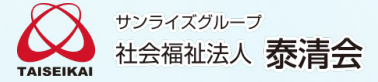


## Case Study:

# Reducing Falls and Staff Response Time in Senior Living Communities through a Vision-based AI System



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## Categories:

- ◆ Reduced Response Time
- ◆ Reduced Incidences
- ◆ Increased Resident/ Staff Safety and Satisfaction
- ◆ Increased Peace of Mind

## About the Organization

### Organization Name:

Social Welfare Corporation,  
Taisei Kai (Hiroshima, Japan)

### Main Contributor:

Satoshi Koike, Head of Facility

### Organization Type:

Assisted Living Facilities

### Organization Description:

Social Welfare Corporation Taisei Kai Sunrise Group was established in 1998 in Mihara City, Hiroshima Prefecture. We are a public interest corporation with approximately 300 employees working in more than 20 businesses in the fields of welfare for older adults, authorized kindergartens and nursery schools, child development support, and community support.

## Project Description

One of the care communities managed by Taisei Kai recently adopted the Voxela VCare solution to detect falls and shorten caregiver response times. The system, installed in rooms of residents with higher risk of falls, especially at night, accurately detects falls and sends alerts within 10-30 seconds, significantly reducing both the time for detection and notification, and, consequently, caregivers' response times. This personalized approach has resulted in a significant reduction in caregivers' response time as well as the rate of incidents of falls for the entire community, potentially due to the insights the systems provided about the causes of falls and the steps the staff have taken to prevent future falls.

## Safety Technology Category

Fall Detection, Notification, and Prevention

## System Embodiment

Sensors embedded in the environment – Vision sensors coupled with highly sophisticated fall detection algorithms using artificial intelligence (AI).

VCare is an AI-powered fall detection and prevention solution that can be installed in residents' own homes, private rooms and/or common areas in congregate living settings (such as assisted living or nursing home communities), as well as hallways of the latter settings. VCare solution uses a CMOS vision sensor that detects particular motions, such as bed or chair exits, and sends the notification to designated caregivers' mobile device. This allows staff to arrive and assist before a fall can occur. VCare also detects actual falls and acts as an added security layer, especially during the night when the rooms are often closed and communities have lower staffing levels. The AI sensor is 99% accurate in detecting true fall events, while reducing the potential for annoying false alarms by 99.8%.

## Business Model

Standard of Care and Other Payment Sources.

## Implementation Approach

The community in this case study managed by Taisei Kai is a long-term older adult community housing several residents who are high risk for falls. The community wanted the high-risk residents to be monitored in their rooms and in the hallway, especially during the night shifts when staffing-to-resident ratios are lower.

The community installed Voxela VCare AI sensors in three locations. One sensor was placed in the resident's room and two in the hallway. The customer support team visited the community, performed a site survey, installed the sensors, and on-boarded the caregivers to the platform to receive the alerts. The hallway sensor was configured to be activated only during the nighttime, whereas the in-room sensor was configured to monitor 24/7. The VCare AI sensor in the room monitored both bed/chair exits as well as falls, whereas the hallway sensor was configured only to monitor falls.

## Outcomes

The installation of the VCare app has played a crucial role in improving the safety and care of the residents of Taisei Kai community. Thanks to the use of the VCare app, the caregivers were able to understand the residents' daily routines and adjust their schedules to better suit the residents' behavior, resulting in better care and a lower risk of falls. After installing the VCare solution, the caregivers' response time to fall incidents have been reduced significantly. It has also alerted staff to hard-to-detect falls, especially in the nighttime, when the residents' doors are closed.

The VCare app has not only helped caregivers respond quickly to fall incidents, but it also provided them with valuable insights into the daily routines of the residents. By monitoring the residents' movements and activities throughout the day, caregivers were able to understand their patterns and habits. This knowledge allowed them to adjust their own schedules to better suit the needs of the residents. For example, if a resident was known to be particularly active during certain times of the day, caregivers could ensure that they were available and alert during those times to provide assistance and supervision as soon as needed. Additionally, if a resident was known to be at a higher risk of falling, caregivers could take extra precautions to ensure their safety during certain activities, such as providing additional assistance during transfers or installing additional safety equipment in the resident's room.

The VCare app also helped caregivers to identify and address potential fall hazards in the environment, such as loose carpets or uneven flooring. By providing real-time monitoring and alerts, the app enabled caregivers to intervene quickly and address any issues that arose. This helped to improve the overall safety of the venue and reduce the risk of resident falls.

As a result, VCare has reduced the number of residents' falls from an average of four per month to one per month per resident. The response time has dropped from an average of 45 minutes per fall before the VCare to four minutes after, an improvement of 90%.

In addition to improving the safety and care of the residents, the VCare app also helped the organization reduce costs associated with fall-related injuries. By reducing the number of falls, the community was able to decrease medical expenses and staff overtime costs associated with fall incidents, including hospitalizations and hospital transfers.

*“Since implementing VCare, our senior living facility has seen a remarkable improvement in care quality, greatly satisfying residents and their families. Caregivers are more efficient, and productivity has increased. We are excited to recommend VCare to other senior living facilities, confident that it will replicate the same positive experience, improving care and satisfaction for all stakeholders.”*

— Satoshi Koike, Head of Facility, Social Welfare Corporation, Taisei Kai (Hiroshima, Japan)

## Challenges and Pitfalls to Avoid

The installation of VCare vision sensors in common areas presents unique challenges compared with in-room installations. Common areas, such as hallways and lobbies, tend to be larger and require a more sophisticated camera setup to capture all motions effectively. Unlike in-room sensors that can often capture the entire area due to the limited space, common areas require multiple sensors to ensure comprehensive coverage.

Hence, it is important to strategically place these sensors and ensure that each one is focused on a specific nearby area. This way, motions that occur in the far corners of the common area will not go unnoticed. Furthermore, installing multiple sensors in the common area can improve the overall security of the premises by providing multiple viewpoints and reducing blind spots.

Therefore, it is crucial to approach the installation of sensors in common areas with a well thought out plan, taking into consideration the size of the area and the desired coverage, to achieve the best possible outcomes. A prior knowledge of the dimension of the common area will help plan of time and shorten the installation time.

## **Lessons Learned/Advice to Share with Others**

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The adoption of new technology, such as the Voxela VCare app, can often be a challenge for caregivers and nurses who may not be used to using technology such as apps on mobile devices. However, we found that a phased approach to onboarding was effective in making the transition smoother. By onboarding just a few caregivers and having them train others, we were able to minimize the learning curve and get everyone up to speed more quickly.

One of the key selling points of the app is its ability to detect falls and alert caregivers almost instantaneously. Demonstrating this feature to the caregivers was essential in gaining their trust and showing them the true value of the app. The rarity of falls in care facilities makes it even more important to have a system in place to quickly and accurately detect and alert staff to such incidents.

Additionally, the caregivers were interested in seeing the data that was captured before an actual fall occurred. This helped them understand the complete picture of patient care and gave them a better understanding of how the app could support them in understanding each at-risk resident's needs and the relevant environmental risks, to address and provide higher-quality person-centered care.

Overall, the process of onboarding caregivers onto the Voxela VCare app was a journey, but one that was well worth the effort. By training staff and showing them the full capabilities of the app, we were able to build trust and support widespread adoption.