



Optimizing Care in Independent Living with **Decision Support Technology**

Results of an Assessment at Presbyterian Senior Living of
TrueCare by ResMed

Abstract

Senior living communities regularly face care-delivery challenges due to having limited-to-no visibility to residents' health statuses behind closed doors, which can lead to unpredictable outcomes ranging from gradual decline to irreversible situations. Therefore, senior living communities struggle to acquire objective information from residents and look for a solution to solve the gap.

Presbyterian Senior Living, an innovator of senior living communities, initiated an assessment of a preventive care solution that can address these limitations by collecting objective information, providing in-depth insights, and optimizing quality care for both individuals and communities.

ResMed's TrueCare solution is the only solution that automates comprehensive insights and enhances senior living care quality. With TrueCare, Presbyterian acquires objective evidence from residents, provides insightful information, and supports the care team, family members, and residents to make better decisions.

This white paper presents several examples demonstrating how TrueCare eases the concerns of residents' families and has the potential to optimize quality across the organization's sites and programs.



Pilot Program Introduction

Presbyterian Senior Living (PSL) offers senior care services with advanced technology. Two of their communities, Green Ridge Village and Westminster Woods, engaged in a pilot program with TrueCare to provide a better living quality. TrueCare (ResMed®) is an automated-insights solution aiming to optimizing resident care, support the care teams' decision-making process, and generate operational value to the senior communities.

Nine residents of Green Ridge Village and Westminster Woods were included in the pilot program that intended to validate the importance of resident information and share the resulting learnings across the entire Presbyterian Senior Living organization. In the meantime, PSL provided valuable feedback leading to TrueCare refinement, enabling to improve residents, families, and communities' assistance.

TrueCare

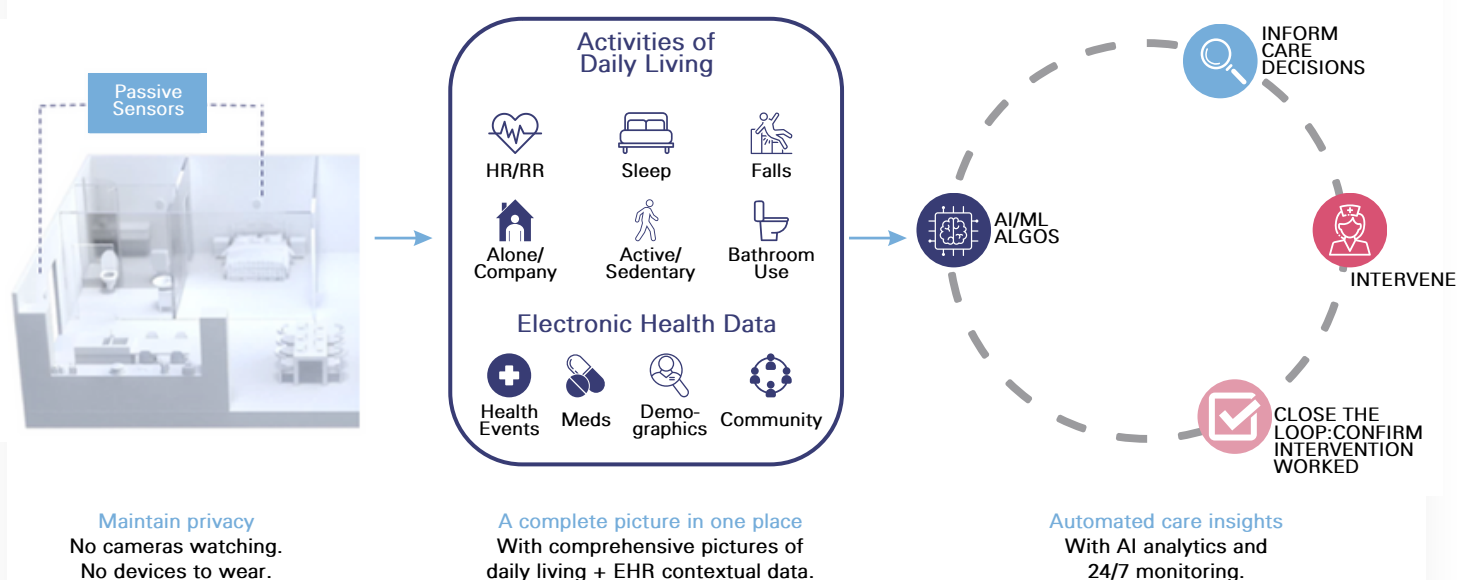


Fig. 1: TrueCare Health Intelligence Platform

The TrueCare solution includes ambient sensors placed in each room of the resident's living unit and a software dedicated to the care team. TrueCare devices will collect daily living activities, such as sleep patterns, bathroom use, and mobility patterns and convert it to scores to facilitate the analysis. The analytics platform combines a comprehensive set of activities of daily living metrics from the sensor with contextual data from electronic health record (EHR) (Fig. 1). The dashboard automatically provides caregivers with the latest insights based on AI analytics and personalized trends for each resident.



