Primary Care in the Nursing Home

10

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Quality of Medical Care in the Nursing Home

The drive for quality primary care in nursing facilities arose in the last few decades in response to public concern about substandard medical services provided to nursing home residents. In his seminal, Pulitzer prize-winning book, *Why Survive? Being Old in America*, Dr. Robert N. Butler wrote in 1975:

> One can also list a grim catalogue of the medical deficiencies of the nursing-home industry and related facilities. Nursing homes, however financed, do not provide well-organized, comprehensive medical care. Care must be obtained from family physicians or private physicians assigned by a welfare agency or the home itself. Many states do not even require a principal physician, let alone a medical director, for a nursing home, and when they do there is no assurance that the physician regards himself as responsible for the patients. Doctors seldom conduct regular rounds. Winter flu shots are often not given. There is minimal preventive care… [1]

In response to the serious problems plaguing nursing home care brought to the public's attention by Butler's book, a series of reports by the Special Committee on Aging of the United States Senate [2] and subsequently by a landmark report by the Institute of Medicine, "Improving the Quality of Care in Nursing Homes [3]," Congress passed the Federal Nursing Home Reform Act as part of the Omnibus Budget Reconciliation Act of 1987 (OBRA-87). Under the regulations of OBRA-87, a skilled nursing facility "must provide services to attain or maintain the highest practicable physical, mental, and psychosocial well-being of each resident, in accordance with a written plan of care which…is initially prepared…by a team which includes the resident's attending physician [4]."

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In addition to introducing a series of quality metrics to be reported in the Minimum Data Set (MDS), OBRA-87 established the right of nursing facility residents to choose a personal attending physician and to be fully informed in advance about care and treatment. In this chapter, we will examine the challenges of providing medical care to this complex and vulnerable elderly population and several approaches to medical management that have evolved since the passage of that landmark bill.

Nursing Home Residents

There are over 15,000 nursing (OBRA-87)facilities in the United States with approximately 1.7 million licensed beds [5]. Most nursing facilities are comprised of two related, though often comingled, services. Long-term residential care is provided for those individuals who live in the nursing facility, often their last place of residence. Skilled nursing and rehabilitation services or subacute care is provided to patients discharged from the hospital but who require additional short-term inpatient nursing and rehabilitation services prior to safely returning home. More recently, many nursing facilities are also providing palliative care and, in collaboration with certified agencies, hospice services for terminally ill residents.

Medicaid is the main source of payment for residential long-term care nursing home services followed by out-of-pocket payments [6], whereas Medicare is the main source of payment for short-term skilled care [7] as well as medical services by physicians and other healthcare providers to both long-term care residents and short-term subacute patients.

According to the Centers for Disease Control and Prevention, 41.6% of long-term nursing home residents are age 85 and over, 27.2% are ages 75–84, 16.1% are ages 65–74, and 15.1% are under age 65. Chronic diseases and multimorbidity are extremely common. Approximately 50% of long-term nursing home residents suffer from Alzheimer's disease or other dementias, just under 50% suffer from depression and nearly a third suffer from diabetes and its complications [8]. Adding to this complexity is the phenomenon of polypharmacy, the administration of multiple medications, resulting in frequent adverse drug reactions [9, 10].

According the Medicare Payment Advisory Commission (MedPAC), in 2014, about 15,000 Skilled Nursing Facilities (SNF) furnished 2.4 million Medicare-covered stays to 1.7 million fee-for-service (FFS) beneficiaries. Most post-acute SNF admissions are for patients treated in the hospital for joint replacement, septicemia, kidney and urinary tract infections, hip and femur procedures, pneumonia, heart failure, and shock. Many recipients of skilled services are long-term nursing home residents returning from hospitalizations back to the nursing home, where they become eligible for skilled services under Medicare Part A. Therefore, post-acute SNF patients are older, frailer and disproportionately female, disabled, living in an institution, and dually eligible for both Medicare and Medicaid. In 2014, 37.6% of recipients of skilled nursing facility care were discharged to the community, although the percentage of patients, who had been living in the community

prior to hospitalization and skilled services and subsequently discharged to the community, is significantly higher [11].

Thus, individuals in nursing homes, for either long-term care or short-term post-acute care, are among the most complex, frail, and vulnerable elderly. Moreover, there is evidence that over the last 20–30 years, nursing home residents have become increasingly frail and complex [12, 13]. A recent review and meta-analysis found that as many as 50% of nursing home residents were frail and approximately 40% were prefrail [14].

A 2006 Kaiser study noted that the average length of stay for long-term residents in nursing homes is just over 2 years [15], but there is great variability, depending on age on admission, comorbidities, and other factors. A 2010 study of lengths of stay of nursing home decedents also demonstrated variable lengths of stay, depending on factors related to social supports, but found that median and mean length of stay before death were 5 months and 13.7 months respectively, with 53% dying within 6 months of placement [16]. This can be expected to have a significant influence on decisions regarding management of chronic disorders as well as preventive care, since such decisions are often dependent on the anticipated time for treatment effect.

The Role of the Attending Physician and Medical Director in the Nursing Home

The attending physician plays a critical role in the nursing home as part of a team, including the nursing staff, social worker, dietician, and other healthcare professionals. Yet, the federal regulations regarding the roles of the attending physician and medical director are relatively brief and vague. The resident has the right to choose a personal attending physician, who must personally approve in writing a recommendation that an individual be admitted to a facility and must supervise the medical care of each resident. The physician must see the resident at least once every 30 days for the first 90 days after admission and at least once every 60 days thereafter([17]). Table 10.1 lists the requirements for physician services by the nursing home and for the nursing home physician.

Table 10.1 From code of federal regulations, 42 CFR §483.30 physician services

Requirements for physician services by the nursing home	*Requirements for the nursing home physician*
1. A physician must personally approve in writing a recommendation that an individual be admitted to a facility	1. Must review the resident's total program of care, including medications and treatments, at each required visit
2. Each resident must remain under the care of a physician	2. Must write, sign and date progress notes at each visit
3. The medical care of each resident is supervised by a physician	3. Must sign and date all orders
4. Another supervises the medical care of residents when their attending physicians are unavailable	4. Must see the resident at least once every 30 days for the first 90 days after admission and at least once every 60 days thereafter

Table 10.2 Responsibilities of the attending physician in the nursing home

Clinical	*Administrative*
• Approve each resident's admission to the facility and complete medical history and physical examination, including a list of medical diagnoses, cognitive and functional status, rehabilitation potential, and review of laboratory and diagnostic data • Provide admission orders until staff completes a comprehensive assessment and interdisciplinary plan of care • Supervise medical care of each nursing home resident including participating in assessment and care planning process, monitoring changes in medical status and providing treatment • Ensure that the resident is afforded privacy and dignity, provide informed consent when appropriate, and preserve the right of the nursing home resident to select clinicians for medical and dental care • Discuss advance care planning with the resident or designee as appropriate • Attend to any emergency or significant change in condition • Obtain consultations when needed • Order laboratory and diagnostic tests when needed and act on results with documentation • Prescribe, monitor, and reconcile all medications and respond in writing to consultant pharmacist review, deprescribing whenever possible • Provide orders for transfer and discharge	• Be familiar with federal and state regulations and facility policies • Serve on process improvement committees when asked by the medical director • Provide nursing home residents, caregivers, and facility staff contact information for calls regarding resident care, and provide on-call and emergency coverage when unavailable • Physician visit intervals – Admission visit: no later than 72 h after admission (except when examination was performed and documented within previous 5 days of admission) – Scheduled visit: at least once every 30 days for the first 90 days and at least once every 60 days thereafter (may delegate every other visit to APC) – Interim visits: in the event of an emergency and whenever indicated Information was adapted from Diamant, Unwin et al., Centers for Medicare and Medicaid Services and Title 42 Requirements for Long-Term Care Facilities

Adapted from Zweig SC, Popejoy LL, Parker-Oliver D, Meadows SE. The physician's role in patients' nursing home care. JAMA. 2011;306(13):1468–1478

Additional roles and responsibilities for attending physicians have been outlined by professional societies such as AMDA-The Society for Post-Acute and Long-Term Care Medicine [18] and have been published in the literature [19, 20]. Table 10.2 lists the responsibilities for the attending physician in the nursing home. Individual states, such as New York, have augmented federal regulations by issuing additional regulations or guidelines for the role of the attending physician in the nursing home [21].

