



In the United States, **20%** of elderly patients with chronic conditions will be readmitted within **30 days** of a hospital visit. Re-hospitalization hurts these patients' chance of recovery and is a serious financial penalty for health care cost. CareCycle Management (CCM) **Navigator** is a clinical decision engine and analytics platform that integrates with wearable devices to reduce re-hospitalizations in this high-risk group, including acute care situations.

Navigator is a patent pending rules engine managing over **2,000 patients daily** for hospital systems like the University of Texas Southwestern Medical Center. Real-time vitals from patient devices combine within Navigator's predictive model, patient profile, and clinician assessments to produce a dynamic acuity score, predicting hospitalization risks and allowing interventions before hospitalization. Developed in partnership with the University of North Texas Medical School, Navigator has helped over 31,000 patients reduce their re-hospitalization risks to an industry-leading **7%**.

Navigator

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- SQL Server
- AngularJS
- Web API
- D3
- Node.js
- SignalR

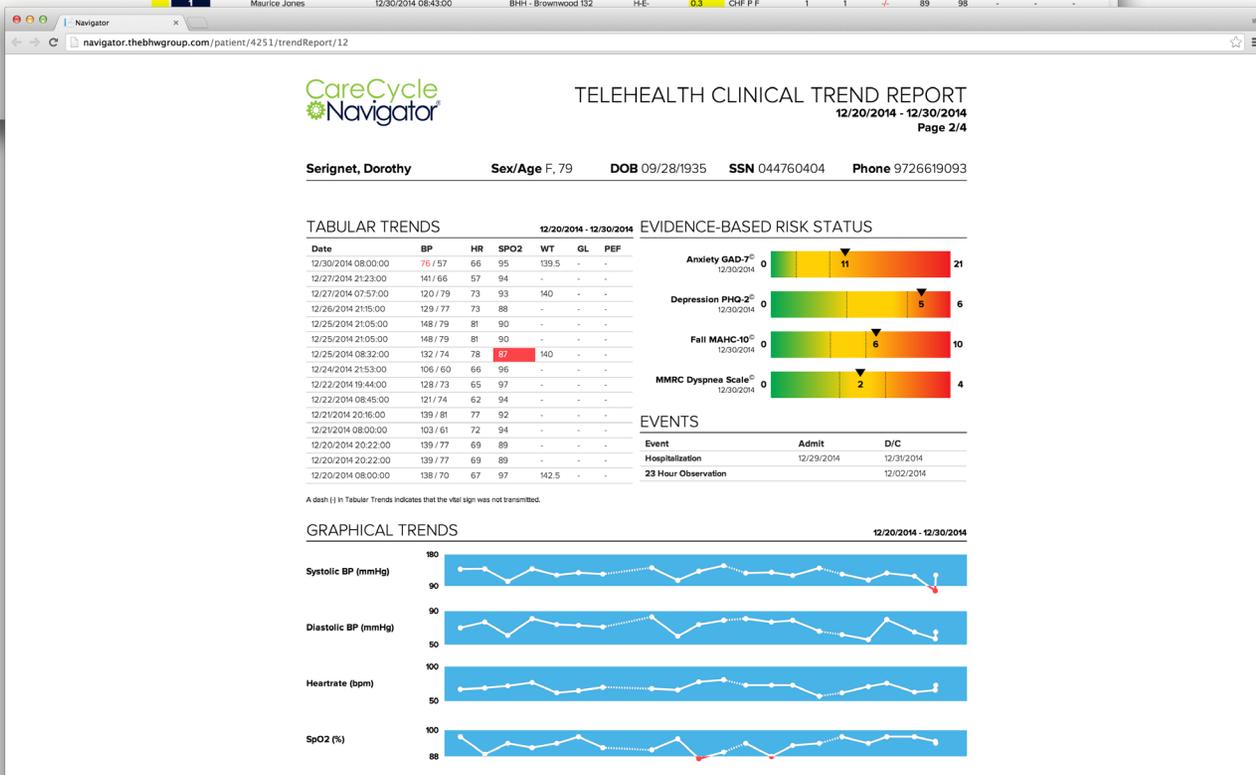
The screenshot shows the Navigator interface for patient Donald Bray. The top navigation bar includes 'DASHBOARD', 'ADMINISTRATOR', 'NEW PATIENT', and 'INITIATIVES'. The patient's name and contact info are displayed, along with risk status (PMS, SA1) and allergies. The main content area is divided into several sections:

- NAVIGATOR SCORECARD:** A table with columns for Date, AS, DA, DR, BP, HR, SPO2, WT, GL, and PEF. It shows a trend of vitals over time, with some values highlighted in red (e.g., HR 41, BP 167.5, HR 46).
- MEDICATIONS:** A list of active medications including X-Viate 40%, Nitrostat 0.4 MG, and Simvastatin 20 MG.
- DIAGNOSES:** A list of medical conditions such as ESOPHAGEAL REFLUX, COR ATH UNSP VSL NTV/GFT, and ANXIETY STATE MOD.
- TRACKERS:** A section with sub-sections for SYMPTOMS (e.g., Altered Mental State, Cough), COORDINATION (e.g., CoC Urgent, Follow Up), EDUCATION (e.g., Non Compliance), and RECOMMENDATIONS (e.g., Therapy Evaluation).
- TELEHEALTH:** A series of line charts showing trends for Systolic BP (mmHg), Diastolic BP (mmHg), and Heartrate (bpm) over a period from 10/01/2014 to 12/01/2014.





Navigator allows clinicians to efficiently care for patients, even in the face of changing patient situations. As a Single Page Application (SPA), Navigator uses **WebSockets** and **AngularJS** to triage patients in real-time, drawing immediate attention to patients at risk. With a **data warehouse** containing over one million days of patient monitoring, CCM has identified 15 risks and over 100 facets that predict re-hospitalization. This data creates a rich entity model that combines real-time vitals and clinician assessments within a patent pending **Node.js** decision engine to prioritize patients and identify their risks.



Managing re-hospitalization takes teamwork, so Navigator includes **CRM** and collaboration features for hospitals, physicians, and clinicians. **RESTful** API's presented by Navigator allow embedded and wearable devices to share patient vitals. Continuity of care across disparate teams is accomplished via an Enterprise Service Bus (**ESB**) exchanging industry-standard **HL7** messages with the Electronic Medical Record (**EMR**) systems used by hospitals and physicians. With a complete patient picture, healthcare professionals can collaboratively provide patient care via **asynchronous** workflows. Armed with data and collaborating with colleagues, healthcare professionals are presented with web-based data visualizations and custom charts in **D3.js** to educate patients and intervene with medication and treatment when necessary.