Surgical Performance Monitoring

Surgical performance monitoring is essential in modern neurosurgical practice to ensure patient safety, maintain quality standards, and support continuous professional development.

CUSUM analysis serves as a powerful tool within this framework, offering:

- **Real-time feedback** on individual or team performance.
- **Early detection** of deviations from expected complication or success rates.
- **Quantification of learning curves**, allowing objective assessment of training progression.
- **Audit support**, especially when documenting clinical governance, accreditation, or institutional benchmarking.

In ICP monitor placement, where precision is critical and complications can be life-threatening, using CUSUM to monitor outcomes enables a data-driven approach to both self-reflection and system improvement.

CUSUM can be implemented for:

- Binary outcomes (e.g., presence/absence of complications)
- Continuous variables (e.g., operative time, ICP accuracy error margins)
- Risk-adjusted scenarios (e.g., accounting for patient-specific factors like GCS or comorbidities)

When used systematically, CUSUM enhances transparency, fosters accountability, and aligns surgical performance with evidence-based safety thresholds.