Multi-Protocol Discipline Agencies Use Different Protocols To Process Traffic Accidents

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ABSTRACT

Introduction: Traffic incidents (collisions and crashes) are among the most common call types handled by Emergency Communication Centers (ECCs). They are also among the most complex call types because they represent such a range of possible situations. ECCs that handle calls in multiple disciplines (medical, fire, and law enforcement) may have multiple protocols available for handling traffic incidents because the Medical Priority Dispatch System, Police Priority Dispatch System, and Fire Priority Dispatch System each contains its own traffic and transportation incident protocol.
Objectives: The primary objective of this pilot study was to determine which of the three traffic incident protocols multi-discipline agencies select to use (or use first) in handling these call types and what their reasons are for their selections.
Methods: This was a prospective, descriptive, uncontrolled pilot study using a structured online survey. Contact persons at ECCs that used two or more of the Medical Priority Dispatch System, Police Priority Dispatch System, and/or Fire Priority Dispatch System were surveyed. Descriptive statistics were used to present outcomes in all analyses.
Results: Of the 27 agencies contacted, 21 responded to the survey, and 17 respondents were ECC managers (n=8), quality assurance managers (n=5), or training/shift supervisors (n=4). Selections were almost exactly evenly split, with agencies not clearly preferring any one of the three protocol disciplines or any specific combination. A majority of the emergency dispatchers use agency policies and/or interrogation at Case Entry to decide which protocol discipline to launch and use to process traffic accidents calls.
Conclusion: Results indicate that agency policy largely determines which discipline to launch when processing a traffic accident/crash/incident, or the emergency dispatcher makes the determination based on what information is gathered during Case Entry. Factors influencing the decision are the presence or absence of injuries, the need for special rescue operations or specialized response vehicles, and the presence of on-scene hazards or scene safety concerns.

INTRODUCTION

Emergency Communication Centers (ECCs) generally handle calls for help in three basic disciplines: medical, fire, and police. While some ECCs are single-service centers, handling calls for only one agency or type of response, many handle responses for multiple services. Such "consolidated" centers are in fact increasing,[1] in line with attempts to reduce costs (often by reducing the number of emergency dispatchers[2]) and standardize services[3-6] Agencies that combine fire and emergency medical services (EMS) response are very common, and some ECCs are fully consolidated, handling calls and dispatching resources for all three types of events. Some call types may require resources to be sent from more than one discipline; for example, a structure fire involving burn victims will require both a fire service and an EMS response. Other call types may require different responses depending on the specifics of the case, or may require one type of response first and then another later, such as a domestic violence situation in which police must first remove the suspect before medical help can be sent in.

Traffic incidents (collisions and crashes) are among the most common call types handled by ECCs.[7] They are also among the most complex call types because they represent such a wide range of possible situations. Some incidents reported as traffic incidents are "fender benders," with no injuries, little or no property damage, and no need for rescue resources. In these cases, the most appropriate response may be to send a single law enforcement officer to produce an accident report. Other traffic accidents may involve serious

injuries requiring EMS response or the need for extrication tools generally managed by the fire service. Still others may involve trains, buses, or other large, multi-passenger vehicles that require specialized response.

In order to accommodate the different types of agencies and responses, the International Academies of Emergency Dispatch (IAED) has developed a separate Chief Complaint Protocol for handling traffic accidents on each of its dispatching protocols, the Medical Priority Dispatch Protocol (MPDS), Police Priority Dispatch Protocol (PPDS), and Fire Priority Dispatch Protocol (FPDS). The MPDS contains Protocol 29: *Traffic/Transportation Incidents*, with a focus on scene safety and possible injured patients. The FPDS contains Protocol 77: *Motor Vehicle Collision*, which includes questions about injuries but focuses more heavily on the possible need for specialized resources. Both triage traffic collisions primarily according to the mechanism of the crash or injuries. The PPDS contains Protocol 131: *Traffic/Transportation Incident (Crash)*, which gathers similar information but also information related to vehicle descriptions, whether drivers have left the scene, and suspects descriptions. In other words, all three gather basic and necessary information about scene safety and the possible existence of injured victims, as well as some basics about the need for specialized machinery. However, each of the three protocols is targeted to the specific needs of the discipline for which it is designed.

