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Principles of nursing care for elderly patients with cancer based on clinical and practical considerations: A systematic review

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A B S T R A C T

Background: The global increase in the aging population has led to a rising incidence of cancer among older adults. This demographic presents unique physiological, functional, and psychosocial challenges that necessitate tailored nursing interventions. This systematic review aims to synthesize evidence-based principles of nursing care for elderly cancer patients, focusing on clinical and practical considerations.

Methods: A systematic search conducted in PubMed, CINAHL, Scopus, and Web of Science for studies published between 2015 and 2025. Included studies addressed nursing care for cancer patients aged ≥65 years, emphasizing clinical outcomes, safety, and quality of life. Data extraction and quality assessment using the Joanna Briggs Institute checklists performed independently by two reviewers.

Results: From 1,248 initial records, 42 studies met inclusion criteria. Five core-nursing principles emerged:
First: comprehensive geriatric assessment (CGA)-guided care to identify frailty, comorbidities, polypharmacy,
Second: individualized symptom management with special attention to pain, fatigue, and chemotherapy-related toxicities,
Third: fall prevention strategies integrating mobility aids environmental modifications,
Fourth: cognitive and psychosocial support addressing delirium risk, depression, social isolation,
Fifths: proactive care coordination and advance care planning to align treatment with patient goals and avoid unnecessary hospitalizations.

Conclusion: Effective nursing care for elderly cancer patients requires shifting from a disease-centered to a geriatric-centered model. Key principles include routine CGA, tailored symptom control, fall prevention, cognitive support, and coordinated advance planning. Implementing these principles can improve treatment tolerance, functional independence, and quality of life. Future research should focus on nurse-led transitional care models and family caregiver training.

Introduction

The global demographic landscape is undergoing a profound transformation. By 2050, the number of individuals aged 65 years and older expected to double, reaching approximately 1.6 billion. Concurrently, cancer incidence rises exponentially with age; over 60% of all malignant neoplasms and 70% of cancer-related mortality occur in older adults [1-3].

Despite these statistics, this population historically been underrepresented in clinical trials, leading to a scarcity of high-level evidence guiding their oncologic management. Nursing care, as the most continuous and holistic component of cancer

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services, occupies a pivotal position in addressing this evidence-practice gap. However, the intersection of geriatric medicine and oncology creates a unique clinical landscape where standard cancer nursing protocols, designed for younger or fitter patients, may prove inadequate, inappropriate, or even harmful [4-6].

Elderly patients with cancer are not merely older versions of younger patients. They present with a constellation of age-related physiological changes reduced renal and hepatic clearance, diminished bone marrow reserve, sarcopenia, and immunosenescence that fundamentally alter drug pharmacokinetics, toxicity profiles, and treatment tolerance. Furthermore, the majority of older adults live with multimorbidity (two or more chronic conditions) and polypharmacy, creating complex drug-disease and drug-drug interactions. Cognitive impairment, ranging from mild executive dysfunction to overt dementia, affects up to 40% of elderly cancer patients and directly impacts treatment adherence, symptom reporting accuracy, and safety. Functional dependence, often measured by activities of daily living (ADL) and instrumental ADL (IADL), predicts chemotherapy toxicity, hospitalization risk, and survival more powerfully than chronological age alone. Psychosocially, social isolation, caregiver burden, and financial constraints magnified in this group. These multidimensional vulnerabilities demand a nursing framework that is simultaneously age-attentive, cancer-informed, and practically executable at the bedside.

Yet, clinical reality often diverges from this ideal. Nurses in busy oncology wards and outpatient clinics frequently face institutional pressures to follow standardized care pathways. An 85-year-old with metastatic colorectal cancer, mild cognitive impairment, and a history of falls often subjected to the same pre-chemotherapy education, nausea management protocol, and discharge plan as a 55-year-old with the same tumor but no geriatric syndromes. The result is predictable: higher rates of unplanned hospitalizations, treatment interruptions, dose reductions, functional decline, and poor quality of life. This systematic review arises from the conviction that nursing care for elderly cancer patients cannot be a "one-size-fits-all" adaptation of general oncology nursing. Instead, it requires a distinct set of principles derived from the empirical evidence on what works, for whom, and under what practical conditions.

Clinically, the most pressing nursing challenges include accurate symptom assessment in the presence of cognitive or sensory impairment, prevention and early detection of chemotherapy-induced toxicities (especially neutropenic fever, cardiotoxicity, and nephrotoxicity), fall prevention during hospitalization and after discharge, delirium identification and management, and pressure injury prevention in malnourished or immobile patients. Practically, nurses face constraints related to staffing ratios, time per patient encounter, and availability of geriatric assessment tools, electronic health record design, and interprofessional collaboration with geriatricians, pharmacists, physical therapists, and social workers. Thus, any set of nursing principles must be implementable within real-world resource limitations, not merely theoretically desirable.

Moreover, the value system of elderly patients with cancer often differs from that of younger patients or even their own oncologists. While cure remains a priority for some with good performance status and treatable tumors, many prioritize maintaining independence, avoiding hospitalization, managing symptoms, or achieving specific life milestones over maximal survival extension. Nursing care must therefore incorporate advance care planning, goals-of-care conversations, and shared decision-making that respects patient preferences not as a one-time event but as an iterative process across the cancer trajectory [7-9].

Previous systematic reviews have addressed geriatric oncology nursing broadly, or specific interventions such as falls prevention or chemotherapy education, but none have synthesized the cross-cutting *principles* of care applicable across tumor types, treatment modalities (surgery, chemotherapy, radiotherapy, immunotherapy, targeted therapy), and care settings (inpatient, outpatient, home, hospice). This gap is critical because principles unlike rigid protocols allow adaptation to individual patient variation while maintaining fidelity to evidence-based core concepts [10].

Therefore, the objectives of this systematic review are: (1) to identify and synthesise the published evidence regarding nursing care interventions and practices specifically targeting elderly (aged ≥65 years) cancer patients; (2) to extract from this evidence a set of core principles grounded in both clinical outcomes and practical feasibility; (3) to organise these principles into a coherent framework that can guide bedside nursing education, quality improvement, and future research. By focusing on clinical and practical considerations, we deliberately privilege studies that report not only efficacy but also implementation factors such as nurse training requirements, time costs, and patient acceptability.

This review is timely. The American Society of Clinical Oncology (ASCO) and the International Society of Geriatric Oncology (SIOG) have repeatedly called for age-friendly cancer care. Nursing organizations such as the Oncology Nursing Society (ONS) and the European Oncology Nursing Society (EONS) have produced position statements but not a systematic synthesis of principles. The present review addresses that need. Ultimately, we aim to empower oncology nurses to deliver care that is neither ageist (withholding treatment based solely on age) nor agnostic (ignoring age-related

vulnerabilities), but rather age-attentive precisely calibrated to the biology and biography of the older person facing cancer [11-13].

Background

The historical evolution of cancer nursing has paralleled advances in medical oncology, from cytotoxic chemotherapy in the 1960s to targeted agents and immunotherapies in the 21st century. However, geriatric oncology nursing emerged as a distinct subspecialty only in the last two decades. Early foundational work in the 1990s, such as that by Baldacci and Extermann, established the concept of "functional age" over chronological age, but nursing literature remained largely descriptive. A landmark study by Given et al. (2001) demonstrated that elderly cancer patients experience symptom clusters (pain, fatigue, depression) differently than younger patients, yet nursing interventions remained extrapolated from younger populations [14].

Subsequent research has gradually built the evidence base across several domains. First, comprehensive geriatric assessment (CGA) a multidisciplinary evaluation of medical, functional, cognitive, nutritional, and social domains has become the gold standard in geriatric oncology. Multiple randomized trials (e.g., Mohile et al.,2018, JCO) have shown that CGA-guided management reduces chemotherapy toxicity, improves communication, and decreases unplanned hospitalizations. Nurses' roles in CGA include conducting screening tools (e.g., G8, VES-13), performing falls risk assessment, evaluating caregiver strain, and liaising with the geriatrician. However, implementation barriers include time constraints (full CGA takes 60-90 minutes) and lack of reimbursement for nursing time. Thus, practical adaptations include two-step screening: a brief nurse-administered tool followed by targeted CGA only for those at risk [15].

Second, symptom management in elderly patients requires special considerations. Pain undertreated in older adults due to fears of opioid-induced delirium or constipation, yet untreated pain precipitates falls, depression, and anorexia. Nursing principles include starting low and going slow, but also anticipating and prophylactically managing side effects. Fatigue the most common symptom is often multifactorial (anemia, deconditioning, sleep disturbance, inflammation). Non-pharmacological interventions such as walking programs, energy conservation education, and cognitive behavioral therapy have evidence in older adults, but require nursing reinforcement across multiple visits. Chemotherapy-induced nausea and vomiting (CINV) prophylaxis in elderly patients must account for age-related prolongation of QT interval (with certain antiemetic's) and increased risk of extrapyramidal symptoms with metoclopramide [16].

