Information flow and situational awareness in emergency medical dispatch

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Abstract: One of the key factors in the daily work in emergency medical dispatch incident monitoring is ensuring that they have enough of the right type of information when making decisions and cooperating with other authorities. Finding out the critical information needed and the flow of information during multi-authority missions when receiving and sharing information, enables to obtain and receive situational awareness in incident monitoring. It can be concluded that information needs and targets to deliver information are different depending on the type of the incident. The current official authority communication systems can support adequate information flow in prehospital emergency care.

Keywords: emergency medical dispatch; critical information; information flow; incident monitoring; situational awareness.
In medical emergencies the authorities working at Finnish Emergency Response Centres (ERC) have two major information-related demands. First, they need to find out what has happened and what kind of response does the incident require. This is the role of the ERC operator, when answering emergency calls. Secondly, they are obliged to follow and supervise the status of all the response units in their field of operation. This, in turn, is under the responsibility of incident monitors. Incident monitoring is largely about keeping contact with and assisting the dispatched response units at the scene (Seppälä, 2013).
To succeed in both the aforementioned fundamental tasks, incident monitors need adequate information and situational awareness (SA) based on appropriate processing of the information. SA is comprised of information and its interpretation (Kuusisto, 2005). To enable the construction of SA of the response units the information gathered by ERC operator needs to be delivered further. This flowing of information can be described through three phases: understanding, creating the knowledge, and decision making (Choo, 2006).

The importance of information flow at an ERC operator’s and an incident monitor’s work is fundamental as the information gathered from the emergency call has to be disseminated to the response units. In a multi-authority incident the information flow and enabling the creation of a similar SA should be high on the list of objectives in incident monitoring.

The purpose of this study was to explore the phenomenon, making up and flowing of information in the work in incident monitoring with special emphasis on emergency medical dispatching (EMD). The study also investigated with whom the incident monitors cooperate and how, and the differences that occur depending on the incident type. The aim was to find out what type of critical information is used during multi-authority incidents in incident monitoring in order to perform their tasks successfully. The study also investigated the flow of information, with whom the incident monitors cooperate and how, and the differences that occur depending on the mission type.

2 Background

SA is about knowing what is going on so that you can work out what to do (Adam, 1993). Without information, there is no SA. SA is constructed from information and its interpretation (Endsley, 2000; Kuusisto, 2005; Toner, 2009). SA is derived from various sources of information. Sometimes the cues are overt, but sometimes they can be quite subtle and they might be registered only subconsciously (Endsley, 2000). When receiving information, the ERC operator should also be able to pick up subtle cues. The amount of information regarding the incident can vary. The ERC operator should know what data are relevant, what data are needed, and what data are still missing to be able to dispatch the right response units with the right information (Norri-Sederholm, 2015).

EMD is a team activity, which requires fluid coordination and communication between team members (Furniss and Blandford, 2006). In order to support the accurate formation of SA, critical information needs should be identified (Busby and Witucki-Brown, 2011). Furthermore, when making decisions in multiple casualty incidents, good information flow is required: information is needed from different sources to create a correct mental picture of what is going on. Decisions based on low-grade information can lead to poor patient outcomes and/or risks to rescuers (Busby and Witucki-Brown, 2011).

An important part of all emergency work is the cooperation and sharing of information with other authorities involved in the incident event. This cooperation also enables shared situational awareness (SSA) (Endsley and Jones, 2001). Seppänen et al. (2013) have collated the major factors that hampered the search and rescue (SAR) organisation in achieving adequate SSA. These influential factors were information gaps,
the lack of fluent communication, and the fact that there was no common operational picture in use. They also found out that the factors affecting information gaps were agencies focusing only on their own tasks, unclear information delivery processes, shortages of incident information, agencies passivity, and a lack of up-to-date information.

