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Nursing Strategies for Preventing Accidental Removal of Medical Devices in Hospitalized Patients

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ABSTRACT: Accidental removal of medical devices, such as catheters, intravenous lines, and feeding tubes, is a significant concern in hospital settings as it can lead to increased patient complications, extended hospital stays, and higher healthcare costs. Effective nursing strategies are essential for preventing such incidents. One primary approach

involves comprehensive education and training for nursing staff on proper device placement, maintenance, and securing techniques. Regular competency assessments ensure that nurses remain proficient in these critical skills. Additionally, individualized patient education is vital; informing patients about the purpose and importance of their medical devices encourages them to report any discomfort or concerns they may have, thereby reducing the risk of unintentional removal. Another key strategy is the implementation of environmental modifications and the use of innovative securing devices designed specifically for high-risk patients. For instance, employing specialty adhesives, securing devices, or protective arm sleeves can help stabilize catheters and other medical devices more effectively. Regular monitoring and assessment of patients' positioning and movement are crucial; nurses should anticipate and intervene when patients show signs of agitation or confusion. Utilizing communication tools, such as wristbands or signs that alert staff and visitors to the patient's device status, can further minimize risks. Overall, a multi-faceted approach that incorporates education, environmental safety, and vigilant monitoring plays a pivotal role in preventing the accidental removal of medical devices in hospitalized patients.

INTRODUCTION

Accidental removal of medical devices is a recognized patient safety event that affects every clinical area in which invasive or semi-invasive equipment is used, and it is particularly consequential in hospitalized patients whose treatment depends on continuous access, ventilation, drainage, or nutrition [1]. The problem is not limited to one device or one patient group. A retrospective study of self-removal of medical devices in the intensive care unit found that nasogastric tubes accounted for approximately half of all removed devices, that delirium was the most significant risk factor, and that removal was associated with tissue trauma, bleeding, urethral damage, air embolism, exsanguination, and peritonitis [2]. Unplanned extubation has been studied as a measurable quality indicator in adult intensive care, with rates above internal benchmarks prompting structured nursing interventions and sustained reduction over time [3]. Best-evidence summaries for nasogastric tubes in adult inpatients have identified risk assessment, tube selection, depth of insertion, fixation, position verification, tube management, and patient education as core domains for preventing unintentional displacement [4]. Dialysis central venous catheters present a particularly severe risk because inadvertent removal can cause fatal haemorrhage, and a nine-year institutional experience identified femoral placement and cognitive impairment as major contributors [5]. Multimodal interventions that combine advanced securement, education, verification, and psychological support have been shown to reduce unintentional nasogastric tube displacement in critically ill patients [6, 7].

Accidental removal is common, costly, and clinically serious. In the intensive care unit study cited earlier, nasogastric tubes were the most frequently removed devices, and delirium conferred more than three times the odds of device removal [2]. The same analysis documented tissue trauma from forcible removal, bleeding and urethral damage when urinary catheters are extracted without balloon deflation, fatal exsanguination after inadvertent central venous catheter removal, cerebral air embolism following self-extraction of a central line, and peritonitis requiring laparotomy after premature removal of percutaneous endoscopic gastrostomy tubes [2]. These examples show that the device intended to preserve life can, when removed at the wrong moment, become the instrument of harm.

The epidemiology of unplanned extubation illustrates both the scale of the problem and the possibility of improvement. In an adult medical intensive care unit, the unplanned extubation rate was 2.0 per 100 ventilator days in the last quarter of 2018, well above an internal benchmark of 1.06 per 100 ventilator days; after the introduction of a risk-stratified bundle of nursing interventions, the rate fell from 1.307 per 100 ventilator days in 2018 to 0.344 in 2023, a statistically significant reduction [3]. Similar patterns have been observed for other devices. Accidental removal of dialysis central venous catheters occurred at a rate of 1.5% in a nine-year Japanese community hospital experience, with femoral catheter placement associated with all fatal outcomes and cognitive impairment present in 75.7% of removal cases [5]. For nasogastric tubes, reported unintentional displacement rates in critically ill patients range from 1.9% to 89%, depending on the population and the definition used [6]. Standardized care bundles in the neonatal intensive care unit have also reduced unplanned extubation below national benchmarks and improved event reporting to 86% compliance [8]. For urinary catheters, self-extraction is a recognized cause

of urethral trauma, stricture, haemorrhage, and catheter-associated infection, and prevention requires both securement and early removal when the catheter is no longer indicated [9]. These figures establish accidental removal as a persistent, measurable, and partially preventable phenomenon.

