

Case study form:

Company name	C2-AI Ltd
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Contact	Mr Steve Barnett: Director Public Sector Engagement
Date	21 July 2020
Sector (i.e. public / commercial)	
Representation Contact	Public & Commercial Sector application Mr Andrew Cairns: Commercial Programme Manager: Innovation Agency North West Coast: Andrew.Cairns@innovationagency.nhs.uk
UK/International	Cambridge UK
Company/ Organisation Description <i>(please provide a brief description of your organisation)</i>	C2-AI are a multi-award-winning UK provider of AI-backed hospital improvement systems. Based in Cambridge, C2-AI are identified by NHSE, DHSC & DiT as one of the 10 'Elite' AI Healthcare Companies in the UK. Compass Point of Care - is recognised by NHSE, DHSC and DiT as a Top 10 Essential Solution for Covid-19 For more than ten years C2-AI have been using AI-backed Clinical Analytics to help hospital systems in the NHS & Overseas drive down costs and improve patient safety through the identification of specific and actionable measures that help reduce mortality & clinical variation in surgery & general medicine. Dramatically cut hospital-acquired conditions, including Acute Kidney Injury, Hospital-acquired Pneumonia and Acute Urinary Retention.
What was the issue/ opportunity area you sought to address? <i>Please detail the patient care, service delivery or operational issue/ opportunity area your service/initiative sought to address including any additional issues brought about by <u>the context of Covid-19</u> e.g. support for remote/virtual working, remote care delivery etc</i>	Already costing the NHS in excess of £900m p.a and consuming 1.6m bed days a third of which are critical care/ICU beds; Acute Kidney Injury and Hospital-acquired Pneumonia (AKI & HAP) are the two most prevalent serious avoidable conditions that escalate patients to Critical Care and can increase a patient's stay in hospital by an average of 6-8 days. At any given time, up to 60% of patients in ICU are suffering from one or both conditions, putting huge pressure on staff, Mechanical ventilation and Dialysis as well as beds. During the pandemic incidences of these conditions have increased by 300% in both Covid and non-covid patients There are therefore significant advantages in terms of resources and outcomes to minimising their occurrence. Our objective was to develop a system that would deliver rapid, significant and sustained reduction in these of high volume, high cost, high harm hospital-acquired conditions.

<p>How has your digital-based service / initiative addressed this?</p> <p><i>Please detail your case study.</i></p> <p><i>Examples include case studies from across primary, secondary, tertiary and social care where health systems, health providers, HCPs/ patients have seen positive outcomes from:</i></p> <ol style="list-style-type: none"> 1) Empowering people to self manage. 2) Improving ability of HCPs to deliver better care. 3) Supporting virtual/remote care 4) Improving population health 5) Improving clinical efficiency and safety. 6) Supporting care or service/system redesign 7) Enabling scalable, integrated care models 8) Using data for analytics and enhanced actionable insight 9) Demonstrating innovative and scaleable partnership models 10) Reducing social/ health inequalities 	<p>Using advanced clinical analytics, based on our long-established AI & Machine Learning systems. C2-AI have developed and successfully implemented ‘Compass Point of Care’</p> <p>Compass Point of Care is a Predictive Risk Assessment tool, ‘that provides clinicians in preventative care with ward-based decision support and actionable insight leading to significant and sustained reductions in both HAP and HA-AKI.</p> <p>Use of Compass PoC within the NHS demonstrably and consistently reduces the occurrence of Hospital-Acquired Pneumonia and Acute Kidney Injury, HAP & HA-AKI.</p> <p>Compass PoC has helped client hospitals reduce HAP & overall AKI (by targeting HA-AKI) by up to 50% and 70% respectively.</p> <ul style="list-style-type: none"> • Results supported by multi-year NHS Clinical trials and Publication and proven in real world use • Registered with the MHRA as a ‘Class 1 Medical Device.’ • Delivered Software as a Service requiring zero integration • Available on IOS & Android mobile devices • No integration with existing Hospital IT infrastructure required • No internet connection required after download • No PID Data collected • All data that is collected is transitted via the NHS N3 network and stored in an NHS Digital licensed and audited high security facility. Details are available on request