Agencies that use more than one of the protocol systems, then, have to determine which of these three protocols to use (or use first) in handling traffic incidents. Up to now, no information has been available regarding which of the three disciplines individual agencies are using or why. Baseline data on the choices made by current multi-discipline agencies would be helpful in informing the decisions of agencies that are implementing the protocols for the first time or moving from a single-discipline to a multi-discipline structure.

OBJECTIVE

The primary objective of this pilot study was to determine which of the three traffic incident protocols multi-discipline agencies select to use (or use first) in handling these call types and what their reasons are for their selections. Additionally, the study aimed to assess whether the ECCs set and/or follow consistent internal policies about which protocols to use to process such calls, or whether they leave some discretion to their EMDs, EPDs, and/or EFDs in selecting the correct protocol according to the specifics of a call.

METHODS

Design and Setting This was a descriptive, prospective, uncontrolled pilot using a structured survey, developed on the SurveyMonkey platform,[8] as the assessment tool. Contact persons at ECCs that used two or three emergency medical, fire, or police dispatch protocol systems or disciplines were surveyed. Each respondent was asked to indicate which discipline's protocol his or her agency selected (or "launched")—MPDS, FPDS, or PPDS—or whether the agency allowed personnel to select one of the protocols based on the specifics of the call. Agency representatives were also asked their roles within the agency, whether their agency uses ProQA (the software version of the MPDS, PPDS, and/or FPDS) or the cardset versions, and what policies they have in place regarding traffic incident protocol selection.

Data collection process The survey was run for four weeks, from July 27, 2017 to August 24, 2017. Halfway into the survey, a reminder message was sent to those who received the original invitation to participate. The survey was then closed at the end of a four-week period.

Data analysis STATA for Windows® software (STATA Statistical Software: Release 14.2 ©1985-2015 StataCorp, College Station, TX, USA) was used for data analysis. Descriptive statistics were used to characterize baseline measures of study respondents and the ECCs, and to describe distributions of dispatch disciplines launched and Chief Complaint Protocols used to process traffic/transportation incidents/accidents. A description of the common reasons why ECCs use specific disciplines and Protocols to process traffic accident calls was also presented.

RESULTS

A total of 27 agency representatives were contacted, of whom 21 (77.7%) responded to the survey (Table 1). A majority 80.9% (n=17) of respondents were either ECC managers (n=8), quality assurance managers (n=5), or training/shift supervisors (n=4) (Table 1). All of the ECCs used ProQA software to triage calls, with the majority 76.2% (n=16) using ProQA exclusively and the others using ProQA with cardsets for backup or in addition. Over 95.2% (n=20) of the ECCs used either the three Protocol disciplines (medical, fire, and police) or medical and fire.

Measure		n (%) (N=21)
Current job position	Communication center manager*	8 (38.1)
	Quality assurance manager*	5 (23.8)
	Training/Shift supervisor*	4 (19.0)
	Division chief	1 (4.8)
	Other*†	3 (14.3)
Current dispatch system used	ProQA software	16 (76.2)
	ProQA and Cardsets	5 (23.8)
Current protocol disciplines used	Medical, Fire, and Police	12 (57.1)
	Medical and Fire	8 (38.1)
	Fire and Police	1 (4.8)

*With/without regular calltaking activities. †Operation supervisor (no regular calltaking activities), Quality improvement (QI) section chief (no calltaking activities, shift supervisor and QI (with regular calltaking activities).

Table 1. Respondent and communication center characteristics

Overall, the decision as to which Chief Complaint Protocol to launch was equally split among the medical (P29), fire (P77) and police (P131) protocols, with a majority of agencies (52.4%) allowing more than one protocol depending on call specifics. However, agencies with access to the PPDS showed a clear trend toward use of P131

when possible; of the 12 agencies using all three protocols, 11 used P131 either alone or in combination with one of the others (Table 2.)

Protocol selected	Discipline used by agency			Overall
	All three	EFD & EPD	EMD & EFD	
	n (%)	n (%)	n (%)	n (%)
P29			3 (37.5)	3 (14.3)
P77	1 (8.3)		2 (25.0)	3 (14.3)
P131	3 (25.0)			3 (14.3)
P29/P77			3 (37.5)	3 (14.3)
P29/P131	3 (25.0)			3 (14.3)
P77/P131	3 (25.0)			3 (14.3)
P29/P77/P131	2 (16.7)			2 (9.5)
Depends		1 (100.0)		1 (4.8)
Overall	12	1	8	21

P29 = Medical Traffic/Transportation Incidents (Protocol #29), P77 = Fire Motor vehicle collision (Protocol #77), P131 = Police Traffic/Transportation Incidents (Crash) (Protocol #131). *For complete responses, see Appendix.

