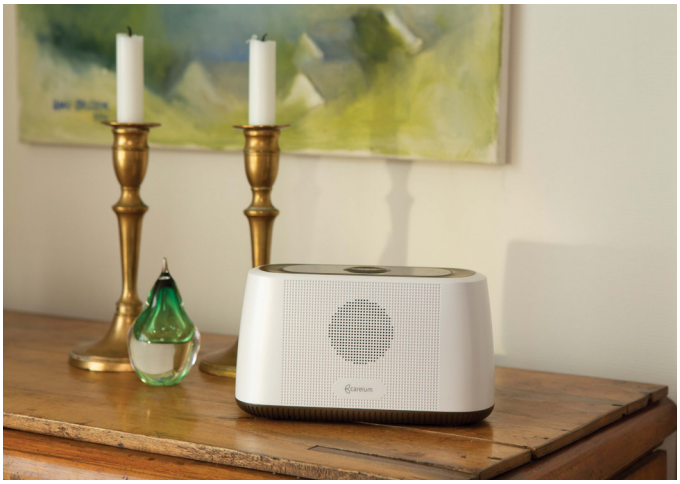
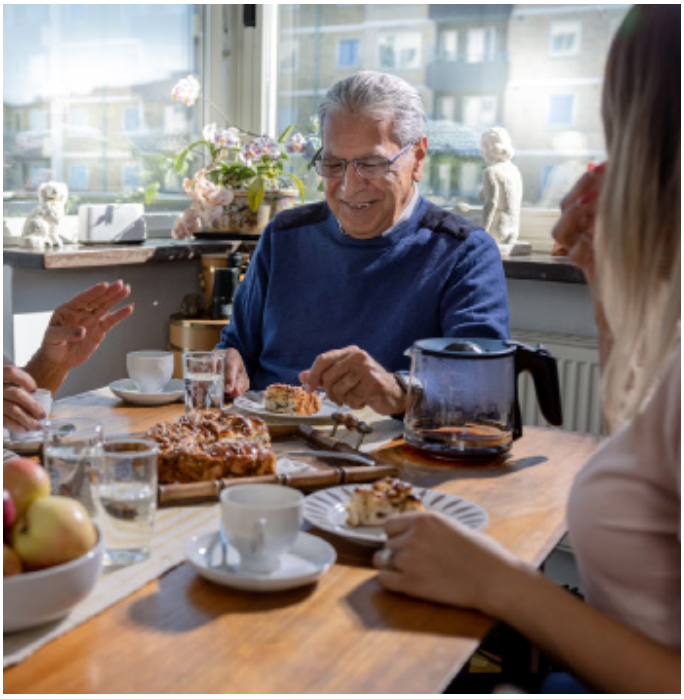
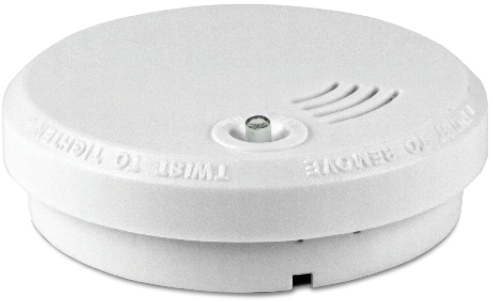
WHITEPAPER