There are a number of different medical staff models in nursing homes. The closed staff model usually involves a small number of employed physicians with or without advanced practice clinicians, to which the residents are assigned according to their floors or units. The open staff model or voluntary model usually involves community physicians, who spend varying parts of their time in the nursing home, but may also have an office practice or manage hospitalized patients. More recently,

there has been an increased presence of large group practices that contract with nursing facilities to provide physicians and advanced practice clinicians, including nurse practitioners and physician assistants, to the facility. These group practices may exclusively serve nursing homes or have mixed practices serving both nursing homes and hospitals or their own office practices.

Most physicians, who care for nursing home residents, are reimbursed under a fee-for-service system by either the Centers for Medicare and Medicaid Services for residents covered by traditional Medicare or Medicaid or by a variety of managed care organizations delegated to administer Medicare Advantage, Managed Medicaid programs, or combined Medicare/Medicaid ("dual eligible") programs. A small but growing number of physicians receive a fixed monthly fee per beneficiary or capitation to cover all necessary visits and management services provided during the coverage period. There are also alternative payment models combining either fee-for-service or capitated reimbursement with additional payments linked to a variety of quality metrics. In 2015, the US Department of Health and Human Services announced that it had set a goal to have 50% of Medicare payments in alternative payment models and 90% of Medicare fee-for-service payments linked to quality metrics by 2018 [22]. As of this writing, it remains to be seen how these goals will affect payment models for physicians caring for nursing home residents, but it is evident that the trend, increasingly, is to link payment to quality, rather than just volume.

A 1997 survey of medical practice in nursing homes revealed that most physicians reported spending no significant time caring for nursing home residents. A majority of physicians with a nursing home practice spent less than 2 h per week with patients [23]. A 2008 American Academy of Family Physicians survey reported that the average family physician supervises 9.6 nursing home residents and conducts 2.3 weekly nursing home visits [24].

To better determine the effect of medical staff organization on the quality of nursing home care, Katz and his colleagues validated the dimensions of a nursing home medical staff organization [25, 26]. Using this framework, a cross-sectional study of 202 freestanding US nursing homes demonstrated that 30-day rehospitalizations, one accepted measure of nursing home quality, were less likely in nursing homes with a more formal appointment process for physicians than in those with a more open and less restrictive staff [27]. This suggests that physicians spending a greater percentage of their time in the nursing home and, therefore, able to spend more time with residents and respond more quickly to changes in condition may provide a higher quality of care than physicians who spend little time caring for nursing home residents.

Although federal regulations do not delineate requirements for nursing home physicians to possess specific competencies, AMDA-The Society for Post-Acute and Long-Term Care Medicine released a position paper outlining the framework, principles, and scope of nursing home competencies. The foundation of nursing home competency rests on addressing ethical conflicts, providing care that is at least consistent with legal and regulatory requirements, appropriate communication, and interaction with staff, patient, and families, exhibiting respectful and culturally

sensitive behavior, and addressing resident/patient care needs in an appropriate and timely fashion. The recommended competencies, listed in Table 10.3, address the medical care delivery process, systems management, a minimum list of medical knowledge, and competency in quality assurance and process improvement [28].

Table 10.3 Competencies for post-acute and long-term care

Foundation, which focuses on ethics, professionalism, and communication, establishes the following six competencies for the NH attending physician
1.1 Addresses conflicts that may arise in the provision of clinical care by applying principles of ethical decision-making
1.2 Provides and supports care that is consistent with (but not based exclusively on) legal and regulatory requirements
1.3 Interacts with staff, patients, and families effectively by using appropriate strategies to address sensory, language, health literacy, cognitive, and other limitations
1.4 Demonstrates communication skills that foster positive interpersonal relationships with residents, their families, and members of the interdisciplinary team (IDT)
1.5 Exhibits professional, respectful, and culturally sensitive behavior toward residents, their families, and members of the IDT
1.6 Addresses patient/resident care needs, visits, phone calls, and documentation in an appropriate and timely fashion
Medical care delivery process includes the following five competencies
2.1 Manages the care of all post-acute patients/LTC residents by consistently and effectively applying the medical care delivery process—including recognition, problem definition, diagnosis, goal identification, intervention, and monitoring of progress
2.2 Develops, in collaboration with the IDT, a person-centered, evidence-based medical care plan that strives to optimize quality of life and function within the limits of an individual's medical condition, prognosis, and wishes
2.3 Estimates prognosis based on a comprehensive patient/resident evaluation and available prognostic tools and discusses the conclusions with the patient/resident, their families (when appropriate), and staff
2.4 Identifies circumstances in which palliative and/or end-of-life care (e.g., hospice) may benefit the patient/resident and family
2.5 Develops and oversees, in collaboration with the IDT, an effective palliative care plan for patients/residents with pain and other significant acute or chronic symptoms or who are at the end of life
Systems include the following six competencies
3.1 Provides care that uses resources prudently and minimizes unnecessary discomfort and disruption for patients/residents (e.g., limited nonessential vital signs and blood glucose checks)
3.2 Can identify rationale for and uses of key patient/resident databases (e.g., the Minimum Data Set [MDS]), in care planning, facility reimbursement, and monitoring of quality
3.3 Guides determinations of appropriate levels of care for patients/residents, including identification of those who could benefit from a different level of care
3.4 Performs functions and tasks that support safe transitions of care
3.5 Works effectively with other members of the IDT, including the medical director, in providing care based on understanding and valuing the general roles, responsibilities, and levels of knowledge and training for those of various disciplines
3.6 Informs patients/residents and their families of their healthcare options and potential impact on personal finances by incorporating knowledge of payment models relevant to the post-acute and LTC setting

(continued)

Table 10.3 (continued)

Medical knowledge includes the following six competencies
4.1 Identifies, evaluates, and addresses significant symptoms associated with change of condition, based on knowledge of diagnosis in individuals with multiple comorbidities and risk factors
4.2 Formulates a pertinent and adequate differential diagnosis for all medical signs and symptoms, recognizing atypical presentation of disease, for post-acute patients and LTC residents
4.3 Identifies and develops a person-centered medical treatment plan for diseases and geriatric syndromes commonly found in post-acute patients and LTC residents
4.4 Identifies interventions to minimize risk factors and optimize patient/resident safety (e.g., prescribes antibiotics and antipsychotics prudently, assesses the risks and benefits of initiation or continuation of physical restraints, urinary catheters, and venous access catheters)
4.5 Manages pain effectively and without causing undue treatment complications
4.6 Prescribes and adjusts medications prudently, consistent with identified indications and known risks and warnings
Personal quality assessment and performance improvement (QAPI) includes the following three competencies
5.1 Develops a continuous professional development plan focused on post-acute and LTC medicine, utilizing relevant opportunities from professional organizations (AMDA, AGS, AAFP, ACP, SHM, American Academy of Hospice and Palliative Medicine), licensing requirements (state, national, province), and maintenance of certification programs
5.2 Utilizes data (e.g., Physician Quality Reporting System indicators, MDS data, patient satisfaction) to improve care of their patients/residents
5.3 Strives to improve personal practice and patient/resident results by evaluating patient/resident adverse events and outcomes (e.g., falls, medication errors, healthcare-acquired infections, dehydration, rehospitalization)

Katz PR, Wayne M, Evans J, et al. Examining the rationale and processes behind the development of AMDA's competencies for post-acute and long-term care. Annals of Long-Term Care: Clinical Care and Aging. 2014;22(11):36–39

The monthly visit is an opportunity not only to fulfill regulatory tasks but also to operationalize good geriatric care. This includes, but is not limited to:

- Assessing and proactively managing chronic conditions
- Rationalizing and streamlining the medication regimen, eliminating unnecessary medications ("deprescribing") as feasible [29–31]
- Reassessing function; assessing need for rehabilitative services
- Assessing appropriateness of preventive services and screening
- Reviewing the advance care plan and advance directives

In addition, the attending physician should be encouraged to attend the required quarterly care plan meetings whenever possible. Physician input is not only required but is an invaluable contribution to a quality plan of care.

According to federal regulations, each nursing facility must designate a physician to serve as medical director. The medical director is responsible for implementation of resident care policies and the coordination of medical care in the facility [32]. While the attending physicians are responsible for supervising and managing the care of individual residents, the medical director provides oversight for the

medical care, providing clinical guidance regarding the implementation of resident care policies, and collaborates with the facility leadership and staff to develop policies and procedures reflecting current standards of practice [5, 8]. Therefore, together with the administrator and director of nursing services, the medical director is a key leader in the delivery of quality services in the nursing facility.

