



# The Impact of Artificial Intelligence on Connected Safety Solutions

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## Introduction

Connected safety technologies have become commonplace in our lives today, from watching the live video feed of your home security camera on your phone to tracking your child's location using a mobile app. In this paper, we explore the aggressive evolution and implementation of Internet of Things (IoT) and other technologies in connected personal and workforce safety, health and wellness. We also examine the impact and practical application of Artificial Intelligence (AI) on this expansion and how it can help improve engagement across many industries.

## Terminology

To begin with, let's clarify the meaning of some commonly used terms that are applicable to our discussion:

**Internet of Things (IoT):** Describes a network of physical devices that are embedded with sensors, software, and other technologies to capture and communicate real-time data with other devices, applications, or systems via the internet.

**Connected Safety:** The process of leveraging IoT technology to facilitate improvements in personal and workforce safety, health and wellness.

- **Workforce Safety:** The implementation of IoT safety devices, apps and systems in the workplace to help organizations improve lone worker safety and safety-process automation.
- **Personal Safety:** Improve safety and well-being of individuals wherever they are through IoT connected safety devices, apps and systems.
- **Personal Health:** The implementation of IoT safety devices, apps and systems to help organizations, individuals and caregivers more effectively manage and enhance the overall health and well-being of the individual.

## Workforce Safety

The concept of safety for lone workers or connected safety for enterprises is not new, but we're in a new era as it relates to safety. Protecting lone workers has been part of the safety performance landscape for some time now; however, the focus has gradually shifted from simply monitoring people to empowering them. It goes beyond reactive measures, such as incident detection and response, to include proactive strategies that promote incident avoidance and a safety culture of accountability and responsibility.



**It is estimated there are 12.3 billion IoT devices in use today. They forecast 27.1B devices in use by 2025.**

(IoT Analytics, September 2021) (1)

Recent advancements in connected safety technologies have resulted in expansion into most major industries such as manufacturing, utilities, transportation, warehousing, healthcare, real estate, insurance, hospitality, mining, agriculture, construction, and more.

The clear need for connected safety solutions in the workplace is captured in the number of occupational injuries, deaths, and illnesses experienced each year.



According to the International Labour Organization, there are approximately 340 million occupational accidents and 160 million victims of work-related illnesses annually (2). They also acknowledge that there is a gross underreporting of occupational accidents and illnesses, giving a false picture of the scope of the problem.

The need for adoption of workplace connected safety solutions is widely recognized. An Employee Risk Management (ERM) safety survey found that 92% of organizations view harnessing technology and data as vital to improving safety performance (3). Yet so many of these organizations struggle to make the leap from great ideas to practical solutions. Adding AI-powered solutions to workforce safety can help proactively protect employees by analyzing worker trends and sending notifications before an issue becomes serious, and reactively by sending alerts when check-ins are missed, or falls are detected.

Investing in worker safety promotes the well-being and health of employees and adds a layer of protection for organizations against litigation and negligence.



**340 million occupational accidents and 160 million victims of work-related illnesses annually.**

(International Labour Organization) (2)

## Personal Safety

Personal Safety devices and technology have taken an advancing leap in the past two decades. Instead of relying on a phone call to 911 and the arrival of emergency responders, personal safety technology has enabled people to take action, often before an emergency occurs, to prevent it from happening.

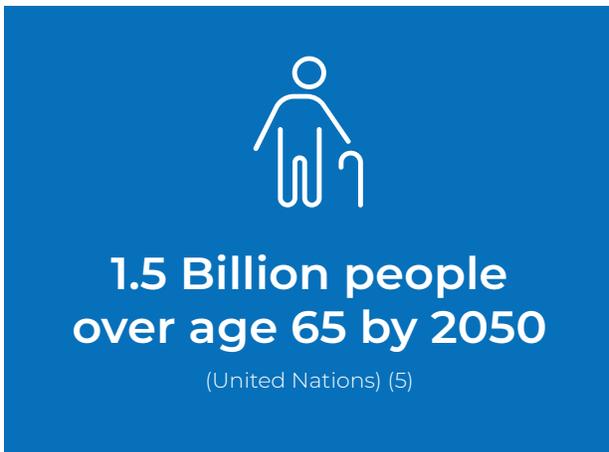
This advancing technology takes many different forms. Code Blue is a safety and emergency notification system used on college campuses that is used to request help and can send push notifications to teachers and students when there is an immediate threat to the safety of students on campus. For example, these emergency notifications may be prompted by a gas leak on campus, fire to a building, an armed aggressor, or someone simply feeling unsafe on campus. This notification system alerts campus security or other specified individuals and helps to prevent potentially dangerous situations from escalating. In some instances, it may prevent situations from ever becoming an emergency.