Fire safety for an ageing population







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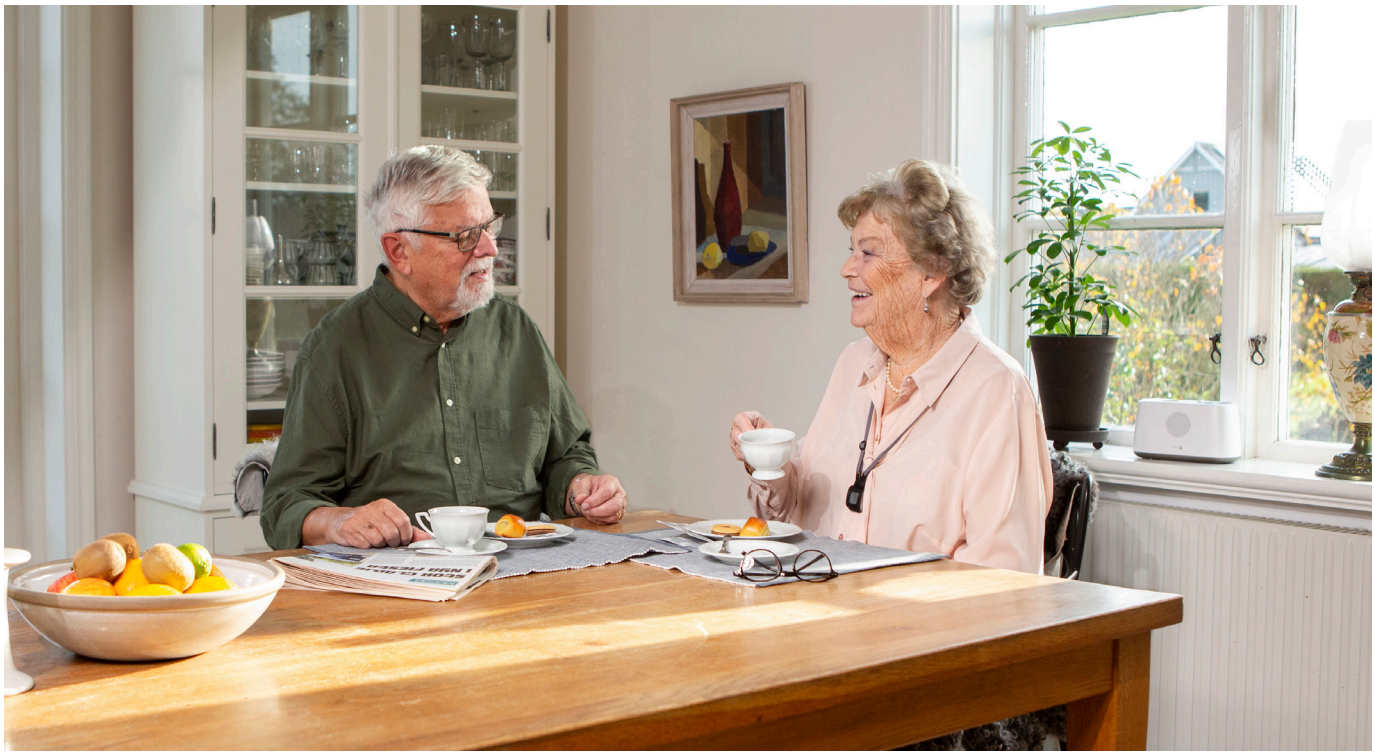

FORWORD

Domestic fires are more common and more dangerous than is widely believed. Every year, around 100 people lose their lives in fires in Sweden. Most fire fatalities occur in the home and the vast majority of these are elderly people. A forgotten candle or a dropped cigarette can quickly cause a fire that all too often has devastating consequences. How can we enhance fire protection in a cost-effective way for an ageing population? What technology enabled care solutions are available and which risk factors are particularly important to consider?

In this white paper, Careium presents not only insights from the latest research but also positive experiences of connecting smoke alarms to social alarms. It need not cost a lot of money to save a lot of lives!

STATISTICS

Between January and September 2020, Sweden recorded the highest number of fire-related deaths since 2005. 83 people lost their lives in a fire during that period, in comparison to 2019 when a total of 81 people died during the entire year (Olsson, 2020). According to Mattias Delin, fire protection engineer at the Swedish Fire Protection Association, the coronavirus pandemic is one possible explanation for the sharp rise in fatalities. Increased isolation in the home is one contributing risk factor (Olsson, 2020).

The significant increase in 2020 is a departure from previously recorded outcomes, and several surveys also point to challenges going forward. The proportion of elderly people is rapidly increasing in society. The risk factors are significantly greater for this age group compared to others, and preventive measures to ensure fire safety are needed (Gustavsson, 2020).

> **"The fire protection required by building legislation in ordinary housing assumes that the resident is capable of acting and escaping to safety unaided in the event of a fire."**

RISK FACTORS AMONG THE ELDERLY

Society aims to support the elderly and vulnerable people to live in their homes for as long as possible. This is made possible by Sweden's local authorities offering their residents supported living services, assistive technology and home adaptations.

A report from the Swedish Civil Contingencies Agency (MSB) shows that statutory fire protection assumes that the resident is capable of acting and escaping to safety unaided in the event of a fire (MSB, 2013).

