C the signs

# A future where every patient survives cancer

**C the Signs™ is a validated AI platform that safely helps to identify patients at risk of cancer earlier and faster**

# The C the Signs Platform

## GP Assessment
### C the Signs

**Used by healthcare professionals in primary care**

Identifies patients at risk of cancer & refers them to the best care pathway.

Automated safety-netting and tracking of patients on cancer pathways.

## Patient Assessment
### C my Signs

**Used by patients to assess cancer risk and screening eligibility**

The platform automatically refers eligible patients into secondary care.

Patients are automatically tracked onto secondary care dashboards.

## Population Screening
### Cancer Case-Finding

**Automated scanning of the medical record to find patients at risk**

Identifies high-risk patients and sends them a digital screening questionnaire or invitation.

# Overcoming delayed cancer detection in primary care

**95%** — 95% of patients are **diagnosed with cancer following a symptomatic presentation.**

**5x** — Many patients require **up to 5 GP visits before being recognised as at risk of cancer,** with 20% of patients diagnosed in A&E - two-thirds of whom had seen their GP in the preceding 12 months with escalating symptoms.

**30%** — Late-stage detection leads to poorer outcomes, with **less than 30% of patients surviving up to 5 years,** and imposes a greater cost on the health system, as late-stage cancer treatment is 500% more expensive.

**8** — GPs, as generalists, only **diagnose up to 8 new cases of cancer per year** and patients can present with virtually every conceivable symptom or clinical sign. This makes it incredibly difficult for GPs to differentiate benign disease from malignant cancer.

**80%** — Yet, if patients are detected at the early stages, **more than 80% survive 10 years or more.**

# AI technology
## Evidence-based & clinically validated

**Computational model based on research & guidelines.**

Analyses diverse data: symptoms, signs, demographics, genetics, medical history, tests, & clinical markers.

AI accurately matches patients to the appropriate referral or diagnostic pathway, considering cancer risk and local availability.

Fully integrated with EMIS, SystmOne, & Vision. All information coded into patient's medical record.

# C the Signs Clinical Decision Support System

## Improving earlier & faster cancer detection in primary care

Used during the consultation by healthcare professionals, C the Signs reliably & accurately rules *in* or *out* cancer risk in primary care.

# C the Signs Implementation

## Real-time decision Support

**AI-led triage of all patients in primary care** to identify patients at risk of cancer (and remove those that aren't from pathway), which cancer type they're at risk of, and recommend the most appropriate next step (e.g. referral, diagnostic, advice & guidance)

Information is **100% compliant** with national guidelines and local referral criteria.

**Real-time patient information** is sent via SMS, email, or print, across multiple languages.

## Cancer referrals and diagnostics

Improved pathway performance and efficiency.

Cancer referral forms have in-built triage and AI technology ensuring **all referrals are 100% clinically appropriate.**

Customisable fields ensure **all essential information for triage is included**, streamlining pathways and time to diagnosis.

Cloud-based technology enables **centralised version control** with pathway changes updated in real time.

## Data Analytics

**Automated safety-netting** and tracking of all patients on a suspected cancer pathway, from risk assessment through to diagnosis and survivorship.

Realtime dashboard for GPs and PCNs to **support with QOF, DES and IIF**.

**Real-time analytics dashboard** for ICB or Cancer Alliance to view cancer utilisation and performance data.

# C the Signs is used by 11,000 healthcare professionals across the following NHS organisations

- Suffolk & North East Essex Integrated Care System
- Norfolk and Waveney Integrated Care System
- Bradford & Craven Health & Care Partnership
- South Yorkshire & Bassetlaw Cancer Alliance
- North West London Integrated Care System
- Liverpool South PCNs

