Innovations in Quality Improvement in Long-Term Care

The purpose of this column is to discuss innovations and quality improvement advancements across the various long-term care settings. This column is coordinated by Marilyn J. Rantz, PhD, RN, FAAN, NHA, rantzm@missouri.edu.

Initiative to Test a Multidisciplinary Model With Advanced Practice Nurses to Reduce Avoidable Hospitalizations Among Nursing Facility Residents

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CONSIDER the current reality for Mrs Florence Jones, a woman of advanced age and mild dementia in a long-term care

facility, who insists everyone call her "Flossie":

On May 1, Karen, the nurse aide taking care of Flossie, needs to assist Flossie to the restroom more than usual. Since her urine does not have an odor, the nurse aide attributes this increased urination to the iced tea served at lunch today. Karen remarks to Jane, the LPN (licensed practical nurse), that the iced tea at lunch sure got Flossie going today, and Jane documents normal toileting for Flossie. Both Karen and Jane go home at the end of their 12-hour shifts.

On May 2, Flossie has a new nurse aide, Chloe, and a new nurse, Joan. They also note increased urination but do not make anything of it as it was documented that Flossie had normal toileting yesterday. Joan document Flossie's increased urination but takes no further action, as it is not a trend and Flossie has a normal temperature. On May 3, Flossie's nurse aide Karen returns, now with a new nurse, Jennifer. Karen notices that Flossie is not herself today, but now her urination is normal but a bit decreased. Karen concludes that her increased urination has resolved and that Flossie's tiredness may be due to overexertion. She does not communicate this, as it seems inconsequential.

On May 4, Chloe returns to find Flossie unresponsive. She reports this to Flossie's nurse Joan, who also cannot arouse Flossie and who notes a high pulse rate and low blood pressure. Flossie's attending physician is called, who agrees with Joan's assessment that Flossie be transferred to the emergency department for further evaluation and treatment. In the urgency of the situation, Flossie's do-not-resuscitate (DNR) status is neither communicated to the emergency department staff nor is her DNR order included with her transfer paperwork. The emergency department staff therefore considers Flossie a "full code" and transfers her to the intensive care unit for signs of sepsis, which is later confirmed by her positive blood culture report. Once Flossie begins producing urine, a urinary tract infection is identified as the likely source.

This scenario illustrates how a simple problem such as acute cystitis in a frail elderly patient can escalate to a life-threatening problem. Sadly, this scenario is not fiction but likely a reality played out many times over in long-term care facilities across the country. Factors contributing to this scenario are frequent changes in staff, lack of recognition of subtle symptoms, lack of typical symptoms such as fever in many elderly patients, and decreased communication ability of the older person with mild dementia. Recognition of her symptoms on day 1 or 2 of illness could have led to an examination of her urine, closer supervision by the nurse and/or the physician, and a prescribed antibiotic that would have cured her problem, without the result of severe illness and transfer to the hospital. We can do better for Flossie . . . .

Faculty at the Sinclair School of Nursing at the University of Missouri, with its 20-year history of partnering with Missouri nursing homes to improve quality of care, have assembled an extraordinary team of organizations to develop and implement the Missouri Quality Initiative for Nursing Homes (MOQI). This call to action was in response to the Centers for Medicare & Medicaid Services (CMS) funding opportunity announcement: *Initiative to Reduce Avoidable Hospitalizations Among Nursing Facility Residents*. The team includes the Quality Improvement Program for Missouri (QIPMO), Primaris (the Missouri Quality Improvement Organization), Leading-Age Missouri, Missouri Health Care Association, Missouri Hospital Association, Missouri Health Connection, Missouri Association of Long Term Care Physicians, Missouri Nurses Association, the Alzheimer's Association, and others.

