



Smart Patients – How data will
inform patient choices

Welcome
from PHIN



Insights from PHIN

Dr Chris Smith-Brown

Clinical Advisor at PHIN



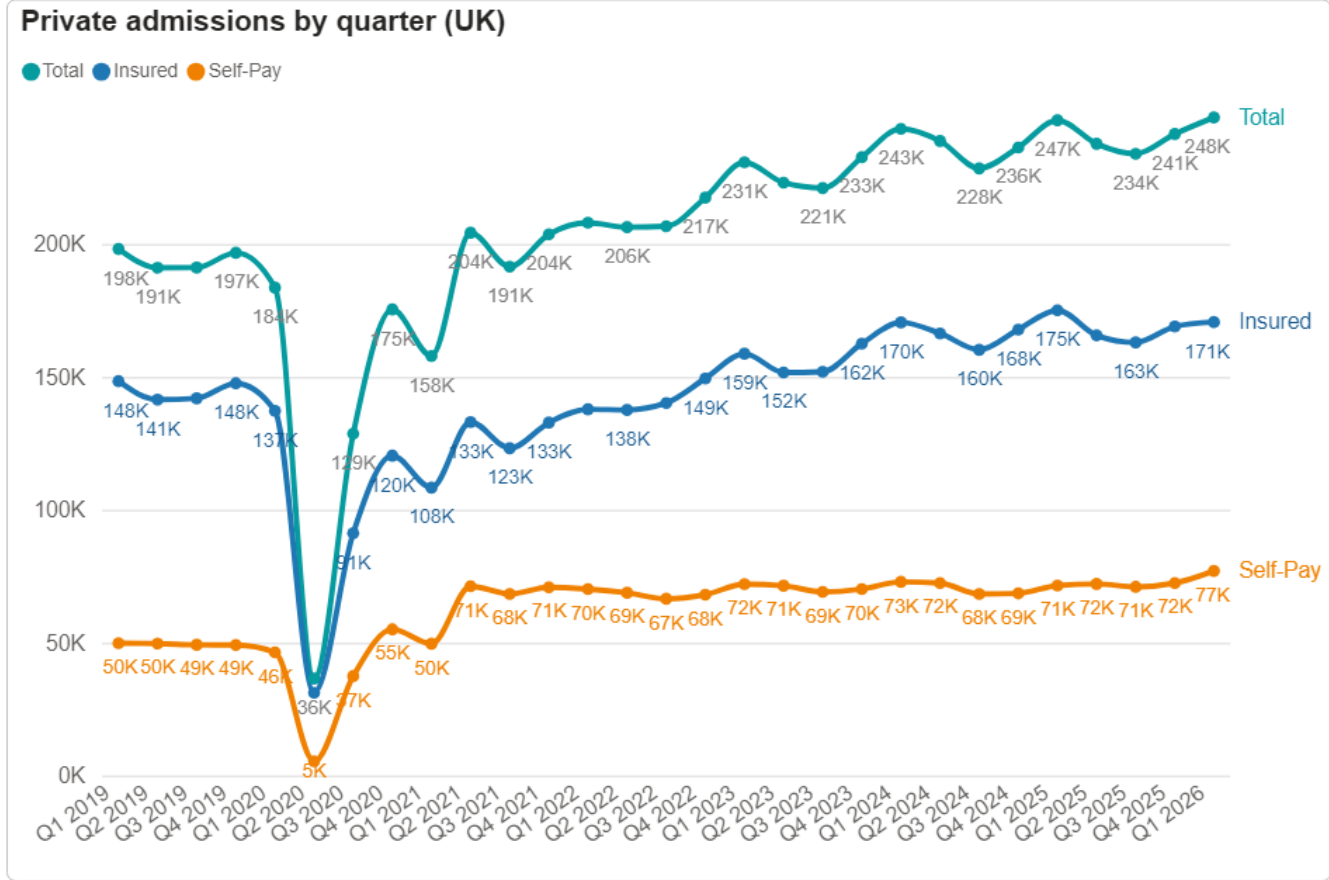
Three parts to my talk

1. PHIN can see a changing market
2. Better visibility reveals the limitations of simple comparisons
3. Post-gold means making information useful

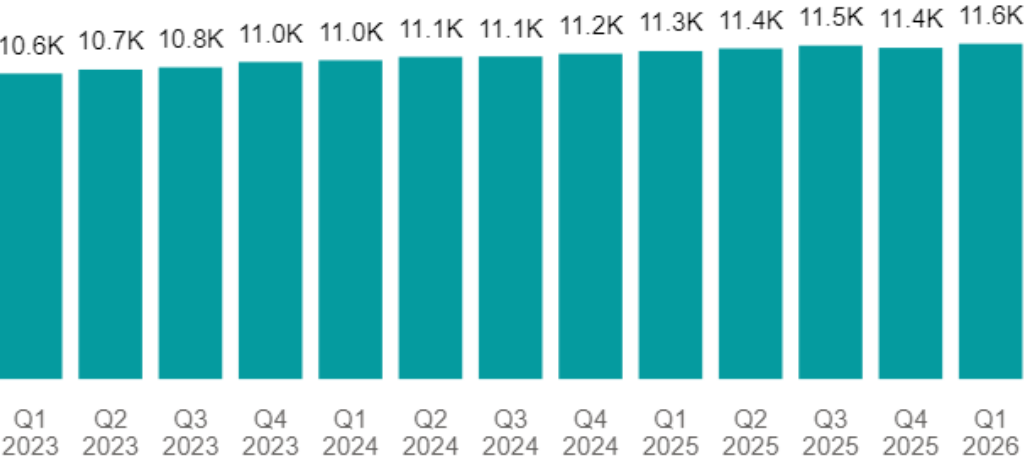
The market is changing

Signals PHIN can see

Private hospital admissions remain at historically high levels, but admitted growth has stalled



Active consultants in private healthcare by quarter (UK)



Signal 1: Private healthcare is growing fastest outside traditional admissions

13.8%

Real-terms growth in voluntary health insurance expenditure in 2024 (1)

8.5%

Year-on-year growth in insured outpatient invoices in Q2 2026 (2)

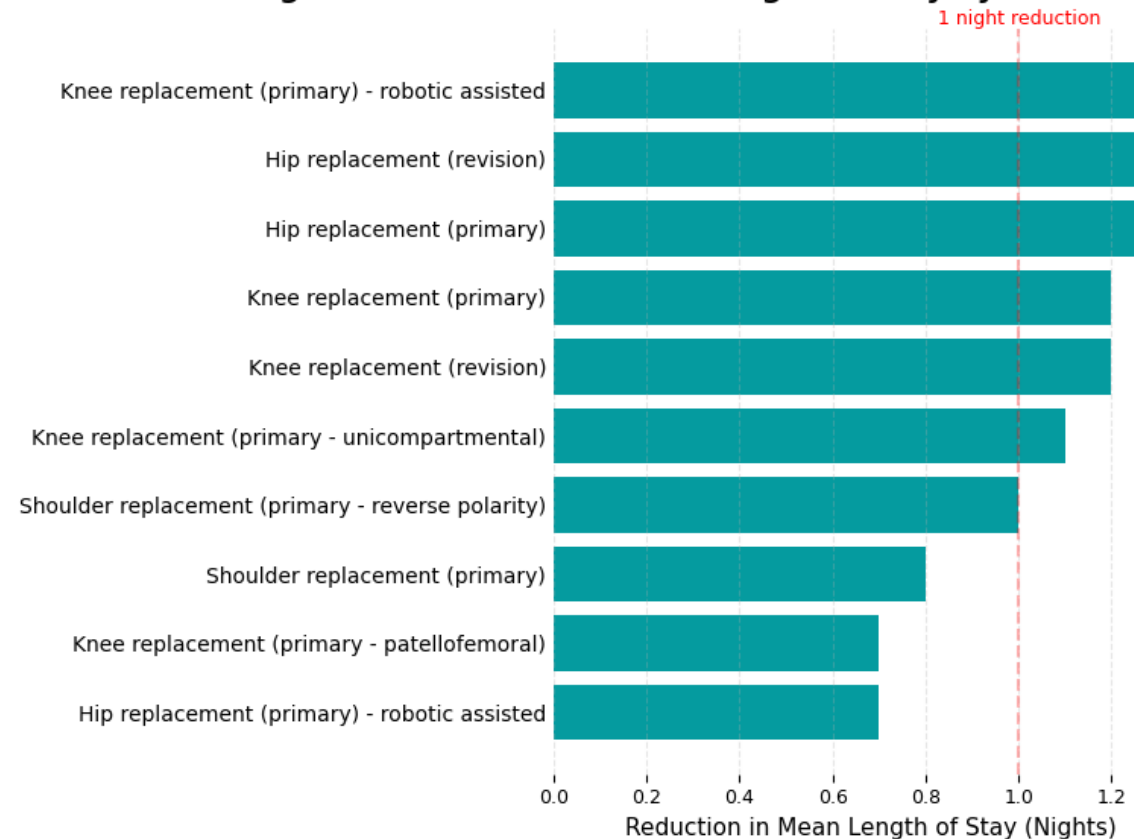
-2.6%

Year-on-year growth in insured admissions in Q1 2026 (3)

Signal 2: Treatment within hospitals is changing...