Risk Factors: Who Is Vulnerable and Why

Prevention begins with recognition. Accidental removal is not randomly distributed across the hospital population; it clusters around identifiable patient, device, and environmental factors. Delirium is the most consistently reported patient-level risk factor. It is both a cause and a consequence of device use: indwelling devices are themselves risk factors for delirium, and delirium in turn is a risk factor for unplanned device removal [2]. Agitation, dementia, mental status changes, recent anaesthesia, and prior catheter removal attempts further elevate risk [2]. Cognitive impairment was present in three-quarters of the dialysis catheter removal cases in the Japanese series, and all fatal events occurred during nighttime hours, six to eleven days after insertion [5]. For urinary catheters, confusion and agitation are repeatedly identified as indications for additional observation and protective measures [9].

Device-related factors are equally important. Devices that are uncomfortable, poorly secured, or visible to the patient are more likely to be removed. Nasogastric tubes are particularly vulnerable because they are uncomfortable and difficult to conceal, which helps explain why they represent half of all devices removed in the ICU study [2]. Femoral dialysis catheters carry a disproportionate risk of fatal haemorrhage because of their anatomical position and the rapidity of blood loss when they are dislodged [5]. Peripheral intravenous catheters fail and dislodge at high rates when securement is inadequate, and loose tape or a loose securement device has been identified as a contributor in the majority of accidental dislodgements [7]. Patient agitation, frequent transfers, and fall events create mechanical forces that overwhelm inadequate fixation, and these states can be detected through structured observation and, increasingly, through sensor-based monitoring [7].

Environmental and care-delivery factors complete the risk picture. Nighttime hours, reduced staffing ratios, frequent repositioning and transport, and procedures that require temporary loosening of securement all create windows of vulnerability [5]. The risk of removal is not static: for dialysis catheters it peaks immediately after placement and gradually declines thereafter, which has direct implications for the intensity of monitoring during the initial post-insertion period [5]. For nasogastric tubes, inadequate fixation, agitation, and procedures that disturb the tube are recurring contributors to displacement [4]. Table 1 summarizes the principal risk domains and the nursing implications of each.

Table 1. Risk Domains for Accidental Device Removal and Corresponding Nursing Priorities

Risk domain	Key factors	Nursing priority
Cognitive and behavioural	Delirium, dementia, agitation, prior removal attempts	Delirium screening, behavioural observation, non-pharmacological delirium prevention, family presence
Device characteristics	Discomfort, poor securement, visibility, anatomical site such as femoral catheter	Device selection, securement choice, concealment or decoy strategies, early removal review
Mechanical and procedural	Transfers, repositioning, transport, loose tape or dressing	Standardized securement, checks before and during movement, two-person repositioning for high-risk devices
Temporal and environmental	Nighttime, early post-insertion period, reduced surveillance	Targeted rounding, enhanced monitoring during high-risk windows, documentation of cognitive status

Nursing Assessment and Risk Stratification

Effective prevention is proportional to risk. A one-size-fits-all approach to device security is neither clinically sound nor resource-efficient. Nurses are best positioned to conduct repeated, contextualized assessments that integrate patient cognition, device type, securement integrity, and the demands of the care plan. The evidence supports structured risk assessment as a foundation for bundled interventions. In the adult medical intensive care unit quality improvement project described earlier, an expert work group created risk categories and linked each category to a corresponding set of bundled nursing interventions; continuous monitoring of unplanned extubation rates then demonstrated the effectiveness of the approach over time [3]. This model of assess, stratify, intervene, and measure is transferable across device types and care settings.

Assessment should be both device-specific and patient-centred. For a patient with an endotracheal tube, the nurse assesses tube position, fixation integrity, oral secretions, level of sedation and agitation, and readiness for weaning [3]. For a patient with a nasogastric tube, the nurse checks the depth marking at the nares, the security of the fixation, the condition of the skin and mucosa, and the patient's tolerance of the tube [4]. For a urinary catheter, the nurse inspects the balloon port, the drainage tubing, the fixation to the thigh, and the patient's mental status and mobility [9]. For vascular access devices, the nurse measures and documents external catheter length, inspects the dressing and securement device, and assesses for signs of migration or phlebitis [7]. The assessment is not a checklist to be completed once per shift but a continuous interpretive practice that informs minute-to-minute decisions about positioning, supervision, and restraint alternatives.