Since 1991, the American Board of Post-Acute and Long-Term Care Medicine (formerly the American Medical Directors Certification Program) has provided a certification process for nursing facility medical directors. At least one study demonstrated that the presence of a certified medical director independently predicted quality in US nursing homes [33]. Most states do not have specific certification requirements for the nursing facility medical director, but the state of Maryland is an exception requiring "that a medical director's qualifications shall include, but are not limited to 'successful completion of a curriculum in physician management or administration from the American Medical Directors Association or another curriculum approved by the Department or its designee [34].'" Most other states, such as New York, do not require certification but have issued general principles and detailed guidelines regarding the qualifications, roles, and responsibilities of the medical director [35].

As the role of the nursing facility medical director has evolved, AMDA-The Society for Post-Acute and Long-Term Care Medicine updated its 1991 document delineating the roles and responsibilities of the medical director to reflect the growing complexity of services provided by the contemporary nursing facility. This 2011 document describes the position of the nursing home medical director in terms of the roles, functions, and tasks hierarchy [36]. The recommended roles and functions of the nursing facility medical director are listed in Fig. 10.1.

Reducing Avoidable Hospital Transfers

It has been well established that hospitalizations of nursing facility residents are often unnecessary or potentially avoidable. A: study, using structured implicit review of hospital transfers, concluded that in 36% of emergency department transfers and 40% of hospital admissions, the transfer/admit was inappropriate [37]. A later study reported that 67% of hospitalizations were potentially avoidable. The reasons given were lack of available primary care clinicians, inability to obtain lab tests or intravenous fluids, and other issues with care delivery [38]. Unnecessary hospital transfers may be caused by multiple factors, including patient and family preferences, inappropriate hospital discharge, lack of advanced directives, polypharmacy, lack of heart failure protocols, under-recognition of early symptoms or over-recognition of acuity of patient, fear of litigation, and poor communication between the hospital and nursing home [39].

Based on these studies, it would appear that the reasons for avoidable nursing home transfers fall into several categories:

- Staff structure: In homes with open medical staffs and little physician presence, residents are more likely to be transferred to the hospital when a change in condition occurs outside regular hours or when a physician is not on the premises.

Four Key Roles

1. Physician Leadership
   - Serves as physician responsible for the overall care and clinical practice carried out at the facility
2. Patient Care-Clinical Leadership
   - Applies clinical and administrative skills to guide the facility in providing care
3. Quality of Care
   - Helps the facility develop and manage both quality and safety initiatives, including risk management
4. Education, Information and Communication
   - Provides information that helps others (including facility staff, practitioners and those in the community) understand and provide care

Functions

1. Administrative
   - Participates in administrative decision making and recommends and approves relevant policies and procedures
2. Professional Services
   - Organizes and coordinates physician services and the services provided by other professionals as they relate to patient care
3. Quality Assurance and Performance Improvement
   - Participates in the process to ensure the quality of medical care and medically related care, including whether it is effective, efficient, safe, timely, patient-centered and equitable
4. Education
   - Participates in developing and disseminating key information and education
5. Employee Health
   - Participates in the surveillance and promotion of employee health, safety and welfare
6. Community
   - Helps articulate the post-acute and long-term care facility's mission to the community
7. Rights of Individuals
   - Participates in establishing policies and procedures for assuring that the rights of individuals (patients, staff, practitioners, and community) are respected
8. Social, Regulatory, Political and Economic Factors
   - Acquires and applies knowledge of social, regulatory, political and economic factors that relate to patient care and related services
9. Person-Directed Care
   - Supports and promotes person-directed care

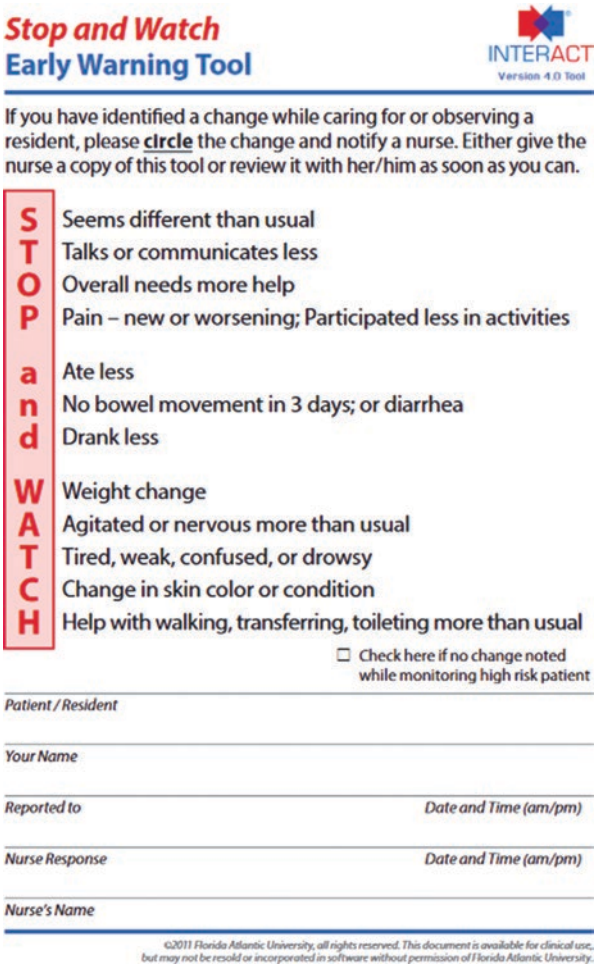
Fig. 10.1 The nursing home medical director: leader and manager. Adapted from AMDA-The Society for Post-Acute and Long-Term Care Medicine. White Paper on the Nursing Home Medical Director: Leader and Manager. March 2011

- Clinical staff capability: In homes with fewer registered nurses, higher resident-to-staff ratios, and/or clinical staff inadequately trained to recognize and manage changes of condition, residents are more likely to be transferred to the hospital when a change of condition occurs.
- Lack of resources: Without adequate available intravenous fluids, antibiotics, and other clinical resources, residents are more likely to be transferred to the hospital.

To address the organizational, cultural, and clinical factors contributing to unnecessary hospital transfers, Ouslander and his colleagues developed a comprehensive, multipronged quality improvement program called Interventions to Reduce Acute Care Transfers (INTERACT). The premise underlying this program is twofold. First, the rate of avoidable transfers to the hospital is considered a proxy for the quality of care, so reduction of avoidable transfers equates to an improvement in the quality of care [40]. Second, effectively impacting the rate of avoidable transfers

requires commitment from the leadership of the facility but must involve all employees of the facility, that is, a commitment from the top to the bottom of the organization but implementation from the bottom to the top. This essentially involves a change in organizational culture, focusing on the reduction of hospital transfers by emphasizing early identification of changes of condition, accurate communication of findings to the medical staff, improved advance care planning, and rapid, effective interventions thereafter [41].

There are three types of tools provided in the INTERACT intervention: communication tools, care paths or clinical tools, and advance care planning tools [42]. To engage the entire facility staff in recognizing and reporting changes of condition, the INTERACT program utilizes the "Stop and Watch" tool. This tool, shown in Fig. 10.2, is a simple form that may be utilized by nursing assistants, housekeeping staff or any other facility employees to report a potential change of condition to nursing staff. Based on an illness warning instrument developed specifically for nursing assistants [43], this validated and standardized form facilitates the communication of observed signs of possible acute illness to the nursing staff.



Stop and Watch
Early Warning Tool

INTERACT
Version 4.0 Tool

If you have identified a change while caring for or observing a resident, please **circle** the change and notify a nurse. Either give the nurse a copy of this tool or review it with her/him as soon as you can.

