

Max E(Nuf) QC Model; Incorporating Frequency Into QC Planning

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Traditionally, planning statistical quality control (SQC) is concerned with the number of control materials per run and the rules of interpretation, but there is nothing about run length or the frequency of SQC. To relate frequency to SQC, Curtis Parvin has introduced the term Max E(Nuf) to represent the 'maximum expected increase in the number of unacceptable final patient results' reported during the presence of an undetected out-of-control error condition.

Max E(Nuf) provides a new design parameter that aligns with the emerging interest in risk based QC plans. The fourth edition of the Clinical and Laboratory Standards Institute (CLSI) guideline on statistical quality control (CLSI C24-Ed4; 2016) is concerned with risk-based SQC strategy, and presents a general guide to application Max E(Nuf) model in medical laboratories.

Max E(Nuf) model is a total error (TE)-based model, and relates performance's quality, expressed as Sigma score, to SQC strategy factors including the number of QC results, the QC rule to use at each QC event, as well as the frequency of QC events.

Max E(Nuf) model is a practical solution for laboratories of any size, in that small laboratories with limited samples can apply wide QC limits with small run sizes whereas large laboratories with thousands of samples per day can apply tighter QC limits with larger run sizes.