On the basis of research conducted at the University of Missouri in the 1990s,[1-3] the QIPMO was designed and implemented to disseminate best practices and improve quality of care in nursing homes statewide. Dr Rantz at the Sinclair School of Nursing has directed the statewide program since its onset in 1999.[4] Currently, the QIPMO comprises 4 nurses with graduate nursing education and gerontological nursing expertise and a nursing home administrator who provide expert consultation to nursing facilities across the state. The development of the MOQI was based on the evidence base, expertise, and success of the QIPMO and existing relationships with

stakeholders, including nursing homes, hospitals, and others. It was initiated early in 2013 as an intervention model that will be developed and implemented over a 4-year evaluation period. While based on the success and lessons learned from the QIPMO, the new model offers some unique features that are described later in the MOQI intervention model. The goals of MOQI are to (1) reduce the frequency of avoidable hospital admissions and readmissions by 35%, (2) improve nursing home residents' health outcomes, (3) improve the process of transitioning between inpatient hospitals and nursing facilities, and (4) reduce overall health care spending without restricting access to care or choice of providers.

SAMPLE

Missouri, particularly the St Louis area, has been identified as a region of the country with the highest rehospitalizations for key diagnoses of acute myocardial infarction, congestive heart failure, and pneumonia[5] and readmissions within 30 days of discharge for all medical or surgical conditions.[6] Examining Missouri nursing home and hospitalization data from 2010, nursing homes and hospitals were identified within the St Louis area that have some of the highest hospitalization rates in the state. A requirement was that the homes had to have evidence of good quality of care (from CMS publicly available survey and quality data) and be willing to engage in implementation of the MOQI intervention model. Also considered was that the nursing homes were transferring to and from the high readmission hospitals in the St Louis area. Sixteen facilities meeting these criteria were recruited with a total of more than 2500 residents. During the first 6 months of resident recruitment, more than 2000 residents who are Medicare/Medicaid beneficiaries have agreed to participate in our MOQI intervention model and thousands more over the next 3 years are anticipated. Inclusion criteria for residents require that residents are long stay—those who reside in a nursing facility for 100 days or more or are identified on the Minimum Data Set assessment as residents expected to remain in the facility, as defined by the CMS. Exclusions include short stay because the focus of the evaluation is to affect the outcomes and costs of long-stay nursing home residents.

MOQI INTERVENTION MODEL

The MOQI intervention model (Figure) illustrates the multidisciplinary vision of transforming certified nursing homes with high hospitalization rates and populations of Medicare/Medicaid beneficiaries through the MOQI intervention into facilities with reduced rates of avoidable hospitalizations, improved health outcomes and transitions between hospitals and nursing homes, and reduced health care costs. The MOQI intervention model uses as its basis evidence from INTERACT II processes and tools,[7] QIPMO,[2-4] advanced practice registered nurses (APRNs), and a multidisciplinary support team to accomplish the objectives of the initiative.

