TPAS

CLINICAL GUIDANCE FOR COMMUNITY HEALTH

A doctor's reasoning, at *every* health worker's side.

TPAS turns a medical director's signed protocols into step-by-step guidance on a community health assistant's phone, and gives the doctor and the programme a backoffice to write, approve, supervise and report. The phone works without a signal, shows why it recommends what it does, and refers when a case is beyond the health worker.

STATUS
In demonstration. Seeking a first pilot.

BUILT FOR
Liberia's community health assistants, and the programmes that support them

FROM
Diggy Solutions · November 2026

WHY TPAS EXISTS

The hardest decisions in Liberia's health system are made furthest from a doctor.

A community health assistant decides, often alone, whether a feverish child can be treated at home today or must reach a health centre now. They make that call with weeks of training, a paper algorithm and no one to ask.

1.2 million

Liberians live more than 5 km from the nearest health facility: the population the national community health assistant programme was built to reach.

4,000+

community health assistants planned for that programme when the government launched it in 2016.

86

deaths before age five for every 1,000 children born alive in 2024: about one child in twelve.

What helps a health worker decide?

A checklist

records what was seen. It cannot weigh findings against each other, notice a second illness, or know when a case is out of scope.

A model

gives an answer that a medical director cannot sign, cite or audit, and that cannot explain itself to a ministry.

TPAS

applies the medical director's own reasoning, approved by signature, the same way at every visit, and shows its working.

AN EXAMPLE VISIT

A boy of two, with fever and a cough for three days, eight kilometres from the clinic. Before the caregiver leaves, the health worker must settle five questions:

1 · Is there a danger sign? If so, refer now.

2 · Is it malaria? Only the rapid test can say.

3 · Is he breathing fast for his age? Count for a full minute.

4 · What dose, for 12 kilograms?

5 · When must he come back, and what should bring him back sooner?

TPAS asks each in turn, in the protocol's own words.

Sources: 1.2 million and 4,000: Last Mile Health, "Government of Liberia launches historic plan", 24 July 2016, on the National Community Health Assistant Program. Under-five mortality, 2024: World Bank World Development Indicators, SH.DYN.MORT (UN Inter-agency Group for Child Mortality Estimation).

WHAT TPAS IS

A coach that rides alongside the visit. The doctor stays accountable.

TPAS asks the questions the protocol asks, weighs what the health worker observes, and recommends only what the evidence supports. Nothing it recommends comes from anywhere but a protocol a named medical director wrote, cited and signed.

The doctor stays accountable

Every recommendation traces to a protocol a medical director wrote against a cited source, and that a second person approved.

Rules a clinician wrote, not a model

There is no machine learning in the decision. The same answers and rules always give the same result, and every number traces to a weight a clinician set.

Built to refer when unsure

Confidence cannot run ahead of the examination. Any danger sign refers the patient, whatever the score.

The same answer anywhere

One decision engine runs on the phone and on the server, checked against the same clinical cases on both. A village with no signal gets exactly the advice a clinic in town would.

Written without code

The medical director writes questions, diagnoses, findings, medicines and referrals in clinical terms in a web backoffice. A new protocol reaches the phones without a new app.

One record, from the visit to the report

Visits, referrals, escalations and supervision share one record, so the numbers a supervisor works from are the numbers in the period report.

WHAT TPAS DOES NOT DO

It does not diagnose by machine. It applies rules clinicians wrote and approved. Where the rules run out, it refers.

It is not a hospital record. It works the community side of care and hands referrals on.

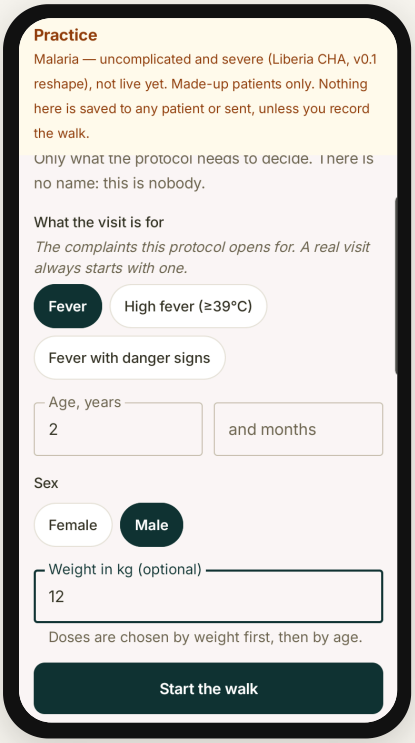
It does not replace the medical director. Nothing reaches a phone without their signature, and the record says whose it was.

It does not supervise for you. It shows supervisors what needs a person, and when. A person still decides.

