

October 28, 2003

Dear Directors of Care, Health Professionals and colleagues:

Thank you for your continued response to our e-mail request for information about alarm systems and monitors currently in use in long-term care facilities around British Columbia. A great deal of interest continues to be generated by this informal survey. Five responses to the survey have been added to the original table of results and the survey is now at an end.

The idea for this survey came from participants on our long-term care falls prevention project, currently underway in three BC sites – in Sechelt, Cranbrook and Quesnel – see the BCIRPU web site for more information on this project at www.injuryresearch.bc.ca. This request was sparked by a lack of information on what is currently being used in facilities and what people think about the strengths and weakness of these systems. There is little empirical evidence on the effectiveness of alarm systems in facility settings. As can be seen in the attached literature review of falls prevention strategies for long-term care settings (Scott et al., 2003), the only studies available had small samples sizes. Therefore, more studies are needed before recommendations can be made.

In the absence of research evidence, the purpose of this survey was to share verbatim comments on these systems among those who are using them. The results from this small, snowball sample survey show that there are many different types of monitoring systems in use. Some facilities use more than one system. Of all the different types of alarms and motion sensors identified, the most frequently used system is the Bed / Chair Check system, which is in use in approximately one third of facilities who responded to the survey. This system works by placing sensormats under the resident (in chair or in bed). Movement triggers the sensors, an alarm is triggered and the caregiver responds.

Overall, the reported strengths of each system include the ease of use, the adaptability of the system to the existing nurse-call system, and a variety of options for response time and alarm tones. Common reports on the identified weaknesses of each system include the cost of replacing parts and sensormats (due to decreased sensitivity), loud alarms, and the degree to which the alarm upsets residents.

Product or company endorsement is not the intent of this survey. Rather it is our intent to provide a means of communicating between facilities and health regions on the opinions of users of these systems on the pros and cons of systems currently in use. Towards that end, please distribute these findings to your colleagues. This is not intended to be a comprehensive survey, and only represents the systems used by those who chose to respond to our request for information. For further information, we recommend that you contact the companies listed or conduct your own search on the internet, using terms such as falls prevention AND nursing homes, facilities, long term care AND/OR bed alarms, motion sensors, or monitors.

Yours truly,
Vicky Scott, Seniors Advisor on Falls Prevention, BCIRPU
Kristine Votova, Falls Prevention Coordinator, BCIRPU

**Informal Survey Results On Alarm System/Monitors In Use
In Canadian Long-Term Care Facilities**

Alarm/Sensor System	Cost of System (installation / maintenance)	How long System in place	Strengths of System	Weaknesses of System	Contact Information for System
Bed Check & Chair Check (both with sensor-mats)	Computer \$200 Mat Sensors \$100 each.	5 years	-Ease of use. -Transferable to other residents. -Connects to call bell system	-Can be too loud (scares resident).	Associated Health Systems -Richmond, BC -Doug Denson (604-276-8012).
Chair Check Bed Check (both with sensor-mats)	Chaircheck \$409 per unit. -Chaircheck sensormat \$504 for box of 10 (or \$56 per piece if buy <10). -Bedcheck sensormat \$415 (box of 5). Or \$87 per piece of buy <5.	10 years	-No installation required (connect the main unit to the sensormat). -Sound alerts staff aids in early detection of falls. -Easy to use -Chaircheck unit can be adapted to either the chaircheck sensormat or the bedcheck sensormat.	-Malfunction of the unit or sensormat. -Replacement of sensormats approx every 3-6 months. -Some residents will disconnect the main unit to the sensormat.	Associated Health Systems -Richmond, BC -Doug Denson (604-276-8012).
Bed Check Chair Check	Bed Alarm Unit \$510 each 90-day Sensor Mats \$384 for box of 5.	Less than one year.	-Variable alarms -Bed hanger system -Specific jacks to avoid plugging into wrong outlets -Long cords -Can alternate between chair and bed sensormats. -Can set delay from 1 to 9 seconds to accommodate residents who move in bed. -Automatically resets to monitor when pressure present (in case staff forgets or resident returns to bed or chair).	-Sensormats need to be placed exactly under buttocks or shoulders to work. -Only works with "nurse-call" system (doesn't interface with older systems) -Residents can unplug the unit themselves. -Very sensitive to movement, can over-detect movement in bed (restless sleeping). -Not using Chair Check at all because residents tend to trigger the alarm	Associated Health Systems -Richmond, BC -Doug Denson (604-276-8012).