- > The sector continues to shift towards day case delivered care
- > Almost 3 in 4 rhinoplasties are now day case (1 in 3 in 2018)
- > 6 in 10 brachytherapy procedures are now daycase (2 in 10 in 2018)
- > Length of stay for private hip and knee joint replacements have fallen by over a day since 2018
- > While hospital care is important, the episode is becoming shorter and the surrounding pathway increasingly significant.

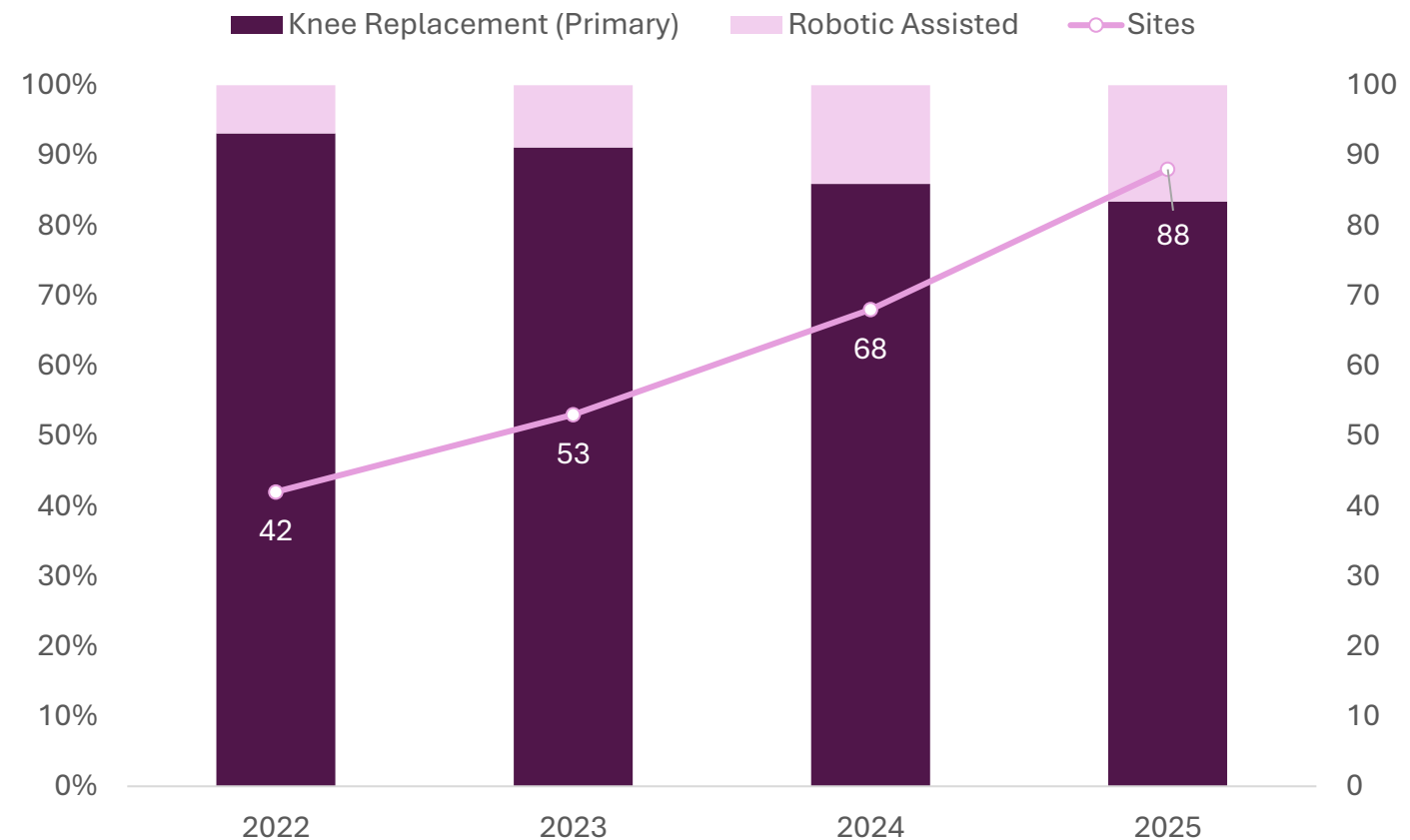
Largest Reductions in Mean Length of Stay by Procedure Group 2018 v 2024



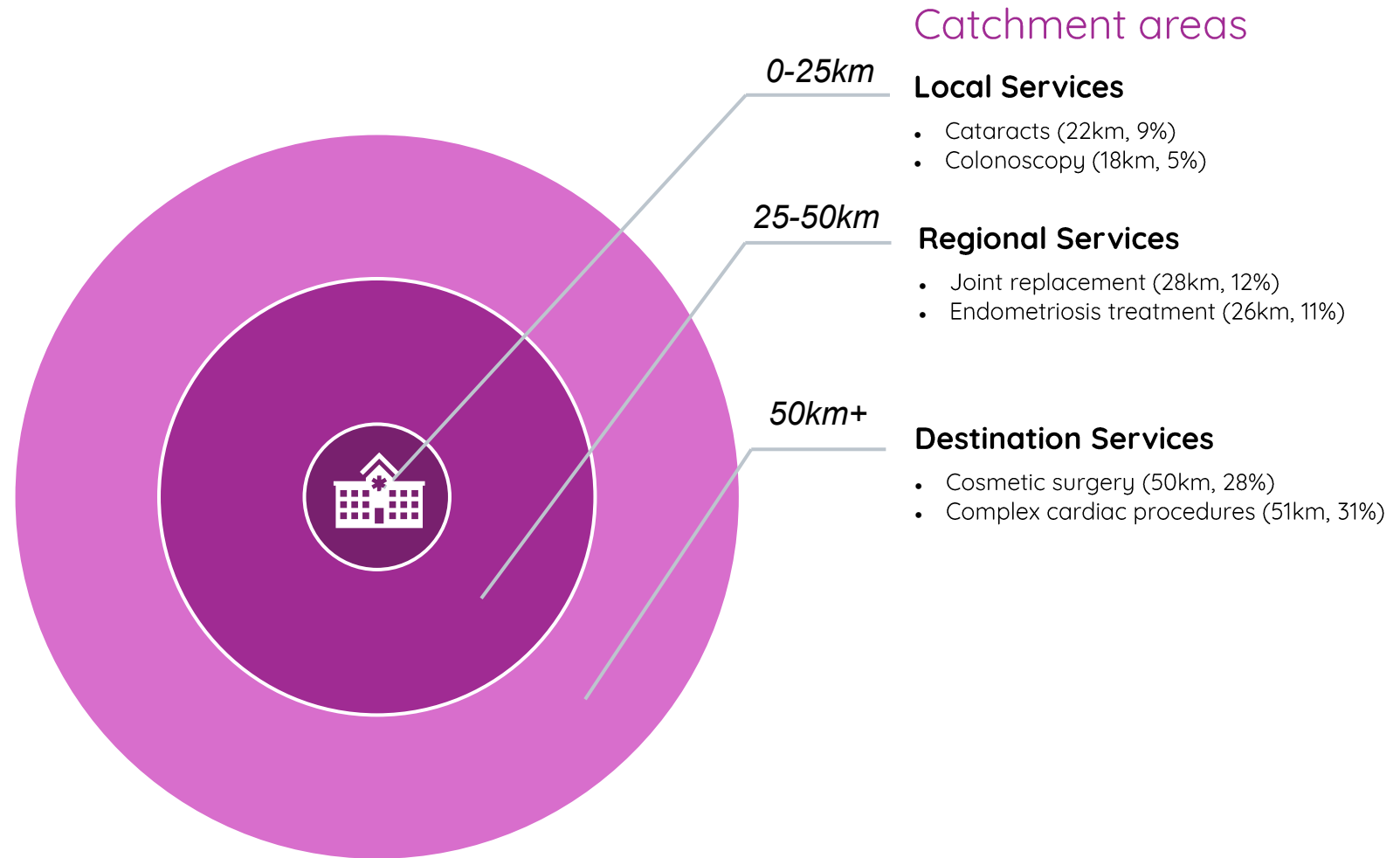
...and the independent sector continues to embrace new technologies

Robotic-assisted knee replacement appears to have more than doubled from roughly 7% to 17% between 2022 and 2025.

In the same period, the number of sites offering robotic knee replacement doubled from 42 to 88 between 2022 and 2025.