Some personal safety apps and devices can serve as a local community watch where members can be on the lookout for suspicious behaviors and warn others in the community. The advancements in technology in both devices and apps can also detect automobile crashes to send help automatically if the user is unable to do so themselves. Others allow users to share their location with individuals in their contact lists or make fake phone calls to help get out of uncomfortable situations, providing peace of mind during potentially dangerous encounters. Rising concern for personal safety has also led to an increase in the number of discrete safety devices disguised



as jewelry, hair ties or keychains to sound alarms or alert contacts or emergency services if required. According to a recent safety study of more than 1,000 smartphone users, 41% of women and 26.1% of men felt safer when sharing their location with family and friends (4).

Another example of a connected personal safety solution is Personal Emergency Response Systems (PERS) – a mobile medical alert system created to expand an individual's mobility and peace of mind. IoT devices, such as PERS devices, help individuals get emergency assistance with the press of a button, wherever they are. A PERS solution can give users increased confidence to live independently and simultaneously provides peace of mind to their loved ones.



According to the United Nations, the number of people worldwide over the age of 65 reached 727 million people in 2020. By 2050, that number is expected to reach 1.5 billion (5). This population is at a higher risk for falls or other health concerns, and increasingly would like to stay independent and live in their homes as long as possible.

These and other personal health and safety devices and applications, often combined with professional monitoring services and AI, result in better clinical or incident outcomes and improved overall health and well-being. For example, PERS devices paired with AI technology can work together, both as a preventative and reactive safety solution, in a variety of ways. As a preventative failsafe, when paired with AI, the device can automatically receive calls informing the user that their equipment batteries are low, preventing them from having an emergency without the aid of the device. The combination of a fall detection device and AI can also get individuals help even if they've become unconscious from a fall or accident and can't use the device to request help. AI can detect unresponsiveness and call for help without human interaction. When used with monitoring solutions, AI coupled with natural language processing services can help streamline personal interactions when help is needed, provide better context for better service and reduce the number of false alarms. As a result, personal safety becomes more effective when AI technology such as machine learning and natural language processing is utilized as a preventative safety measure or to supplement reactive safety measures.

## Personal Health

Personal Health & Wellness relies on a complete ecosystem of connected devices and systems to improve an individual's overall health and wellbeing. We are experiencing high-speed advancements of connected safety in the personal health and wellness arenas among individuals, their personal and professional caregivers and organizations seeking to study and improve overall health through clinical trials. These solutions aim to provide proactive, multichannel engagement, delivering insights from devices, applications, and interactions to support better health, wellness and safety.

Remote Patient Monitoring (RPM) offers remote healthcare through IoT-based devices and systems. These devices transmit vital sign data on activities of daily living that are monitored by caregivers and acted upon when necessary. This contemporary approach to healthcare is proving effective in many ways:

1. Encourage increased patient involvement in their healthcare
2. Improve patient engagement with their care providers
3. Reduce short term hospitalizations
4. Prevent or delay complications from disease in the long term
5. Reduce healthcare costs for patients and providers

A Kaiser Permanente study found that an RPM program effectively prevented readmissions and improved the recovery process for the virus. The study included 13,055 patients. Among them:

- Only 10% were admitted to the hospital based on their symptoms
- Over 95.5% of patients recovered and completed the RMP program within nine days
- More than 94% of responding patients said they were satisfied with the quality of care and would recommend the program to others (6)

Ultimately, RPM programs are a win-win for every stakeholder. The patient gets satisfactory medical attention while keeping bills low from reducing hospital visits. The healthcare provider saves costs by reducing time and resources for unnecessary hospital visits, while also utilizing the technology to be more attentive to patients.

