not amenable to

measurement. This has been robustly defended by Fish *et al.* (2008) who describe social care as a socio-technical system – one where people and technology interact.

As health care has espoused industry-derived approaches to safety, so too has it looked to adopt industry-based methods and tools for assessing and improving safety. One tool that has received considerable attention is Failure Mode and Effects Analysis (FMEA), a risk assessment methodology used to identify potential vulnerabilities in complex, high-risk processes and to generate corrective strategies to counteract these before they result in adverse events (Ashley *et al.* 2011). A multidisciplinary team of subject matter experts typically undertakes a FMEA over a series of team meetings and, although several variants exist, FMEA has a formal, sequential process (shown in Figure 1).

Figure 1: Five stages of a FMEA (Ashley *et al,* 2011)

1) Map the process under evaluation to identify its component steps

2) Identify failure modes (potential errors) for each process step

3) Numerically score the failure modes to prioritise them according to the risk they pose

4) Identify possible causes for the highest-risk failure modes (and based on these)

5) Generate corrective actions to address them

In order to effect change the corrective actions described in Step 5 must of course be implemented and should subsequently be monitored to assess impact. FMEA has been successfully used to proactively assess and improve the safety of a range of different health care processes in numerous settings and countries including medicines management, blood transfusion and organ transplantation (e.g. Burgmeier *et al.* 2008, Steinberger *et al.* 2009,

Armitage *et al*. 2011, Ashley *et al*. 2011). Despite the extensive use of FMEA in health care, it appears that FMEA has not to date been used to appraise and improve the quality and safety of a social care process.

In a project commissioned by the UK National Society for the Prevention of Cruelty to Children (NSPCC), we explored the feasibility and utility of using FMEA to evaluate an aspect of a child safeguarding social care process. Specifically, we used a modified FMEA methodology to evaluate the process for recognising a child who is exposed to domestic abuse and responding in terms of making a referral to social care services for children and young people. This paper reports a summary of the FMEA process, including illustrative examples of the failure modes and corrective actions generated. Given the novel and exploratory nature of using FMEA in a social care context, we also collected feedback from the FMEA team. Finally, as potential impact was important to commissioners and the Local Safeguarding Children's Board (LSCB), we reflect on and provide future recommendations for the use of a prospective systems approach, and specifically FMEA, in appraising social care processes and practice. This paper will be of interest to service managers, LSCB members, commissioners, front line practitioners and researchers, particularly those who are involved in child protection and/or who are looking to use a proactive, systems-based approach to improve social care processes.

The Process

Setting

The FMEA was undertaken between July and October 2012 in a city in the English midlands in partnership with the city council's LSCB. The Boards in England have a mandatory duty to co-ordinate how agencies work together to protect children and to ensure effectiveness of

those arrangements (HM Government 2015). The city's population of approximately 250,000

is ethnically and linguistically diverse and is relatively deprived in national terms, although

deprivation levels vary considerably across city wards (Office for National Statistics, 2014).

The city has a higher than national average rate of referrals relating to safeguarding and

family support. As the FMEA was classified as a quality improvement project, and did not

involve service users or any review of social care records, ethical and governance approvals

were not required. However, permissions to recruit staff from local teams and discuss their

SCR processes were given by the LSCB, and all participation was voluntary. The LSCB

location is not revealed and all discussions were confidential and reported anonymously.

FMEA Team

The FMEA team (Figure 2) comprised 10 frontline professionals with day-to-day

responsibility for safeguarding children. Team members were recruited from several different

professional groups, and possessed varying levels of experience and seniority. The team

included a senior manager with a role in shaping policy and practice as well as being a

member of the LSCB.

