

American Journal of Alzheimer's Disease and Other Dementias®

<http://aja.sagepub.com>

A Framework for Managing Wandering and Preventing Elopement

D. Helen Moore, Donna L. Algase, Gail Powell-Cope, Shawn Applegarth and Elizabeth R. A. Beattie
Am J Alzheimers Dis Other Demen 2009; 24; 208 originally published online Apr 8, 2009;
DOI: 10.1177/1533317509332625

The online version of this article can be found at:
<http://aja.sagepub.com/cgi/content/abstract/24/3/208>

Published by:



<http://www.sagepublications.com>

Additional services and information for *American Journal of Alzheimer's Disease and Other Dementias*® can be found at:

Email Alerts: <http://aja.sagepub.com/cgi/alerts>

Subscriptions: <http://aja.sagepub.com/subscriptions>

Reprints: <http://www.sagepub.com/journalsReprints.nav>

Permissions: <http://www.sagepub.com/journalsPermissions.nav>

Citations <http://aja.sagepub.com/cgi/content/refs/24/3/208>

A Framework for Managing Wandering and Preventing Elopement

D. Helen Moore, PhD, BSW,
Donna L. Algase, PhD, RN, FAAN, FGSA,
Gail Powell-Cope, PhD, ARNP, FAAN, Shawn Applegarth, MSME,
and Elizabeth R. A. Beattie, PhD, RN, FGSA

Purpose of the Study: A framework aids choice of interventions to manage wandering and prevent elopement in consideration of associated risks and mobility needs of wanderers. *Design and Methods:* A literature review, together with research results, published wandering tools, clinical reports, author clinical experience, and consensus-based judgments was used to build a decision-making framework. *Results:* Referencing a published definition of wandering and originating a clinical description of problematic wandering, authors introduce a framework comprising (1) wandering and related behaviors; (2) goals of wandering-specific care, (3) interpersonally, technologically, and policy-

mediated wandering interventions, and (4) estimates of relative frequencies of wandering behaviors, magnitudes of elopement risk, and restrictiveness of strategies. *Implications:* Safeguarding wanderers from elopement risk is rendered person-centered and humane when goals of care guide intervention choice. Despite limitations, a reasoned, systematized approach to wandering management provides a basis for tailoring a specialized program of care. The need for framework refinement and related research is emphasized.

Keywords: dementia; elopement; risk; behavior management; technology

Caring for persons with dementia who wander calls for decision making on elopement prevention. Given the negative consequences of elopement for persons and organizations, including physical harm,¹ emotional distress, and potential civil tort claims and regulatory penalties,² the multiple interventions available, but few with proven clinical effectiveness,³ the marketplace proliferation of wandering management technologies,^{4,5} and the crucial task of optimizing well-being, safety, and mobility of persons with dementia who wander,⁶ informed decision making is imperative and challenging. We introduce a conceptual framework to aid understanding of and effectual response to wandering and related behaviors.

From the VARR&D Research Enhancement Award Program (GP-C), James A. Haley VAMC Tampa, Florida (DHM, SA); Center on Frail and Vulnerable Elders, University of Michigan School of Nursing, Ann Arbor, Michigan (DLA); Queensland University of Technology, Brisbane, Queensland, Australia (ERAB).

Address correspondence to: D. Helen Moore, VAMC, 8900 Grand Oak Circle, Tampa, FL 33637; e-mail: Dorothy.Moore4@va.gov.

The framework's *behavioral focus is problematic wandering*, or that affording obvious and heightened elopement risks; its *care focus is person-centered*,⁷ or that it is responsive to the needs of diverse individuals, and its *intervention focus is nonpharmacological*, in recognition of the side effects, drug-drug interactions, chemical restraint associations, and widespread ineffectiveness of pharmacology for treatment of the behavioral symptoms of dementia.⁸

Approach

Referencing a previously published empirical definition of wandering behavior⁹ and originating a clinical description of problematic wandering, we comprehensively searched MEDLINE, CINAHL, and PsychInfo databases using search terms within 3 domains I, wandering behaviors; II, goals of wandering-specific care; and III, wandering interventions. We then built a cumulative framework by delineating and aligning domain data referencing (a) research results, (b) published wandering tools, (c) clinical reports, (d) author clinical experience, and

(e) consensus-based judgments. The specific content and organization of each domain is described more fully below.

In Domain I, we identified certain *wandering and related behaviors, including exiting-referenced behaviors, unauthorized exiting, actual elopement, and losing one's way/getting lost exterior to the care setting* informed by items specified in major measures of wandering¹⁰⁻¹² and based on research and clinical reports. Domain I was organized into behavioral constructs by considering whether the behavior involves locomotion empirically identifiable as wandering (see Discussion), accompanies wandering or references the act of exiting, transgresses a care setting perimeter boundary, results in wandering away from care confines, or inability to return unassisted to the point of origin post an elopement event. Based on author clinical experience, wandering and related behavior constructs were elaborated by estimating the relative frequency of behavior occurrence within dementia care settings.

In Domain II, we identified *goals of wandering-specific care including universal, patient-specific, and elopement prevention goals* by referencing a published wanderer assessment guideline (WING-AP, 2007)¹³ and drawing upon our own nursing and social work backgrounds. Domain II was organized into constructs by considering goals applicable in *all* wandering-specific care scenarios and those individually and elopement prevention-specific.