As illustrated in the center of the Figure, participating nursing homes have the typical staff found in nursing homes nationwide. Two foundational levels were added to the current status of the facilities: APRNs working full-time within each home and an MOQI intervention team that supports each APRN and nursing home in the initiative. The MOQI intervention team is designed using lessons learned (clinical focus on the basics of care with the nursing staff by a nurse with graduate education in nursing and expertise in gerontological nursing) from the state's successful QIPMO team.[3,4] Added to the QIPMO for the MOQI model are the project medical director, a licensed social work care transitions coach, a health information technology coordinator, and an RN INTERACT/QIPMO coach. The MOQI intervention model is more intensive than the QIPMO, providing the multidisciplinary team that works closely with the APRNs (in Missouri, these nurses can be clinical nurse specialists or nurse practitioners) designated for each facility to support
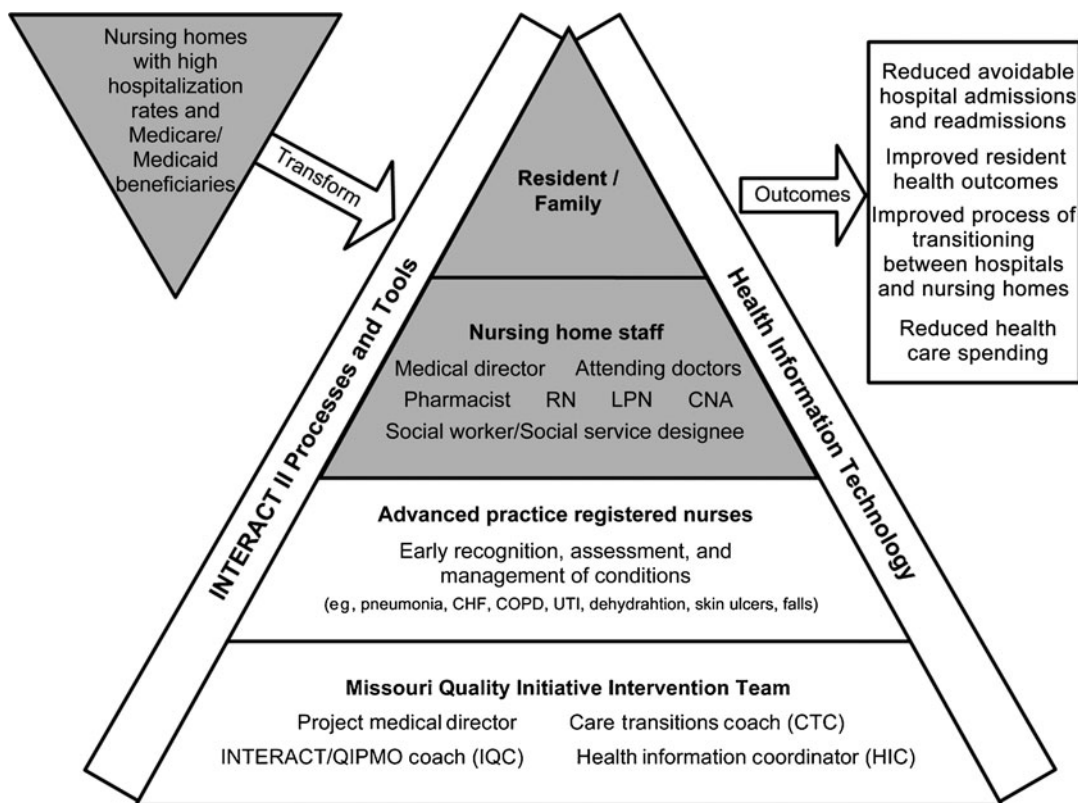
Figure. Missouri Quality Initiative for Nursing Homes intervention model. CHF indicates congestive heart failure; CNA, certified nursing assistant; COPD, chronic obstructive pulmonary disease; LPN, licensed practical nurse; UTI, urinary tract infection.

implementation of the intervention in each facility. More intensive coaching through the MOQI is designed to address the persistent problem of excessive health care costs related to unnecessary hospitalizations of nursing home residents.

The left side of the triangle (Figure) illustrates the use of processes and tools from the validated INTERACT II program[7]; the INTERACT/QIPMO coach works with each facility's APRNs to educate all staff members about INTERACT II tools. This coach develops relationships with each facility's nursing staff and care delivery system to embed the processes of INTERACT II into their care delivery systems. The INTERACT/QIPMO coach works within each unique care delivery system and culture to facilitate implementation and sustainability of the MOQI initiative, taking into considera-

tion uniqueness of delivery systems and staff communication patterns between and within systems.

The right side of the triangle illustrates the addition/enhancement of health information technology to accomplish the initiative goals. While nursing homes have collected resident assessment data since 1990 and transmitted it electronically since 1998,[8] most use electronic care planning and billing systems[9] and few use complete electronic health records.[10] For care transitions and management of older adults with complex problems to occur in the nursing homes, improvements in real-time electronic communication must be accomplished. This is a major focus of MOQI intervention in 2 ways: (1) the health information coordinator works directly with facility staff to improve communication workflow and

the use of electronic communication, and (2) Missouri Health Connection, a federally designated Health Information Exchange service for Missouri, is supporting secure electronic communication among health care providers within and between health care agencies. This collaborative effort is electronically connecting hospitals and nursing homes in the initiative and is facilitated by the health information coordinator.

Proactive discussions about end-of-life decision making are essential in nursing homes and community-based care.[11] A key focus of the MOQI intervention is developing and implementing end-of-life decision-making and communication systems to honor residents' and family wishes. The social work care transitions coach, a key member of the MOQI intervention team in the foundation of the triangle (Figure), works with participating nursing homes so that he or she can develop working relationships with staff, residents, and families. The care transitions coach works closely with the staff of each nursing facility, such as the social worker/social service designee, primary care providers, nursing staff, and APRNs, to ensure that systems are in place for consistent communication of each resident's (or proxy's) decisions about advance care directives (including code status, hospitalization, and specific treatments such as antibiotics), while residing in the home and during care transitions.