Signal 3: There is no single private healthcare market



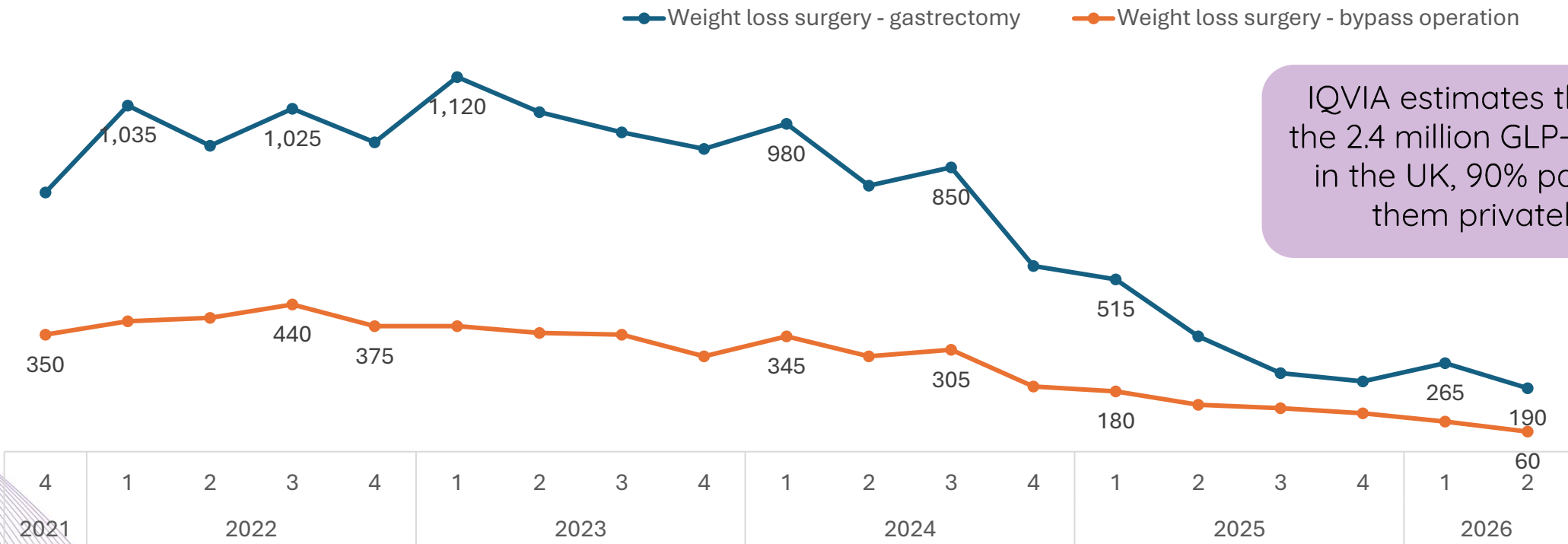
Signal 4: Innovation outside hospitals can reshape demand inside them

Featured October 2026



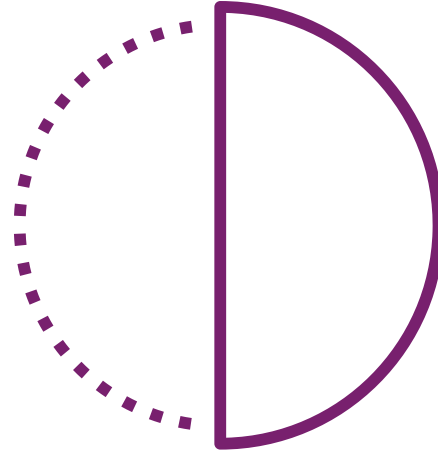
Private bariatric surgery has fallen sharply as GLP-1 use has expanded

Private bariatric and metabolic surgery



IQVIA estimates that of the 2.4 million GLP-1 users in the UK, 90% pay for them privately

And we know that not every patient will go private



- > Nearly **half the public** remain unlikely to use private healthcare according to IPSOS Mori.
- > Our responsibility is therefore not only to understand the growth in the market, but to ensure that better information supports all patients, irrespective of how their care is funded in an independent or NHS hospital.

Seeing more raises harder questions

Not every comparison is meaningful

Nearly the whole admitted market is visible,
but not every question is answerable

98%

Market activity represented at Gold

Gold is the sector's compliance
with the CMA's Private Healthcare
Market Investigation Order 2014.
Delivered in July 2026

697

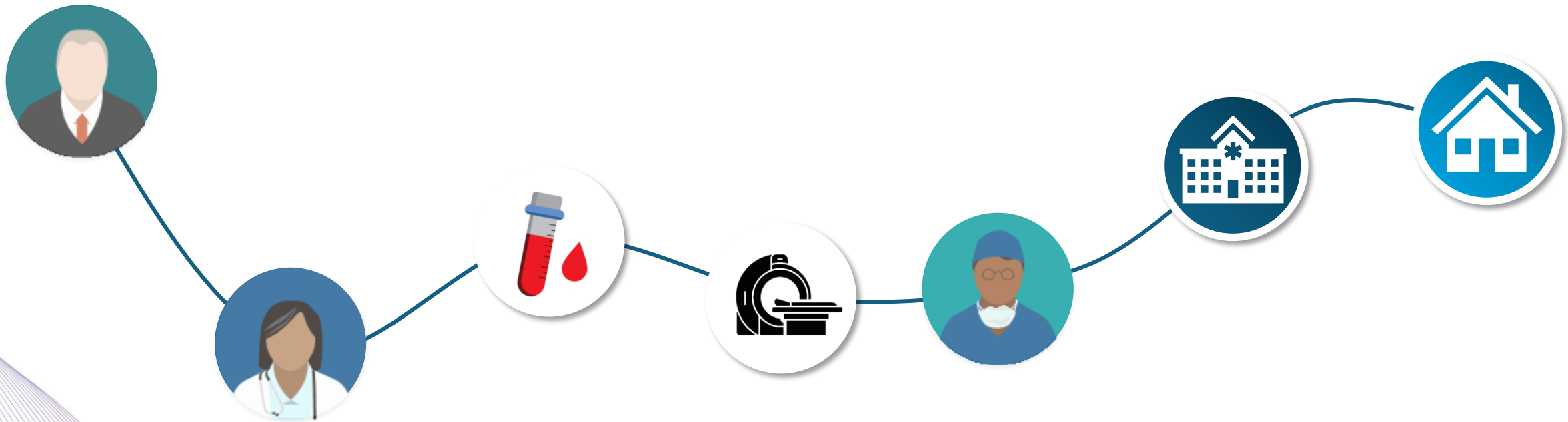
Hospitals published with activity measures

12,899

Consultants visible in our data

Challenge 1: Patients experience a pathway. Our data often sees an episode.

- > Patients may receive diagnostics, consultation, intervention and follow-up across different organisations and funding routes. PHIN's current hospital focus captures an important part of the journey, but not necessarily all of it.



Challenge 2: Comparison without context can mislead

3 surgical site infections

10 surgical site infections

20 admissions

Which is better?

500 admissions

15% infection rate

2% infection rate

Challenge 3: more information is not the same as better decisions

- A smart patient is not given more numbers.
- A smart patient can understand what the numbers mean.

To create a smart patient that can make decisions about their healthcare the numbers need to include

- Denominators and uncertainty
- Comparison groups
- Plain-language explanation
- Information about people like them
- Clarity on what a number can and can't do

Visibility must create confidence

What post-Gold means for PHIN

Gold completed a delivery milestone. It also created an information asset that needs to be usable for patients.