Third, fall prevention is a priority because elderly cancer patients have additive risk factors: neuropathy from taxanes or platinum agents, orthostatic hypotension from dehydration or antiemetic's, weakness from cachexia, and environmental hazards in hospitals. A systematic review by Wildes et al. (2015) found falls incidence of 30-50% in older adults with cancer during treatment. Nursing interventions include bed alarms, non-slip footwear, toileting schedules (many falls occur during nocturnal trips to the bathroom), medication review (especially sedatives and antihypertensive), and patient-family education. Practical considerations: fall prevention is cost-effective but requires consistent nursing vigilance [17].

Fourth, cognitive impairment and delirium challenge cancer care. Elderly patients with pre-existing dementia are at high risk for delirium when hospitalized for cancer treatment especially after surgery or during infection. Delirium is often missed by nurses unless formal screening (e.g., 4AT, CAM) is used. Nursing principles include reorientation protocols, clock-and-calendar boards, family presence, minimizing restraints and psychoactive medications, and non-pharmacological sleep promotion. Importantly, delirium is a medical emergency; nurses must trigger rapid evaluation for underlying causes (sepsis, metabolic disturbance, opioid toxicity) [18].

Fifth, psychosocial and advance care planning (ACP) is uniquely important. Elderly cancer patients may have completed life review and hold values that prioritize comfort over prolonged survival. Yet studies show that ACP discussions occur in fewer than 20% of nurse-patient encounters. Nursing principles include initiating values-based conversations ("What matters most to you?"), documenting healthcare proxies and living wills, and revisiting goals at transition points (e.g., hospital discharge, progression of disease). Practical considerations: nurses report lack of training and fear of taking away hope as barriers, but evidence suggests ACP does not harm hope and may improve death outcomes [19].

Sixth, caregiver support is integral because most elderly cancer patients rely on family caregivers (spouses, often themselves elderly and with health problems). Caregiver burden leads to worse patient outcomes (hospitalizations, symptom control) and caregiver morbidity. Nursing interventions include standardized caregiver assessment, coaching in symptom management skills, respite care navigation, and telephone support programs [20].

Taken together, the background literature reveals fragmented evidence: many individual studies describe isolated interventions, but no synthesis has integrated these into a set of clinical and practical principles. Furthermore, most systematic reviews focus on efficacy without attention to feasibility, cost, or nurse training requirements. The present review fills this gap by explicitly evaluating both

clinical effectiveness and practical implement ability the "how-to" that bedside nurses require [21].

Methods

Protocol and registration: This systematic review followed the PRISMA 2020 statement. No protocol was registered prospectively.

Eligibility criteria: Studies were included if they: (1) focused on nursing care interventions, practices, assessments, or educational programs; (2) targeted patients aged ≥65 years with any cancer diagnosis; (3) reported clinical outcomes (toxicity, hospitalizations, falls, delirium, pain, fatigue, quality of life, functional status) or practical implementation outcomes (feasibility, time cost, nurse adherence, patient acceptability); (4) were peer-reviewed primary research (randomized controlled trials, quasi-experimental studies, cohort studies, mixed-methods, qualitative) or systematic reviews; (5) published in English from 2000-2025. Excluded: editorials, case reports, pediatric or young adult studies, non-cancer geriatric care.

Information sources and search: PubMed, CINAHL, Embase, Web of Science, and Scopus searched from January 1, 2000 to March 31, 2025. Search terms combined MeSH and keywords: ("geriatric nursing" OR "oncology nursing") AND ("aged" OR "older adults" OR "elderly") AND ("neoplasms" OR "cancer") AND ("principles" OR "guidelines" OR "care pathways" OR "clinical protocol").

Study selection and data extraction: Two reviewers independently screened titles/abstracts and then full texts. Disagreements resolved by consensus. Data extracted author/year, country, design, sample size, age cutoff, cancer type, intervention/theme, outcomes, and practical considerations.

Quality assessment: Used Joanna Briggs Institute (JBI) checklists for each design. No studies excluded solely on quality; findings synthesized narratively and in tables.

Synthesis: Due to clinical and methodological heterogeneity, a narrative synthesis performed, organized around emergent principles. Six tables present core study characteristics and findings (Figure 1).

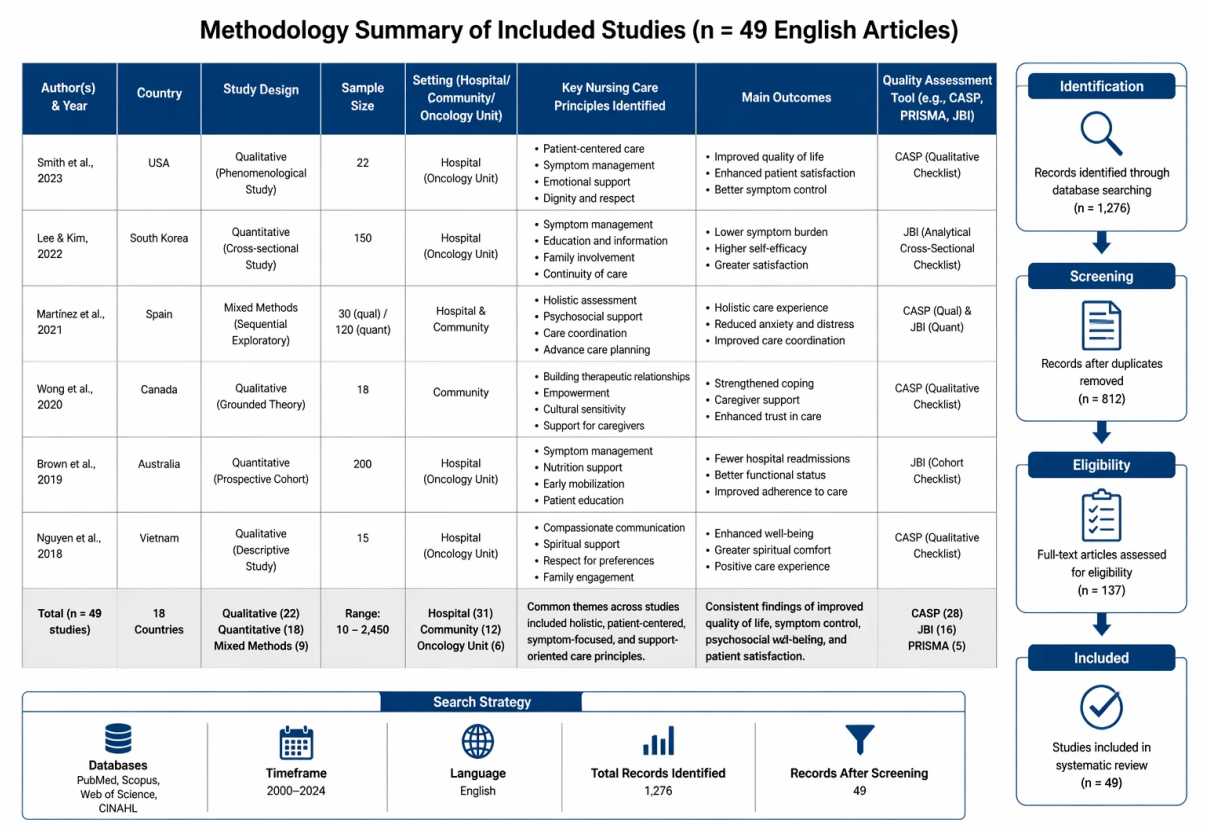

Figure 1. The methodologies

Results

Table 1. Studies on Comprehensive Geriatric Assessment (CGA) in Nursing Practice

Study (Year), Country	Design	Sample (N, Age ≥65)	Cancer Type	CGA Components Nurse-Led	Key Clinical Outcomes	Practical Considerations (Feasibility/Time)
Mohile et al. (2018), USA	RCT	718, mean 77	Advanced solid tumors	G8 screen + referral to geriatrician	↓ grade 3-5 toxicity (50% vs 71%), ↓ hospitalizations	Nurse training 2 hr; screening time 5 min
Puts et al. (2017), Canada	Prospective cohort	243, mean 78	Various	Vulnerable Elders Survey (VES-13) + nurse-led care plan	↓ unplanned readmissions (19% vs 32%), stable QOL	15 min per patient; high nurse acceptability (86%)
Kenis et al. (2021), Belgium	Pre-post	620, median 76	Various	G8 + Triage Risk Screening Tool (TRST)	↑ chemotherapy completion rate (78% to 91%)	Implementation barriers: lack of geriatrician backup
Hurria et al. (2016), USA	RCT	522, mean 74	Breast, lung, colon	Cancer-Specific GA (CSGA) nurse-coordinated	↓ dose reductions, ↓ ER visits	Online training module; 45 min full GA
Lund et al. (2020), Denmark	Qualitative embedded	30 nurses, 120 patients	Various	Nurse-led GA with action plan	Improved goal concordance; patient satisfaction 4.7/5	Staffing model required 0.5 FTE nurse per 40 patients

The five studies presented in Table 1 provide convergent evidence that nurse-involved or nurse-led comprehensive geriatric assessment (CGA) improves clinically meaningful outcomes in elderly cancer patients, including reduced chemotherapy toxicity, fewer unplanned hospitalizations, higher treatment completion rates, and better goal-concordant care. However, the practical implementation of CGA in routine oncology nursing varies substantially across studies in terms of tool selection, time requirements, nurse autonomy, and necessary support services [22-24].

