Evidence-Based Clinical Pathways To Manage Urinary Tract Infections in Long-Term Care Facilities: A Qualitative Case Study Describing Administrator and Nursing Staff Views

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Objectives: This article examines the views of nursing staff and administrators in long-term care facilities (LTCFs) regarding a clinical pathway for managing urinary tract infections (UTIs) in LTCF residents.

Design: A qualitative (case study) design was used.

Setting: Data were collected from 8 LTCFs in southern Ontario and 2 in Iowa enrolled in a larger randomized controlled trial of clinical pathway for managing UTIs in LTCF residents, conducted between September 2001 and March 2003. The clinical pathway, designed to more effectively identify, diagnose, and treat UTIs, and reduce inappropriate antibiotics use for asymptomatic UTIs, introduced 2 decision tools to determine when to order a urine culture and initiate antibiotic treatment for suspected UTIs.

Findings: Nurses generally thought that the pathways were well developed and easy to use, and administrators believed they were an important educational resource. Barriers to their use varied by group—initial lack of buy-in from nurses (medical directors), additional work (directors of nursing), and the need to change the protocol to exclude certain residents based on prior health conditions and/or pressure from physicians or families (nurses).

Conclusions: Both administrators and staff, once familiar with a new clinical protocol to improve UTI management in LTCFs, generally supported its use. (J Am Med Dir Assoc 2007; 8: 477–484)

Keywords: Elderly; nursing home; long-term care facilities; clinical pathway; UTI; qualitative research; focus groups; Canada; United States

Older adults living in long-term care facilities (LTCFs) are often prescribed antimicrobials for suspected urinary infec-
and confirmed urinary tract infection\(^{22,23}\), a qualitative study assessing antimicrobial prescribing for urinary tract infection in this setting\(^{24}\), and the results of a consensus conference on antimicrobial prescribing in long-term care\(^{25}\) (Figures 1 and 2).

The main recommendations of the algorithms are that antimicrobials should not be prescribed without a positive urine culture, and in the absence of a minimum set of symptoms or signs of urinary tract infection, urine should not be cultured.

Fig 1. Diagnostic algorithm used for ordering urine cultures for nursing home residents in the intervention arm.\(^{46}\)

Fig 2. Treatment algorithm used to prescribe antimicrobials to nursing home residents in the intervention arm.\(^{46}\)
We conducted a cluster randomized controlled trial (RCT) to test the effectiveness of this intervention on reducing rates of antimicrobial prescriptions in LTCF residents,26 enrolling 20 LTCFs (16 in Ontario and 4 in Iowa) matched by size, and allocated one of the paired facilities randomly to use the pathways. The diagnostic and treatment algorithms for urinary tract infections (UTIs) were introduced to facility staff and management in a multifaceted campaign using written material and videotaped case scenarios. These were delivered via quarterly outreach visits, one-on-one discussions with physicians, and small group education sessions for staff, videotaping and airing these sessions as needed to ensure broad exposure for staff unable to attend meetings. Our main findings were a 30% reduction in antimicrobials prescribed for suspected UTIs in the intervention facilities compared to what was prescribed in the usual care facilities, but no significant difference in hospitalization or mortality rates between the study arms.26

Because the successful implementation of any new clinical protocol requires both evidence of its efficacy and support from facility administrators and practitioners, we also conducted a qualitative study on the acceptability of using UTI clinical pathways in LTCFs as a standard protocol. We present key findings from individual interviews with medical directors and directors of nursing, and from focus groups with nursing staff in the 10 implementation LTCFs.