S	Seems different than usual
T	Talks or communicates less
O	Overall needs more help
P	Pain – new or worsening; Participated less in activities
a	Ate less
n	No bowel movement in 3 days; or diarrhea
d	Drank less
W	Weight change
A	Agitated or nervous more than usual
T	Tired, weak, confused, or drowsy
C	Change in skin color or condition
H	Help with walking, transferring, toileting more than usual

☐ Check here if no change noted while monitoring high risk patient

Patient / Resident

Your Name

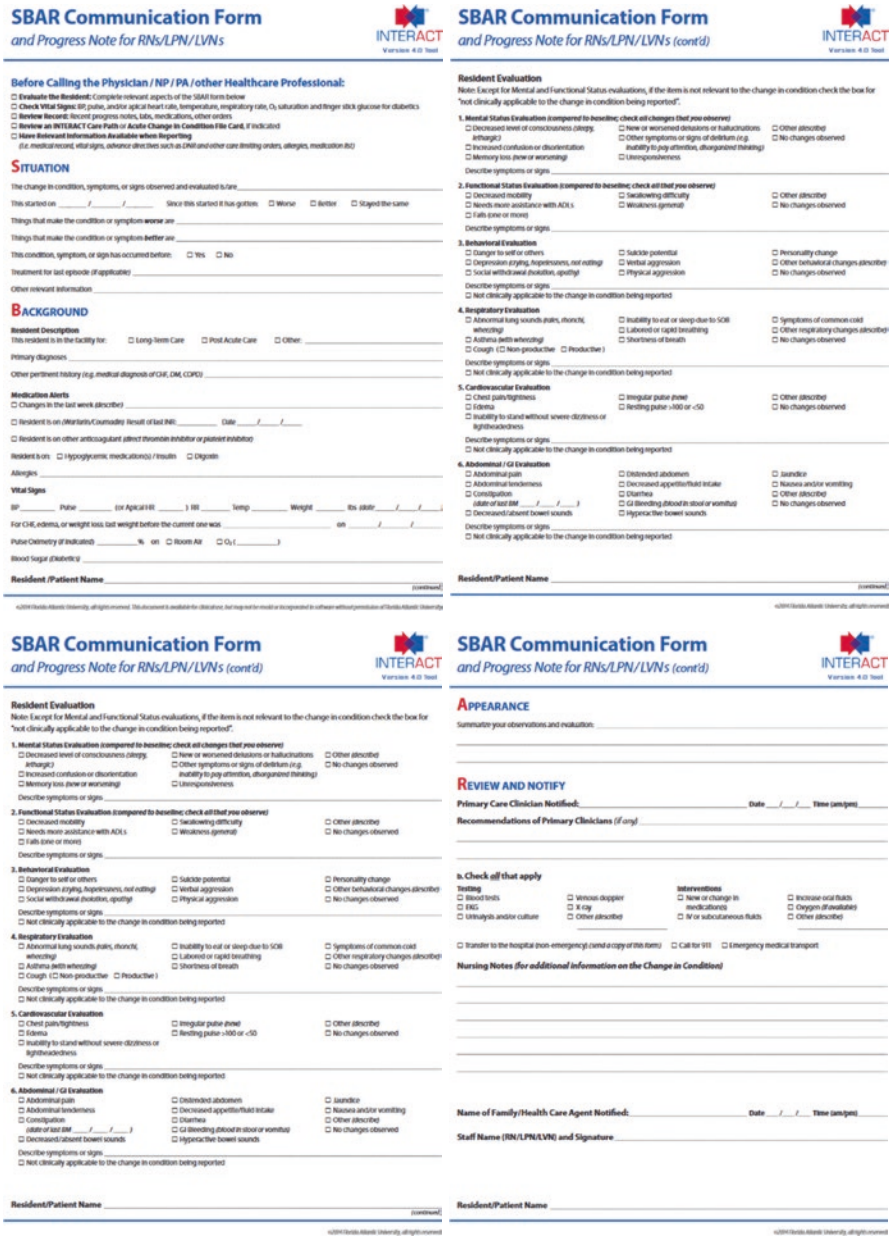
Reported to *Date and Time (am/pm)*

Nurse Response *Date and Time (am/pm)*

Nurse's Name

Fig. 10.2 The Stop and Watch early warning tool. http://interact2.net/docs/INTERACT%20Version%204.0%20Tools/INTERACT%204.0%20NH%20Tools%206_17_15/148604-Stop-and-Watch%20v4_0.pdf. Accessed 17 Dec 2016

Once a potential change in condition is either reported to nursing or observed by nursing, there are tools designed to facilitate the assessment and collection of appropriate clinical information and a form structured to encourage thorough and accurate documentation and communication of clinical findings. This SBAR ("Situation-Background-Appearance-Review") form, shown in Fig. 10.3, is based



SBAR Communication Form
and Progress Note for RNs/LPN/LVNs
INTERACT Version 4.0 Tool

Before Calling the Physician / NP / PA / other Healthcare Professional:

☐ **Evaluate the Resident:** Complete relevant aspects of the SBAR form below
☐ **Check Vital Signs:** BP, pulse, and/or apical heart rate, temperature, respiratory rate, O_2 saturation and finger stick glucose for diabetics
☐ **Review Record:** Recent progress notes, labs, medications, other orders
☐ **Review an INTERACT Care Path** or **Acute Change in Condition File Card,** if indicated
☐ **Have Relevant Information Available when Reporting**
(i.e. medical record, vital signs, advance directives such as DNR and other care limiting orders, allergies, medication list)

SITUATION

The change in condition, symptoms, or signs observed and evaluated is/are _____

This started on ____/____/____ Since this started it has gotten: ☐ Worse ☐ Better ☐ Stayed the same

Things that make the condition or symptom **worse** are _____

Things that make the condition or symptom **better** are _____

This condition, symptom, or sign has occurred before: ☐ Yes ☐ No

Treatment for last episode *(if applicable)* _____

Other relevant information _____

BACKGROUND

Resident Description
This resident is in the facility for: ☐ Long-Term Care ☐ Post Acute Care ☐ Other: _____

Primary diagnoses _____

Other pertinent history *(e.g. medical diagnosis of CHF, DM, COPD)* _____

Medication Alerts
☐ Changes in the last week *(describe)* _____

☐ Resident is on *(Warfarin/Coumadin)* Result of last INR: _____ Date ____/____/____

☐ Resident is on other anticoagulant *(direct thrombin inhibitor or platelet inhibitor)*

Resident is on: ☐ Hypoglycemic medication(s) / Insulin ☐ Digoxin

Allergies _____

Vital Signs

BP _____ Pulse _____ (or Apical HR _____) RR _____ Temp _____ Weight _____ lbs *(date)* ____/____/____

For CHF, edema, or weight loss: Last weight before the current one was _____ on ____/____/____

Pulse Oximetry *(if indicated)* _____% on ☐ Room Air ☐ O_2 (_____)

Blood Sugar *(Diabetics)* _____

Resident /Patient Name _____ *(continued)*

SBAR Communication Form
and Progress Note for RNs/LPN/LVNs (cont'd)
INTERACT Version 4.0 Tool

Resident Evaluation
Note: Except for Mental and Functional Status evaluations, if the item is not relevant to the change in condition check the box for "not clinically applicable to the change in condition being reported".

1. Mental Status Evaluation *(compared to baseline; check all changes that you observe)*
☐ Decreased level of consciousness *(sleepy, lethargic)* ☐ New or worsened delusions or hallucinations ☐ Other *(describe)*
☐ Other symptoms or signs of delirium *(e.g. inability to pay attention, disorganized thinking)* ☐ No changes observed
☐ Increased confusion or disorientation
☐ Memory loss *(new or worsening)* ☐ Unresponsiveness
Describe symptoms or signs _____

2. Functional Status Evaluation *(compared to baseline; check all that you observe)*
☐ Decreased mobility ☐ Swallowing difficulty ☐ Other *(describe)*
☐ Needs more assistance with ADLs ☐ Weakness *(general)* ☐ No changes observed
☐ Falls (one or more)
Describe symptoms or signs _____

3. Behavioral Evaluation
☐ Danger to self or others ☐ Suicide potential ☐ Personality change
☐ Depression *(crying, hopelessness, not eating)* ☐ Verbal aggression ☐ Other behavioral changes *(describe)*
☐ Social withdrawal *(isolation, apathy)* ☐ Physical aggression ☐ No changes observed
Describe symptoms or signs _____
☐ Not clinically applicable to the change in condition being reported

4. Respiratory Evaluation
☐ Abnormal lung sounds *(rales, rhonchi, wheezing)* ☐ Inability to eat or sleep due to SOB ☐ Symptoms of common cold
☐ Asthma *(with wheezing)* ☐ Labored or rapid breathing ☐ Other respiratory changes *(describe)*
☐ Cough (☐ Non-productive ☐ Productive) ☐ Shortness of breath ☐ No changes observed
Describe symptoms or signs _____
☐ Not clinically applicable to the change in condition being reported