ON THE PHONE

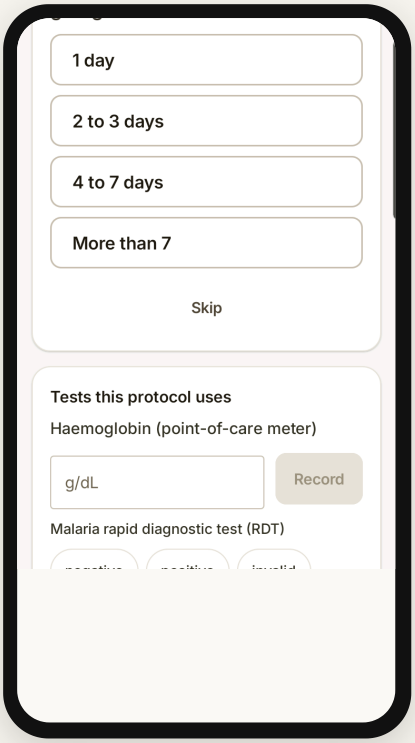
A visit, one step at a time.

The health worker is never left to guess what comes next. These are real screens from an Android phone, practising the draft malaria protocol with a made-up two-year-old.



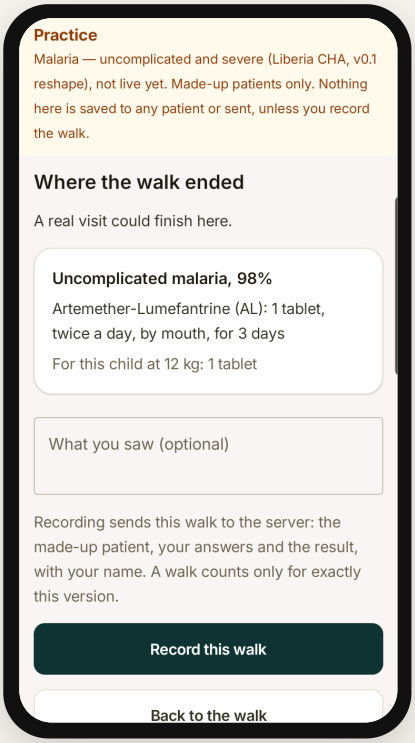
01 · The patient

Only what the protocol needs
The complaint, age, sex and weight. Doses are chosen by weight first, then by age.



02 · The questions

One question, then the next
Answers as large buttons, with the tests the protocol uses below: here, how long the fever has lasted. The danger signs are always asked.



03 · The result

The diagnosis and the dose for this child
After a positive rapid test and no danger signs: uncomplicated malaria, with the dose for a child of 12 kg.

Works without a signal. Once a visit is open, answers, scoring, vital signs, tests, medicines, referrals and escalations are kept on the phone and sent in order when it reconnects.

Tools in the flow. A 60-second breath-count timer, the dose by weight with a warning when no weight was taken, and a high-contrast mode for bright sun.

Nothing skipped in silence. A question can be skipped only with a reason. A corrected answer replaces the old one, keeps a link to it, and the answers that depended on it are asked again.

A referral that travels. The handoff note follows the protocol's template and can be printed or shared from the phone. Leaving without referring asks why.

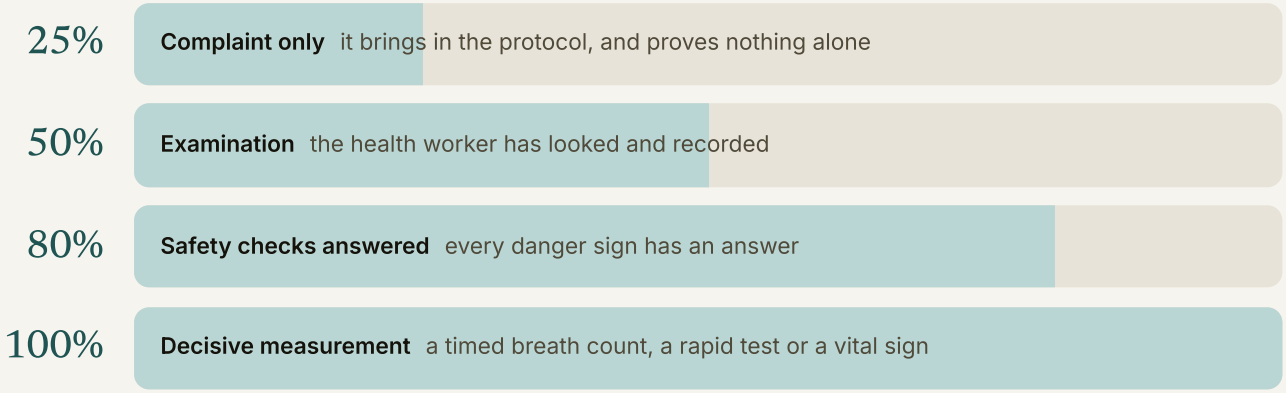
Counselling in plain words. A caregiver's card gives each medicine's times of day and return signs, and reads them aloud, offline.