Figure 2. Composition of the FMEA team; TM = team member

Social work	TM-1	Senior Social Worker, Children and Young People's Department
	TM-2	Social Work Manager, Children and Young People's Department
Health care	TM-3	School Nurse
	TM-4	Named Midwife, local hospital
	TM-5	Young Persons Substance Misuse Commissioner and Safeguarding Lead
	TM-6	Designated Safeguarding Nurse & Local Safeguarding Children Board member
Education	TM-7	Assistant Head / Child Protection Officer, local pupil referral unit
Police	TM-8	Police Constable, local Constabulary
	TM-9	Detective Sergeant, local Constabulary

> TM-10   Detective Chief Inspector, local Constabulary

Team meetings were led and facilitated by a senior NSPCC consultant with a background in children's social work; the role of the facilitator incorporated setting ground rules, assuring participants were not threatened by any part of the process, could withdraw if they felt distressed, and were able to raise negative issues without compunction. This team leader was supported by two academic researchers with experience of FMEA in health care settings, following recommendations that FMEA teams also include 'outsiders' so as to facilitate the team's adoption of a critical but unbiased approach (DeRosier *et al*. 2002, Ashley *et al*. 2010a). An administrator made a contemporaneous record of all team meetings.

FMEA Procedure

We employed a modified FMEA methodology. As noted earlier, FMEA traditionally entails a prioritisation step whereby failure modes are numerically scored, typically on the basis of their likely severity (S), occurrence (O) and detectability (D), and these scores are then multiplied in order to obtain a risk priority number (RPN), where higher numbers indicate greater safety risk (e.g. Armitage *et al*. 2011). However, recent literature appraising the use of FMEA in health care has questioned the reliability and validity of FMEA risk scoring and the consequent prioritisation of failure modes, and highlighted the mathematical violations and limitations of calculating a RPN by SOD multiplication (Ashley & Armitgae 2010b, Franklin *et al*. 2012, Shebl *et al*. 2012). Additionally, although failure mode scoring is undertaken to help focus attention and resources towards greatest risk, it does ultimately mean that many potential but low-scoring failure modes are simply ignored. Reflecting on the recent critique of FMEA risk scoring, and the current project's novel application of FMEA methodology in a social care context, the team decided it was neither feasible nor desirable to prioritise the

failure modes. Therefore, causes and corrective actions were generated for all potential failure modes, rather than just for a high-scoring subset.

The FMEA was undertaken over seven 3-hour face-to-face team meetings, spaced approximately biweekly. Over the course of these meetings, the team undertook the methodological steps detailed in Figure 1 (except step 3). Although the process for recognising and referring a child exposed to domestic abuse is governed by local and national policies, the team did not map the process and identify failure modes (and so on) according to such policies, but rather, according to the team's current, local practice. To facilitate the identification of failure modes, and the subsequent generation of related causes and corrective actions, the academic researchers encouraged the team to consider potential failure modes at the level of the individual, in relation to local conditions, and at an organisational level (also termed latent conditions). It was explained to the team that latent conditions are not seen as direct causes, but as contributory factors that are necessary for any causal agents (more proximal to failure modes) to generate an impact. In line with this thinking we also indicated that front line practitioners rarely instigate organisational failures but often inherit the (problematic) latent conditions, (e.g. poorly designed IT systems, training inadequacies) (Reason 2008). Outside meetings, the team leader synthesised, documented and circulated the session's output for team member review and comment.

Evaluation

Team members completed an evaluation questionnaire and a semi-structured interview to provide feedback on the FMEA project. The feedback questionnaire was completed anonymously online and included items on the composition of the FMEA team and meeting administration, the perceived usefulness and value of the FMEA, and the experience of taking part. The feedback interviews were undertaken face-to-face (with the exception of one

telephone interview). To encourage candid feedback, interviews were conducted

individually, by a doctoral student uninvolved in the FMEA.

Findings

Process mapping

The process for recognising and referring a child exposed to domestic abuse was mapped out

in ten main steps, from the point of receiving information about a child (e.g. through first-

hand observation or by email from a third-party) - which arouses a suspicion that the child is

exposed to domestic abuse (steps 1 & 2) - to the point of making a child protection referral to

social care services and confirming receipt of this referral (steps 9 & 10). Five of the main

steps had numerous sub-steps; e.g. the fifth step 'analyse information received' had three sub-

steps including review of all the information to hand, identification of the features of

domestic abuse within the information and documentation. The final version of the process

map generated by the FMEA team included a categorised list of 'influencing factors', such as

personal values, fear of retribution and co-worker morale, which the team saw as having a

bearing on professional decisions and actions at various steps in the process. Although

atypical of FMEA mapping, efforts to incorporate such social influences into the map are

perhaps inevitable given the highly interpersonal nature of the process under examination.