In Domain III, informed by research results,¹⁴ clinical reports,¹⁵ and author engineering background, we identified constructs of wandering *interventions, including those interpersonally, technologically, and policy-mediated*. Domain III was organized into constructs by considering an intervention's primary mode of interface with the wanderer, that is, via a 1:1 caregiver/wanderer interaction, via a design or device or via standardized, organizationally stipulated procedures. Domain III was further elaborated by identifying mechanisms of effect, persons or groups targeted for behavioral change, advantages and disadvantages of each and estimates of restrictiveness to wanderer mobility.

The final cumulative framework was built in 2 stages: (1) based on rationales underpinning care goals (Domain II), aligning wandering interventions (Domain III) with wandering behavior constructs (Domain I) and (2) based on the spatial proximity and behavioral reference of wandering and related behaviors to the built perimeter of a given dementia care setting, assigning magnitudes of elopement risk.

Results

Domain I: Wandering and Related Behaviors

Table 1 encompasses 4 behavioral constructs organized into 13 categories: (1) a *wandering construct*, comprising 6 categories of very frequently observed wandering behaviors (excessive locomotion, locomotion that interrupts or interferes with necessary activities, losing one's way interior to care, locomotion into off-limits, prohibited, or hazardous areas, locomotion during the night, locomotion or traveling unaccompanied indoors or outdoors beyond area of mastery or supervision); (2) an *exiting-referenced construct*, comprising 4 categories of frequently observed behaviors observed to co-occur with wandering (stating intent to leave, preparing to leave, exit door lingering and testing, seeking means or opportunity to exit); (3) an *exiting construct*, comprising a less frequently observed outcome of wandering (unauthorized exiting), and (4) a *post-exiting outcomes construct*, comprising 2 relatively rare outcomes of unauthorized patient exiting (eloping, losing one's way/getting lost exterior to care).

Domain II: Goals of Wandering-specific Care

Table 2 specifies 10 universal goals of wandering-specific care (contain wandering, maximize wanderer function, support abilities, use preserved skills, promote safety, aid navigation, minimize restrictions, afford comfort, encourage appropriate social interaction, support mobility), 13 patient-specific goals, and 8 elopement prevention goals. Based on author consensus, 6 of the patient-specific goals were judged appropriate for the wandering behavioral construct (increase location checks, decrease agitation, reduce felt need to wander, alert responsible parties to emergent or heightened wandering behavior, evaluate/adjust medications, monitor for toileting needs, weight loss, malnutrition, dehydration, exhaustion), 5 for the exiting-referenced construct (heighten monitoring, increase location checks, decrease agitation, reduce felt need to exit, alert responsible parties to emergent, or heightened exit-referenced behavior), 1 toward unauthorized exiting (promptly respond to alerts/alarms), and 3 toward elopement/getting lost behaviors (promptly recognize elopement, quickly locate and return wanderer to secure setting, assess health status). Of the elopement prevention goals, 4 were judged appropriate to wandering behaviors (monitor, accommodate,

Table 1. Wandering and Related Behaviors

Constructs	Categories	Behavior Descriptions
Wandering	Excessive locomotion	Volume of locomotion is greater than usual for self; has no expressed, apparent or known reason for locomoting; does so frequently and/or continuously over several hours; locomotion in circles, or haphazardly
	Locomotion that interrupts or interferes with necessary activities	Unable to discontinue locomotion long enough to eat, to watch a TV show, or complete other activity; locomotion interferes with rest or sleep; continues even during pain, fatigue, or discomfort
	Losing one's way interior to care	Unable to find specific rooms in own residence; unable to navigate through obstacles or detours; failing to recognize whereabouts
	Locomotion into off-limits, prohibited, or hazardous areas	Crossing a care setting geographic boundary; intruding into the private living quarters or personal space of others (may include rummaging through drawers or closets); disregarding boundaries, obstacles, or other barriers to hazardous or off-limits areas (kitchen, stairwells, nursing station)
	Locomotion during the night	Arising from bed before morning; getting up to go to the bathroom and failing to return to bed; awakening early and dressing for work
	Locomotion alone indoors or outdoors, beyond area of mastery	Locomoting or traveling unaccompanied indoors or outdoors beyond area of mastery or supervision
Exiting referenced	Stating intent to leave	Asking to "go home" or stating intent to do so, even when living at home; talking about going somewhere; voicing threat to leave; asking others for a ride
	Preparing to leave	Packing a suitcase, bag, or lunch; looking for car keys or purse; looking for someone or some place; donning hat or coat; closing windows; turning off lights; calling a cab; asking about the bus schedule; removing identification bracelets, or other security devices from self; asking to borrow money
	Exit door lingering and testing	Standing or lingering near exit points; lingering near exit doors or in the lobby or entrance hall; trying doorknobs, door locks, or window latches (includes interior doors); tampering with security systems, pulling, pushing, ramming, kicking, knocking, or pounding on exit doors
	Seeking means or opportunity to exit	Approaching exit points(entrance, elevator, or stairwell), repetitively locomoting back and forth from other areas to exit points; pacing back and forth in proximity to exit points; following or shadowing family members, visitors, delivery people, or staff toward or through exit doors
Exiting	Unauthorized exiting	Crossing a care setting structural boundary into an unsupervised area; slipping past or circumventing exit point security systems; unauthorized penetration of a perimeter barrier
Post-exiting outcomes	Eloping	Wandering away into nonsupervised environments subsequent to an unsupervised exit from care
	Losing one's way exterior to care/getting lost	Locomoting without a sense of direction; unable to return to one's care setting or residence on own when walking alone; when accompanied, becoming separated from an attendant, unable to find the attendant, and unable to return to the point of departure unassisted

redistribute, reduce), 4 to exiting-referenced behaviors (monitor, redistribute, reduce, track), 3 to unauthorized exiting (monitor, track, restrain), and 2 to post-exiting behaviors (track, retrieve).