Personal Health & Wellness can also go beyond RPM solutions in how we care for ourselves and our loved ones every day. Integrated multipurpose devices, or other connected devices and applications, can protect users and gather critical information such as location, movement metrics, fall detection, and facilitate two-way



**\$600 Thousand to \$8 Million USD per day**

**Cost of Study Participant Drop outs**

(National Library of Medicine) (7)

communication. The growth and acceptance of these technologies make it easier to remember to take medications on time, eat and exercise frequently, monitor sleep patterns, and even help address loneliness.

We are also seeing an increase in the need for these types of solutions to improve the outcome of clinical trials and research. A recent report by the National Library of Medicine estimated that 30% of patients drop out of clinical trials. The cost of non-compliance by study participants that either drop out or delay sending in their results can cost anywhere from \$600,000 to \$8 million USD per day (7). Connected personal health solutions that help improve these results by even 1% can have a significant impact on the success of clinical trials and bringing advanced medical solutions to market.

The primary goal for wellness checks, connected safety devices and apps, and RPM is to increase patient involvement in their health and wellbeing. With technology and AI-powered solutions, providers can equip their patients with the tools they need to easily become a more engaged, active participant in their healthcare. These systems help the patient play a more engaging and active role in their own healthcare and increase the likelihood of positive health outcomes and the success of clinical trials.



## Connected Safety and Artificial Intelligence

Several recent advancements in a variety of technologies have played a key role in the increased adoption and accessibility of connected safety solutions:

- Affordable and reliable IoT sensors and devices
- Internet network protocols that enable sensors to easily connect with other devices, or the cloud, to transfer data
- Cloud computing and data storage platforms that provide the needed infrastructure for scale
- Machine learning and AI that help analyze data for powerful insights to help improve health and safety
- Natural-language processing solutions to help reduce costs and provide context for more meaningful interactions at scale and help improve engagement with users
- Advanced app technologies and systems

The emergence of these technologies continues to push the boundaries for connected safety solutions for individuals and enterprises. While all the above are essential components for the recent advancements, it is the power of machine learning and AI that are opening new windows of opportunity for dramatic improvements in health and safety performance, both personally and professionally.

The power of applying artificial intelligence to safety is that the system is able to track and analyze millions of data points at a rate that is impossible for humans to achieve. Automated data processing improves repeatable outcome detection, objectivity, speed, and accountability, while freeing up humans to handle the higher thinking tasks and processes.

The three main components to implementing AI into connected safety include:

1. Natural language processing – helping computers understand the way humans write and speak
2. Machine learning – the capability of a machine to imitate intelligent human behavior
3. Visual components such as CCTV or OCR (optical character reader) that turn visual or physical information into computer data to be analyzed

In harmony, AI assistance can be implemented in a variety of ways. It can collect data about a worker's safety by monitoring their activity and heart rate to send a warning or alert before a workplace incident occurs. It can be used with video cameras to let homeowners know when an intruder is present and distinguish between an actual intruder and someone who belongs on the property (family, pets, etc.). It can also take and make phone calls, answering and responding to customer or patient inquiries efficiently without any human interaction.

AI and machine learning are providing the potential to improve user engagement and implement unique solutions to complex health and safety problems in the workplace and at home, for both enterprises and on an individual basis.



## Practical Application

Let's examine a few practical applications of Artificial Intelligence (AI) and machine learning in workplace and personal connected safety.

### AI in Manufacturing

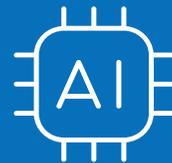
AI-powered solutions in manufacturing, specifically in sectors like energy and utilities, heavy machinery, and big assembly lines, are used to help detect or predict faults in equipment that may lead to potential safety hazards. Cameras on factory floors can be used, in conjunction with machine learning, to recognize potential hazards and notify safety managers. Camera AI can also detect when workers are not wearing the required safety gear such as helmets, safety glasses, or harnesses for workers at height.