The multidisciplinary support team of the MOQI model is designed to work with the APRNs to not only reduce hospitalizations but also improve hospital transitions, improve communication, and reduce polypharmacy. Specifically, the MOQI intervention team focuses on these processes at many levels. The care transitions coach builds relationships with hospital staff and nursing homes by implementing effective processes for transitions of care that occur when Medicare/Medicaid beneficiaries are transferred between the facilities. The goal is that handoffs are smooth, with necessary information flowing accurately in both directions, which will be the

primary focus of the health information technology coordinator. It is widely recognized that health information technology supports accurate information flow about health conditions and that *not* having systems in place may result in unnecessary health care procedures, medication errors, and other adverse events.[12] To improve accurate health information flow, the health information coordinator is focusing on medication reconciliation between agencies (nursing home, pharmacy, hospital, primary care). Similarly, the APRNs are working collaboratively with the project medical director and are role modeling review and assessment of residents' medication necessity to reduce both polypharmacy and the inappropriate prescribing of psychotropic medications with nursing staff.

The evidence base of the MOQI intervention model is grounded in research literature measuring the impact of APRNs in nursing homes to improve care and outcomes of older adults.[7,13-15] Major health care cost savings and reduced hospitalizations have been measured when APRNs work in nursing homes.[14] This appears to be related to the expertise in clinical management of health conditions, early detection, and problem solving with nursing staff to provide the needed care to manage the conditions within the resident's "home" environment.

Primary foundational evidence for the MOQI intervention model comes from process and outcome research about the QIPMO in Missouri.[2,3] Providing clinical consultation to nursing homes by nurses with graduate education in gerontological nursing has demonstrated improvements in resident outcomes and major cost savings.[4] For this initiative, we have enhanced the QIPMO model with the addition of a care transitions coach to focus on care transitions and coaching nursing home staff to enhance communication with families and residents. There is evidence for the effectiveness of interventions of social workers in long-term care to improve care decision making and resident and family satisfaction with care.[16-18]

ROLE OF THE APRN

A primary role of the APRN hired to work in each nursing home is to provide direct services to residents while mentoring, role modeling, and educating the nursing staff about early symptom/illness recognition, assessment, and management of health conditions commonly affecting nursing home residents. While the primary focus of the work is to provide services to dually eligible Medicare/Medicaid beneficiaries, it is anticipated that all residents living in the facility are benefiting from the work of APRNs, due to the diffusion of the intervention throughout each home. These APRNs are focusing on common reasons for rapid functional decline that also increase the risk of hospitalization, including pneumonia, congestive heart failure, chronic obstructive pulmonary disease and asthma, urinary tract infections, dehydration, skin ulcers, and falls.[5,19-21]

Early recognition, assessment, and management of residents' conditions, as well as developing positive, collaborative relationships with primary care providers of the residents in the facility, enable the APRNs to intervene early when changes in health status occur. Early intervention stabilizes conditions and makes sure approaches to care are in place so that the best management of conditions can occur within the long-term care setting, avoiding a hospitalization. Hospitalization, in many cases, may do more harm with the trauma of relocation, as well as unintended consequences of skin, nutritional, and functional decline.[22-24] Faster recovery from acute changes is more likely if conditions are managed within the nursing facility proactively with early detection.

Role modeling and education of nursing home staff have been creatively embraced by the APRNs. One APRN describes his success with focusing "drive-by" education on each nursing unit on priority topics that are determined by analyzing the INTERACT STOP and WATCH tools completed by the staff the prior weeks. On the basis of the clinical problems that the staff members are detecting, the APRN has focused discussions about subtle changes with early detection of congestive heart failure, urinary tract infection, or other frequent problem noted on the tools. This approach reinforces the assessment skills the staff members are developing and challenges them to learn and improve skills. Another APRN focuses her attention on developing staff awareness of clarifying advance directives during routine care conferences so that information is current and in line with each resident's health status and desire. Still another APRN spends key time with staff reviewing medications to improve clinical status and reduce the complications of polypharmacy.