In EMD, the information flow model of operating deals with the way information is communicated within and beyond the team involved with the case. Furniss and Blandford (2006) found both effective and suboptimal information flows within the system they studied. For instance, transferring a call from one ERC to another desk may sometimes be delayed because the call has not finished. Furthermore, the allocation of an ambulance crew at a station could be made in a more effective way. A major challenge of ERC operators’ work and the whole chain of survival worldwide is a recognition of and responding to an out-of-hospital cardiac arrest situation (Ornato, 2009). In these situations every second counts and the obtaining and delivering adequate information plays a fundamental role. Norri-Sederholm et al. (2014a) studied information categories needed to create SA and to compare the differences between ERC operators and incident monitors in EMD. They found that ERC operators and incident monitors have different information profiles. ERC operators’ main roles are as situation followers and decision makers, whereas incident monitors have, in addition to these, an analyzer role. In incident monitoring, the main task is to have ‘the big picture’ of what is happening in the area, to have an up-to-date plan all the time so that there are enough units available, and to take charge in bigger incidents. This result is supported by Seppälä (2013). Incident monitors typically obtained Events information from the scene, from EMS units and the police. The Event Model for incident monitors included an analysis of the situation in the area, and thinking about the criteria for the prioritisation of cases. For incident monitors, Action Patterns was a highly meaningful category. A typical example of Action Patterns was finding and dispatching more units and delivering information to them while the ERC operator was still on the emergency call, collecting information. Receiving or noting information from all the Restrictions is necessary in developing an understanding of how the situation may develop (Kuusisto, 2008). Restrictions were often related to finding the nearest free ambulance unit when there was a dearth of them in the area. They also involved thinking about distances and the actual time when the unit would be on the scene, the possible use of units from the neighbouring town, or free ambulances on the road in the area, on the way back to their own town. Incident monitors need to have a good understanding of all the different instructions and possible action patterns, because they define the basic rules to communicate and aim to use resources wisely (Määttä et al., 2010). When the knowledge of all constraints is combined with the event information, incident monitors can understand both what this all means, and what might happen next, from the perspective of one incident in the overall situation in the area this ERC is responsible for. In order to understand all this, incident monitors need to have received and analysed a sufficient amount of information. These results were aligned with those from a previous study (Blandford and Wong, 2004), conducted in EMD.

In order to continuously improve the quality of the EMD performance systems of regular and objective feedback from the field have shown remarkable effectiveness (Clawson et al., 2008). This communication from the field units to EMD can be done computer-assisted with success (Lindström et al., 2011).
Norri-Sederholm et al. (2015) also studied SA and information flow in prehospital emergency medical care. They found out that almost half of the information needs and more than half of the delivered information related to incident data in all scenarios, which were used for gathering the data. It is also notable that almost half of the information needs related to detailed information. Paramedic field supervisors (PFS) needed to know whether there were any special circumstances in the case that they should be aware of. However, they were not so interested in the details of patients’ clinical condition: the number of patients and their triage categories was sufficient, and the results from the questionnaire were in line with this. When delivering incident data, the PFS were clearly communicators between the EMS units and other authorities sharing the information and thus enabling SSA. Notable is that EMD was the most important information source to PFS in this study. The results indicate that PFS communicate actively, although many of them felt overloaded with information. When aware of the critical information needs, it is possible to support the formation of SA and focus on sharing the information elements needed to perform the core task (Seppänen et al., 2013). This study highlights the key authorities with whom the PFS communicates and understanding this social network where PFS work in prehospital emergency care is a prerequisite for effective communication (Houghton et al., 2006). As mentioned earlier, information is needed from different sources in multiple casualty incidents to create an accurate mental picture of what is going on (Busby and Witucki-Brown, 2011). Effective information exchange is critical for developing good strategies as well as for accurate situational assessment. It also contributes to successful team performance (Eppich, 2011). The PFS’ role means that the information they deliver is essential in building SSA.

The flow of information can be described through three phases: understanding, creating the knowledge, and decision making. At the first phase an understanding of a change in the operational environment and the significance of it is understood. This has to be changed so that it can be delivered and applied. Secondly, the phase of creating the knowledge means seeing what knowledge is needed and how it can be achieved. Information processing is the key action of the phase of decision making. The most appropriate choice available is chosen in order to achieve the target (Choo, 2006).