Risk stratification also allows resources to be directed where they are most needed. High-risk patients may warrant more frequent rounding, placement in a room visible from the nurses' station, involvement of family members as vigilant observers, and earlier multidisciplinary discussion about whether the device remains necessary. Identifying high-risk patients allows providers to respond with increased vigilance, and sitters, alarms, and mechanical safeguards can be deployed in a targeted rather than indiscriminate manner [2]. The principle is to match the intensity of surveillance to the probability of harm, while avoiding the paradox in which protective measures themselves increase agitation and delirium [2].

Securement: The Foundation of Device Stability

If risk assessment determines who needs attention, securement determines whether the device stays in place when that attention is momentarily diverted. Securement is the most concrete and immediately modifiable nursing intervention, and the evidence increasingly favours purpose-designed devices over improvisation. Traditional adhesive tape and basic staff training have shown inconsistent effectiveness, whereas advanced securement devices and multimodal approaches significantly reduce unintentional displacement [7]. Silicone-based securement devices have been associated with lower dislodgment rates for nasogastric tubes, and real-time placement verification technologies improve both accuracy and safety [6]. For vascular access devices, the principle is to minimize catheter motion while preserving skin integrity and allowing inspection. Commercial securement devices are designed to reduce motion and are preferable to tape in patients with fragile skin, diaphoresis, or anatomical variation that interferes with adhesion [7]. For peripheral intravenous catheters, a bundled device strategy may be slightly more expensive per day but can produce net savings by reducing unscheduled removal and replacement, a point that is directly relevant to procurement decisions [7].

Urinary catheter securement requires particular attention to both internal and external fixation. The best-evidence summary for prevention of unplanned removal of indwelling urinary catheters identifies internal fixation methods, external fixation methods, catheter selection, and risk assessment as distinct domains of practice [1]. Securing the catheter to the thigh with tape or a commercial device is recommended, and additional observation should be provided for patients who appear confused or agitated [9]. The choice of catheter also matters: smaller-diameter catheters with smaller balloons minimize urethral irritation and bladder spasm, whereas the routine use of a 30 mL balloon solely to prevent self-extraction is controversial because it may cause greater urethral damage if removal does occur [9]. A decoy catheter, sometimes called a "Phantom Foley," has been proposed as a low-risk distraction technique that encourages the patient to tug on the decoy rather than the real catheter [10].

Nasogastric tube securement deserves separate emphasis because of the frequency with which these tubes are removed. Adhesive tape alone is often insufficient, particularly in patients with facial moisture, confusion, or agitation. Bridling, in which the tube is secured with a nasal bridle, has produced dramatic results: a single institution achieved an 80% reduction in unintentional nasointestinal tube loss after implementing a routine bridling protocol, and extrapolation of those findings predicted substantial reductions in pneumonia, pneumothorax, and death if bridling were widely adopted [6]. Silicone-based securement devices and real-time verification technologies further improve outcomes [6]. Table 2 compares securement approaches across device categories.

Table 2. Securement Strategies by Device Category

Device category	Securement approach	Evidence-informed nursing considerations
Endotracheal tube	Standardized fixation method; daily assessment of position; elective change of fixators; two clinicians for repositioning	Include fixation integrity in every assessment; avoid unnecessary loosening during oral care

Nasogastric tube	Bridling, silicone-based securement, tape to gown as adjunct	Bridling is associated with large reductions in unintentional loss; check depth marking and skin daily
Urinary catheter	Thigh fixation with tape or commercial device; appropriate catheter and balloon size	Avoid routine large-balloon use solely for prevention; inspect balloon integrity after any traumatic event
Vascular access	Commercial securement device; regular dressing change; external length measurement	Document external length at insertion and at each access; replace loose or soiled dressing promptly
Surgical drains and chest tubes	Anchoring to skin; avoidance of tension; positioning of tubing to prevent traction	Secure tubing to skin, not to bed rails; keep clamps available; assess insertion site and drainage system

Delirium, Cognition, and the Limits of Restriction

Because delirium is the strongest and most modifiable patient-level risk factor for accidental device removal, delirium prevention and management are inseparable from device safety [2]. The relationship is bidirectional and potentially vicious: restraints and sitters may be applied because of agitation, but restraints are themselves a risk factor for delirium, and delirium increases the likelihood of device removal, creating a cycle in which measures intended to protect the device make it more vulnerable [2]. Breaking this cycle requires a shift from containment to delirium prevention and holistic care. Nurses have long been responsible for maintaining technologic devices and preventing treatment interference, and this role includes anticipating the patient's interaction with the device rather than simply securing it [11]. Non-pharmacological measures, including restoration of a regular sleep-wake cycle, exposure to natural light, access to hearing aids and glasses, early mobilization, and avoidance of benzodiazepines, can reduce delirium and thereby protect devices [2].