- Somerset Integrated Care System
- Dorset Integrated Care System
- Hull University Teaching Hospital
- Somerset Foundation Trust
- Bury PCNs
- Staffordshire PCN
- South West London PCNs
- North East London PCNs
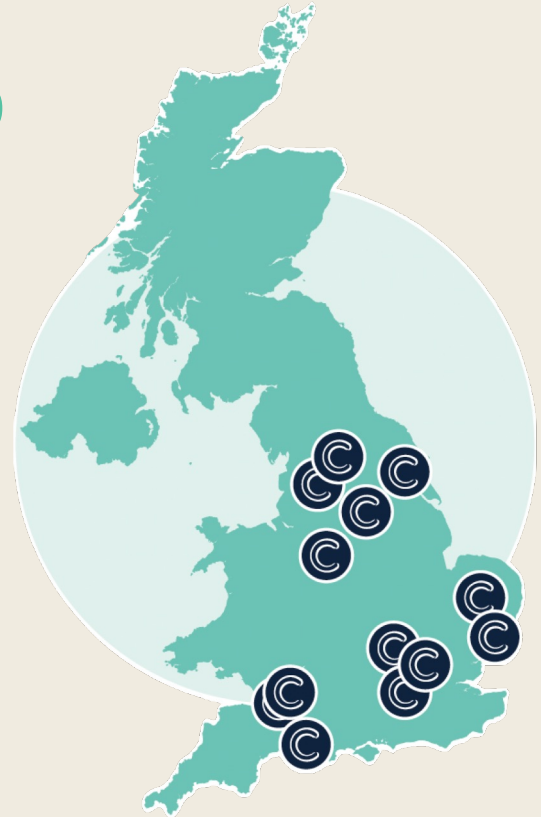
# Real-world Impact

## Delivering impact across the NHS at scale

**15%**
Of primary care commissions C the Signs

**300,000**
Cancer risk assessments conducted by C the Signs

**25,000**
Patients have been diagnosed with cancer

**50+**
Different types of cancers have been detected

**P<0.05**
Statistically significant impact on cancer detection

YHEC — York Health Economics Consortium

NHS

NCRI — National Cancer Research Institute

NIH — NATIONAL CANCER INSTITUTE

# Landmark Study in the NHS

**122,193 patients risk assessed by C the Signs in a real-world setting, resulting in 7,622 cancer diagnoses**

## 99%

**Sensitivity for cancer,** finding all patients with cancer (GPs have a 53% sensitivity for cancer)

## 99%

**Negative predictive value,** safely excluding patients from cancer risk

## 94%

**Accuracy in predicting tumor origin,** getting it right first time, preventing duplicate referrals

## EQUITY

**The impact and accuracy of the system performed equally across all demographic groups** (65+, under 65, male, female and across ethnic minority groups the system performed better then existing standards of care).

NHS | ASCO®

# Impact of C the Signs on the Faster Diagnosis Standard for Colorectal Cancer in Somerset Foundation Trust

## RESULTS OF STUDY

### 46.4%

6-months prior to C the Signs, 46.4% of patients achieved the FDS.

### 69.5%

6-month post C the Signs implementation, this increased significantly, to 69.5% of patients achieving the FDS (P<0.001).

"If we compared the information from both groups, the **C the Signs group were moving through the pathway much quicker, much more accurately,** whereas the other group were not."
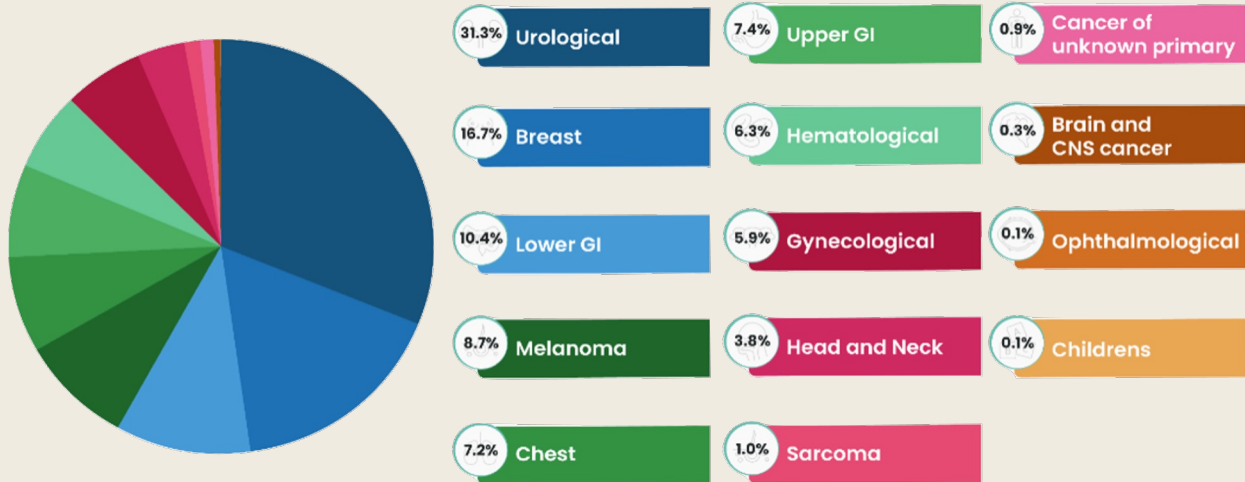
**Mr Richard Bamford, Consultant Colorectal Surgeon**