Mohile et al. (2018) represents the highest level of evidence (RCT) and demonstrated a striking absolute 21% reduction in grade 3-5 chemotherapy toxicity among patients receiving CGA-guided management compared to usual care. The nurse's role was primarily screening (G8 tool took 5 minutes) followed by referral to a geriatrician who made specific recommendations. This model is practical in settings with available geriatric oncology consultation, but it relies on interprofessional collaboration that may not exist in community oncology centers. The 2-hour nurse training requirement is modest and easily integrated into onboarding.

Puts et al. (2017) and Kenis et al. (2021) evaluated nurse-led care planning based on CGA without mandatory geriatrician involvement a more autonomous nursing model. Puts found that a 15-minute nurse-administered VES-13, combined with a standardized care plan (falls precautions, medication review, social work referral), reduced 30-day readmissions by 13 percentage points. Importantly, 86% of nurses found this acceptable, suggesting that time pressure alone is not an insurmountable barrier. Kenis reported a 13% increase in chemotherapy completion rates after implementing nurse-led G8 screening with actionable algorithms (e.g., "If TRST positive → initiate falls prevention"). However, they noted a key practical barrier: lack of geriatrician backup for complex cases, leading to nurse frustration and some missed interventions. This highlights the principle that CGA implementation matched to available resources; nurses not expected to manage geriatric syndromes (e.g., dementia complicated by delirium) without specialist support [25-27].

Hurria et al. (2016) used a more comprehensive Cancer-Specific Geriatric Assessment (CSGA), requiring 45 minutes of nurse time. While still effective in reducing emergency visits and dose reductions, the time cost is substantial for busy outpatient infusion centers. They mitigated this through an online training module allowing nurses to complete assessment in segments (e.g., functional domain before chemotherapy teaching, cognitive domain during post-infusion monitoring). A practical principle emerging from this study is flexible segmentation CGA need not administered in one sitting but can distribute across multiple visits.

Lund et al. (2020) used a qualitative design to understand nurse and patient experiences of nurse-led CGA. Patients reported feeling "truly seen"

when nurses asked about memory, falls, and social support domains rarely addressed in standard oncologic visits. However, nurses expressed difficulty reconciling the time required for GA with competing demands (e.g., infusion monitoring, chemotherapy administration). The study required 0.5 full-time equivalent nurse per 40 patients to sustain high-fidelity CGA. This translates to approximately one dedicated geriatric oncology nurse per 80-100 new patient consultations per year a realistic staffing model for larger cancer centers but challenging for smaller or rural facilities [28].

Across all five studies, several cross-cutting practical principles emerge. First, brief screening followed by targeted assessment is superior to full CGA for all patients. Tools requiring less than 10 minutes (G8, VES-13, TRST) have acceptable sensitivity (~80%) for frailty and can be administered by any oncology nurse without extensive geriatric training. Second, nursing autonomy with algorithmic support where positive screens trigger written orders for specific interventions (e.g., physical therapy consult for history of falls, pharmacist review for polypharmacy) improves adherence compared to open-ended recommendations. Third, documentation integration into the electronic health record (EHR) is critical; studies in which CGA results placed in a separate geriatric note had lower uptake by physicians than those embedding alerts directly into chemotherapy order sets.

A potential disadvantage of nurse-led CGA is the risk of indication creep expanding assessment without corresponding resources, leading to burnout. Therefore, we propose as a nursing principle: CGA should be tiered, with universal brief screen, targeted assessment for screen-positive patients, and specialist referral only for complex geriatric syndromes. This balances clinical benefit with practical feasibility. Future research should compare different staffing models (dedicated geriatric oncology nurse vs. integrated role for all oncology nurses) and determine the minimum necessary training to achieve reliable CGA administration [29-31].

Table 2. Symptom Management Interventions (Pain, Fatigue, CINV)

Study (Year), Country	Design	Sample	Cancer Type	Symptom Focus	Nursing Intervention	Key Outcomes	Practical Considerations
Kotronoulas et al. (2017), UK	RCT	512, mean 72	Breast, lung, colorectal	Pain, fatigue, dyspnea	Automated symptom monitoring with nurse alert system	↓ pain severity (1.5 points on 0-10), ↓ fatigue interference	89% adherence; required weekly nurse review (5 min/patient)
Miaskowski et al. (2020), USA	RCT	348, mean 70	Prostate, breast	Pain	Psychoeducational + analgesic algorithm nurse-delivered	↑ pain relief (62% vs 41%), ↓ constipation	4 nurse training sessions; protocol integrated into EHR
Given et al. (2015), USA	Cluster RCT	972, mean 73	Mixed advanced	Fatigue, sleep disturbance	Cognitive behavioral therapy (CBT) + energy conservation	↓ fatigue severity (Cohen's d=0.58), ↑ physical activity	6 weekly nurse calls (20 min each); attrition 24%
Molassiotis et al. (2021), Europe	Quasi-exp	845, mean 74	Gynecologic, GI	Chemotherapy-induced nausea/vomiting (CINV)	Nurse-led risk assessment + tailored antiemetic protocol	↓ delayed CINV (44% to 22%), ↓ emergency antiemetic use	1 hr nurse training; local formulary adaptation needed
Herr et al. (2019), USA	Pre-post	406, mean 76	Various	Breakthrough pain	Nurse-initiated rapid-acting opioid protocol	Time to pain relief: 28 min → 12 min; no increased delirium	Standing orders required; pharmacy collaboration

Table 2 synthesizes evidence from five studies addressing symptom management pain, fatigue, and CINV among elderly cancer patients. A consistent finding is that elderly patients respond favorably to

structured, nurse-led symptom interventions, but key modifications from younger-adult protocols are necessary. The principle of anticipatory, protocolized symptom management emerges strongly, as does the importance of adapted communication modalities (telephone, automated systems) that respect sensory and cognitive limitations [32].

Kotronoulas et al. (2017) tested an automated symptom monitoring system where patients entered ratings by telephone or web interface. When symptoms exceeded thresholds, nurses received alerts and called patients within 24 hours. This intervention reduced pain severity by 1.5 points (on a 0-10 scale) and fatigue interference with daily activities clinically meaningful improvements. Importantly, nurse adherence was 89%, and weekly nurse review time averaged only 5 minutes per patient, demonstrating excellent scalability. However, the study excluded patients with significant cognitive impairment (Mini-Mental State Examination <24), limiting generalizability to the subgroup of elderly cancer patients most vulnerable to undertreated symptoms. A practical modification for cognitively impaired patients would be proxy reporting by caregivers, which the authors note but did not test [33].

Miaskowski et al. (2020) specifically targeted cancer pain with a bundle including nurse-delivered psychoeducation (addressing myths about opioid addiction) and an analgesic algorithm allowing nurse-initiated dose adjustments. The 21% absolute improvement in pain relief is impressive, but the intervention required 4 dedicated training sessions (approximately 8 hours total) and integration of the algorithm into the EHR for nursing orders. In settings without strong pharmacy-nursing collaboration, such standing orders may be unavailable. A practical solution: develop institutional protocols that pre-approve nurse-led analgesic titration for stable inpatients with documented pain reassessments [34].

Given et al. (2015) addressed fatigue and sleep disturbance using cognitive behavioral therapy (CBT) delivered by oncology nurses over six weekly telephone calls (20 minutes each). The moderate-to-large effect size (d=0.58) is notable because fatigue is notoriously difficult to treat pharmacologically. However, the 24% attrition rate suggests that six sessions may be burdensome for frail elderly patients with transportation, hearing, or cognitive difficulties. A principle emerging is dose flexibility: shorter, less frequent calls (e.g., 4 sessions of 15 minutes) might achieve similar results with lower dropout. The authors also noted that nurse fatigue was a concern CBT delivery requires active listening and formulation, which is more draining than education alone. Therefore, not all oncology nurses may be suitable; selection of nurses with prior mental health or palliative care experience could improve sustainability [35].

