

Impact of predictive modelling and application of preventative measures in reducing fall rates in domiciliary care

Heger T, Windle N, Bucci M, Prando G, Maruthappu M
Cera Care, London, UK

HSD108

INTRODUCTION

Falls among older adults are a significant concern, causing over 200,000 hospitalisations annually and costing the UK an estimated £4.4 billion each year.

Cera Care is a UK company which provides home care to adult people. Thanks to its widespread tech adoption, Cera Care leverages customers' data to predict falls and design optimal interventions which are performed by carers during their daily visits.

OBJECTIVE

This study evaluates the effectiveness of a predictive & preventative intervention aimed to reduce the number of falls based on data from adult patients in home care settings collected by Cera Care. The goal is to evaluate whether the implementation of fall-specific care tasks and timely care plan reviews based on patient risk can significantly lower the incidence of falls in the home care setting.

METHOD

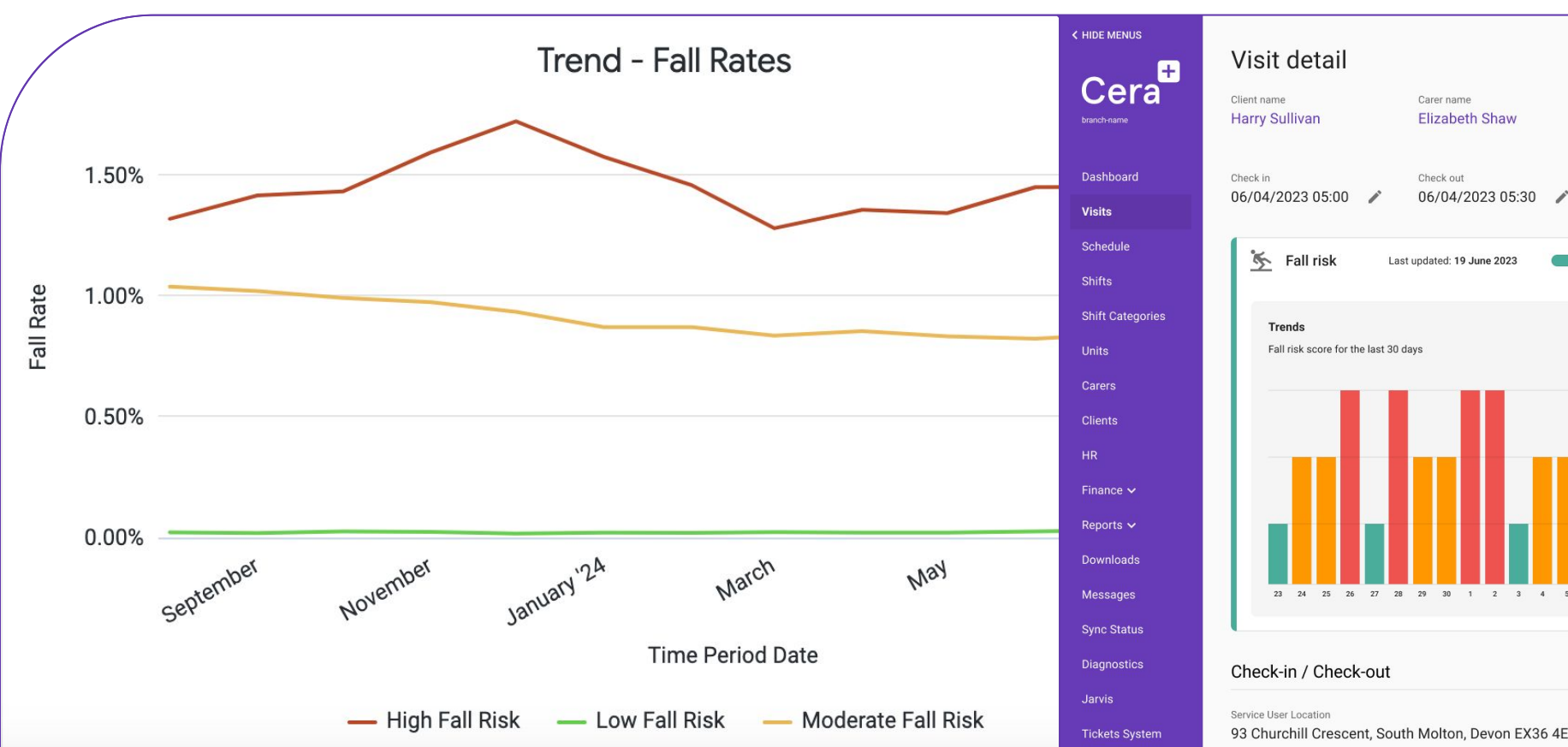
The intervention employed an AI-powered Falls Risk tool that used comprehensive patient data to stratify clients into different fall risk levels and generate daily alerts for branch staff. Based on these predictions, personalised fall-specific care tasks and timely care plan reviews were implemented to reduce fall incidence.