Domain III: Wandering Interventions

Table 3 comprises 3 wandering intervention constructs organized into 10 strategy categories and 22 subcategories (1) *interpersonally mediated intervention*, 4 strategy categories (1:1 caregiver/patient-interaction, recreational, educational, administrative); (2) *technologically mediated interventions*, 5 strategy categories

(perceptual, environmental, sensory, physical, signal transmitting systems); and (3) *policy-mediated interventions*, 1 strategy category (standardized procedures).

A Framework for Managing Wandering and Preventing Elopement

In Table 4, a cumulative framework integrates the 3 domains constructs, categories, and subcategories. Because framework users are likely to begin with a behavior of concern, Domain I constructs (behaviors) provide an overall organizing structure.

Table 2. Goals of Wandering-specific Care

Goal Constructs		
Universal Goals of Wandering-related Care ^a		
Behavioral Constructs and Categories	Patient-specific Goals	Elopement Prevention Goals
Wandering: excessive, disruptive, disoriented, intrusive, nocturnal, beyond mastery	Increase location checks, decrease agitation, reduce felt need to wander; alert responsible parties to emergent or heightened wandering behavior, evaluate/adjust medications; monitor for toileting needs, weight loss, malnutrition, dehydration, exhaustion	Monitor, accommodate, redistribute, reduce
Exiting-referenced: stating intent, preparing, lingering, shadowing, door testing	Heighten monitoring, increase location checks, decrease agitation, reduce felt need to exit, alert responsible parties to emergent or heightened exiting-referenced behavior	Monitor, redistribute, reduce, track
Unauthorized exiting	Promptly respond to alert/alarms	Monitor, track, restrain
Eloping, losing one's way, getting lost	Promptly recognize elopement, quickly locate and return wanderer to secure care setting, assess health status	Track, retrieve

^a Contain wandering, maximize wanderer function, support abilities, use preserved skills, promote safety, aid navigation, minimize restrictions, afford comfort, encourage appropriate social interaction, support mobility.

Estimated elopement risk magnitudes comprise column 2, Domain II (goals), column 3, and Domain III (interventions), a fourth, trifurcated column.

Discussion

Framework Foundations

We introduce a framework to aid choice of wandering management and elopement prevention strategies, innovative because it (1) is founded upon objectively defined wandering behavior and clinically described “problematic wandering behavior,” (2) specifies universal, patient-specific, and elopement prevention goals of care and uses rationales underpinning goals to guide choice of specific strategies, (3) estimates elopement risk magnitudes by considering the likelihood of a wanderer’s transgressing a care setting’s built perimeter, and (4) estimates the magnitude to which implemented strategies are likely to restrict a wanderer’s freedom of mobility.

The framework is grounded in theory, science, and policy. Specifically referenced is a model of risky wandering and adverse outcomes,⁸ suggesting relationships among wandering behaviors, caregiver strategies, immediate and cumulative adverse outcomes for wanderers, and adverse outcomes for caregivers. The framework’s joint wandering and elopement focus reflects the content of an objective, empirically founded definition of wandering, “a syndrome of dementia-related locomotion behavior having a frequent, repetitive, temporally disordered and/or

spatially disoriented nature that is manifested in lapping, random, and/or pacing patterns, some of which are associated with eloping, eloping attempts or getting lost unless accompanied.”⁹ The framework’s emphasis on optimizing mobility in people with dementia stems from the relationship of exercise to increased physical and cognitive function in this population.¹⁶ Policy-wise, the framework translates recent Centers for Medicare and Medicaid Services (CMS) directives on accident prevention in long-term care, including those related to unsafe wandering and elopement, into explicitly stated elopement prevention goals.¹⁷

Wandering and Related Behaviors

Table 1 provides detailed descriptions of certain wandering and related behaviors that typically compel caregivers to seek out wandering management and elopement prevention strategies. Inclusive but not exhaustive, Table 1 focuses on clearly problematic wandering behaviors that (1) stand to interfere with overall goals of care for the wanderer (or other care recipients) or (2) afford risks for cumulative negative outcomes (sleep and nutritional deficits) and more immediate adverse events (falls, injury, elopement, getting lost exterior to care). Notably, our definition of “problematic wandering” is framed in clinical, patient-centered as opposed to subjective terms. The importance of these behaviors over other locomotion or wandering is supported by the prevalence of wanderer exiting-referenced behavior.^{18,19}

