A Program for Recording and Evaluating ENT Therapy Data – User Report

ENTstatistics is a program developed by Messrs. Innoforce (Liechtenstein) for recording multiple data generated during the treatment of ENT patients. The company promises that by using this program for seamlessly recording therapy data it is possible not only to improve the success rate of the therapies but also to achieve a reduction in costs.

The basic functions of the program comprise both the recording of patient and therapy data and the statistical evaluation of the data recorded. Patient data are recorded in the base module. As the system is constructed in modules, various therapy data can be documented. At present it is possible to include treatment data for ear surgery, using the ear module; additional modules are under development, for example a thyroid module or an extension for dealing with cochlea implants. ENTstatistics consists of a client program for recording and evaluating data, together with an Admin Tool, which allows an administrator to manage complex settings for the program. The data record is built up chronologically. A kind of digital clinical history is set up for each patient, which for ear therapies distinguishes between right and left, making it possible to record therapeutic measure and the accompanying diagnoses for each ear. In detail, information can be entered concerning surgery (distinguishing between primary operation or revision), with audiograms, follow-up data, PDF documents, images – e.g. photos, sketches, x-rays and –with an additional option – videos can also be included. The administrator determines what kind of entry each user is allowed to make.

Patients' basic data can be ex-ported from existing hospital information systems (HIS) using the widespread HL7 interface. Provision is also made for various additional information to be entered ("interesting case", "treatment concluded", "external treatment", "exclusion from statistical evaluations") and for free comments. The unambiguous allocation of a patient is made via a patient ID. More than one case can be set up for each patient; they are differentiated from each other by appropriate IDs.

Provision is made for a very detailed recording of operation data; the use of an object-oriented branching structure means that an overview can be maintained despite the wealth of detail. It is also easy to enter the many parameters required for an operation, as the program works with context-dependent selection fields. It is possible to enter numerical values for the subsequent statistical evaluation. The overview is further improved by the use of colour coding according to criteria determined in advance by the administrator – for example for intra-operative findings which deviate from the norm.

Before operation reports can be set up, it is necessary to perform a diagnosis for the treatment planned. Here, the program distinguishes between initial and subsequent diagnoses. Provision is also made for a post-operation report.

Special mention must be made of the successful way the program supports the incorporation of external data. PDF documents or images can be imported either manually or via drag'n'drop. Images can also be incorporated in this way, and in addition they can be scanned in directly. An automatic scan function allows several images to be imported simultaneously. In addition, the program allows for a classification of the images (photo, sketch, x-ray) and a structured description of them, so that searches can be made on the basis of image characteristics. Images can be overlaid and marked or captioned in various ways.

The important recording of audiogram data is effected in the ear module either via manual input or through the import of NOAH-XML files. In addition, the program supports the automatic import of tone audiogram data from a number of audiometers (Interacoustics, GNotometrics, Maico); additional import facilities are available by request. The representation of the audiograms can be changed and thus adapted to international standards, and they can be exported as graphics to other applications.

The audiogram representations provide for a series of parameters which allow for a classification of the hearing loss and of the hearing gain achieved through the surgical intervention. Thus the hearing loss is determined in percent following CPT-AMA and the degree of hearing loss is stated following Feldmann. Thus it is possible to compare the results of various prostheses or surgical procedures without much effort. The analysis is based on audiogram readings pre- and post-treatment and provides characteristic values including statistical significance. The results can be exported to other Office applications. The search criteria can be stored for repetitive evaluations. The main search criteria provided are the surgeons and patients involved together with treatment data such as diagnosis, therapies and results. Evaluation can be undertaken over various time periods.

The timing of the audiometric tests pre-and post-op can be set. An overview of the results of the statistical evaluation are presented in graphs and tables. They show demographic information (patients categorised by age and gender) and mean/median values (selectable) of the therapy data derived from the pre- and post-operative tone audiograms (ABG, air and bone conduction). The graphs can be presented as box plots or bar charts.

In summary, then, after an initial training period this otology database, which the producer describes as 'ultimate', provides a user-friendly means of entering the comprehensive data arising from ear operations. The interface communication with HIS systems and connection with audiometry equipment can relieve operators of some of the work of data entry. The particular strength of the program lies in its facility for adaptation to the specifics of a particular clinic and the particularities of surgery for hearing improvement. The return for the work involved in registering and maintaining the data lies in the comprehensive statistical analyses and representations integrated within the program which produce publishable tables and images.

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