

# Designing for Residents with Dementia

## The Dorothy Macham Home

**M**ost long term care residents with dementia exhibit behavioural problems at some point. Although these behaviours are often disruptive, they rarely affect the safety of others. But for those one-quarter of residents with dementia who are physically aggressive, it is sometimes difficult to manage their behaviour. A number of studies have been conducted on the positive behavioural influence of one's physical surroundings. Indeed, environment plays an increasingly therapeutic role as cognition declines.

**by Jocelyn Charles and Norm Abrams**

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### Case Study: Sunnybrook's Cognitive Support Unit

The Cognitive Support Unit at Sunnybrook and Women's College Health Sciences Centre in Toronto is part of a 575-bed long term care facility.

The Cognitive Support Unit accommodates 178 primarily male veterans with dementia. There are five resident care sections, each accommodating about 33 residents with nursing home and complex continuing care needs. One section – designed as a “racetrack” corridor – has both private and three-bed rooms clustered around a central dining area and adjacent to a multipurpose lounge. In the other four sections, private and semi-private rooms are strung along a wide hallway, with each section having its own nursing station, lounge and dining room.

In a previous survey of behavioural problems, 43 of the 186 residents in the Cognitive Support Unit exhibited significant agitated behaviour. Using the Cohen-Mansfield Agitation Inventory and the Overt Aggression Scale, staff found that 86% of these residents showed at least one behavioural problem several times a day, while 76% were physically aggressive a few times every day or several times in an hour. In one week, 10 residents received mild or moderate injuries as a result of aggressive incidents, with most inci-

dents occurring during the day or evening and in resident rooms or hallways.

The decision was made to construct a small behavioural care unit, and Veterans Affairs Canada agreed to fund the project.



*The Dorothy Macham Home*

### The Design Process

#### Step 1: Determining Needs and Researching Possibilities

A physical space for residents with dementia should ensure safety and dignity yet minimize confusion. According to M. Schiff, the environment should be well-structured, be stable and familiar, serve as behavioural and memory cues, and orient the individual to the surroundings. Because those with dementia are unable to process large amounts of information at a time, a well-structured environment can minimize excess stimuli. Example: smaller groups of residents living in well-defined spaces reduce distraction and improve function. A familiar, stable environment also helps to maintain or improve function. Example: rooms used consistently for the same purpose – the dining room for eating – cue behaviour and compensate for memory loss. Other types of cues, such as signs, can be used to help residents find their rooms and beloved objects. The environment should also support reality. Example: contradictory or ambiguous stimuli, such as artificial plants and murals, should be avoided.

Researchers J. Teresi, M.P. Lawton, M. Ory and D. Holmes also discovered the importance of promoting awareness and orientation, providing appropriate stimuli, supporting functional ability, providing a positive social milieu, promoting privacy and control, creating familiarity and providing overall comfort. In practical terms, the physical environment should be home-like, allow residents to wander safely without risk to themselves, “house” no more than eight residents in a section/unit and provide access to secure outdoor space. Interior design considerations – equally important for elderly without dementia – include appropriate and sufficient lighting, reduced glare, adequate contrast, judicious use of colour, sound-attenuating or non-slip/non-patterned flooring, appropriately placed grab bars and guard rails, and stable furniture.

Following an extensive literature review, Cognitive Support Unit staff visited several innovatively designed dementia care units in Canada, the United States and Tasmania to gather information about specific design features (both positive and negative), supportive and activity programming, and operational procedures. They then examined four possible locations within the facility itself to determine the feasibility of retrofitting existing space for a separate, secure 10-bed dementia unit, taking into account accessibility, proximity to an exterior garden, residential appearance, security and capital cost. However, structural obstacles, anticipated design compromises and other difficulties made it clear that a retrofit was impossible. A one-storey, stand-alone building, which would be connected to the main facility by a covered walkway, was the answer.

### **Step 2: Programming**

To ensure the design would support the desired programming, a half-day interdisciplinary retreat was held. Using “a day in the life of a resident” as the envisioning focus, staff reviewed the types of residents who would be admitted to the unit, the range of their physical and cognitive abilities, and the activation programs that would enhance daily living. Activities were defined in broad terms and included basic or daily living functions, spontaneous activities for both individuals and groups, scheduled activities, and special events.