Table 3. Non-Pharmacological Wandering Management Strategies

Strategies and Sub-strategies (scaled 1-4, low to high mobility restrictiveness)	Elopement Prevention Goals; Mechanism of Effect	Targets of Behavioral Change	Examples	Advantages/Disadvantages
Constructs				
Technologically-mediated Interventions				
Caregiver/Patient Interaction 1:1				
Distraction-1	Redistribute; cognitive	Wanderer	Caregiver redirects wanderer attention from wandering locomotion to other activities, eg, verbal-redirecting, engagement, collusion	Resource inefficient
Behavioral modification-1	Reduce; cognitive		Contingent administration of reinforcement in response to wandering and nonwandering behaviors, verbal redirection	Resource inefficient, ethical concerns renegeative reinforcement
Allied and alternative health therapies-1	Reduce; biopsychosocial		Physical and occupational therapies, massage, acupuncture, air mat, bright light, others	May enhance wanderer physical and psychological well-being/relatively expensive
Recreational				
Structured activity programs-1	Redistribute; biopsychosocial	Wanderer	Walking regimens, exercise routines, musical programs or other structured group or individual activities	
Educational				
Training-1	Contain; cognitive	Caregivers, wanderers	1:1, group or media-based instruction, eg, caregiver training—disable the car or store keys in safe or locked places. Wanderer navigation training and wayfinding tips	Provides social support
Administrative				
Wanderer registry-1	Retrieve; (organized at the local, regional, or national level)	Family caregiver, administrative personnel	Database + identification jewelry signify wanderer status to a “finder” + information in central database, eg, Alzheimer Association Safe Return Program	Preserves wanderer freedom of locomotion/little used, identification jewelry may stigmatize
Law enforcement search and rescue-1		Paid community personnel	Individual or group law enforcement intervention for lost or distressed wanderer, eg, search and recovery mission, Project Lifesaver	Resource inefficient
Technologically-mediated Interventions				
Perceptual				
Subjective exit Barriers-2	Reduce; cognitive/perceptual	Wanderer	Camouflaging doors, and door-knobs; adding floor grid patterns near exits	Low cost, simple to install, adaptable/may impede non-wanderer entrance and egress
Environmental				
Cueing-1			Directional and destination signage, landmarks, increased and simplified use of signage and symbols, eg, stop signs at exit doors, resident photos on living quarter doors, night lights, “smart lighting”, signs to alert visitors to potential resident exiting	Resource efficient, simple to install, may benefit wanderers and non-wanderers alike

(continued)

Table 3. (continued)

Strategies and Substrategies (scaled 1-4, low to high mobility restrictiveness)	Elopement Prevention Goals; Mechanism of Effect	Targets of Behavioral Change	Examples	Advantages/Disadvantages
Constructs				
Technologically-mediated Interventions				
Sensory				
Sensory enhancement-1	Accommodate; cognitive/sensory		Modifying environmental ambiance via music, aroma therapy, texture, noise and lighting level control: multisensory environments	Low cost, may benefit patients and others on multiple levels
Physical				
Environmental design-2	Accommodate, redistribute; biopsychosocial	Wanderer	Dementia-specific environmental layout, eg, indoor or outdoor "safe wandering paths," parks, gardens	May benefit wanderers and non-wanderers alike/expensive
Barricades-3	Restrain; mechanical		Obstructing locale-specific entry using a chair, hedge, domestic sprinkler system, cloth, plastic tape, other devices	Resource efficient, simple, adaptable/possible fall hazard
Locks-3			Simple door locks	Fire hazard
Personal restraints-4			Belts, vests, chairs, others	Regulatory issues, ethical concerns
Signal transmitting systems				
Locking systems-3	Contain; signal, activates auto locking		Elopement management systems, eg, WanderGuard	Regulatory issues, possible fire hazard, complex and expensive to install
Alarm/alert systems-3	Monitor; pressure, pull tag, optically or video-activated alerts to wanderer locomotion		Pressure mats—alarm (sound, light, moving image) alerts or sounds when pressure is changed Pull-tabs—alarm sounds when tab is pulled from device Door—alarm sounds when monitored door is accessed by tagged person Optical—activates lights via infrared, when monitored door is accessed Video monitor: alert runs continually or activated by trigger	Low cost, simple to use, adaptable/ false positives Low cost, small size, simple to install, adaptable, tethers to a small confine/ triggering devices easily removed, restrictive, false positives Well-established, easily audible, installable on interior and exterior doors, nonrestrictive to locomotion/high cost, battery-powered identification tag required, installation may be difficult, loud audible alarms may be distressing, caregiver response may be inconsistent or absent, may be ignored or disarmed Low cost, small size, simple to install, adaptable, unobtrusive, long spatial working range/false positives Real time feedback, established technology/confined coverage area, privacy issues

(continued)

Table 3. (continued)

Strategies and Sub-strategies (scaled 1-4, low to high mobility restrictiveness)	Elopement Prevention Goals; Mechanism of Effect	Targets of Behavioral Change	Examples	Advantages/Disadvantages
Constructs				
Technologically-mediated Interventions				
Radio frequency identification device (RFID)-1	Monitor/track; electromagnetic energy	Caregiver	Wanderer wears a tag emitting signals; a sensor tracks locomotion to software, eg, real-time locating systems	Compact, real time feedback/high cost/some interference with other electronic devices, ethical concerns, operational indoors only
Global positioning system (GPS)-1	Track; satellite, digital wireless network and the Internet		Wanderer location tracked via integrated systems, eg, Mobile Locator, Project Lifesaver, videophones	High cost, ethical concerns, wanderer must carry a signaling device, operational out-of-doors only
Advanced, combined systems-1	Monitor/track; multiple, integrated technologies	Caregivers, others including community personnel	Integrated technologies alert to specified behaviors, eg, "integrated monitoring systems"	Multipurpose, high level of discernment between wanderer and non-wanderer/high cost, installation highly complex
Policy-mediated Interventions				
Standardized procedures				
Wanderer assessment/screening-1	Contain/monitor, published directives	Paid caregivers	Assessment instruments, behavior logs	Adherence may be absent, partial, or inconsistent
Scheduled location checks-1			Scheduled location checks	
Missing patient procedures-1	Retrieve; published directives		Lost resident plans, door alarm drills/checks, incident reports, others	
			Elopement response policies	

