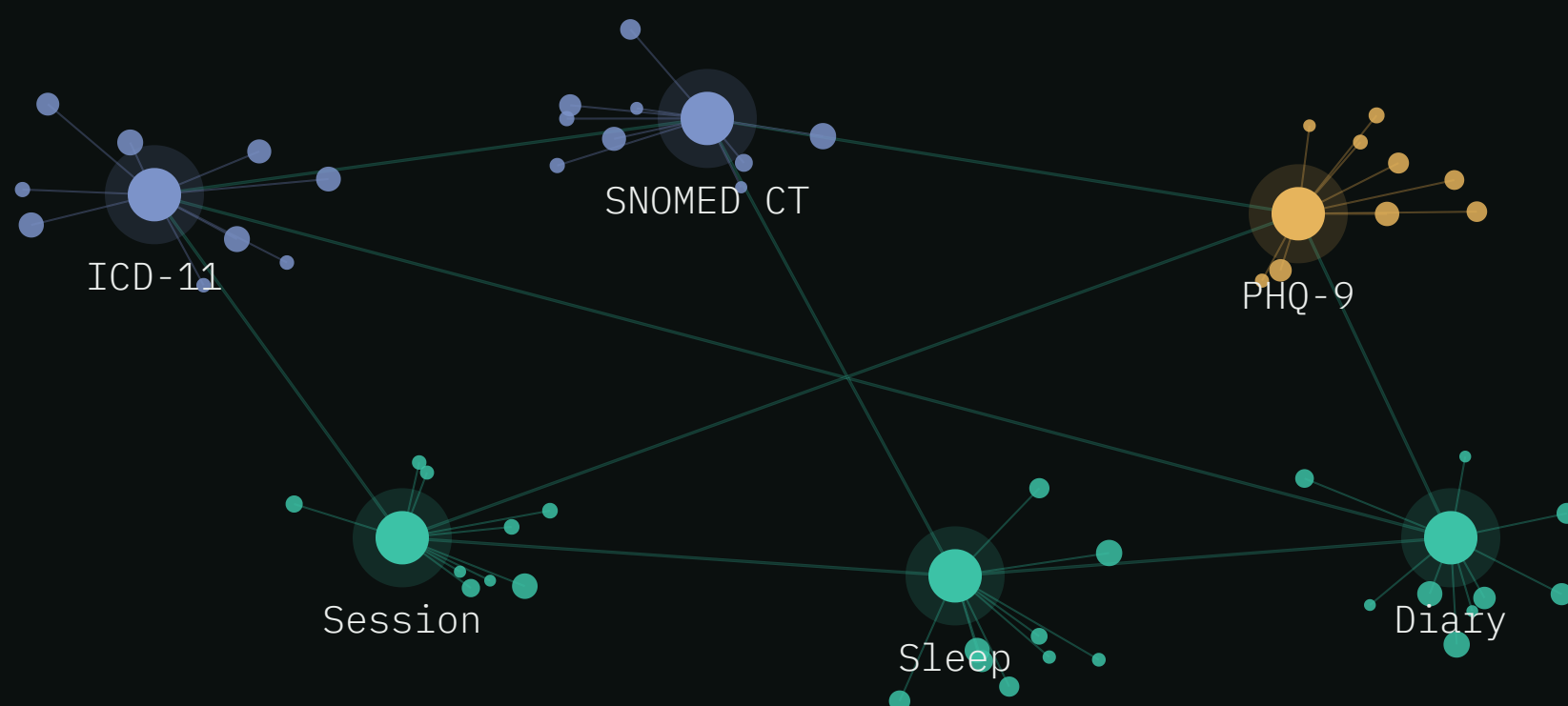


HAIVA · INTELLIGENCE GRAPH

A map of clinical knowledge, built for research.

How haiva links what is known in psychiatry with what happens in care, and how research teams could use it, carefully.