Machine learning and AI are capable of generating heat maps that show activity in the highest risk areas of a facility. This provides management with insights into worker behavior and potential for danger in these high-risk areas.

Managers can use these AI insights to proactively improve employee safety. Measures such as sending regular safety reminders to workers on the warehouse floor, sending prompts to workers to be cautious as they approach dangerous areas in the facility, contacting workers when they fail to wear the proper safety gear, and sending notifications about potential or active equipment malfunctions that may be

a safety hazard. It can prevent major incidents from occurring without any invasive procedures or additional processes.

In the event of a workplace incident, geolocation and AI engagement ensure that help is sent immediately to the correct location for the best possible outcome. These proactive and reactive safety measures result in a safer working environment for employees and increased worker confidence and morale while simultaneously reducing the costs and risks for employers associated with personal injuries, property damage, and potential litigation.



**AI can prevent major incidents from occurring without any invasive procedures or additional processes.**



## AI in Healthcare

Remote Patient Monitoring (RPM) is considered by 66% healthcare professionals to be one of the top solutions for improving patient engagement (8). IoT devices and AI have enabled countless applications in patient monitoring, from managing medication plans or medication adherence to sophisticated devices for tracking vitals, falls, activity levels, responsiveness, etc.

Patient compliance is also critically important for the successful outcome of clinical trial programs. AI can be leveraged to facilitate and automate the collection of data from program inception to completion - from reminding patients to stay on track, providing encouragement, and sending alerts if issues arise. Leveraging AI-powered solutions that provide natural language processing can make it cost effective for Contract Research Organizations (CROs) to easily collect data and improve patient compliance.

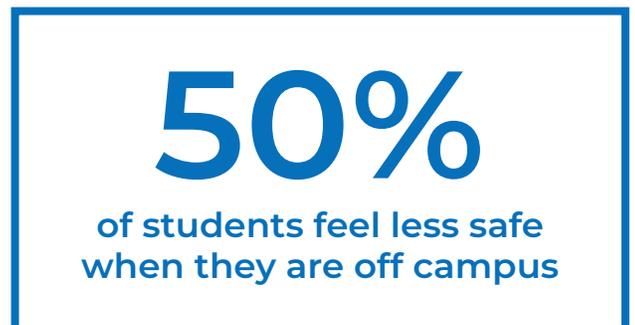
In Healthcare, both patients and medical professionals are experiencing great benefits from the implementation of AI and use of IoT devices. Medical professionals have a much clearer picture of their patient's health through the availability and analysis of better data and a more proactive approach to care. This results in better diagnosis and care for patients.

Additionally, the implementation of AI saves both the patients and providers money from less frequent hospital visits and recuperation of hospital resources.

## AI in Personal Safety

**Aging in Place:** With the estimated increase in the senior population by 2050, the availability of caregivers and medical resources will be severely taxed. Personal Emergency Response System (PERS) devices provide an added layer of safety and peace of mind for their users and an increased sense of personal freedom, especially for aging seniors who want to remain independent.

When PERS IoT devices are coupled with AI, the potential for increased safety is enhanced. AI can be used to immediately verify if a fall signal is a valid or false alarm and get the individual to the top of the emergency call queue for assistance if needed. Other applications of AI with PERS could include sending reminders to change device batteries or to take medications, to do wellness check ins, or to track behavioral trends and alert caregivers when a behavior is out of the norm or outside the boundaries set.



**Students and Everyday Safety:** Almost three quarters of students live off campus at one time during their college career (9), and 50% of them feel less safe when they do. Anyone who feels unsafe or vulnerable in everyday life can benefit from a personal safety device or app. Whether working late at night or walking alone in an unfamiliar neighborhood, a personal safety IoT device or app can provide a sense of assurance and peace of mind knowing that help is always nearby.

There are many uses for artificial intelligence in this scenario as well, from notifying an individual when they enter an area with high incidents of crime, to automatically calling emergency response if a crash is detected while driving. Leveraging artificial intelligence coupled with machine learning to understand intent and provide context helps provide better protection for everyday personal safety.



