Table 1 Core nursing-sensitive indicators (NSIs) for hospitalized older adults

Domain	Core NSI Indicator	Indicator Description	Modifiable Nursing Targets	Data Source	Recommended Metric
Structure	Geriatric-trained nurse staffing ratio	Proportion of nurses with geriatric care qualifications	Nurse staffing and competency management	Human resources system	Percentage (%)
	Nursing staff training coverage	Completion of geriatric and safety-related training	Continuing education and skill development	Training management records	Compliance rate (%)
	Availability of fall- and pressure-injury-prevention equipment	Adequacy and accessibility of protective equipment	Equipment allocation and maintenance	Nursing management records	Availability rate (%)
Process	Fall risk assessment compliance	Completion of standardized fall risk assessments	Risk screening and ongoing reassessment	Electronic medical records	Compliance rate (%)
	Pressure injury risk assessment compliance	Use of tools such as the Braden scale	Early identification of high-risk patients	Electronic medical records (EMR)	Compliance rate (%)
	Appropriate restraint use compliance	Adherence to indications and protocols for restraints	Alternatives to restraints and monitoring	Nursing documentation	Compliance rate (%)
	Medication administration safety compliance	Double-checking and safe administration of high-risk medications	Medication verification and patient education	Electronic medical records (EMR)	Compliance rate (%)
Outcome	In-hospital fall incidence rate	Falls occurring during hospitalization	Environmental safety and nursing surveillanc	Adverse event reporting system	Incidence per 1000 patient-days
	Hospital-acquired pressure injury incidence rate	New pressure injuries developed during hospitalization	Repositioning and skin care interventions	Adverse event reporting system	Incidence per 1 000 patient-days
	Nursing-related infection rate	Infections associated with nursing procedures	Aseptic technique and device care	Infection control system	Incidence per 1000 patient-days
	Overall nursing adverse event rate	Falls, pressure injuries, medication errors, etc	Comprehensive nursing quality improvement	Adverse event reporting system	Incidence per 1 000 patient-days

Meanwhile, national indicator programs that monitor long-term trends and conduct inter-institutional benchmarking can identify quality improvement priorities and research gaps, offering macro-level evidence to support sustained improvement efforts. With advances in information technology, multidimensional data integration and visualization have become increasingly important tools in nursing quality management. Embedding NSIs into information systems and applying statistical process control (SPC) methods (e.g., control charts) for real-time or periodic monitoring facilitates early detection of abnormal variation, triggers root cause analysis, and supports evidence-based decision-making, thereby promoting a shift from “outcome reporting” to “process governance” in quality management (Figure 1).

4.2 Current status of nursing quality and adverse event occurrence in hospitalized older patients

Existing research and quality monitoring evidence indicate that preventable nursing-sensitive adverse events remain common among hospitalized older adults, with substantial variation across wards and institutions, reflecting persistent gaps in nursing quality. In studies of geriatric trauma patients, approximately 30% experienced at least one nursing-sensitive adverse event, most commonly healthcare-associated infections (19%), bladder overdistension (11%), pressure injuries (6%), and malnutrition (5%). Patients who experienced events were older, frailer, more severely injured, and had nearly threefold longer hospital stays than those without events