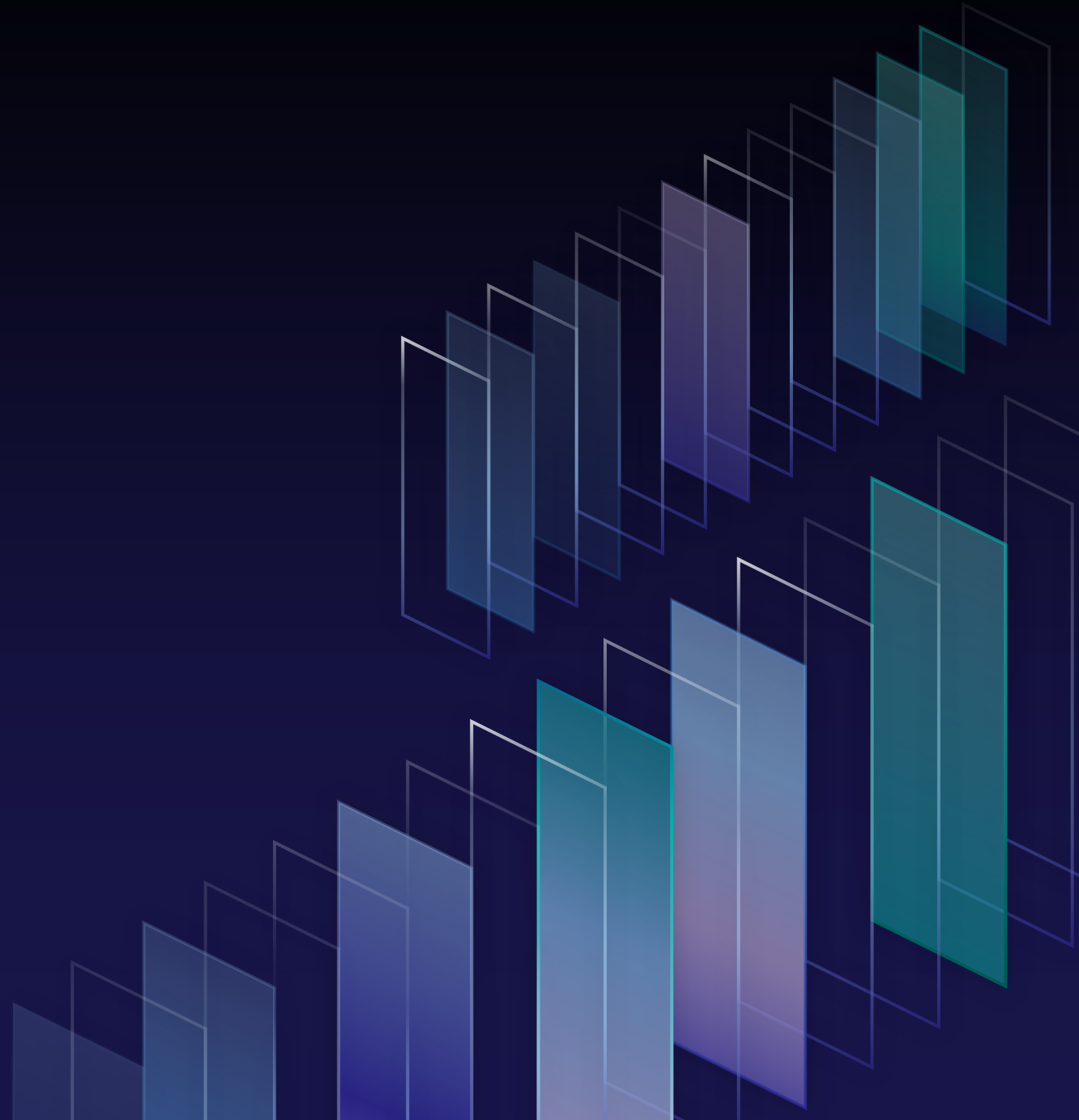


Biology, Digital Backbone and the 10-Year Plan

Dr. Yossi Cohen
Physician Executive



...

LYMPH NODES: Multiple mildly enlarged mediastinal and bilateral hilar lymph nodes. For example, there is a right inferior paratracheal node measured at 1.5 cm, a subcarinal node measured at 1.3 cm and a right hilar lymph node measured at 1.6 cm. There is an AP window node on image 52 mm measuring 1.6 cm. No calcified lymph node. No enlarged lymph nodes in the supraclavicular fossae, axillary or subpectoral regions. No retrocrural adenopathy. No enlarged nodes in the visualized upper abdomen.

RIGHT LUNG: There is a stable fissural nodule on image 74 measuring 7 mm. Another 8 mm nodule is stable in the left lower lobe on image 78 as well as a punctate subpleural nodule on image 102, favoured to represent a granuloma. There is mild atelectatic opacities in the gravity-dependent portions of the lower lobe. No consolidation. No signs of fibrosis. No pulmonary manifestations of sarcoidosis.

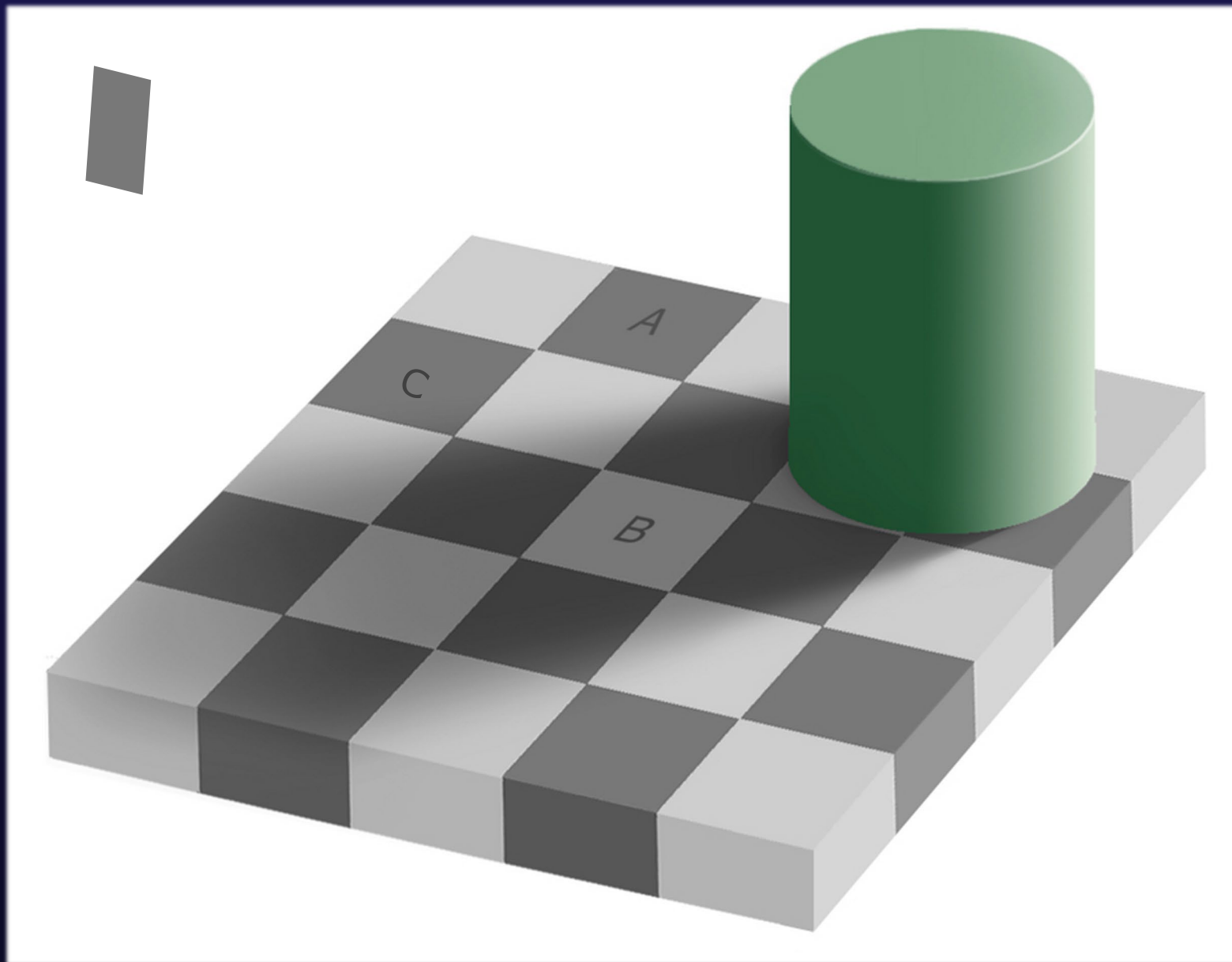
LEFT LUNG: Stable punctate perifissural nodule on image 72. A few small stable bands of atelectasis in the inferior lingula and lower lobe. No consolidation. No signs of fibrosis. No pulmonary manifestations of sarcoidosis.