## AI in Home Security

According to the Home Security System Market Global Forecast for 2023, the market for home security systems is expected to reach \$74.75 billion, up from \$45.58 billion in 2018 (10). This is widely attributed to the advancement of AI in home security, making homes safer and security systems more convenient for customers.

AI in smart systems can ignore movement from animals or a tree limb blowing in the wind, reducing false alarm dispatches. It can also immediately alert homeowners, listed contacts and the authorities more efficiently and quickly in the event of an incident. It can utilize machine learning to understand the intent of callers more quickly, responding to false alarms efficiently and routing urgent calls to authorities more quickly making these home security systems safer and more cost effective.



**Home security systems market to reach \$74 Billion by 2023**

(Home Security System) (10)

## AI in Fleet Management

AI is used to provide accurate and meaningful safety data for drivers and fleet managers alike. From collision warnings to vehicle tracking, AI helps to keep those inside and outside the vehicle safe. AI technology enabled by IoT devices can calculate distance, speed, and trajectory of a vehicle. It can help distinguish between an inanimate object and a pedestrian. It can read a speed limit sign and alert the driver if they are going too fast.

Automotive AI now goes beyond monitoring external elements. It can be used inside the vehicle to track the condition of the driver while behind the wheel. It can detect dangerous behaviors such as cell phone usage, drowsiness, and other distractions that may take a driver's attention off the road and result in an accident.

Additionally, it can better protect drivers and the fleet proactively by enabling a quick response to emergency situations. If sensors detect a crash, it can immediately contact the driver to see if help is needed and notify emergency personnel about the accident and its location for the fastest possible response.

AI can also monitor data from the vehicle's critical systems to ensure it is safe to drive. This not only improves driver safety but saves the company money with proactive driver safety measures and properly timed vehicle maintenance.

This is the type of intelligence that keeps data meaningful and is being adopted at the personal and enterprise levels for enhanced safety and productivity.

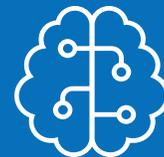


## Introducing the Becklar Engage Platform

There is a delicate balance between AI and human interaction. To be effective, AI-powered solutions should augment human interactions, not replace them, by providing information and insights to help guide better decisions and actions.

Becklar is dedicated to creating solutions for a safer world by integrating a suite of connected personal and workplace safety, health, and wellness solutions across industries to support and protect corporate customers, employees, subscribers, and assets. One of the most powerful tools Becklar has created is its Engage Platform, which is an intent-based platform that is powered by AI services.

The Becklar Engage Platform uses artificial intelligence (AI) and machine learning algorithms to automate routine calls across the network. It helps improve the efficiency of call handling, and operator effectiveness by providing context to calls before they are answered. Today, the Becklar Engage Platform provides inbound and outbound event responses through multiple channels including voice, text, SMS and more. Through this platform, Becklar helps clients engage with the right stakeholder at the right time, in the right context, through the right channel. Becklar offers a unique approach using AI services to understand intent, augment human interactions, drive better service, and improve customer retention.



**Becklar Engage is an  
intent-based platform  
powered by AI services**

## Inbound Call Handling with Becklar Engage

Becklar started the development of the Engage Platform in 2018, with a premium interactive voice assistant service that utilizes natural language processing to hold conversations by asking questions and interpreting responses. It took a substantial financial investment and thousands of hours over a two-year period to finish development of the Engage Platform.

Becklar built upon industry-leading machine learning technology to deconstruct thousands of live customer-to-operator alarm calls to train the Engage platform to respond to customer requests quickly and accurately. By analyzing thousands of calls, the experienced technologists at Becklar created an AI assistant to determine intent for multiple scenarios including emergency, false alarms, device and system testing, and general questions in order to respond and process calls appropriately.

When deployed in conjunction with live operators, the platform enables the fastest emergency response times possible, and has been trained to quickly verify if an alarm is a real emergency and forward the call to the top of the queue for a live operator to respond and dispatch emergency services immediately.

