

Cooperation of Information Technologies, Software and Quality Tools In Terms of Quality Options and Information Back Up and Documents In the Conditions of Quality Management Systems

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Abstract: *The technical and technological procedures used to monitor the patient's life functions, when reading data from both the recorded data and archiving, use the storage media (SD cards) on which the life functions are recorded. This archiving is carried out at certain time intervals on the main disk in the main folder for storing important information. In further sections of this scientific article we will present the possibilities and intervals of recording individual archives from the instruments at individual emergency medical stations. This is in particular the way of actual archiving, its capabilities and possible improvement through selected quality tools, which can significantly increase the efficiency of archiving the information as well as strengthen the implementation of quality systems in this area.*

Keywords: *monitoring, recording, archiving, SD Cards*

INTRODUCTION

In the presented scientific article, we will deal with the current method of archiving data from medical devices as well as with some suggestions for improvement of the used sequences. An important point is to mention from a technical point of view the security controls of the given devices as well as certain suggestions based on professional literature as well as some used paper forms. These qualitative tools can significantly improve the methods used to verify the reliability and security of the devices in terms of functionality, quality and archiving of important information. An important part of these methods is also the implementation of quality tools and methodologies not only in the work sequences, but generally in the process function sequences. Based on these important features, the so-called process approach as well as complex process management and an effective tool are important in the given conditions of the organization as a whole as well as the procedural parts of the individual focus. The methodology can then be branched out into further process methodologies, whether in the technical, technological or archiving process in terms of all priority issues.

MATERIAL AND METHODS

Methodological solutions to these issues can be made in several ways where it is very important to mention useful and effective quality tools in synergy with information systems in the application of selected methods, tools and techniques of quality management systems. An example is the efficient collection and archiving of data from the ECG monitor and defibrillator where archiving from individual devices is registered into the defibrillator backup table and, if necessary, the records can be viewed using the CorView2 software.

The application of some quality methods is so complex in terms of scope and mathematical apparatus that the usage time may outweigh the effect of the application itself. In such a case, it is appropriate to use a corresponding information system that increases the efficiency of the individual methods. In principle, companies may choose to proceed with the appropriate information system as follows:

1. choose a **specific software tool** that was created only for the application of a particular method and cannot be used for the application of another method,
2. Use **standard tools** that allow formulation of custom relations and solution processes.

Both options have their advantages and disadvantages. In the case of a specific software

tool, it is not important to concentrate on the algorithm to solve the given method but, above all, to correctly define the input data and parameters. The advantage is in this case:

- simplicity and application speed of the given method,
- managing application results are clear and structured,
- there is no need for a deep understanding of the solution's algorithm.

The greatest disadvantage of using a specific software tool is its limited use in the application of other related methods, and in particular its high price. A clear advantage of using standard software is its low cost. The disadvantage is the need to use more software. It is good if all come from one manufacturer. For example, MS Visio allows creation of IDEF0 process maps with different hierarchies and links to other documents. MS Project is suitable for tracking customized production processes with tracking indicators such as time, cost, human resources.

Open mission □

Folder to be searched: G:\Corpus III EKG prog Q Browse

Q X (123 / 123)