...

FOR PHYSICIAN USE ONLY - Please note that this report was generated using voice recognition software.

...

According to a research at Cambridge University, it doesn't matter in what order the letters in a word are, the only important thing is that the first and last letter be at the right place. The rest can be a total mess and you can still read it without problem. This is because the human mind does not read every letter by itself, but the word as a whole.



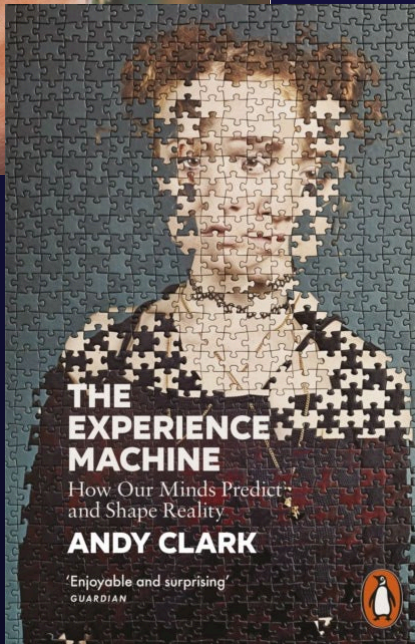
Prof. Edward Adelson, MIT



Neuroscience model of **Predictive Processing**



Prof. Andy Clark
Uni of Sussex



Prof. Karl Friston
UCL



Prof. Anil Seth
Uni of Sussex

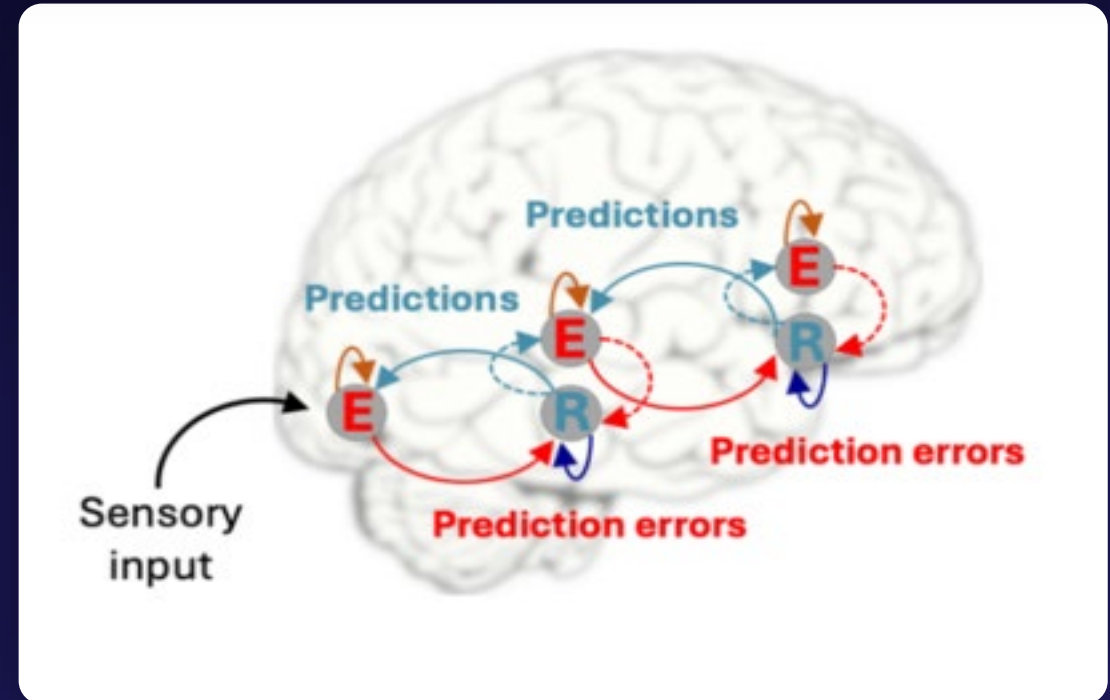
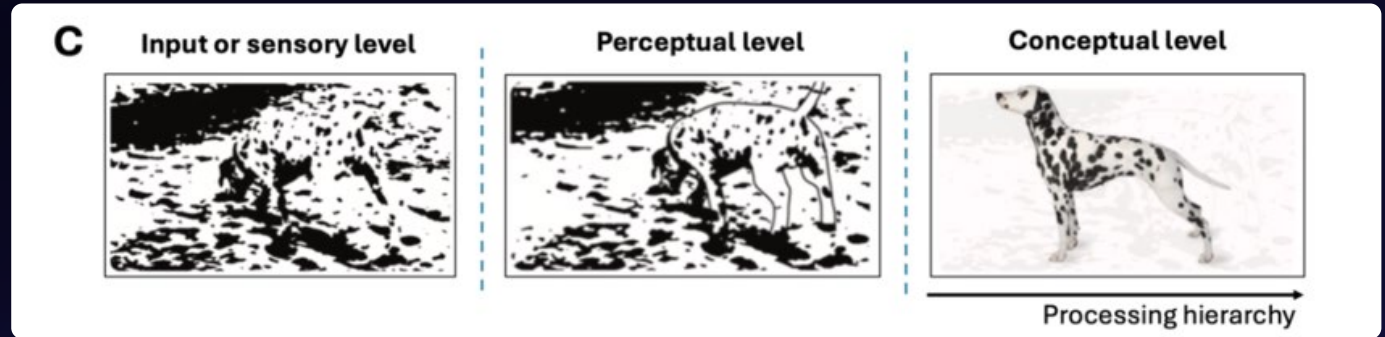
Traditional model