Drawing · not real data

haiva

BUILT IN R3

1.1 million nodes of
clinical knowledge

924,798
UMLS concepts

148,154
SNOMED CT concepts

36,762
ICD-11 entries

12,250
ICD-10-GM codes

13,749 links between ICD-11 and ICD-10-GM, the code Swiss invoices need

HAIVA R3 · GRAPH INVENTORY

demonstration records

GRAPH INVENTORY

924798 UMLSConcept

148154 SNOMEDConcept

36762 ICD11Disorder

12250 ICD10GMCode

416 Drug

142 Alert

121 TemporalSegment

93 CAMLIB_Modality

78 AI Companion Calls

69 PatientBiomarkers

58 AssessmentItem

38 DisorderScores

34 SonaCrisisEvent

31 Clinical Sessions

28 ScoreThreshold

28 CAMLIB_Mechanism

26 DiagnosticCriterion

26 SonaEvent

24 AcousticMapping

20 CAMLIB_Condition

19 Discrepancy

19 SonaLanguageSwitch

18 ClinicalRecommendation

17 LifeEvent

15 Patient

14 eGeMAPSFeature

14 SonaTheme

14 PBM_Window

13 CAMLIB_Category

12 Associate

11 PopulationSpecialty

10 CAMLIB_Safety

6 TheoreticalOrientation

6 DisorderCategory

6 AssessmentInstrument

6 NICEGuideline

6 CAMLIB_Evidence

5 ClinicalStandard

3 Practitioner

3 SonaMemory

3 SonaContactPattern

1 MedEvoLT

1 PBM_Device

Also in the reference layer: medicines (RxNorm), assessment instruments, NICE guidelines, voice-measure definitions. 40 node types, 51 relationship types.

IN PROGRESS IN HAIVA 4

Three layers, kept apart

THE CLINICAL RECORD

The single source of truth: sessions, notes, questionnaires, consents. Everything below is rebuilt from it.

↓ projected, rebuilt on demand, checked for drift

REFERENCE KNOWLEDGE

Its own database. No patient data.

ICD-11

ICD-10-GM

SNOMED CT

UMLS

RxNorm

instruments

↔
codes

PRACTICE GRAPH

Each practice's own patients only. Fixed, reviewed, read-only questions.