More than one illness. A child with fever and cough is assessed for malaria and pneumonia together; shared questions are asked once.

HOW IT REASONS

How sure it lets itself be depends on how far the examination has gone.

A score can be high and still not count. Until the health worker has examined the child, answered the safety checks and taken the decisive measurement, TPAS holds its confidence down.



The highest confidence allowed at each stage of the examination. These are the engine's defaults; the complaint alone proves nothing.

Only what is observed counts

Every answer records where it came from: the health worker's observation, a vital sign, a rapid test, or only the complaint.

Treatment waits for its test

Where a protocol names a confirming test, such as the malaria rapid test, a diagnosis must pass its threshold and have its test before treatment is offered. A high score without it keeps asking.

A danger sign refers, whatever the score

A danger finding ends the questions, raises the severe diagnosis and fires the referral. Home treatment is not offered, and a first dose is given before referral where the protocol says so.

Every number traces to a person

Weights, thresholds and dose bands are set by the clinician who wrote the protocol. The evidence behind each score is kept with the visit, and a supervisor can review any visit answer by answer.

One engine, two places. The decision engine is a single program, run on the health worker's phone and on the server. The same set of clinical test cases is run against both, to show they reach the same answer. The signed protocol is the only thing that changes what it does.

Everything a health worker can do on the visit.

Starting a visit

- **Twelve kinds of visit**, from a sick visit, follow-up and referral follow-up to antenatal, postnatal, growth monitoring, screening, vaccination and counselling.
- **Where it happens:** home, clinic, outreach, school, market or elsewhere.
- **Complaints grouped by urgency**, with a body-region picker. A complaint typed in freely goes to the backoffice for review.
- An unfinished visit can be **resumed**; a visit can change kind or stop early, each with a reason.
- A critical alert must be **acknowledged** before the visit goes on.

Safety before treatment

- **Pregnancy** (with trimester), **allergies** (by class and severity) and **current medicines**, asked as each kind of visit requires, with how long an earlier answer still counts.
- **Medicine warnings at three levels:** advice; a warning to acknowledge; or a critical one that needs a written reason, which the supervisor sees.
- **Vital signs** with limits by age, built-in limits offline, and the server checking the readings again on upload.
- A breath count that looks impossible or near a limit asks for a **recount**.

Point-of-care tests

- **Malaria rapid test, pregnancy test, glucometer, urine protein dipstick and haemoglobin meter.**
- Results as positive, negative or invalid, as grades, or as numbers, with the **lot and expiry date**. A test from an expired lot is refused.

Immunization

- Each vaccine shows as **due, overdue, given, not due yet** or past its age, with "postpone for fever" and "do not give in pregnancy".
- Route, site, lot and expiry recorded; **several vaccines in one visit**; a dose not given needs a reason (postponed, on a paper card, contraindicated, refused, out of stock).

Medicines and stock

- After a dose, the phone works out **how many tablets or sachets to hand over**, and the server takes them off stock.
- The treatment card shows the **stock level** from the last count. Stock never blocks a treatment.

After the visit

- A confirmed diagnosis **schedules its follow-up**. The follow-up asks better, same, worse or not home; same or worse starts a new visit.
- **Reflection:** the visit's key findings read back to the caregiver, each confirmed or corrected.
- **Surveys** for patients or health workers, opened from the visit; answers are kept on the phone until they can be sent.

Patients, offline

- Search by name or TPAS number; recently seen patients; **follow-ups due or late**; allergy status, last weight and a call button.

The health worker's own view

- **"Your week":** children seen, visits finished and follow-ups done, and the supervisor's answers to their concerns.
- Signing in is renewed quietly while working offline, and **unsent work survives signing out**. New guidelines arrive with one tap.

English today. The phone's wording is kept apart from its code, about 1,500 phrases, ready for translation.

Everything behind the phone, for the people who run the programme.

The patient record

- A patient list with filters, search and **CSV export**.
- Each patient's diagnoses, and **where each came from**; medicines, visits, vital-sign trends, tests, vaccinations and referrals.
- A **timeline** of twelve kinds of event, filtered by date and kind.

Supervision

- Visits filtered by status, date, health worker and kind; each one **read answer by answer**, with the patterns it raised and the protocols it matched.
- A licensed clinician can **record a diagnosis or prescribe** from the patient's page. Health workers cannot choose a diagnosis: the server enforces it.
- An **inbox** of approvals by role, with email, and a home page of each person's open actions.