Many people become physically weaker with age, and experience other age-related limitations such as impaired vision and hearing. Many people could have difficulties in escaping to safety on their own. Despite adequate fire protection in accordance with building legislation, major risk factors remain for the elderly (Rosenberg, 2019).

PRIORITISED RISK-REDUCTION MEASURES

The Swedish Civil Contingencies Agency predicts that the number of house fire deaths is likely to increase by just over a third by 2050. According to the agency, fire protection for vulnerable people needs a greater degree of individual adaptation (MSB, 2013).

A large proportion of people deemed particularly at risk live at home in their own residence and often receive support from their local authority in the form of e.g. home care services and social alarms (MSB, 2013). As a preventive measure, smoke alarms can be connected to social alarms and thus managed by a monitoring centre. Forwarding the alarm signal to home care services or relatives can also increase the possibility of getting to safety (Mjörnell, Kylefors & Wendin, 2013).

When the smoke detector is triggered, a prioritised alarm is sent to a monitoring centre, who will assess the situation and contact the fire & rescue service if appropriate. This can work to ensure that the fire & rescue service can be alerted more quickly.

> **"Connecting social alarms to smoke alarms creates a safer home environment for the elderly and peace of mind for their loved ones."**

The person may not hear or be able to react to a fire alarm without outside support. Connecting social alarms to smoke alarms creates a safer home environment for the elderly and peace of mind for their loved ones. The Swedish Fire Protection Association has established that well-functioning fire protection is the best way to reduce the risk of dying in a fire. However, fire protection must be designed so that measures can be taken. Sometimes the individual is unable to take action on their own.

Fire protection needs to ensure that there is time to evacuate and preferably extinguish the fire (Swedish Fire Protection Association, 2020). This is particularly important for elderly people with limited mobility, who might have difficulty of escaping or extinguish the fire on their own.

A study from 2016 (Jonsson et. al, 2016), concluded, among other things, that stand-alone fire alarms are of limited use to people with a reduced ability to react to and act on the alarm.

A number of studies indicate that the battery in the fire alarm is a weak link, as it is often not replaced or checked. Connecting the smoke alarm to the social alarm means that the functioning of the smoke alarm is continuously monitored. When the battery is low, a message is automatically sent to the monitoring centre, which in turn can alert the home care service or individual, for example, that the battery needs replacing.

WAYS FORWARD

Many risk factors that contribute to more elderly people dying in fires can be minimised with cost-effective solutions. As many people in the risk group already have access to social alarms, connecting them to smoke alarms is a simple solution that can save many lives.

It is a legal requirement to have functioning fire alarm equipment in Sweden. By introducing monitored fire alarms for the elderly, we can reduce the number of deaths.

CASE STUDY: VÄSTERVIK MUNICIPALITY

Several municipalities in Sweden are currently working collaboratively with the local fire & rescue service to find solutions. One good way is to install smoke alarms that are connected to social alarms. Västervik Municipality has connected these systems in order to save more lives.

The fire & rescue service and the social services department are working together on a project that aims to provide all of the municipality's social alarms with fire detection.

Careium met some of the people involved in the project to hear about and discuss their experiences.

- Our elderly residents constitute one of the largest risk groups. They need the most help and it's crucial that they're able to raise the alarm as soon as possible, as they often may have difficulty moving around or extinguishing a fire. This is why this initiative felt like an obvious choice, as the elderly are a group we've long wanted to provide with additional help, says Jakob Dahlquist, fire protection engineer at the Västervik Fire & Rescue Service.

The project, which started in 2019, has currently installed almost 300 smoke detectors and the reactions have been positive.

- Several other Swedish fire & rescue services have already contacted me to ask how we got the ball rolling. The initiative is very cost-effective and has the potential to improve fire protection nationwide in Sweden in the long term, says Jakob Dahlquist.

The proposal to link social alarms with smoke alarms was put forward in a motion two years ago. The social services department and the fire & rescue service worked closely together to drum up the strong political support to make this a priority issue – something that is cited as a success factor by Sven Tholén, development director at the Västervik Social Services Department.

- This issue had been on the agenda for quite some time, and the fire & rescue service presented a really good information folder that dispelled all the decision-makers' doubts.

- I think it's important to view this from the dual perspective of the social services department and the fire & rescue service. Now there's a very well-established collaboration between the social services department and the fire & rescue service in Västervik, which makes our discussions much easier.