Table 2. Distribution of protocol selected by disciplines used in the agency

A majority of the time (57.1%), emergency dispatchers use agency policy in every case to determine which protocol to decide what protocol discipline to launch to process traffic incident calls (Table 3). Less commonly, emergency dispatchers apply discretion based on their interrogation at Case Entry (19.1%) or a combination of both (9.5%). 52.4% of the time, the ECCs consistently launched the prescribed protocol disciplines.

Respondents reported that the medical *Traffic/Transportation Incidents Protocol* (P29) was mostly used to process calls in which callers/patients reported injuries, and/or in situations where ECCs considered treatment to be more important than scene safety (Table 4). The fire *Motor Vehicle Collision Protocol* (P77) was perceived as handling all the issues related to traffic incidents and especially useful for special rescue operations. However, the police *Traffic/Transportation Incident (Crash) Protocol* was predominantly used when patients reported no injuries, and/or to address hazards on scene.

DISCUSSION

This study found no clear preference among multi-discipline user ECCs for using one discipline over another to handle traffic and transportation incidents. The agencies were almost exactly evenly divided in using each of the three studied protocols individually, or combinations of two depending on the specifics of the incident. The only responses with fewer reports were the one agency that reported using none of the three, and the two agencies using all three (medical, fire, and police) depending on the specifics of the call. Most of the agencies had a policy in place to determine which protocol would be used, although some of these left significant discretion to their triple-certified EMD/EFD/EPDs to determine which protocol to use based on the answer to the Case Entry question, "Tell me exactly what happened."

Measure		n (%) (N=21)
Basis for protocol selection	Agency policy only	12 (57.1)
	Case entry interrogation (CEI)	4 (19.1)
	Both agency policy and CEI	2 (9.5)
	Other*	3 (14.3)
Chief Complaint Protocol selected to process traffic accident calls, according to policy	P29 only	3 (14.3)
	P77 only	3 (14.3)
	P131 only	3 (14.3)
	P29/P77	3 (14.3)
	P29/P131	3 (14.3)
	P77/P131	3 (14.3)
	P29/P77/P131	2 (9.5)
	None†	1 (4.8)
Policy-selected protocol used consistently?	Yes	11 (52.4)
	No	10 (47.6)

*Agency policy in combination with emergency dispatcher decision, or based on caller-described problem during "tell me exactly what happened" questioning. P29 = MPDS Traffic/Transportation Incidents (Protocol #29), P77 = FPDS Motor Vehicle Collision (Protocol #77), P131 = PPDS Traffic/Transportation Incidents (Crash) (Protocol #131). †"Depends on the caller's response to the question 'Tell me exactly what happened?' If hazards or entrapment then Fire P77, if injuries we send to EMS for interrogation. If no injuries, entrapment, or hazards then we use Police, P131."

Table 3. Protocol discipline selection and Chief Complaint Dispatch protocols use.

Chief Complain Protocol	Reasons why used to process traffic accident calls*
Medical P29	• For calls involving caller/patient injuries. • Treatment is considered more important than scene safety.
Fire P77	• Handles all issues. • Addresses hazards, and/or injuries. • For special rescues.
Police P131	• Used for non-injuries. • For hit-and-run where suspect information is available. • Addresses hazards. • Addresses all concerns.

P29 = Medical Traffic/Transportation Incidents (Protocol #29), P77 = Fire Motor vehicle collision (Protocol #77), P131 = Police Traffic/Transportation Incidents (Crash) (Protocol #131). *For complete responses, see Appendix.

Table 4. Common reasons why agencies use specific Chief Complaint Protocols to process traffic accident calls

However, a clear preference existed in agencies with access to the PPDS; in these agencies, almost all chose to use Protocol 131, the PPDS Traffic/Transportation Incidents (Crash) Protocol, either alone or in combination with other disciplines. In fact, 11 of the 12 agencies with all three disciplines used Protocol 131 at least sometimes, including three agencies that used Protocol 131 exclusively. By contrast, of the 12 agencies with all three disciplines, only one chose to use FPDS Protocol 77 exclusively, none chose to use MPDS Protocol

29 exclusively, and none chose to use P29 and P77 only. The respondents' comments seem to suggest that the most common reason for this is that Protocol 131 handles all potential issues well, with the exception of incidents with injuries reported in Case Entry.

