



CASE STUDY

BICKFORD SENIOR LIVING LEVERAGES A.I. TO IDENTIFY EARLY SIGNS OF HEALTH DECLINE

Shifting The Care Paradigm from Reactive to Proactive

Bickford Senior Living is a family-owned and managed senior living operator caring for over 2500 residents across 9 U.S. states. At the core of their care philosophy is “Happiness” and doing whatever it takes to make their residents happy. At Bickford communities, happiness translates to ensuring their residents remain independent, healthy and safe for as long as possible. To make this a reality, Bickford decided to go beyond the traditional reactive approach and provide proactive, preventive care.



Identifying Early Signs of UTI - A Significant Challenge in Dementia Patients

A urinary tract infection (UTI) is an infection in any part of the urinary system. UTIs are the most commonly diagnosed infections in older adults and account for 20-30 percent of all infections reported by long-term care facilities. According to the National Institutes of Health¹, UTIs affect around 10 percent of men and 20 percent of women over the age of 80, and the incidence of UTIs increases with age in both men and women. If left untreated, UTIs can cause long-term complications such as delirium, permanent kidney damage, blood poisoning or sepsis, recurrent infections, and even death. Hence it is crucial to identify the earliest signs of a UTI, especially in older adults who may have a weakened immune system.

Bickford of Omaha – Hickory is an assisted living and memory care community that primarily cares for dementia patients. Jill Colling, the director of the community, and her staff found it challenging to detect UTIs early as they could not rely on the self-reporting of their memory-impaired residents.

Continuous Visibility and AI-Powered Wellness Insights



Bickford communities partnered with CarePredict, a leading AI-powered digital health senior care platform, to enable preventive care. CarePredict uses an award-winning smart wearable, Tempo™, sophisticated sensors and deep learning algorithms to understand each resident's daily activity patterns, such as eating, sleeping, walking, and bathroom visits. When there is a deviation from a resident's established baseline activity, the system alerts the staff on a range of possible issues such as UTI, falls, depression and cognitive impairment.

Jill and her staff began using these actionable insights served up by the CarePredict platform to identify potential issues before they happened and take proactive measures. The team noticed that two residents who rarely deviated from their activity patterns, started exhibiting reduced nighttime sleep duration and an increase in the duration of restroom visits. After initial nurse assessments, they swung into action and ordered urinalysis, urine culture, and sensitivity tests.

“Not knowing until the problem has almost reached the point of criticality can be devastating to the resident and the caregiver. Without CarePredict, it would have taken up to three weeks to notice a marked change in the behavior leading to a UTI. CarePredict has been a powerful tool in helping our community reduce unplanned hospitalizations and has positively impacted the health and safety of our residents.”