"Prior to C the signs, our turnaround time for referrals to be triaged was over 6 days, sometimes 18, 20 days, waiting for information from GPs. **We're now triaging within 24 hours."**

**Rosie Edgeley, Cancer Program Manager**

The Faster Diagnosis Standard sets a target for 75% of patients suspected of cancer to be diagnosed or excluded within the first 28 days.
Data was collected from Somerset Cancer Registry & Somerset NHS Foundation Trust.

# 25,000 Cancers Detected to Date

C the Signs is a pan-cancer platform. The AI technology helps to improve identification of cancers that are rare and harder to detect, improving detection and survival across common and uncommon cancers.

| % | Category |
|---|---|
| 31.3% | Urological |
| 16.7% | Breast |
| 10.4% | Lower GI |
| 8.7% | Melanoma |
| 7.2% | Chest |
| 7.4% | Upper GI |
| 6.3% | Hematological |
| 5.9% | Gynecological |
| 3.8% | Head and Neck |
| 1.0% | Sarcoma |
| 0.9% | Cancer of unknown primary |
| 0.3% | Brain and CNS cancer |
| 0.1% | Ophthalmological |
| 0.1% | Childrens |

# TESTIMONIALS

"**Excellent tool** for helping to identify correct referral pathways and the dashboard is excellent for safety netting referrals."

*Dr Sabah Ahmad GP, Brunel Medical Centre, North West*

"**Don't know how I worked without it.** When the 'gut feeling' hits and I know something is wrong, this app often helps guide to the most appropriate investigations or referrals. Its has been essential in preventing over investigating and ensuring appropriate management of patients."

*Advanced Nurse Practitioner, Doncaster*

"**Superb resource**, all in one place, clear and helpful. Practice dashboard and safety netting are excellent features."

*Dr Daniel Dietch, GP, Lonsdale Medical Centre, North West London, Brent*

"**Very positive experience.** Helpful to both clinicians and patients. For example, the advice on differential diagnosis is very good. The patient finds the information useful."

*Dr Cyril Evbuomwan, GP, Church End Medical Centre, Brent*

"**A very young patient with tenesmus who we may not have referred had a rectal carcinoma**"

*GP, NW London*

"On adding to C-the-Signs, the **suggestion came up to add a Ca-125** - this was done, raised and the patient was diagnosed **with a gynaecological cancer** after assessment."

*GP, Newham PCN*

"**Invaluable,** diagnosed Ca pancreas in a female 70yr old pt presenting with diarrhoea as C the Signs suggested CT pancreas."

*GP, Newham PCN*

# C my Signs

## Improving patient recognition of cancer signs and overcoming delayed patient presentation

Proactive cancer case finding and patient-initiated risk assessment, with automatic onward referral for eligible patients

# Overcoming delayed patient presentation

**Delays in symptomatic presentation contribute to late-stage diagnoses and poorer survival rates.**

The time a patient takes to present to a healthcare professional is influenced by several factors, including:

- The nature of the symptoms
- Perception of personal cancer risk
- The lack of specificity in some symptoms, such as weight loss and fatigue
- Challenges getting a GP appointment
- Worries of wasting the doctor's time

