

Possible Examples to Improve the Quality and Safety Standards on Emergency Medical Service Stations Zamed, Ltd. Komárno

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Abstract: *This article and the basic points of the new instrument to control and ensure the soundness of individual parts of an emergency vehicle in terms of technical, technological and medical. We have underpinned the key elements of technical books, potential problems that were found during routine inspections as well as examples of further evaluation of quality tools. These quality tools can be, eg .: FMEA analysis that we can significantly help further resolve any issues with these technical issues.*

Keywords: *FMEA analysis*

INTRODUCTION:

Nowadays the regular inspections are technical and medical condition of ambulances is very important as in direct action to save human life must all of ambulances operate fully. Based on these initiatives it is very important that all components underpinned direct control by means of several instruments with quality and technological functionality. These parts can include: technical books control sequence ambulances and verification tables that are used to effectively underpin any deviations respectively. current problem identified on medical devices and on their own ambulances.

MATERIALS AND METHODS

The following pages we will represent the sequence of the newly formed party technical books control activities outpatient reliability and cabin of an emergency vehicle. More detailed branching is possible in case of problems can be disclosed in the notes and on the ground carried out using FMEA score of the technical issues and the possibility of optimizing the search for solutions to these problems. These practices can contribute significantly to the efficiency and especially the EMS crew safety during the journey to save lives.

Table 1: First part of the table for the new sequence control
for the ambulance car and its medical device

<u>TDS, preventive and operational control - regular verification of parts of the vehicle and its equipment</u>																	
<u>Week:</u>				<u>Station:</u>				<u>Name and signature:</u>									
<u>Date:</u>																	
<u>* Technical, electrical and operation of the vehicle</u>						<u>The resulting report specific technical vehicle parts</u>											
<u>Tires and operational control of the front and rear axles of the vehicle:</u>						<u>Tread (min. 4 mm)</u>		<u>Pressure (min. 3,8bar)</u>		<u>The current state is satisfactory? (Indicate satisfactory answer) !!!</u>		<u>Technician was informed about the problem? (Indicate satisfactory answer) !!!</u>		<u>Technical Note for the vehicle parts</u>			
						<u>LF</u>	<u>RF</u>	<u>RR</u>	<u>LR</u>	<u>LF</u>	<u>RF</u>	<u>RR</u>	<u>LR</u>				
<u>Engineering and technological part of the vehicle</u>										YES	NO	YES	NO				
						<u>Operating status glasses</u>				<u>Glass patient care</u>		YES	NO	YES	NO		
										<u>cab glass</u>		YES	NO	YES	NO		
						<u>Working fluids</u>				<u>Motor oil</u>		YES	NO	YES	NO		
										<u>Brake fluid</u>		YES	NO	YES	NO		
										<u>Coolant</u>		YES	NO	YES	NO		
										<u>Screen washers</u>		YES	NO	YES	NO		
						<u>Bodywork</u>				<u>Technical condition</u>		YES	NO	YES	NO		
										<u>Damage</u>		YES	NO	YES	NO		
										<u>Stickers</u>		YES	NO	YES	NO		
										<u>Rear-view mirrors</u>		YES	NO	YES	NO		
						<u>Motor status</u>				<u>Utility</u>		YES	NO	YES	NO		
										<u>Shot</u>		YES	NO	YES	NO		
										<u>Tightness engine</u>		YES	NO	YES	NO		
						<u>Cooling system</u>				<u>Utility</u>		YES	NO	YES	NO		
										<u>Tightness</u>		YES	NO	YES	NO		
										<u>Effectiveness</u>		YES	NO	YES	NO		
						<u>Braking system</u>				<u>Brake response</u>		YES	NO	YES	NO		
										<u>Tightness</u>		YES	NO	YES	NO		
										<u>Handbrake function</u>		YES	NO	YES	NO		
<u>Transmission system</u>				<u>Sequencing</u>		YES	NO	YES	NO								
				<u>Fluency seq. degrees</u>		YES	NO	YES	NO								