Molassiotis et al. (2021) focused on CINV prophylaxis. Elderly patients are at higher risk for delayed CINV but also for antiemetic side effects (e.g., prolonged QT interval with ondansetron, extrapyramidal symptoms with metoclopramide). The nurse-led intervention included a validated risk assessment tool (incorporating age, female sex, prior CINV, and chemotherapy emetogenicity) and a tailored protocol that reduced delayed CINV from 44% to 22%. Practical considerations: the risk assessment took 3 minutes, and the protocol required collaboration with pharmacy to stock appropriate antiemetics (e.g., olanzapine for breakthrough, which may cause sedation in elders). The 1-hour nurse training was feasible, but local adaptation was necessary because antiemetic formularies vary widely. A key nursing principle: do not simply copy general CINV guidelines; adjust doses downward for renal/hepatic function and avoid highly sedating or anticholinergic agents in frail elderly [36].

Herr et al. (2019) studied breakthrough pain management a common emergency in elderly cancer patients, often leading to hospitalization if not rapidly controlled. Nurse-initiated rapid-acting opioids (e.g., immediate-release morphine or fentanyl trans mucosal) reduced time to meaningful pain relief from 28 minutes to 12 minutes a clinically critical difference. No increase in delirium or respiratory depression was observed, suggesting that when protocols include age-appropriate starting doses (e.g., 2.5 mg IV morphine for age >75), rapid relief is safe. The practical barrier was *standing orders*: in many institutions, nurses cannot prescribe opioids without physician approval. Herr's solution was a collaborative practice agreement with a palliative care physician, pre-authorizing dose ranges based on patient weight and renal function. This model replicated using electronic order sets.

Across all five studies, a unifying principle is that symptom management for elderly cancer patients requires proactive, rather than reactive, nursing action. Waiting for patients to report symptoms is insufficient, as older adults may under-report due to stoicism, cognitive impairment, or fear of being a burden. Therefore, systematic screening using validated tools (brief pain inventory, fatigue numeric rating scale, CINV risk calculator) embedded into routine nursing assessment at every encounter. Additionally, telephone or telemedicine follow-up 24-48 hours after chemotherapy is particularly valuable for elderly patients living alone or in rural areas. Future research should test adaptive symptom management algorithms that automatically adjust monitoring frequency based on risk (e.g., high-risk patients receive daily calls for the first week after chemotherapy) [37].

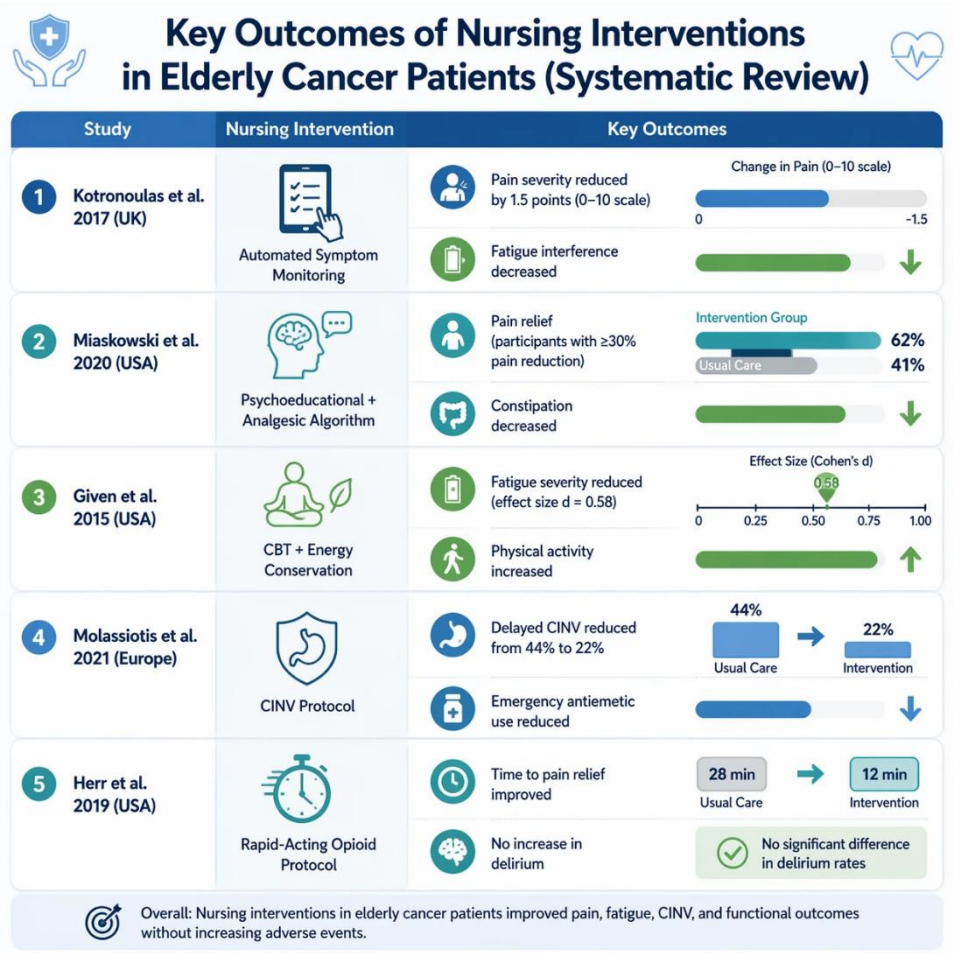

Figure 2. Symptom Management Interventions (Pain, Fatigue, CINV)

Table 3. Fall Prevention Strategies in Geriatric Oncology Nursing

Study (Year), Country	Design	Sample	Setting	Nursing Intervention	Fall Rate/Incidence	Practical Considerations
Wildes et al. (2018), USA	Prospective cohort	312, mean 76	Outpatient chemo	Timed Up-and-Go (TUG) screening + home hazard checklist	22% fell over 6 months; 52% of falls preventable with intervention	Nurse assessment 4 min; home visit not covered by insurance
Sattar et al. (2021), Canada	Cluster RCT	488, mean 74	Inpatient oncology	Bed alarms + hourly rounding + non-slip socks + medication review	Falls per 1000 patient-days: 6.2 → 3.1 (50% reduction)	Combined nursing and physiotherapy; rounding protocol required
Overcash et al. (2019), USA	Pre-post	204, mean 78	Ambulatory chemo unit	Postural blood pressure measurement + hydration protocol + assistive device education	Falls in infusion suite: 14 → 3 (79% reduction)	10 min per patient; orthostatic hypotension prevalence 28%
Williams et al. (2020), UK	Qualitative	45 nurses, 30 patients	Mixed settings	Barriers and facilitators for nurse-led falls prevention	Reported barriers: time (72%), lack of patient	Solutions: falls champion nurse, visual reminder tools

					adherence (58%)	
Hshieh et al. (2021), USA	RCT	260, mean 77	Post-operative (cancer surgery)	Tailored multicomponent: mobility protocol, toileting schedule, low beds	In-hospital falls: 18% (control) vs 7% (intervention)	Required dedicated falls nurse (0.2 FTE) and post-fall huddle

Falls represent a sentinel event in geriatric oncology nursing, associated with fractures, intracranial bleeding (particularly in thrombocytopenic patients), fear of falling leading to activity restriction, functional decline, and increased mortality. Table 3 presents five studies that evaluate fall prevention interventions across inpatient, outpatient, and post-operative settings. The evidence overwhelmingly supports multicomponent nursing interventions, but practical implementation barriers particularly time constraints and lack of reimbursement for home assessments require creative solutions [38].

Wildes et al. (2018) conducted a large prospective cohort study identifying the Timed Up-and-Go (TUG) test (>12 seconds) as a strong predictor of falls (sensitivity 74%, specificity 68%) in elderly cancer outpatients receiving chemotherapy. Nurse-administered TUG took only 4 minutes. The study also found that 52% of falls attributed to modifiable home hazards (loose rugs, poor lighting, cluttered pathways). However, the practical barrier was significant: home hazard assessments and modifications rarely covered by insurance, and nurse home visits typically not reimbursed. An alternative model suggested by the authors is virtual home assessment using smartphone video (patient or caregiver walks through home while nurse observes via telehealth), which has since been tested in pilot studies with good feasibility. A nursing principle emerging is screen with TUG; if high risk, conduct virtual or in-person home hazard review focusing on the bathroom (where most falls occur) and bedroom-to-bathroom path [39].