5. Cardiovascular Evaluation
☐ Chest pain/tightness ☐ Irregular pulse *(new)* ☐ Other *(describe)*
☐ Edema ☐ Resting pulse >100 or <50 ☐ No changes observed
☐ Inability to stand without severe dizziness or lightheadedness
Describe symptoms or signs _____
☐ Not clinically applicable to the change in condition being reported

6. Abdominal / GI Evaluation
☐ Abdominal pain ☐ Distended abdomen ☐ Jaundice
☐ Abdominal tenderness ☐ Decreased appetite/fluid intake ☐ Nausea and/or vomiting
☐ Constipation ☐ Diarrhea ☐ Other *(describe)*
(date of last BM ____/____/____) ☐ GI Bleeding *(blood in stool or vomitus)* ☐ No changes observed
☐ Decreased/absent bowel sounds ☐ Hyperactive bowel sounds
Describe symptoms or signs _____
☐ Not clinically applicable to the change in condition being reported

Resident/Patient Name _____ *(continued)*

SBAR Communication Form
and Progress Note for RNs/LPN/LVNs (cont'd)
INTERACT Version 4.0 Tool

APPEARANCE

Summarize your observations and evaluation: _____

REVIEW AND NOTIFY

Primary Care Clinician Notified: _____ Date ____/____/____ Time (am/pm) _____

Recommendations of Primary Clinicians *(if any)* _____

a. Check *all* that apply

Testing		Interventions	
☐ Blood tests	☐ Venous doppler	☐ New or change in medications	☐ Increase oral fluids
☐ EKG	☐ X-ray	☐ IV or subcutaneous fluids	☐ Oxygen *(if available)*
☐ Urinalysis and/or culture	☐ Other *(describe)*		☐ Other *(describe)*

☐ Transfer to the hospital (non-emergency) *(send a copy of this form)* ☐ Call for 911 ☐ Emergency medical transport

Nursing Notes *(for additional information on the Change in Condition)*

Name of Family/Health Care Agent Notified: _____ Date ____/____/____ Time (am/pm) _____

Staff Name (RN/LPN/LVN) and Signature _____

Resident/Patient Name _____

Fig. 10.3 The INTERACT SBAR communication form. http://interact2.net/docs/INTERACT%20Version%204.0%20Tools/INTERACT%20V4%20SBAR_Communication_Form%20Dec%2010.pdf. Accessed 17 Dec 2016

on similar forms utilized in nuclear submarines and provides a template for documenting and reporting clinical information to the covering physician. By allowing for efficient collection, organization, and presentation of clinical information, the SBAR process and form improves communication with the covering clinician and improves the timeliness and quality of clinical decision-making.

The cornerstone of INTERACT is its structure as a performance improvement program, based on the "Plan-Do-Study-Act" cycle [44]. The *sine qua non* of a quality improvement intervention is the process of root cause analysis ("study") allowing for identification of opportunities for further improvement ("act"). The INTERACT program requires that each hospital transfer undergoes root cause analysis, usually by a team consisting of the medical director, director of nursing, director of performance improvement, and other clinicians. By identifying root causes for each hospital transfer, particularly potentially avoidable hospital transfers, and implementing further process improvements, clinical quality is continuously monitored and improved, leading to fewer avoidable hospital transfers.

A partial implementation of the INTERACT quality improvement strategies resulted in a 50% reduction of hospitalizations and a 36% reduction in potentially avoidable hospitalizations [45]. A subsequent implementation of the INTERACT program in 30 New York nursing homes showed mixed results, depending on the level of engagement of facility leadership and staff. Whereas overall there was a nonsignificant 10.6% decrease in hospital admissions, there was a 14.3% reduction in nursing homes with the highest engagement and a 27.2% reduction in nursing homes in the highest tertile of baseline hospital admission rates [46]. This suggests that the INTERACT program requires a full commitment of leadership and complete engagement of staff to succeed [47]. It appears to work best in facilities with high baseline hospital transfer rates.

Continuing research on facilities implementing the INTERACT program has shed light on common root causes for potentially avoidable hospitalizations [48, 49]. Based on the lessons from this research, the INTERACT team developed order sets for common conditions associated with potentially avoidable hospitalizations [50]. As INTERACT has become increasingly adopted by nursing facilities across the country and elsewhere in the world, it is setting a standard for primary care in the nursing home.

Collaborative Physician/Advanced Practice Clinician Models

According to federal regulations, after the required first visit, the physician has the option of alternating subsequent visits with an advanced practice clinician (APC), such as a physician assistant or nurse practitioner ([17]). There are no other regulatory limits on the number of visits that may be provided by APCs. This has encouraged the development of collaborative models between physicians and APCs for a number of reasons, including augmenting the availability of medical care provided by physicians, providing a more rapid and proactive approach to preventive maintenance and changes of condition or simply to build a more lucrative business model.

Probably the most widespread and well-known impetus for a implementing collaborative model is to reduce unnecessary hospital transfers, thereby saving costs and improving the quality of care.

Most studies of collaborative care models examine the impact of nurse practitioners or advanced practice nurses (APN). In one review of the literature, five distinct APN roles were identified:

- Provider of primary care to long-term care residents
- Provider of acute care to both short-stay and long-stay residents
- Educator of residents, families, and staff
- Consultant for staff on system-wide patient care issues
- Consultant to organizations on improving facility-wide systems of care

The following outcomes of APN care were found:

- Management of chronic conditions
- Improved functional status
- Reduced hospitalization and emergency department use
- Reduced costs
- Reduced or equivalent mortality
- Increased time spent with residents
- Improved resident, family, and staff satisfaction [51]

The EverCare Model One of the earliest and well-studied models of collaborative care with APCs is the EverCare model. The EverCare model is a hybrid managed care plan and service model characterized by the delivery of care to long-term nursing home residents by advanced practice clinicians in collaboration with nursing facility attending physicians.

In the late 1980s, observing the frequency at which nursing home residents were transferred to the emergency room, the lack of adequate medical supervision, and the need for more coordinated care, two nurse practitioners in Minnesota, Jeannine Bayard, MPH, APRN, and Ruthann Jacobson, MPH, APRN, proposed a capitated, managed care model, in which nurse practitioners employed by the payer would collaborate with the facility's attending physicians to provide care to a panel of residents. By paying the facility a higher rate to manage sick residents in house, avoiding unnecessary hospitalizations, and sharing the resulting savings with the facility, the goal was to provide higher-quality, coordinated care at a lower cost to the plan [52].

Initially established in the Twin cities, the EverCare program was subsequently replicated as a Medicare demonstration program in six cities [53]. Studies at the time demonstrated that nurse practitioners spent about 35% of their working day on direct patient care and another 26% in indirect care activities. Of the latter, 46% was spent interacting with staff, 26% with families and 15% with physicians [54]. Early findings indicated that residents enrolled in the EverCare program were hospitalized at half the frequency of control residents, with significant savings in hospital costs

per nurse practitioner [55]. When hospital admissions and in-house treatment days (known then as "intensive service days") were combined, EverCare enrollees had significantly fewer events than controls [56], suggesting that this collaborative model might have resulted in earlier detection and/or treatment of changes in condition. Family members of EverCare enrollees expressed greater satisfaction with some aspects of medical care than did controls, although satisfaction of EverCare enrollees, themselves, was more comparable with controls [57]. In addition, there is evidence that the EverCare model had higher completion of advance directives compared to controls [58].

In its current form, the EverCare model, now known as OptumCare CarePlus, continues to utilize a collaborative model partnering attending physicians with nurse practitioners or physician assistants. In a Medicare Advantage Institutional Special Needs Plan, eligible nursing home residents must be beneficiaries of Medicare A and Medicare B and be long-term nursing home residents. Prior participation in the Medicare End-Stage Renal Disease Dialysis benefit is an exclusion criterion, but enrollees subsequently requiring dialysis continue to be covered by the plan. A typical APC's panel includes approximately 80–90 enrolled nursing home residents. Depending on enrollment and facility size, the panel may be entirely in one facility or spread over two or more facilities. Depending on the staff model, an APC may collaborate with one or many attending physicians.

