



Harnessing DHIS2 and mobile tools to strengthen malaria surveillance: the journey from fragmented paper-based systems to an integrated digital solution

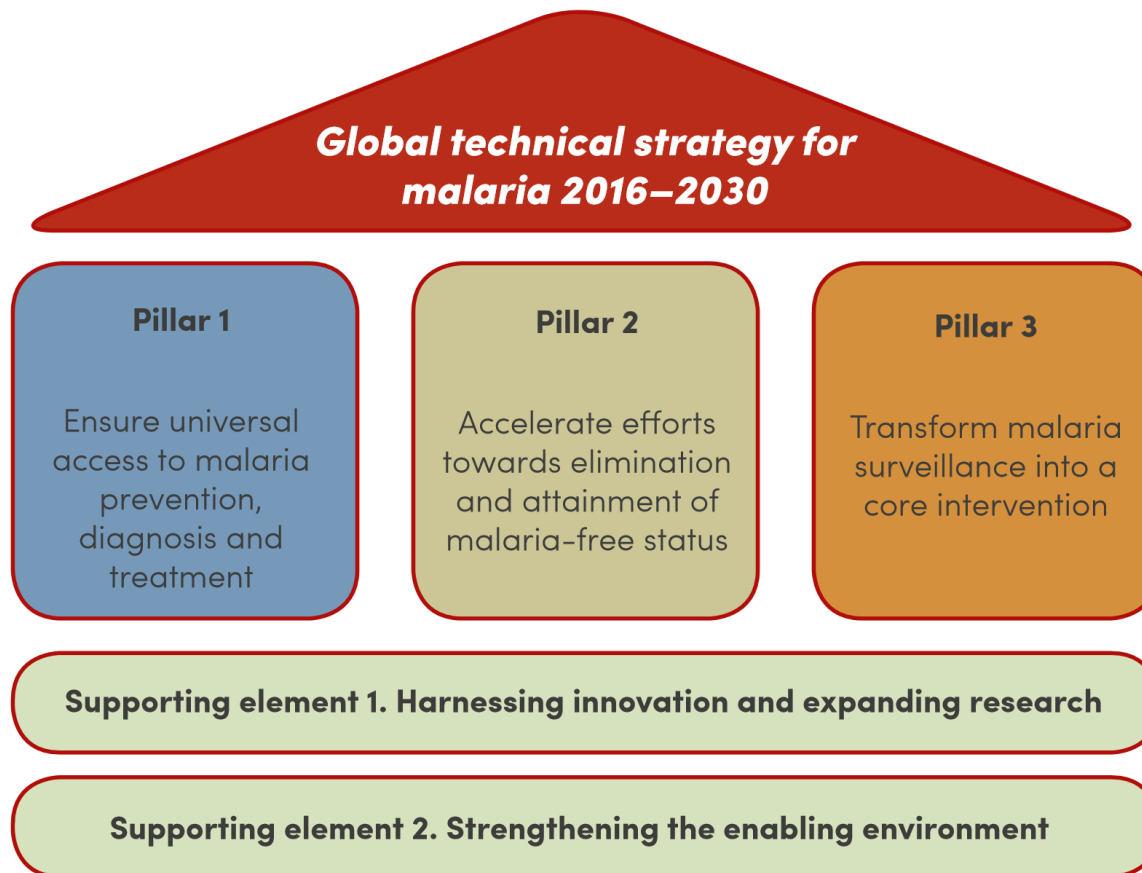
Rebecca Potter

Evidence & Monitoring Advisor, Greater Mekong Subregion



Dec. 5, 2017 | Washington, DC | GDHF

The challenge: Accelerating malaria elimination in the Greater Mekong Subregion through surveillance



WHO, Global Technical Strategy for Malaria Framework 2016-2030

PSI: Strengthening private sector malaria surveillance

WHERE WE WORK

MYANMAR

LAO PDR

CAMBODIA

VIETNAM

20,000+
private outlets
supported

455,783
malaria tests
conducted

11,941
malaria cases
detected, treated,
& reported

Our journey: Strengthening private sector malaria surveillance



Transition fragmented systems across countries to a regional surveillance ecosystem grounded in DHIS2