## Application & Testing

The Becklar Engage Platform was first deployed taking live calls for PERS (Personal Emergency Response System) users in June of 2020 on a limited basis. In the first month of operation it responded to approximately 300 calls from our industry-leading IoT PERS devices. By September of 2021, it was handling over 90,000 calls per month with speed and accuracy, proving its ability to successfully handle large call volumes.

The Engage Platform is constantly being tested and has several fail-safes in place, including many layers of redundancy, to ensure service will continue uninterrupted. Using several means of testing, including active, passive, and third-party testing measures, the Becklar tech team is notified immediately if any interruption to service takes place.

While in operation, if a call is not understood or able to be processed (i.e., calls with too much background noise, silent calls, or calls that are disconnected before call intent is established) the signal is automatically sent to a live operator for immediate assistance to ensure that all subscribers receive the help they need.

The Engage Platform's use of artificial intelligence and machine learning make it much more than an IVR, as it helps understand the intent of incoming calls. Armed with this information, calls can be handled more efficiently, and personalized care delivered more quickly, every time.

## Stats & Testimonials

Implementation of machine learning and AI in other industries shows the promise and potential of the Engage platform within the connected safety solutions space. There is a big shift in modern industries to be more efficient and cost effective. And AI is helping lead the way:

### AI Industry Stats

- In 2020, there were 4.2 billion digital voice assistants being used in devices around the world. Forecasts suggest that by 2024, the number of digital voice assistants will reach 8.4 billion units – a number higher than the world's population. (Statista.com) (11)
- AI can increase business productivity by 40% (Accenture) (12)
- In 2017, Netflix saved \$1 billion by using machine learning (Forbes) (13)
- Automation could free up 10% of nursing activities by 2030 (EIT Health) (14)

## Inbound Call Handling Results

The Becklar Engage Platform processed over 2 million inbound live calls on hundreds of thousands of devices with subscribers between June 2020 and November 2022, primarily in the mPERS industry, with exceptional results.

- All calls answered immediately by the Engage Platform
- Emergency calls response times cut in half – to an industry leading average of under 9 seconds
- 60% of live calls are closed without needing to involve a live operator.

Becklar has received a significant number of compliments for the speed of response and the efficiency with which their calls are handled.

“

*I am really happy with the service. I liked how you reached out to me so quickly. You guys are doing an awesome job.*

- Dean

”

## Outbound Calling with Becklar Engage

Based on the successful deployment of the Engage Platform for inbound calling, the Becklar AI Solutions team began the development of outbound engagement solutions in December of 2020. The purpose was to create a connected safety technology platform that could scale beyond PERS devices with both inbound and outbound communications – a platform that could also be implemented across health and personal safety industries, remote patient monitoring, fire and burglary, lone worker, as well as health and wellness industries. The team set out to develop a robust suite of AI based,



**60% of live calls are closed without needing to involve a live operator.**

connected safety solutions to support corporate customers, employees, and subscribers.

The first outbound notification and engagement were also PERS related, deployed in November 2021. The first use cases included outbound communications with customers:

- When the device detected a fall
- When the individual pressed the SoS button
- When the individual left their geofenced area/location
- When their devices sent low battery signals to the central station

Implementation of Engage has proved extremely successful in supporting live operator interactions and providing enhanced service to subscribers by providing the context to each call. Early success led to continued exploration of new ways to implement this technology.



## Evolution of Becklar Engage

The progression to scale the technology across industries required the Engage Platform to communicate through multiple channels. Today, the Engage Platform use cases have expanded beyond PERS IoT devices and now include RPM, lone worker, and wellness checks, and can communicate through multiple channels including:

- Voice
- SMS
- Email
- Push Notifications

Providing this flexibility is critical for different industry applications. For PERS and RPM, many customers prefer to be contacted directly through their IoT devices, making the process of engaging with providers or emergency response seamless. For other applications, text messaging services are key in providing alerts for customers. Research has shown that 63% of surveyed respondents prefer text messaging as a communication channel and that 75% of respondents find it helpful to receive appointment reminder (15).

A Gartner research study shows that 98% of all text messages are read (16). The Engage Platform application provides information to patients and customers in the form they prefer receiving information, which will increase engagement.