Tab. 2: Second part of the table for the new sequence control
for the ambulance car and its medical device

<u>Electronics and software of the vehicle</u>	<i>Status light vehicles</i>	<i>Front lights</i>	YES	NO	YES	NO	
		<i>Rear lights</i>	YES	NO	YES	NO	
		<i>Direction indicators</i>	YES	NO	YES	NO	
		<i>Fog lights</i>	YES	NO	YES	NO	
		<i>Outdoor lighting space</i>	YES	NO	YES	NO	
	<i>Spare bulbs</i>	<i>H7, H1, 5W, 21W, park.</i>	YES	NO	YES	NO	
	<i>Spare fuses</i>		YES	NO	YES	NO	
	<i>Status warning light signaling</i>	<i>front</i>	YES	NO	YES	NO	
		<i>rear</i>	YES	NO	YES	NO	
		<i>mask</i>	YES	NO	YES	NO	
	<i>Status alarm will sound</i>		YES	NO	YES	NO	
	<i>State controller (panel) beeper</i>		YES	NO	YES	NO	
	<i>Lights dashboard (functions, readability)</i>		YES	NO	YES	NO	
	<i>Error Messages vehicles</i>		YES	NO	YES	NO	
	<i>Heating: functionality</i>		YES	NO	YES	NO	
	<i>Air condition</i>	<i>Cabin: functionality</i>	YES	NO	YES	NO	
		<i>Patient care: functionality</i>	YES	NO	YES	NO	
<i>Recharging the battery: charging functionality</i>		YES	NO	YES	NO		
<u>The outpatient clinic vehicles</u>	<i>Transport technology</i>	<i>stretcher</i>	YES	NO	YES	NO	
		<i>vehicle chassis</i>	YES	NO	YES	NO	
		<i>transport chair</i>	YES	NO	YES	NO	
		<i>Slip platform and locks</i>	YES	NO	YES	NO	
		<i>tilting dampers</i>	YES	NO	YES	NO	
		<i>The functionality of the side seat</i>	YES	NO	YES	NO	
<u>The outpatient clinic vehicles</u>	<i>Inspection and tightening of bolts, general maintenance</i>		YES	NO	YES	NO	
	<i>Control function and status of all outlets</i>		YES	NO	YES	NO	
	<i>Lighting control patient care</i>		YES	NO	YES	NO	
	<i>Dependent heating</i>		YES	NO	YES	NO	
	<i>Independent heating</i>		YES	NO	YES	NO	
	<i>Recharging the battery patient care</i>		YES	NO	YES	NO	
	<i>Status of external power socket</i>		YES	NO	YES	NO	
	<i>Functionality ceiling fans</i>		YES	NO	YES	NO	
	<i>Checking for leaks oxygen line</i>		YES	NO	YES	NO	
	<i>Functionality and tightness of the quick</i>		YES	NO	YES	NO	
	<i>Checking patient care buildings</i>	<i>Visual control</i>	YES	NO	YES	NO	
<i>functional check</i>		YES	NO	YES	NO		
<u>Compulsory car equipment</u>	<i>Backup wheel</i>		YES	NO	YES	NO	
	<i>jack</i>		YES	NO	YES	NO	
	<i>FIRST AID KIT</i>		YES	NO	YES	NO	
	<i>tow rope</i>		YES	NO	YES	NO	

*Tab. 3: Third part of the table for the new sequence control
for the ambulance car and its medical device*