Goals of Wandering-specific Care

As we have characterized them, universal goals of wandering-specific care are those applicable to all wanderers, aimed at optimizing wanderer health, safety, well-being, and freedom of mobility within formal and informal dementia care settings. Our patient-specific goals are those more immediately responsive to the nursing care needs of individuals.

Our elopement prevention goals catalogue a range of actions of varying levels of restrictiveness to wanderer mobility (monitor, accommodate, reduce, redistribute, track, restrain, retrieve), actions implementable in concert with patient-specific goals of care.

Wandering Interventions

To our knowledge, Table 3 organizes wandering management strategies more inclusively than elsewhere published. Strategies organized within the interpersonally-mediated construct involve a direct interaction between a caregiver and a wanderer, for

example, a caregiver's verbally redirecting or distracting a wanderer, escorting a wanderer back to a supervised setting, applying contingent reinforcement, and other approaches. Technologically-mediated strategies involve a device or design interface with a wanderer and/or others, for example, a wanderer's encounter with a system that secures exit doors to wanderers only or tethers a wanderer to a pull-tab alarm. (Technology is broadly defined here to include "everyday,"²⁰ low- and high-tech and single and integrated approaches.) Policy-mediated interventions include organizationally prescribed procedures such as wandering-specific admission screening and care planning. The relative advantages of the many strategies included in Table 3 receive brief comment; however, efficacy, reliability, adaptability, simplicity, and acceptability of usage including to wanderers themselves are key considerations. An ideal strategy does not limit nonwandering behavior or lead to harm or distress in the patient or the caregiver, involves little caregiver training or involvement, and is relatively inexpensive.²¹

Table 4. A Framework for Managing Wandering and Preventing Elopement

Wandering Behaviors (Domain I)	Elopement Risk Magnitude Estimates	Elopement Prevention and Patient-specific Goals (Domain II)	Wandering Management Interventions (Domain III)		
			Interpersonally-mediated	Technologically-mediated	Policy-mediated
Wandering excessively	Low	Contain, monitor, accommodate, redistribute, reduce; increase monitoring, location checks, decrease agitation, reduce felt need to wander, evaluate/adjust medications, monitor for toileting needs, weight loss, malnutrition, dehydration, exhaustion	Engagement, diversion, collusion, behavioral modification, health therapies	Sensory enhancement	Wanderer assessment, risk screening, behavior logs, scheduled location checks
Wandering locomotion interrupts necessary activities	Low		Verbal redirection; train wanderer to travel using same route every time	Environmental design and cueing	
Losing one's way indoors	Low-to-medium		Redirect using verbal and nonverbal cues, behavioral modification, structured activity programs, and wandering registry	Alert/alarm systems; barricades/locks/subjective exit barriers: mirror, mural, door and floor camouflage, environmental design and cueing	
Wandering locomotion trespasses into off-limits or hazardous area or beyond area of mastery	Medium	Allied and alternative health therapies	Alert/alarm systems, surveillance through video, RFID or combined techniques; locks, locking systems	Subjective exit barriers	Lost resident plans, door alarm drills/checks
Wandering during the night					
Stating intent to leave		Contain, monitor, redistribute, reduce, track; diversion, conceal cues for leaving, eg, hide car keys	Redirect using verbal and nonverbal cues, intensified supervision		
Preparing to leave	Medium-to-high	Contain, monitor, redistribute, reduce; heighten monitoring, increase location checks, decrease agitation, reduce felt need to exit, alert responsible parties to emergent or heightened exiting-referenced behavior		Alert/alarm systems, surveillance through video, RFID or combined techniques; locks, locking systems, physical restraint	
Exit door lingering and testing					
Seeking means or opportunity to exit					
Unauthorized exiting	High	Contain, monitor, restrain; promptly respond to alert/alarms			Incident reports
Eloping, losing one's way exterior to care; getting lost	Adverse event	Track/retrieve; promptly recognize elopement, quickly locate and return wanderer to supervised care setting, assess health status	Wandering registries, local or state police, search and recovery mission	GPS	

Abbreviations: GPS, global positioning system; RFID, Radio frequency identification device.

