

## SUCCESS STORY:

# Saving Lives Through Accident Detection Technology with Advanced Video and Sound Capabilities

The Australian government administers a national-level comprehensive nursing care program known as the Dementia and Aged Care Services (DACS) Funds that sponsors hospitals and nursing/care facilities. Seniors, medical patients, and disabled persons needing nursing care and facilities can participate in this cost-effective plan. A portion of this service includes lodging and private care, which provides monitoring 24 hours a day in addition to nursing and health care services.

XYZ District Hospital (confidential) in the city of XYZ region, South Australia, is an active member of the national care program. For the past nine years, the hospital has been providing dedicated residential aged care services to the community of XYZ region. Today, this place operates two hundred and fifty staff to deliver around the clock care and can assist hundreds of residents at any given moment.

With outdated practice procedures, however, the quality of monitoring service became ineffective.

XYZ District Hospital, with the support of the Commonwealth Department of Health, who is leading the project, turned to IVS for an answer.

## Keeping up with year-round safety monitoring: How

At XYZ region District Hospital, their nursing facility must provide closely tailored assistance to ensure all residents meet safety. Ideally, the standard measure of effective monitoring requires one dedicated assistant for every resident. However, with the growing number of residents and aging equipment and practice, it was impossible to meet the demands of the community.

XYZ region District Hospital typically deals with senior residents who are frequently affected by diseases due to physical health issues and mental instability. Seniors fall from their beds, toilets, or wheelchairs in an attempt to grab an object from the floor due to their physical weakness requires even closer attention. Night bathroom trips that led to accidental falls involved care staff for an immediate medical response. Patients with memory loss or mental health issues pose challenges to support, and at times their chaotic or abnormal behavior puts attending hospital caretakers and fellow residents at risk.

XYZ region District Hospital was particularly interested in round-the-clock monitoring abilities similar to close-circuit television (CCTV) to avoid accidents. With limited staff and lacking the right equipment, the hospital confronted difficulties responding to all residents' needs. The on-site care personnel required better observation and rapid response capabilities.

After evaluating several commercially available products and concluded that most of the systems were inadequate for meeting the hospital requirements.



## Aged Care Services in XYZ District Hospital

Customer: XYZ District Hospital (confidential)  
Industry: Residential Aged Care Services  
Location: XYZ region, South Australia

## IVS Solutions Implemented

### Fall down Detection Technology

Sophisticated deep learning artificial intelligence (AI) software that analyzes closed-circuit (CCTV) footage of who falls in real-time and send alerts to the monitoring center.

### Violence Detection Technology

IVS Artificial Intelligence Video Analytics detects movements combined with the use of abnormal sound analytics to identify a person in danger or facing a violent situation. Kneeling Pose Detection technology senses the kneeling action of a person. Pose Detection technology assists a person needing attention or calls out for help in an emergency.

### Abnormal Sound Detection Technology

AI-driven abnormal sound detection hardware facilitates Detection of a scream from a person who falls or face a violent situation and send an alert to the Monitoring Center.

### Abnormal Voice Detection Technology

Voice/sounds such as "help" or "help me" are detected, and it alerts the monitoring center.



The competing products were unable to cover the corner-to-corner of the hospital facility and blind spots. Their detection feature is unable to assess the slight movements or gestures of residents who may or may not be in danger.

## Accident monitoring 24X7: IVS AI-Driven Analytics to detect movements

Through the support of the national healthcare authority, the hospital selection committee chose IVS as their solution provider. Distinct from other alternative solutions, IVS received the highest score because of its Video and Sound analytics, which is the main differentiator and requirement for the hospital.



XYZ region District Hospital, along with five other participating hospitals, will test and evaluate their requirements for 12 months in a pilot program, which is the first phase of a larger project. The IVS solution was deployed in December 2020 for testing and acceptance and recently completed the process of tuning detection parameters to enhance accuracy. The IVS solution is now optimized and ready to go live on a large scale. Upon successful completion of the first phase, the commonwealth department of health will begin a full deployment and eventual nation-wide rollout to all nursing care facilities, hospitals, and clinics across Australia.

For the pilot program, IVS delivered a solution that consists of a frontend video management system (VMS) server connected to the closed-circuit televisions and a control module for configuring intelligent analytics parameters. The IVS video and sound analytics (VA & SA) is running in the backend and begin analyzing activities per VMS settings and send alert notifications to the monitoring center.

The CCTV project is Australia's first to explore the acceptability and viability of using audio-visual surveillance (recording devices) and monitoring. Throughout the pilot, an independent evaluation will measure the feasibility, acceptability, and quality and safety of the use of recording devices in the facilities. It will further assess the future use of surveillance technology in residential aged care facilities.

## Detailed features of the IVS smart system include:

- With the IVS AI-Driven (Artificial Intelligence) video and sound analytics, this integrated technology offers 24X7 monitoring capabilities. It recognizes any abnormal movement and sends an alert notification to the control center. The core feature is a smart detection engine that understands a series of different events. It can identify beyond accidental falls to include actions related to violence, kneeling poses, abnormal screams, and a shouting voice for emergency help.
- At the center of the IVS smart detection system, there exists AI software. It is a purposefully built engine with an algorithm that analyzes each camera footage in real-time. The lens of the detection system works with AI features in the background to capture crisp and clean human movements frame by frame through a proprietary 3D rendering technique unparalleled to other alternatives. The use of AI in the system is vital because it allows proactive and intelligent monitoring a possibility. AI can identify, learn, and display abnormal behaviors, violent actions, and even the slightest movements as compared to other systems on the market today.
- Typically, a conventional closed-circuit (CCTV) camera alone is not capable of covering the entire area. IVS implemented sound analytics technology as a support mechanism to its system to overcome limitations for detecting movements in blind spots and places that are considered off-limits due to privacy concerns (for example, bathrooms).
- Another added feature is the use of AI in abnormal sound detection hardware, which facilitates detection of a scream in a violent situation or a loud voice of a person expressing pain from falling. It immediately sends an automatic alert notification to the monitoring center. The system, likewise, includes a pose detection algorithm to determine people calling out for help.



\*IVS Sound Detector Hardware

## About IVS Inc.

Founded more than a decade ago, IVS Inc. is one of the world's leading audio and video analytics providers with proprietary technologies and well over a dozen patents. Its unique suite of 30+ products outperforms any other commercially available alternatives, and it truly offers an unfair advantage for customers.

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