Physical restraints occupy an ethically contested space in device protection. They are widely used, but their effectiveness in preventing self-removal is uncertain, and they carry adverse effects including agitation, device removal, use of psychoactive medications, and higher mortality [12]. Current recommendations suggest that restraints should be a last resort, should not be prolonged beyond what is strictly necessary, and should be used only when less restrictive measures have failed [12]. Ethical and legal analyses of physical restraint in critically ill patients emphasize the need for clear indications, time-limited orders, monitoring, documentation, and respect for dignity and autonomy [13]. Nurses therefore need a repertoire of alternatives before resorting to restraint: hiding devices from the patient's view, covering intravenous sites with gauze, placing intravenous poles out of sight, using decoy catheters, involving family members as sitters, providing comfort measures, and treating pain and anxiety [10]. These alternatives are not uniformly effective, but they align with the ethical imperative to use the least restrictive effective intervention [12].

Device-Specific Nursing Strategies

Endotracheal Tubes and Airway Devices

Unplanned extubation is a sentinel event that reflects systemic vulnerabilities in airway safety and nursing care quality [3]. Prevention requires a coordinated bundle rather than a single intervention. In the neonatal intensive care unit, a standardized care bundle built on four pillars, namely optimal endotracheal tube securement, daily assessment of tube placement, elective change of fixators, and the presence of two clinicians at the bedside during infant repositioning, reduced the unplanned extubation rate below the national benchmark and improved event reporting to 86% compliance [8]. In adult intensive care, a risk-stratified bundle that included delirium prevention, staff education, proper patient positioning, and daily nurse-led rounds reduced unplanned extubation rates significantly over a five-year period [14]. The SAFE-CARE nursing bundle, which addressed multiple artificial airway complications, reduced unplanned extubation from 31.1% to 3.3% in a before-and-after interrupted time-series study [15]. Delirium prevention through the ABCDEF bundle provides a structured framework for daily rounds and supports both device safety and patient dignity [16].

Several principles emerge from this evidence. First, securement must be standardized and audited; variation in taping technique is a modifiable contributor to failure [8]. Second, sedation and analgesia should be optimized so that the patient is comfortable

without being excessively sedated, because both agitation and deep sedation carry risks [3]. Third, weaning should be actively pursued so that the tube is removed as soon as it is no longer needed; a device that is not present cannot be accidentally removed [3]. Fourth, nursing assignment should be strategic, with the most experienced nurses caring for intubated patients during high-risk periods [14]. Fifth, every unplanned extubation should be reviewed as a learning event, with attention to situational factors rather than blame [8].

Nasogastric and Enteral Feeding Tubes

Nasogastric tubes are among the most frequently removed devices, and their dislodgement carries risks of aspiration, delayed nutrition, and repeated insertion trauma [2]. A best-evidence summary for adult inpatients identified thirty pieces of evidence across seven themes: risk assessment, selection of nasogastric tube, depth of intubation, tube fixation, tube position, tube management, and patient education [4]. Multimodal interventions that combine advanced securement devices, patient and staff education, real-time placement verification, and psychological support significantly reduce unintentional displacement [6]. The use of nasal bridles is particularly compelling: the 80% reduction in unintentional nasointestinal tube loss and the predicted nationwide reductions in pneumonia, pneumothorax, and deaths make a strong case for routine bridling in patients at high risk of removal [6].

Nursing care of the nasogastric tube also includes regular verification of tube position, particularly after coughing, vomiting, or repositioning. The depth marking at the nares should be documented and checked at every shift, and any increase in the external length of the tube should prompt immediate verification before feeding or medication administration [4]. Head-of-bed elevation of at least 30 to 45 degrees during feeding reduces the risk of aspiration if the tube has migrated, and securing the tube to the patient's gown with tape or a clip provides a secondary layer of protection against traction [4]. Patient education should include instructions to avoid pulling on the tube and to report any sensation of displacement immediately [4].