Before Gold

- Building participation
- Establishing core information
- Meeting the order

After Gold

- Explaining variation
- Connecting patient pathways
- Creating patient confidence

Shift 1: Patients want to research private care, but do not know where to begin

84%

would research before choosing private care

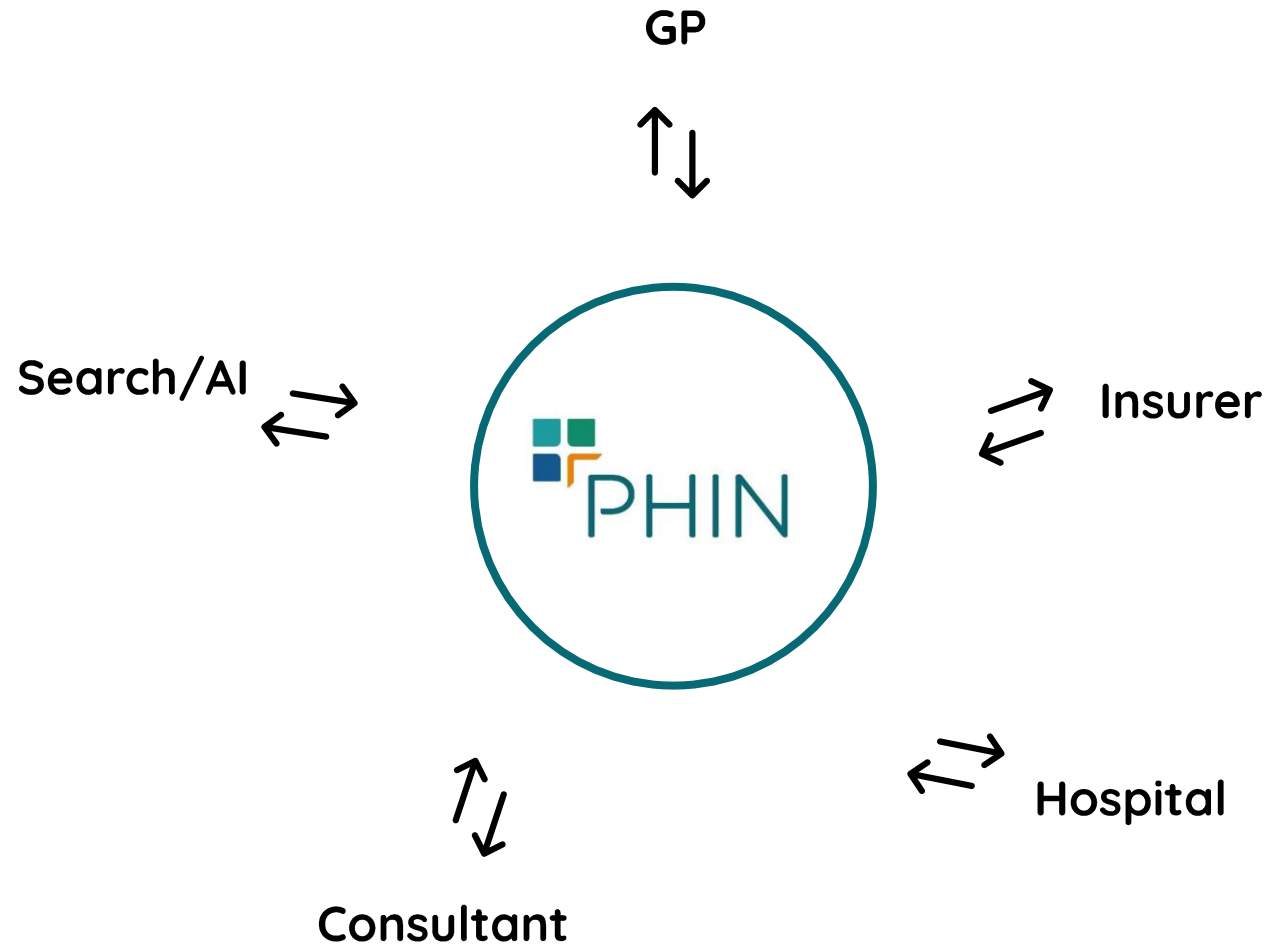
28%

could not name any information source

1 in 4

feel very confident organising private care

Trusted information must reach patients where decisions begin



Shift 2: Making the patient's picture more complete

- IHPN reported more than **1.1 million private tests and scans in 2024** and suggested that growing diagnostics use will increasingly lead patients to “mix and match” NHS and private care, such as paying for a scan before returning to the NHS for treatment.
- Diagnostics are estimated to be 85% of clinical pathways.

Patients do not recognise the boundary between NHS and private data and assume we already see everything



Shift 3: From presenting measures to answering patient questions

PHIN's contribution

Has a consultant treated someone like me before?

- Activity volumes
- Procedure-specific experience
- Whole Practice
- Appropriate comparison groups

Will I feel better after treatment?

- PROMs
- PREMs

What will the complete treatment cost?

- Consultation and procedure fees
- Insured fee arrangements
- Clearer explanation of possible additional costs

What happens if something goes wrong?

- Adverse events
- Follow up arrangements
- Linked activity
- Critical care arrangements

How do I know what to trust?

- Explicit provenance
- Understandable methods
- Honest about limitations

From visibility to confidence

1

See the market

Reveal how funding, delivery, geography and technology are changing care.

2

Make sense of it

Add context, explain uncertainty and avoid misleading comparisons.

3

Make it useful

Help patients ask better questions and make more confident decisions.

Delivery of 'The Private Healthcare Market Investigation Order' has made more of private healthcare visible.

Our next task is to make this unique information more relevant and useful to patients and the sector.

Breakthrough technology influencing patient care



Dr William Cook

Commercial Partnerships
(UK & Ireland) at
Tandem Health AI



Simon Gale

Divisional Director
at Howden



Amit Patel

Founder and CEO
of Peachy Health



Mr Kapil Sahnun

Consultant Colorectal Surgeon



Nathalie Alpi

Digital and Analytics
Operations Director
at PHIN **(Chair)**

QF PHIN QUALITY FORUM

Smart Patients – How data will
inform patient choices





Innovation with a patient focus

Centre for Sight
Spire Healthcare
HCA Healthcare



Innovation with a patient focus

...



Innovation with a patient focus

Centre for Sight



Best use of PHIN data

Dean Bennett

James Matthews

St Joseph's Hospital



Best use of PHIN data

...



Best use of PHIN data

St Joseph's Hospital



Promotion of PHIN

Aviva

Beth Barron

Stuart Hammond



Promotion of PHIN





Promotion of PHIN Beth Barron



Consultant contribution

Dr Sarah Frankton

Dr Mark Hamilton

Rachel Wheeler



Consultant contribution

...



Consultant contribution Dr Mark Hamilton



Patient contribution

Dale Atkinson

Debbie Douglas

Derrick Clarke



Patient contribution





Patient contribution

Debbie Douglas

Break

20 minutes

Patient safety in an online world



Deborah Cohen
Author and broadcaster



Henrietta Hughes
Patient Safety Commissioner

Bridging economic theory and real-world health delivery

Helen Hayes

Associate Principal Economist,
Office of Health Economics



PHIN Quality Forum, 13 October 2026

Evidence from diagnostic
imaging for suspected cancer

Bridging Economic Theory and Real World Health Delivery

**How hospitals respond to
payment incentives**

Presented by
Helen Hayes
Principal Economist, OHE



Every payment system rewards something

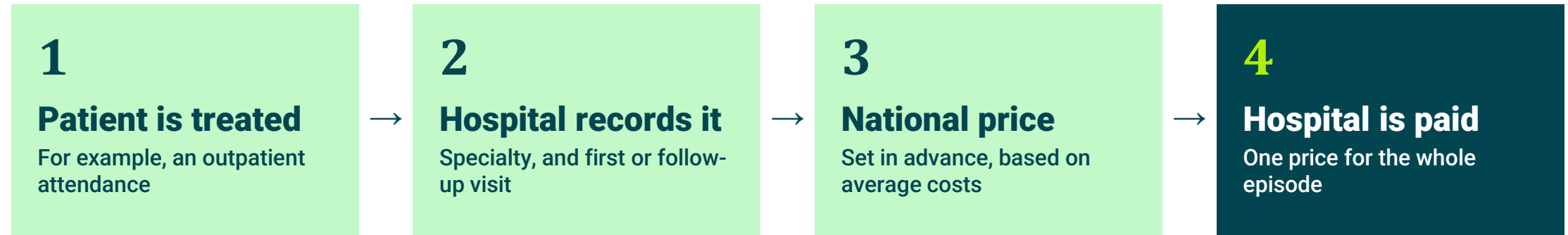
Why it is worth a closer look

- How hospitals are paid shapes what care they deliver, and what ends up in the data.
- A national price change, applied to every hospital at the same time, is a rare chance to see the effect.
- Activity data now feeds comparison, transparency and AI tools.

Questions to keep in mind

- Do hospitals respond when the price changes?
- Does more activity mean better care?
- What does a payment change do to the data we rely on?

In England, NHS hospitals are paid a national price per episode



Before 2013, any scans during an outpatient visit were included in that one price.

In 2013, each scan began to earn its own payment

The reform we will look at today: In April 2013 diagnostic scans were 'unbundled': each one earned its own payment on top of the visit.

Unbundled: CT, MRI, ultrasound, nuclear medicine, DEXA, contrast fluoroscopy and echocardiogram.

Not unbundled: standard X-rays.



Aim: more diagnostic activity and support earlier diagnosis

How economists test a policy change

The problem. Scans will change over time anyway, regardless of the reform, so comparing before with after can be misleading.

The idea. Compare a group the change affected with a similar group it did not. The gap is the effect.