Authoring, for the medical director

- **Clinical fields:** created, merged when duplicated, given limits and answers, and approved.
- **Diagnoses:** findings with weights; tests that confirm, add evidence or rule out; colour band (pink, yellow, green), follow-up days and home-care advice; a spreadsheet import with preview.
- **Protocols:** triggers, questions, dose tables by weight and age, and referral rules, each citing its source.
- **Medicines catalogue:** its key fields are locked while a live protocol uses the medicine.
- **Vocabulary:** units, frequencies, routes and course lengths, in the words the phone shows.
- **Vaccine schedules** in versions, dose by dose, with their own two approvals.
- Protocols can be **exported and imported** as bundles, cloned into a new version, or archived as a draft.

Stock

- In stock, low and empty at a glance, with each item's **history**.
- Deliveries received and counts corrected; vaccines and test kits **taken off stock automatically** when used.

Surveys

- Written in the backoffice for patients, health workers or supervisors: scales, choices, yes or no, numbers and text.
- Responses and totals shown as they arrive.

People and access

- Accounts created with roles, passwords reset, accounts blocked, clinical roles given or withdrawn, and **every change audited**.
- Roles are checked by the server on each action, not only hidden on the screen.

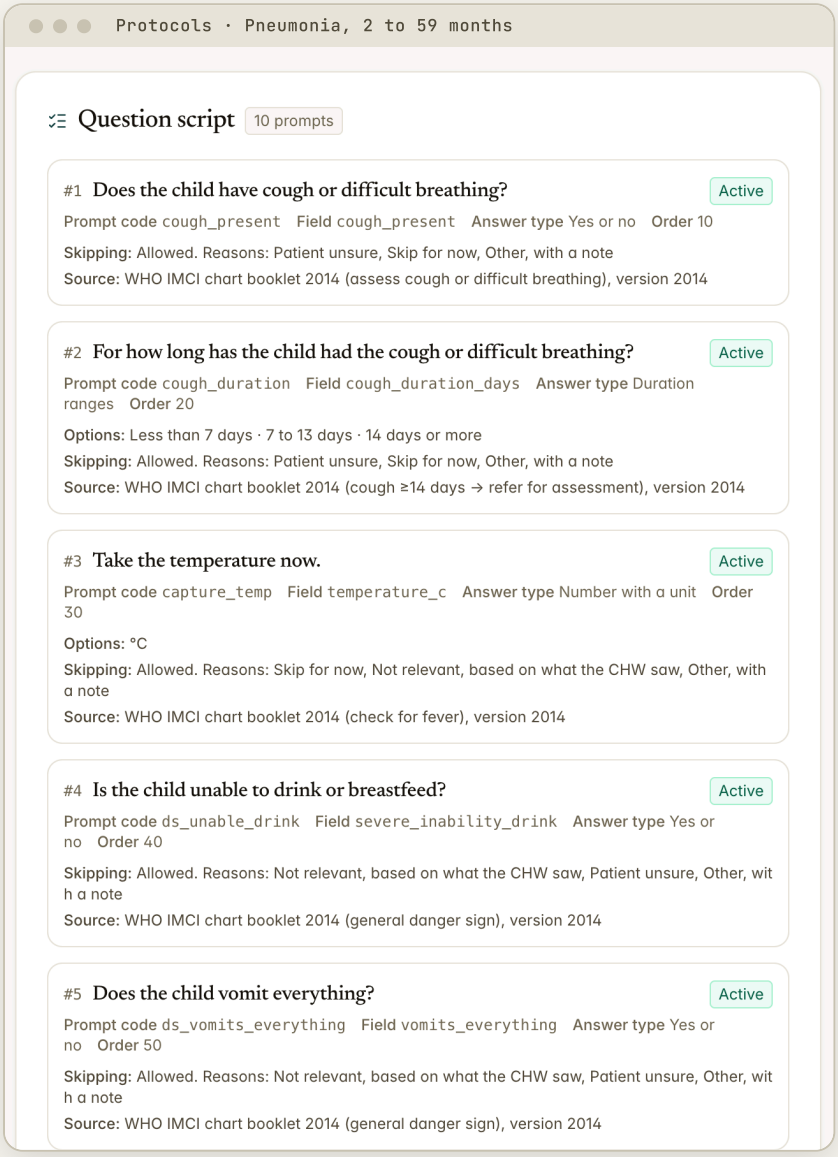
Exports

- **CSV** for the period report, referrals, the patient list, disease activity and health worker activity.

IN THE BACKOFFICE

Behind every visit, the doctor's own workspace.

The phone is what the health worker sees. What it asks, how it decides and what it may give are written, approved, watched and reported in the backoffice, in a web browser. These are real screens from the demonstration server.



