

## **Application of Statistica for analysis of large patient dose data sets obtained from RIS**

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**Purpose:** It has been shown that data can be obtained from a hospital radiology information system for the purposes of patient dose audit, clinical audit and radiology workload analysis. Data from many hospital sites is collected in a database driven application for the purpose of analysis. However, there are inconsistencies within the data between the different sites, specifically the labelling of the data and blank or zero values with records. In order to be able to analyse the data, it is desirable to ensure consistency and remove anomalous data. This can be automated using a statistical package and Visual Basic coding

**Method:** Data files received from RIS are imported into the application. The database is a Structured Query Language (SQL) database, which can be queried using an off-the-shelf statistical package, Statistica. Macros were created to automatically format the data to a consistent format between different hospitals ready for analysis. Further application of these macros can be used to automate further analysis such as detailing mean kV, mAs and Entrance Surface Dose (ESD) per room and per gender. Standard Deviation and Standard Error of the mean are also generated. Graphs can also be generated to illustrate trends in doses between different variables such as room and gender. Collectively this information can be used to generate a report.

**Major Findings:** A process that once could take up to one day to complete now takes around one hour. A major benefit in providing the service to hospital trusts is that less resource is now required to report on RIS data, making the possibility of continuous dose audit more likely. Time that was spent on sorting through data can now be spent on improving the analysis in order to provide benefit to the customer

**Conclusions:** Using data sets from RIS is a good way to perform dose audits as the huge numbers of data available provide the bases for very accurate analysis. Using macros written in Statistica Visual Basic has helped to sort and consistently analyse this data. Being able to analyse by exposure factors has provided a more detailed report to the customer.

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