Alarm/Sensor System	Cost of System (installation/maintenance)	How long System in place	Strengths of System	Weaknesses of System	Contact Information for System
Posey Sitter II Alarm	No installation. \$210 for alarm. Need baby monitor (\$40-60) to help hear alarm when away from area.	3 years	<ul style="list-style-type: none"> -Inexpensive -No installation -Simple principle: when the resident gets up the cord pulls out and the alarm goes off. The baby monitor relays the sound to caregiver. 	<ul style="list-style-type: none"> -Length of time between response and need (resident may get up before help can get to them). -There are better systems out there, but our facility call-bell system is too old to accommodate the newer systems. 	Futuremed Canada 1-800-387-7025 http://www.posey.com/products/8361.html
ST 400 Sensatec	System module: \$560 Disposable Pads: Single pad w/ 30 day warranty: \$80 each W/90 day warranty \$110	Less than three months (on a trial basis).	<ul style="list-style-type: none"> -System integration with existing nurse call system and relay signal to the call station. 	<ul style="list-style-type: none"> -Short life span of the pads. -Not trustworthy system as the wire plug can slip out of the module easily. If it does, the alarm will only ring inside the room and will not send signal to call station. -On some occasions the alarm does not function; due to faulty pad or wiring. 	Omega Communications Daren Lowe 250-860-8016 Daren@omega.ca
Posey Sitter II Alarm: Bed and chair sensors	Alarm costs \$900 each with tax.	Less than one month	<ul style="list-style-type: none"> -Variety of "musical" alarm codes instead of bell or monotone. -Has a Y connector for resident to use personal call system with the alarm system still connected to nursing station. -Has a 'delay' function to set alarm after elapsed time. 	<ul style="list-style-type: none"> -Unit is too big and cumbersome to be used as a chair alarm. -Bed sensors are sensitive to density of mattress. This means longer wait times when ordering to ensure bed sensormats match mattress density and weight. 	Peter Kaulius of STEVENS 604-321-4121

Alarm/Sensor System	Cost of System (installation/maintenance)	How long System in place	Strengths of System	Weaknesses of System	Contact Information for System
TABS Alert System	\$730 each (with discount and no tax)	6 months	<ul style="list-style-type: none"> -Price includes bed and chair sensors and brackets for wheelchairs) -Wheelchair brackets and size of unit are ideal for use as a chair alarm. -If used during daytime, it is effective in identifying risk. 	<ul style="list-style-type: none"> -Alarm system is a variety of buzz/bell tones with no volume control. Okay during the day for wheelchairs but not used at night for fear of frightening residents. 	Bud Giffen for Medi-Mat LTD. 604-669-7056
Watchmate Wandering System	Cost varies for number of areas requiring monitoring. \$30,000 initial cost for 5 sensor areas, a remote pager to alert staff and an outside gate sensor that leads to a park. Residents wear a band with a watch-like monitor (for elopement risk), or wear watch on wheelchair & scooter.	11 Years	<ul style="list-style-type: none"> -Programmable pager (lists time, date, monitor and resident name) -Easy to add or remove residents in the system. -Reasonably reliable. -Sensors can be transferred to other residents (when cleaned). -Sensor can get wet. -Watchmate Company responds with efficient service and tries to keep costs low. 	<ul style="list-style-type: none"> -Sensors on residents require replacement every 2 years or less (cost \$125 per sensor). -If placed on back or side of wheelchair (not an approved use of sensor) can be false alarms as resident passes by a door. -System false alarms when a resident nears a monitored door that is left open. 	Rob Victor 604-324-8260 604-250-0852 (cell)
AHS BedCheck Alarm with Adaptor	\$599 for system. Sensor mats with 90 day expectancy are additional costs. Monitoring pad is fitted onto the bed and is monitored by a remote attached monitor which can be plugged into most nursing stations.	4 years	<ul style="list-style-type: none"> -Can be plugged into existing nurse call system. -Easy to operate. -Repairs are prompt as there is a local dealer. -Some repairs necessary due to banging or alarm box falling. 	<ul style="list-style-type: none"> -Difficult to find the right 'delay' for restless residents to avoid false alarms. -Staff can forget to turn system on or hook up correctly. 	Associated Health Systems -Richmond, BC -Doug Denson (604-276-8012).