Identifying failure modes

In total, 121 failure modes were identified. We present here some illustrative examples of the

failure modes for three particular steps of the process. For the fourth step '*gather further

information*' and sub-steps, 22 failure modes were generated. These included failure to gather

a sufficiently adequate amount of information, failure to gather information from appropriate

sources, and making attempts to gather further information but being unsuccessful (i.e. efforts

being thwarted). A total of 17 failure modes were identified for the fifth step '*analyse information received*' and sub-steps, and included: not analysing all the information to hand, identifying too few of the features of domestic abuse and wrongly identifying such features. For the seventh step '*make judgement on child's exposure to domestic abuse*' 18 failure modes were generated, including wrongly identifying the risk and/or protective factors, not using a tool to weigh these factors against each other and not ultimately determining the balance of risk to the child.

Identifying causes

Ninety-seven individual causes for the failure modes were identified, with many applicable to more than one failure mode. Some causes were identified at the level of the individual, in association with specific local conditions and organisational level factors. Individual-level causes included professionals' lacking knowledge and confidence, and becoming desensitised to childhood trauma and abuse, potentially then having higher thresholds for safeguarding concerns. The causes generated by the team which were thought to relate to local conditions included: workload and time pressures, inaccessible supervision and peer-guidance, and having a 'competing' work goal or orientation deflecting attention from protecting children. For example, professionals may be focused on other work priorities (e.g. teaching in a classroom) or oriented towards the adults in a domestic situation (e.g. pregnancy or drug misuse). At an organisational level, causes included policies and procedures that were seen as overly administratively burdensome to the point of obstruction, and difficulties with cross-agency communication due to differences in information and communications technology (e.g. causing emails to be blocked by firewalls), terminology and agreed standards of best practice. For example, team members noted that social work records are largely inaccessible for children new to a locality, because in their experience records stay with the social worker rather than move with the child. Other causes were also identified which might be considered

'case specific', such as fear of (family) retribution, language barriers and worries about accusations of racism across different cultures.

Generating corrective actions

A total of 34 corrective actions was generated. The actions were diverse and included changes focused on policy and procedures, information technology, professional awareness and training, and practitioner tools and documentation, and changes which were aimed at addressing causes at the individual, local and organisational levels. The team's suggested changes to policy and procedures included a need (possibly for LSCBs) to audit and monitor local schools to ensure they all have an accessible child protection policy and that such policies are consistent, along with the need to establish a transfer protocol within social work for the handover of pertinent social care records when a child moves to a new locality. A cluster of corrective actions focused on information technology included, in the short-term, using workarounds to prevent cross-agency email communications from being blocked (e.g. typing s-ex rather than sex), and, in the longer-term, reviewing and adjusting agencies' firewalls to stop legitimate communications from being blocked. Actions around professional awareness and training included, at a simple level, holding local multi-agency child protection training sessions at schools to facilitate the attendance of teachers (which is historically low), and, more ambitiously, developing a local network of domestic abuse champions or 'safeguarding stars' who model good practice and help to promote awareness of and dispel common 'myths' around domestic abuse. It was suggested that a third sector organisation might spearhead the establishment of such an initiative. Suggested revisions to practitioner tools and documentation included developing compulsory prompt questions for enquiring about domestic abuse and adding these questions to key documents across agencies (e.g. midwife assessment forms, police interview forms). The team also recommended a review of the nationally-used Domestic Abuse, Stalking and Honour-based violence checklist

(DASH) (Richards 2009) for risk assessment, and for this review to include consideration of adding to the DASH an explicit risk classification for each child of the adult 'victim'.