Beyond a one-to-one live response, the Engage Platform can detect a voicemail message prompt and leave a voicemail for the intended recipient. If the Engage Platform is enabled to reach out to a subscriber's contact list, it can also sequentially contact each member of the subscriber's contact list until someone is reached. This automation frees up operators to handle emergency situations, and results in expedited responses and better outcomes. It is constantly being trained to handle new use cases for different markets we serve. The Engage Platform is built on the idea that the tools we use should be more intelligent, more flexible, and better able to adapt to the dynamics of changing environments.

## Becklar Engage Platform Applications

Let's look at some practical applications of the Engage Platform across various industries.

### Healthcare & Engage

The Engage Platform is customizable and utilizes open APIs so enterprise users can adapt it to their needs. For example, remote patient monitoring is considered one of the top solutions for improving patient engagement by 66% of healthcare professionals. The platform assists clinicians in implementing a healthcare regimen for patients to take their medications on time, check their equipment, or take their readings as prescribed. If a reading is missed or is out of range, the platform can proactively engage with patients automatically to remind them to take action or retake their readings to verify results. If required, the platform can contact patients directly, through their IoT device or other preferred channel, and connect them with their healthcare provider. This saves time for providers as they are not trying to reach patients unsuccessfully. It also helps improve patient compliance with their health plans, leading to better health and reduced medical costs.

Remote patient monitoring can play a key role in the management of chronic conditions such as diabetes or hypertension. Patients can take vitals through their IoT devices such as blood pressure and glucometer readings and have that information sent to their health care professionals. Based on the results of the data, the Engage Platform can call or message the patient confirming their vitals data was normal or contact their doctor to schedule an earlier visit if needed. This proactive process saves patients and health care professionals from unnecessary visits and reduces both parties' costs.

Similarly, the Engage Platform can help improve patient compliance in gathering data for clinical trials. Identifying and securing enough participants for a clinical

# 80%

**of clinical trials are delayed by at least a month**

trial is a long and costly process. Contract Research Organizations (CROs) and Pharmaceutical companies report that nearly 80% of trials are delayed by at least a month due to patient retention. Patients leave trials for many reasons – including moving away, or having difficulties remembering to take their readings. The Engage platform can help improve patient compliance from the moment a participant enters the program. Once a participant receives their data collection devices, the Engage Platform can contact the patient directly, through any channel, instructing them on how to set up their device, collect data, and answer any questions they may have. Throughout the trial, the Engage Platform can send reminders, provide encouragement, and notify plan administrators if any issues arise. Since these calls are handled by the AI-enabled platform, supplementing human operators, it is extremely cost effective. Leveraging this program means that there are less trips into a doctors office, and proximity to the trial location becomes less of a factor.

The Engage Platform can help improve the success of any RPM, clinical trial, or patient compliance program by improving patient engagement through cost-effective automated voice reminders. It can improve quality of care through predictive analytics and alerts, as well as patient compliance through easy-to-use solutions. The platform also reduces costs by freeing up clinical resources from routine tasks and reducing patient hospital visits resulting in better overall health.



## Professional Monitoring Services & Engage

One of the biggest issues alarm monitoring companies deal with is false alarms. On average, 70% of incoming signals to a central station are either false alarms or non-urgent. In 2020 alone, Becklar subsidiary, AvantGuard Monitoring Centers, received over 306 million signals. If the average holds true, 214.2 million signals would have been considered non-emergency, with the potential to push higher priority signals farther back in a call queue. The Engage Platform has proven successful in handling non-urgent signals, freeing up live operators to focus on the more urgent signals. This installment of the platform assists — instead of replaces — the call center workforce, allowing for person-to-person empathetic assistance for the customers experiencing emergencies, and quick automated assistance for customers with non-urgent scenarios.

# 70%

of incoming signals to a central station are either false alarms or non-urgent

## Lone Workers & Engage

Lone workers are individuals that carry out their work activities without direct supervision, independently, and often work in remote areas. In 2015, Berg Insight projected there were 15 million lone workers in North America and Europe. Today, Berg Insight forecasts 1.8 million lone workers will be utilizing some form of connected safety solutions by 2025 (17). That's over a 13-million-person gap between protected and unprotected lone workers.