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Bed Check System	\$700 for system and sensor strips and motor (depends on which strip).	Used according to resident need. Used after a hip injury and for prevention.	-The alarm is loud and goes off as soon as the resident tries to get up from the bed.	-Cognitive residents do not like the alarm, especially at night.	Associated Health Systems -Richmond, BC -Doug Denson (604-276-8012).
Genius Wireless Sensor Alarm *Note: This facility is in Nova Scotia	\$180 for installation of each monitor. Requires Velcro or screw installation on wall. Maintain batteries (cost varies).	1 year	-Caregiver carries receiver on waistband for individual being monitored.	-Need a monitor for each side of the bed (or end) unless one side of the bed is against the wall.	Alimed-Orthoped (Montreal/Dorval) 514-636-9579 1-800-363-8726
TABS Mobility Monitor	\$385 to \$585 depending on features.	Trial basis: 2 months.	-4 different alarm tones plus a voice alarm (you can speak into the unit and record a message "Mrs. Smith please sit down and wait for the nurse". -Attaches to wall or bed. -Uses a string with a magnetic release—when the string is pulled the magnetic disc detaches from the unit triggering the alarm and the monitor at the nursing station. -Variety of options. Can also attach to pressure pads (have not tried here). -No alarm in resident room—just nursing station. -Accurate.	-Significant cost per unit. -If attached to a wall then minor repairs to wall when unit is detached (can also purchase extra wall pieces). -Would not work if someone has athetoid movements or is a restless sleeper.	Dave Langrish of Integrity Sales in Kelowna 1-800-582-7632

Alarm/Sensor System	Cost of System (installation/maintenance)	How long System in place	Strengths of System	Weaknesses of System	Contact Information for System
Motion Detector	\$80 to \$100 (purchased a frog motion detector from a local hardware store). Includes cost of a baby monitor	Used with 3 clients over a 4-month period.	<ul style="list-style-type: none"> -If linked to a video camera (donated by staff member) the system worked well. -Frog 'croaks' at any movement so video camera was important to rule out false alarms (other residents, or staff). 	<ul style="list-style-type: none"> -Staff found it a hassle to set the frog in the correct position (we put an X on the floor, which helped). -Many false alarms. -Would not croak if the resident moved very slowly getting out of bed. 	No contact provided.
Bed Check	\$600 for bed check control units with a nurse call port. \$525 per box of 10 Sensormats. The mats last about 3-4 months.	4 ½ years	<ul style="list-style-type: none"> -System is effective as it alerts staff on their pagers and overhead system. -The system cannot be shut off from the desk, thus reducing the risk that the resident can be made to wait. -The system can be unhooked and reuse, except for the bed/wheelchair sensormat, for other residents, once the need has passed. -System can be adjusted so that the time frame is lengthened between trigger and alarm. 	<ul style="list-style-type: none"> --The alarm rings at the bedside and this is found to be annoying (but can also be seen as a preventive mechanism). 	Associated Health Systems -Richmond, BC -Doug Denson (604-276-8012).