Following the retreat, staff devised a functional programming plan based on identified design needs. Design needs included:

- a safe kitchen for residents to cook and bake
- large, yet cosy and non-institutional kitchen/dining room for food preparation and dining with family members

- secure garden space for outdoor activities;
- storage for activity kits to be used by nursing staff when needed;
- enclosed activity room near the living and dining rooms;
- state-of-the-art technological communication, tracking and security systems;
- efficient, safe kitchen appliances (electromagnetic induction burner and convection/microwave for reheating food quickly, creating pleasant aromas and browning food); and
- wandering loops away from activity areas.

*The kitchen*



### **Step 3: Involving Families and Staff in the Process**

Family members and staff were invited to be involved in the design process. Jackie Barnett, a physiotherapist with an expertise in ergonomics, acted as facilitator for the three focus group sessions, two with nursing and allied health staff and one with family members of residents with disruptive behaviour. All responses were recorded.

On the families’ wish list:

- deter residents from wandering into other residents’ rooms by locating bedrooms away from activity areas;
- make bedrooms visible to staff;
- use carpeting, grab bars in bathrooms and showers, a shower chair in the shower area, and safe, heavy furniture to reduce the incidence of falls and associated injuries;

*The living room*



- install grab bars in the bathroom to help with toileting and dressing;
- use low sinks and shelving,
- tilt mirrors, large shower stalls and wide doorways for non-ambulatory residents and higher toilet seats and chairs for those with minimal leg strength;
- select bedside tables with lockable bottom drawers and situate one locked cupboard beside an unlocked cupboard to allow controlled rummaging;
- create a “homey” environment with a resident’s personal items to enhance orientation;
- provide supervised, secure outdoor space and an area for coat/boot storage to encourage independence;
- install ensuite bathrooms in residents’ rooms for privacy;
- encourage residents to use their room when they wish; and
- use skylights, colours, large closets and bulletin boards.

On the wish list of nursing and physiotherapy staff:

- enable staff to observe residents as much as possible;
- create flexible work areas and use laptop computers, for completing charts while in the presence of a resident;
- design a separate staff room for relaxation;
- create an area for staff to prepare and chart medications;
- ensure the kitchen and dining room are functional to encourage resident functioning and simulate daily living activities;
- install on-site laundry facilities for quick laundering and resident activities;
- install large shower stalls without curtains or with a two-tiered shower curtain, and use glass blocks to minimize resident claustrophobia;
- lower sinks and mirrors, and ensure ample transfer space for non-ambulatory residents;
- use reversible mirrors for residents who get upset by their reflection;

- purchase vinyl furniture for easy cleaning and install fecal drains in the showers;
- make heating vents inaccessible to discourage the tendency to urinate into the vents;
- create “home-like” surroundings;
- conceal and secure cupboards to reduce rummaging; and
- create two means of egress from every room and install a voice intercom and security panic alarm system.

#### **Step 4: Meeting with Support Services**

Following a meeting with staff from the food service, pharmacy, communications, infection control, materials and environmental service departments to ascertain how they could help improve resident care, suggestions were made to:

- reheat food in the unit’s own kitchen rather than use the re-thermalized tray service to create cooking smells and then serve on dishes (residents with swallowing problems would be served a combination of bulk foods and individually packaged items from the tray service);
- wire an alarm system into the phone system;
- conceal one handwashing station in each of the bedroom corridors, to be used by staff;
- locate the room for soiled items away from resident bedrooms to reduce odour and ensure accessibility by staff with minimal disruption to residents;
- conceal soiled linen carts that are close to resident bedrooms; and
- locate the utility room near the entrance to minimize the presence of non-unit staff.

#### **Step 5: Resolving Design Conflicts**

The wish lists developed by families and staff clearly highlighted a number of design conflicts, which needed to be resolved:

1. *Ability to observe residents at all times versus a familiar, home-like environment with small, well-defined spaces:* Staff were educated about the negative impact a noisy, open-concept environment has on resident behaviour. Alternatives that would enable staff to closely supervise the residents were explored: strategically locating the living and dining rooms and kitchen with respect to the bedrooms; creating indoor/outdoor wandering paths; partitioning off central rooms to reduce distraction yet allow for staff observation; installing sensors under bedroom floors (connected to the phone system) to alert staff to resident movement; and installing a security system to ensure resident safety and quick staff response.