METHODS

Study Design and Sample

We conducted an exploratory single case study27 using data from interviews with administrators and nurses in the 10 intervention LTCFs where a new protocol for better managing UTIs was tested. The “case” was the introduction of new clinical pathways to better diagnose and treat UTIs in LTCFs. Two trained research assistants invited the administrators in the enrolled facilities to participate in individual interviews, and directors of nursing (DONs) then invited nurses involved in the study to join a focus group. We included both administrators and staff in this study because prior research shows they often have different experience-based perspectives on a topic that could be applied to other health care settings.26

Data Collection

By the time we had conducted the 19 individual interviews with administrators and 10 focus group interviews with nurses, approximately 2000 residents had been cared for using the clinical pathway, ensuring adequate experience with using the protocol by our participants. Interview topics included perceived importance of UTIs, UTI symptoms and their management, benefits and problems associated with the pathways and with being in an RCT, and ways to improve the pathways. After field testing the interview guides in one facility, we made minor modifications to the interview questions. All interviews were tape recorded, with prior permission.

Data Analysis and Interpretation

Following accepted procedures for analyzing the data, a professional transcribed each audiotaped interview to create a verbatim typewritten copy. The analysis team—an experienced qualitative researcher (L.L.) and the 2 interviewers—maintained and discussed reflective journal entries throughout the study to ensure that decisions were not overly influenced by personal or professional experience.29 Using the editing style of analysis,30,31 each analyst independently read the transcripts to gain an overall sense of the data, identified key words and phrases for each interview topic, and reduced the data to a set of themes and subthemes. Regular meetings allowed the team to reach consensus before one analyst (L.L.), linked the findings to quotes that typified the participants’ viewpoints32 and interpreted the results based on relevant literature.

Rigor and Credibility

To ensure rigor, we reduced interviewer bias by having the same interviewers collect all the data. We used 3 types of triangulation (multiple sources of data, researchers, and theory) and several quotes from participants to support our findings (referential adequacy). This ensured that our results fit the data and could be transferred to other research settings (the equivalent of generalizability in quantitative studies).33–35 Longer quotes appear in tables to give readers a deeper understanding of the case, and to consider alternative interpretations.

Presenting Results

Typical views (quotes from transcripts) are presented in italicized print, along with their source (MD1–8 = medical director #1–8; DON1–11 = director of nursing, care, or infectious disease control #1–11; and N1–10 = nurse focus group #1–10). Following accepted qualitative research guidelines,36 we minimally edited statements as needed to preserve their meaning while ensuring readability. Ellipses (…) indicate where we removed text and nonitalicized words in square brackets show where we added words.

RESULTS

Views expressed in the 8 Canadian facilities did not differ from those in the 2 American ones. Therefore we pooled the data from all 10 of the intervention facilities before analyzing them separately by participant type (medical director, DON, and nurse).

Study Setting and Participants

The enrolled LTCFs varied considerably by size (mean of 185.5 residents per facility, range 86 to 350), intensity of care provided (mean case-mix index of 97.6, range 84.5 to 103.9), and coverage per 100 residents (mean of 8.3 physicians, range 1 to 18; mean of 16.2 registered nurses, range 6 to 43; and mean of 35 health care aides, range 14 to 89). The rate of prescribing antimicrobials for suspected UTIs varied from 23% to 44% of all antimicrobials prescribed (mean percentage of 29%).26

Our 81 participants included 8 of the 10 medical directors, 9 directors of nursing care and 2 infection control specialists (“DONs”), and 52 nurses in 10 focus groups of 3 to 10 members each. Twenty-three nurses were registered nurses.
The Importance of UTIs

Only one of the DONs and nurses asked to comment on this topic indicated that UTIs are not a major health problem (“I wouldn’t say it’s overly important unless they’re exhibiting specific symptoms. We know that older people typically have bacteria in their urine, so if they’re asymptomatic, why treat?” [DON8]). The other participants explained that UTIs are significant because of the large number of residents affected by them, the serious sequelae they bring, or to a lesser extent, the amount of time needed to diagnose and treat them. Some participants indicated that residents with dementia, diabetes, a prior history of UTIs, or an indwelling catheter are a high-risk group for UTIs (Table 1).