Evidence of Success

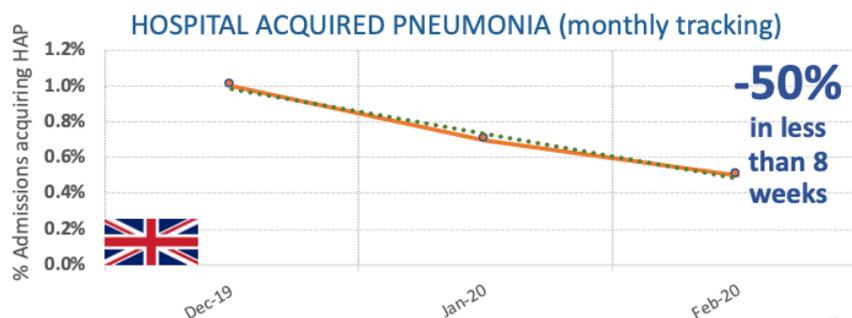
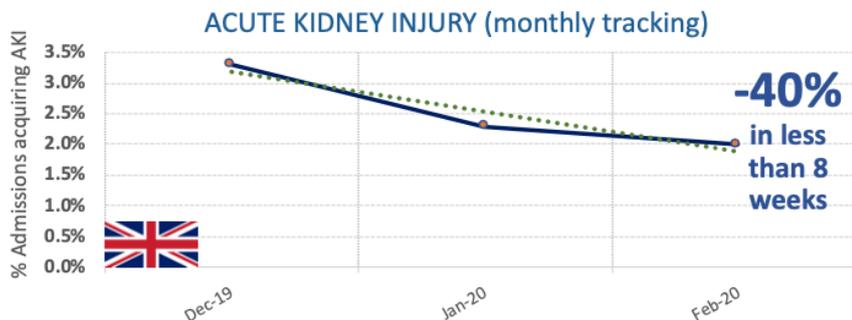
How has your service/initiative delivered important change for the benefit of patients/HCPs,/service provider organisations/population? Please provide qualitative or quantitative proof.

The following is a case study including clinical comment and proofs showing how Compass PoC has been implemented within St Helen's and Knowsley Teaching Hospital NHS Trust.

Case Study: using COMPASS Point of Care to assess patients at point of admission to significantly reduce the incidence of AKI and HAP

St. Helen's & Knowsley Teaching Hospitals NHS Trust (STHK) introduced the prototype of the COMPASS AKI & HAP Apps in early January 2020. During this first wave, the Apps were designed for deployment for junior doctors and nursing staff on hospital mobile devices.

STHK installation is enabled to monitor the impact of these new initiatives in real-time, providing immediate visibility on performance, highlighting evidence of best practice and excellent performance. This capability evidenced the impact on levels of AKI and HAP within the two months to the end of February was both immediate and significant, as shown below.



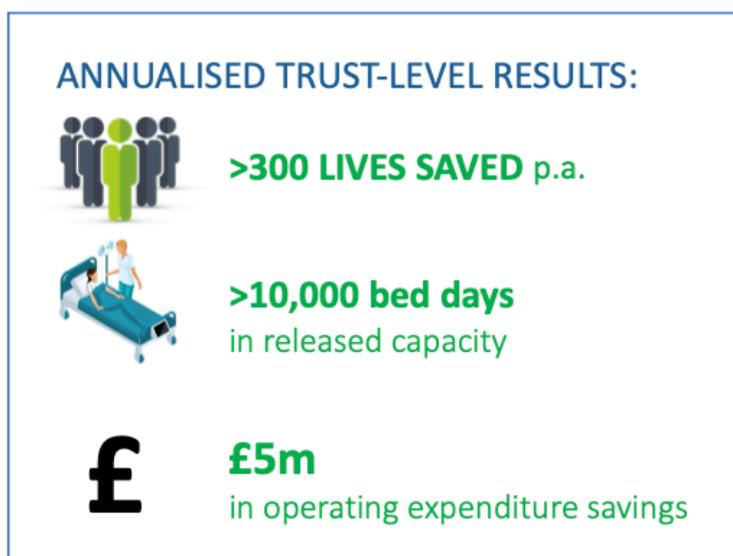
Consultant Surgeon Dr Sunjay Kanwar stated: "I have been trialling the new C2-AI App for AKI & HAP, both of which are phenomenal and work incredibly fast... We are delighted and excited as to how this tool can help us identify these patients early and put in place simple measures, which have a significant impact."

