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URODYNAMICS DATABASE FOR AUTOMATED REPORTING

Aims of Study

Databases are becoming more important as research tools in medicine. The urology unit had prospectively acquired manually recorded data on over 12,000 patients covering the most important observations in the urodynamics procedure which was previously sent off-site for data entry. We developed a system to streamline data acquisition, check veracity of data and generate an automated report from on-line computer entry.

Methods

An original manually recorded urodynamics data sheet covering over 150 questions on history, observations and diagnoses relating to urodynamics procedure was adapted into a Microsoft Access Database. A simple interactive data entry procedure was designed utilising standard built-in checking and forced data revision rules. Urodynamics reports were designed by generating significant negative and positive findings into a standard reporting format from the entered data. This design is based on progression through symptom history, neurological problems, related surgery, test measurements, cystometrogram findings, appearance on micturition, fluoroscopic findings, diagnoses, contractility and outlet obstruction parameters and recommendations. Reports were generated automatically from previously entered data to design reporting logic to cover a wide variety of diagnoses, and continuously re-programmed on-site during urodynamics procedures over two years. Data entry accuracy was assessed by auditing 50 patients from the existing database and 50 patients acquired through the new data entry and reporting procedure.

Results

Audit of 100 patients (over 15000 fields) showed improved accuracy of data from 99.0% to 99.9%, p<.001. Inaccuracies in the new system were not clinically relevant and were used to generate more error checking procedures. Reports are based on underlying data which can be re-edited on-line to immediately correct any mistakes. The data entry procedure was more intuitive and quicker for users to learn than the manual system and reduced secretarial workload by 20 minutes per patient over previously dictated reports. The report was versatile and provided a complete record of the urodynamics procedure and with the addition of free text editing was able to be sent to referring GP with the patient immediately after the procedure. Generation of contractility bladder outlet obstruction parameters and graphing of Abrams-Griffiths and Schafer pressure-flow nomograms during procedures aided in diagnosis and an understanding of the urodynamics procedure.

Conclusions

We designed a streamlined data collection process that generates computer reports with minimal data handling, improved accuracy and faster processing times. The system is intuitive and didactic and can be easily modified to provide a research database and automated reports for other urologic and medical investigations.