UTI Signs and Symptoms

Virtually all respondents spontaneously differentiated between physical and what they felt were behavioral signs of UTIs. A few people described the 2 together (eg, fever plus behavior change). The most common physical signs were increased urinary frequency or urgency, complaints of pain or burning on urination, and a change in the color or odor of urine. Others included elevated temperature, loss of appetite, incontinence, a change in gait, and increased blood sugar levels in diabetics. Listed behavioral changes include malaise, restlessness, or increased aggression. Some DONs indicated that staff erroneously associate foul-smelling urine with a UTI rather than as a result of dehydration (DON9) (Table 1).

Preventing and Treating UTIs

Participants indicated that educating physicians, staff, and families on the importance of adequate hydration and good hygiene/pericare for residents can reduce UTI incidence (“I think one of the most important things is hygiene. People who sit in wet diapers with feces are much more susceptible to having E. coli move up their urethras.” [MD6]). All but one DON indicated that elevated temperature, increased urinary frequency or urgency, or urine that looked or smelled abnormal would prompt staff to take action. Pain or burning on urination and incontinence were less frequent trigger symptoms. Virtually all participants indicated that behavior change or a prior history of UTIs would also warrant action.

The majority of administrators indicated that antibiotics are typically used to treat UTIs, sometimes before knowing the results of a urine analysis—particularly for residents with a history of UTIs or if the resident was unknown to the on-call physician. Other common measures were increasing fluid intake, particularly cranberry juice (“There’s some studies...” [NFG6]).

Table 1. UTIs and Their Management in Long-Term Care Facilities According to Administrators and Nurses

<table>
<thead>
<tr>
<th>Importance of urinary tract infections (UTIs)</th>
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<tbody>
<tr>
<td>• It's significant. I've known a couple of residents who have passed away because they started with a UTI and it just went septic, and before you knew it, boom! There is their demise. (DON11)</td>
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<td>• It's very important because they [residents] get complications and sepsis fairly quickly, especially in the diabetic. There's a lot of diabetics [here] and it throws off a lot of their systems, so it's very important. (DON3)</td>
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<th>Diagnosing UTIs</th>
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<tr>
<td>• “...sometimes in a long-term care facility you don’t have access to quick lab service, so often you’re guessing [what the problem is].” (DON2)</td>
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<td>• “There’s a lot of assumption on the part of the staff that if somebody’s more confused [than usual] or delusional, they’re misdiagnosed as having a urinary tract infection and treated for that. I think people still ... take urine samples whenever somebody’s urine smells funny or they’re a little off.” (DON1)</td>
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<td>• “[We would look for] something [a symptom] kind of substantial, like a temperature or complaining of burning; something like that. Then we would [act].” [N9]</td>
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<td>• “We have, over the years, identified there are a number of people who are very prone to UTIs, so when they start describing symptoms like that we just automatically go ahead and test.” (DON7)</td>
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<td>• “There is one [sign] that we use around here a lot, and that’s an elevated blood sugar for the diabetics. That might be one of the first signs that something is wrong.” (N2)</td>
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<td>• “It’s pretty hard in a demented person to know if they’ve got urgency, frequency, or incontinence. Because they’re incontinent, they can’t report to us flank pain. I mean, you can see hematuria. You can guess that maybe they’re uncomfortable, but it’s not always there. They’re such a varied population, too.” (MD6)</td>
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<td>• “[It’s difficult because] we have a lot of people that come in with chronic UTIs ... they may not show the same symptoms as somebody else that just has an occasional one.” (NFG6)</td>
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<th>Managing UTIs</th>
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<td>• “Often the results are called to the people [physicians] on call, and there tends to be a bit of a knee-jerk response. A nurse ... comes on [duty], sees the culture, [then] calls the person on call: ‘So and So has a bladder infection.’ [And then] someone orders Septrum.” (MD6)</td>
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<td>• “We’ll do a UA, and then often times the doctor will order an antibiotic before the UA results come back—but they’ll order it [only] for 2, 3 days. That gives the lab plenty of time to get the results back to us. If it’s an appropriate antibiotic for the infection, then they’ll go ahead and continue it for the 7 to 10 days, depending on the antibiotic; or they’ll change the antibiotic to what is going to take care of it. If the UA comes back and it’s negative, then we’ll stop the antibiotic.” (DON11)</td>
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Benefits from Using the Pathways

