

Automated Fall Detection: Saving Seniors' Lives One Fall at a Time





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Many elderly have health issues which make falling a significant likelihood. Falls may result from a variety of conditions such as mobility, difficulty from arthritis, vertigo from poor circulation, negative reactions to medication, etc. Whatever the cause, more than one third of seniors will fall in a given year. This means that in the US alone, 12 million seniors will fall this year.

According to the U.S. Department of Health and Human Services, falls account for 70% of the accidental deaths in the elderly population. These falls often lead to debilitating injuries such as broken hips, head traumas, or even entrapment, which renders the person immobile.

The fear of falling and subsequently losing independence is the most common concern facing many seniors as they age in place.

A recent study by the National Institutes of Health found that 67% of elderly who fall and are incapacitated such that they can't seek assistance for longer than 72 hours will not survive. On the other hand, if help can be attained within one hour, the seniors are nearly **six times more likely to survive**.

Of course, the best remedy is to avoid the fall all together. There are generally some simple things you can do to make your home safer and be less of a risk for a debilitating fall. According to the Center for Disease

Control and Prevention (CDC) website, there are 4 easy steps to prevent falls

(<http://www.cdc.gov/ncipc/duip/spotlite/falls.htm>):

1. Begin a regular exercise program.
2. Make your home safer.
3. Have your health care provider review your medicines.
4. Have your vision checked.

Even with the most diligent fall prevention program, falls are inevitable. Seniors living alone, at risk for falls, should consider some form of Personal Emergency Response System (PERS). The vast majority of current PERS, or so called “panic button” devices, requires a user to manually press a button when help is needed. These devices are highly effective when used properly; however, in many cases the senior may be unconscious or unable to press the button – rendering them useless. If a senior wearing a panic button is unable to press the button, it may mean that help is not notified for up to 24 hours or even longer. In many cases, this can mean the difference between a happy and tragic ending.

What can we do to protect ourselves or our loved ones if they are at risk for a fall? At Halo Monitoring, we believe there is a better way to detect and respond to falls. For the past several years, we have been developing technology that can now reliably detect human falls **automatically**. Automated fall detection means that no button needs to be pressed. It’s automatic. If you fall, we detect it. It’s that simple.

How does automated fall detection work?

The figure below depicts the myHalo™ system and how it works. Once you have been assessed as having a risk for falls, you will be given a myHalo™ chest strap (1). The chest strap was designed with comfort and wearability in mind; it’s waterproof and can be worn 24/7. The chest strap contains tiny sensors capable of measuring user orientation and motion in three-dimensions. The device is constantly monitoring this data and analyzing the signals in real-time looking for signature movement data indicative of a fall. Once a fall is detected, the chest strap transmits a wireless message indicating a fall. That message is sent to our Health Server (3) via the user’s Home Gateway (2), which is then delivered immediately to a professional call center as well as delivering instantaneous text messages to the designated caregivers.



Why is the device worn on the chest versus the wrist?

There are two major advantages of choosing the chest mount position. First, any central part of the body (chest or waist) will move much more predictably than the wrist. It's much more likely that the wrist will move erratically and make it difficult to reliably detect falls. Second, determining the final orientation of the person is again, much more reliable if you consider all the final resting positions of a wrist compared to the body's chest region. Centrally worn fall detectors, such as those worn on the chest promise the most reliable and accurate form of fall detection. They are also worn out of sight – making them more acceptable by the senior community.

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Our proprietary fall detection algorithms are the result of years of observation, hard work, and creative engineering. In a recent study of efficacy, our fall detection algorithms demonstrated high reliability and accuracy – 98.9% sensitivity and 99.2% specificity.

Sandra Elliot, Director of Consumer Technology and Service Development at Meridian Health stated, "The fear of falling and subsequently losing independence is the most common concern facing many seniors as they age in place. They are afraid they will fall and not be able to get help...myHalo™"

provides an effective detection system families can use to be notified of a fall and have the peace of mind that their loved one can receive the help they need when they need it the most.”.

In addition to automatically detecting falls, the myHalo™ chest strap is also constantly monitoring key vital signs such as heart rate, temperature, and orientation. This means that we can deliver current vital sign information to emergency responders – something that is not currently possible with any other PERS device on the market. Knowing the vital signs of a senior in advance allows faster and more accurate response when responders arrive on the scene. Just one of the many ways, Halo Monitoring is saving senior lives: one fall at a time.

ABOUT HALO MONITORING

Halo Monitoring, Inc. is a technology healthcare products and services company. Our mission is to deliver novel and innovative solutions that help seniors maximize their independence, lower healthcare costs, and allow them to remain at home longer. We offer peace of mind to both seniors and their caregivers through continuous health monitoring, and help them maintain a normal independent lifestyle by monitoring in the most unobtrusive manner possible. Halo is...

Independence, Redefined. Please visit www.halomonitoring.com for more information.

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