A WEB-BASED KNOWLEDGE DATABASE (WIKI PLATFORM) FOR STANDARD OPERATIONAL PROCEDURES (SOPS) IN CARDIAC ANESTHESIA.

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Introduction: Clinician groups' infrastructure aims to improve communication, learning and access to knowledge (1). However valuable meetings and seminars can be, they are time-consuming, prone to redundancy and subject to time lag in information flow. Manuals and quality management systems (QMS) are commonly used in order to guarantee quality and consistency of workflow. Maintenance of these documents is laborious; access to information can be difficult because they are often distributed across different computers, bookshelves and folders. Searching this environment is time-consuming.

In rapidly progressing medical specialties, manuals get outdated very quickly. It is therefore important to have an easy way to update and handle knowledge.

A ''collaborative hypermedium'' is a medium that consists of nodes representing content and arcs representing links between contents. A wiki (or Wiki-Wiki, meaning ''super fast'' in the Hawaiian language) is hypertext - based collaborative software that enables documents to be authored collectively using any web browser (2). The MediaWiki content management software (CMS) is licensed under General Public Licenses and freely available (MediaWiki, http://wikipedia.sourceforge.net). Performing anesthesia for highly innovative fields, e.g., cardiac surgery or cardiology, requires exact and up to date SOP for daily practice. Wiki platforms are widely used for educational purposes (3, 4, 5) and are innovative tools for research networks (6). The aim of this project was to develop a wiki based platform that allows continuous availability, documentation and development of SOP in cardiac anesthesia for teaching and information exchange.

Methods: We installed the software on a privately hosted server and added extensions to introduce images, videos and pdf documents as well as an implementation for online scheduling in the database (without confidential information).

The MediaWiki-System logs every editing, documenting every contribution. Furthermore conversation pages permit users to be actively involved in discussion of SOP.

We limited access to the platform with a password. Editing rights were restricted to users with an account provided by the wiki administrator only. Of course, no confidential patient data were to be introduced in the database and all illustrations had to be anonymized carefully before upload.

We analyzed data logged by the server for a period of 6 month, including time spent on the wiki, number of access and daytime access.

Results: The wiki actually consist of 247 pages assigned to 14 categories and generated within 1.5 years. The number of files (*.pdf, *.swf, *.jpg) uploaded is 345.

During the 6 month period, an increase in number of users, pages visited and data volume accessed was observed. However traffic from within the hospital is directed over a proxy-server and therefore counted as one single user. The access statistics demonstrated a clear circadian course, during working hours with a second peak at 9 pm. This clearly indicates the necessity for out of work accessibility.

Two thirds of the visited pages related to team scheduling and the main page containing actual information. One third of all accesses were for medical articles dealing with anesthesia management and echocardiography.

One half of the visits on the wiki lasted for maximum 15 min; the other visits lasted up to 1 h.

Discussion: This wiki implementation compares quite favourably with the more cumbersome setup of intranet solutions requiring the long term commitment of group members and redirecting manpower away from the clinical core business and teaching (7).

Transesophageal echocardiography (TEE) is a widely used diagnostic tool for the evaluation of heart structure and function during cardiac surgery (8). The video extension in the wiki is an exceptionally valuable tool to display loops and images from TEE recordings. This is used in the actual development of an interactive online textbook for teaching and learning TEE.

The limitations to the system consist actually in forwarding the IP address through the proxy server for the editing function.

Moreover, every wiki underlies the network effect, where quality improves when more users contribute. Since we cannot lower the effort it takes for writing articles, we have to maximize the value a user obtains from the platform to profit from this effect.

An important point for the future is quality management. A peer review system where every editing has to be controlled by selected reviewers is under development.

Conclusion: A wiki knowledge database is well suited for medical SOP documentation, learning and access and easily edited for up to date information. It can improve development and maintenance of collective knowledge, especially with continuous staff turnover.

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