In addition, the choice to use P131 may reflect the fact that many traffic incidents are reported by third-party callers—individuals who are not on scene and may be reporting an accident as they drive by on the highway. While such callers often know more than they realize, they generally cannot tell what specific injuries may be present, and they certainly cannot provide hands-on assistance to injured people on scene, making the ability to access dispatch life support instructions less important. Overall, these callers may be able to provide more information about the circumstances, including the mechanism level of the accident (such as whether a tractor-trailer was involved or whether vehicles are still blocking lanes) than about individual injured patients.

The explanations offered by ECCs regarding why they chose a specific protocol or combination of protocols provided insight into the range of considerations involved in handling traffic and transportation incidents. In most cases, the primary consideration was the type of response that was needed or available. For example, most ECCs made a distinction between those incidents that primarily involved patient care issues (injuries, especially those reported at Case Entry) and those that primarily involved specialized responses (such as extrication tools). Similarly, several noted that all or most traffic incidents would be handled by law enforcement agencies such as the Highway Patrol or the Sheriff's Office and used the police protocol to gather suspect information.

The most common distinction made across all agencies was the difference between incidents with reported injuries and those without. Of the 21 responding agencies, 12 reported using MPDS Protocol 29 for any traffic incidents with reported injuries. Interestingly, only three agencies reported using Protocol 29 exclusively; this suggests that while the MPDS Traffic and Transportation Incidents Protocol is well-suited to handling injured patients, it was not considered as effective for other types of traffic incidents. However, some respondents did note that updates made in MPDS version 13.0 might change their policies.

Across all the agencies, the issues that drove protocol selection were the presence or absence of patient injuries, the need for specialized equipment (for example, HAZMAT or extrication incidents), and the need for law enforcement response to a potential crime scene. However, the policies were not as clear-cut as expected. For example, one ECC indicated that their administration may decide to switch back from Protocol 77 to Protocol 29 to better handle medical incidents, and others noted that while they preferred the equipment, resource, and hazard information gathered on P77, they use the medical P29 for incidents involving most types of injuries. Thus, while most agencies do have policies in place, these policies are somewhat flexible and may be in flux.

The lack of consensus, even within individual agencies, regarding the most appropriate or useful protocol for handling traffic incidents underlines the comments made by several respondents that they would like to see a combined or expanded protocol that would take into account all of the potential issues—including patient care, specialized resource needs, and potential suspect/crime information. All three protocols do already address the most important issues, including patient and caller safety, potentially pinned or trapped persons, and the presence of hazardous materials. Perhaps the most significant difference between the three is not the information gathering sequence but the Pre-Arrival Instructions (PAIs) provided. Several ECCs, for example, mentioned that they selected the medical protocol because it offered patient care instructions. Others noted that they launch the MPDS after gathering information and assigning a dispatch code from one of the other protocols, specifically for the purpose of providing instructions, and one agency noted that if they speak with several callers about the same incident, they may interrogate them on different protocols. Combining the three protocols into a single standardized protocol for handling traffic incidents, or making specific PAIs available on all three, might be worthwhile improvements, and further research should explore the opportunity to generate evidence to consider for future protocol versions.

Limitations

One potential limitation of this study was its focus on U.S. agencies. Some countries, especially those in Europe, offer separate phone numbers for accessing medical, fire, and/or police ECCs, and these often do not communicate with one another. In these agencies, callers have essentially already "self-selected" when they decided which ECC number to call. With often no ability to transfer callers among services, such agencies have little recourse but to use whatever protocol discipline they have available. Combining protocols or adding common instruction sets to all would be of particular value for such agencies. Similarly, any agency with access to only a single type of resource (such as an ambulance or a police officer) might not be able to change their response based on the selection of a different protocol, but might still benefit from the ability to provide PDIs and PAIs, especially those relating to caller safety or patient care.