Urinary Catheters

Traumatic removal of an indwelling urinary catheter can cause pain, haematuria, urethral trauma, stricture formation, and catheter-associated urinary tract infection [9]. Up to 78% of patients with Foley catheter-related urethral trauma develop strictures over time, and rare cases involve life-threatening haemorrhage requiring pelvic arterial embolization [9]. Prevention therefore has both immediate and long-term consequences. The best-evidence summary for adult patients identifies early removal as a central strategy: the most effective way to prevent unplanned removal is to ensure that the catheter is removed as soon as it is no longer clinically indicated [1]. Daily review of ongoing need, nurse-initiated removal protocols, and prompt communication with prescribers are essential components of this strategy [1].

When a catheter is necessary, securement and surveillance are the cornerstones of prevention. The catheter should be secured to the thigh with tape or a commercial device, and the drainage tubing should be positioned to avoid tension or looping around the patient's legs [9]. Patients with confusion or agitation require additional observation, and the use of a decoy catheter has been proposed as a low-risk distraction technique [10]. The routine use of a larger balloon solely to prevent self-extraction is not recommended, because the greater resistance to removal may be accompanied by greater urethral damage if removal is successful, and larger balloons may increase bladder and trigone stimulation and thereby increase removal attempts [9]. After any traumatic removal, the balloon should be inspected for missing fragments and the patient assessed for haematuria, retention, and urethral injury [9].

Chest Tubes and Surgical Drains

Surgical drains and chest tubes are less commonly the subject of dedicated nursing research than airways and vascular access, but the principles are similar. Chest tubes should be anchored to the patient's skin, not to the bed or side rails, and the tubing should be positioned to avoid kinking, occlusion, or traction [17]. Two non-toothed chest drain clamps should be available with the patient at all times in case of accidental disconnection, and the drainage system must remain upright and below the level of the insertion site [17]. Clinical practice guidelines for chest drainage tubes after open-heart surgery include chest tube care, insertion-site care, drainage system management, and assessment of complications as core domains for preventing dislodgement and obstruction [17].

For surgical drains, unplanned removal accounted for 13% of all surgical drain-related morbidity in one series, and the authors recommended standardization of fixation technique, repeated nursing education, improved documentation, and better communication between staff members [18]. A "PART" bundle checklist has been associated with improved nurse compliance

and a clear reduction in accidental removal of drains and nasogastric tubes, suggesting that structured checklists can translate evidence into practice [19]. These findings reinforce that drain security is not a minor technical detail but a component of surgical safety that depends on consistent nursing practice [18].

Vascular Access Devices

Central venous catheters, peripherally inserted central catheters, and peripheral intravenous catheters are all vulnerable to dislodgement, and the consequences can be severe [5]. Fatal exsanguination after inadvertent central venous catheter removal and cerebral air embolism after self-extraction of a central line have both been described [2]. For dialysis catheters, femoral placement is associated with all fatal outcomes in the Japanese series, and enhanced monitoring during high-risk periods, particularly nighttime hours, is a practical priority [5]. Prevention strategies implemented in that hospital included anti-reflux valves, blood detection sensors, mandatory protective clothing for femoral catheter insertions, standardized three-way stopcock protocols, hourly nighttime rounds, and standardized documentation of cognitive status and risk assessment [5].

For peripherally inserted central catheters, the key nursing practices are regular assessment of the external length of the catheter, securement with a commercial device, dressing changes every seven days or earlier if loose or soiled, and education of the patient to avoid excessive movement or heavy lifting with the affected arm [7]. For peripheral intravenous catheters, tailored securement, skin assessment, and integration of securement protocols into institutional workflows are essential [7]. A quality improvement project on peripheral nerve catheters demonstrated that departmental education on a standardized evidence-based securement kit reduced unintentional dislodgement, illustrating that even simple educational and standardization interventions can have measurable effects [20].

Gastrostomy Tubes and Specialized Devices

Gastrostomy tubes and other enteral access devices carry a risk of premature removal that can lead to peritonitis, need for laparotomy, and interruption of nutrition [2]. A quality improvement initiative to reduce gastrostomy tube dislodgements used a multidisciplinary taskforce, proper securement devices, pressure relief at the insertion site, and consistent evaluation during movement and transport to reduce complications [21]. The same logic applies to highly specialized devices such as extracorporeal membrane oxygenation cannulas, where migration or dislodgement can be immediately life-threatening. An ECMO cannula safety bundle has been described as a nurse-driven quality improvement initiative to prevent migration and dislodgement, with nursing surveillance and early recognition of cannula migration as central components [22]. These examples show that device safety is scalable from the most common tubes to the most specialized circuits.