Dev...	ID device mission	Date	Start	Duration	Device ID	📶	📝	📁	🔌	CO2	Patient ID	Case nu...	First name	Last name	Date of birth	Age	Post
📶	20140720105526	20/07/2014	12:55:26	00:55:42	--						--	--	--	--	--	--	--
📶	20140720101243	20/07/2014	12:12:43	00:10:43	--	✓					--	--	--	--	--	--	--
📶	20140718213555	18/07/2014	23:35:55	00:09:10	--						--	--	--	--	--	--	--
📶	20140718164241	18/07/2014	18:42:41	00:06:35	--	✓					A	--	--	--	--	--	--
📶	20140718110608	18/07/2014	13:06:08	00:02:27	--						--	--	--	--	--	--	--
📶	20140718110107	18/07/2014	13:01:07	00:02:22	--						--	--	--	--	--	--	--
📶	20140718105448	18/07/2014	12:54:48	00:05:43	--						--	--	--	--	--	--	--
📶	20140718101719	18/07/2014	12:17:19	00:11:06	--						--	--	--	--	--	--	--
📶	20140718093407	18/07/2014	11:34:07	00:04:17	--						--	--	--	--	--	--	--
📶	20140716164915	16/07/2014	18:49:15	00:03:19	--						--	--	--	--	--	--	--
📶	20140715145932	15/07/2014	16:59:32	00:02:35	--						--	--	--	--	--	--	--
📶	20140715064947	15/07/2014	08:49:47	00:02:48	--						--	--	--	--	--	--	--
📶	20140715052918	15/07/2014	07:29:18	00:02:28	--						--	--	--	--	--	--	--
📶	20140715052740	15/07/2014	07:27:40	00:00:32	--						--	--	--	--	--	--	--
📶	20140714141505	14/07/2014	16:15:05	00:08:05	--						--	--	--	--	--	--	--
📶	20140714083842	14/07/2014	10:38:42	00:01:22	--						--	--	--	--	--	--	--
📶	20140714030657	14/07/2014	05:06:57	00:05:20	--						--	--	--	--	--	--	--
📶	20140713194728	13/07/2014	21:47:28	00:31:19	--						--	--	--	--	--	--	--
📶	20140713112729	13/07/2014	13:27:29	00:05:29	--						--	--	--	--	--	--	--
📶	20140712145217	12/07/2014	16:52:17	00:03:34	--						--	--	--	--	--	--	--
📶	20140712124326	12/07/2014	14:43:26	00:49:01	--						--	--	--	--	--	--	--
📶	20140712110500	12/07/2014	13:05:00	00:01:47	--						--	--	--	--	--	--	--
📶	20140712060444	12/07/2014	08:04:44	00:01:26	--						--	--	--	--	--	--	--
📶	20140712054455	12/07/2014	07:44:55	00:19:17	--						--	--	--	--	--	--	--
📶	20140712054350	12/07/2014	07:43:50	00:00:27	--						--	--	--	--	--	--	--
📶	20140712054029	12/07/2014	07:40:29	00:00:59	--						--	--	--	--	--	--	--
📶	20140712035256	12/07/2014	05:52:56	00:04:59	--						--	--	--	--	--	--	--
📶	20140712035130	12/07/2014	05:51:30	00:00:58	--						--	--	--	--	--	--	--
📶	20140712012536	12/07/2014	03:25:36	00:20:05	--						--	--	--	--	--	--	--
📶	20140711174205	11/07/2014	19:42:05	00:05:52	--						--	--	--	--	--	--	--
📶	20140710170254	10/07/2014	19:02:54	00:42:59	--						--	--	--	--	--	--	--
📶	20140710122306	10/07/2014	14:23:06	00:42:00	--	✓					--	--	--	--	--	--	--
📶	20140709162704	09/07/2014	18:27:04	00:01:08	--						--	--	--	--	--	--	--
📶	20140709104540	09/07/2014	12:45:40	00:02:17	--	✓					--	--	--	--	--	--	--
📶	20140708182525	08/07/2014	20:25:25	00:01:28	--						--	--	--	--	--	--	--

Fig 1 Illustration of archived defibrillator records from the SD cards in corView2 software

MS Excel is able to solve problems of statistical quality management. However, the use of different programs requires a lot of work and concentration on the connections between them, which is their major disadvantage. However, the deployment of a relevant software also depends on other criteria that are rather organizational and economic. These include, for example, business size, process complexity, software cost, and additional costs for updating, software support options of the provider, additional training, and other business references,

and more. Based on these important information, it is possible to compile several effective tools for collecting information e.g.: for archiving documents from ECG devices as well as universal pulmonary ventilators.

RESULTS AND DISCUSSION

The MS Excel spreadsheet is an excellent tool for defining various mathematical functions and using them for applying different quality methods. It contains a number of predefined functions. The greatest possibilities of its use are mainly in statistical quality management. An important feature of the MS Excel spreadsheet is collecting information about data collection from the devices.