CONCLUSIONS

No information has previously ever been collected regarding the selection of protocols for handling traffic and transportation incidents in multi-discipline ECCs using the MPDS, FPDS, and PPDS. This study provides a baseline understanding of not only the distribution of protocol selections but the reasons agencies offer for their choices. The information collected here may be useful in driving future updates to the MPDS, PPDS, and FPDS traffic incident protocols. Also, future research may expand the sample size or compare the outcomes of incidents for which each of the three protocols was used. Specifically, future studies will compare the information gathered by each protocol discipline with the findings on scene, to determine the minimum information needed to handle any reported traffic incident or crash, no matter what protocol type is available or in use.

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Appendix

Protocol(s) Selected	Reason for Selection
77	We felt by using protocol 77 that we would have more information to address the hazards but considering a change back to 29 due to not enough to identify medical. Would be great to combine 29 and 77
29, 131	We use the police protocol for non-injury accidents /hit and run accidents where there is suspect information and if both parties are there and insist on an officer in person. We also recommend on-line reporting for Hit and Run accidents in which no suspect information is available. Also, when both parties ore on scene, we can give both of them a case number and they can both report it on line. If there are injuries, we triage on Medical Protocol 29 and when a case us created, it also auto-generates a case for police.
29, 77	[Agency name] is currently rewriting our MVA policy. In the past we only used P29 unless LE called and requested a Fire response only. New guidelines are leaning toward: P29 - caller on scene with patients; P77 - 3rd party callers. We would prefer 1 protocol that would work for all three disciplines.
29,77,131	We allow the call taker in case entry to ask if there are injuries. If there are injuries the EMD protocol is selected. If there are no injuries EPD protocol is the disciplined that is followed. In rare circumstances discovered with the caller statement that the fire protocol is utilized.
29,131	During Case Entry the calltaker attempts to confirm with the caller if there are injuries if not obvious. If the caller is unable to verify injuries the call is handled on 131, if the caller provides information regarding injuries or entrapment Protocol 29 is used. Some discretion is left to the calltaker based on caller information and location of incident.
29,77,131	131 is used for most accidents 29 is used for Motorcycle accidents and pedestrian struck incidents 77 is used for anything on our limited access highway (the beltway)
29,77	You have to address the primary reason for response which is preservation of life
77	Inquiry order.
29,131	Based on caller statement, if they indicate injuries we use #29. If they do not indicate one way or another, local policy requires CT to ask follow up question to determine if medical is needed. If the answer is yes, they go to 29, if the answer is no, they go to #131.
77,131	In our policy our call takers are allowed to ask about injuries and leaks in case entry in order to determine which discipline to process the call initially. If there leaks and injuries the call is processed under Fire (77) if none Police (131)
131	We are currently in talks to see if we can change this thinking to using EMS protocols for accidents with injuries vs. police for all types. I think some of the bigger reasons were because a lot of accidents are from passerby who are no longer on location, the EMD portion does not address traffic issues for blocked road ways which in our area can mean detours having to be set up and major traffic headaches. in some cases having vehicle description is essential to helping responders find victims
77,131	In coordination with our user agencies, we agreed that vehicle collisions with injuries or vehicle collisions with unknown injuries will be processed via FPDS in order to better address any potential hazards/rescue needs. The MPDS Protocol 29 is more patient centric. For non-injury crashes we use the PPDS as those are strictly a law enforcement matter.
29,77	If 1st or second person caller with known injuries after "tell me exactly what happened" use 29
29	Based on being a multi-jurisdiction center. We don't dispatch all Fire agencies, however we do dispatch all EMS requests
131	We are Tri accredited and our policy states: all traffic/transportation incidents shall be handled on the police protocol which addresses hazards, scene safety and shunts to medical when necessary. Failure to select the appropriate discipline according to agency policy will be scored as failure to choose the correct chief complaint protocol.
29	Medical was our first discipline but also easier to handle injuries.
131	131 addresses all concerns.
29	Call takers feel that treating patients takes precedence over scene safety in most traffic accidents finding most motor vehicle collisions have scene safety issues.
77	We use Fire because before V13 of EMD the Fire cards better handled all the issues that can come up with accidents. We are now looking at allowing the caller to make an educated decision between fire and medical depending on what the caller advises. This is a hot topic in our agency, I would like to see what others are doing and why if you can share.
No policy	As above.....If we have multiple callers we may keep a caller for each discipline...
77,131	77 for injuries or any special rescue. 131 for a report.