Stimulus driven



Predictive Processing

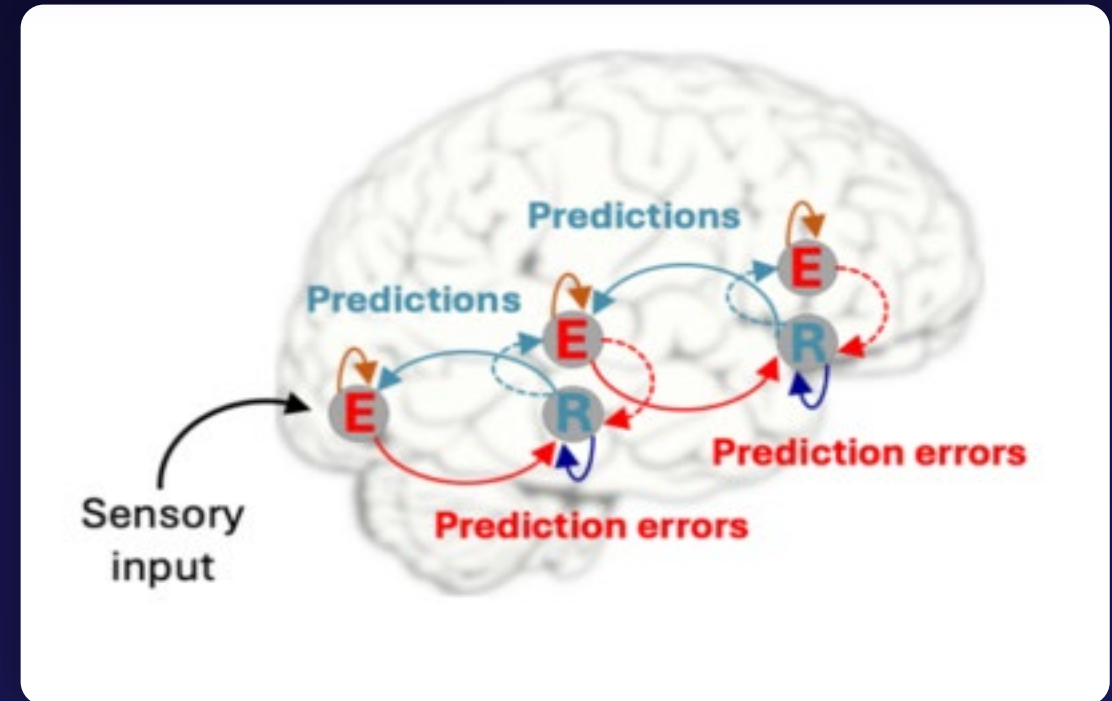
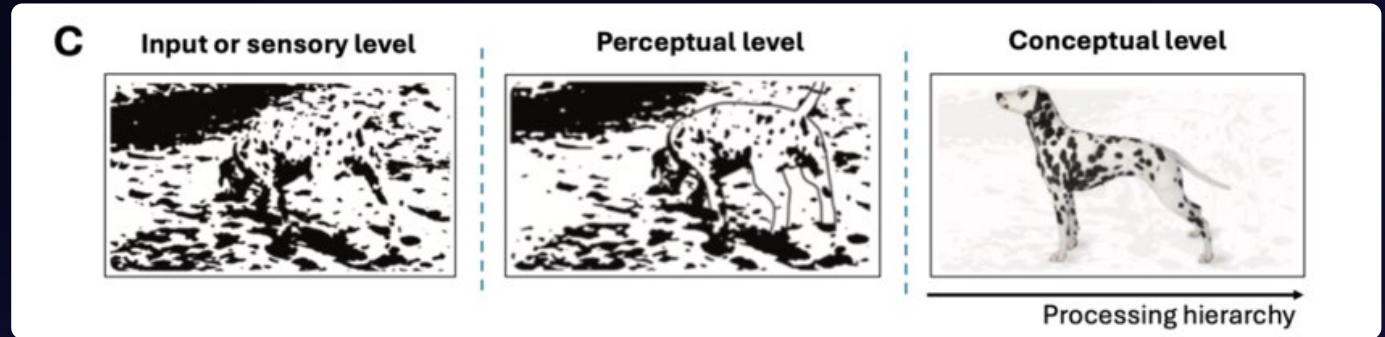
Top-down Inference



Predictive Processing

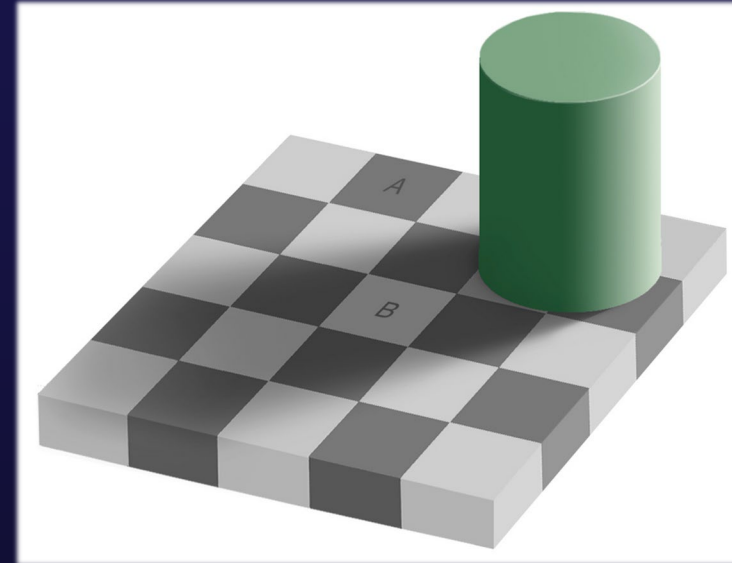
Top-down Inference

“ **Perception**
is a controlled
Hallucination



Aoccdrnig to a rscheearch at Cmabrigde
Uinervtisy, it deosn't mttar in waht oredr the
Itteers in a wrod are, the olny iprmoetnt ting
is taht the frist and Isat Itteer be at the rghit
pclae. The rset can be a toatl mses and you
can sitll raed it wouthit porbelm. Tihs is
bcusee the huamn mnid deos not raed ervey
Iteter by istlef, but the wrod as a wlohe.