Method: Difference-in-Differences

CHANGED (the treatment group)

Outpatient scans

UNCHANGED (the control group)

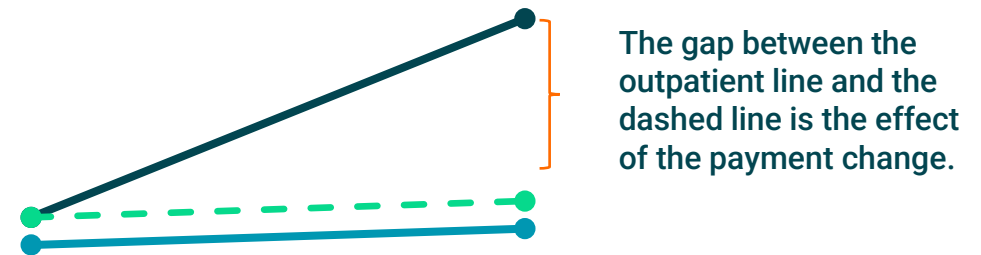
Inpatient scans

180 NHS Trusts, 2010 to 2018, Hospital Episode Statistics

Why it is useful. A national reform cannot be randomised like a trial. Quasi-experimental techniques estimate the causal effect of a policy.

When this method is credible. Similar trends before the reform, and stable results with other comparison groups.

DIFFERENCE-IN-DIFFERENCES ILLUSTRATION



Before the reform

After the reform

—●— Outpatient scans (payment changed)

—●— Inpatient scans (unchanged)

—●— Outpatient if it had followed the inpatient trend

Hospitals responded strongly to the price signal

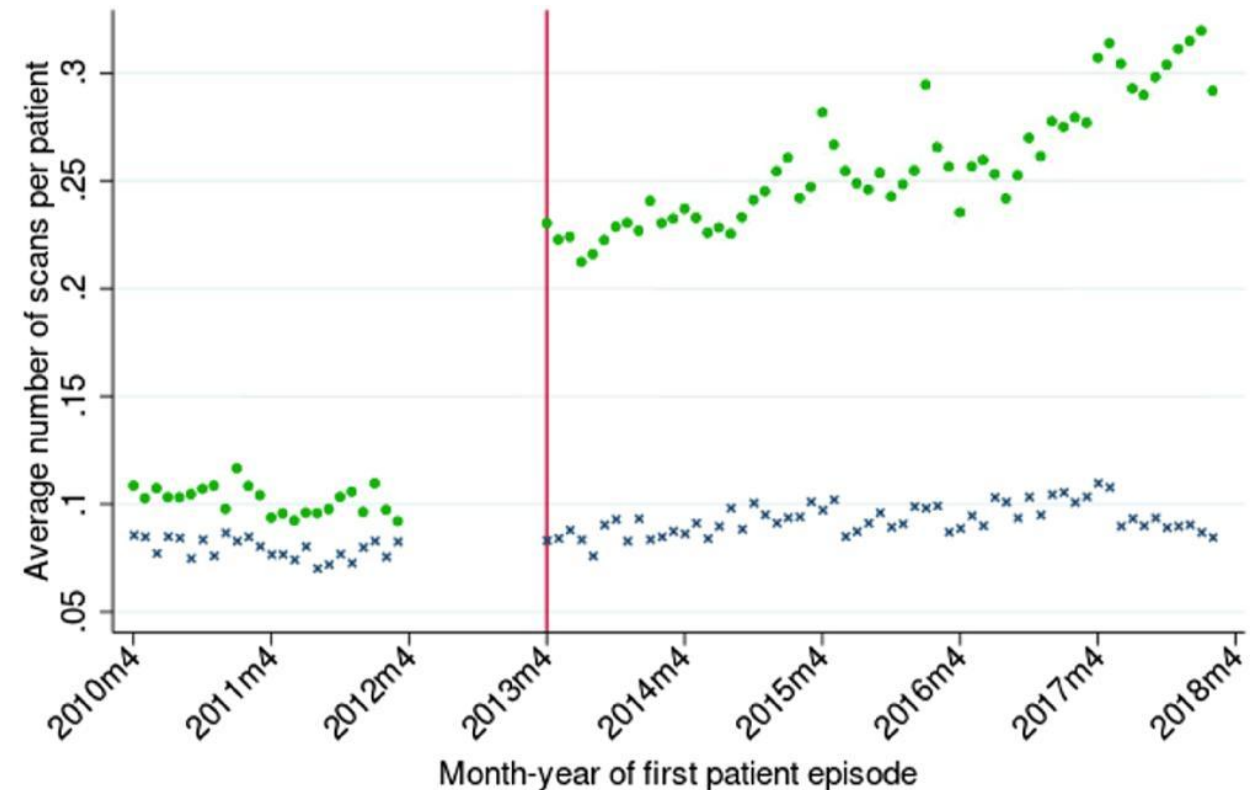
134%

increase in scans per patient (+0.137) after unbundling

Positive across all sensitivity checks: +0.117 to +0.272 scans per patient

This is NHS evidence. Private care is largely paid per item already, so the same question applies: what does each payment reward, and how do you know if it's working as intended?

FIGURE 1 FROM THE PAPER: AVERAGE SCANS PER PATIENT, BY MONTH



Green dots: outpatient scans (payment changed). Blue crosses: inpatient scans (unchanged). Red line: April 2013, when the payment changed.

When payment changes, the data changes

29% of Trusts went from recording no unbundled scans to recording some

15% of post-reform scans were at providers that had recorded none before

So the 134% is likely an upper bound on the real increase in scans.

An unintended effect of the reform: increased transparency

Part of the effect may reflect better recording. Comparison and AI tools built on this data may inherit these biases.

Small improvements in outcomes, modest next to activity

At hospitals with a bigger scan response

- Lower probability of death in the years after referral
- Fewer emergency admissions and shorter hospital stays

What this suggests

- Some of the extra testing was real and useful, including for patients without cancer
- Much of the extra activity may not be linked to outcomes
- Paying for activity is not the same as paying for value

Changing the price, changes behaviour

What we learned

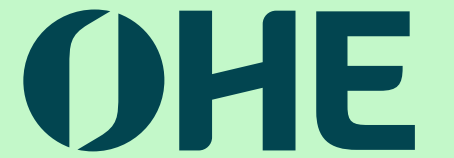
1. **Price is a powerful tool.** Hospitals respond even when staff are salaried.
2. **Payment changes the data, not just the care.** Expect recording to shift.
3. **More activity is not the same as better care.** Pay for what you want to buy.

Discussion

- How would you tell whether more activity means better care?
- Do you consider changing incentives in your own data?

For further enquiries, please contact:

Helen Hayes
Principal Economist, OHE
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ohe.org



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How do we empower patients?



Akeel Arshad

Managing Director
at OS Clinic



Daniel Maude

Head of Marketing and
Communications at
Chrysalis Finance



Jon Twinn

Head of B2B (UK & Ireland)
at Top Doctors Group



Edward Ungar

Co-founder and
CEO at Pharmacierge



Greg Swarbrick

Partnerships Director
at PHIN (**Chair**)

Lunch

12.50–13.50

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Smart Patients – How data will
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Welcome back

Using AI to improve transparency and patient choice



Jules Blanc

Lead Software
Engineer at PHIN



Karl Warner

Senior Software
Engineer at PHIN



Dr Ian Gargan

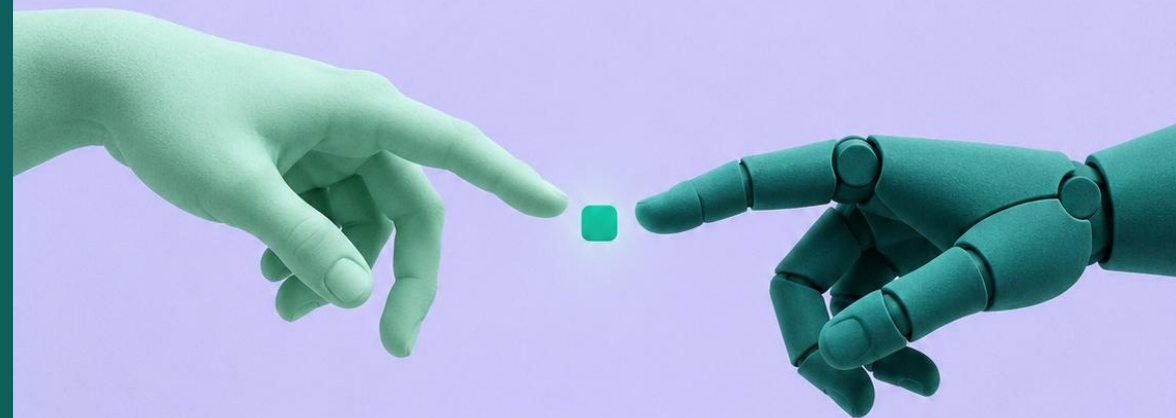
Chief Executive at PHIN

What can we build now?

Starting with patients. Going beyond off-the-shelf tools to build applied AI at PHIN

Jules Blanc Lead Software Engineer

Karl Warner Senior Software Engineer



SHOW OF HANDS

Who knows what this means?