01 · The medical director

The protocol, in clinical words

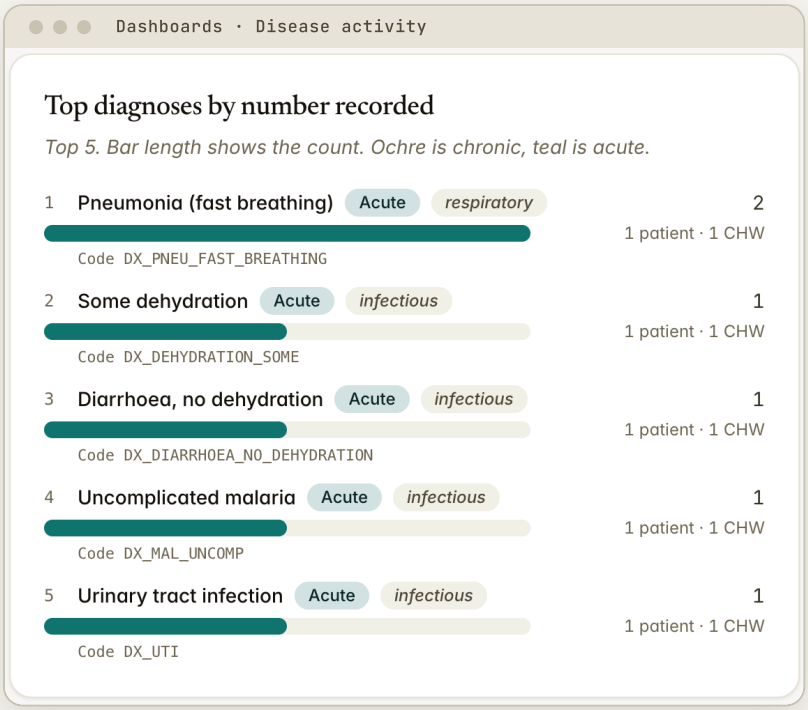
Each question is written as the health worker will read it, with its answers, when it may be skipped and why, and the source it comes from: here, the WHO IMCI chart booklet. There is no code to write.

- **Diagnoses and danger signs**, with how sure the phone may be at each step.
- **Medicines and doses** by weight, then age, from the programme's own catalogue.
- **Referrals**: where to, how urgently, the handoff note, and the follow-up.
- **Checks before it goes live**, listing what is missing, with a link to fix each.
- **Practice on a phone**, on exactly the version to be approved.

Changed without a new app. A protocol written here reaches every phone at its next sync, once two people have approved it. The phone app itself does not change.

IN THE BACKOFFICE

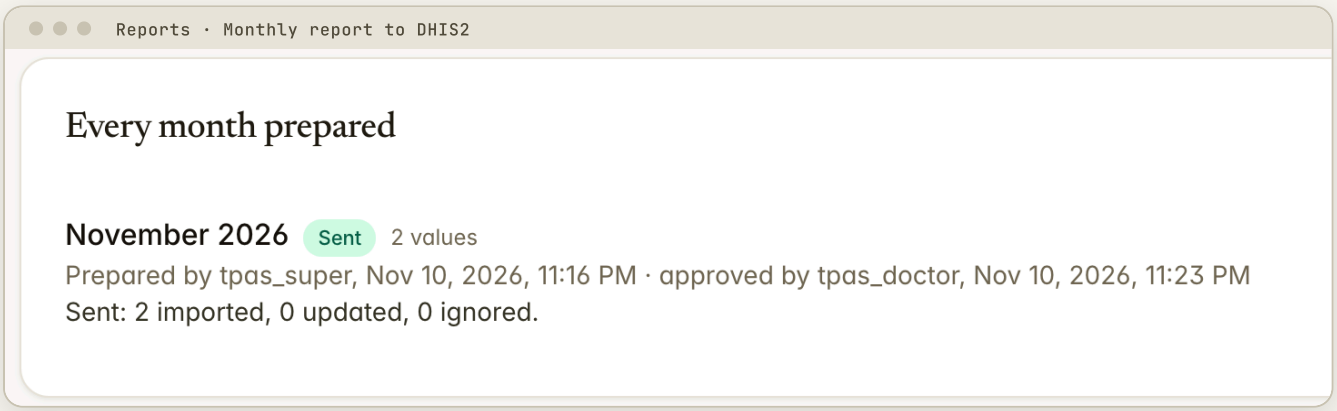
What happens in the field, and what goes to the Ministry.



02 · The programme

Eight dashboards, from the same record

What health workers diagnose, ranked and trended. Supervisors also see referrals and their outcomes, rapid-test quality, vaccination dropout, and each health worker's activity, and can read any visit answer by answer.



03 · The Ministry

The monthly report to DHIS2, approved by a second person

One person prepares the month and DHIS2 checks it; a different person approves it, and it is sent and read back. Here, November 2026, sent from the demonstration server to a test DHIS2.