Jill Colling
Director, Bickford of Omaha - Hickory

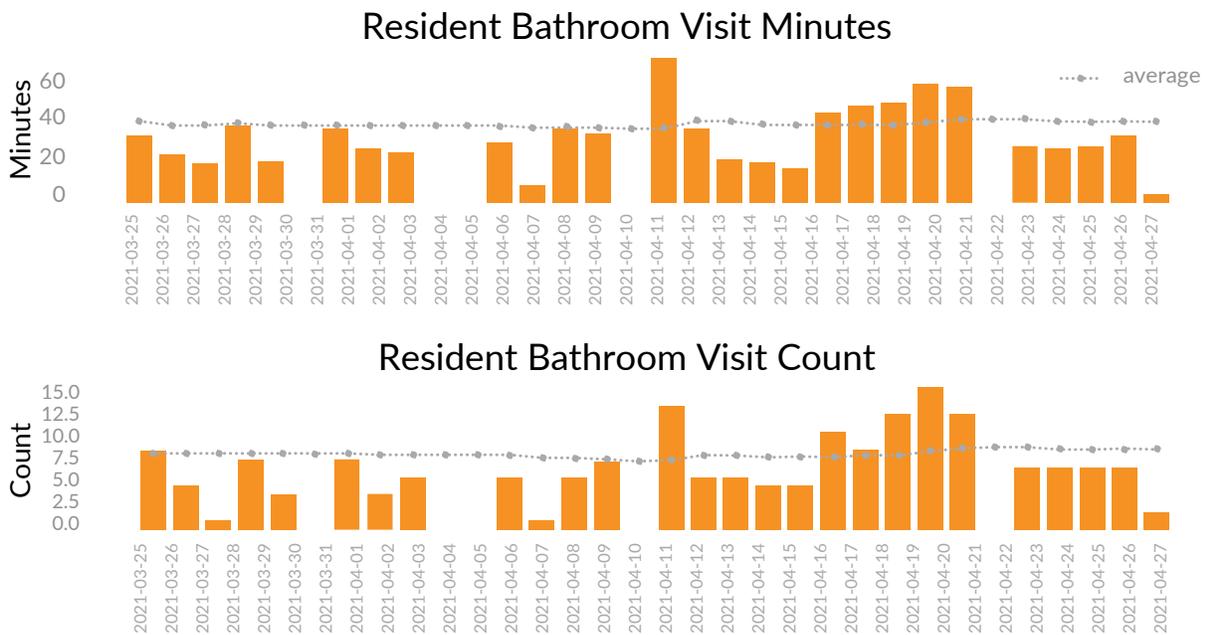


Fig 1. Resident Out of Baseline Report used by Bickford to identify UTI early in their residents - Resident exhibited out of baseline activity for bathroom duration and visit counts on 04/11

A Data-Driven Approach to Reducing Hospitalizations

According to a study², UTIs cause 15.5 percent of hospitalizations and 6.2 percent of deaths among those 65 years and older. Early detection is key to reducing hospitalizations and long-term complications from the infection, such as kidney damage and sepsis. A study³ on the association between antibiotic treatment and UTIs has shown that UTI patients aged 65 years and older were at an increased risk of bloodstream infection and death when antibiotic treatment was deferred or not provided (rate of bloodstream infection was 2.9 percent for deferred antibiotics vs. 0.2 percent for immediate antibiotics.)

The CDC⁴ lists new or marked increases in incontinence, urgency, and frequency of bathroom visits, as some of the initial indicators of a UTI. CarePredict's AI-Powered insights have revealed that in older adults, an increase in the duration

of the bathroom visits is associated with an increased possibility of a UTI. Without CarePredict, it may have taken the Bickford staff between two to three weeks to notice a significant change in the bathroom and sleeping patterns. The treatment for UTI with such late detection would have entailed:

- a. A higher likelihood of hospitalization.
- b. Hospital-acquired secondary infection and antibiotics resistance.
- a. Prescribing a broad-spectrum antibiotic or intravenous antibiotics known to have adverse effects in older adults.