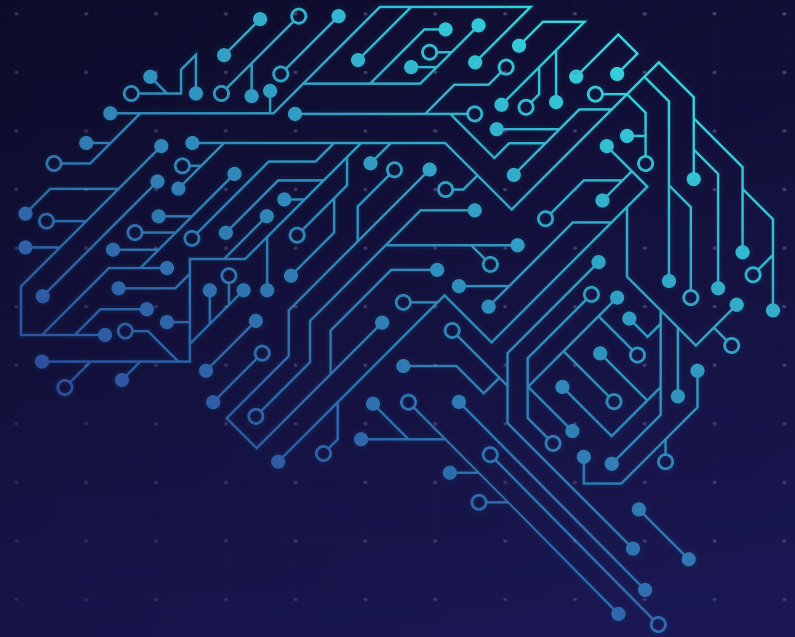
Oaccdrnig ot a srcheearch ta Mcabrigde
Iunervtisy, ti edost'n tmtaer ni awht roedr the
Tlteers ni a rwod ...



gen**Brain**



gen**AI**

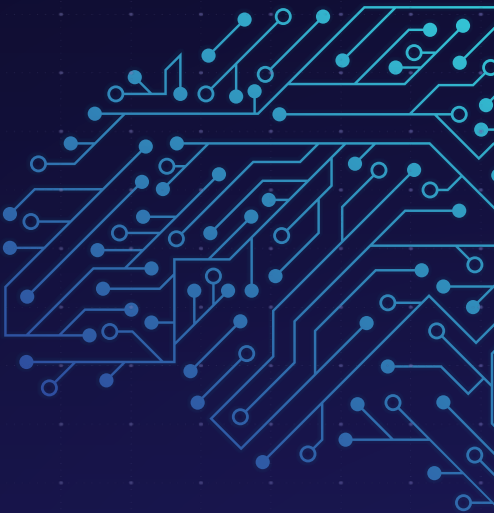


genBrain



✓ Sensory Grounding	Trusted enterprise data ✓
✓ Tightly coupled sensory input and cortex	Compute close to data ✓
✓ Shared inferential process between cortical workloads	Agentic loops ✓
✓ Iterative processing	Tools ✓
✓ Semantic memory retrieval	RAG ✓
✓ Associative memory	Vector search ✓
✓ Executive functions	Governance: access, security, audit... ✓
	Guardrails ✓
	Systems prompts ✓
✓ 2% body weight, 25% energy	Reusable, controlled cost ✓
✓ Efficiency crucial	

genAI



Digital Backbone

Concluding the analogy



The **Digital Backbone** is not just a good enterprise architecture.

It resembles the same principles **Evolution** discovered long ago:

1

Trusted
evidence

2

Shared
computation

3

Governance
of behaviour

4

Efficient use
of resources

The *Digital Backbone* does for **Enterprise AI** what *Predictive Processing* does for the brain

Creating a foundation that allows intelligence to scale safely.



From hospital to community



From sickness to prevention



From analogue to digital



UK Government



FIT FOR THE FUTURE

10 Year Health Plan
for England



Surfacing data



We will put the NHS at the forefront of data to deliver impact: ***high-quality, interoperable health data, is the lifeblood for AI algorithms.***



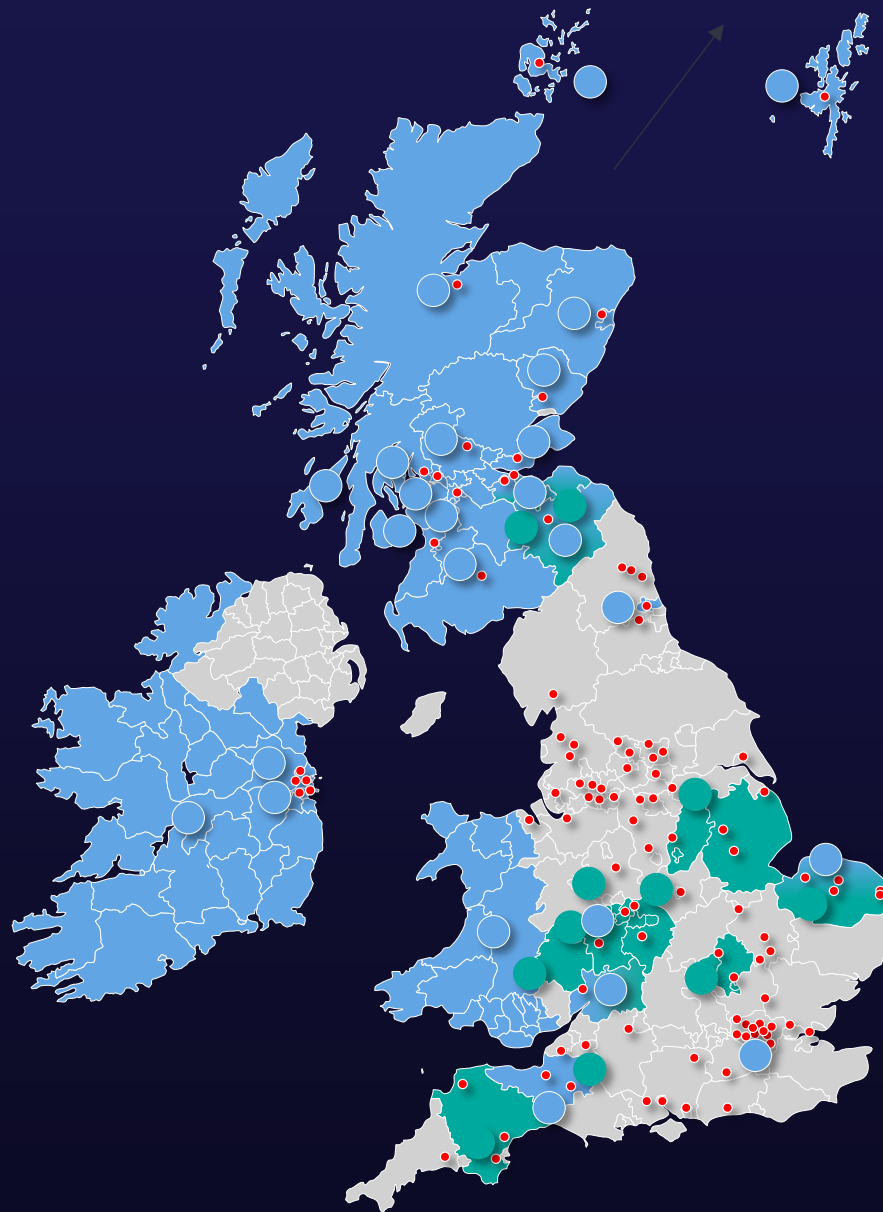
InterSystems Health
Connect: 135 NHS Trusts



InterSystems
TrakCare EPR



InterSystems
HealthShare ShCR







**Make AI every nurse's
and doctor's trusted
assistant - saving them
time and supporting
them in decision making.**





“ By 2027, 95% of people with complex needs will have an agreed care plan.