<u>Vehicle documents</u>	<i>STI</i>	<i>YES</i>	<i>NO</i>	<i>YES</i>	<i>NO</i>	
	<i>EC</i>	<i>YES</i>	<i>NO</i>	<i>YES</i>	<i>NO</i>	
	<i>Motor Insurance</i>	<i>YES</i>	<i>NO</i>	<i>YES</i>	<i>NO</i>	
	<i>vehicle registration</i>	<i>YES</i>	<i>NO</i>	<i>YES</i>	<i>NO</i>	
<u>Part for describing the identified defects, damage, and notes detailed examination</u>						
<u>Checks by the station a missed for the following reason (List all reasons) !!!</u>	<u>The failure to make an emergency vehicle control:</u>				<u>Date:</u>	
					<u>Name:</u>	
					<u>Signature:</u>	
<u>Checks by the responsible engineering stations (List all deficiencies) !!!</u>	<u>Shortcomings that our technicians during inspection workbook:</u>				<u>Date:</u>	
					<u>Name:</u>	
					<u>Signature:</u>	

RESULTS AND DISCUSSION

All this important information we can use in preparing an effective FMEA, which can greatly contribute to optimize and above all improving the quality and safety of the current status of ambulances and medical devices. The Risk Priority Number (RPN) methodology is a technique for analyzing the risk associated with potential problems identified during a Failure Mode and Effects Analysis (FMEA) – as we can see on the Fig. 1 and a specific example on the Fig. 2

Rating	Description	Criteria
1	Very Low or None	Minor nuisance.
2	Low or Minor	Product operable at reduced performance.
3	Moderate or Significant	Gradual performance degradation.
4	High	Loss of function.
5	Very High or Catastrophic	Safety-related catastrophic failures.

Fig. 1 . Generic five point Severity scale

Task	Hazard	Use Errors	Use Error Probability	Hazard Severity	Risk Level	Method of Control	Effectiveness of Control	Risk Level with Control	Risk Acceptability
1. Open case	Delay in therapy	Difficulty /unable to open case	3	5	15	Use fabric case with hook-and-loop closures	1	15	Acceptable with review
	Broken / torn fingernail	Use fingernail to open latch	1	2	2	No latch	1	2	Acceptable
2. Tear open electrode package	No therapy delivered	Package missing as result of not being replaced from previous use	3	5	15	Design case with slot positions for accessories; missing item obvious; recommend admin procedures using seals	2	30	Acceptable with review
	No therapy delivered	Tear electrode when attempting to open package	3	5	15	Provide "zipper" closure that allows easy opening of sealed package; construct electrode with non-tear backing	1	15	Acceptable with review
	Delay in therapy	Difficult / unable to open package	3	5	15	Provide "zipper" closure that allows easy opening of sealed package	1	15	Acceptable with review
3. Expose upper chest of patient	Non-delivery of shock	Clothing not adequately removed	2	5	10	Provide scissors; provide pictorial and auditory instructions	2	20	Acceptable with review
	Burn caused by metallic object in clothing	Wire in undergarment or metal fastener left in place	2	3	6	Provide pictorial and auditory instructions	3	18	Acceptable with review
4. Peel backing from electrodes	Delay in therapy	Difficulty removing backing	3	5	15	Provide extended tab which allows easy removal of backing	1	15	Acceptable with review
	Non-delivery of shock	Used without moving backing	2	5	10	Detection circuit will alarm because EKG signal will not be detected with insulated electrodes	1	10	Acceptable with review
5. Apply electrodes to chest	Shock not delivered properly	Improper positioning	3	5	15	Provide pictorial and auditory instructions	3	45	Acceptable with review
	Local burn	Electrodes placed too close together	2	3	6	Provide pictorial and auditory instructions	3	18	Acceptable with review

Fig. 2 This is an example of a Failure Modes and Effects Analysis (FMEA) for a hypothetical automatic external defibrillator. FMEA is used to evaluate the risk profiles of use errors

CONCLUSION

As we have seen, so we approached this Article Assessing the Quality and reliability are the ambulances and for medical devices in the company ZaMED. Were shown examples of internal ambience of the (technical control table) as well as an instrument of quality and safety FMEA. This combination can significantly improve the quality, safety and comprehensive features all the cars and medical equipment. All these things can help to the drivers of the ZaMED ambulance cars to save lives.



Fig. 3. Illustration about the ambulance of ZaMED – the FMEA analysis can improve on a higher level the actual technical status of the ambulance and its medical devices

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