**10%** For many cancers there is a 10% **increase in mortality** for each month cancer treatment is delayed.
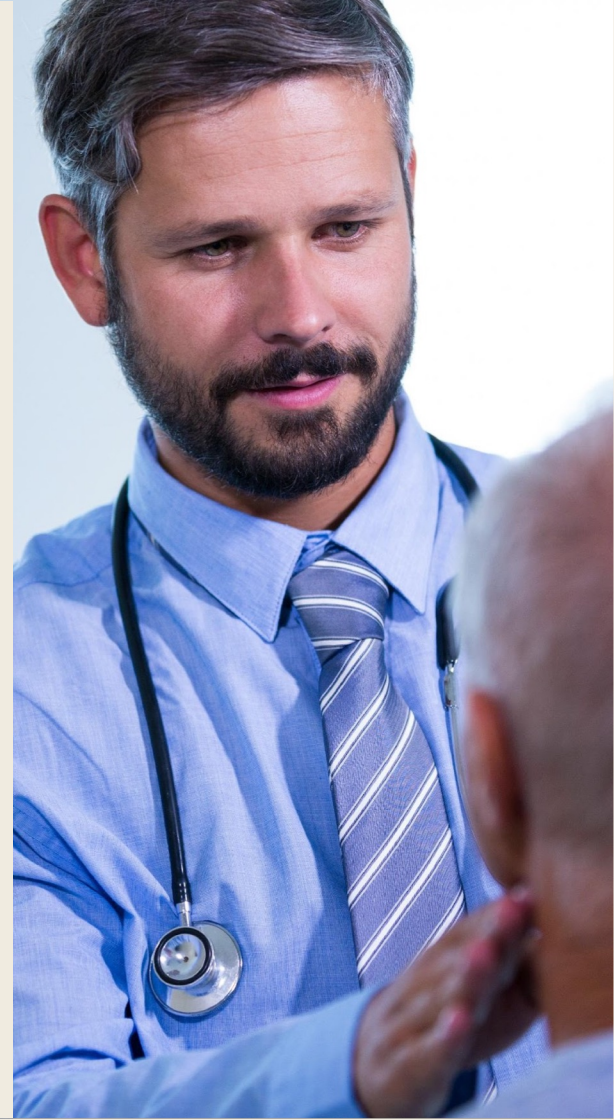
# System wide approach across primary and secondary care

### Cancer Case Finding
Automated identification of at risk patients

### Patient Self-Assessment
Patients triaged based on inclusion/exclusion criteria to the correct pathway

### Hospital Dashboard
Eligible patients added to hospital Dashboard for tracking

### Cancer Analytics
Real-time access to data on pathway utilisation, conversion rates and outcomes

## Powered by advanced technology

# Bespoke Configuration & Implementation

**1**    ## Stakeholder led pathway mapping and design
- Streamline pathways and access to diagnostics
- Inclusion criteria based on local guidelines and capacity
- Easy to use interface design with bespoke elements (e.g. leaflets in different languages)

**2**    ## Implementation plan to suit your needs
- Phased deployment (e.g. by PCN) to monitor capacity or target high risk populations & support with public awareness campaigns
- Access to pathway through link or QR code

**3**    ## Fast and unlimited updates & changes
- Analytics can guide suggestions for improvement

# Examples of pathways we're working on so far:

**Post menopausal bleeding**
Self assessment for women to assess eligibility for post menopausal bleeding pathway. Eligible patients are referred directly into secondary care and tracked on a dashboard

**Bowel symptoms and FIT**
Self assessment for patients with lower GI symptoms to assess eligibility for a FIT test, supporting with onward triaging and management of results

**Symptomatic patients from bowel screening**
Self-assessment to check for the presence of symptoms in patients with a negative bowel screening result (FIT <120) but who would meet the symptomatic threshold (>10)

**Lung health checks**
Identification of eligible patients and self-assessment to gather smoking history etc. Supporting tracking of patients through the pathway and automating discharge, follow up and surveillance

**High genetic risk of breast cancer**
Assessment of genetic risk for breast cancer based on NICE CG164 guidelines and local criteria with patients triaged to the correct services depending on risk

**Pancreatic case finding**
Automated case finding to detect patients with new onset diabetes and weight loss with a self-assessment used to gather further information on symptoms and risk factors

# Technical Compliance
## Governance, security & integrations

- UKCA Class 1 medical device
- CE Marked with MHRA
- ISO 27001 & ISO 20000 Compliant
- Data Protection Act & GDPR compliant
- NIST SP 800-53 (FISMA & FedRAMP)
- FHIR/HL7 Integration compliant
- NHS Clinical Risk Management DCB0129/060 compliant
- NHS Data Security & Protection Toolkit Compliant
- Digital Technology Assessment Criteria Compliant
- Cyber Essentials Plus certified
- NHS Digital IM1 Approved Supplier
- G-Cloud 13 & Spark DPS frameworks

# For further information or to arrange a demo, please contact:

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