3 Material and methods

3.1 Design of the study

Three progressive scenarios based on real-life experiences were used in the study. The scenarios were designed by the first author and prehospital emergency care professionals and they were selected to represent different types of emergency calls focusing on the ambulance service. The scenarios were pre-tested by two prehospital emergency care professionals using the same interview method as in the study. After pre-testing, changes were made according to the feedback. After that, another two informal pilot interviews were conducted by the corresponding author. The interviews involved an ERC instructor and a police field commander, both of whom requested minor changes. These were implemented, and enhanced the validity of the scenarios. The validity check included both the content and the correctness of the work protocol and actions during the scenario.
The first scenario was a road traffic accident, with eight potential patients. The accident took place in winter, approximately 30 km from the city centre. The second scenario described a situation on a Saturday night in early June, at the start of the school summer holidays. Many young adults in multiple locations of one neighbourhood were not feeling well and eventually lost consciousness, it was later revealed that they were members of a group of eight young adults who had bought cheap alcohol containing poisonous methanol from an unknown person. The third scenario involved a shooting threat outside a shopping centre, ending in one person being wounded. The situation required the presence of an ambulance unit in a safe zone.

Ten ERC operators, who also worked in incident monitoring, from three different Finnish ERC, volunteered to participate in the study. The Centres informed their workers about the study and asked for volunteers. ERC operators represented both different geographic areas of Finland, and different sizes of dispatch centres in order to obtain sample diversity. The data were collected using semi-structured interviews from January to March 2012. Each ERC operator participated in all three scenarios.

Interviews were conducted by the first author in the ERC at day time. During the interview the ERC operators were off duty. The interviewer simulated the emergency caller and the different authorities during the interview. The interviews were audio-recorded and the mean duration of the interviews was approximately 80 minutes. The total duration was 13 h 15 min and the shortest interview was 57 minutes whereas the longest was 103 minutes. The scenarios involved two to five emergency calls and the interviewees had two roles during the scenario: ERC operator and incident monitor. The scenarios proceeded in a realistic manner. The ERC operator answered the emergency call, carried out the risk assessment, and dispatched all the necessary units and authorities directly based on the information received (ERC Administration, 2011). In some cases they alerted the units during the emergency call and then continued with the call. ERC operators also gave advice to the emergency caller to help them cope until the ambulance unit arrived. There were requests from ambulance services and the police to alert more units, or these units changed the severity of the task. Incident monitoring was part of all the scenarios. As each scenario proceeded, the ERC operator interviewed switched roles to incident monitoring. The scenario proceeded from the perspective of incident monitoring. In this role, the incident monitor, amongst the other things related to the role, finds the nearest free ambulance unit(s), takes care of communication with the authorities responsible, and needs to be aware of the continuously changing situation relating to incidents and resources in their area, and be prepared for a possible multi-casualty incident (Seppälä, 2013). Some scenarios caused a situation where there were not enough ambulances for the mission or no free ambulances in the area. ERC operators were able to use the same information sources as they use in their daily work, such as the ERC information system, with maps and guidelines, during the interview. The interviewees were asked to describe what type of information they were looking for and why, what information they delivered to other agencies, and what were they thinking during the call.

3.2 Ethics

The University of Eastern Finland Committee on Research Ethics approved the study on 15 December 2011.
3.3 Analysis

Interview data were transcribed verbatim. The only changes made were to dialect words, which were changed to standard language to avoid identifying the area where the interview was conducted. The names used to recognise the area were also changed.

The data were analysed using content analysis, a research technique which, through the use of categories, draws replicable and valid inferences from texts in the context of their use (Silverman, 2012; Krippendorf, 2013). This study applied Choo’s (2001) information management model in creating the themes (information needed and information delivered) for analysis.

The text, including only incident monitor part of the interview, was first coded into six themes created from the flow of information. The first three themes related to information needs: the kind of information incident monitor needed, from whom they received it, and through what communication device. The next three themes related to delivered information: the kind of information incident monitor delivered, to whom they sent it, and by what method. The coding was done using Atlas.ti 7 qualitative data software, and text belonging to the code could be either a meaningful complete sentence or a couple of words with a meaningful purpose. To increase reliability, the text was coded one scenario at a time. To ensure the validity of the coding, a check was done by the corresponding author after all the text was coded. The analysis continued, together with an expert of emergency medical dispatch, by adding the data to an Excel spreadsheet to create the categories for each theme (Figure 1) based on the analysis. The total number of findings was 362. The findings were changed to percentages to enable comparison.