Table 1 Creating arch. rec. to perform the main archiving of ECG and UPV according to the prescribed schedule

<u><i>Checking and registering records from defibrillators and UPVs (checking SD cards and uploading data to an external disk)</i></u>					
<u><i>Station</i></u>	<u><i>Date</i></u>	<u><i>Equipment</i></u>	<u><i>Serial / inventory number</i></u>	<u><i>Filename or remark</i></u>	<u><i>Responsible tech.</i></u>
MES Komárno 1	03.08.2016	Corpuls3	100138	MES Komárno 1. 03.08. 2016	-
MES Komárno 2	03.08.2016	Corpuls3	100170	MES Komárno 2. 03.08. 2016	-
MES Zemian. Olča	03.08.2016	Corpuls3	100178	MES Zemianska Olča 03.08. 2016	-
MES Veľký Med.	03.08.2016	Corpuls3	100173	MES Veľký Meder 03.08. 2016	-
MES Nesvady	04.08.2016	Corpuls3	100181	MES Nesvady 04.08. 2016	-
MES Trstice	03.08.2016	Corpuls3	100177	MES Trstice 03.08. 2016	-
MES Kolárovo	04.08.2016	Corpuls3	100169	MES Kolárovo 04.08. 2016	-
MES Komjatice	04.08.2016	Corpuls3	100176	MES Komjatice 04.08. 2016	-
MES Marcelová	05.08.2016	Corpuls3	100175	MES Marcelová 05.08. 2016	-
MES Pribeta	04.08.2016	Corpuls3	100174	MES Pribeta 04.08. 2016	-
MES Štúrovo	04.08.2016	Corpuls3	100172	MES Štúrovo 04.08. 2016	-
MES Gbelce	04.08.2016	Corpuls3	100179	MES Gbelce 04.08. 2016	-
MES Želiezovce	04.08.2016	Corpuls3	100171	MES Želiezovce 04.08. 2016	-
MES Podhájska	04.08.2016	Corpuls3	100180	MES Podhájska 04.08. 2016	-

Presented records are carefully preserved according to the prescribed time intervals and the prescribed method so that all required matters and information are effectively captured. For possible additional security and quality information procedures within quality management systems, it is possible to focus on the synergy of these tools together with effective quality tools that can be used primarily to enhance security and retention of information. These quality tools can be presented not only by a flowchart or the Ishikawa diagram but as well as by a checklist which can be a significant strengthening of these important tools. Based on this information, we can list at least two examples of document archiving where these quality tools prove to be of great importance.