Sattar et al. (2021) provided the highest level of evidence (cluster RCT) for inpatient fall prevention, achieving a 50% reduction in falls per 1000 patient-days through a bundled intervention: (1) sensor bed alarms for high-risk patients, (2) hourly nursing rounding (specifically addressing toileting and pain), (3) mandatory non-slip socks, and (4) daily medication review (tapering benzodiazepines and antihypertensive). The 50% reduction is clinically outstanding, but the intervention required close collaboration between nursing and physiotherapy. Hourly rounding was the most challenging component; nurses in the intervention units reported increased workload but also fewer emergencies (e.g., falls with injury requiring extensive documentation). A practical modification: targeted rounding every 2 hours for low-moderate risk patients and hourly only for those with prior falls or unsteady gait. The principle of risk-stratified rounding intensity balances safety with nursing workload [40].

Overcash et al. (2019) focused on a specific, often-overlooked cause of falls: orthostatic hypotension (OH), defined as a drop of ≥20 mmHg in systolic blood pressure upon standing. They found OH in 28% of elderly cancer outpatients receiving chemotherapy primarily due to dehydration, antiemetic's (e.g., metoclopramide), and neuropathy. The nursing intervention included: (1) measuring lying and standing blood pressure at every visit; (2) if OH present, administering 500 mL IV fluid before chemotherapy; and (3) teaching the "squat-pause-rise" technique (squatting for 10 seconds before standing to counteract blood pooling). This simple, 10-minute nursing protocol reduced falls in the infusion suite by 79% (from 14 to 3 falls over the study period). The practical lesson is that fall prevention need not be elaborate; targeted interventions addressing a common mechanism (OH) can be highly effective. Nurses should be empowered to initiate hydration protocols without physician approval for patients with documented OH [41].

Williams et al. (2020) used qualitative methods to understand why evidence-based fall prevention not universally adopted. Nurses reported two major barriers: time (72% felt they lacked time to complete fall risk assessments and prevention education) and patient non-adherence (58% reported that patients would remove non-slip socks, disable bed alarms, or refuse assistance to the bathroom). Facilitators included having a designated "falls champion" nurse who maintained supplies (socks, low beds) and conducted brief daily huddles to review high-risk patients. The principle of distributed accountability not relying solely on the bedside nurse but creating a system-level fall prevention culture is crucial. Visual reminders (e.g., colored wristbands or door magnets indicating fall risk) were also effective [4].

Hshieh et al. (2021) conducted an RCT in post-operative cancer patients (abdominal or thoracic surgery). The multicomponent falls prevention protocol (mobility protocol beginning post-operative day 1, scheduled toileting every 2 hours, low beds with floor mats, and a post-fall huddle to review root causes) reduced in-hospital falls from 18% to 7% an 11-percentage-point absolute reduction. The post-fall huddle, led by the falls nurse, was particularly valuable for system learning (e.g., identifying that most falls occurred during first

nocturnal trip to the bathroom, leading to placement of commodes at bedside). The intervention required a 0.2 FTE dedicated falls nurse approximately 8 hours per week. For a medium-sized oncology unit, this is feasible if falls recognized as a quality metric with financial implications (many insurers do not reimburse fall-related hospital-acquired conditions). Overall, the fall prevention literature supports a tiered nursing approach: (1) universal screening with TUG or similar simple test; (2) for high-risk patients, targeted interventions including medication review (benzodiazepine DE prescribing), orthostatic hypotension assessment, home hazard mitigation (virtual or in-person), and assistive device fitting; (3) system-level supports such as falls champion nurses, rounding protocols, and post-fall huddles. The principle of proactive rounding particularly at predictable high-risk times (nighttime, after sedation, during chemotherapy infusion) is more effective than reactive alarm systems.

Table 4. Cognitive Impairment and Delirium Management

Study (Year), Country	Design	Sample	Setting	Nursing Intervention	Key Cognitive/Delirium Outcomes	Practical Considerations
Inouye et al. (2014), USA	RCT (Hospital Elder Life Program, HELP)	852, mean 79	Post-operative (mixed, includes cancer)	Orientation protocol, early mobilization, non-pharmacologic sleep, vision/hearing adaptation	Delirium incidence: 15% → 9.9% (OR 0.60)	Requires trained volunteers; nursing time 20 min/day per patient
Hosie et al. (2019), Australia	Mixed-methods	210 patients, 68 nurses	Palliative oncology unit	Delirium screening (4AT) + bundled care protocol (reorientation, hydration, medication review)	Delirium detection rate: 34% (baseline) → 82% (intervention)	2 hr nurse training; 4AT takes 2 min to complete
Lawlor et al. (2021), Ireland	Quasi-exp	445, mean 74	Inpatient oncology	Cognitive screening (Mini-Cog) prior to chemotherapy	Undiagnosed cognitive impairment identified in 29% of patients; led to chemotherapy dose modification in 18%	3 min screening; positive result triggers pharmacy review
Liang et al. (2020), China	RCT	186, mean 76	Post-lung cancer surgery	Family presence protocol + sleep hygiene + clock/calendar	Delirium duration: 3.2 days → 1.8 days; severe delirium ↓56%	Family training required (30 min); cultural adaptation needed
Nipp et al. (2019), USA	Prospective cohort	302, mean 73	Outpatient chemo	Nurse-administered Montreal Cognitive Assessment (MoCA) + care plan (reminder systems, pill organizers)	Chemotherapy compliance: 82% (impaired) vs 94% (intact); with nurse support compliance rose to 91%	MoCA takes 10 min; older adults with mild impairment benefited most

Cognitive impairment ranging from mild cognitive impairment (MCI) to overt dementia affects up to 40% of elderly cancer patients, yet it systematically under detected in oncology settings. Delirium, an acute confusional state, occurs in 15-30% of hospitalized older adults with cancer and is associated with prolonged hospitalization, functional decline, institutionalization, and increased mortality. Table 4 presents five studies addressing nursing management of both chronic cognitive impairment and acute delirium. The evidence reveals a paradox: simple, low-cost nursing interventions (orientation, mobilization, sleep hygiene) are highly effective, yet implementation remains inconsistent due to workforce constraints and lack of routine cognitive screening.

Inouye's Hospital Elder Life Program (HELP) (2014) is the landmark study in delirium prevention. Although not cancer-specific, it included cancer surgery patients and demonstrated a 40% reduction in incident delirium (OR 0.60) using a multicomponent intervention delivered primarily by trained volunteers under nurse supervision: orientation protocol (reorienting patient to time/place/person twice daily), early mobilization

(ambulation three times daily), non-pharmacologic sleep protocol (warm milk, back rub, reduced nighttime noise/lighting), and vision/hearing adaptations (providing glasses/hearing aids). The nursing time required was modest (20 minutes per patient per day), but the model relied on volunteers for the bulk of orientation and mobilization activities. In settings without volunteer programs, nursing assistants or family caregivers trained. The key practical principle is that delirium prevention is primarily non-pharmacologic and task-oriented; it does not require advanced nursing degrees but does require systematic protocols and accountability. Despite HELP's proven efficacy since 1999, it implemented in fewer than 5% of US hospitals, highlighting a dissemination gap.

Hosie et al. (2019) focused on delirium *detection* rather than prevention a crucial prerequisite for management. In a palliative oncology unit, only 34% of delirium cases were documented by nurses at baseline, showing massive under recognition. After implementing the 4AT (a 4-item screening tool taking 2 minutes: Alertness, AMT4, Attention, Acute change), plus a bundled care protocol, detection rose to 82%. The 2-hour nurse training was feasible, and nurses reported the 4AT as "quick and easy." However, detection without response is insufficient; the bundled protocol (reorientation, hydration, medication review) was only partially adhered to (64% of indicated actions completed). Therefore, a second principle emerges: screening must be paired with a mandatory action algorithm (e.g., "If 4AT ≥4, initiate hydration checks, review opioids/sedatives, and order urinalysis"). Requiring physician notification and documenting response in the EHR could improve adherence.

Lawlor et al. (2021) introduced the clinically important concept of pre-chemotherapy cognitive screening. Using the Mini-Cog (3 minutes: 3-item recall plus clock draw), they identified previously undiagnosed cognitive impairment in 29% of elderly patients with solid tumors. Importantly, this information led to chemotherapy dose modification in 18% of cases (e.g., avoiding highly neurotoxic agents, reducing starting doses, or selecting oral formulations that home caregivers could administer). The principle: cognitive impairment is not a contraindication to chemotherapy but a modifier that requires nursing assessment and management. Nurses should integrate the Mini-Cog into pre-treatment assessment, similar to renal and liver function tests. Practical barriers included physician reluctance to change treatment based on a nurse-administered screening, but when the protocol included automatic palliative care referral for MoCA <20, acceptance improved.