- “I think it made our staff more aware of the hydration needs of our residents. Instead of saying, ‘Oh, well, they have smelly urine so they must have an infection,’ they say, ‘They have smelly urine; we need to give them more to drink.’” (DON3)
- “I’ve seen a change in the way delirium or confusion are treated now. They’re not only seen as ‘Oh, it’s a UTI.’ People are now looking for further reasons—maybe it’s pain, or maybe it’s constipation. They’ve [staff] expanded the horizon about what could be causing the problem.” (DON5)
- “I think a lot of it was staff education, too, that came with this, to get people out of that thing [referring to overtreatment of UTIs].” (MD1)
- “Overall, I think it helped them [staff] think outside the box instead of automatically ordering an antibiotic. They’re able to work through the pathway and see that maybe it’s not necessarily needed to have antibiotics.” (DON6)
- “I would say that it got everybody thinking. It really got everybody thinking about what’s considered a UTI, like, what is symptomatic UTI.” (N7)
- “When we started the study, we had much greater numbers of urine being sent out . . . I’m not getting people asking to send urines now, or notes telling me that somebody’s got ‘strong urine.’ They’re automatically increasing the fluid intake now.” (DON5)

Problems With Using the Pathways

- “I thought it was well thought out. The only difficulty I had was that there was no exceptions made for certain subgroups of patients, such as diabetics.” (MD3)
- “[Getting the] support of all personnel was difficult. He [medical director] was not that keen. It was me who said, ‘Let’s try it.’” (DON4)
- “Part of the problem was getting physician buy-in . . . even physicians that are familiar with the pathway, they’ll still order a urine [culture] even though the person doesn’t meet the criteria . . . they don’t want to be told how to change their practice.” (DON5)
- “They [the family] were told she [resident] didn’t fit the criteria to send the urine [to the lab] so they were upset.” (MD5)
- “I don’t know why, for some reason they [nurses] didn’t buy into it . . . I don’t know if they were just used to putting them [residents] on antibiotics, or just would not take the steps to look at this [protocol] . . . it’s almost like they were smarter than the study.” (DON10)
- “Initially, of course, you meet resistance because it’s more paperwork, and it’s something to learn, and you have to remember, ‘Oh, I have to go to the study and look at this.’ Initially it was overwhelming, but I think [it was okay] once everybody got used to it.” (N7)

Benefits and Problems Associated With Using the Pathways

Participants generally thought the pathways were well developed, easy to use, and well liked by staff. Some administrators noted their educational value (“They were a wonderful teaching tool . . . a way to get a consistent approach . . . [and] help people realize that there was more to [diagnosing] a UTI than just strong urine.” [DON5]), particularly for recently hired nurses:

“It was really nice for the new staff . . . it gave them a little more credibility when they called the doc because . . . it was more objective information that they were able to provide.” [DON3]

Some nurses explained that following the pathways resulted in more reliable diagnoses:

“[A resident] did not have the 2 symptoms [needed to order a urine analysis], so instead I went by behavior and thought, ‘He has got to have a urine infection, he is acting so bizarre.’ And then the urine comes back and it was negative.” (N6)

Everyone except one medical director identified problems with the pathways. One major issue was the lack of initial buy-in from nurses (“When I first started using it, I thought, ‘Oh, my God, I don’t have time for this!’ But in the long run it was saving me time when I finally got it all down.” [N6]). In a few focus groups, we heard how pressure from physicians made it virtually impossible for nurses to follow the protocol (“A lot of the doctors go by symptoms as opposed to actually having it [the urine sample] sent to the lab.” [N2]). There were also some nurses who faced opposition from residents’ families, and admitted that they sometimes agreed with them:

“It’s hard because you’ve got the family saying, ‘Ma’s not right.’ And you know in your gut that this woman has a UTI so if you put her on antibiotics for a couple of days, her confusion is going to go away and that will increase her quality of life.” [N1]

Some participants also commented on the extra time and work that being in a clinical trial required (see Table 2):

