The medical heritage concept: a model for assuring comparable laboratory results in long-term longitudinal studies.

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The success of a three or four decade health monitoring program depends upon the constancy and stability of the laboratory measurement data. This paper describes a prospective model which has been implemented as part of a 30-year health care program developed for the benefit of a particular group of residents who have lived for more than two years within five miles of an industrial plant which processed uranium metal and contaminated the surrounding area. Effective long-term laboratory monitoring (20 to 40 years) requires (1) a stable analytical base to establish comparability of all data collected, (2) innovative computer based record keeping, and (3) two selected reference populations which reflect method bias and widespread population change bias. To meet this need for comparability, the long-term Medical Heritage comparability concept was developed. This is an approach to the determination, storage, and retrieval of the laboratory data obtained on each specific participant in such a manner that all of that participant's data are internally comparable and continually traceable to definitive and/or reference methods developed by the National Institute for Standards and Technology and the Centers for Disease Control and the National Committee for Clinical Laboratory Standards. Systematic long-term documentation differentiates the Medical Heritage 30 to 40 year concept from the current short-term two- to three-year data continuity systems. As a model for long-term medical monitoring, the Medical Heritage comparability concept gives validity to individual patient care monitoring decisions.

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