After the initial evaluation within surgical specialties and based on the evidential improvement Saint Helen's and Knowsley have embraced full trust roll-out of Compass PoC at senior management and leadership level, and the impact was both immediate and significant.

Extrapolating the results from the first two months across the year suggests two very significant findings for both the Trust and healthcare more widely:

1. The opportunity to save lives, release capacity in critical care and reduce in-year cost in order to direct resources far more effectively is significant.
2. Because around 60% of AKI patients already have the condition before they arrive in hospital, a 40% reduction in the total means that the hospital-acquired element of AKI was more or less eliminated.

They calculated the estimated impact for St. Helen's and Knowsley as:



	<p>C2-AI analysis suggests that if these results were replicated across the NHS nationally the positive impact could be:</p> <div style="border: 1px solid #0070C0; padding: 10px;"> <p>IMPLICATIONS FOR THE NHS NATIONALLY:</p> <div style="display: flex; align-items: center; margin-bottom: 10px;">  <div style="margin-left: 10px;"> <p>>40,000 LIVES SAVED p.a.</p> </div> </div> <div style="display: flex; align-items: center; margin-bottom: 10px;">  <div style="margin-left: 10px;"> <p>>1.6m bed days in released capacity</p> </div> </div> <div style="display: flex; align-items: center;">  <div style="margin-left: 10px;"> <p>£900m in savings</p> </div> </div> </div> <p>Note: Compass PoC supports and is compliant with NICE COVID-19 rapid guideline: acute kidney injury (AKI) (Last update: 6 May 2020)</p>
<p>Is your case study scalable?</p> <p><i>Please detail how might your service / initiative be scalable across the health/ care system. What enablers or constraints will impact the ability to scale and diffuse your service across the system?</i></p>	<p>Compass PoC can be deployed rapidly, and at scale, the system is currently being delivered nationally & Internationally.</p> <p>Delivered as an IOS or Android App Compass can be in place and operational in 5 to 7 days.</p> <p>Deployment is non-disruptive, requiring zero integration with Hospitals' existing IT systems.</p> <p>Training is delivered via the video embedded into the app.</p> <p>Typically 'Download to first completed assessment' takes about five minutes.</p> <p>The user interface is intuitive and designed so that any member of clinical staff can use it to its full benefit.</p> <p>Innovation Agency North West Coast and C2-AI are collaborating on the rapid deployment to Trusts in that region in response of the COVID19 Pandemic and in support of the NICE COVID-19 rapid guideline: acute kidney injury (AKI) May 2020.</p>

<p>Additional Information</p>	<p>Recognition of C2-AI and Compass in 2020:</p> <ul style="list-style-type: none"> • C2-AI named as a <i>Top 100 UK Digital Health Company</i>, in the elite ‘Digital Essentials’ category. • Compass Point of Care named a <i>Top 10 Essential Solution for Covid-19 by Healthcare UK</i>, a joint initiative of the DHSC, NHS-E and Department of Trade. • Compass Point of Care awarded <i>Best Overall Covid-19 Healthcare Innovation</i> by Secretary of State at COGX 2020. • C2-AI cited in parliament as an example of <i>World Class - AI in Healthcare Leadership</i> by Under Secretary of State for Trade <p>FAQ: Compass Point of Care - Vital Information</p> <ul style="list-style-type: none"> • Predictive Risk Assessment tool providing ward-based decision support for preventative care to prevent the occurrence of Hospital Acquired Pneumonia and Acute Kidney Injury. • When fully implemented has helped hospitals reduce HAP & overall AKI (by targeting HA-AKI) by 50% and 70% respectively • Results proven in real world use and supported by multi-year NHS Clinical trials and Publication • Registered with the MHRA as a ‘Class 1 Medical Device.’ • Supports and is compliant with NICE COVID-19 rapid guideline: acute kidney injury (AKI) (Last update: 6 May 2020) • Delivered Software as a Service requiring zero integration • Available on IOS & Android mobile devices • No integration with existing Hospital IT infrastructure required • No internet connection required after download • No PID Data collected • C2-Ai operates on NHS Digital audited Secure datacentre storage via N3 Network