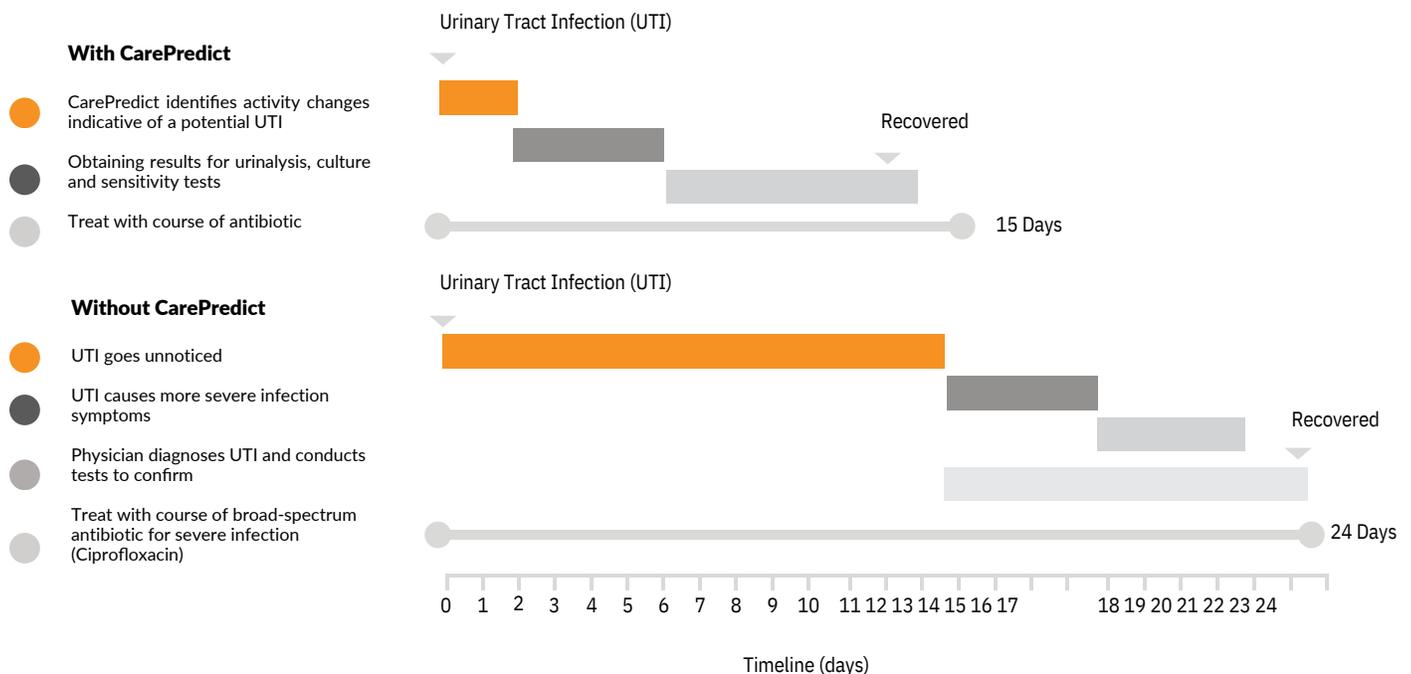


Fig. 2 - A comparison timeline of UTI detection and treatment with and without CarePredict.



“At Bickford we have a variety of ages and residents who are at different stages of dementia. With that said we have many different activity focused tasks and behavior patterns, so it can be difficult to see signs and symptoms of a UTI that would be noticed on someone younger in age or even visually with behaviors. Since we have a very busy branch it is hard to see and notice different patterns and changes in behaviors. CarePredict’s continuous tracking helps us confirm our assessment findings quicker and we can intervene with treatments in a more timely manner.”

Tia Donnelly
Health & Wellness Director
Bickford of Omaha - Hickory

Using CarePredict’s Out of Baseline report, the Bickford staff could identify changes much earlier – within two days instead of two to three weeks it would have taken the staff to notice a prominent change indicative of a UTI. There was also a significant difference of 60 percent in time to recovery with CarePredict (Fig.2). This early indication from the CarePredict system was instrumental in helping the Bickford staff provide prompt medical attention that was faster, safer, and more therapeutic while preventing unplanned hospitalization. Peer-reviewed and published study⁵ has shown that the CarePredict reduces unplanned hospitalizations by 39 percent and increases the average length of stay in the same care setting by 67 percent in senior living communities.

Leading Technology For Senior Care

CarePredict is a leading digital health company purpose-built to meet the demands of senior living. The CarePredict solution uses an award-winning smart wearable,⁶ Tempo™, artificial intelligence, machine learning, and advanced kinematics algorithms to learn each resident’s daily activity and behavior patterns. When there is a deviation from an individual’s “normal,” the system alerts staff on a wide range of potential health concerns. This ability to detect the early signs of health concerns allows the facility staff to intervene before there is an actual issue, enabling preventive care. Peer-reviewed and published studies⁵ show that CarePredict reduces hospitalizations by **39%**, falls by **69%**, improves staff response times by **37%**, and increases the length of stay by **67%**.

CarePredict's end-to-end platform encompasses all aspects of care delivery, such as data-driven wellness insights; precise real-time location of staff, residents, and visitors; insights into workforce productivity; enhanced resident safety with customizable geofence alerts and intelligent fall detection; an advanced call button with two-way audio functionality; enhanced communication platforms for staff and families; and the first commercially available automated digital contact tracing specifically designed for senior living.

Sources:

1. Urinary Tract Infection in Older Adults
2. Urinary Tract Infection and Asymptomatic Bacteriuria in Older Adults
3. Antibiotic management of urinary tract infection in elderly patients in primary care and its association with bloodstream infections and all cause mortality: population based cohort study
4. CDC Urinary Tract Infection (UTI) Event for Long-term Care Facilities
5. Artificial Intelligence-Powered Digital Health Platform and Wearable Devices Improve Outcomes for Older Adults in Assisted Living Communities: Pilot Intervention Study
6. CarePredict Selected as a CES 2020 Innovation Awards Honoree for Wearable Technology Developed Just for Seniors