A lack of appropriate bedside equipment can impede thorough clinical evaluations, but this can be easily remedied.

Natalie Roeser, MD, D. Maggie McEvoy, MD, Amber Scaletta, DO, Don Pine, MD, and Teresa Quinn, MD

A TOOLKIT for Clinicians Rounding in LONG-TERM CARE FACILITIES

Residents living in long-term care (LTC) facilities are some of the most complex patients clinicians will encounter. Rounding on these patients can be made additionally challenging by a lack of appropriate bedside equipment, which can limit clinicians' abilities to perform thorough evaluations. Because of this problem, clinicians may recommend transport to a clinic for further diagnosis and treatment, or they may forgo a thorough diagnostic evaluation.[1-7]

We investigated a third option – bringing a set of diagnostic and procedural equipment on bedside rounds to LTC facilities – with the goal of decreasing fragmentation of care due to equipment difficulties and thus improving quality of care. We did not identify a currently existing toolkit, and a literature search yielded minimal results.[8-11]

We started by developing a list of the procedures we considered feasible to perform during LTC rounds. We also identified the tools we thought were necessary to conduct a thorough bedside physical examination and any of the procedures we considered.

We then surveyed clinicians attending three geriatric and primary care CME meetings about equipment currently available to them and what additional equipment they would need to provide comprehensive care. Of the 94 responding clinicians, 47 percent were nongeriatrician physicians, 15 percent were geriatrician physicians, 32 percent were nurse practitioners, 3 percent were physician assistants, and 6 percent were other clinicians. (Percentages do not equal 100 because three clinicians indicated multiple credentials.) Nearly 90 percent of the clinicians had practiced five years or more.

Overall, we found a wide variety in the use of equipment in LTC facilities. Otoscopes and flashlights were the most commonly used equipment (77 percent of respondents). Dermatoscopes and anoscopes were least used (less than 10 percent of respondents).

Clinicians reported they would use both disposable and durable equipment more frequently if it were available at the bedside. One of the durable items with the largest anticipated use was the ultrasound Doppler. Seventeen percent of respondents indicated they currently use a Doppler, and 59 percent of respondents indicated they would use a Doppler if one was readily accessible. Of the disposable items, a sterile razor blade for shave biopsies was one of the items with the greatest increase in anticipated use. Twenty-six percent of respondents indicated they currently use sterile razor blades, and 66 percent indicated they would use sterile razor blades if they

About the Authors

Dr. Roeser is a family physician practicing with the Buffalo Clinic in Buffalo, Minn. Dr. McEvoy is a family physician practicing with the Park Nicollet-Bloomington clinic in Bloomington, Minn. Dr. Scaletta is a resident at the University of Minnesota (UM) Methodist Hospital Family Medicine Residency in St. Louis Park, Minn. Dr. Pine is an assistant professor at the UM Methodist Hospital Family Medicine Residency. Dr. Quinn is a family physician with a certificate of added qualification in geriatrics practicing with the Park Nicollet-Creekside clinic and is an assistant professor at the UM Methodist Hospital Family Medicine Residency. Author disclosure: The Minnesota Academy of Family Physicians, the Park Nicollet Foundation, and the Minnesota Medical Directors Association provided funding for the toolkit project. The authors acknowledge the efforts of Jeremy Springer, MD, Jennifer Olson, MD, Olfemi Banjoko, MD, Diane Dunn, NP, and Shari Schmitt, CMA, for field testing and offering improvements to the toolkit.

The toolkit is in a medium-sized backpack that weighs 11 pounds. It cost $1,072.

were readily available. (See the table on page 16, which lists the current and anticipated use for all reusable and disposable equipment included in the survey.)

The survey also asked about procedures and found that no more than 26 percent of clinicians are currently performing any one bedside procedure during LTC rounds. The most commonly performed procedures are joint injections and abscess incision and drainage. For every procedure included in the survey, clinicians indicated they would perform it much more frequently if equipment was available, assuming medical necessity of course. (See "Current and anticipated performance of procedures in long-term care facilities," below.)

Assembling the toolkit

Based on the survey results and practice experience, we assembled a toolkit that included both reusable and disposable equipment (see "Toolkit inventory" on page 17). It contains many simple items that are helpful during LTC rounds but were not readily available at our facilities. We obtained the tools from a variety of general and medical equipment websites, and all items were purchased individually. We anticipate that the disposable items can be replenished biweekly from the clinician's clinic supply. The toolkit is in a medium-sized backpack that weighs 11 pounds. A clinician can easily carry it from room to room during rounds. The entire toolkit cost $1,072 and is currently being used within the Methodist Hospital Family Medicine Residency in St. Louis Park, Minn.

One of the most useful items we include is a portable external hearing aid. Enhanced communication can improve all aspects of patient care. Patients can voice their concerns more easily, and clinicians can be reassured that they are not misdiagnosing hearing loss as depression or dementia, which can lead to unnecessary polypharmacy. Similarly, the laminated "review of systems" (ROS) cards (see page 18) allow for improved communication with patients who have profound hearing loss and are unresponsive to any hearing aid. For the ROS cards, patients read the statements on the card and can ask the clinician to address specific issues (e.g., bowel function, insomnia, and mood disorders).