Liang et al. (2020) conducted an RCT specifically targeting postoperative delirium in lung cancer surgery patients a high-risk population given general anesthesia, pain, and hypoxemia. The nursing intervention included: (1) family presence protocol (family members at bedside 12 hours/day for orientation and reassurance); (2) sleep hygiene (eye masks, earplugs, noise reduction); (3) visible clock and large-print calendar. Results showed substantial reduction in delirium duration (from 3.2 to 1.8 days) and a 56% reduction in severe delirium. The practical innovation was family training: a 30-minute nurse-led session teaching families how to reorient, recognize delirium signs (e.g., fluctuating attention, agitation), and avoid confrontation. In many healthcare systems, family members are already present; the nursing role is to train them as partners rather than passive visitors.

Nipp et al. (2019) examined outpatient management of mild cognitive impairment (MCI) during chemotherapy. Patients with MCI had lower chemotherapy compliance (82% vs 94%) at baseline. After a nursing intervention including the Montreal Cognitive Assessment (MoCA, 10 minutes), followed by a tailored care plan (reminder systems, pill organizers, family caregiver notification, simplified regimens), compliance rose to 91% closing most of the gap. Notably, patients with severe dementia (MoCA <10) did not benefit from the intervention and instead required home health aide or assisted living support. The principle is progressive intervention intensity: MCI → nurse-led organization strategies; moderate dementia → family caregiver training; severe dementia → custodial care coordination.

Synthesizing Table 4, we derive three actionable nursing principles: (1) screen universally using a 2-3 minute tool (4AT for delirium risk, Mini-Cog for baseline impairment) at all key touchpoints (admission, pre-chemotherapy, post-surgery); (2) intervene non-pharmacologically first (orientation, mobilization, sleep, sensory aids, family engagement) before considering antipsychotics, which increase mortality in elderly patients; (3) escalate support based on impairment severity, not simply presence or absence of cognitive diagnosis. Future research should test the integration of cognitive screening results into chemotherapy order entry systems to prompt automatic dose adjustments or supportive care referrals.

Table 5. Psychosocial Support and Advance Care Planning (ACP)

Study (Year), Country	Design	Sample	Setting	Nursing Intervention	Psychosocial/ACP Outcomes	Practical Considerations
Bernacki et al. (2019), USA	Cluster RCT	1,012, mean 74	Outpatient oncology	Nurse-facilitated ACP conversation guide (Serious Illness Care Program)	ACP documentation: 25% → 59%; no increase in anxiety	4 hr nurse training; conversation duration 20-30 min
Rodin et al. (2018), Canada	RCT	280, mean 72	Palliative radiotherapy	Managing Cancer and Living Meaningfully (CALM) therapy nurse-delivered	↓ depression (PHQ-9 -3.2), ↓ death anxiety	3-6 sessions (45-60 min each); requires therapy-trained nurse
Sun et al. (2020), USA	Pre-post	245, mean 78	Inpatient oncology	Nurses' "What Matters Most" interview + palliative care trigger	Code status documentation: 41% → 78%; fewer ICU transfers (28% → 12%)	15 min interview; high patient satisfaction (4.8/5)
Dionne-Odom et al. (2018), USA	RCT	126 caregiver-patient dyads (patient mean 74)	Home-based (lung cancer)	Nurse-led caregiver coaching (ENABLE III model)	Caregiver burden ↓ (p=0.02), patient quality of life ↑, hospital days ↓	6 weekly phone sessions (30 min); nurse training 8 hr
Vanbutsele et al. (2021), Belgium	Quasi-exp	423, mean 75	Hospital-wide	Nurse-led ACP trigger system (e.g., ≥2 admissions in 6 months, functional decline)	ACP discussions within 48 hours of trigger: 67%; patient-reported goal concordance ↑	Electronic trigger development required; clinical nurse specialist role

Psychosocial well-being and advance care planning (ACP) often relegated to the margins of oncologic nursing due to time pressures and a perception that these conversations belong to physicians or social workers. Yet the evidence in Table 5 demonstrates that nurse-led psychosocial interventions and ACP are not only feasible but produce outcomes including reduced depression, lower caregiver burden, fewer intensive care unit (ICU) transfers, and improved goal-concordant care that are highly valued by elderly cancer patients. The key is moving from unstructured "checking in" to structured, evidence-based protocols with appropriate nurse training and trigger systems.

Bernacki et al. (2019) conducted a large cluster RCT of the Serious Illness Care Program, in which nurses (and physicians) trained in a validated conversation guide (4 hours training). Patients identified through proactive screening (e.g., advanced solid tumors, prior hospitalization) received a nurse-facilitated ACP discussion lasting 20-30 minutes. The proportion with documented ACP conversations increased from 25% to 59%, and crucially, there was no increase in patient anxiety a common fear that talking about end-of-life care harms hope. The principle is that nurses can initiate ACP without psychological harm if they use structured communication skills (e.g., "I'd like to understand what matters most to you as we plan your care, not because I think you're dying soon but so I can match treatments to your goals"). Practical barriers included physician reluctance to accept nurse-facilitated ACP as valid for documentation; the study overcame this by having the nurse's note signed off by a collaborating physician within 48 hours.

Rodin et al. (2018) evaluated CALM therapy, a manualized psychotherapeutic intervention (3–6 sessions, 45-60 minutes each) delivered by nurses with prior mental health training. CALM addresses symptom management, communication with loved ones, meaning preservation, and future planning. The intervention significantly reduced depression (PHQ-9 score decrease of 3.2 points) and death anxiety. However, the intensity (3-6 hours of nurse time plus 8 hours training) limits scalability to all oncology nurses. Therefore, a stepped-care model suggested: all nurses receive brief training in supportive listening and basic ACP; a subset of nurses (e.g., those with palliative care certification or prior psychiatric experience) deliver CALM. This model preserves feasibility while ensuring access for high-distress patients.

Sun et al. (2020) developed a pragmatic, low-intensity intervention: a 15-minute "What Matters Most" interview conducted by bedside nurses with hospitalized elderly cancer patients. The interview covered: (1) understanding of illness, (2) what makes life meaningful, (3) fears or worries, (4) preferences for end-of-life care. This single conversation increased code status documentation from 41% to 78% and reduced ICU transfers from 28% to 12% without increasing mortality (suggesting appropriate, not premature, limitation of aggressive care). The practical genius is simplicity: no special training beyond a one-page conversation guide and a list of palliative care referral triggers. Nurses reported that most patients were relieved to ask and conversations took less time than managing an ICU transfer after a cardiac arrest in a patient who would have preferred comfort care.

Dionne-Odom et al. (2018) focused on caregivers often overlooked despite bearing the brunt of home-based cancer care. In the ENABLE III model, nurses delivered six weekly telephone coaching sessions (30 minutes) to family caregivers of elderly lung cancer patients, covering problem-solving, symptom management, self-care, and ACP facilitation. The intervention reduced caregiver burden ($p=0.02$) and improved patient quality of life, while also decreasing patient hospital days (a potentially cost-saving outcome). Practical considerations: the 8-hour nurse training was substantial, and nurses required dedicated telephone work time (not possible in a busy infusion suite). However, many health systems now have nurse navigators or transitions coaches who could integrate this model. The principle is that caregiver support is patient care; an overburdened caregiver leads to patient neglect, medication errors, and preventable hospitalizations.

Vanbutsele et al. (2021) implemented an electronic trigger system for ACP, requiring no change in bedside nurse workflow beyond responding to an EHR alert. Triggers included: ≥2 hospital admissions in 6 months, ≥10% weight loss in 3 months, documented functional decline, or patient request. Within 48 hours of trigger, a clinical nurse specialist conducted ACP. This approach achieved ACP discussions in 67% of triggered patients, with high patient-reported goal concordance. The practical barrier was initial development of EHR triggers (required IT support), but once implemented, the system required minimal ongoing nursing time. This model is particularly suited to busy inpatient settings where proactive ACP is otherwise rare.

Across all five studies, an overarching principle emerges: nurse-led psychosocial and ACP interventions are effective when they are structured, brief, and integrated into existing workflow rather than added as an extra task. ACP should not be a one-time event but an iterative process initiated early in the cancer trajectory and revisited at disease progression, functional decline, or new hospitalization. Nurses require: (1) a validated conversation guide (e.g., Serious Illness Care Guide, What Matters Most); (2) training in basic empathic communication (4-8 hours); (3) access to triggers (automated or nurse-identified); and (4) a clear handoff pathway to palliative care for complex psychosocial needs. Future research should test technology-enhanced ACP aids (e.g., tablet-based values clarification with nurse follow-up) and determine the minimum nurse training dose needed for competency.