Care Planning



High-quality care plans can improve care experience, while also achieving an ROI of:

£3 for every £1 spent

2027 Target

95%

of people with complex needs to have an agreed care plan

"However, recent data also shows only about ____% of people with a long-term condition have one"

A. 20%

B. 30%

C. 40%

D. 50%

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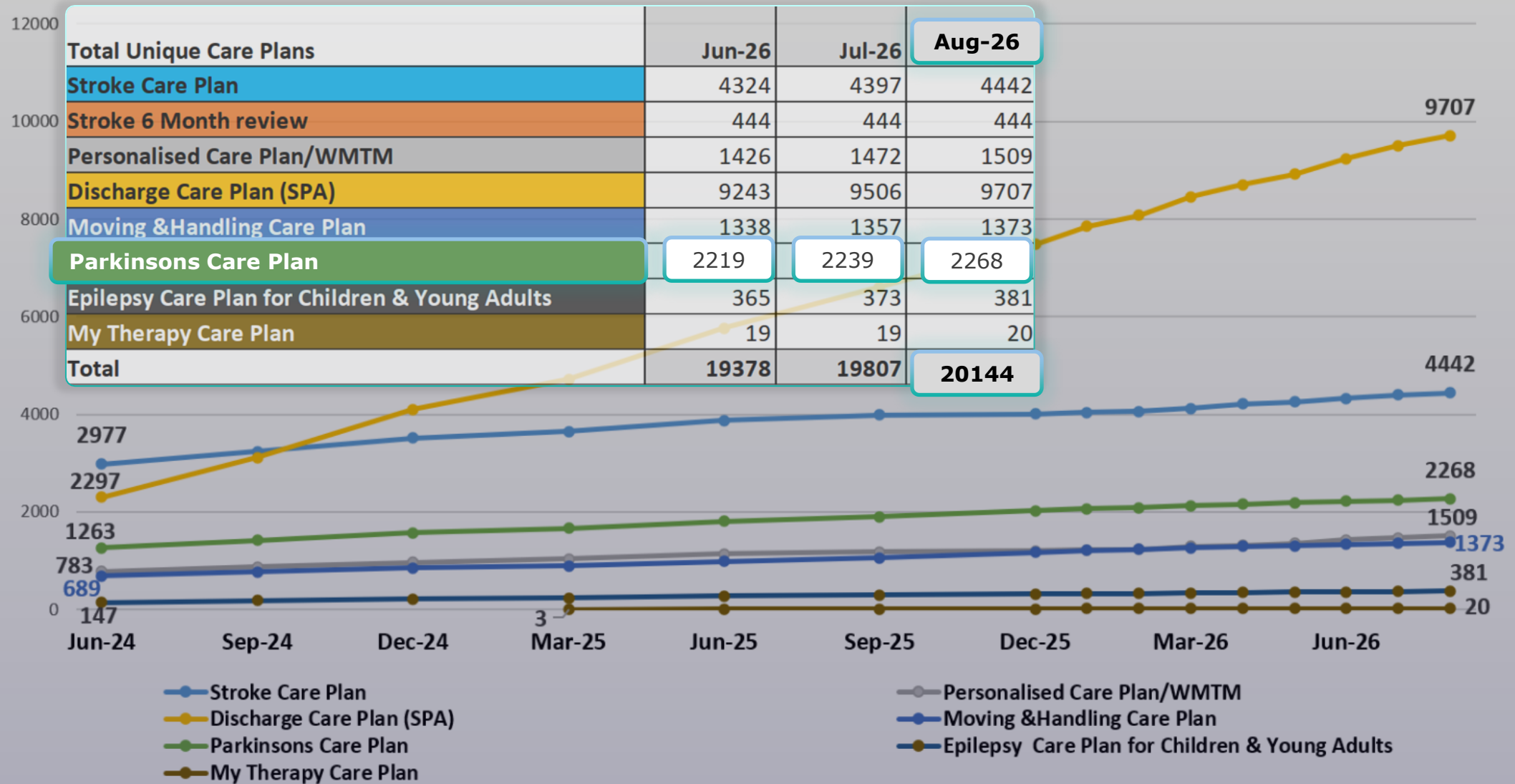
B. 30%

C. 40%

D. 50%

An "add-on" that sits on top of the Shared Care Record

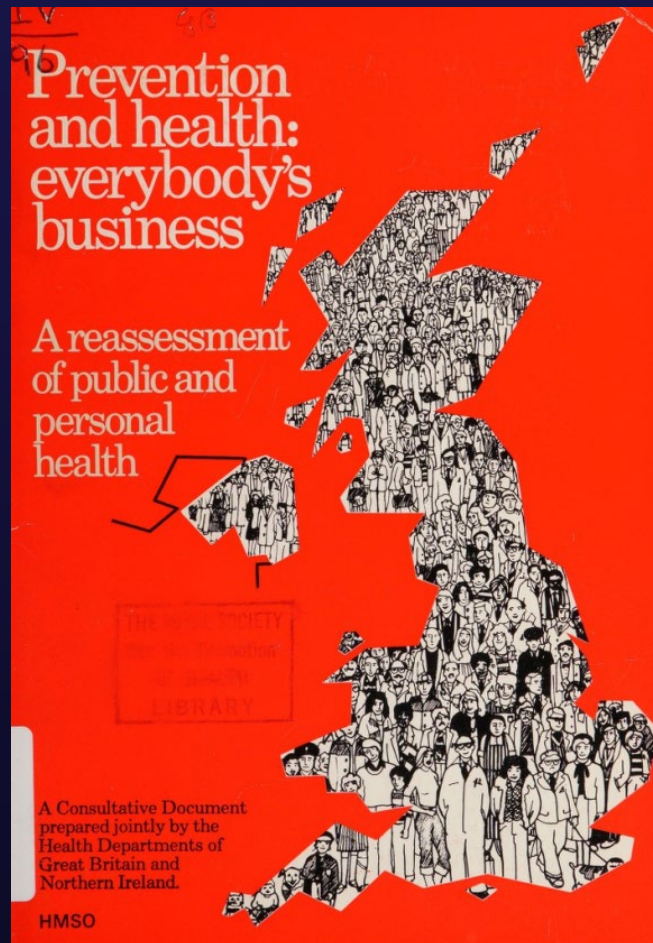
Shared Care Record Programme - Care Plan Growth (all types)