ALSO IN THE BACKOFFICE

Patients and every visit, referral and follow-up on their record.

Referral reports and concerns, each followed to its outcome.

Places, from county and health district to facility and community.

Medicines, lab kits, vaccines and stock, as the protocols use them.

People and roles, checked by the server on every action.

The audit log: who did what, in which role, and when.

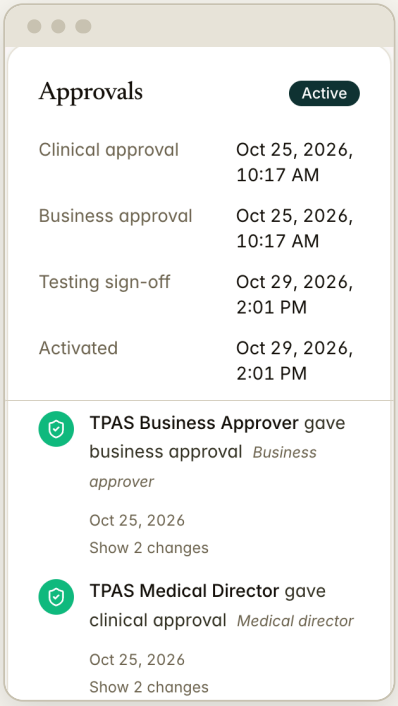
GOVERNANCE

Nothing reaches a phone without a source, a signature and a second signature.

The medical director writes the reasoning. TPAS enforces how it is approved, changed and recorded, so a programme can show what was in use on any day, and who put it there.

1. **Draft** — Written in clinical terms, against a cited source
2. **Clinical review** — The medical director attests, in their own words
3. **Business approval** — A different person signs
4. **Testing** — Walked on a phone, on exactly this version
5. **Active** — On every phone, and locked
6. **Retired** — Kept on record, never deleted

- **Cited.** No protocol can be submitted without its source document, version and date.
- **Attested.** The medical director approves in their own words, against the source.
- **Two people.** The second approval must come from someone else. The server refuses it otherwise.
- **Walked first.** It cannot go live until someone has walked it on a phone, on exactly the version being approved.
- **Safe to activate.** Activation is refused while any question, rule or field it uses is still a draft. Checks list what to fix, with a link to each.
- **Locked.** An active protocol cannot be edited. A change is a new version through the same cycle, and the old one is retired and kept.
- **Recorded.** Approvals and changes to clinical content are kept in an audit trail: who acted, in which role, what changed and when.



The record, in the backoffice
The pneumonia protocol: approved by the medical director and, separately, by the business approver, then walked and made live. Each step is in the audit trail.

Tested this month. On 10 November 2026, two new rehearsal protocols, one for skin sores and one for acute malnutrition in children 6 to 59 months, were built through the backoffice forms alone. Each was walked on a phone, given both approvals from two different accounts and made live, on a copy of the demonstration server. Neither needed a change to the app.

SECURITY AND DATA

Safe on the phone, on the server, and in the record.

A health worker's phone can be lost, a password guessed, a record misused. TPAS is built so that each of these is prevented, stopped quickly, or shows in the record.

Signing in

- **Passwords are never stored**, only a one-way hash of them.
- **Repeated wrong passwords** slow down, then lock the account until an administrator reopens it. BEFORE THE FIRST PILOT
- **No default passwords.** Every new account sets its own. BEFORE THE FIRST PILOT
- **Sign-ins expire**, and an administrator can block any account at once.

On the phone

- **No password is kept on the phone.** Its own sign-in is held in Android's encrypted key store.
- **The phone's records are encrypted** on the device. BEFORE THE FIRST PILOT
- **A lost phone can be signed out** from the backoffice, or erased once it has sent its work, so nothing is lost and nothing is left.
- **Each phone has its own sign-in**, listed for administrators with its last contact.

On the server

- **Every request is signed in** and its role checked by the server, whatever the phone or browser shows.
- **Encrypted in transit.** Browser protections keep the backoffice from being framed or tampered with. BEFORE THE FIRST PILOT
- **Secrets are encrypted**, such as the key for sending to DHIS2, with a key only the server can read.
- **Backed up every night.**

In the record

- **An audit trail** of who did what, in which role, and when.
- **Two people** approve every clinical change; nothing clinical is deleted, only retired.
- **The programme's own instance**: its own server and database, hosted where it agrees, including in Liberia.
- **The programme owns its data** and can export it at any time.

BEFORE THE FIRST PILOT marks a commitment: built and checked before a pilot begins. Everything else on this page is in place today.

Checked from outside. Before a pilot handles real patients, the programme receives a written security summary, and TPAS is tested by an independent security reviewer.