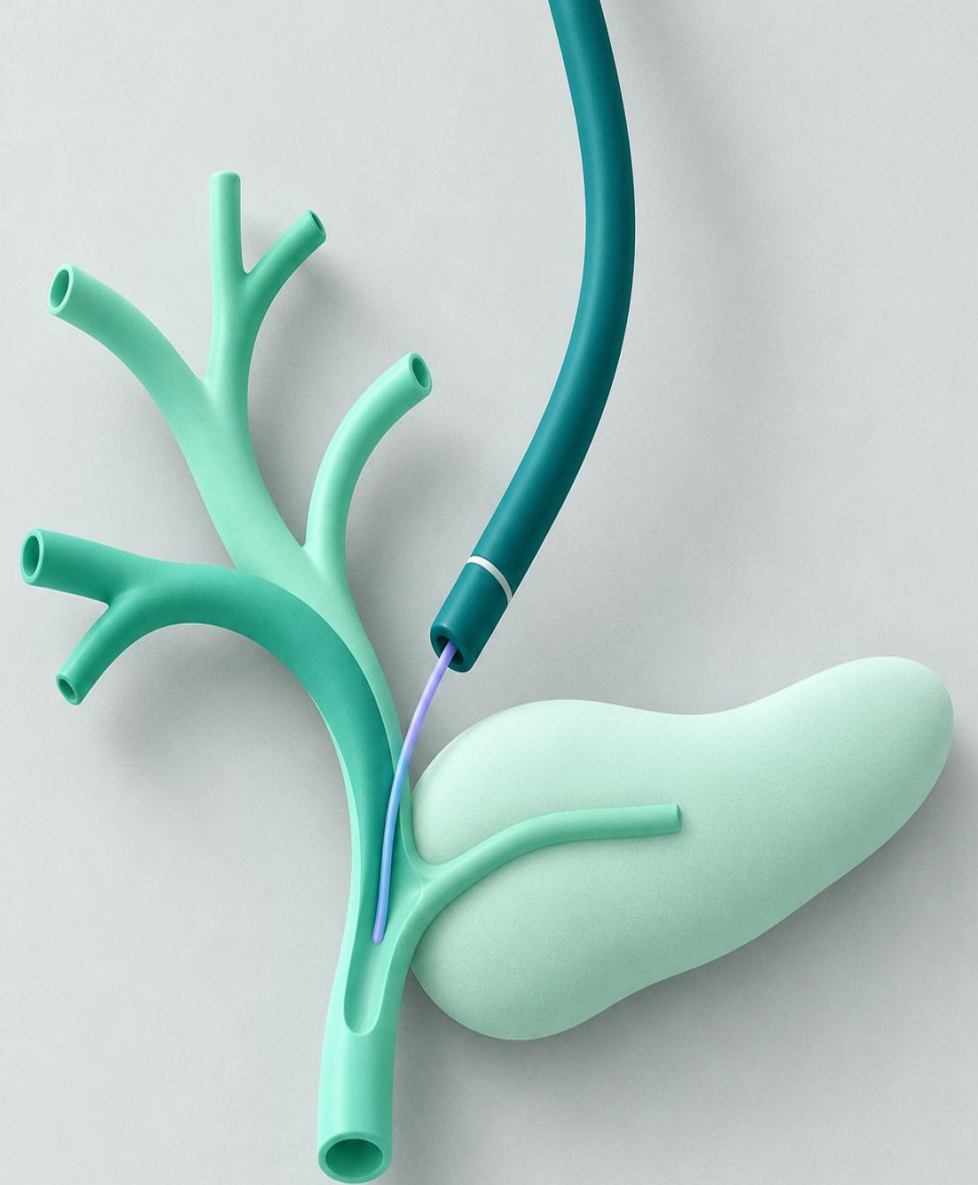
Endoscopic retrograde cholangiopancreatography



THE ANSWER

Endoscopic retrograde
cholangiopancreatography (ERCP) - Patients
shouldn't need to know this language

A procedure using a small
tube and X-rays to
examine and treat the bile
and pancreatic ducts.



THE GAP

Healthcare speaks one language.
Patients speak another.



TINY QUERIES. HIGHLY COMPLEX RECORDS.

What a patient actually types

A horizontal search bar with rounded corners and a teal border. Inside the bar, on the left, is a teal magnifying glass icon followed by a vertical line cursor, indicating a search input field.

Two informal words



TINY QUERIES. HIGHLY COMPLEX RECORDS.

Two words in. An entire healthcare
system **to navigate.**

Procedures

Diagnoses

Specialties

Consultants

Hospitals

Articles

Detailed records that may never use the words “knee pain”.



The system must understand meaning,
not just match words.



BUT BUILT FOR DIFFERENT OBJECTIVES

Powerful AI embedding models already exist

01

General embedding models

Designed to represent language across broad, general-purpose tasks.

02

Medical embedding models

Strong on biomedical papers, clinical questions and technical terminology.

03

PHIN Search objective

Short patient language retrieving multi-category PHIN service records.



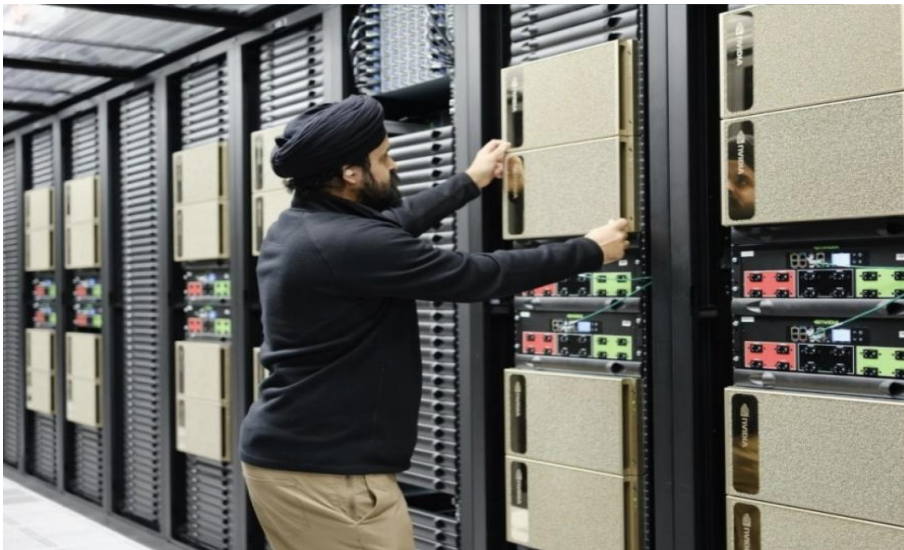
THE CATCH

An excellent model can still be
the wrong model for a specific product.



