

Title: The Radiology-Pathology Imaging-Centric Abdominal Multi-omics Program - Quality Improvement Workflow for Radiology-Pathology Correlation of Prostatectomy

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Introduction: High data quality in large, multi-disciplinary, multi-scale, multi-modal databases is difficult to maintain, especially within the dynamic of personalized care in large healthcare settings. The Imaging-Centric Abdominal Multi-omics Program's (ICAMP) project management office (PMO) optimizes data integration workflows by focusing on data accuracy and integrity. Such efforts strengthen the database, which catalyzes innovative research and tool development for the improvement of early detection, diagnosis, and treatment of cancer and non-cancer diseases.

Methods and Materials: The study coordinators, data manager and program manager maintain data quality and integrity for the ICAMP database by 1) streamlining data variables to accurately capture new cohort characteristics; 2) implementing key Quality Assurance (QA) strategies for high-volume data entry; 3) fostering a data accuracy mentality amongst staff; 4) imposing data entry deadlines; and 5) encouraging feedback from data requestors on distributed data.

Results: The PMO performs data entry for 7 retrospective and prospectively enrolled prostate cohorts, maintaining a database of 19,871 subjects. As new cohorts are integrated over time, the operations team meets regularly with the program manager and PIs to ensure that current data variables accurately capture cohort-specific characteristics and to update variables as needed.

Concurrently, data entry SOPs are updated, and staff are trained on all changes, on top of the mandated quarterly refresher training. The data interface's real-time auto-checks (i.e., drop-down menus and integer-specific free-text fields) impose a first-line data accuracy check. Additionally, 2 coordinators are required for data entry – one performs initial entry while the other performs a quality check. Short breaks are also encouraged during data entry to minimize fatigue-related errors. Finally, the data manager performs monthly audit checks to identify outliers, missing information, format issues, etc. Audit reports consistently show error rates of <1%. The data entry deadline is 3 days post-enrollment for most studies, a self-imposed requirement to ensure database completeness and timeliness. Once data is distributed to researchers, we seek feedback on data usefulness, completeness, etc.

Conclusions: The PMO's QA is a vital part of ICAMP's role as a data distributor at our institution, continuously optimizing operational workflows that ensure data accuracy, completeness, timeliness, and relevance.

Reference: <https://www.6sigma.us/six-sigma-in-focus/dimensions-of-data-quality/>