Evaluation questionnaire and interviews

All ten team members completed the feedback questionnaire, and the closed-responses across most domains were generally very positive. The composition of the FMEA team and the way meetings were run was highly valued and it was seen as helpful having outsider perspectives with no familiarity with the child protection system. The team was unanimous in saying they both understood the FMEA process and could speak freely during meetings. In terms of perceived utility and value of the FMEA, there was team unanimous agreement that each of the methodological steps (see Figure 1) had been *very useful* or *useful*, that it "has been worth my time and effort", and had provided new insights into other professional perspectives. The experience of taking part was seen as both motivating and enjoyable. All team members participated in a short feedback interviews. All team members said they thought FMEA was an effective methodology

> If it came to a question of would you use it again for this kind of social, dynamic social situation or not, then I would say yes. It has real world value [TM-8]

> Having come to the end now, I think it has been a really effective process…I have seen it as quite beneficial [TM-4]

Team members commented positively on the detail demanded by an FMEA and welcomed the protected 'time out' to reflect systematically and deeply on processes and practice.

> ….it's very effective in terms of the amount of detail it goes into…corrective actions they obviously make so much sense 'cos they flowed from all the detailed work that they do, so I think the methodology's really valuable [TM-2]

Team members valued the collaborative nature of FMEA and appreciated the opportunity to carefully examine aspects of child safeguarding processes with other professionals. There was widespread acknowledgement that for the FMEA to be worthwhile and truly effective the outcomes must be translated into practice. Team members perceived implementation of the corrective actions to be a shared responsibility and intimated that they had in some cases already begun to make changes to their systems and/or personal practice. During the FMEA the team decided by consensus not to prioritise the failure modes. The majority of the team highlighted the difficulty of risk scoring, and said that they thought failure modes should not be prioritised.

> You start to question, actually, can one of them be prioritised over another"; "I think it feels unsafe to do it [TM-5]

The team strongly believed their involvement had provided considerable learning, increasing their knowledge and understanding of the different roles and internal working processes of other agencies, and about their drivers and challenges. It was also felt that taking part in the FMEA had extended and/or enhanced their professional networks.

> I learned a hell of a lot about what the police perceive I do, what they do. It was fantastic for me, me seeing colleagues from a different discipline. Who I work alongside but I realise I never actually understood how they did what they did [TM-1]

Discussion

This exploratory service evaluation used a modified FMEA methodology to evaluate the process for recognising and referring children exposed to domestic abuse. Despite the growing use of FMEA in health care, to our knowledge, this is the first application of FMEA to appraise and improve the quality and safety of a social care process. Also it is one of the

first attempts to respond to the call for a whole systems approach in error management and specifically addresses the proposed use of FMEA as a means of generating multi-agency learning (Munro 2011). Here we reflect on and discuss the feasibility and utility of using FMEA in a social care context. Finally, we provide recommendations for all those involved in the prevention of domestic abuse, as well as researchers in the field who may be looking to use proactive systems approaches like FMEA as a means of evaluation.

Feasibility of FMEA in a social care context

This project show that is feasible to apply FMEA to a social care process – albeit using a modified methodology in terms of scoring and mapping. Like others (Franklin *et al*. 2012, Shebl *et al*. 2012), we have become sceptical of the validity of failure mode scoring and so we chose to omit this element of the methodology. In the feedback interviews after completion of the FMEA, most team members expressed doubt that failure mode scoring was possible or desirable. We agree with the FMEA team in that scoring all failure modes (assigning a score to the likely occurrence and severity, and the detectability) would have been particularly difficult in a social care context as the process under evaluation does not occur in a small-scale space such as a factory or hospital ward, but rather the large geographical area of a city and is being analysed from the various perspectives of different professionals, who are also, importantly, from different agencies. Tangential to the challenges of scoring failure modes, the team also found it difficult to map the process under scrutiny. In response to this, and unusually for a FMEA, the map included a list of 'influencing factors' which impact upon professionals' decisions and actions at various steps of the process – this allowed such factors to be acknowledged and drawn upon in the later FMEA steps, but also to be 'contained' such that a useable map could still be created. In order to map social care processes which are less protocol-driven than processes in industry and health care, and which involve professional judgements which are more dependent on

unmeasurable factors, it will likely be necessary to generate modified process maps such as this one. We argue that this does not diminish the value of the FMEA, indeed we believe that it enhances the way in which a complex, social process is shown to exist.