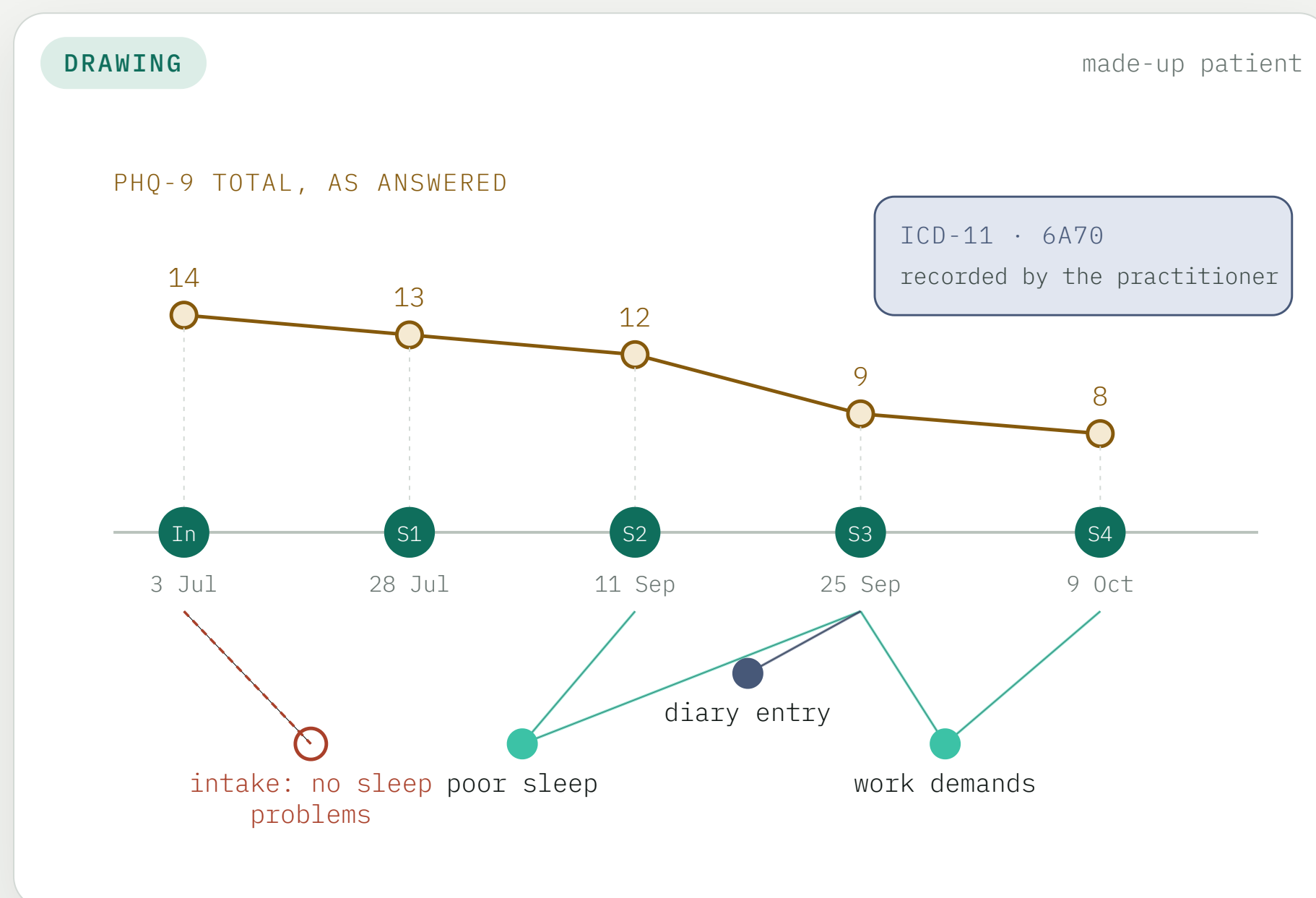
⋮ ↓ only with consent and ethics approval

RESEARCH COHORT

Pseudonymised, per study. Groups under five people are hidden.

ONE PATIENT, LINKED FACTS

A course of care, with every link sourced



Sessions, questionnaire totals, themes, a diary entry and where sources differ, on one line. A diagnosis appears only when the practitioner records it.

IN CARE: EVIDENCE WITH ITS SOURCE

Before the session, what the record shows

HAIVA 4 · PROTOTYPE

sample data

Things to consider

AI-drafted · review required

☒

From the record

PHQ-9 of 29 Sep: item 9 was answered above 0. A safety follow-up is in progress.

PHQ-9 · 29 Sep Follow-up task

Hide for now

☐

Differs between sources

The intake (3 Jul) records no sleep problems. The sessions on 11 and 25 Sep mention poor sleep.

Intake · 3 Jul Session 11 Sep Session 25 Sep

Hide for now

☐

Raised by the patient

Shared a diary entry on 24 Sep about a meeting at work.

Diary entry · 24 Sep

Hide for now

☐

Open from last session

Agreed to review work demands in four weeks.

Session 25 Sep · 00:41:10

Hide for now

The tick means "discuss today". Differences between sources are not errors by the patient. Nothing here is written to the record.