Recent studies confirm that the EverCare model successfully addresses important deficits in physician care for geriatric conditions [59]. Additional studies of Medicare managed care programs have shown that residents enrolled in managed care were more likely to have do-not-hospitalize orders, less likely to be transferred to the hospital for acute illness, and had more primary care visits per 90 days than those in traditional Medicare fee for service [60].

The OPTIMISTIC Model In 2012, the Centers for Medicare and Medicaid Services Innovation (CMMI) announced its Initiative to Reduce Avoidable Hospitalizations among Nursing Facility Residents, selecting seven organizations throughout the United States to participate [61, 62]. Participating organizations were located in Alabama, Nebraska, Nevada, Indiana, Missouri, Pennsylvania, and New York City. Here we look at one such project.

Using a similar collaborative approach to EverCare, the Indiana project, "Optimizing Patient Transfers, Impacting Medical Quality and Improving Symptoms: Transforming Institutional Care (OPTIMISTIC)" model, enlisted the participation of 19 nursing facilities. Unlike the EverCare model, OPTIMISTIC staff are not primary care providers. Rather, RNs and NPs work together in a more consultative fashion on collaborative care reviews, providing a structured interview and physical examination, with a focus on geriatric syndromes. Recommendations involving care areas including cognition, function, medication appropriateness, weight changes, skin problems, falls, vaccinations, and pain are discussed with a project geriatrician and finalized. Thereafter, the NP discusses the recommendations with the attending physician. Much like the EverCare model, the OPTIMISTIC model's aim is to improve in-house care and reduce avoidable hospital transfers [63, 64].

The RNs are placed in each facility full time, providing direct clinical support and education and training to the staff. In addition to identifying opportunities to reduce unavoidable hospital transfers, the OPTIMISTIC model has highlighted both the opportunity and difficulty in increasing and improving advance directives [65].

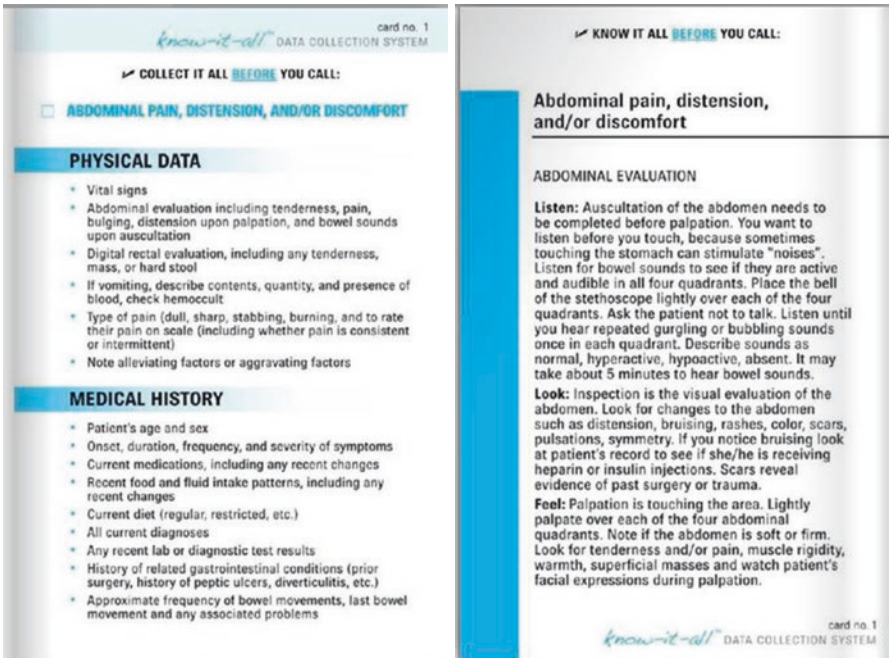
Another function of the OPTIMISTIC NPs is to provide transitional care to residents returning from the hospital. The NPs interventions included obtaining missing discharge summaries, obtaining additional information from the treatment team at the hospital, reconciling and adjusting medications, recommending modifications in treatment, and instituting monitoring and follow-up for existing problems. A majority of the visits required an intervention [66], consistent with prior studies demonstrating the need for improved transitional care between nursing homes and hospitals [67].

Other collaborative models combine the addition of APCs and/or RNs with the use of the INTERACT quality improvement program, telehealth technology, or some combination of the above. As more data is collected in the OPTIMISTIC project and other innovative collaborative models, additional best practices will undoubtedly be delineated. Nonetheless, there is increasing evidence that properly implemented, collaborative models utilizing APCs teamed with physicians can significantly improve the care of nursing facility residents and reduce unnecessary hospitalizations and control costs, while maintaining or improving patient and family satisfaction.

Telehealth in the Nursing Home

Telehealth or telemedicine may be defined as the remote management of patients using real-time electronic communication equipment. In the strictest definition of the term, telehealth has always played a role in nursing homes. As physicians or advance practice clinicians are not always present in the facility, much of the care is managed by telephone, particularly when a resident experiences a change of condition requiring immediate attention. A nurse would assess the resident and call the covering physician with the findings. Based on the information provided, the physician would devise a differential diagnosis and order appropriate diagnostic tests and treatment. If the physician determined that the resident required services not available at the nursing facility, the resident would be transferred to an emergency room, where additional diagnostic and therapeutic interventions could be implemented.

The success of managing residents' health by telephone is dependent on several factors, including the quality of the nursing assessment, the accuracy of the communication with the covering physician, the physician's diagnostic acumen, the quality of the execution of the new plan of care by the nursing home staff, and the willingness of the resident and family to accept the plan of care. Although there are no studies examining the quality of care delivery by telephone in the nursing home, programs such as INTERACT have attempted to improve the quality and success of telephonically delivered care by devising tools specifically designed to improve the thoroughness and accuracy of the nursing assessment as well as the communication and documentation thereof. There are also tools available to assist the nurse in



card no. 1
know-it-all™ DATA COLLECTION SYSTEM

✔ COLLECT IT ALL BEFORE YOU CALL:

☐ ABDOMINAL PAIN, DISTENSION, AND/OR DISCOMFORT

PHYSICAL DATA

- Vital signs
- Abdominal evaluation including tenderness, pain, bulging, distension upon palpation, and bowel sounds upon auscultation
- Digital rectal evaluation, including any tenderness, mass, or hard stool
- If vomiting, describe contents, quantity, and presence of blood, check hemoccult
- Type of pain (dull, sharp, stabbing, burning, and to rate their pain on scale (including whether pain is consistent or intermittent)
- Note alleviating factors or aggravating factors

MEDICAL HISTORY

- Patient's age and sex
- Onset, duration, frequency, and severity of symptoms
- Current medications, including any recent changes
- Recent food and fluid intake patterns, including any recent changes
- Current diet (regular, restricted, etc.)
- All current diagnoses
- Any recent lab or diagnostic test results
- History of related gastrointestinal conditions (prior surgery, history of peptic ulcers, diverticulitis, etc.)
- Approximate frequency of bowel movements, last bowel movement and any associated problems

✔ KNOW IT ALL BEFORE YOU CALL:

Abdominal pain, distension, and/or discomfort

ABDOMINAL EVALUATION

Listen: Auscultation of the abdomen needs to be completed before palpation. You want to listen before you touch, because sometimes touching the stomach can stimulate "noises". Listen for bowel sounds to see if they are active and audible in all four quadrants. Place the bell of the stethoscope lightly over each of the four quadrants. Ask the patient not to talk. Listen until you hear repeated gurgling or bubbling sounds once in each quadrant. Describe sounds as normal, hyperactive, hypoactive, absent. It may take about 5 minutes to hear bowel sounds.

Look: Inspection is the visual evaluation of the abdomen. Look for changes to the abdomen such as distension, bruising, rashes, color, scars, pulsations, symmetry. If you notice bruising look at patient's record to see if she/he is receiving heparin or insulin injections. Scars reveal evidence of past surgery or trauma.

Feel: Palpation is touching the area. Lightly palpate over each of the four abdominal quadrants. Note if the abdomen is soft or firm. Look for tenderness and/or pain, muscle rigidity, warmth, superficial masses and watch patient's facial expressions during palpation.

card no. 1
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Fig. 10.4 Sample pages from "Know-it-all Before You Call". http://www.paltc.org/sample-know-it-all-when-youre-called-diagnosing-system. Accessed 17 Dec 2017

assessing and collecting appropriate information prior to calling the covering physician and to assist the covering physician in asking for appropriate clinical information, devising a differential diagnosis and care plan and determining whether a transfer to the emergency room is prudent [68, 69]. An example is shown in Fig. 10.4. Although these "Know-it-all" tools make sense as clinical decision aids, there is little published literature on the frequency of their use or efficacy.