SPECIALISATION VERSUS SCALE

A small team taking on giants



Nvidia DGX platform Enables the world's most powerful supercomputers

vs



Jules and his Nvidia DGX Spark One very specific problem

THE QUESTION

Could a small team at PHIN out-build
the giants **where it mattered?**



INTRODUCING

PHIN-Search S3

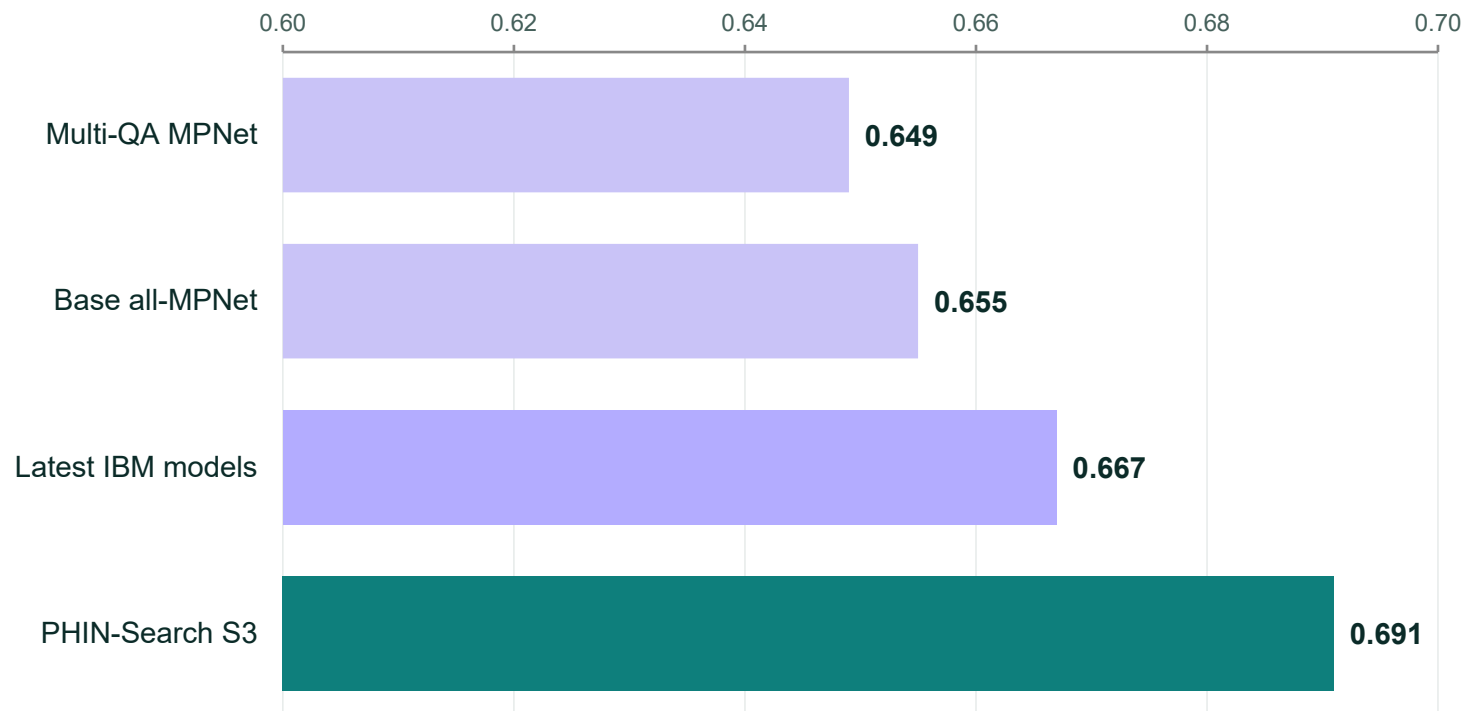
PHIN-SEARCH-DAPT-FT-S3-V2

Specialist intelligence built at PHIN.



INTERNAL COMPOSITE SCORE · SCALE BEGINS AT 0.60

The result came from the process.



+3.6%

vs strongest IBM models

+5.5%

vs base all-MPNet

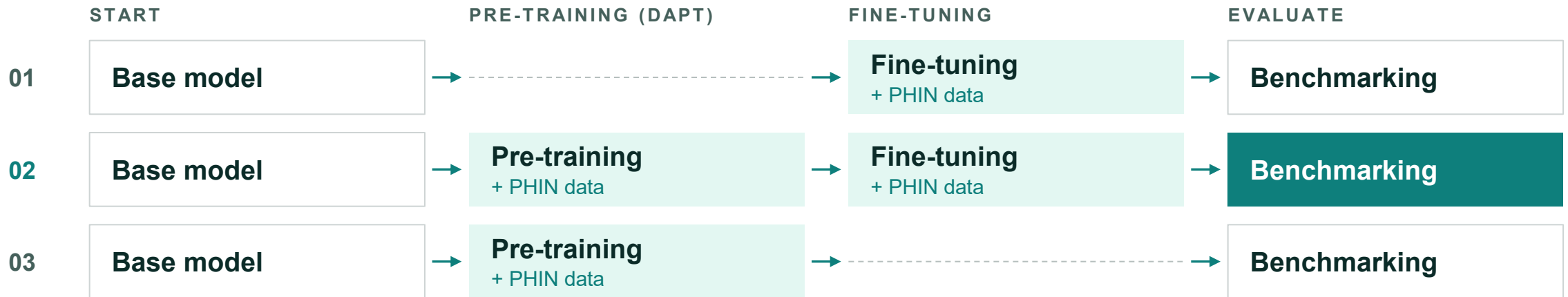
+6.5%

vs Multi-QA MPNet



HOW WE BUILT IT

We didn't bolt on AI. We built a specialist.



SETTINGS WE TUNE FOR EACH

How much data goes in

How often it loops through
the data

How related two episodes
are

What synonyms are



How the model learns

01

Domain-adaptive pre-training (DAPT)

Masked language modelling: hide a random word in a sentence about an admitted patient care (APC) record. The model learns to fill the gap.

“Knee arthroscopy is a **[MASK]** used to treat problems inside the knee joint.”

02

Fine-tuning

We show the model two anonymised medical records and tell it whether they're related or opposites.

“knee pain”

+ **Positive:** knee arthroscopy

– **Negative:** unrelated or misleading procedure

Every example nudges the model's weights, **like a scale tipping.**



RESULT QUALITY

Same question. Very different answers.

“My vision has become cloudy and bright lights have halos around them.”

GENERAL MODELS

- 1 Laser eye (refractive) surgery in...
- 2 Sclera buckling
- 3 Haemorrhoid banding, injections a...
- 4 Botox to reduce wrinkles
- 5 Stretching (hydrodistension) of t...

PHIN-SEARCH S3

- 1 **Cataract surgery**
- 2 **Eye injections**
- 3 **Diagnostics – ophthalmology**
- 4 **Surgical glaucoma treatment**
- 5 **Surgical vision correction**



EXPERTISE, AMPLIFIED

7 minutes

Average manual flying time per flight



EXPERTISE, AMPLIFIED

The pilot is not redundant.

Pilots manage the system, monitor what is happening, make critical decisions and take responsibility when circumstances change.

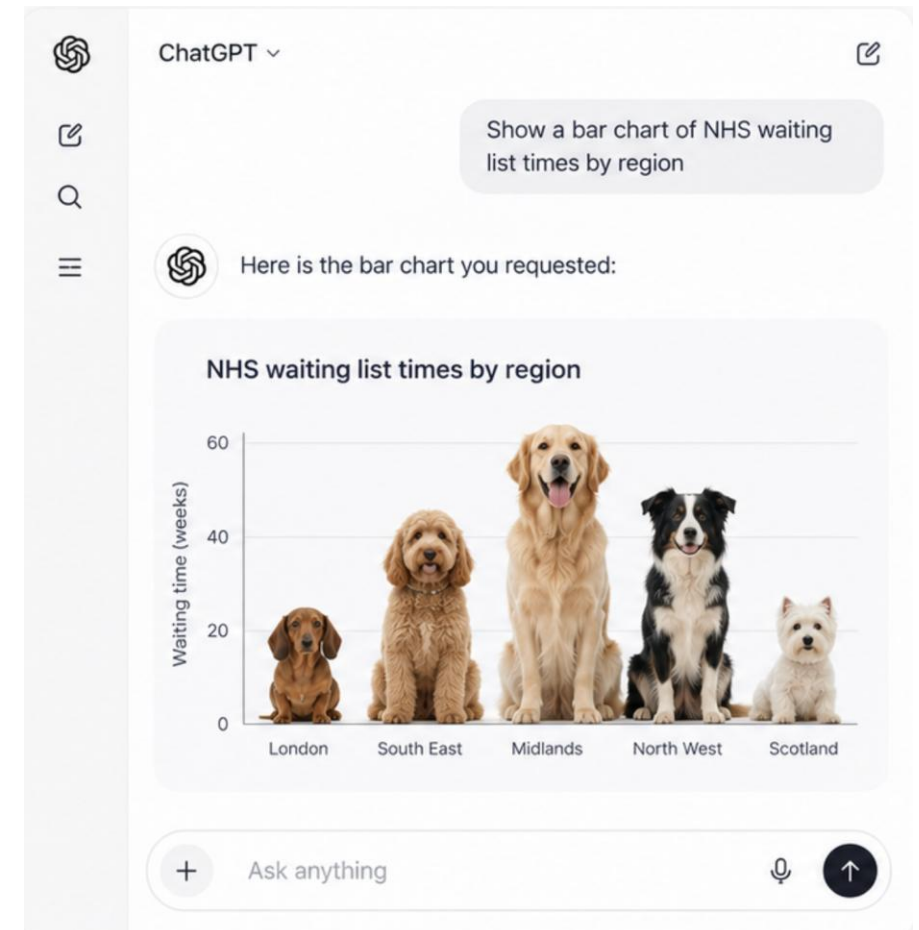


EXPERTISE, AMPLIFIED

AI did not replace the engineering.
It amplified it.



Who has used an AI tool and it's made a mistake?



Some mistakes don't matter. In healthcare, they do.

LOW STAKES

Film recommendation

Pasta recipe

HIGH STAKES

Healthcare question



How can we improve the accuracy of AI responses in healthcare?



Data.

An AI agent is only as good as its data source.



so...

Why doesn't AI use PHIN data already?

It probably does, in some capacity.