Despite the pivotal role school teachers occupy for recognising and protecting children exposed to domestic abuse (Crosson-Tower 2003), it proved difficult to recruit representatives from education to the FMEA team, and in the feedback interviews several team members expressed their disappointment at the underrepresentation of education. Our difficulty recruiting teachers may be simply be a reflection of their workload pressures (Johnson *et al*. 2005), or be unique to this project, although there is evidence to indicate that many teachers' lack knowledge and confidence about child protection (McGarry & Buckley 2013) and this could have undermined their confidence to join the FMEA team. We highlight the underrepresentation of education on our team for others to consider and address as a potential barrier when planning children's social care FMEAs.

We have demonstrated that it is *possible* to use FMEA in a social care context, however, it is only *practicable* provided there is sufficient protected time for team members and that they receive unconditional managerial support. Managerial support is more likely to be received when FMEA meetings are facilitated effectively; making certain that time is not devoted to marginal issues (Carlson 2012).

Utility and acceptability of FMEA in a social care context

The utility of the FMEA can be judged positively in two key ways. First, although the FMEA inevitably raised and 'replicated' perennial issues and challenges around safeguarding children such as interagency communication, decisions on role boundaries and threshold decisions (Sidebotham 2012), it also generated novel insights into a complex process embedded in a complex socio-technical system. This was evident in the team's

acknowledgement of the impact of various interrelating factors such as staff failing to refer appropriately due to uncertainty about existing procedures alongside technical factors, such as emails containing terms common to the description of domestic abuse being blocked by poorly calibrated firewalls. Furthermore, new ideas were advanced for service improvement which did not appear to have been previously considered in the locality (e.g. multi-agency training sessions on domestic abuse to be held at schools to encourage education sector attendance). Second, many team members felt that they had personally benefitted from participating in the FMEA, notably in terms of gaining increased understanding of other professionals' roles and challenges and, related to this, improved team working and communication. These team-building benefits of FMEA have been noted by others (Steinberger *et al*. 2009, Ashley *et al*. 2011). Given the central and persistent role of communication failures in adverse events in healthcare (Sutcliffe *et al*. 2004, Lawton *et al*. in press), and across the various agencies in social care (DH/Home Office 2003, Laming 2009), the reported benefit of participation in the analysis for team members would seem to be a strong benefit. The feedback from the team members suggests that these benefits are owed, at least in part, to the prospective, systems-approach of the methodology, participants having indicated that they felt able to be forthright and candid, in contrast to SCRs where it was suggested that they would be far more cautious and indeed defensive.

The FMEA process resembles what one might see from in an experience based co-design (EBCD) process where patients and staff work together directly drawing on their experience to redesign a service, although a bespoke EBCD here would likely involve public representatives and as such, we recommend future FMEAs in this sphere of practice consider public involvement. Therefore we believe that the FMEA process, especially in relation to organisational level corrective actions, be considered by service managers as complementary to other user-driven feedback mechanisms. We argue that a prospective approach is an

obvious way forward, yielding considerably more information than a retrospective approach – largely because organisational failures in social care (especially involving children) can have the most catastrophic of outcomes; investigations can be easily blighted by hindsight bias (Henrikson & Kaplan 2003); and the results of an investigation are often highly and emotively publicised. Furthermore, it is not uncommon for the front line workers involved to be demonised and blamed by media and public (Lonne & Parton 2014). Lastly, the nature of the professional-client relationship is different in social care to health – sometimes characterised by defensiveness and anger rather than gratitude (Bradbury-Jones *et al*. 2014). In this FMEA we attempted to enhance a whole systems approach by encouraging the team to move away from individual culpability and towards a contributory factors approach where the reason for failure is almost always multi-factorial.