Recent advances in internet technology coupled with increases in broadband width allow more sophisticated telemedicine devices to be introduced into the nursing home. These devices allow a greater amount of diagnostic data to be transmitted to the covering physician. For instance, telemedicine devices may include a camera to transmit real-time video of the resident, an electronic stethoscope to transmit real-time cardiac or lung sounds, an otoscope to visualize the ear, and an ophthalmoscope to visualize the retina. Machines may also transmit EKG or even ultrasounds. In most facilities, the machine is brought to the bedside and operated by a nurse, but in some programs, an emergency medical technician is stationed in the facility specifically to provide this service. In either case, the information is transmitted to the physician on call, who then uses the information to devise a plan of care or determine that the resident should be transferred to the hospital. Some of these technologies have been integrated into individual projects funded by CMS's Initiative to Reduce Avoidable Hospitalizations described above.

There is widespread agreement among nursing home healthcare providers that the use of advanced telehealth would improve timeliness of care, although there are varying opinions about who would be providing the remote oversight and consultative service [70]. Preliminary studies have shown that using telemedicine physician coverage during off-hours may reduce hospitalizations and generate Medicare cost savings [71]. Telemedicine may also be used to provide specialty services not otherwise available to the nursing facility. Obtaining the services of a dermatologist by telemedicine has been well accepted in the health system [72], and the use of telemedicine services to provide psychiatric and psychological services has grown and is under study [73].

As the enthusiasm for telemedicine services in the nursing home has grown [74], there is a need for continuing research to examine its effect on hospitalizations, costs, and other quality measures. The same may be said for the variety of nursing home primary care models being developed in today's evolving healthcare environment.

References

1. Butler RN. Why survive? Being old in America. New York: Harper & Row; 1975.
2. Subcommittee on Long-Term Care of the Special Committee on Aging. United States Senate. Nursing home care in the United States: failure in public policy. Washington: U.S. Government Printing Office; 1974.
3. Committee on Nursing Home Regulation, Institute of Medicine. Improving the quality of care in nursing homes. Washington: National Academies Press; 1986.
4. Omnibus Budget Reconciliation Act of 1987. https://www.gpo.gov/fdsys/pkg/STATUTE-101/pdf/STATUTE-101-Pg1330.pdf. Accessed 15 Oct 2016.
5. Centers for Disease Control and Prevention. National Center for Health Statistics. Long-term care providers and services users in the United States: data from the National Study of Long-Term Care Providers, 2013–2014. 2016.
6. The Kaiser Commission on Medicaid and the Uninsured. Medicaid and long-term services and supports: a primer. Kaiser Family Foundation. 2015.
7. Medicare Payment Advisory Commission (MedPAC). Report to the Congress: Medicare Payment Policy. Chapter 7: skilled nursing facility services. March 2016. http://www.medpac.gov/docs/default-source/reports/chapter-7-skilled-nursing-facility-services-march-2016-report-.pdf?sfvrsn=0. Accessed 8 Oct 2016.
8. Centers for Disease Control and Prevention. National Center for Health Statistics. Nursing home care. 2016. http://www.cdc.gov/nchs/fastats/nursing-home-care.htm. Accessed 8 Oct 2016.
9. Dwyer LL, Han B, Woodwell DA, et al. Polypharmacy in nursing home residents in the United States: results of the 2004 National Nursing Home Survey. Am J Geriatr Pharmacother. 2010;8:63–72.
10. Nguyen JK, Fouts MM, Kotabe SE, et al. Polypharmacy as a risk factor for adverse drug reactions in geriatric nursing home residents. Am J Geriatr Pharmacother. 2006;4:36–41.
11. Medicare Payment Advisory Commission (MedPAC). Skilled nursing facility services payment system. 2016. http://medpac.gov/docs/default-source/payment-basics/medpac_payment_basics_16_snf_final.pdf?sfvrsn=0. Accessed 11 Dec 2016.
12. Sahyoun NR, Pratt LA, Lentzner H, et al. Centers for Disease Control and Prevention. National Center for Health Statistics. The changing profile of nursing home residents: 1985–1997. 2001. https://www.cdc.gov/nchs/data/ahcd/agingtrends/04nursin.pdf. Accessed 8 Oct 2016.

13. Williams C, Rosen J, O'Malley M. Profiles of nursing home residents on Medicaid. Washington: The Kaiser Commission on Medicaid and the Uninsured; 2006.
14. Kojima G. Prevalence of frailty in nursing homes: a systematic review and meta-analysis. J Am Med Dir Assoc. 2015;16:940–5.
15. Kaiser Commission on Medicaid and the Uninsured. Private long-term care insurance: a viable option for low and middle-income seniors? 2006. http://www.kff.org/uninsured/upload/7459.pdf. Accessed 20 Nov 2016.
16. Kelly A, Conell-Price J, Covinsky K, et al. Length of stay for older adults residing in nursing homes at the end of life. J Am Geriatr Soc. 2010;58:1701–6.
17. Code of Federal Regulations, 42 CFR §483.30 Physician Services.
18. AMDA-The Society for Post-Acute and Long-Term Care Medicine. Role of the attending physician in the nursing home. 2003. http://www.paltc.org/amda-white-papers-and-resolution-position-statements/role-attending-physician-nursing-home. Accessed 16 Oct 2016.
19. Diamant J. Responsibilities of attending physicians in long-term care facilities. J Am Med Dir Assoc. 2002;3(4):254–8.
20. Diamant J. Roles and responsibilities of attending physicians in skilled nursing facilities. J Am Med Dir Assoc. 2003;4(4):231–43.
21. The Medical Direction and Medical Care Work Group, New York State Department of Health. Role of the attending physician in the nursing home. 2011. https://www.health.ny.gov/professionals/nursing_home_administrator/docs/11-13_att_phys_role.pdf. Accessed 16 Oct 2016.
22. Centers for Medicare & Medicaid Services. Better care. Smarter spending. Healthier people: paying providers for value, not volume. 2015. https://www.cms.gov/Newsroom/MediaReleaseDatabase/Fact-sheets/2015-Fact-sheets-items/2015-01-26-3.html. Accessed 10 Dec 2016.
23. Katz PR, Karuza J, Kolassa J, Hutson A. Medical practice with nursing home residents: results from the National Physician Professional Activities Census. J Am Geriatr Soc. 1997;45:911–7.
24. American Academy of Family Physicians. Practice profile I survey. 2008. http://www.aafp.org/about/the-aafp/family-medicine-facts.html. Accessed 20 Nov 2016.
25. Katz PR, Karuza J, Intrator O, et al. Medical staff organization in nursing homes: scale development and validation. J Am Med Dir Assoc. 2009;10:498–504.
26. Katz PR, Karuza J, Lima J, Intrator O. Nursing home medical staff organization: correlates with quality indicators. J Am Med Dir Assoc. 2011;12:655–9.
27. Lima JC, Intrator O, Karuza J, et al. Nursing home medical staff organization and 30-day rehospitalizations. J Am Med Dir Assoc. 2012;13:552–7.
28. Katz PR, Wayne M, Evans J, et al. Examining the rationale and processes behind the development of AMDA's competencies for post-acute and long-term care medicine. Ann Long-Term Care: Clin Care Aging. 2014;22(11):36–9.
29. Garfinkel D, Mangin D. Feasibility study of a systematic approach for discontinuation of multiple medications in older adults: addressing polypharmacy. Arch Intern Med. 2010;170(18):1648–54.
30. Newton PF, Levinson W, Masen D. The geriatric medication algorithm: a pilot study. J Gen Intern Med. 1994;9:164–7.
31. Scott IA, Hilmer SN, Reeve E, et al. Reducing inappropriate polypharmacy. The process of deprescribing. JAMA Intern Med. 2015;175(5):827–34.
32. Code of Federal Regulations, 42 CFR §483.75 Quality Assurance and Performance Improvement.
33. Rowland FN, Cowles M, Dickstein C, Katz PR. Impact of medical director certification on nursing home quality of care. J Am Med Dir Assoc. 2009;10:431–5.
34. Code of Maryland Regulations. Title 10 § 10.07.02.11 Medical Director Qualifications.
35. The Medical Direction and Medical Care Work Group, New York State Department of Health. Role of the Medical Director in the Nursing Home. 2011. https://www.health.ny.gov/professionals/nursing_home_administrator/docs/11-13_med_dir_role.pdf. Accessed 25 Nov 2016.
36. AMDA-The Society for Post-Acute and Long-Term Care Medicine. White paper on the nursing home medical director: leader and manager. 2011. http://www.paltc.org/sites/default/files/White%20Paper%20NH%20Medical%20Director%20Leader%20and%20Manager.pdf. Accessed 25 Nov 2016.

