effectively.

There are multiple indications for urethral catheter insertion and a range of catheter types and sizes. The choice of catheter is dependent on the patient and indication  $^{1)}$ .

Urinary catheterization is an important procedure that is regularly performed in hospital. All clinicians should have a good working knowledge of urinary catheters and the competence to manage them

Indwelling urinary catheter overuse occurs when a device is in place without an appropriate indication.

Indwelling urinary catheter indications

There are two ways of reducing IUC use:

1) by minimizing the initial placement of IUCs and 2) by reducing the duration of each catheterization.

Urinary catheters have various medical indications but the most common is short term drainage of the urinary bladder. For some patients with upper tract deterioration due to elevated bladder storage pressures (e.g. poor compliance from prior radiation therapy, neurogenic disease, etc.), an IUC may have a role. The catheter permits low pressure, unimpeded drainage of urine from the upper urinary tract through the bladder and then directly into a collection receptacle. The following are indications for IUC use. - Short term for acute urinary retention:

Sudden and complete inability to void Need for immediate and rapid bladder decompression Monitoring of intake and output

- Temporary relief of bladder outlet obstruction secondary to:

Enlarged prostate gland in men

Urethral stricture

Obstructing pelvic organ prolapse in women

- Chronic urethral obstruction or urinary retention and surgical interventions, or the use of intermittent catheterization, has failed or is not feasible, or both

- Short term following a urological or gynecological surgical procedure

- Irreversible medical conditions are present (e.g., metastatic terminal disease, coma, end stages, of other conditions)

- Presence of stage III or IV pressure ulcers that are not healing because of continual urine leakage

- Instances in which a caregiver is not present to provide incontinence care

see Initial management of spinal cord injury

Since patients with stroke frequently develop bladder dysfunction, a careful approach is required to reduce unnecessary indwelling urinary catheter (IUC) for preventing catheter-associated urinary tract infection (CAUTI).

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<sup>2</sup>.

## Mannitol in severe traumatic brain injury

To prevent distension from urinary retention

1)

Tan E, Ahluwalia A, Kankam H, Menezes P. Urinary catheterization 1: indications. Br J Hosp Med (Lond). 2019 Sep 2;80(9):C133-C135. doi: 10.12968/hmed.2019.80.9.C133. PMID: 31498674. 2)

Ikeda-Sakai Y, Kubo K, Wada M, Seki R, Hijikata Y, Yoshioka T, Takahashi Y, Nakayama T. Effectiveness and safety of a program for appropriate urinary catheter use in stroke care: A multicenter prospective study. | Eval Clin Pract. 2021 Oct 10. doi: 10.1111/jep.13626. Epub ahead of print. PMID: 34628703.

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