**19% of lone worker professionals report having an accident and struggled to get help**

(TrackPlus) (18)

Making a commitment to employee's health and well-being with real-time connected safety monitoring devices and solutions gives employees peace of mind knowing that their organization cares about their safety. In a survey conducted by TrackPlus, roughly 19% of lone worker professionals report having an accident and struggled to get help (18). The Engage platform can automatically contact employees if they have missed their scheduled check-in and determine if help is needed through automated response processing. Knowing that systems and technologies are in place to get lone workers immediate help if an incident occurs builds trust, increases employee retention rates, and can reduce insurance costs.

The Engage Platform provides an automated way to confirm lone worker's devices are on while out in the field and connect with them during their shift, ensuring their continued protection, building trust with employers, protecting employees, and reducing organizational safety risks.

## Home-Owners & Engage

Even for non-emergency situations the Engage Platform can be of assistance. Forgetting to turn your water off for an extended period will not only run up your water bill but is also wasteful and has a negative environmental impact. According to USDAM, more than 20% of land in the Western United States was classified as experiencing extreme drought in 2022 (19). The platform can call and remind customers to turn off their water after a certain threshold has been reached, potentially saving hundreds of millions of gallons of water a year.

The same could apply to other household utilities. Connect4Climate asserts that 35% of energy is wasted in residential homes. HVAC systems use up the most energy in homes (47% of a home's energy cost) (20). When connected to a smart-home IoT device, the Engage Platform can alert customers when energy usage levels are beyond a certain threshold or if the temperature in the house becomes too hot or too cold, providing significant savings to home owners.

## Conclusion

Industry projections indicate a need, as well as a growth opportunity, for connected safety solutions including IoT devices and AI-powered engagement technologies that can scale across industries. The number of lone workers using connected safety solutions is projected to reach 1.8 million in the US and Europe by 2025. According to Research and Markets, the global RPM system market will be worth over 1.7 billion dollars with over 30 million U.S. patients using RPM tools by 2024. Stats from the University of Pittsburg Medical shows hospital readmissions were reduced by 76% and patient satisfaction with RPM equipment and procedures was over 90% (21). The National Library of Medicine has estimated that the cost to replace a patient that has left a clinical trial is over twenty thousand dollars – and with 30% drop out rates, programs that help improve patient compliance by even 1% can provide significant savings (22). Across all facets of medicine, patient centricity is becoming a key to successful outcomes. By utilizing AI-powered solutions and IoT enabled devices that improve patient engagement -

for clinical trials, RPM or overall well-being - patients will benefit from better health and organizations will see reduced costs.

The average life expectancy for people has increased by 10 years since 1960 (23). There are expected to be over 1.5 billion senior citizens in the worldwide population by 2050 (24). As the population of senior citizens grows, so will the need for professional caregivers. Yet, individuals with PERS IoT devices require almost 100 less hours of care than non-PERS users.

The implementation of AI in the security monitoring sector has shown positive results. AvantGuard, Becklar's premier monitoring provider, has shown a significant decrease in the time it takes to first interaction during an emergency call using AI, going from an industry average of two minutes down to seconds.

Proper implementation of IoT devices and AI can help increase customer or patient engagement, reduce the amount of time spent on unnecessary appointments, and reduce costs for both the company and customer. It has proven effective in decreasing, and even preventing, events that have major financial or medical implications to both company and individual.

The power of the Engage Platform is in its ability to use artificial intelligence and machine learning to understand the intent of the user, allowing teams to respond more quickly and appropriately based on the interactions. It has been deployed across a variety of IoT devices, and can send alerts through multiple channels including voice, SMS, text and more. It has already provided extraordinary benefits when used for alarm monitoring and personal emergency response (PERS) and has the potential to make positive sweeping changes in other industries and across all areas of workplace and personal connected safety.

**Becklar Engage helped  
drive emergency  
response times down to  
the fastest in the industry**

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