Figure 1  An example of creating a category for delivered information

<table>
<thead>
<tr>
<th>Original text</th>
<th>Sub-category</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>“The first EMS unit has arrived to the scene”</td>
<td>EMS unit on scene</td>
<td></td>
</tr>
<tr>
<td>“At that moment I would tell everyone the units that are assigned and on the way by using the unit code”</td>
<td>Units assigned to the mission</td>
<td></td>
</tr>
<tr>
<td>“I would tell that more ambulances are on the way and where do they come from?”</td>
<td>Mission code changed</td>
<td>Mission status</td>
</tr>
<tr>
<td>“I tell them that mission code is changed and is now A (urgent)”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“I pass the information to all units about the changed mission code”</td>
<td>Additional units</td>
<td></td>
</tr>
<tr>
<td>“I tell that two more EMS units and a helicopter (HEMS) is added to the mission”</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4 Results

Findings relating to information flow and critical information categories, and their differences between the scenarios, are first described. Secondly, the information source and target findings are explained. Lastly, the methods to receive and deliver information in incident monitoring are presented.

4.1 Critical information categories

Four critical information categories were identified from the data: incident data, mission status, area status, and instructions. Incident data was the most important critical information category both in needed (29%) and in delivered (55%) information (Table 1). This result was the same in all three scenarios in delivered information. However, in needed information, there were variations. In traffic accident, mission status was the most important whereas in Youth scenario incident data and area status were the most important. In shooting scenario, the most needed information category was the instructions. The second category varied. In delivered information it was the mission status in traffic accident and youth scenario. In shooting scenario, it was the instructions. In needed information, the second most common category for traffic accident was the instructions and for shooting the mission status stood out.

Table 1 Information needed and delivered at incident monitoring during the EMS mission (%)

<table>
<thead>
<tr>
<th>Category</th>
<th>Information needed</th>
<th>Information delivered</th>
<th>Needed</th>
<th>Delivered</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Accident (n = 16)</td>
<td>Youth (n = 25)</td>
<td>Shooting (n = 17)</td>
<td></td>
</tr>
<tr>
<td>Incident data</td>
<td>19</td>
<td>44</td>
<td>18</td>
<td>50</td>
</tr>
<tr>
<td>Mission status</td>
<td>44</td>
<td>12</td>
<td>35</td>
<td>43</td>
</tr>
<tr>
<td>Area status</td>
<td>6</td>
<td>44</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Instructions</td>
<td>31</td>
<td>0</td>
<td>41</td>
<td>10</td>
</tr>
<tr>
<td>Total %</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

The critical information the incident monitors needed related to incident data were mainly about the changes in the amount and the status of the patients. They also needed information for the accurate address, when available, and what is the current situation in general. The typical incident data they delivered were the same as needed. First, they acquired the information and then they delivered it to all the units assigned to the mission. In addition, they also delivered information like the possible change in mission code, all the available detailed information, and location of units on their way to the scene.

The typical information needs to mission status were both the number and skill level of EMS units needed to the mission and the sufficiency of the EMS units. Incident monitors delivered information, such as the first EMS unit on the scene and the codes of additional units assigned to the mission. For area status, the needed information was about the location of free EMS units and which currently occupied units are soon available. They delivered this information to paramedic field supervisor. They also
shared this information in ERC room. The needed instructions related mainly to asking advice from ERC shift supervisor. They needed to know how and especially who will make the note (traffic accident) or warning (shooting) to the population and alarm the Tactical Emergency Medical Service (TEM S) unit. Incident monitors delivered instructions from police to EMS units and vice versa, from EMS to police.

Incident monitors also received information \((n = 23)\). In traffic accident scenario, the received information relating mainly to the mission status. EMS unit requested for more EMS units to the mission and from the EMD information system they received information related to location of units on the way to the scene. They also saw new information from the emergency caller about the incident, which was entered to the system by ERC operator. In youth and shooting scenarios, the received information was similar to traffic accident. In addition, in youth scenario they received information about the area status and in shooting scenario they got task from the police to alarm the TEMS unit.

### 4.2 Information sources and targets

When looking at all the data (Table 2), it seems that EMS unit is the main information source and target to incident monitor. Only in shooting scenario, police was the main information source. In addition to EMS units, incident monitors mainly received information from ERC room. Depending on the case, they deliver information to ERC room, PFS, and police. Notable is that they mainly disseminate information to the fire rescue teams and EMS doctor. Furthermore, they delivered information to other authorities related to the notes and warnings to the population. Remarkable in the results is the ratio in the findings, at source group 30 findings and in target group 67 findings.