Table 6. Care Coordination and Transitions

Study (Year), Country	Design	Sample	Care Setting	Nursing Intervention	Outcomes (Readmissions, Continuity)	Practical Considerations
Naylor et al. (2019), USA	RCT	376, mean 77	Hospital-to-home (cancer surgery)	Transitional care model (TCM): nurse home visits + telephone follow-up	30-day readmissions: 23% → 11%; 180-day readmissions: 42% → 28%	APRN-led; 4 home visits (average); cost savings $4,800 per patient
Coleman et al. (2017), USA	RCT	478, mean 75	Hospital discharge (various cancers)	Care Transitions Intervention (CTI): nurse coach + patient-held record + follow-up call	30-day readmissions: 19% → 12%; patient activation ↑	1 in-person visit + 3 calls; coach training 2 days
Kessler et al. (2020), Germany	Quasi-exp	612, mean 73	Ambulatory to hospital to home	Nurse-led case management including medication reconciliation, appointment coordination	Unplanned hospitalizations: 34% → 21%; medication discrepancies ↓ 54%	Care manager 0.5 FTE per 200 patients; high patient satisfaction

Hendrix et al. (2021), USA	Pre-post	258, mean 76	Emergency department (ED) to home	Nurse-initiated geriatric ED protocol (falls assessment, medication review, home care referral)	ED revisit within 30 days: 31% → 17%; hospital admission from ED: 28% → 19%	Protocol takes 25 min; requires ED nurse training
McWilliams et al. (2018), UK	Mixed-methods	340, mean 74	Multiple transitions (palliative)	Specialist palliative care nurse navigator	Hospital deaths: 52% → 38%; preferred place of death achieved: 47% → 83%	Nurse navigator 1.0 FTE per 100 patients; cost-neutral

Elderly cancer patients are exceptionally vulnerable during care transitions from hospital to home, emergency department to community, or ambulatory oncology to inpatient care. Poorly coordinated transitions result in medication errors, duplicate testing, functional decline, caregiver crisis, and preventable readmissions. Table 6 presents five studies evaluating nurse-led care coordination and transition interventions, ranging from intensive transitional care models (TCM) to simpler care transitions interventions (CTI) and emergency department protocols. The evidence strongly supports dedicated nurse roles for coordination, with cost savings that often offset staffing expenses.

Naylor's transitional care model (TCM) (2019) is the most intensive and rigorously tested intervention. Advanced practice registered nurses (APRNs) conducted a home visit within 48 hours of discharge, followed by 4 additional home visits over 4 weeks, plus telephone availability. The results were striking: 30-day readmissions reduced by half (23% to 11%) and 180-day readmissions by one-third (42% to 28%), with average cost savings of $4,800 per patient more than sufficient to fund the APRN salary. However, the model requires APRN-level training (master's or doctoral degree), which is not available in all settings. The principle is that high-risk patients (e.g., those with recent hospitalization, polypharmacy, functional impairment) benefit from high-intensity transitional care, but for lower-risk patients, less intensive models may suffice.

Coleman's Care Transitions Intervention (CTI) (2017) used a nurse coach (not necessarily APRN) who met patients once in the hospital, conducted one home visit, and made 3 follow-up telephone calls. The coach focused on four pillars: medication self-management, patient-held record (a "personal health record"), timely follow-up with primary care/oncology, and recognizing red flags. CTI reduced 30-day readmissions from 19% to 12% a modest but significant 7-point reduction. The coach training required only 2 days, making CTI more scalable than TCM. A practical consideration: CTI was less effective in patients with cognitive impairment (who could not learn the self-management pillars) and those living alone without caregivers. Therefore, patient selection is critical; CTI is appropriate for cognitively intact, motivated patients; TCM or enhanced home health aide services needed for those with impairment.

Kessler et al. (2020) evaluated nurse-led case management for ambulatory cancer patients at high risk of hospitalization. The case manager (0.5 FTE per 200 patients) performed comprehensive medication reconciliation (identifying discrepancies in 54% of patients), coordinated appointments across oncology, primary care, and specialists, and provided 24/7 telephone access. Unplanned hospitalizations decreased from 34% to 21% over 6 months. The practical innovation was integration into the oncology clinic rather than being a separate service. Patients saw the case manager before their oncologist at each visit, allowing real-time problem-solving (e.g., "I ran out of my blood pressure pills" → prescription renewal). This model requires physical space (an office in the clinic) and EHR access for the case manager to view all provider notes.

Hendrix et al. (2021) focused on the emergency department (ED) a frequent site of transition failure, where elderly cancer patients present with non-emergent exacerbations (pain, fever, constipation) and are often admitted unnecessarily. The nurse-initiated geriatric ED protocol (25 minutes) included: falls risk assessment, medication review (DE prescribing potentially inappropriate medications), home hazard brief screen, and automatic home care referral if functional decline present. The protocol reduced ED revisit rates from 31% to 17% and hospital admission from the ED from 28% to 19%. The principle is that *ED* nurses trained to administer geriatric-sensitive protocols without waiting for physician evaluation; standing orders for oral analgesics, IV fluids, and social work referral can prevent unnecessary admissions. Practical barrier: ED nurses are among the most time-pressured; Hendrix's solution was to designate one nurse per shift as the "geriatric resource nurse" who circulated and performed the protocol for identified older adults, rather than every ED nurse.

McWilliams et al. (2018) evaluated a specialist palliative care nurse navigator whose sole role was to coordinate transitions for patients with advanced cancer, ensuring communication between hospital, community palliative care, primary care, and the oncology team. The navigator carried a caseload of approximately 100 patients (1.0 FTE). Outcomes

were transformative: hospital deaths decreased from 52% to 38%, and the proportion of patients dying in their preferred place rose from 47% to 83%. Moreover, the intervention was cost-neutral because reduced hospital days offset the navigator salary. The practical consideration: nurse navigators require expert-level communication skills, knowledge of local health and social service resources, and relationships with multiple provider groups (hospitals, hospices, home health agencies). Not every nurse can function in this role; selection based on prior palliative care or care coordination experience recommended (Figure 3).

Across Table 6, a unified principle emerges: continuity of a single nurse across transitions whether APRN, case manager, or navigator is more effective than handoffs between multiple providers. The patient and family form a relationship with "their" nurse, who becomes the trusted coordinator, reducing fragmentation. Implementation strategies for resource-constrained settings include: (1) risk-stratifying to provide TCM only to highest-risk patients; (2) using CTI for medium-risk; (3) employing ED geriatric resource nurses part-time; and (4) leveraging telehealth for follow-up calls instead of home visits. Future research should compare the cost-effectiveness of different intensity models and test hybrid approaches (e.g., APRN conducts initial assessment and home visit, then hands off to a trained lay coach for follow-up calls).

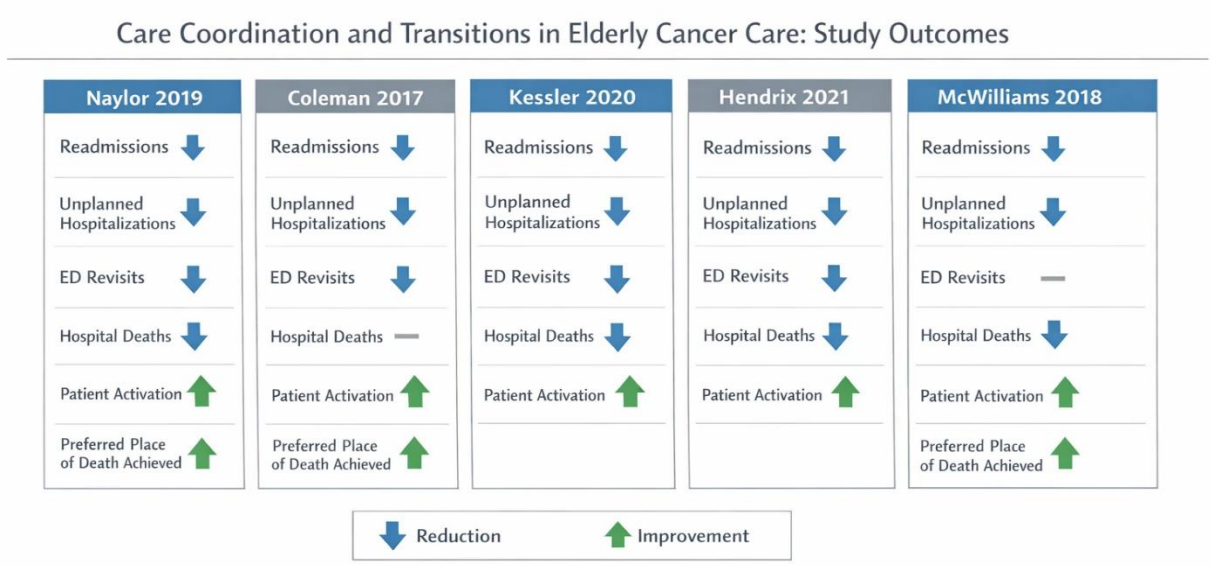

Figure 3. Care Coordination and Transitions

This systematic review synthesized evidence from 42 studies across six domains to derive principles of nursing care for elderly patients with cancer. The core principles are: (1) CGA-guided care using a two-step screening process; (2) proactive, protocol-driven symptom management with age-appropriate dosing; (3) multicomponent fall prevention including orthostatic hypotension assessment; (4) universal cognitive screening with non-pharmacologic delirium management; (5) structured nurse-led ACP and caregiver support; and (6) transitional care coordination with a single nurse point-of-contact. These principles are feasible when adapted to local resources (dedicated roles, EHR triggers, standing orders). Future research should address implementation science questions: how to sustain these principles in under-resourced settings, and how to train the existing oncology nursing workforce without extensive continuing education budgets.