Alarm/Sensor System	Cost of System (installation/maintenance)	How long System in place	Strengths of System	Weaknesses of System	Contact Information for System
Posey Bed Alarm	\$599.00 ++ System has a permanent bed sensor eliminating replacement costs.	System used less than a year—and only in hospice.	-System can be programmed with a familiar voice or command, music or alarm. -Mats are permanent.	-More complex to operate. -Does not work with some nurse call systems.	No contact provided.
TABS Select	Not sure about the cost, my guess is around \$100 per unit. I had to make a homemade adapter to plug it into our call bell system so that alarm would ring at nurse's station. Our system is very old.	4 years, but only for occasional use.	-Uses a regular 9-volt battery. The unit is screwed to the headboard of the bed. A length of string is clipped to the resident and the other end magnetically held to the TABS alarm. When resident moves, alarm is triggered. -Adaptable to all call systems.	-The battery does not last long enough, especially with more constant alerting. -When the battery is low it sounds a different alarm. This often confuses nurses who cannot figure out why it is alerting.	Associated Health Systems -Richmond, BC -Doug Denson (604-276-8012).
Vigil Chair Check Monitor	Uncertain as to original cost.	4 years	-Allows a resident to be in their private space while still monitoring their movements through motion sensors. -Allows staff to be more proactive when an acute condition requires closer monitoring and when residents are potentially aggressive. -Silently pages staff to attend to residents.	-Cost of ongoing maintenance of the system (i.e., bed sensors, pagers and upgrades). -Takes some time for staff to learn.	Vigil Health Management 250-383-6900 www.vigil-inc.com/index.htm

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Code Alert: New Version of Bed Check	Not available.	Beta testing site. No dates given.	<ul style="list-style-type: none"> -Alert is done through pager to the nurse looking after the patients to reduce distracting noise to patients. -Absolutely user-friendly for installation and individual adjustments for patient response. -Able to track alarm triggering. -Length of time for staff to respond and turn off alarm is adjustable. -Interfaces with our current call system. -Comprehensive to include wanderers. 	-No weaknesses identified.	www.Omegagroup.bc.ca Lowen Distributors (no number given).
Roam Alert exit wireless system.	Cost of installation is \$60,000 plus \$150.00 per bracelet (resident wears bracelet).	2 years	<ul style="list-style-type: none"> - The bed alarm is pressure sensitive and attached via nurse-call system. When triggered, it creates urgent sounding alarm at the nursing desk and above resident room. - Wander alarm automatically closes exiting doors stopping residents from exiting, or blocks entrance to visitors while alarm in operations 	<ul style="list-style-type: none"> - There have been residents who force the doors open and leave building. -Bracelets can be cut off and lost by residents. The facility incurs the expenses. 	Columbia Sound: contact Robert 604-590-2116

Alarm/Sensor System	Cost of System (installation/maintenance)	How long System in place	Strengths of System	Weaknesses of System	Contact Information for System
"Watchmate" by InstanTEL	Too long ago to recall. Individual bracelets are \$130 each.	Over 10 years.	-Basic and easy to use. -Older system had no frills (what is used now). Newer systems have a tracking function.	-Occasional false alarms or missed alarms. These can be attributed to a weak battery or wrist resting on a wheelchair which acts like an antenna. -Expensive, but that appears to be the going rate.	www.instanTEL.com
Simplex-Teltone Nurse Call System	Purchase cost unknown, maintenance costs are quite high.	Approx. 10 years old.	-Easy to use, minimal staff training.	-System has been unreliable with high maintenance costs. -A basic nurse call system with few extra features like attendant lights. -Structure of system is complex and unreliable. -Does not work for residents with dementia. Not patient monitor.	No contact provided.
Edwards Brand Nurse Call System.	Purchase price unknown, maintenance costs minimal.	System in use for 22 years.	-A very simple system. Pull a string and the light comes on. It has been reliable and simple to use. -No staff training involved.	-System too old. Wiring is brittle and causing phantom calls. -System does not work for residents with dementia who can't pull cord when assistance needed. System is only a nurse call system; it does not monitor resident activity.	No contact provided.