A hand mirror helps improve visualization of feet at high risk for ulcers. A monofilament, essential to the standard of care for routine clinic visits, allows for thorough diabetic foot exams. A flashlight and magnifying glass may help clinicians examine immobile patients. Tongue blades help clinicians detect oral infections and cancers.

The rotary tool (e.g., Dremel) is used to grind thickened fungal toenails when they are too thick to be appropriately trimmed with a toenail cutter. Ours includes

CURRENT AND ANTICIPATED PERFORMANCE OF PROCEDURES IN LONG-TERM CARE FACILITIES

Procedure	Currently perform	Currently perform + Would perform if equipment available	% increase
Anoscopy	7 (7.45%)	24 (25.53%)	243%
Cryotherapy	17 (18.09%)	53 (56.38%)	212%
I & D of abscess	24 (25.53%)	61 (64.89%)	154%
Joint/bursa injection	24 (25.53%)	54 (57.45%)	125%
Lipoma/skin excision	6 (6.38%)	27 (28.72%)	350%
Skin biopsy	13 (13.83%)	49 (52.13%)	277%
Toenail removal	15 (15.96%)	41 (43.62%)	173%

a standard drum accessory for sanding. We were surprised that only 26 percent of clinicians would potentially use the dermatoscope, a handheld lighted magnifying tool used to closely examine skin lesions. We opted to include this relatively new and unfamiliar piece of medical equipment because of the frequency of precancerous and cancerous skin lesions in the geriatric population, and because the dermatoscope improves diagnostic accuracy.[12]

While the geriatric toolkit contains some equipment that may be available at LTC facilities, the benefit of the toolkit to the clinician is that appropriately sized and functional equipment is readily available. For example, LTC facilities often have a sphygmomanometer with only one cuff. An inaccurate reading could

Bringing a set of diagnostic and procedural equipment on rounds to long-term care facilities can help clinicians perform more thorough evaluations.

In a survey conducted by the authors, clinicians reported that they would use certain medical equipment more frequently if it were available at the bedside.

Based on the survey results, the authors created a recommended toolkit, which fits in a backpack.

CURRENT AND ANTICIPATED USE OF MEDICAL EQUIPMENT IN LONG-TERM CARE FACILITIES

Reusable equipment	Currently use	Currently use + Would use if available	% increase
Anoscope	7 (7.447%)	29 (30.85%)	314%
Dermatoscope	3 (3.191%)	24 (25.53%)	700%
Doppler	16 (17.02%)	55 (58.51%)	244%
Flashlight	72 (76.60%)	87 (92.55%)	21%
Hand mirror	24 (25.53%)	43 (45.74%)	79%
Laminated ROS cards	13 (13.83%)	38 (40.43%)	192%
Magnifying glass	15 (15.96%)	52 (55.32%)	247%
Otoscope	72 (76.60%)	86 (91.49%)	19%
Oximeter	54 (57.45%)	73 (77.66%)	35%
Portable external hearing aid	24 (25.53%)	63 (67.02%)	163%
Rotary tool	13 (13.83%)	39 (41.49%)	200%
Shoe horn	14 (14.89%)	32 (34.04%)	129%
Sphygmomanometer	53 (56.38%)	65 (69.15%)	23%
Toenail cutter	36 (38.30%)	60 (63.83%)	67%
Wound curette	30 (31.91%)	61 (64.89%)	103%
Disposable equipment	**Currently use**	**Currently use + Would use if available**	**% increase**
Adhesive bandages/ dressings	65 (69.15%)	81 (86.17%)	25%
Betadine swabs	55 (58.51%)	74 (78.72%)	35%
Cryotherapy	17 (18.09%)	59 (62.77%)	247%
Ear curettes	43 (45.74%)	68 (72.34%)	58%
Gloves	66 (70.21%)	80 (85.11%)	21%
Hemostatic agent	17 (18.09%)	57 (60.64%)	235%
Local anesthetic	29 (30.85%)	62 (65.96%)	114%
Monofilament	39 (41.49%)	66 (70.21%)	69%
Sterile razor blades	24 (25.53%)	62 (65.96%)	158%
Suture material	16 (17.02%)	50 (53.19%)	213%
Suture removal kit	40 (42.55%)	73 (77.66%)	83%
Syringes and needles	46 (48.94%)	70 (74.47%)	52%
Tongue blades	61 (64.89%)	80 (85.11%)	31%
Wound culture swabs	43 (45.74%)	67 (71.28%)	56%

lead clinicians to change blood pressure medications unnecessarily. Therefore, we included multiple sizes of blood pressure cuffs in our toolkit. Similarly, we included the oximeter in because it can help a clinician rapidly determine the severity of a patient's illness.