Estimated Elopement Risk Magnitudes

The dementia-compromised status of wandering behavior²² largely accounts for its problematic nature, that is, its associated risk of harm. For

example, losing one's way exterior to care or getting lost in familiar or unfamiliar environments is predicted from distractibility, impulsivity, and executive function problems.²³ Risk in a health care context refers to any external factor or characteristic of an

individual patient that influences the potential for harm.¹⁶ One scholar conceptualizes wandering-related risk as “a potential that something might happen that remains present until it happens;” a phenomenon influenced by type of wandering locomotion, environmental factors, and caregiver knowledge.²⁴ To assign global estimates of relative risk for a wandering-related elopement event, we have operationalized aspects of this theory, using the perimeter transgression criterion described below. Given the lack of predictability in wandering behavior, and the continuing nature of related risk, such an enterprise is in itself risky, and we believe unprecedented. However, mobility goals cannot be responsibly achieved absent a consideration of how risk levels and individual wanderer needs and rights coincide. (Additional, specific types of wandering risk [eg, falls] also bear consideration; however, risk of an elopement event is the exclusive focus here.)

We have estimated elopement risk magnitudes using a broad “perimeter transgression” criterion. For example, of 3 behavioral constructs discussed (wandering, exiting-referenced, and unauthorized exiting behaviors), the unauthorized exiting construct merited a relatively higher magnitude of elopement risk, based on the behavior’s transgression of a care setting’s perimeter boundary, that is, that built, architectural feature separating interior supervised areas from external, nonsupervised areas. The exiting-referenced construct merited a medium elopement risk, given occurrence in proximity to perimeter boundaries and/or in reference to the act of exiting. Wandering in random, lapping, or pacing patterns was evaluated at the lowest overall elopement risk because as defined, the behavior may transgress temporal or spatial/geographical bounds within dementia care settings but does not transgress or threaten to transgress a built perimeter boundary (Table 4). Yet, a subset of these (wandering intrusively, nocturnally, beyond mastery) bears a higher risk potential due to a concomitant decrease in available caregiver oversight. It is critical to note that suggested risk estimates are anecdotally rather than empirically supported. To reiterate, pending verification elopement risks must be evaluated within the context of personal knowledge and individual assessment of each person with dementia who wanders.

Framework Implications

Combining framework concepts with knowledge of progressive dementing processes can powerfully focus choice of wandering management and

elopement prevention strategies, as the following example illustrates: on one hand, behavior modification, a technique useful to instill learning in healthy humans, achieves its effect by applying contingent or differential reinforcement to persons with dementia who wander; on the other hand, subjective exit barriers exploit the known cognitive and perceptual deficits of wanderers. Given the promising evidence for subjective exit barrier effectiveness in reducing or eliminating exit-seeking⁹ and results more equivocal for contingent reinforcement in dementia,^{25,26} strategies matched not to health but to dementia models appear more promising. Combining informational sources also implies the value of targeting caregivers or cognitively intact others in lieu of wanderers, and/or, of circumventing “wandering stakeholders” altogether, focusing instead on modifying the dementia care environment. The framework additionally highlights the steps of health care decision making, namely, delineating problems, assigning goals, implementing strategies, and ultimately, assessing and revising strategies.²⁷

Framework Limitations

The framework emphasizes the problematic and interventional aspects of wandering-specific care over a more holistic approach; however, we comprehensively address wandering best practice elsewhere.²⁸ The framework intentionally excludes potentially benign or beneficial wandering behaviors, such as “foraging.”⁹ Whether some types of wandering benefit wanderers and ought to be encouraged or at least permitted in safe surroundings is an unresolved issue of continuing debate. However, the framework recognizes the exercise²⁹ and self-determination benefits of personal mobility.³⁰ Although wandering management strategies—in one modified form or another—are potentially applicable across multiple wandering types, the framework’s structure does not depict this. Structural and space limitations similarly disallow framework inclusion of dual (elopement prevention and research methodology) applications of certain technologies, for example, video cameras and signal-transmitting systems,^{31,32} and inclusion of very low-tech approaches, such as having wanderers wear a nametag. Certain high-tech solutions such as pervasive and proactive computing systems are not acknowledged due to their broad applicability beyond wandering intervention. A further critical limitation of this work is the lack of robust evidence to recommend any one non-pharmacological wandering management strategy

over another. There is some evidence, although of poor quality, for the effectiveness of exercise, providing multisensory environments¹⁴ and subjective exit barriers.¹⁷ Otherwise, the literature supports non-pharmacological approaches as working as well as drug treatments³³ and highlights the ethical dilemmas attached to the use of certain strategies, such as tracking and tagging devices.^{34,35}

At least 3 additional caveats bear mention. First, some wandering behaviors, while not immediately harmful or an obvious source of potential danger or elopement risk, nonetheless warrant clinical attention either because of implied meanings (eg, unmet needs) or in relation to delayed or cumulative negative outcomes (eg, weight loss). Despite limited evidence for benefits (improved fitness) of wandering³⁶ and speculation regarding its satisfying functions, no wandering behavior should be dismissed as wholly benign, beneficial, or trivial.

Wandering is a dementia-related locomotion syndrome uniquely shaped and determined by personal drives and meanings and also by certain (as yet barely understood) environmental conditions.^{37,38} Despite wanderers' sometimes articulating personal drives or destinations, possible motivations should nonetheless be considered for their overall implications for wanderer health, comfort, and well-being. Third, some kinds of wandering may lead to exiting, others may not. Exit-referenced behaviors described herein are similar to those reported by Rader and colleagues,³⁹ who coined them "agenda behavior" because they *appear* to reflect an intention to leave. Although common among wanderers,¹⁴ they may not entail walking or wandering itself. Direct association between these behaviors and actual unauthorized exiting has not been studied, but a consequent increased risk for exiting is anecdotally supported.