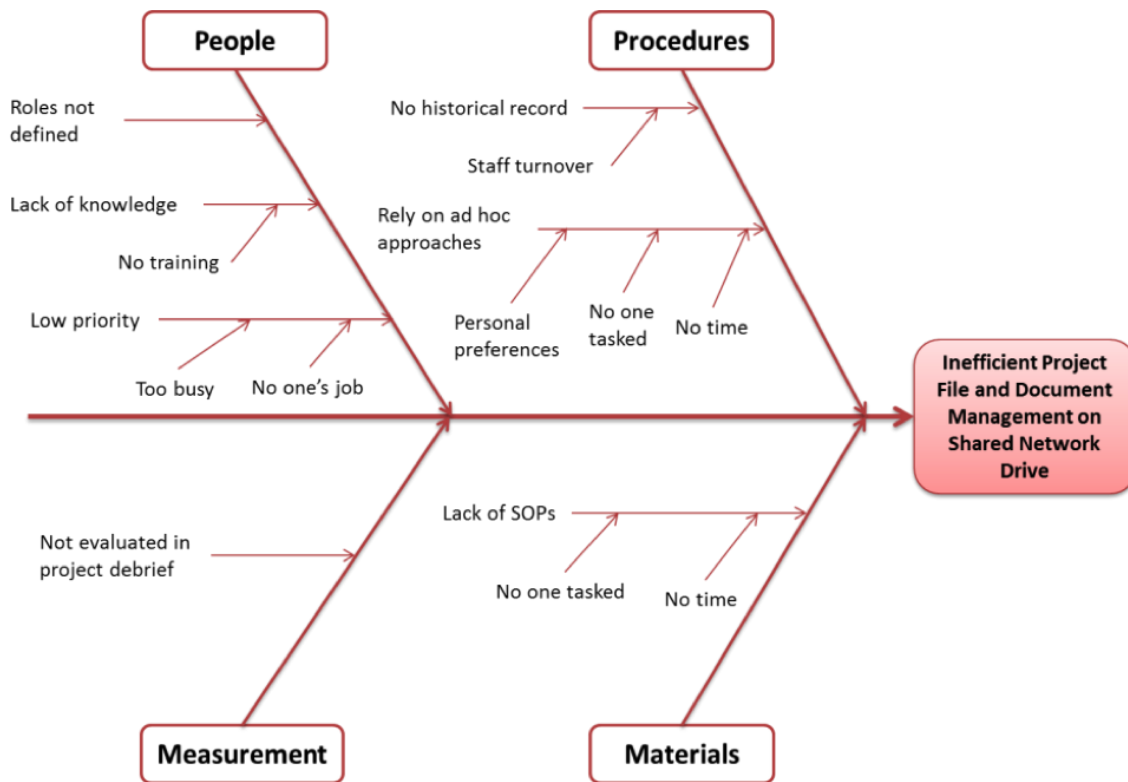


Fig 2 Diagram of causes and effects in improving electronic document archiving

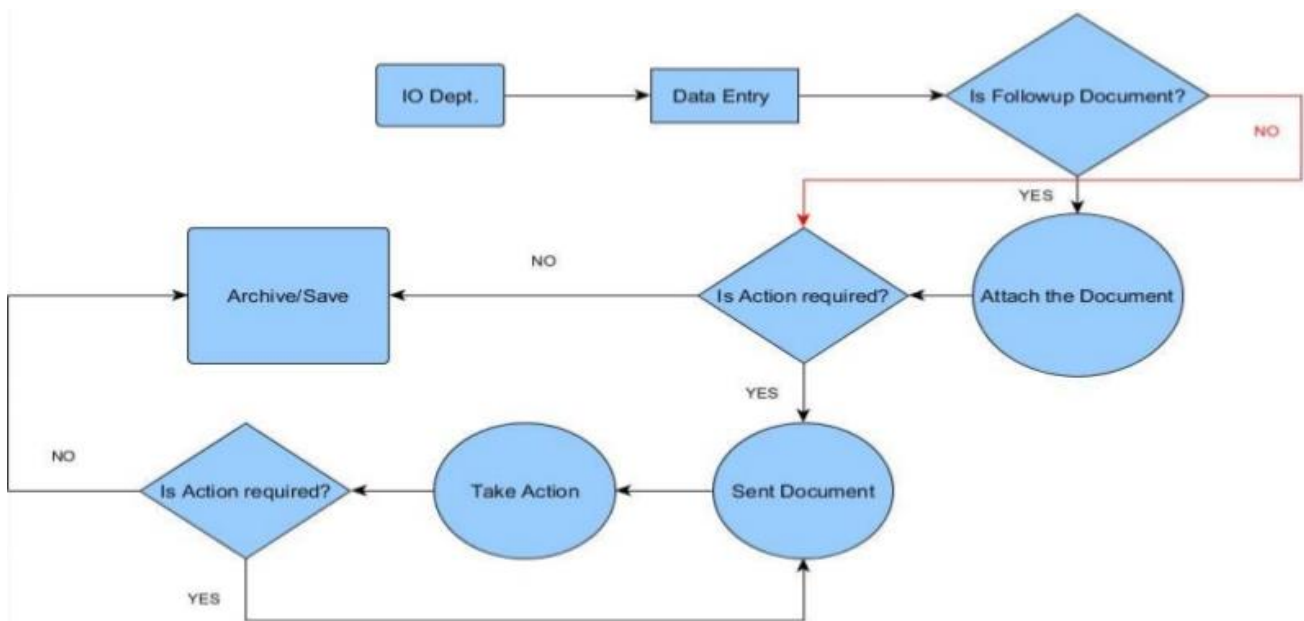


Fig 3 An example of using a flowchart for document archiving

Graphically, we can see the correlation of the important information and process steps of archiving such as the effective use of quality tools, and, in the case of other options, it might be possible to attach, for example, also the mentioned check sheet as a certain type of process control of adherence to each sequence during the archiving of individual document types as important part of the quality management systems.

CONCLUSION

The operational processes and procedures have to be defined, documented and updated as necessary. The structuring of the different levels of documentation, records and data has to be defined, efficiently and operationally managed. Records are documents that show achieved results or provide evidence of proven work. Records are evidence of the activity being performed and are generated during the implementation of activities in the organization.

The purpose of records management:

- keep data on suitable medium for a certain period of time at an appropriate location,
- make the data available to all defined functions in the organisation.

Based on the above information, it is of utmost importance in each organization to determine an efficient and very secure way of archiving information and records that show the very important internal information of the selected organization. Therefore, it is very important to have an efficient functional interplay between archiving records, information technologies and effective tools of quality management systems.

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