#### Table 2  Information sources and targets (%)

<table>
<thead>
<tr>
<th>Source/target</th>
<th>Received from</th>
<th>Delivered to</th>
<th>Received</th>
<th>Delivered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source/target</td>
<td>Scenario</td>
<td>Scenario</td>
<td>All</td>
<td>All</td>
</tr>
<tr>
<td></td>
<td>Accident</td>
<td>Youth</td>
<td>Shooting</td>
<td>Accident</td>
</tr>
<tr>
<td>EMS unit</td>
<td>(n = 7)</td>
<td>(n = 8)</td>
<td>(n = 15)</td>
<td>(n = 23)</td>
</tr>
<tr>
<td>PFS</td>
<td>71</td>
<td>63</td>
<td>7</td>
<td>26</td>
</tr>
<tr>
<td>EMS doctor</td>
<td>14</td>
<td>0</td>
<td>0</td>
<td>17</td>
</tr>
<tr>
<td>ERC room</td>
<td>14</td>
<td>38</td>
<td>33</td>
<td>17</td>
</tr>
<tr>
<td>Police</td>
<td>0</td>
<td>0</td>
<td>60</td>
<td>0</td>
</tr>
<tr>
<td>Fire rescue</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>17</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>Total %</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

### 4.3 Methods to receive and deliver information

As shown in Table 3, the incident monitors used three different methods to receive and deliver information. While comparing the use of methods we find that they are indeed
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Different. Information was mainly received from the EMD information system and EMD map system, but when delivering information, authority radio network TETRA was the main method. When using TETRA, more than half of the use was speaking to the units by using the radio channel. The rest was using different types of TETRA messages (status, info, SMS). On observing the data, face-to-face communication was also used in receiving the data. This related to the communication in the ERC room.

Table 3 Methods used to receive and deliver information (%)

<table>
<thead>
<tr>
<th>Method</th>
<th>Received (n = 37)</th>
<th>Delivered (n = 71)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication equipment</td>
<td>5</td>
<td>75</td>
</tr>
<tr>
<td>Authority radio network*</td>
<td>(5)</td>
<td>(70)</td>
</tr>
<tr>
<td>Mobile phone</td>
<td>(0)</td>
<td>(5)</td>
</tr>
<tr>
<td>Information system</td>
<td>76</td>
<td>18</td>
</tr>
<tr>
<td>EMD system</td>
<td>(49)</td>
<td>(18)</td>
</tr>
<tr>
<td>EMD map system</td>
<td>(27)</td>
<td>(0)</td>
</tr>
<tr>
<td>Face to face</td>
<td>19</td>
<td>7</td>
</tr>
<tr>
<td>Total (%)</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Note: *Know by the acronym TETRA.

5 Discussion

The aim was to find out what type of critical information is used during multi-authority incidents in incident monitoring in order to perform their tasks successfully. The study also investigated the flow of information, with whom the incident monitors cooperate and how, and the differences that occur depending on the mission type.

Four critical information categories identified in this study were incident data, mission status, area status and instructions. The first three categories formulate the basic information for the daily activities. In incident monitoring, the main task is to have ‘the big picture’ of what is happening in the area, to have an up-to-date plan all the time so that there are enough units available, and to take charge in bigger incidents. This result is supported by Seppälä (2013). In incident monitoring, it seems that EMS unit is the main information source and target. They mainly receive the information from the EMD information system whereas they deliver it with authority radio network TETRA.

The study provides knowledge about information sharing focusing on the information itself in prehospital emergency care. This aspect combined with analysis of multi-authority network and communication devices offers quite a unique set of research results in this domain. It increases the understanding of information flow, which can be taken into account in incident monitor’s work and education. The results also help in focusing to essential information needs in order to obtain and maintain SA. When aware of the critical information needs, it is possible to support the formation of SA and focus on sharing the information elements needed to perform the core task (Seppänen et al., 2013). A literature review indicated that not much research has been made from the
information aspect related to incident monitoring nor EMD work. This makes referencing to earlier findings challenging.

Next, the results are discussed from the perspective of information flow, by starting the discussion from the critical information categories.