Impact

Following this work, the NSPCC used FMEA during 2013 to explore supervisory processes within the delivery of NSPCC services. Given that NSPCC is a UK-wide service and travel is an issue, senior managers, in consultation with NSPCC staff who had experience of FMEA from this domestic abuse project, adapted the FMEA format to enable the process to be completed over two full day sessions. The FMEA facilitator employed on the domestic abuse FMEA reported here provided the internal expert advice on both the planning and implementation of the FMEA and led the facilitation. However, in contrast to here, the improvement team also developed the implementation plan. Overall, FMEA was seen to be a suitable process for identifying problems in a given system. On the basis of the FMEA outcome, the NSPCC was able to target specific problems and revise the supervisory processes accordingly.

Future recommendations for using FMEA as part of a whole systems approach in social care

In summary, we offer a number of recommendations:

1. Underpinning a FMEA with established theory on accident causation and human error can enhance the depth of analysis but also serve to give participants the confidence and competence to recognise the ubiquity of error and the futility of individual blame in managing failure.

2. FMEA is time consuming and therefore costly. However, a 'mini-mapping' (step 1, Figure 1) could be of benefit especially for team building, empathic understanding and raising misunderstandings, highlighting discrepancy between policy and practice. In essence however, while cost is a major consideration, it is dwarfed by the cost of an inquiry after a major failure.

3. The nature and context of social care, and specifically safeguarding against domestic abuse, is not amenable to the scoring of failure modes, or indeed their prioritisation

4. Team members require protected time to attend and with managerial support

5. Management should be represented in the team and have a designated responsibility (with LSCBs) to develop an action plan for reviewing and (if agreed) implementing any recommended changes. A local 'champion' who is a front line professional should be appointed directly from the team to support management for the duration of the action plan.

6. Future FMEAs here are likely to be enhanced by public involvement, and initiated from the first stage; a lay perspective would be especially helpful in generating corrective actions. Additionally, public involvement in analysing failure is an important step in advancing transparency and professional accountability.

7. A FMEA is not static - it is an illustration of practice at one time. It is essential that the process originally scrutinised is revisited. We suggest that any repeat FMEA would not need to be as resource intensive.

8. FMEA facilitators should not only be conversant with the FMEA process but also a systems approach to organisational failures and have experience of working with multi-agency teams who are very likely be working together on a potentially sensitive topic.

Limitations of this work

We were unable to develop a full multi-agency picture of the process under scrutiny or how it might be improved due to the lack of consistent attendance from education representatives, something seen as a particular weakness by the FMEA team. Second, although generalisability of FMEA findings is commonly cited as a limitation, we are confident that the failure modes identified would resonate with all those in the field as being repeatedly reported in major inquiries and that this work strongly suggests they continue to pose a threat to the welfare of children exposed to domestic abuse. Third, the extent of system-wide change following the FMEA has been difficult to establish; and although we are aware of changes in NSPCC practice, our fifth recommendation reflects the need for a more focused approach on implementing change post-FMEA.

Conclusion

Domestic abuse is acknowledged as a public health issue of epidemic proportions and seemingly on the rise. The seriousness of exposure to domestic abuse for children is increasingly being recognised. Whilst response to this issue is variable, attempts to appraise processes around this with a view to making service and response seamless and timely are important. Although the child protection process is unwieldy and complex, systematic and

prospective quality assurance methodologies can be applied with success. Our use of FMEA within one safeguarding board locality demonstrated that for a focused issue (response to domestic abuse exposure), FMEA was possible and helpful in a child protection situation. It was neither possible nor desirable to 'score' failure modes and mapping the process was difficult. Nonetheless, the FMEA process was hugely beneficial in demonstrating the existence of wider influences within a complex situation. We have demonstrated that whilst it is possible to use FMEA within child protection, it is only practicable if there is managerial support and sufficient protected time. In balance though, whilst FMEA is costly in staff time, the human and economic costs of domestic abuse are so great, and the potential outcomes for children so severe, that FMEA and other human factors approaches may be beneficial in the longer term.

References

Anda, R.F., Butchart, A., Felitti, V.J., & Brown, D.W. (2010) Building a framework for global surveillance of the public health implications of adverse childhood experiences. *American Journal of Preventive Medicine* **39**, 93-98.

Armitage, G. (2009) Human error theory: relevance to nurse management. *Journal of Nursing Management* **17**, 193-202.

