Urinary Tract Infection Prevention

Severe intraoperative hyperglycemia (SIH) is associated with a higher risk of infections within the first postoperative week in patients undergoing elective brain neurosurgical procedures. Preoperative HbA1c is a reliable marker of the potential risk both of SIH and postoperative infections in the selected cohort. Future studies need to assess possible improvements in outcome under more precise monitoring and tighter control of perioperative hyperglycemia [1].

A careful approach is required to reduce unnecessary indwelling urinary catheter (IUC) for preventing catheter-associated urinary tract infection (CAUTI). Findings suggest that traditional thinking about UTI prevention may need modification [2].

Patients with neurological disorders often have lower urinary tract dysfunction, manifesting as urinary retention or urinary incontinence, and so commonly use catheters. Neurologists should therefore be aware of the different types of catheters and appliances and their risks, benefits and complications. Clean intermittent self-catheterisation is preferable to an indwelling urinary catheter; however, if this is not possible, then a indwelling suprapubic catheter is preferable to a urethral catheter for long-term management [3].

Ikeda-Sakai et al. conducted a prospective interrupted time series study in three tertiary care hospitals in Japan. Adult patients with acute stroke were eligible. The study consisted of three phases: baseline, education and implementation. The program included an assessment of IUC indications, educational meetings among healthcare professionals, reminders for removal of inappropriate IUC and a urinary retention protocol. The primary outcome was the proportion of inappropriate IUC use to assess effectiveness. The device utilization ratio and incidence of CAUTI were examined to assess effectiveness, and incidences of urinary retention and all symptomatic urinary tract infection (UTI) were examined to assess safety.

Among 976 patients who met the inclusion criteria, 738 were analysed. Inappropriate IUC use decreased from 50.1% in the baseline phase to 22.5% in the implementation phase (absolute risk reduction in interrupted time series analysis 42.4% [95% confidence interval, 19.2%-65.6%]). The device utilization ratio decreased from 0.302 to 0.194 ($p < 0.001$), whereas CAUTI did not change significantly (from 8.81 to 8.28 per 1000 catheter-days; incidence rate ratio 0.95 [0.44-1.94]). All symptomatic UTI decreased from 9.5% to 4.9% ($p = 0.015$), with no increase in urinary retention.

The program improved the appropriateness of IUC use in stroke care while ensuring safety [4].

A set of bundled interventions was implemented, including staff education, an electronic daily checklist, and a nurse-driven removal protocol for indwelling urinary catheters. Data were analyzed using mixed statistics, including independent samples t tests and Fisher exact tests.

No catheter-associated urinary tract infections were reported during the intervention period, reducing the rate by 1.33 per 1000 catheter days. There was a 10.5% increase in catheter days, which was not statistically significant ($P = .12$). Documentation compliance increased significantly from 50.0% before to 83.3% during the intervention ($P = .01$).

This bundled approach shows promise for reducing catheter-associated urinary tract infections in critical care settings. The concept could be adapted for other health care-associated infections [5].

1)
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