2. *Two means of egress from every room versus small, well-defined rooms and private bedroom space:* In the central area,



*The nursing station*





### Design Highlights

- resembles a typical home, inside and out
- residential kitchen and no nursing station
- private rooms with ensuite bathrooms for 10 residents
- camouflaged exit with a door that residents can use beside it
- no dead-end corridors (except when west garden not accessible)
- wandering path located away from bedroom corridors
- two, small corridors with five private rooms each
- two sound-attenuated rooms for noisy residents
- toilet visible from each bed
- floor sensor to notify staff when a resident is out of bed or another resident has entered a bedroom
- shared showers between adjacent bathrooms with camouflaged swing door between the adjacent bathrooms (two means of egress from each room)
- two separate, fully secure gardens.
- east garden visible from living, dining and activity rooms
- east garden has concealed fence, outdoor wandering path and space for outdoor activities
- west garden (terrace) provides quiet patio space for individual or small group use

doors to the outside garden area are used as the second exit when possible, and most of these doors can be closed for increased privacy. From every resident bedroom, a second means of egress was achieved through a shared shower between the ensuite bathrooms.

THE DOROTHY MACHAM HOME, WHICH OPENED IN MAY 2001, WAS BUILT AS A MODEL CANADIAN FACILITY FOR THE CARE OF PEOPLE WITH DEMENTIA WHO HAVE CHALLENGING BEHAVIOURS, AS WELL AS AN ACADEMIC FACILITY WITH BOTH TEACHING AND RESEARCH MANDATES. IT WAS NAMED AFTER MS. DOROTHY MACHAM, A NURSING SISTER AND MAJOR IN THE SECOND WORLD WAR, THE FORMER ADMINISTRATIVE SUPERINTENDENT OF WOMEN'S COLLEGE HOSPITAL AND THE RECIPIENT OF THE ORDER OF CANADA IN 1980.

3. *Keep residents away from the bedrooms during the day (to reduce altercations) versus enabling them to stay in their room for solitary time:* Two short hallways to the resident rooms, with both hallways visible from the central living room, were created. Lighting was used to attract residents to the central area during the day. A wandering path was created away from the bedroom hallways to discourage bedroom wandering.

4. *Ability to work with the residents in the unit versus a traditional nursing station and a place to retreat to in times of crisis/need:* Staff input regarding the "high environmental press" effect (over-stimulation) on residents by a traditional nursing station and input from Dr. John Tooth of the ADARDS Nursing Home in Tasmania – where nursing stations are not used – reassured those staff members who wanted to keep to the traditional nursing station concept. A small office and staff lounge were located just outside the unit.

5. *Carpet to cushion falls, attenuate sound and reduce the institutional appearance versus the difficulty in cleaning, operational costs and problems for residents who shuffle:* A slightly cushioned vinyl floor that looks like wood was installed.

6. *Low toilet seats for a home-like appearance and to accommodate commode chairs versus high toilet seats for individuals with hip and leg strength problems:* A 16-inch high toilet that can accommodate a commode chair and be elevated further with a device, as well as white toilets with black toilet seats, for better visibility, were chosen.

7. *Bathroom sink tap levers, which are highly functional, versus traditional knob taps, which are less so but more homey:* A home-like tap lever was selected.

### The Final Design

Design drafts were circulated for comment to staff, managers, clinical and environmental experts, and Veterans Affairs Canada. As a starting-point, the ADARDS Nursing Home in Tasmania was used for a template, but modifications were made in consideration of the colder Canadian climate, different fire and building code regulations, difference in size and overall facility layout, and physical and operational links to Sunnybrook. ADARDS' pinwheel design – four 8-bed units emanating from a central activity/night nursing area and activity spaces at the edge of each spoke – was modified into an L-shaped design with four parts: each of the two arms of the L contains five bedrooms, the common junction is reserved for the activity areas and a small "connector" is used for staff areas. This connector also links the activity area with the hospital.