CASE STUDY: VÄSTERVIK MUNICIPALITY

In 2019, Västervik Municipality in Kalmar County started a collaborative project with the Fire & Rescue Service, with the long-term goal of connecting all social alarms to smoke detectors.

VÄSTERVIKS KOMMUN

MULTIPLE BENEFITS WITH THE SAME SOLUTION

The connection between social alarms and smoke alarms means that an alarm signal is sent directly to the monitoring centre operator, who contacts the person at home, which according to Jakob Dahlquist makes the fire & rescue service's job much easier.

- With automatic alarms, we often have to respond to situations where someone has burned food on the stove, for example. With an operator who's able to find out more, we avoid many unnecessary call-outs of this type and can attend genuine emergencies instead.

> **"This is one of the most reassuring and best initiatives Västervik Municipality has implemented to avoid the accidents and deadly fires that are so difficult to tackle."**

Jakob Dahlquist underlines the fact that the alarm solution following the risk group helps to cut the costs.

- The great thing is that we've found an effective way for the alarm solution to continually follow the risk group and not just an individual or a building. When the individual no longer needs their social alarm, the fire alarm follows along to the next person to take over the unique social alarm. This is instead of installing individual automatic fire alarms that follow the specific buildings, which is not as effective from a risk perspective.

In addition to creating greater peace of mind for the elderly and their relatives, Sven Tholén, development manager at the social services department in Västervik, points out the benefits to the home care staff as well.

- By alerting the fire & rescue service directly, the initiative also creates a sense of security for our personnel, who know that the fire & rescue service will be there as soon as possible.

Jakob Dahlquist argues that in addition to increased fire protection, the collaboration that began last spring has also resulted in other synergies.

- The firefighter who installs the smoke alarms in homes acts as our "eyes on the ground", which has a great synergy effect for the entire municipality. This gives us the opportunity to assess the general safety of the home, whether there's anything else that could pose a risk of falls, such as rugs. If so, we can recommend their removal or the addition of anti-slip protection, which avoids potential suffering for the individual and major costs for society in relation to falls.

Detecting the fire in time is the most important aspect for avoiding serious fires that endanger lives and property. The solution in Västervik costs SEK 750,000.

- We think this is extremely cheap in relation to the level of security we get in exchange for our money, says Sven Tholén.

- We can't stress enough how satisfied we are that we've achieved this. This is one of the most reassuring and best initiatives Västervik Municipality has implemented to avoid the accidents and deadly fires that are so difficult to tackle, says Jakob Dahlquist.

SOURCES

Gilbert, S. W., & Butry, D. T. (2017). Identifying vulnerable populations to death and injuries from residential fires. Injury Prevention, injuryprev-2017-042343.

Gustavsson, Johanna. Fire safety for an ageing population – a deeper understanding of future challenges and solutions. Karlstad University. 2020. BF18-0006. https://www.brandforsk.se/forskningsprojekt/2020/brandsakerhet-for-aldrande-befolkningen/

Jonsson, A., Runefors, M., Särdqvist, S., & Nilson, F. (2016). Fire-related mortality in Sweden: temporal trends 1952 to 2013. Fire Technology, 52(6), 1697–1707.

Mjörnell, Kristina., Kylefors, Martin och Wendin, Karin. An ageing population. Final report of national strategic research agenda. SP Technical Research Institute of Sweden, 2013. https://www.vinnova.se/contentassets/c74ea395507146eba49292e8f26d4e82/agendaaldrande-befolkning.pdf

The Swedish Civil Contingencies Agency. Fire-protected homes for everyone. Guidance for individually adapted fire protection. 2013. https://rib.msb.se/filer/pdf/26580.pdf

The Swedish Civil Contingencies Agency. A national strategy to strengthen fire protection through support to individuals, Reporting of assignment (Fo2009/2196/SSK, 2009-11-05), MSB doc. no. 2009–14343, 2010-09-28

The Swedish Civil Contingencies Agency. Risk-reducing measures for fatal fires in homes. 2018. https://rib.msb.se/filer/pdf/28660.pdf

Olsson, Gustav. Dramatic increase in fatal fires in Sweden. Dagens Nyheter. 2020-08. https://www.dn.se/nyheter/sverige/kraftig-okning-av-dodsbrander-i-sverige/

Rosenberg, Linn. Fire protection worse for older people living alone. Sveriges Radio. 2019-12-17