

**Anesthesia information management systems:  
comparison of functionality, operability and economic efficiency**

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Since the nineties more and more electronic documentation systems are used to replace the handwritten anesthesia record. Such anesthesia information management systems (AIMS) offer beside the clinical record a lot of useful features to support the anaesthesiologist. But the available solutions differ a lot in scope of functions and in usability. The same applies to the technical requirements like operating or database systems and the integration in existing IT structures. This study offers a survey of available AIMS in the German-speaking park and illuminates the differences between the particular software packages.

First of all the approach for automatic data acquisition from clinical monitoring devices are evaluated. As well as the possibilities for graphical data presentation, data entry and final report build. Another feature should be the implementation of a pre- and post- surgery documentation system and the use of digital signatures like- wise the statistic analysis of the captured data. Some solutions also offer a decision support system and a control system for medical devices like an electronic infusion device.

The second part of this survey regards the technical implementation of the particular systems. On the one hand there are single-vendor solutions with full integration in a monolithic hospital information system and on the other side there are interface-based "best of breed" approaches which use the common HL7-Interface or other standards to get clinical patient information like blood tests.

Lastly, the usability of the AIMS was also studied. The human-computer interaction plays an important role due to the lack of available space at an anesthesia working place. Particularly touch screens and multi-touch screens have been approved and are supported by several vendors. Also the fast entry of drugs and transfusion products with bar code labels and scanner or RFIDs (Radio Frequency Identification) are helpful in an anesthesia environment.

With respect to economical aspects, there are significant differences in the costs of AIMS. Several licence models, which are hardly to match, make an economic choice very difficult. Especially functional add-ons and technical interfaces complicate the cost estimation.

In conclusion this study shows that none of the available AIMS in the German-speaking park include all features of a modern AIMS. The choice is also affected by the existing IT infrastructure and the hospital information system and its interfaces.