From Sickness to Prevention

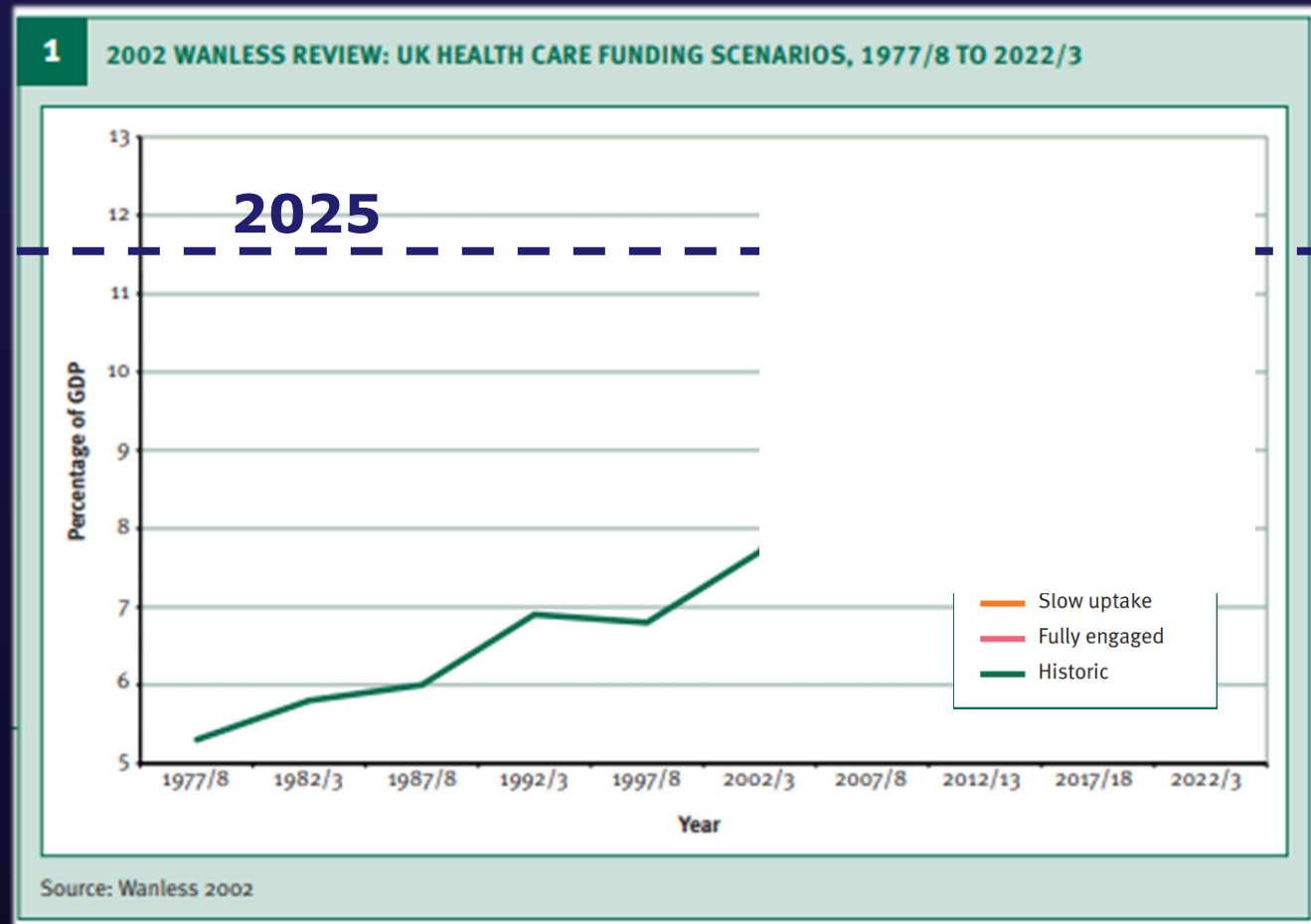


1976



2002

The Wanless Review



VIEWER

Patient SelectionEnglish (US)Jingwen

SMITH, Amelia R.

Date of Birth: 12/05/1980Age: 46yGender: Female

NHS No:

Address: 10 Test Street

Chartbook

Care Summary

Allergies and Alerts

Medications

Summary Care Rec

GP Summary

Care Plans

Published care plans

Documents

Safeguarding Docs

Social Care

Laboratory Results

Radiology Results

Diagnoses

Procedures

Discharge Summaries

Observations

Encounters

Referrals

Appointments

Care Team

Encounters

Sorted by Date of Encounter, Episode Time

Encounter Number	Type	Source	Department	Location	Date of Encounter
UC-WARNING-20260903-007	Emergency	Russells Hall Hospital	Russells Hall Hospital	Ward 27	03 Sep 2026
UC-WARNING-20260901-006	Emergency	Russells Hall Hospital	Russells Hall Hospital	Ward 27	01 Sep 2026
UC-WARNING-20260827-005	Emergency	Russells Hall Hospital	Russells Hall Hospital	Ward 27	27 Aug 2026
UC-UNPLANNED-20260819-004	Emergency	Russells Hall Hospital	Russells Hall Hospital	Ward 27	19 Aug 2026
UC-UNPLANNED-20260814-003	Emergency	Russells Hall Hospital	Russells Hall Hospital	Ward 27	14 Aug 2026

Page 1Next >

Diagnoses

Sorted by Date

Source	Date	Description	ICD Code	Care Provider
Lincolnshire Community Health Services	13 Aug 2026	Dyspnea	267036007	
Lincolnshire Community Health Services	13 Aug 2026	Type 2 diabetes mellitus	44054006	
Lincolnshire Community Health Services	13 Aug 2026	Hypertensive disorder	38341003	
Lincolnshire Community Health Services	13 Aug 2026	Cellulitis	128045006	
Lincolnshire Community Health Services	13 Aug 2026	Asthma	195967001	

Laboratory Results

Sorted by Test Date

Order Status	Source	Study	Report	Test Date	Details
Executed	Lincolnshire Community Health Services NHS Trust	Full blood count	Report	13 Aug 2026 09:20	
Executed	Lincolnshire Community Health Services NHS Trust	C-reactive protein	Report	13 Aug 2026 09:25	
Executed	Lincolnshire Community Health Services NHS Trust	Haemoglobin A1c	Report	05 Aug 2026 08:30	

Warnings

VitalSign

Table with 8 columns: VitalSign, 18 Aug 2026 10:15, 17 Aug 2026 19:05, 16 Aug 2026 14:20, 14 Aug 2026 08:40, 13 Aug 2026 09:30, 20 Jul 2026 09:55, 13 Jul 2026 14:00

Alerts

Sorted by Entered On

Alert Category	Alert	Message	Status	Entered On
Social	Mobility Issues	Patient requires assistance with mobility and transfers.	Active	13 Aug 2026

Medications

Sorted by Start Date, Medication

Medication	Dose	Frequency	Priority	Start Date	Details
Flucloxacillin 500 mg capsules	500 milligram	Four times daily	Normal	13 Aug 2026, 12:00	
Salbutamol 100 micrograms/dose inhaler	2 puff	As required	Normal	13 Aug 2026, 09:30	

< Back to Viewer

Address: 10 Test Street



Sorted by Date of Encounter, Episode Time	
Encounter	Date of Encounter ▾
Encounter 27	03 Sep 2026
Encounter 27	01 Sep 2026
Encounter 27	27 Aug 2026
Encounter 27	19 Aug 2026
Encounter 27	14 Aug 2026

Sorted by Date	
Encounter Code ▾	Care Provider
7036007	
054006	
341003	

VitalSign							
ObsItem	18 Aug 2026 10:15	17 Aug 2026 19:05	16 Aug 2026 14:20	14 Aug 2026 08:40	13 Aug 2026 09:30	20 Jul 2026 09:55	13 Jul 2026 14:00
Assessment using Royal College of Physicians National Early Warning Score 2 with oxygen saturation scale 1 (procedure)	1	5	3	0			
Blood oxygen saturation	97	91	94	99		98	
Systolic blood pressure	128	96	104	118	122	98	135
Diastolic blood pressure	79	58	66	72	76	62	84