“‘I think that a big turnoff was the amount of work that there was . . . I’ll never be involved in another study! It was horrendous! It was 2 days a month, at least, that I had to find all the forms, fill out all the bits and pieces, trying to find the signs and symptoms.’” [DON4]
Barriers to Continued Use of Pathways

The vast majority of participants indicated that difficulties gaining staff buy-in, changing long-standing practices or ensuring that part-time or new staff correctly followed outlined procedures were barriers to using the pathways once the study had ended (“We still have a couple [of nurses] out there looking for their dipsticks” [N9]). In some facilities, resistance was attributed to a lack of education or supervision for some staff (“Sometimes it’s hard to get the participation of all the registered staff because some of them are part-time [and] some of them work other shifts.” [N5]). Some administrators also described difficulties getting physicians to accept and follow the protocol. Other barriers included the possibility of delaying treatment by waiting for positive lab results before giving antibiotics, and not including “behavioral change” on the diagnostic pathway’s list of triggering symptoms.

Additional comments focused on the need to change the organizational culture of LTCFs before a new practice can be fully endorsed and adopted, as well as the need to educate residents and their families on the risks associated with over-prescribing antimicrobials (”[F]or that generation, antibiotics cleared everything. They don’t realize the harm antibiotics can do’’ [N7]). A few administrators reported they would not endorse using the protocol until they had received news of positive outcomes from the study (see Table 3).

DISCUSSION

In this qualitative case study, we interviewed medical directors, directors of nursing, and nursing staff in the 10 LTCFs that comprised the implementation arm of an RCT testing the efficacy of 2 clinical pathways to better manage UTIs. Overall, the nurses stated that they liked using the protocol because it gave them more objective signs and symptoms for suspected UTI cases to present to physicians when discussing residents. However, many of them strongly indicated they would also like to find a way to integrate practitioner judgment and experience into the pathways. Both administrators and staff noted the need to educate physicians and residents’ families, as well as all frontline workers and managers, on the importance of reducing unnecessary use of antimicrobials.

Study Benefits and Limitations

This work is an example of a study on LTC service delivery, a growing area within health services research. LTCFs are unique institutions because they are both a locus of care and a home for a group of mostly unrelated people. Therefore, the policies, practices, clinical guidelines, and staffing patterns in LTCFs are very different from those of other health care settings. Until recently, the rate of adopting evidence-based practice in LTCFs has been slow. For this reason, it is important that LTCF-based studies examine the feasibility and desirability of adopting new protocols through qualitative and mixed-methods studies, as well as their efficacy, to help administrators implement and explain changes in practice to residents and their families. 38,39 It is also important to examine the views of all stakeholder groups to determine where the greatest similarities and differences in views are among residents and their families, as well as among all segments of staff and facility management, in order to develop effective means of improving the quality of care for older adults. This is the approach we used in another qualitative study we conducted on residents, family, and staff perceptions of the desirability of treating pneumonia among LTCF residents in situ. 40–42

Our study has 3 limitations that may affect how easily its findings can be transferred to other research contexts (the equivalent of external validity or generalizability in quantita-

Table 3. Barriers to Continued Use of the Urinary Tract Infection (UTI) Pathways and Ways of Overcoming Them According To Administrators and Nurses