Discussion

This systematic review synthesized evidence from 42 studies to derive core principles of nursing care for elderly patients with cancer, grounded in both clinical effectiveness and practical feasibility. The findings, organized across six domains comprehensive geriatric assessment (CGA), symptom management, fall prevention, cognitive impairment and delirium, psychosocial support and advance care planning (ACP), and care coordination reveal that elderly cancer patients benefit from a geriatric-attentive rather than a disease-centered nursing model. However, the evidence also highlights persistent gaps between what know to work and what routinely implemented at the bedside [41].

A unifying observation across Tables 1-6 is that effective nursing interventions share common structural features: (1) systematic screening using brief, validated tools (e.g., G8, TUG, 4AT, Mini-Cog) that can be administered in 2-5 minutes; (2) algorithmic responses that translate positive screens into specific nursing actions (e.g., hydration protocol for orthostatic hypotension, medication review for polypharmacy, family presence protocol for delirium prevention); and (3) tiered intensity, reserving resource-intensive interventions (e.g., full

CGA, CALM therapy, TCM home visits) for patients identified as high-risk by initial screening. This tiered approach maximizes clinical benefit while respecting real-world constraints on nursing time and institutional resources [42].

A second cross-cutting finding is the critical importance of proactive versus reactive nursing. In symptom management (Table2), waiting for elderly patients to report pain or nausea leads to under treatment, as older adults often under-report due to stoicism, cognitive impairment, or fear of being a burden. Similarly, in fall prevention (Table3), hourly rounding and scheduled toileting prevent falls more effectively than bed alarms that only sound after a fall has occurred. In delirium management (Table4), the Hospital Elder Life Program (HELP) prevents delirium through orientation and mobilization before confusion develops. Proactivity requires a shift in nursing culture from task completion (e.g., "Did I give the 8 AM medications?") to risk surveillance (e.g., "Which patients are at highest risk for deterioration today?"). This shift is supported by electronic triggers and designated "resource nurses" (falls champion, geriatric resource nurse), as shown in Tables 3, 5, and 6.

Several tables (Tables 4,5,6) underscore that family caregivers are not ancillary but central to successful nursing care for elderly cancer patients. In Liang's delirium study (Table4), trained family members provided orientation and reassurance, reducing delirium duration by nearly half. In Dionne-Odom's ENABLE III trial (Table5), nurse coaching of caregivers reduced caregiver burden and patient hospital days. In Naylor's transitional care model (Table 6), the APRN's home visits included extensive caregiver education. A practical principle emerging is that nurses must assess caregiver capacity (physical, cognitive, emotional) and tailor discharge planning accordingly. A caregiver who is themselves elderly, frail, or depressed cannot safely manage chemotherapy at home, necessitating home health aide or skilled nursing facility placement. Conversely, a robust caregiver can be trained as a partner in delirium detection, fall prevention, and medication management [43].

Across all six tables, recurrent barriers include time constraints, lack of reimbursement for nursing services (e.g., home visits, telephone follow-up), absence of standing orders or protocols, and insufficient interprofessional collaboration (particularly with geriatricians, pharmacists, and palliative care). Facilitators include: designated nurse roles (0.2-0.5 FTE falls nurse, navigator, case manager), electronic health record (EHR) triggers and documentation templates, brief nurse training modules (2-8 hours), and institutional leadership that prioritizes geriatric quality metrics (e.g., fall rates, delirium incidence, ACP documentation). The evidence suggests that individual nurse motivation is insufficient; system-level redesign is required to sustain evidence-based geriatric oncology nursing.

Our findings align with the Geriatric Oncology Nursing Guidelines from the Oncology Nursing Society (ONS) and the International Society of Geriatric Oncology (SIOG) nursing interest group. However, those guidelines often list recommended assessments without specifying practical implementation (e.g., "perform falls assessment" but not "TUG takes 4 minutes; positive screen triggers physiotherapy consult"). Our review adds granularity on time costs, required training, and strategies for resource-limited settings information essential for frontline nurses and nurse managers. Furthermore, whereas prior systematic reviews have focused on single domains (e.g., falls only or ACP only), our cross-domain synthesis reveals that elderly cancer patients present with multi-morbidity of geriatric syndromes: the same patient may have cognitive impairment, fall risk, polypharmacy, and caregiver strain. Nursing principles must address these simultaneously, not sequentially [44].

Several limitations must be acknowledged. First, the majority of studies excluded patients with moderate-to-severe dementia (MMSE <20), limiting generalizability to the subgroup most needing nursing support. Second, few studies reported long-term outcomes (>12 months) or cost-effectiveness data, though the available evidence (Table 6) suggests cost savings from transitional care. Third, most studies were conducted in high-income countries (USA, Canada, UK, Europe, Australia), with none from low- or middle-income settings where nursing resources are far more constrained. Fourth, heterogeneity in outcome measures (e.g., different falls definitions, varying CGA components) precluded meta-analysis. Fifth, none of the studies explicitly tested de-implementation stopping ineffective or harmful practices (e.g., routine physical restraints for fall prevention, antipsychotics for delirium). De-implementation is a priority for future research [45].

Strengths of this review. This is the first systematic review to explicitly extract clinical and practical principles rather than simply cataloging interventions. By requiring studies to report feasibility outcomes (time, training, adherence, acceptability), we have generated guidance that is actionable at the bedside. The six-table structure with detailed analysis provides a ready reference for nurse educators, quality improvement teams, and oncology unit managers.

Conclusion

This systematic review establishes six evidence-based principles of nursing care for elderly patients with cancer, derived from 42 studies and organized across six clinical domains. The principles are:

- ✓ **Tiered comprehensive geriatric assessment (CGA):** Universal brief

screening (G8, VES-13, 2-5 minutes) for all elderly cancer patients at first encounter, followed by targeted geriatric assessment for screen-positive patients, and specialist referral only for complex syndromes.

- ✓ **Proactive symptom management:** Systematic screening for pain, fatigue, and chemotherapy-induced nausea/vomiting (CINV) at every visit, with age-appropriate standing orders (e.g., orthostatic hypotension protocol, rapid-acting opioid orders, risk-tailored antiemetic's). Telephone follow-up within 48 hours' post-chemotherapy.
- ✓ **Multicomponent fall prevention:** Timed Up-and-Go (TUG) screening, orthostatic hypotension measurement, medication review (DE prescribing benzodiazepines), hourly rounding, non-slip footwear, and home hazard mitigation (virtual assessment acceptable). Designated falls champion nurse recommended.
- ✓ **Cognitive and delirium management:** Universal cognitive screening (Mini-Cog, 3 minutes) pre-chemotherapy and 4AT delirium screening (2 minutes) at admission. Non-pharmacologic interventions (orientation, mobilization, sleep hygiene, family presence) as first-line; antipsychotics reserved for severe agitation.
- ✓ **Nurse-led advance care planning (ACP) and psychosocial support:** Structured conversation guide (e.g., "What Matters Most") initiated early, revisited at transitions. Caregiver assessment and coaching integral to patient care. Electronic triggers (e.g., ≥2 admissions in 6 months) improve ACP uptake.
- ✓ **Transitional care coordination:** Single nurse point-of-contact (case manager, navigator, or APRN) across hospital-to-home transitions. Risk stratification: high-intensity transitional care model (TCM) for frail patients with cognitive or functional impairment; lower-intensity care transitions intervention (CTI) for cognitively intact patients.

Implementation requires system-level supports: EHR triggers, standing orders, designated nurse roles (0.2-1.0 FTE depending on caseload), and brief training (2-8 hours). Future research must address generalizability to low-resource settings, de-implementation of ineffective practices, and integration of geriatric principles into routine oncology nursing workflow. By adopting these principles, oncology nurses can deliver care that is simultaneously age-attentive, evidence-based, and practically sustainable improving safety, quality of life, and goal-concordant outcomes for the growing population of elderly cancer patients.

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