Alerts					Sorted by Entered On	
Alert Category	Alert	Message	Status	Entered On ▾		
Social	Mobility Issues	Patient requires assistance with mobility and transfers.	Active	13 Aug 2026		



est Street

Sign

	18 Aug 2026 10:15	17 Aug 2026 19:05	16 Aug 2026 14:20
Using Royal College of Physicians Early Warning Score 2 with oxygen scale 1 (procedure)	1	5	3
Oxygen saturation	97	91	94
Blood pressure	128	96	104
Blood pressure	79	58	66

Smith Amelia



Ongoing Patient Alerts



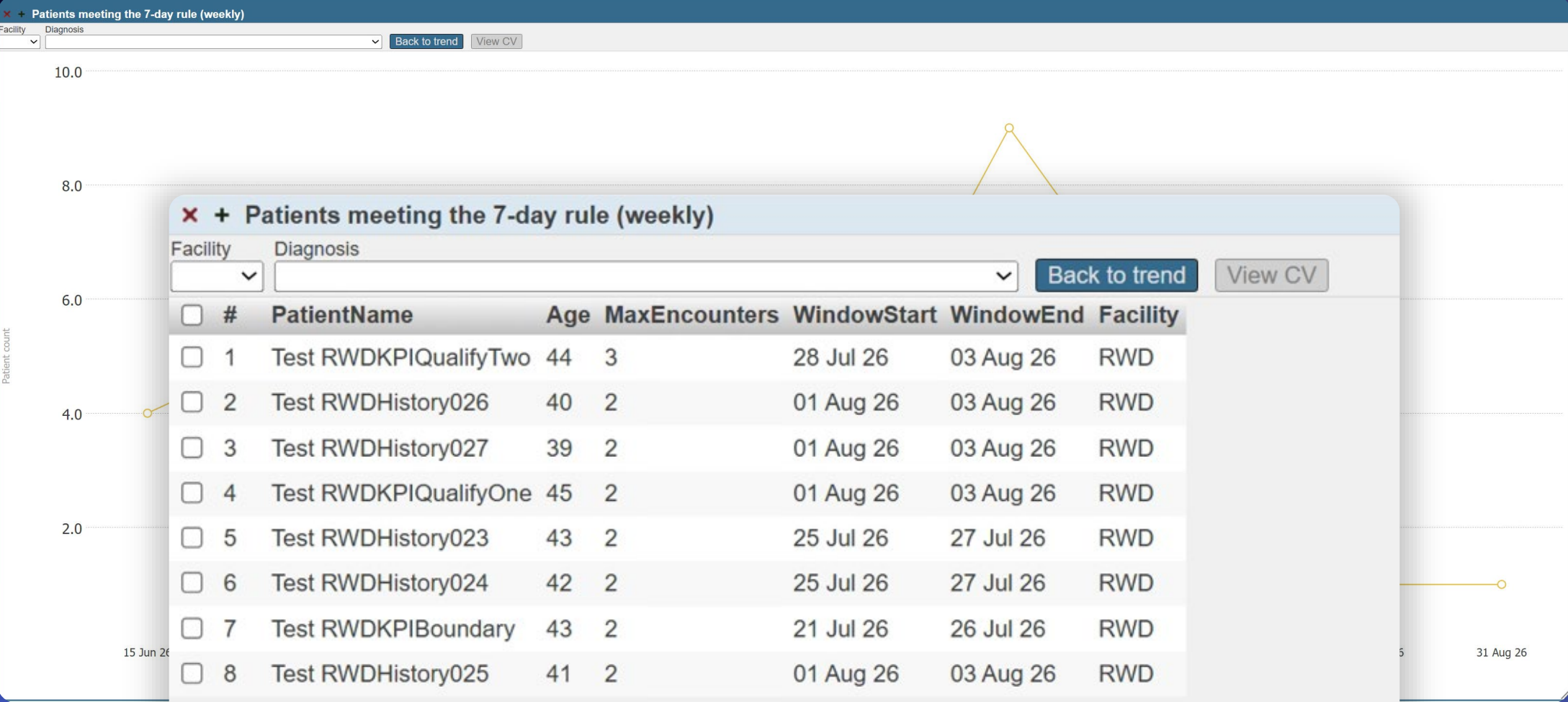
Patient has Allergies



Patient Demographic



This icon indicates that the patient has received a clinical encounter with another ICS provider within the last 7 days. Please check the recent patient history for details.

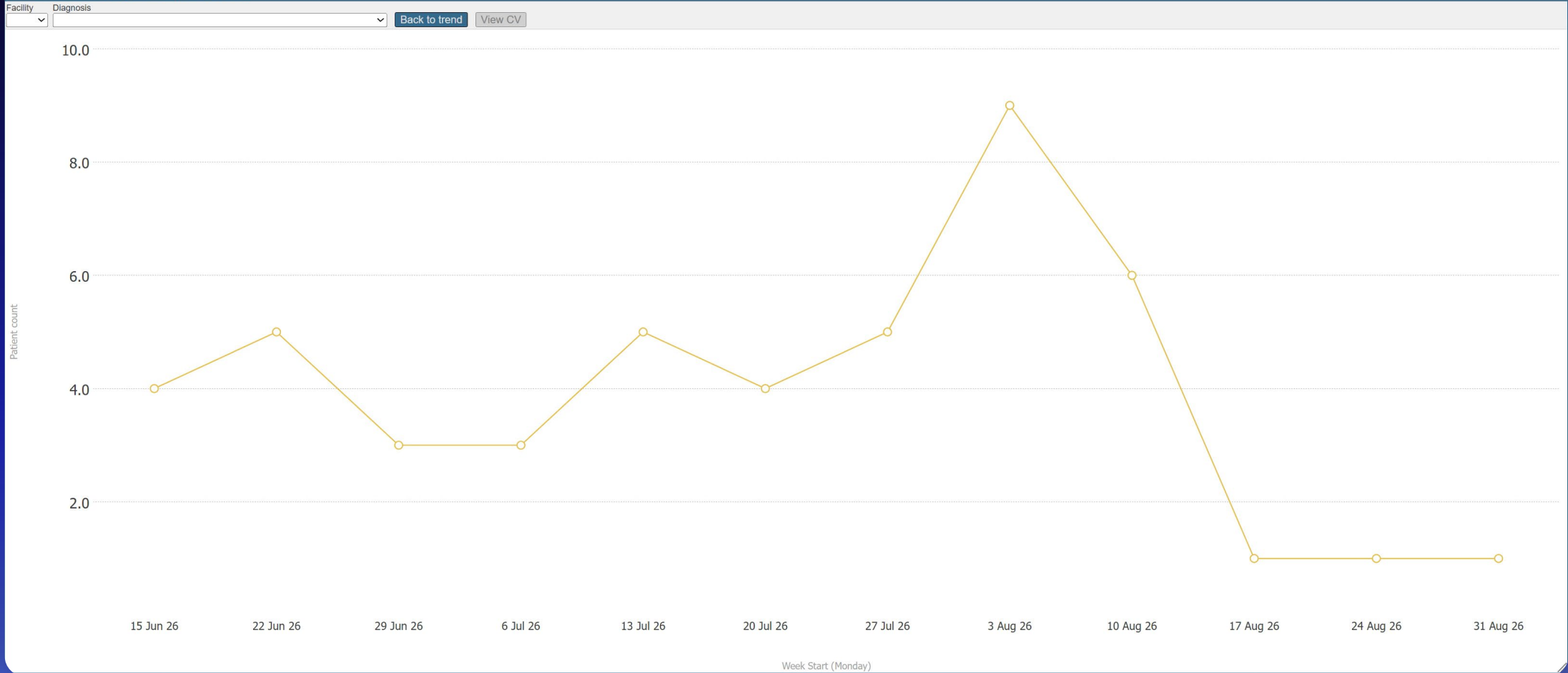


✖ + Patients meeting the 7-day rule (weekly)

