Between-hospital variation

- Between-hospital variation in biopsy indication for patients with newly diagnosed glioblastoma in the Dutch Quality Registry for Neurosurgery
- Association of hospital volume with survival but not with postoperative mortality in glioblastoma patients in Belgium
- Validity of Early Outcomes as Indicators for Comparing Hospitals on Quality of Stroke Care
- Making Meaningful Use of Price Transparency Data: Describing Price Variation of Spine Surgery and Imaging in a Single System
- Casemix, management, and mortality of patients rreseceiving emergency neurosurgery for traumatic brain injury in the Global Neurotrauma Outcomes Study: a prospective observational cohort study
- Between-hospital variation in time to glioblastoma surgery: a report from the Quality Registry Neuro Surgery in the Netherlands
- Can We Cluster ICU Treatment Strategies for Traumatic Brain Injury by Hospital Treatment Preferences?
- Frequency of Withdrawal of Life-Sustaining Therapy for Perceived Poor Neurologic Prognosis

Between-hospital variation refers to the differences in healthcare outcomes, treatment practices, resource allocation, and patient care approaches among different hospitals. These variations can be due to multiple factors, including:

Differences in Clinical Protocols – Hospitals may follow different guidelines, protocols, or standards for diagnosing and treating the same conditions.

Resource Availability – Variations in the availability of medical equipment, specialized personnel, and intensive care facilities can lead to differences in patient outcomes.

Surgeon and Staff Expertise – Differences in the experience and training of healthcare providers can affect surgical outcomes, complication rates, and overall quality of care.

Hospital Case Mix – Some hospitals treat more complex or high-risk patients than others, leading to differences in mortality rates and other performance metrics.

Institutional Culture – The decision-making process, teamwork, and hospital policies can impact treatment approaches and patient management strategies.

Financial and Administrative Factors – Funding models, insurance reimbursement policies, and hospital management decisions can influence resource allocation and prioritization of certain treatments.

Geographic and Demographic Influences – Patient populations, socioeconomic status, and access to healthcare can vary by hospital location, influencing outcomes.

Data Collection and Reporting Differences – Hospitals may report clinical data differently or have different methods of measuring outcomes, leading to perceived variations.

Relevance in Neurocirugical Practice

Between-hospital variation may be relevant when analyzing surgical outcomes, complication rates, and efficiency in managing conditions like brain tumors, hydrocephalus, or spinal disorders across different institutions. Addressing these variations often involves:

Standardizing clinical guidelines.

Sharing best practices across hospitals.

Implementing quality improvement programs.

Conducting comparative research and benchmarking outcomes.

Registry-based observational studies

A registry-based study examines the variation in biopsy and resection indications for glioblastoma surgery patients across Dutch hospitals and identifies patient- and hospital-related factors associated with the surgical treatment.

Data from all 7443 adults with first-time glioblastoma surgery at 12 hospitals were obtained from the prospective population-based Quality Registry Neurosurgery in the Netherlands between 2011 and 2021. Patients were stratified by either biopsy or resection. They analyzed variations in the American Association of Anesthesiologists (ASA) classification, Karnofsky Performance Score (KPS), and gender and age distribution between the different centers. Between-hospital variation in biopsy percentage was analyzed using a funnel plot. Logistic regression was used to identify associated patient- and hospital-related factors.

32% of the newly diagnosed glioblastoma patients underwent a biopsy, with wide variations between the different centers (23-56%). Patient-related variables such as higher age or ASA classification and lower KPS were significantly associated with the indication for biopsy. After correction for these factors, between-hospital variation persisted, with two institutes performing more biopsies than expected and one less than expected. Median overall survival was 12.5 months (95% CI 12.2-12.9) in the resection group and 5.6 months (95% CI 5.1-6) in the biopsy group, with wide variations between the different centers.

A substantial between-hospital variation in biopsy percentages was found. Patient factors (age, ASA classification, and KPS) but also hospital factors (such as academic setting) impact surgical decisions. Variation persisted also after correction for potential confounders, indicating that other factors play a role in decision-making ¹⁾.

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