COLLABORATIONS AND STAKEHOLDERS

The MOQI initiative has a wide range of collaborators that include Primaris (the Missouri Quality Improvement Organization) and Missouri Health Connection. Both organizations have health information technology expertise relationships with health care providers in the state and specifically in the St Louis area. Other collaborators include LeadingAge Missouri, Missouri Health Care Association, Missouri Hospital Association, Missouri Association of Long Term Care Physicians (Missouri Chapter of the American Medical Directors Association), Missouri Nurses Association, St Louis Alzheimer's Association, representatives from state certification and survey and Medicaid agencies, and residents' family members of participating nursing homes and the hospitals in the St Louis area that discharge/admit the nursing home residents from the facilities in the initiative. These collaborators are key members in the MOQI's active Stakeholder Advisory Board that meets quarterly to guide the initiative.

Sustainability of the MOQI intervention model is a central focus of this initiative. The value of APRNs in nursing homes is well documented, but adoption is not widespread

across the country. Missouri has been a slow adopter due to the burdensome regulatory restrictions of the Missouri Nurse Practice Act. With this initiative and state efforts to revise, it is hoped that regulations will change. It is the initiative's plan to develop a sustainable business model for APRNs hired for each facility to be able to bill for their services so that they can continue to provide care in the nursing homes after the grant ends. With 16 participating nursing facilities, it is anticipated that several different, sustainable business models will emerge. Differences are likely because nursing homes have highly individualized approaches to their businesses, and there is wide variation in corporate business practices that influence billing. By the end of the grant, it is intended that a plan will be in place to transition APRNs into fundable practice plans so that they can continue in their roles to enable the positive outcomes and cost savings to be sustained.

The MOQI intervention team and APRNs are working within existing relationships with health care providers and health plans of the residents' choice. The MOQI intervention does not require that residents change providers or enroll in a health plan. Existing relationships between residents and health care providers are undisturbed.

A NEW VISION FOR THE FUTURE

After participating nursing homes experience the MOQI intervention model, the following is the new vision for Flossie, the woman of advanced age and mild dementia living in a long-term care facility described at the beginning of this application:

On May 1, Karen, the nurse aide taking care of Flossie, needs to assist Flossie to the restroom more than usual. Her urine does not have an odor, so it may be due to the ice tea served at lunch today. Karen shares this information with Jane, Flossie's LPN for the day. Both Karen and Jane have recently attended a short educational presentation about the subtle signs of urinary tract infection in older adults, given by the MOQI APRN. So both Karen and Jane are alert to the possibility that while this could be due to iced tea, it may also represent the early signs of urinary tract infection. Because the MOQI APRN has been role modeling early detection behaviors, and because she is readily available, Jane has a brief consultation with her, and they decide it would be appropriate to test Flossie's urine. Jane, Flossie's LPN, speaks with Flossie's physician, and the urine test is ordered.

On May 2, Flossie has a new nurse aide, Chloe, and a new nurse, Joan. At the beginning of the day, Joan notes that there is a urine study pending and checks on this. The urinalysis report suggests infection. Joan confers with the MOQI APRN, who agrees. Joan contacts Flossie's physician, who suggests that Flossie be treated with a 5-day course of levofloxacin. Later in the day, the APRN follows up with Joan about what the physician suggested for Flossie, and Joan tells her about the levofloxacin. The APRN checks Flossie's medication list because she recalls that Flossie is taking warfarin. In her role as the MOQI APRN, she is well acquainted with common medication interactions in the geriatric population. She understands that levofloxacin increases the bioavailability and absorption of warfarin and frequently leads to increased PT (prothrombin time)/INR (international normalized ratio) values, with potential increases in serious bleeding adverse events. The APRN and Flossie's physician again and discusses this, and she and the physician decide that they will monitor Flossie's INR closely during and after her therapy with levofloxacin. Flossie begins her 5-day course of levofloxacin.

On May 6, Flossie's INR does indeed rise, and the APRN consults with Flossie's physician, who suggests a dosage reduction for the next week and continued close monitoring. Flossie's mental status is maintained, and her urination returns to normal. Flossie never has a serious bleeding problem, and she never goes to the hospital with urinary sepsis. The MOQI APRN enjoys seeing Flossie in her day-to-day rounds at the facility. She also enjoys an ever-increasing collaborative relationship with Flossie's physician, who grows to appreciate her presence in the facility, expertise, and assistance in caring for residents in the nursing facility.

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