37. Saliba D, Kington R, Buchanan J, et al. Appropriateness of the decision to transfer nursing facility residents to the hospital. J Am Geriatr Soc. 2000;48:154–63.
38. Ouslander JG, Lamb G, Perloe M, et al. Potentially avoidable hospitalizations of nursing home residents: frequency, causes, and costs. J Am Geriatr Soc. 2010;58:627–35.
39. Morley JE. Opening Pandora's box: the reasons why reducing nursing home transfers to hospital are so difficult. J Am Med Dir Assoc. 2016;17:185–7.
40. Ouslander JG, Weinberg AD, Phillips V. Inappropriate hospitalization of nursing facility residents: a symptom of a sick system of care for frail older people. J Am Geriatr Soc. 2000;48:230–1.
41. Ouslander JG, Bonner A, Herndon L, Shutes J. The interventions to reduce acute care transfers (INTERACT) quality improvement program: an overview for medical directors and primary care clinicians in long term care. J Am Med Dir Assoc. 2014;15:162–70.
42. Interventions to Reduce Acute Care Transfers (INTERACT). 2016. www.interact2.net/about.html. Accessed 3 Dec 2016.
43. Boockvar K, Brodie HD, Lachs M. Nursing assistants detect behavior changes in nursing home residents that precede acute illness: development and validation of an illness warning instrument. J Am Geriatr Soc. 2000;48:1086–91.
44. Langley GJ, Moen RD, Nolan KM, et al. The improvement guide: a practical approach to enhancing organizational performance. 2nd ed. San Francisco: Jossey-Bass; 2009.
45. Ouslander JG, Perloe M, Givens JH, et al. Reducing potentially avoidable hospitalizations of nursing home residents: results of a pilot quality improvement project. J Am Med Dir Assoc. 2009;10:644–52.
46. Tena-Nelson R, Santos K, Weingast E. Reducing potentially preventable hospital transfers: results from a thirty nursing home collaborative. J Am Med Dir Assoc. 2009;13:651–6.
47. Bonner A, Tappen R, Herndon L, Ouslander J. The INTERACT institute: observations on dissemination of the INTERACT quality improvement program using certified INTERACT trainers. Gerontologist. 2015;55:1050–7.
48. Ouslander JG, Naharci I, Engstrom G, et al. Lessons learned from root cause analyses of transfers of skilled nursing facility (SNF) patients to acute hospitals: transfers rated as preventable versus nonpreventable by SNF staff. J Am Med Dir Assoc. 2016;17:596–601.
49. Ouslander JG, Naharci I, Engstrom G, et al. Root cause analyses of transfers of skilled nursing facility patients to acute hospitals: lessons learned for reducing unnecessary hospitalizations. J Am Med Dir Assoc. 2016;17:256–62.
50. Ouslander JG, Handler SM. Consensus-derived interventions to reduce acute care transfer (INTERACT)—compatible order sets for common conditions associated with potentially avoidable hospitalizations. J Am Med Dir Assoc. 2015;16:524–6.
51. Bakerjian D. Care of nursing home residents by advanced practice nurses. Res Gerontol Nurs. 2008;1:177–85.
52. Bayard J, Jacobson R. How two NPs changed managed care: the birth of Evercare. Interview by Jill Rollet. Adv Nurse Pract. 2007;15(5):73–5.
53. Kane RL, Huck S. The implementation of the EverCare demonstration project. J Am Geriatr Soc. 2000;48:218–23.
54. Kane RL, Flood S, Keckhafer G, Rockwood T. How EverCare nurse practitioners spend their time. J Am Geriatr Soc. 2001;49:1530–4.
55. Kane RL, Keckhafer G, Flood S, et al. The effect of EverCare on hospital use. J Am Geriatr Soc. 2003;51:1427–34.
56. Kane RL, Flood S, Keckhafer BA, et al. Nursing home residents covered by Medicare risk contracts: early findings from the EverCare evaluation project. J Am Geriatr Soc. 2002;50:719–27.
57. Kane RL, Keckhafer G, Robst J. Evaluation of the Evercare demonstration program final report. Minneapolis: Division of Health Service Research and Policy, School of Public Health, University of Minnesota; 2002.
58. Lawrence JF. The advance directive prevalence in long-term care: a comparison of relationships between a nurse practitioner healthcare model and a traditional healthcare model. J Am Acad Nurse Pract. 2009;21(3):179–85.

59. Wenger NS, Roth CP, Martin D, et al. Quality of care provided in a special needs plan using a nurse care manager model. J Am Geriatr Soc. 2011;59:1810–22.
60. Goldfeld KS, Grabowski DC, Caudry DJ, Mitchell SL. Health insurance status and the care of nursing home residents with advanced dementia. JAMA Intern Med. 2013;173(22):2047–53.
61. Centers for Medicare & Medicaid Services. Initiative to reduce avoidable hospitalization among nursing facility residents. CMS Web Site. 2016. http://go.cms.gov/1QNwsfG. Accessed 10 Dec 2016.
62. Centers for Medicare & Medicaid Services. State operations manual. Appendix PP—guidance to surveyors for long term care facilities. (Rev 157, 06-10-16). 2016. https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/downloads/som107ap_pp_guidelines_ltcf.pdf. Accessed 25 Nov 2016.
63. Holtz LR, Maurer H, Nazir A, et al. OPTIMISTIC: a program to improve nursing home care and reduce avoidable hospitalizations. In: Malone ML, Capezuti EA, Palmer RM, editors. Geriatrics models of care: bringing 'best practice' to an aging America. Cham: Springer International Publishing; 2015. p. 287–92.
64. Unroe KT, Nazir A, Holtz L, et al. The optimizing patient transfers, impacting medical quality, and improving symptoms: transforming institutional care approach: preliminary data from the implementation of a centers for Medicare and Medicaid services nursing facility demonstration project. J Am Geriatr Soc. 2015;63:165–9.
65. Hickman SE, Unroe KT, Ersek MT, et al. An interim analysis of an advance care planning intervention in the nursing home setting. J Am Geriatr Soc. 2016;64:2385–92.
66. Nazir A, Unroe KT, Buente B, et al. OPTIMISTIC transition visits: a model to improve hospital to nursing facility transfers. Ann Long-Term Care: Clin Care Aging. 2016;24(7):31–6.
67. LaMantia MA, Scheunemann LP, Viera AJ, et al. Interventions to improve transitional care between nursing homes and hospitals: a systematic review. J Am Geriatr Soc. 2010;58(4):777–82.
68. AMDA—The Society for Post-Acute and Long-Term Care. Know-it-all before you call: data collection system. Columbia: AMDA—The Society for Post-Acute and Long-Term Care; 2015.
69. AMDA—Society for Post-Acute and Long-Term Care. Know-it-all when you're called: diagnosing system. Columbia: AMDA—The Society for Post-Acute and Long-Term Care; 2015.
70. Driessen J, Bonhomme A, Chang W, et al. Nursing home provider perceptions of telemedicine for reducing potentially avoidable hospitalizations. J Am Med Dir Assoc. 2016;17:519–24.
71. Grabowski DC, O'Malley AJ. The use of telemedicine can reduce hospitalizations of nursing home residents and generate savings for Medicare. Health Aff. 2014;33(2):244–50.
72. Landow SM, DH O, Weinstock MA. Teledermatology within the Veterans Health Administration, 2002–2004. Telemed J E Health. 2015;21:769–73.
73. Volicer. Nursing home telepsychiatry. J Am Med Dir Assoc. 2015;16:7–8.
74. Morley JE. Telemedicine: coming to nursing homes in the near future. J Am Med Dir Assoc. 2016;17:1–3.