Armitage, G., Hodgson, I., Wright, J., Bailey, K., & Mkhwana, E. (2011) Exploring the delivery of antiretroviral therapy for symptomatic HIV in Swaziland: threats to the successful treatment and safety of outpatients attending regional and district clinics. *BMJ Quality and Safety* **20**, 52-59.

Armitage, G., Taylor, J., & Ashley, L. (2012) Systematic assessment in child protection: improving outcomes. *Nursing Children and Young People* **24**, 20-22.

Ashley, L., & Armitage, G. (2010b) Failure mode and effects analysis: an empirical comparison of failure mode scoring procedures. *Journal of Patient Safety* **6**, 210-215.

Ashley, L., Armitage, G., Neary, M., & Hollingsworth, G. (2010a) A practical guide to failure mode and effects analysis in health care: making the most of the team and its meetings. *Joint Commission Journal on Quality and Patient Safety* **36**, 351-358.

Ashley, L., Dexter, R., Marshall, F., McKenzie, B., Ryan, M., & Armitage, G. (2011) Improving the safety of chemotherapy administration: an oncology nurse-led failure mode and effects analysis. *Oncology Nursing Forum* **38**, E436-E444.

Bradbury-Jones, C., Taylor, J., Kroll, T., & Duncan, F. (2014) Domestic abuse awareness and recognition among primary healthcare professionals and abused women: qualitative investigation. *Journal of Clinical Nursing* **23**, 3057-3068

Buckley, H., Holt, S., & Whelan, S. (2007) Listen to me! Children's experiences of domestic violence. *Child Abuse Review* **16**, 296-310.

Burgmeier, J. (2002) Failure mode and effect analysis: An application in reducing risk in blood transfusion. *The Joint Commission Journal on Quality and Patient Safety* **28**, 331-339.

Carlson, C.S. (2012) Effective FMEAs: achieving safe, reliable, and economical products and processes using Failure Mode and Effects Analysis. Wiley: New Jersey.

Coles, G., Fuller, B., Nordquist, K., Weissenberger, S., Anderson, L., & DuBois, B. (2010) Three kinds of proactive risk analyses for health care. *The Joint Commission Journal on Quality and Patient Safety* **36**, 365-375.

Crosson-Tower, C. (2003) The role of educators in preventing and responding to child abuse and neglect. https://www.childwelfare.gov/pubPDFs/educator.pdf

Department of Health and The Home Office. The Victoria Climbié Inquiry, Report of an Inquiry by Lord Laming, Cm 5730, January 2003.

DeRosier, J., Stalhandske, E., Bagian, J.P., & Nudell, T. (2002) Using health care Failure Mode and Effect Analysis: the VA National Center for Patient Safety's prospective risk analysis system. *Joint Commission Journal on Quality and Patient Safety* **28**, 248-267.

Fish, S., Munro, E., & Bairstow, S. (2008) *'Learning together to safeguard children: developing a multi-agency systems approach for case reviews'*. Social Care Institute for Excellence.

Franklin, B.D., Shebl, N.A., & Barber, N. (2012) Failure mode and effects analysis: too little for too much? *BMJ Quality and Safety* **21**, 607-611.

Garcia-Moreno, C., & Watts, C. (2011) Violence against women: an urgent public health priority. *Bulletin of the World Health Organization* **89**, 2-3.

Gilbert, R., Kemp, A., Thoburn, J., Sidebotham, P., Radford, L., Glaser, D., & MacMillan, H.L. (2009) Recognising and responding to child maltreatment. *Lancet* **373**, 167-180.

Henriksen, K., & Kaplan, H. (2003) Hindsight bias, outcome knowledge and adaptive learning. *Quality and Safety in Health Care* **12**, ii46-ii50.

HM Government (2015) Working Together to Safeguard Children. TSO: London

Holt, S., Buckley, H., & Whelan, S. (2008) The impact of exposure to domestic violence on children and young people: a review of the literature. *Child Abuse and Neglect* **32**, 797-810.