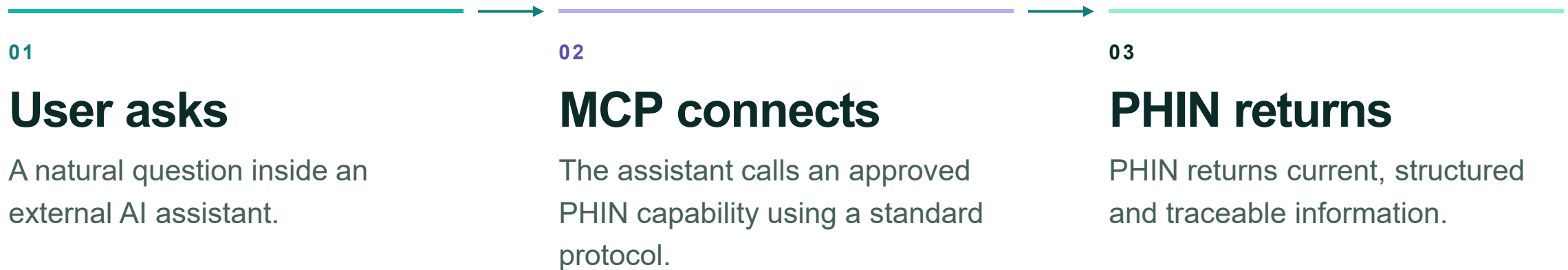


PHIN provides information to humans through a website.

AI needs a different kind of medium to interact with us.



MCP: a trusted connection

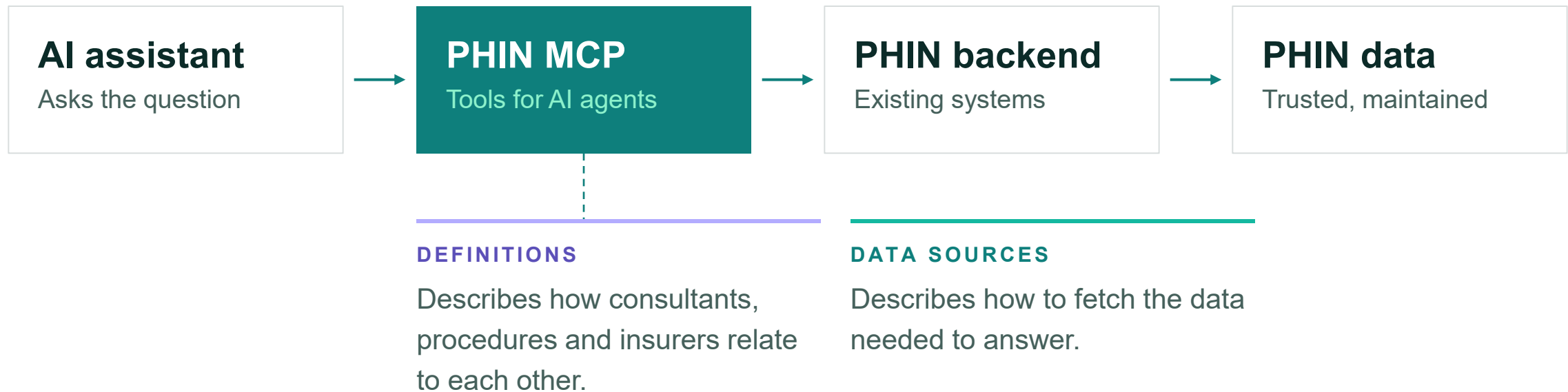


A standard connection. Clear boundaries. **Trusted PHIN information.**



A PATIENT ASKS

🔍 Find me a consultant for my procedure who's covered by my insurance.



The result: an AI answer backed by a trusted source of information.

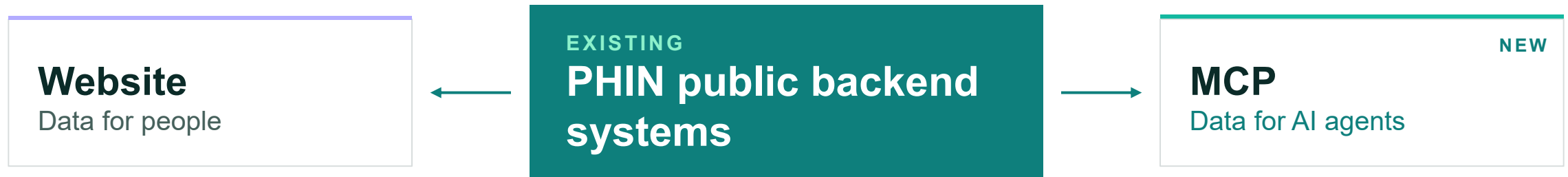


BUILDING IT

So how do we build an MCP?



It's just another route into the data we already share



PARTNERSHIPS

How do we get AI models to use our MCP?

Partnerships with AI model providers.

OpenAI

Google

 perplexity

BUILD ONCE, DISTRIBUTE DELIBERATELY

One capability. Four routes to value.



The same intelligence can power different products without rebuilding the core capability each time.



THE FUTURE

As the way people access
information changes,
PHIN moves with the
technical times.



Three pillars. One PHIN AI programme.

PATIENT-FACING PILLAR

Make complex healthcare information easier to understand, search and navigate.

Examples PHIN Search, guided discovery and clearer explanations.

INTERNAL PHIN PILLAR

Help PHIN colleagues access knowledge, improve data quality and reduce repetitive work.

Examples Internal assistants, anomaly review and research support.

CONSULTANT & HOSPITAL PILLAR

Help consultants and hospitals understand submissions, gaps, outcomes and areas requiring attention.

Examples Data-quality guidance and provider intelligence.

Different users. Shared research, models, infrastructure and governance.



WHAT COMES NEXT

We are going to build things...



WHAT COMES NEXT

...we had no idea
we were capable of.

Things we could previously only aspire to do.

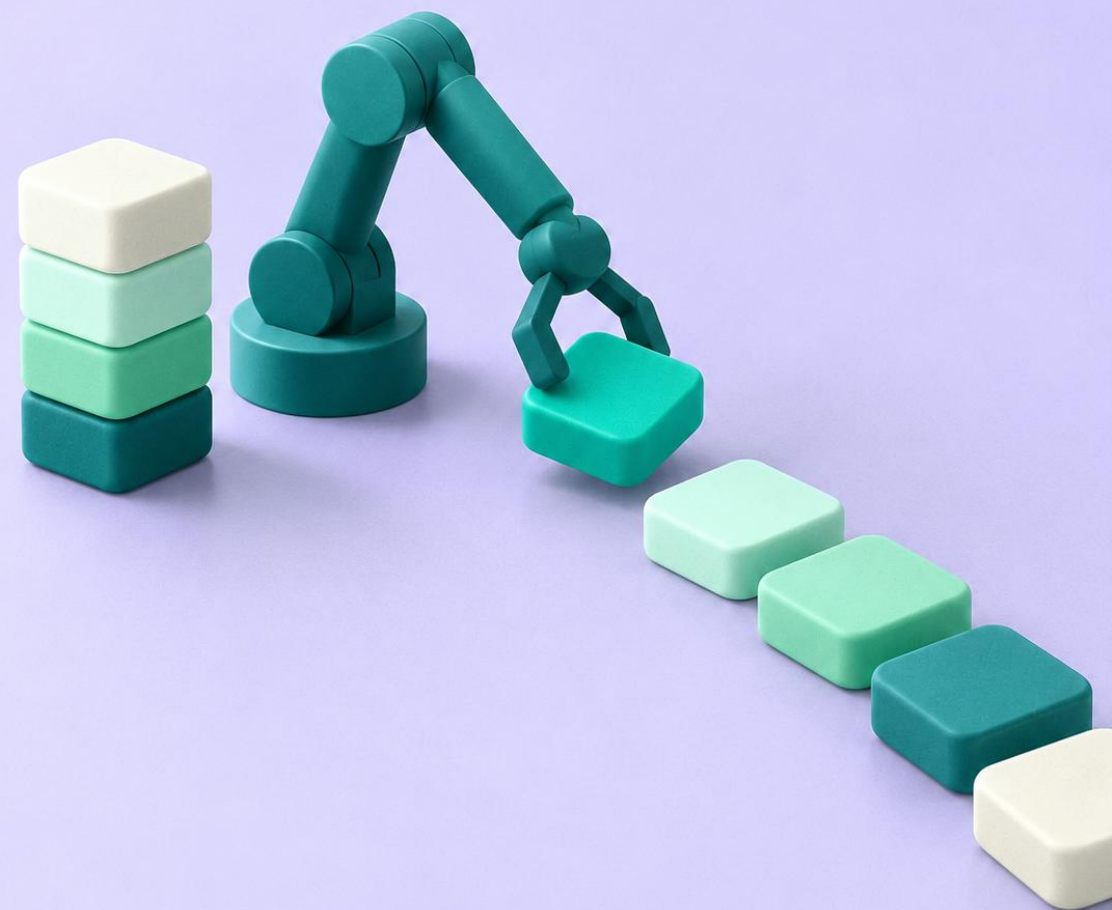


Applied AI. Built at PHIN. Delivering for patients.

Now we build what comes next.

Thank you

Jules Blanc | Lead Software Engineer



Creating a winning mindset

Maggie Alphonsi

The face of international women's rugby



Closing remarks

Dr Ian Gargan

Chief Executive of PHIN



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