TrueCare Dashboards

Residents of concern are flagged based on automated insights in health status provided by TrueCare, allowing the care staff to make informed decisions during their daily stand-up meetings and weekly transition meetings about the right time to provide care and proactively intervene with residents. The same information also serves as validation data for conversations with the resident's family members.



TrueCare Score

The TrueCare Score is made up of five sub-scores: Stability Score, Bathroom Score, Sleep Score, Social Score, and Mobility Score. Each sub-score is weighted by points and each sub scores' significance is determined based off its percent contribution based on available trends.



Mobility Score

Mobility Score makes up 20% of the overall TrueCare Score and is based on movement throughout the living space combined with sedentary measures. The platform shows transitions made throughout the home as well as time spent sitting in defined areas.



Bathroom Score

Bathroom Score makes up 15% of the overall TrueCare Score and is based on bathroom visit consistency during the daytime and nighttime in addition to a hygiene metric.



Sleep Score

Sleep Score makes up 25% of the overall TrueCare Score and is based on consistency of bedtime, wake time, sleep duration and how tranquil one was during the night. Additional information related to sleep, like naps, is a metric that is provided in the dashboard to give additional context around the resident's habits and health status.



Social Score

Social Score makes up 20% of the overall TrueCare Score and is based on identified visitors and resident's time spent outside the home.



Stability Score

Stability Score makes up 20% of the overall TrueCare Score and is based on observed and predicted falls in their living space. A higher count of falls as well as the duration of the fall will decrease this score indicating that the longer the fall occurs the greater the severity of the fall may be.



TrueCare Radar

The radar map visually represents the change in sub-scores between today and another period in time. This view allows the care staff to easily see if a score in one or multiple areas has decreased (moved inward) or increased (moved outward) between now and the time being assessed.





Presbyterian Pilot and Case Studies

Case study #1

TrueCare eases the concerns of the resident's family

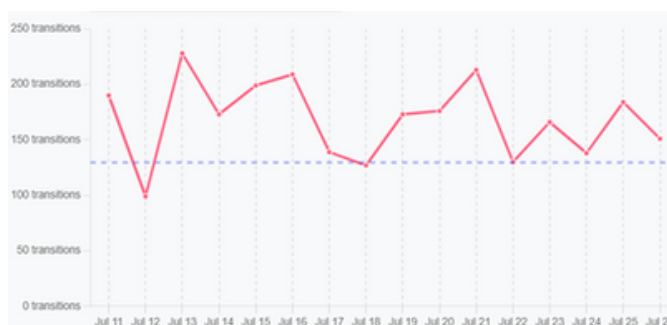
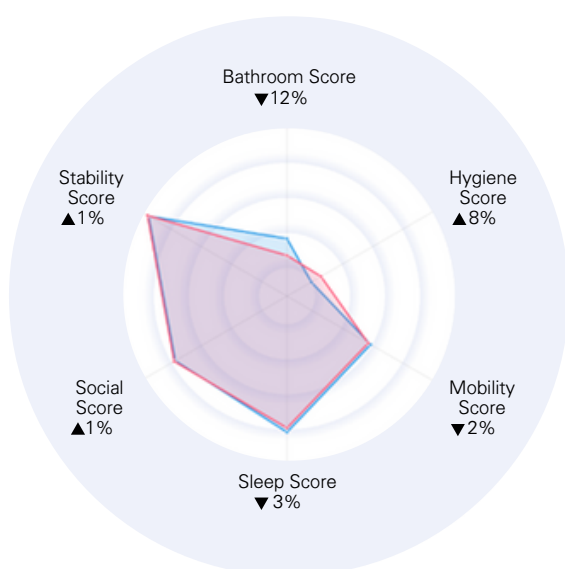


Fig. 2: TrueCare Score and the transition numbers

The resident family informed the care team about their worry that the resident spent too much time sitting and as not active enough in their home. Therefore, the care team analyzed the TrueCare scores to verify the real activity status of the resident.

The TrueCare scores showed that the resident regularly walks among different rooms and the Mobility score was consistent (Fig. 2). In fact, the resident was active, stayed outside very often and presented an average transition number and Mobility score above the baseline compared to other residents. Overall, the TrueCare data confirmed that the resident was active and doing well at home. The care team was able to share these data elements with the resident's family and addressed their concerns effectively.

Case study #2

TrueCare enables professional care givers to close the loop



Fig. 3: Bathroom visits at night

The resident's neighbors shared with the care team that the resident was away from home and wandered in the middle of nights, leading the care team to investigate the resident's health status as nighttime activity can be associated with an increased risk of falls and declining quality of life.