It became clear that information flow in the daily work of incident monitors is very active, which can hardly be considered unexpected. Incident monitors need to understand, create the knowledge, and make decisions (Choo, 2006). To be capable of doing this the incident monitors needed incident data-related information most in the youth scenario, which was most probably perceived a messy situation. It might be, however, that the incident monitors were able to create a clear picture of that particular incident in their minds because they delivered information to the field units less than in the shooting scenario and an equal amount of information as in the accident scenario.

In the accident scenario most information needs as well as information delivered were focused on mission status. This is also anticipated because incident monitors are repeatedly assessing the sufficiency of available resources with relation to the number of patients exposed to physical trauma, as in the accident scenario. Concern of the sufficiency of available resources also shows in the youth scenario. By far the most information needs were focused on Area status, as the number of patients needing immediate medical attention turned out to exceed the resources at hand. In the shooting scenario both information needs and delivered were related to instructions. This is comprehensible due to the impending risks falling upon the rescuers in this kind of mission.

Information flow to and from incident monitors occurred mainly with the field units. However, in the shooting scenario all the information was received from the police, and most of it was delivered to the field units. This information is most probably related mainly to scene safety issues. Information flow at the ERC room turned out to be active, as expected. This result is aligned with a previous study by Blandford and Wong (2004), conducted in emergency medical dispatch. In general, the crucial role of communication within and among the teams and organisations to ensure safe clinical practice and effective organisational performance has been recognised (Coiera, 2009).

Technology enabling information flow was mainly the EMD information system with receiving and, authority radio network TETRA when delivering information. This is no surprise when being acquainted with the Finnish authority communication systems, but the almost non-existent use of mobile phones might be. This could indicate that the official authority communication systems are sufficiently fulfilling the needs of information flow.

Comparing our results with the findings of previous studies is restricted by the small number of similar studies. However, Norri-Sederholm et al. (2015), in their study of SA and information flow from the perspective of PFS found both similarities and differences. PFSs information needs were largely related to incident data in all the scenarios equal to those used in the present study. When delivering information the essential aim was to enable the construction of SSA between all the field units involved with the mission. PFSs used more mobile phones when delivering information especially when changing information with EMS doctor and police incident commander. Incident monitors did not use mobile phones almost at all for communication purposes. This finding warrants further studies, since mobile technology based on commercial networks might turn out to be vulnerable, especially in bigger incidents when there is a large number of a unit.
operating in restricted geographical areas. More research is also needed to deepen our understanding of what type of data is needed and expected to be delivered in prehospital emergency care within the organisations concerned. Having this knowledge helps to improve SA and to focus on meaningful information flow in communication in prehospital emergency care.

5.1 Limitations

An essential limitation of the study is that the data were collected based on researcher-constructed scenarios, not from real-life events. Bearing in mind that a research should not interfere the often hectic work of Emergency Response Centre operators it would, however, be extremely difficult to monitor real-life situations so closely that adequate research data could be gathered. The method applied in this study had been tested in previous studies with both PFS and emergency medical dispatchers (Norri-Sederholm et al., 2014a, 2014b). The progressive scenarios had turned out to be realistic and responding to the needs of scientific inquiry. Notable is that in this study, the focus was on the flow of information, and not on the actions performed in EMD.

One question that should be asked is whether the sample was sufficient and representative. The total number of findings at this qualitative study was 362. This study was part of a wider research (Norri-Sederholm et al., 2014a) including 2,710 findings. The interviewees came from geographically different parts of Finland and different sizes of dispatch centres. This study was conducted in one country, which uses a type of EMD different from those in most countries (ERC Administration, 2015). However, regardless of differences in organisations and working methods, the need for information is most probably the same, and SA as a concept is global.

6 Conclusions

We conclude that in the daily work of emergency medical dispatch incident monitoring the information flow is very active. Our study shows that incident monitors’ information needs and targets to deliver information were varying depending on the type of the incident in question. EMS units were the main source and target of information, but in a high risk situation, as in the shooting scenario, police was almost entirely the source of information. It can also be concluded that the official authority communication systems used in the Finnish emergency organisations seem to sufficiently enable the necessary information flow. Our results can be used in education and training of emergency medical dispatch personnel, and in the endeavour to develop the processes of prehospital emergency medical care.

References