Johnson, S., Cooper, C., Cartwright, S., Donald, I., Taylor, P., & Millet, C. (2005) The experience of work-related stress across occupations. *Journal of Managerial Psychology* **20**, 178-187.

Laming, H. (2009) The protection of children in England: a progress report.

http://dera.ioe.ac.uk/8646/1/12_03_09_children.pdf

Lawton, R., McEachan, R.R.C., Giles, S., Sirriyeh, R., Watt, I., & Wright, J. (in press) Development of an evidence-based framework of factors contributing to patient safety incidents in hospital settings: a systematic review. *BMJ Quality and Safety*.

Lawton, R., O'Hara, J.K., Sheard, L., Reynolds, C., Cocks, K., Armitage, G., & Wright, J. (in press) Can staff and patient perspectives on hospital safety predict harm-free care? An analysis of staff and patient survey data and routinely collected outcomes. *BMJ Quality and Safety*.

Lazenbatt, A., Taylor, J., & Cree, L. (2009) A healthy settings framework: an evaluation and comparison of midwives' responses to addressing domestic violence. *Midwifery* **25**, 622-636.

Lonne, B., & Parton, N. (2014) Portrayals of child abuse scandals in the media in Australia and England: impacts on practice, policy, and systems. *Child Abuse and Neglect* **38**, 822-836.

McGarry, K., & Buckley, H. (2013) Lessons on child protection: a survey of newly qualified primary-level teachers in Ireland. *Child Abuse Review* **22**, 80-92.

McGuigan, W.M., & Pratt, C.C. (2001) The predictive impact of domestic violence on three types of child maltreatment. *Child Abuse and Neglect* **25**, 869-883.

Munro, E. (2011) The Munro review of child protection: final report a child-centred system.

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/175391/Munro-Review.pdf

Munro, E., & Hubbard, A. (2011) A systems approach to evaluating organisational change in children's social care. *British Journal of Social Work* **41**, 726-743.

Nelson, S., Baldwin, N., & Taylor, J. (2012) Mental health problems and medically unexplained physical symptoms in adult survivors of childhood sexual abuse: an integrative literature review. *Journal of Psychiatric and Mental Health Nursing* **19**, 211-220.

Office for National Statistics (2014) 2011 Census Analysis. http://www.ons.gov.uk/ons/rel/census/2011-census-analysis/inequality-in-general-health-and-activity-limiting-health-problems-and-disabilities-by-imd-2010-area-deprivation--england-2011/index.html

Plesk, P., & Greenhalgh, T. (2001) The challenge of complexity in health care. *BMJ*, 323:625

Rawlings A., Paliokosta P., Maisey D., Johnson J, Capstick J., & Jones R. (2014) A study to investigate the barriers to learning form serious case reviews and identify ways of overcoming these barriers. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/331658/RR340.pdf

Reason, J.T. (2008) *The Human Contribution: unsafe acts, accidents, and heroic recoveries*. Ashgate: Farnham, UK.

Richards, L. (2009) DASH risk identification and assessment and management model. http://www.dashriskchecklist.co.uk/

Shebl, N.A., Franklin, B.D., & Barber, N. (2012) Failure mode and effects analysis outputs: are they valid? *BMC Health Services Research* **12**:150.

Sidebotham, P. (2012) What do serious case reviews achieve? *Archives of Disease in Childhood* **97**, 189-192

Steinberger, D.M., Douglas, S.V., & Kirschbaum, M.S. (2009) Use of failure mode and effects analysis for proactive identification of communication and handoff failures from organ procurement to transplantation. *Progress in Transplantation* **19**, 208-214.

Sutcliffe, K., Lewton, E., & Rosenthal, M. (2004) Communication failures: an insidious contributor to medical mishaps. *Academic Medicine* **79**, 186-194.

Walby, S. (2009) *The Cost of Domestic Violence: Up-date 2009.* Lancaster University, Lancaster.

World Health Organisation. (2013) Global and regional estimates of violence against women: prevalence and health effects of intimate partner violence and non-partner sexual violence: executive summary.

http://apps.who.int/iris/bitstream/10665/85241/1/WHO_RHR_HRP_13.06_eng.pdf?ua=1