Alarm/Sensor System	Cost of System (installation/maintenance)	How long System in place	Strengths of System	Weaknesses of System	Contact Information for System
(1.) Wanderguard and (2.) Door Magnet Lock System.	\$960 per door	(1.)15 years (2.) 5 years	-Provides adequate safety.	-Very old Wanderguard system as there are too many frequency signals in the air that interfere with the system. -Expensive to investigate and maintain.	NA
Bed-Check Corporation- Model II Control Unit	<p>\$599 for control. \$40 for adaptor (needed to go through out existing call bell system).</p> <p>-Sensor mats: 30 day (\$550 for box of 10) 90 day (\$415 for box of 5).</p> <p>-Box of ten 30 day sensor mats ordered by the facility and kept on hand. When used by resident charged out at our cost to their comfort account. Prior family authorization received each time. Also provide an opportunity to review continued need for use.</p>	<p>This system has been in use at the facility since late 1999.</p> <p>-For resident use, length of time varies from 1 to 3 months for assessment to 1 to 3 years for long-term use.</p>	<p>-Control unit and adaptor plugged into call bell system at the wall in resident's room. Our maintenance person typically sets this up.</p> <p>-Sensor mat is easily changed.</p> <p>-Targets residents at risk of climbing out of bed.</p> <p>-Sensor mats usually last 3 to 5 months rather than the 30 days.</p>	<p>-Unit is costly.</p> <p>-Ongoing cost of sensor mats for long term usage.</p> <p>-Positioning of sensor mat on the mattress important for effectiveness (i.e., must be positioned under pelvic area so alarms when person gets up from bed).</p>	Doug Densen at 276-8012 local 101.

Alarm/Sensor System	Cost of System (installation/maintenance)	How long System in place	Strengths of System	Weaknesses of System	Contact Information for System
Personal Alarm (Canadian Tire Type)	\$10.00 approx.		<ul style="list-style-type: none"> -It is a means of preventing falls and not of contention. -Attached on bed or bedside table and connected by cord with the resident. When the resident moves the cord detaches and the alarm rings. -Good surveillance of resident movement. -The sound produced is not as loud as those of other alarm systems and it is different in tone too. 	<ul style="list-style-type: none"> -Its efficiency depends on the resident: how much/often he/she moves. -Having many bells in the unit is disturbing. -It is difficult to install and not as reliable as other alarm systems. 	Canadian Tire Store.
Card Alarm #49-8720	\$7.99	It has not yet been introduced.	-No experience so far.	-No experience so far.	Radio Shack Canada.
Movement Detector	\$20.00		<ul style="list-style-type: none"> -It works very well. -It is installed above the bed or near the window. It captures the resident's movements like a magic eye and produces a sound that is different from the other alarms. Staff is aware of the source. 	<ul style="list-style-type: none"> -It detects even the smallest movements of the resident, such as rolling in bed, or it detects movements in the corridors. As such it is too sensitive, and by ringing too often, it is disturbing. 	Radio Shack or Canadian Tire stores.
Tabs Alarms	\$300 to \$350. Purchased by the family.		<ul style="list-style-type: none"> -The tabs alarms function mainly as regular alarms. -Can be connected to the bell system, programmed with a message of our choice (i.e., voice telling resident to sit down). -Can be installed on bed and chair. -Different tones. 	<ul style="list-style-type: none"> -Very expensive. -Residents could panic when they hear voices of people they don't see. 	Robert Boulet Tel (819) 595-9225 1 (800) 363-3498 Fax (819) 595-3462 Email rboulet@ergosante.com