Although exiting may result from wandering, such events may also occur for unrelated reasons. Knowledge about wandering in proximity to exit doors or windows, and thus defined by us as a high-risk activity, is limited. Relationships between elopement and exiting-related behaviors and unauthorized exiting are largely anecdotal, requiring further study. In our experience, exit-related behaviors tend to escalate over time and may serve as early clues of intention. However, wanderers and non-wanderers alike, and wanderers engaging in seemingly benign to more overtly exit-referenced behaviors have been known to exit without expressing prior intent.

Caveats aside, knowledge of wandering's manifold expression, inherent risks, and available safeguards are fundamental to responsible and humane care. Despite limitations, our framework provides a starting point for tailoring a specialized program of wandering-specific care. The framework may also have value to (1) provide a context for evaluating outcomes of a wandering-specific programs of care; (2) develop risk intervention protocols, policies, and procedures; (3) guide development of wandering practice training initiatives; (4) facilitate informed consumerism of wandering intervention devices and technologies; and (5) suggest testable hypotheses.

Future Research Directions

Given current knowledge gaps and the seriousness of outcomes involved, rigorous evaluations are needed of current, novel, and emergent wandering management and elopement prevention strategies for effectiveness and user satisfaction including that of wanderers.⁹ Additional research foci of clear value include (1) associating specific wandering behaviors and outcomes, (2) evaluating wandering management strategies on a dementia stage-specific basis, (3) identifying clinical indicators of problematic wandering behavior, (4) building frameworks addressing wandering-related risks such as sleep and nutritional deprivation, and (5) testing and refining wandering policy templates for their relationship to patient outcomes.

Conclusion

In the daily round of practice, caregivers are tasked to safeguard persons who wander against elopement while supporting their mobility rights and needs. To minimize risks of harm and to encourage the use of preventive measures, we have provided a framework to facilitate choice of wandering management strategies. We join at least 2 other investigative teams^{40,41} in this effort. Our work differs from theirs in scope, in a specific elopement focus and application of goals of care rationales. (Our predecessors applied "wandering causality" rationales, rejected by us due to the speculative nature of such rationales.) Refinement and revision of our framework is needed, especially as new, improved, and validated wandering management strategies emerge. We encourage the critique and suggestions of others.

Acknowledgments

This material is based upon work supported by the Department of Veterans Affairs, Veterans Health Administration, Office of Research and Development. Authors are members of the International Research Consortium on Wandering at the James A. Haley VAMC, Tampa, Florida, and thank Consortium members for manuscript review. Consortium member Dr James Fozard is gratefully acknowledged for early planning and contribution to this work; Dr William Kearns for developing with authors Drs Moore and Algase a model of wandering technologies presented by him to members in 2005. Views expressed in this article are the authors' and do not necessarily represent views of the Department of Veterans Affairs.