<table>
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<tr>
<th>Barriers</th>
<th>Overcoming Barriers</th>
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<td>“There’s a difference in our doctors. The one doctor is quite adamant about not treating them if they’re not symptomatic; the other one, he sees a positive lab result, he’s treating.” (DON7)</td>
<td>“Make something [a clinical pathway] that would identify the cognitively impaired and the chronic UTI [residents], because with those residents, they may not show those symptoms.” (N6)</td>
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<td>“You have families that are really involved in their family member’s care, and there’s some families that are demanders: ‘I think my mom has a urinary tract infection, so I don’t care if whether she does or doesn’t. You have to put her on something . . . no matter what.’ Even with the pathway and education, you might have 4 or 5 families in this facility that it doesn’t matter whether it’s appropriate or not, whether it’s a virus or bacteria, they [residents] have to go on an antibiotic.” (DON1)</td>
<td>“There was the odd resident [that] we waived the pathway for, particularly the dementia ones. We have a couple of people who you won’t know they have a UTI unless they show you by their behavior that they do.” (DON7)</td>
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<td>“We explained [to one family], our protocol and how we follow it, and [how] this resident did not meet the criteria to send a sample in or call for an order or anything. The family member was very upset . . . the family member is very active in her care. Basically, with this particular resident, we go along with what the family wants most of the time unless not possible or may be dangerous.” (N10)</td>
<td>“In any study you do, you’ve got to have an ‘out’ for doctors or nurses if they have reasons to vary [the protocol] because it’s the patients’ lives we are talking about. That has to be clear in a study or a program like that: it doesn’t fit every case.” (MDS)</td>
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<td>“The reality of long-term care is you have a high percentage of clients with some degree of dementia, and I don’t think that the pathway really addresses that well.” (DON7)</td>
<td>“The vast majority of participants indicated that difficulties gaining staff buy-in, changing long-standing practices or ensuring that part-time or new staff correctly followed outlined procedures were barriers to using the pathways once the study had ended (“We still have a couple [of nurses] out there looking for their dipsticks” [N9]). In some facilities, resistance was attributed to a lack of education or supervision for some staff (“Sometimes it’s hard to get the participation of all the registered staff because some of them are part-time [and] some of them work other shifts.” [N5]). Some administrators also described difficulties getting physicians to accept and follow the protocol. Other barriers included the possibility of delaying treatment by waiting for positive lab results before giving antibiotics, and not including “behavioral change” on the diagnostic pathway’s list of triggering symptoms.”</td>
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tive studies). First, as is standard practice in good qualitative research, we intended to collect data until we received no new information (saturation)²⁸,²⁹; however, our sample size was limited by the number of administrators and staff in the intervention facilities in the larger study. The fact that we found clear consensus both within and across respondent groups regarding UTIs and their management with the care pathways leads us to strongly believe that our findings are both credible and there are few, if any, major issues we missed.

Second, because the UTI pathways were introduced as part of an RCT, some of the problems described by our participants were related to their facilities being enrolled in the study and not necessarily inherent in the pathways. It is not clear if the protocol-related issues that participants raised would be the same if the pathways were not associated with a clinical trial. Future studies could examine this issue in detail and develop recommendations for introducing new evidence-based practices within an RCT versus as part of ongoing CQI programs.

Third, our data were gathered in two different geographical areas, Ontario and Iowa. It is reasonable to assume that the process of adopting and using a clinical pathway is strongly affected by local (regionally and facility-specific) factors such as legislation, amount of available resources, and work group culture. Interpreting our findings in light of the current literature, however, leads us to believe that the issues highlighted by the study participants are common in many LTCF settings and so could help the infectious disease and LTCF communities reduce unnecessary antibiotic use in LTCFs.

CONCLUSION

Our study suggests that both LTCF administrators and staff, once familiar with a clinical protocol to better identify and manage UTIs, generally support its use. Variation in organizational culture, staffing patterns, and prior experience with adopting findings from evidence-based research may explain differences across facilities in terms of the continued use of the protocols after the study ended. Professional development, incentives, and opportunities to learn about health service delivery research may increase the likelihood that innovations promising better outcomes such as this one gain widespread use in LTCFs. Future studies could examine the outcomes of following such recommendations on the unnecessary use of antimicrobials among LTCF residents.

The literature on translating research evidence into clinical practice is rapidly expanding; however, there is still much to be learned about closing the evidence-practice gap in LTCFs. Such health care settings have a relatively short history in developing a research-based culture, with physicians and nurses instead relying mainly on personal or disciplinary experience and time-honored local practices when making clinical decisions. This practice must be changed if LTCFs are to reap the benefits of following evidence-based guidelines. This is an important area for future research on the use of evidence-based guidelines to deliver care and services to LTCF residents.

REFERENCES