The study, conducted over 6 weeks with 614 patients across 10 Cera Care branches, utilised a pre/post analysis to evaluate fall incidence and associated healthcare outcomes.

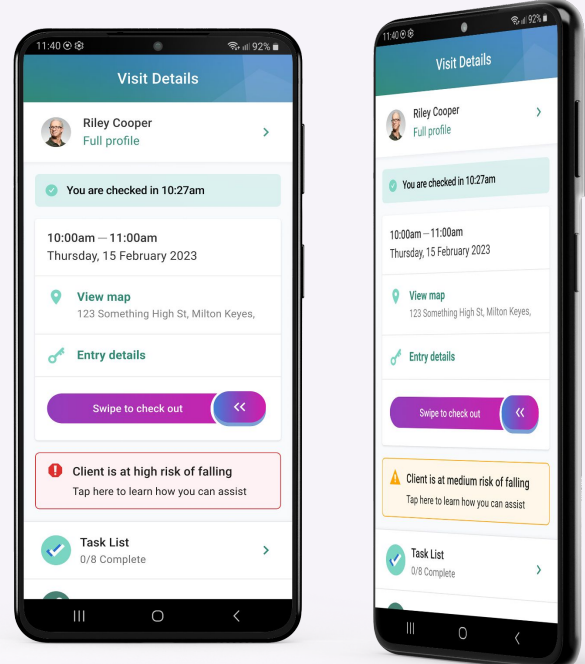
The impact of the interventions was assessed for each client separately from the moment they started receiving the intervention due initial operational challenges with the rollout of the intervention.

RESULTS

The implementation of the Fall Risk assessment tool – where moderate- and high-risk users have up to a 6% chance of falling on any given week – in combination with new fall-specific, personalised care tasks and timely care plan reviews resulted in a 20% (p-value 0.00003) reduction in fall rates among the 614 patients involved in the pilot study.



We leveraged data gathered from care plans, electronic medication administration records (eMAR), daily visits, and prospective questionnaires to develop a comprehensive, longitudinal perspective on our service users' health.



AI-powered risk stratification enables our staff to offer more personalised and informed care. In particular:

- ❑ We assigned fall prevention tasks such as: “make sure client is hydrated” and “make sure their assistive devices are near them” to make sure our carers perform additional preventative actions.
- ❑ We recommended a care plan reassessment, if a service user is classified at moderate or high risk for several weeks in a row.

Using these data points, we've developed a risk assessment tool which stratifies service users into 3 fall risk levels. “High Risk” users are on avg 48 times more likely to fall than “Low Risk” ones.

Features	Data source
Age	User's Profile
Fall history (1 fall within last 6 months)	Visit reports
Urinary incontinence	Care plan
Cognition (impulsive, altered awareness of surroundings)	Care plan
Care equipment (IV infusion, chest tube, catheter, SCD)	Care plan
Mobility (requires assistance for transfer/ambulation, unsteady gait, visual or auditory impairment)	Care plan
Medications (opiates, anti-hypertensive, diuretics, laxatives, sedatives)	eMAR
Additional medications (Meptazinol, Salazopyrin)	
Sleep problems (in last 3 days)	Visit reports
Chronic diseases (Alzheimer's, Parkinson's, Arthritis, Dementia, Diabetes, Depression, Heart Disease)	Care plan

CONTACTS

Tomas Heger - tomas.heger@ceracare.co.uk
Giulia Prando - giulia.prando@ceracare.co.uk

CONCLUSIONS

An AI-powered falls risk assessment tool, integrated with personalized care tasks and regular plan reviews, proved highly effective in reducing falls among adult patients receiving home care, showcasing the benefits of advanced predictive analytics and immediate interventions.

The observed 20% reduction in fall incidents could, when applied to the whole Cera Care's population of patients, prevents an estimated 602 hospitalizations and save approximately £5.5 million in healthcare costs annually.

Cera Care's tech-enabled home care provides a rich source of real-world patient data which, when leveraged AI, allows to improve disease prediction and prevention, enhance outcomes for older adults and reduce healthcare costs.