Patient and Family Education

Education is a cross-cutting strategy that applies to every device and every care setting. Patients and families are not passive recipients of care; they are observers, reporters, and sometimes inadvertent actors in device removal. Best-evidence summaries for both urinary catheters and nasogastric tubes include patient education as a distinct domain of practice [1][4]. Educational interventions using problem-based methodologies have improved nursing teams' theoretical knowledge and reduced early catheter removal in paediatric intensive care [23]. For elderly patients with indwelling needles, combining feedback methods with the Ebbinghaus forgetting curve, through systematic education, daily nursing checks, and regular reviews at spaced intervals, strengthened memory retention and reduced unplanned removal [23].

Patient education should be tailored to cognitive status and health literacy. For a delirious patient, direct instruction may be ineffective; family education and environmental modification become more important [2]. For a lucid patient with a nasogastric tube, explaining why the tube is necessary, what sensations are normal, and what to do if it feels displaced can reduce the likelihood of reflexive pulling [4]. For a patient going home with a drain or catheter, written and verbal instructions should include what to do if the device falls out, whom to contact, and how to apply pressure if bleeding occurs [9]. Education is not a one-time event but a recurring conversation that adapts to the patient's changing condition.

Staff Education and Competence

Nursing competence in device securement and assessment is a modifiable determinant of patient safety. Investing in specific training programmes on external securement devices can increase awareness of their benefits and promote broader and more consistent adoption [7]. Teaching competency in vascular access securement has been identified as a specific educational need, particularly as securement technologies become more sophisticated and the risk of improper application increases [7]. The best-

evidence summaries for urinary catheters and nasogastric tubes both include personnel training and education as a key domain [1][4], and the unplanned extubation literature consistently identifies staff education as a component of successful bundles [3][14].

Education should be practical, repeated, and embedded in workflow. Simulation-based training, bedside teaching, and competency assessment for securement techniques are more effective than didactic instruction alone [7]. Education should also include recognition of early warning signs of migration, documentation standards, and the correct response to a dislodged device [4]. Debriefing after unplanned removal events can transform adverse occurrences into learning opportunities, and monthly debrief sessions have been used successfully in neonatal intensive care to review unplanned extubation events and reinforce bundle adherence [8].

Quality Improvement, Bundles, and Organisational Culture

Individual nursing actions are necessary but not sufficient. Sustainable prevention requires organisational systems that make the right action the easy action. Care bundles, which are small evidence-based sets of practices performed collectively and reliably, have become the dominant model for device safety. The neonatal care bundle described earlier, the risk-stratified adult intensive care bundle, the SAFE-CARE nursing bundle, and the PART bundle for drains and tubes all share a common logic: standardize the essential practices, measure adherence, and feed data back to frontline staff [8][14][15][19]. These bundles do not rely on individual heroism; they build safety into routine care.

Quality improvement methodology provides the discipline to implement and evaluate these bundles. The Model for Improvement, Plan-Do-Study-Act cycles, and interrupted time-series designs have all been used to test device safety interventions [3][15]. A quality improvement initiative to reduce gastrostomy tube dislodgements used a multidisciplinary taskforce, proper securement devices, pressure relief at the insertion site, and consistent evaluation during movement and transport to reduce complications [21]. An ECMO cannula safety bundle illustrates the extension of these principles to highly specialized devices, with nursing surveillance and early recognition of cannula migration as central components [22]. Implementation science frameworks can help identify barriers and facilitators and evaluate real-world impact, moving device safety beyond ad hoc rollouts toward sustained practice change [7].

Organisational culture is the substrate in which bundles succeed or fail. A culture of safety encourages reporting of unplanned removals without blame, supports interprofessional communication about device necessity, and values the bedside nurse's assessment as a source of actionable data [3]. Daily multidisciplinary rounds that include a device-necessity review, asking whether each tube, line, and catheter is still indicated, reduce exposure and therefore reduce risk [1]. The simple principle that a device not present cannot be accidentally removed should be embedded in every ward round and every shift handover [1].

CONCLUSION

Accidental removal of medical devices in hospitalized patients poses a significant risk, which can be mitigated through a comprehensive nursing approach. Key strategies include systematic risk assessment, securement with specialized devices, device-specific care bundles, non-pharmacological delirium management, and tailored patient education. The effectiveness relies on aligning assessment, securement, education, and organizational culture to support nurses, thereby reducing unplanned removal rates and enhancing patient safety.

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