Utilizing TrueCare, the care team confirmed the neighbor's information: the sensors showed that the resident was away from home on one night and had a high nighttime activity in the residence on several nights of the same week. The Bathroom trends showed an increase from 1 to 2 or 3 bathroom visits per night (Fig. 3). Furthermore, the sleep score appeared to decrease, suggesting the resident was out of bed during their typical sleep times.

Through TrueCare use, the care team rapidly obtained objective evidence and confirmed the cause that was affecting resident's sleeping quality, saving investigation time.

With this data in mind, the care team decided to have a conversation with the resident that resulted in a decrease of their time spent outside at night, of the night activity and the bathroom visits at night and an improvement of the Sleep score (Fig.3). Their possibility of falling was therefore decreased, improving the quality of life.

In this situation, TrueCare provided an opportunity to observe the resident's baseline, analyze the scores improvement over time, and offered the care team additional insights when creating a care plan.

Case study #3

TrueCare assists the care team to maintain the quality of life for the resident

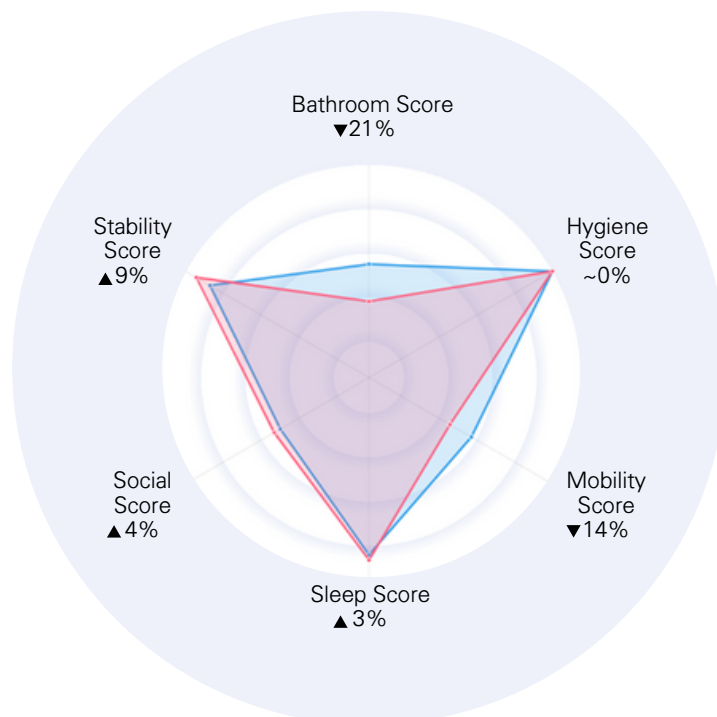


Fig. 4: TrueCare Radar

This resident was facing incontinence due to medication. In addition to helping the resident with supportive service, their family also considered transferring the resident to another level of care. However, the resident was adamantly against the decision because they would like to maintain current life quality.

The care team then decided to investigate the resident's health status through TrueCare. TrueCare showed that the resident had lower bathroom visits compared to other residents, which was consistent with their actual health status. TrueCare Sleep score also indicated a stable sleeping status that included one to three hours of napping daily. Despite the low Bathroom Score, no additional decline was identified in the TrueCare Score throughout the pilot program.

With TrueCare Radar (Fig. 4), the care team had a discussion with the resident's family, which realized that the support service was effective in helping the resident and provided justification of the expense of the supportive services. The care team had hoped to adopt TrueCare earlier so that they could see the resident's decline and engage the problem sooner.

TrueCare played a significant role to ensure that the resident's status is controlled, supported the care team's and the resident family's decision, and ease the concerns of the resident and their family. In addition, TrueCare could be used with other residents before decline occurs to help identify early and manage with supportive services that enable the resident to stay in their home.