FOR PROGRAMMES

See what happens in the field, act on it, and report it.

Every visit, referral and follow-up lands in one record. Supervisors see what needs a person today, and every report comes from the same numbers the team works from.

An escalation loop that closes

Emergency, within 24 hours, or routine, with a deadline of 24, 72 or 168 hours. When a deadline passes without an outcome, supervisors are alerted. The outcome is recorded: went and was treated, went but was not treated, or did not go.

Supervision that teaches

Health workers' field observations are answered with feedback, which they read on the phone, or promoted into a new clinical pattern. Any visit can be reviewed answer by answer.

Rapid-test quality, tracked

Positivity and invalid-run rates by test kit. Expired lots are refused at the point of use, and a health worker whose positivity runs at twice the clinic's is flagged for review.

Roles, checked by the server

Health worker, medical director, approver, observer and administrator. An observer, such as a ministry or a funder, can read the dashboards without being able to change a dose.

EIGHT DASHBOARDS

- Health worker performance
- Disease activity
- Protocol activity
- Escalation activity
- Laboratory activity
- Immunization dropout (Penta 1 to 3, BCG to Measles 1)
- Clinical patterns
- Surveys

A PERIOD REPORT IN EIGHT SECTIONS

- Population: registered, women 15 to 49, under five, pregnant
- Service delivery: visits, completion, treatments
- Disease burden: top conditions, age bands
- Quality: vital signs captured, thresholds breached
- Escalations: followed up, lost contact
- Immunization dropout
- Laboratory: runs, invalid rate, positivity
- Workforce: active health workers

For any date range, on screen or exported as CSV. Monthly figures, defined by the programme and counted by community, facility, district and county, go to DHIS2: one person prepares the month, another approves it, and every submission is kept and read back.

Its own instance. A programme can run on its own server, database and backoffice, separate from every other programme.

Hosted where agreed. Including servers in Liberia, where national rules require it.

Your data. The programme owns its records. Reports, the patient list and activity can be exported at any time.

CLINICAL CONTENT

Your use cases, in your medical director's words.

TPAS has no fixed clinical scope. The programme that adopts it decides which conditions, which health workers and which reports, and its medical director writes them. To show how, the demonstration starts with the illnesses that kill Liberia's children, following WHO and Liberia Ministry of Health guidance.

THE SOURCES THEY CITE

- WHO IMCI chart booklet, 2014
- WHO/UNICEF integrated community case management, 2012
- Liberia Ministry of Health community health assistant algorithm, 2017

Live on the demonstration server

General danger signs, child under 5

Asked first for every child. Any one sign refers, whatever else is wrong.

Pneumonia, 2 to 59 months

Cough or difficult breathing. Timed breath count, chest indrawing, amoxicillin by weight and age, and a first dose before referral.

Diarrhoea, 2 to 59 months

Dehydration classified, dysentery recognized, ORS and zinc.

Malaria, uncomplicated and severe

Treated only after a positive rapid test. Severe signs refer, with treatment before referral.

> These four were written by the TPAS team from the sources above, to show what TPAS does. They await review by a medical director, who would adapt and sign them before any use with patients.

Starting points, waiting for a medical director

The rest of iCCM

A content pack for the medical director's review: acute malnutrition, the sick young infant under 2 months, and new versions of the four child protocols, with colour bands, follow-up intervals and stock counts.

A library of WHO starting points

32 WHO reference protocols held as drafts, for hypertension, type 2 diabetes, cardiovascular risk, asthma, COPD, early cancer diagnosis and malaria prevention in pregnancy. Each needs its questions, diagnoses and referrals written before it can run.

WHERE TPAS STANDS TODAY

What works today, and what waits for a pilot.

A plan should rest on what is true. This page separates what has been shown working from what is still to be done.

AREA	STATUS	DETAIL
Visits on the phone	● Working	Questions, scoring, tests, doses, referrals and the caregiver's card, offline, on an Android phone. Registering a new patient still needs a connection.
One engine on phone and server	● Working	The same clinical test cases are run on both and agree.
Protocols written without code	● Working	Shown in November 2026: new protocols built through the forms alone reached the phone with no new app.
Two-signature approval and practice walks	● Working	Enforced by the server, including a walk on exactly the version approved.
Referrals	● Working	The handoff note travels with the patient, printed or shared from the phone, and the referral is followed to its outcome by a deadline. It is not connected to a hospital record system: in community care, that is how a referral usually travels.
Escalations, dashboards and the period report	● Working	Deadlines and alerts, eight dashboards, the eight-section report with CSV export.
Reporting to DHIS2	● Working	Shown in November 2026 against a test DHIS2 holding module 3 of the CHA monthly report: a month prepared by one person, approved by another, sent from the demonstration server and read back value by value. The national DHIS2 needs the Ministry's agreement, and an account allowed to enter data for the report.
Interfaces to other systems	● Working	The same web interface the phone and the backoffice use: every request signed in, its role checked and recorded. Custom integrations are built on it, as the DHIS2 link was. A published reference, and health-data standards such as FHIR, come next.
Use by health workers with patients	● Waits for a pilot	TPAS has run in demonstration only. Its first real test is a supervised pilot.
Clinical sign-off	● Waits for a medical director	The demonstration protocols, the iCCM pack and the child vital-sign limits await review. Vital-sign limits are set for ages 15 and over today.