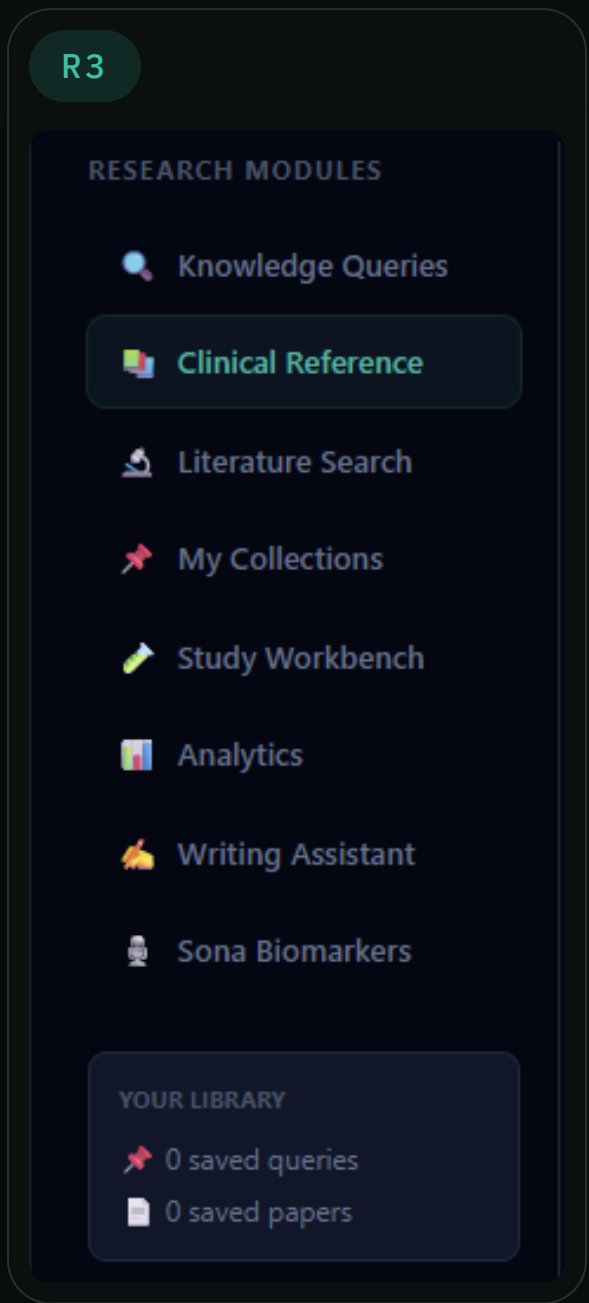
Each line names where it comes from: a questionnaire item, a session, a diary entry.

When sources differ, it says so, without calling it an error.

Nothing here is a finding. The practitioner judges.

FROM R3 TO HAIVA 4

What R3 taught us



IN R3

IN HAIVA 4

Free text turned into database queries

Free text only picks one of a catalogue of fixed, reviewed, read-only queries

"Similar patients" across the whole database

Own patients only, off by default, no voice scores

Some facts lived only in the graph

The record holds every fact; the graph is rebuilt from it

An outage looked like "nothing found"

"Graph unavailable", said plainly

Left: R3's research modules: knowledge queries, clinical reference, literature search, study workbench. Demonstration records.

FOR RESEARCH TEAMS

A study, step by step

1

A question

written down before any data is seen.

2

Ethics approval and consent

by the study team, under Switzerland's Human Research Act or the local equivalent.

3

A pseudonymised cohort

only consenting patients. Pseudonymous is not anonymous, so access stays restricted.

4

A fixed, versioned query

the same question gives the same answer, and others can rerun it.

5

Clinicians review the result

an association is a hypothesis, not a finding.

6

Published, whatever the result

including what did not work.