Several items were excluded from our final toolkit. Cryotherapy is a commonly requested bedside procedure; however, the cost of safely transporting liquid nitrogen made its inclusion cost-prohibitive. Because cryotherapy is frequently used, we are currently pursuing alternatives to liquid nitrogen, such as the Cryoprobe. The Cryoprobe is a portable cryotherapy device consisting of nitrous oxide, which would allow us to treat skin lesions at the bedside. We excluded most injectable drugs from the toolkit to avoid the problem of expired medication, although we bring new vials on rounds when we anticipate performing joint injections. We also chose to exclude an anoscope. We anticipated that properly positioning patients in their beds would continue to be difficult, and using this invasive piece of equipment on memory-impaired patients would make the risks of bedside anoscopy outweigh its benefits.

Patient, family, and clinician benefits

Bringing comprehensive and timely care to the bedside provides benefits for patients and their families. Patients receive better continuity of care when the rounding clinician performs bedside procedures rather than deferring them to a later date with a different clinician at an outpatient clinic. Painful joints can now be injected during LTC rounds. When worrisome lesions are biopsied at the bedside, the clinician can interpret the pathology in the context of the individual patient, and this allows for a customized care

The toolkit includes items such as a portable hearing aid, a monofilament, and a dermatoscope.

The cost of assembling the entire toolkit was $1,072.

Patients receive better continuity of care when the rounding clinician performs bedside procedures rather than having to defer them.

TOOLKIT INVENTORY

Reusable equipment	Cost	Disposable equipment	Cost
Backpack	$21.46	1% lidocaine without epinephrine vial (1)	$1.15
Dermatoscope	$215.00	4mm punch biopsy devices (2)	$2.00
Disposable-equipment organizer	$7.44	4x4 gauze pads (10)	$0.26
Doppler	$154.00	Adhesive bandages (10)	$1.46
Flashlight	$7.99	Alcohol swabs (20)	$0.35
Hand mirror	$2.00	Antibiotic ointment packages (5)	$0.42
Laminated ROS cards	$0	Betadine swabs (1 package)	$0.41
Magnifying glass	$4.89	Ear curettes (4)	$0.84
Otoscope	$78.64	Formalin jar (1)	$1.67
Oximeter	$165.91	Lubricating jelly packets (5)	$1.00
Portable external hearing aid	$161.18	Monofilament	$0.10
Reflex hammer	$2.14	Single-use cautery device (1)	$33.00
Rotary tool with drum accessory	$41.22	Sterile razor blade (1)	$0.16
Shoe horn	$0	Tape measure (1)	$0.01
Skin lesion removal kit	$12.00	Tongue blades (8)	$0.02
Sphygmomanometer (four cuffs of varying sizes)	$107.78	Wound culture swabs (3)	$0.48
Toenail cutter	$21.45		
Wound curette	$26.00		
Reusable equipment cost	**$1,029.10**	**Disposable equipment cost**	**$43.33**
Total cost for entire toolkit			**$1,072.43**

When rounding physicians are equipped to provide medical care at the bedside, this avoids transport challenges.

Rounds are more efficient and satisfying when clinicians don't have to spend time searching for equipment.

plan. This approach eliminates long delays in obtaining an outpatient clinic appointment for the same procedure and reduces potential miscommunication in transfer of care.

Providing medical care in LTC facilities may also alleviate challenges associated with transport. The risks of transferring frail patients to outside clinics are serious and stressful for patients and families. Inclement weather increases the risk of falls and other accidents, and it may prevent some clinic visits altogether. Coordinating transportation can be difficult, and the cost may be prohibitive for patients who are dependent on wheelchairs or oxygen. In Minnesota, the out-of-pocket cost to transport a patient using a wheelchair or oxygen a distance of five miles is $60 to $200. Additionally, families have added stress because they must take time off work to accompany patients to appointments. Having a toolkit with the means to provide as much care as possible at the patient's bedside can significantly decrease these health risks and monetary costs.

The geriatric toolkit may also increase clinician efficiency and satisfaction during rounds. When clinicians spend less time searching for appropriate equipment, they have more time and energy to devote to direct patient care. For example, with the toolkit, clinicians can independently, quickly, and accurately reassess vital signs during rounds. Efficient rounds and comprehensive patient care may increase clinician job satisfaction.

Patients living in long-term care facilities, as well as other home-bound patients, have many of the same medical needs as ambulatory patients. However, the ability to provide full-spectrum care at the bedside may be reduced or delayed due to lack of equipment. With the geriatric LTC toolkit, we aim to improve the quality of care patients receive during rounds, reduce costs of health care for patients, and improve job satisfaction of clinicians rounding in LTC facilities. FPM

REVIEW OF SYSTEM CARDS

The review of systems (ROS) cards contain large-print phrases and questions for patients to read. To create this tool, we simply printed the text on plain paper (with phrases on the front and back) and laminated them. We can point at the phrase, and even if the patient has hearing loss, he or she can answer the question or at least use non-verbal cues to indicate a response. The cards are pictured in the toolkit on page 15.

The cards read as follows:

- I'm going to check you over.
- Are you sleeping OK?
- How is your appetite?
- Are your bowels OK?
- Does it burn when you pass your urine?
- How is your mood?
- How do you feel?
- Any pain?
- How is your breathing?
- Do you have chest pain?
- Take a deep breath.
- IN – OUT.
- Thanks, you look good.
- Have a great day!

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