Facility: Diagnosis: [Back to trend](#) [View CV](#)

☐	#	PatientName	Age	MaxEncounters	WindowStart	WindowEnd	Facility
☐	1	Test RWDKPIQualifyTwo	44	3	28 Jul 26	03 Aug 26	RWD
☐	2	Test RWDHistory026	40	2	01 Aug 26	03 Aug 26	RWD
☐	3	Test RWDHistory027	39	2	01 Aug 26	03 Aug 26	RWD
☐	4	Test RWDKPIQualifyOne	45	2	01 Aug 26	03 Aug 26	RWD
☐	5	Test RWDHistory023	43	2	25 Jul 26	27 Jul 26	RWD
☐	6	Test RWDHistory024	42	2	25 Jul 26	27 Jul 26	RWD
☐	7	Test RWDKPIBoundary	43	2	21 Jul 26	26 Jul 26	RWD
☐	8	Test RWDHistory025	41	2	01 Aug 26	03 Aug 26	RWD

✖ + Patients meeting the 7-day rule (weekly)



✖ + Patients meeting the 7-day rule (weekly)

Facility Diagnosis

Back to trend

View CV

ICD-10 | I10 | Essential (primary) hypertension

ICD-10 | J44.9 | Chronic obstructive pulmonary disease, unspecified

SNOMED | 195967001 | Asthma

SNOMED | 44054006 | Diabetes mellitus



a prelude to care-planning

8.0

6.0



At its core, the Neighbourhood Health Service will embody our new preventative principle - that care should happen as locally as it can.

Neighbourhood working

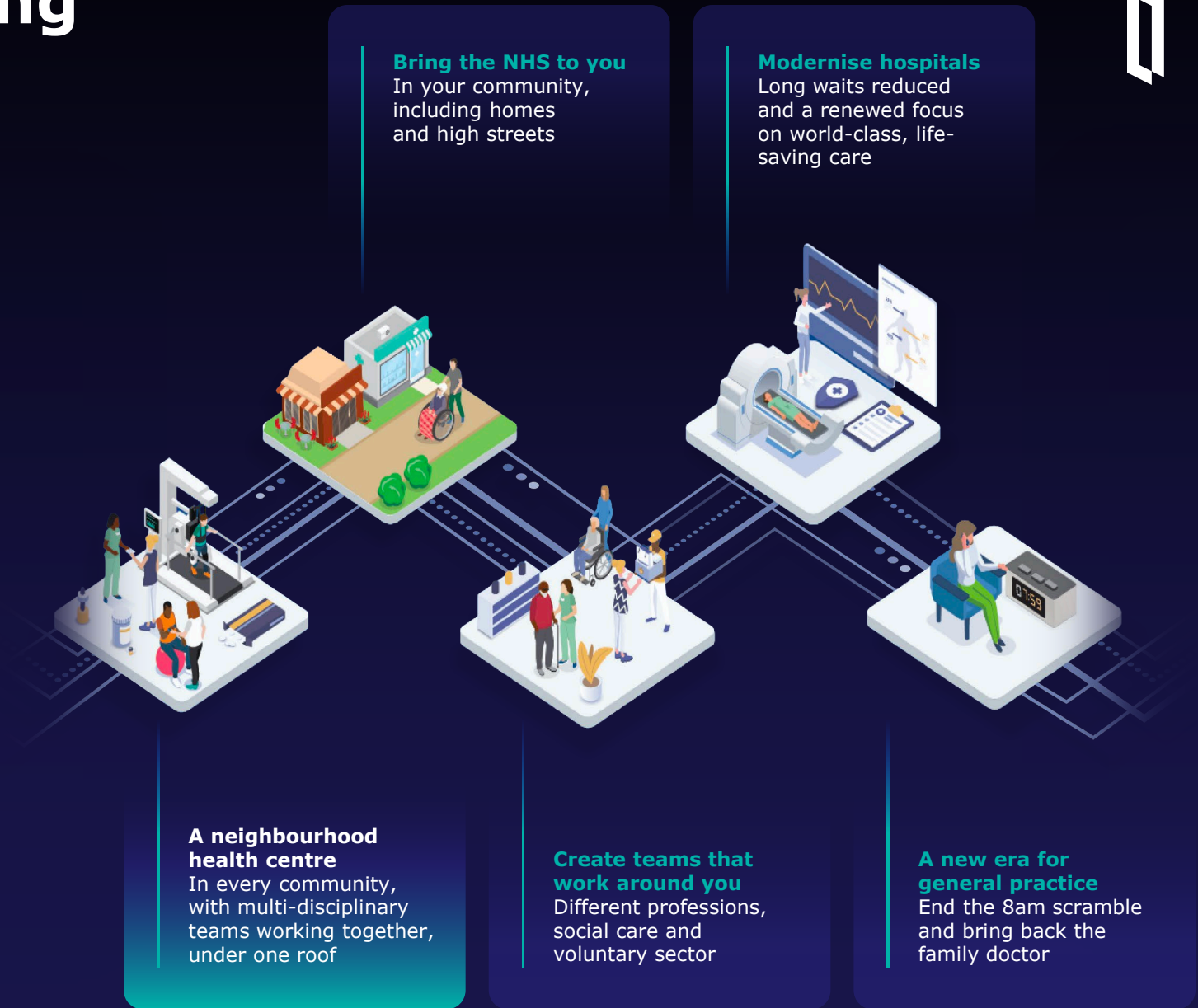


✓ **Neighbourhood** Health Centres

✓ For **30,000-50,000** residents each

✓ **Purpose:** Prevention

✓ "Left shift"



Norwich City Centre

Partners Involved



Coming Up Next

FEATURING



**Neighbourhood
working**



Prevention



Care Planning



Analytics

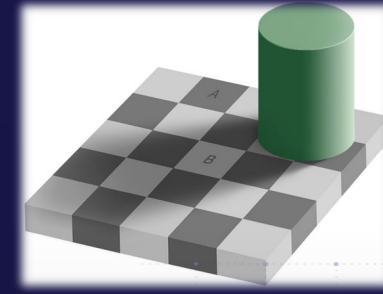


soon... AI

3:05_{PM}

Turning Neighbourhood
Health Plans into Action

Closing remarks



“ We are all hallucinating all the time;
when we agree about our hallucinations, we call it reality.”



Prof. Anil Seth,
Uni of Sussex

“ The difference between a hallucination and
reality is not prediction, **it is the quality of
the evidence that constrains it.** ”