● Working: shown on the demonstration server and on an Android phone. ● Waits for a pilot or a medical director.

THE ROAD AHEAD

From a demonstration to a national tool, in four steps.

Each step is gated by the one before it. The pace is set by clinical sign-off and by what a pilot shows, not by a calendar.

STEP 1

Choose the use cases, and sign them

The adopting programme chooses what TPAS should cover. Its medical director reviews, adapts or writes those protocols and signs them, so that they say exactly what its health workers are taught.

- The child protocols already drafted
- Acute malnutrition
- Sick young infant
- Child vital-sign limits
- Any other area the programme chooses

STEP 2

A first supervised pilot

Community health assistants in one district or facility catchment, with their supervisors working from the backoffice, and an agreed way to measure what changes.

- Training
- Supervision and escalations
- Period reports
- Evaluation with partners

STEP 3

Connect to the health system

Where a hospital or clinic keeps an electronic record, a referral from the village can arrive in it with its note, its findings and the first dose given, and the outcome can come back.

- Hospital record systems (EMR), such as Intellicare
- Outcomes returned to the health worker
- Missed appointments become home visits
- A published interface reference

STEP 4

Broaden the care

The same signed-protocol approach for whatever a programme needs next. The WHO drafts and diagnoses already in the library are ready starting points.

- Malaria prevention in pregnancy
- Pre-eclampsia warning signs
- Hypertension
- Type 2 diabetes
- Asthma and COPD
- HERMIS workforce platform
- Mira patient record

Dashed items are planned and not yet designed in full. The connections in step 3 and the items in step 4 are not built today.

WORKING TOGETHER

Three ways to take TPAS forward.

TPAS is ready for partners who want to see it, shape it and test it with health workers.

The Ministry of Health

How would it fit the national programme?

- Ministry clinical leads review and sign the protocols, against national guidelines
- A pilot inside the community health assistant programme
- Beside eCBIS: TPAS guides the clinical decision at the visit, eCBIS records the community health work
- Hosting in Liberia, under national rules
- Reporting to the national DHIS2, mapped to its data elements

Health service providers

Can it support our health workers?

- Hospitals and NGOs that run community programmes
- Your own instance, roles and medical director
- Your protocols, adapted or new, without code
- Supervision and reports from one record

Funders and partners

What would a pilot need?

- Backing for a first supervised pilot
- An evaluation partner to measure its effect
- Phones and connectivity for health workers
- Clinical review time from a medical director

WHAT A PILOT COULD MEASURE · PROPOSED FOR DISCUSSION

- Children with a danger sign who were referred, and how soon
- Antimalarials given only after a positive rapid test
- Rapid-test quality by kit and by health worker
- Referrals followed to an outcome before their deadline
- Questions skipped, and the reasons given
- What health workers, supervisors and caregivers say of it

Most of these come from the records TPAS already keeps; the last needs an evaluation partner.

HOW A PROGRAMME COMES ONTO TPAS

1 **Scope**
Services, protocols, roles, pilot sites and reports, agreed with clinical and programme leads.

2 **Your instance**
A dedicated server, database and backoffice.

3 **Author and sign**
The medical director adapts or writes the protocols. Two signatures.

4 **Walk each one**
On a phone, against its expected outcomes, before it goes live.

5 **Train and pilot**
A pilot group first, supervisors in the backoffice.

6 **Refine**
Escalations and reports show what to improve, through the same approvals.

NEXT STEP

See it on a phone and in the backoffice, then decide.

A demonstration takes under an hour: a visit walked on a field phone, the same protocol in the backoffice, and how a medical director would change it, sign it and send it to every phone.

In the meeting

A child with fever and cough, walked from the complaint to the referral note. The approvals, the audit trail and the period report.

After it

A short scoping conversation: which services, which sites, whose medical director, and how a pilot would be measured.

About Diggy Solutions

Diggy Solutions builds TPAS for community health, and Intellicare, a hospital management and ERP system.

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TPAS is in demonstration and has not been used with patients. The phone and backoffice screens in this brochure come from the demonstration server and practice walks with made-up patients. Figures on page 2 are from the sources named there. Prepared by Diggy Solutions, November 2026.