QUESTIONS IT COULD HELP STUDY

Hypotheses, not answers

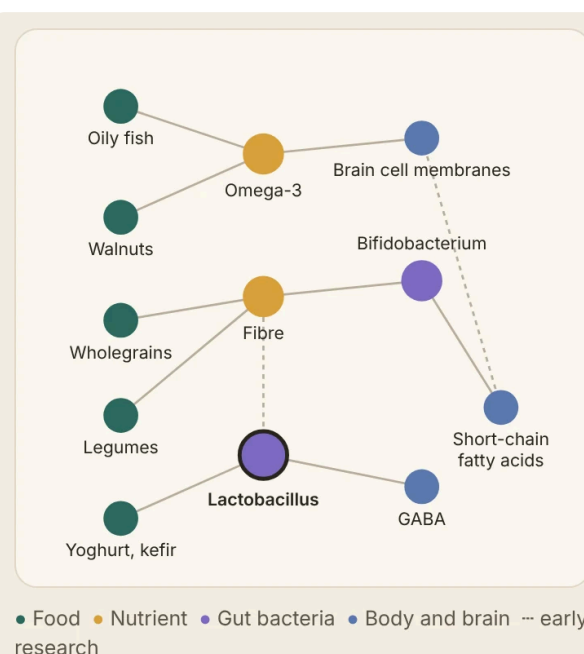
? Do speech-timing measures move with questionnaire totals, **within the same person**, over months?

? How do the weeks between sessions, diary and companion use, relate to what is discussed in session?

? Where do intake and later sessions differ, and what does that say about assessment?

? Where does the ICD-11 to ICD-10-GM crosswalk lose clinical detail?

SONA 4 • NOURISH



Gut bacteria

Lactobacillus

Found in yoghurt, kefir and other fermented foods. In the laboratory, some strains make GABA, a messenger of the nervous system. Whether this changes how people feel is not known.

Early research 3 sources

For patients, the same idea: each link shows how strong the evidence is.

THE LINES WE HOLD

The graph never

- ✗ diagnoses on its own
- ✗ scores risk
- ✗ mixes practices without consent
- ✗ gives researchers names
- ✗ keeps what was erased

Erasure is checked by a test: no node of the patient may remain.

Reference vocabularies are used under their licences: SNOMED CT through a national licence, UMLS under its licence agreement. DSM-5-TR only under licence from its publisher.

LOOKING FOR RESEARCH PARTNERS

Help us make the graph useful for science.

universities

research teams

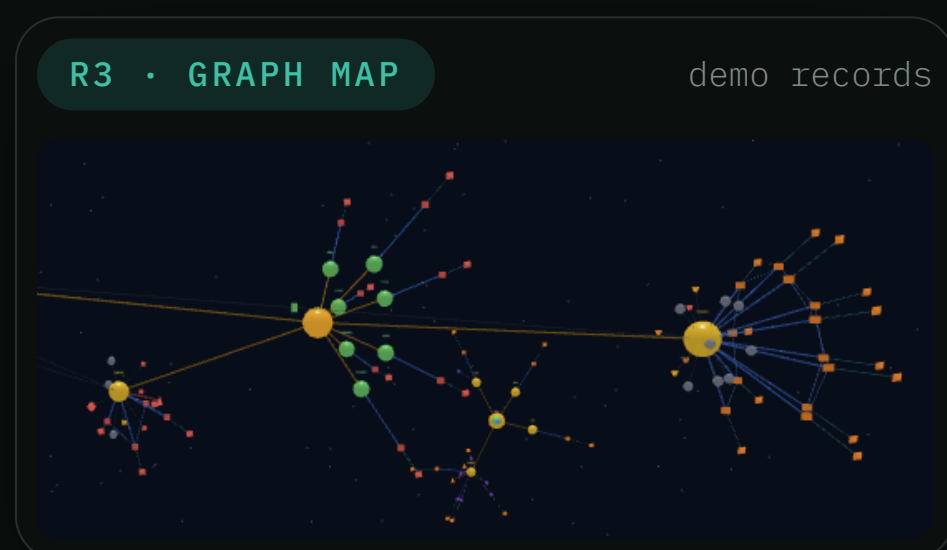
clinicians with ethics experience

terminology specialists

graph engineers

funders

A research and education edition, **free to universities** when released, with every research module labelled.



jb.decorzent@innerecho.ch

innerecho.ch