References

1. Aud MA. Dangerous wandering: elopements of older adults with dementia from long-term care facilities. *Am J Alzheimers Dis Other Demen.* 2004;19:361-368.
2. Stevenson DG, Studdert DM. The rise of nursing home litigation: findings from a national survey of attorneys. *Health Aff.* 2003;22:219-229.
3. Siders C, Nelson A, Brown LM, et al. Evidence for implementing non-pharmacological interventions for wandering. *Rehabil Nurs.* 2004;29:195-206.
4. Kenner AM. Securing the elderly body: dementia, surveillance, and the politics of "Aging in Place." *Surveill Soc.* 2008;5:252-269.
5. Nelson A, Powell-Cope G, Gavin-Dreschnack D, et al. Technology to promote safe mobility in the elderly. *Nurs Clin North Am.* 2004;39:649-671.
6. Francese T, Sorrell J, Butler FR. The effects of regular exercise on muscle strength and functional abilities of late stage Alzheimer's residents. *Am J Alzheimers Dis Other Demen.* 1997;12:122-127.
7. Zeman S. Person-centered care for the patient with mid- and late stage dementia. *Am J Alzheimers Dis Other Demen.* 1999;14:308-310.
8. Sink KM, Holden KF, Yaffe K. Pharmacological treatment of neuropsychiatric symptoms of dementia: a review of the evidence. *JAMA.* 2005;293:596-608.
9. Algase DL, Moore DH, Vandeweerd C, Gavin-Dreschnack DJ. Mapping the maze of terms and definitions in dementia-related wandering. *Aging Ment Health.* 2007;11:686-698.
10. Algase DL, Beattie ERA, Bogue E, Yao L. The Algase Wandering Scale: initial psychometrics of a new caregiver reporting tool. *Am J Alzheimers Dis Other Demen.* 2001;16:141-152.
11. Teri L, Truax R, Logsdon J, Uomoto J, Zarit S, Vitaliano PP. Assessment of behavioral problems in dementia: the revised memory and behavior problems checklist. *Psychol Aging.* 1992;7:622-631.
12. Hope T, Fairburn CG. The present behavioural examination (PBE): the development of an interview to measure current behavioural abnormalities. *Psychol Med.* 1992;22:223.
13. Algase DL, Yao L, Beel-Bates C, Song J. Theoretical models of wandering. In: Nelson AL, Algase DL, eds. *Evidence-based Protocols for Managing Wandering Behaviors.* New York: Springer; 2007:19-51.
14. Robinson L, Hutchings D, Corner L, et al. A systematic literature review of the effectiveness of non-pharmacological interventions to prevent wandering in dementia and evaluation of the ethical implications and acceptability of their use. *Health Technol Assess.* 2006;10:iii, ix-108.
15. Kearns W, Rosenberg D, West L, Applegarth S. Attitudes and expectations of technologies to manage wandering behavior in persons with dementia. *Gerontechnology.* 2007;6:89-101.
16. Heyn P, Abreu BC, Ottenbacher KJ. The effects of exercise training on elderly persons with cognitive impairment and dementia: a meta-analysis. *Arch Phys Med Rehabil.* 2004;85:1694-1704.
17. Centers for Medicare and Medicaid Services. CMS Manual System, Pub. 100-07. State Operations, Transmittal 27, 8-17-07. 2007. Available at www.cms.hhs.gov/transmittals/Downloads/R4SOM.pdf. Accessed December 20, 2008.
18. Price JD, Hermans DG, Grimley Evans J. Subjective barriers to prevent wandering of cognitively impaired people. *Cochrane Database Syst Rev.* 2001:CD001932. DOI: 10.1002/14651858.CD001932.
19. Lucero M. Intervention strategies for exit-seeking wandering behavior in dementia residents. *Am J Alzheimers Dis Other Demen.* 2002;7:277-280.
20. Dishman E, Carrillo MC. Perspective on everyday technologies for Alzheimer's care: research findings, directions, and challenges. *Alzheimers Dement.* 2007;3:227-234.
21. Hussian RA, Brown DC. Use of two-dimensional grid patterns to limit hazardous ambulation in demented patients. *J Gerontology.* 1987;42:558-560.
22. Algase DL. Wandering. A dementia-compromised behavior. *J Gerontol Nurs.* 1999;25:10-6; quiz 7, 51.
23. Chiu YC, Algase D, Liang J, Liu HC, Lin KN. Conceptualization and measurement of getting lost behavior. *Int J Geriatr Psychiatry.* 2005;20:760-768.
24. Dewing J. Screening for wandering among older persons with dementia. *Nurs Older People.* 2005;17:20-22, 24.
25. Heard K, Watson TS. Reducing wandering by persons with dementia using differential reinforcement. *J Appl Behav Anal.* 1999;32:381-384.
26. Burgess IS, Wearden JH, Cox T, Rae M. Operant conditioning with subjects suffering from dementia. *Behav Psychother.* 1992;20:219-237.

27. Elstein AS, Schwartz A. Clinical problem solving and diagnostic decision making: selective review of the cognitive literature. *BMJ*. 2002;324:729-732.
28. Nelson AL, Algase DL, eds. *Evidence-based Protocols for Managing Wandering Behaviors*. New York: Springer; 2007.
29. Bean JF, Vora A, Frontera WR. Benefits of exercise for community-dwelling older adults. *Arch Phys Med Rehabil*. 2004;85(7 suppl 3):S31-S42;quiz S43-S44.
30. Melander-Wikman A, Fältholm Y, Gard G. Safety vs. privacy: elderly persons' experiences of a mobile safety alarm. *Health Soc Care Community*. 2008;16:337-346.
31. Kearns W, Algase D, Moore DH, Ahmed S. Ultra Wideband Radio: a novel method for measuring wandering in persons with dementia. *Gerontechnology*. 2008;7:48-57.
32. Greiner C, Makimoto K, Suzuki M, Yamakawa M, Ashida N. Feasibility study of the integrated circuit tag monitoring system for dementia residents in Japan. *Am J Alzheimers Dis Other Demen*. 2007;22:129-136.
33. Hermans DG, Htay UH, McShane R. Non-pharmacological interventions for wandering of people with dementia in the domestic setting. *Cochrane Database Syst Rev*. 2007;CD005994. DOI: 10.1002/14651858.CD005994.pub2.
34. Robinson L, Hutchings D, Corner L, et al. Balancing rights and risks: conflicting perspectives in the intervention of wandering in dementia. *Health Risk Soc*. 2007;9:389-406.
35. Moore DH, French DD. Real ID Act and Radio Frequency Identification Devices (RFID): the future of patient identification? *J Am Med Dir Assoc*. 2007;8:551.
36. Snyder LH, Rupperecht P, Pyrek J, Brekhuis S, Moss T. Wandering. *Gerontologist*. 1978;18:272-280.
37. Yao L, Algase D. Environmental ambiance as a new window on wandering. *West J Nurs Res*. 2006;28:89-104.
38. Yao L, Algase D. Emotional intervention strategies for dementia-related behavior: a theory synthesis. *J Neurosci Nurs*. 2008;40:106-115.
39. Rader J, Doan J, Schwab M. How to decrease wandering, a form of agenda behavior. *Geriatr Nurs*. 1985;6:196-199.
40. Coltharp W Jr, Richie MF, Kaas MJ. Wandering. *J Gerontol Nurs*. 1996;22:5-10.
41. Carlson D, Fleming K, Smith G, Evans J. Intervention of dementia-related behavioral disturbances: a nonpharmacologic approach. *Mayo Clinic Proceed*. 1995;70:1108-1115.

For reprints and permissions queries, please visit SAGE's Web site at <http://www.sagepub.com/journalsPermissions.nav>