Case study #4

TrueCare brings more insights for the care team wellness visit

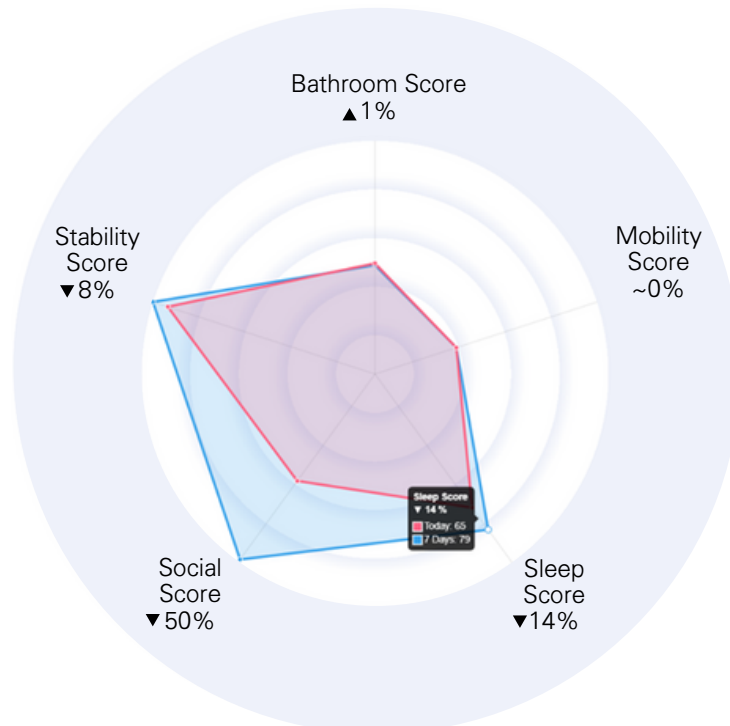


Fig. 5: TrueCare Radar

Shortly before the pilot period, the resident lost a family member and the care team was providing support and monitoring the resident's physical status and mental health.

TrueCare was able to provide insight to the resident's health score that would typically be difficult to obtain for residents in independent living. The sleep trends showed the resident was going to bed later and later while sustaining a consistent wake time, resulting in a decline in overall sleep duration and Sleep Score. Though the TrueCare Radar (Fig. 5), the care team identified that the Sleep Score and the Social Score declined by 14% and 50% respectively. After discussing with the resident, the care team regarded the resident's situation as understandable and decided to keep observing and verifying whether the resident needs additional support in the future.

TrueCare helps the care team to follow the resident's daily behaviors and reminds them when trends start to change or stretch outside the norm.

Conclusion

In conclusion, the pilot achieved the objectives defined in the letter of intent by Presbyterian and TrueCare. Through the evidence collected and improvements made to the TrueCare solution, the success criteria were achieved, including to provide clinical insights to optimize care, increase operational efficiency, and optimize quality from individual residents to the organizational level.

Provide clinical insights that optimizes care

TrueCare collects objective evidence and automates insights, especially the information that residents do not reveal. As it provides more than one metric, TrueCare enables the care team to comprehensively and rapidly analyze the resident's health status. For instance, lower risk of falling might result from less wandering and fewer bathroom visits at night, while fewer bathroom visits do not necessarily mean decline of health status as it might be caused by the resident spending more time being away from their residence. Providing detailed data, TrueCare's clinical insights facilitate the setup of care plans by the care team and highlight the early signs of decline of residents.

Increase operational efficiency

TrueCare is based on artificial intelligence and machine learning that enables the automated analysis of all parameters on a 24/7 basis. The system then provides detailed insights and alerts to the care team when needed. Care teams have reported TrueCare to be user-friendly and the dashboard to be clear and easily understandable, allowing for time-savings. These features, as well as the privacy respect due to the use of radar, are what makes TrueCare distinguished. The care team feedback was that TrueCare is an easy to learn and easy to use solution that requires minimal maintenance. The TrueCare Score and journal entries allow the care team to review the events of the latest week in a glance. More insights are provided and evolution over time can be assessed by comparing the baseline and actual scores, enabling the care team to have a detailed view of the resident's health status.

TrueCare's insights facilitate and streamline effective communication between the care team, residents, and their family. Prior to adopting TrueCare, the care team looked for a balance between collecting objective evidence from residents and maintaining residents' privacy. After introducing TrueCare in the communities, the care team was able to acquire more insights and establish communication with the resident/resident's family at the right time.



Optimize quality from individual resident to organization level

Overall, the pilot showed that TrueCare optimized the care quality of not only residents but potentially the communities as well. From individual residents' perspectives, TrueCare assures capturing the resident health status, including subtle changes. For instance, TrueCare's insights allow the care team and the resident's family to justify the expense of supportive service (case study #3). Regarding communities, as TrueCare Score assists the care team to observe the health status of individual residents, the comparison of TrueCare Score among different residents can help identify which residents require more attention. For instance, the TrueCare Score of one resident improved by 9 points and another resident declined by 11 points within the two months' period of the pilot study. TrueCare, through its detailed insights, enables the care team to better understand and maximize the quality of life for individuals across to the whole community base.

Future Opportunities With TrueCare

In addition to the above advantages, Presbyterian's assessment identified additional applications of TrueCare that would benefit senior living communities. While the pilot focused on residents with initial decline, the solution could also be used with residents that are seen as functional but may present changes in health status or early decline that are difficult to notice. Furthermore, TrueCare could be used to market to potential customers interested in joining a community where advanced technology is available to manage the continuum of care. Finally, as communities expand their home care offerings, TrueCare's insights would help the care team to know the right timing to introduce home care services for residents and support residents desire to stay in their current level of care.