Co-create mobile tools with data users at each level



Integrate private sector data with national systems



Use data to take action & make decisions

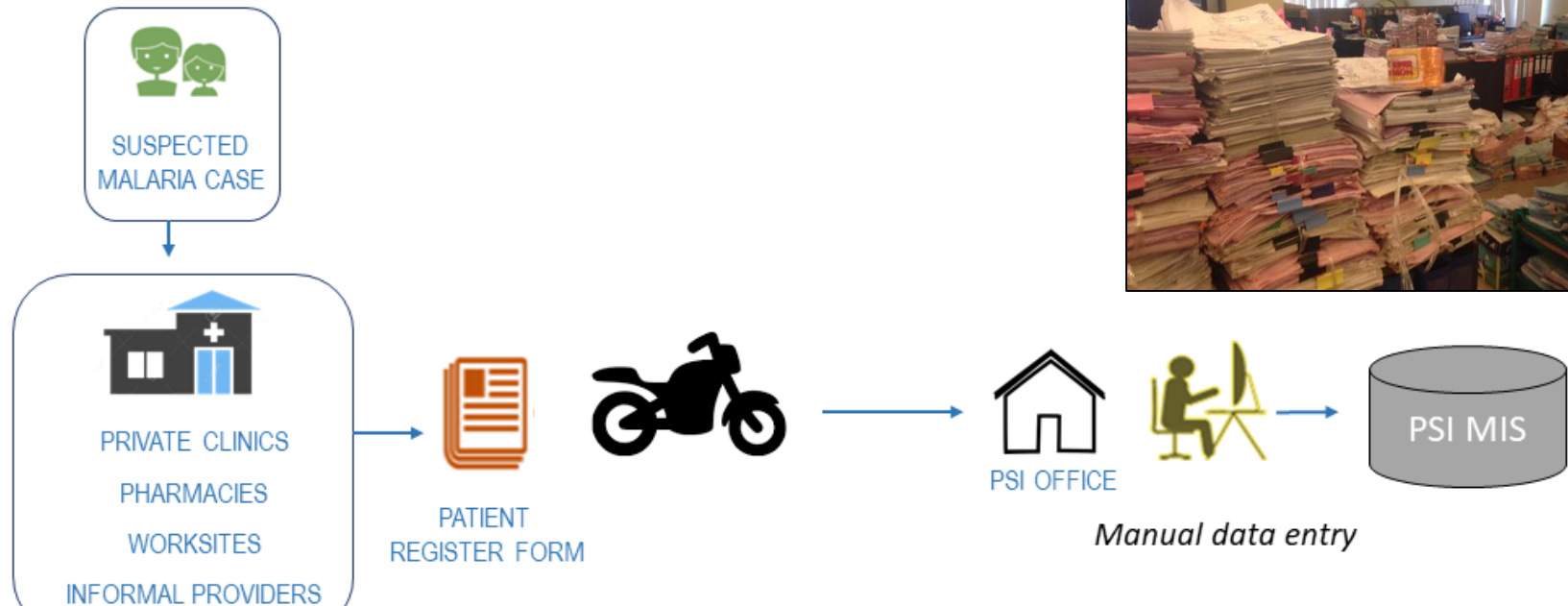


Adapt & scale field-tested innovations through global partners

Before transition to DHIS2...

Fragmented paper-based systems in each country

One-directional data flow

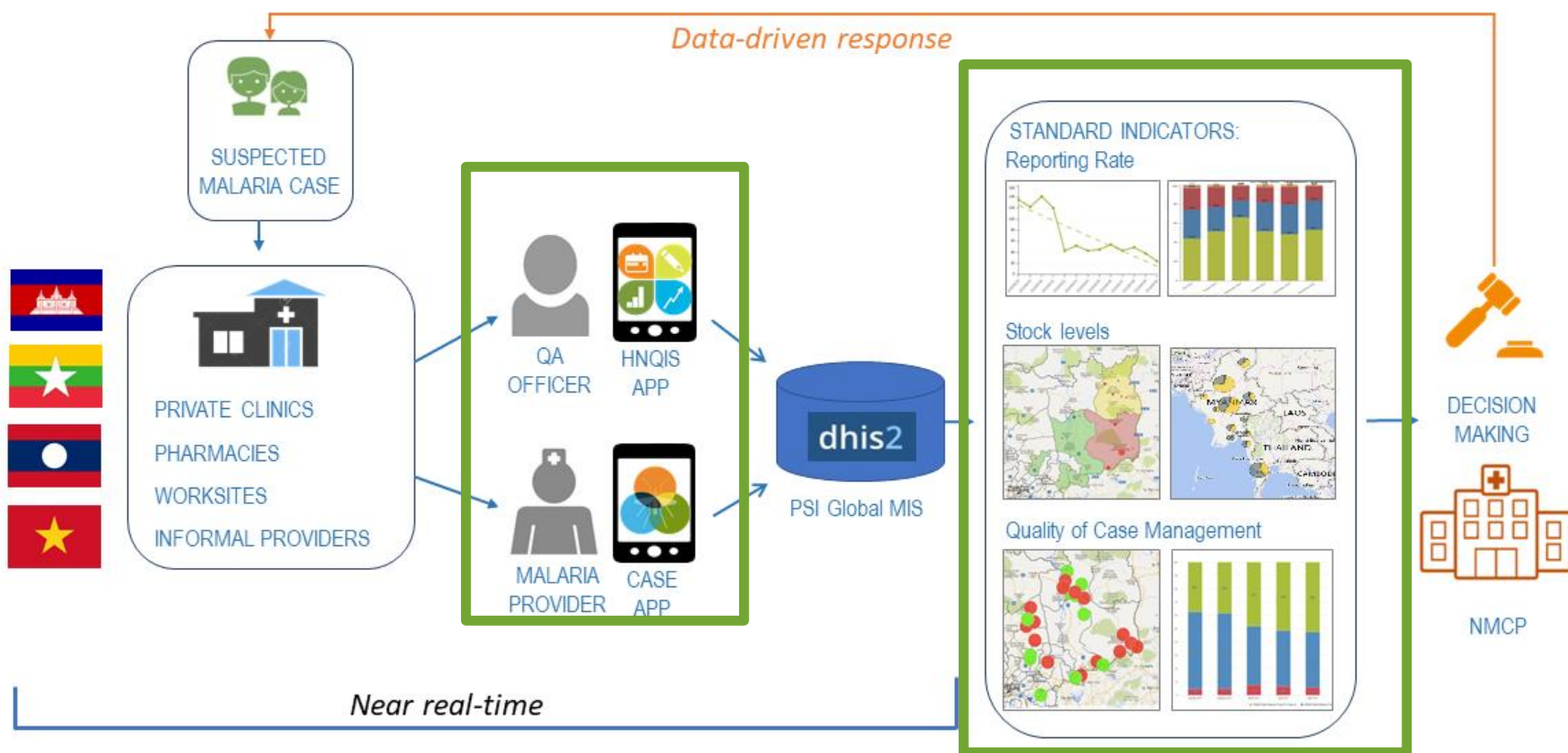


Manual data entry



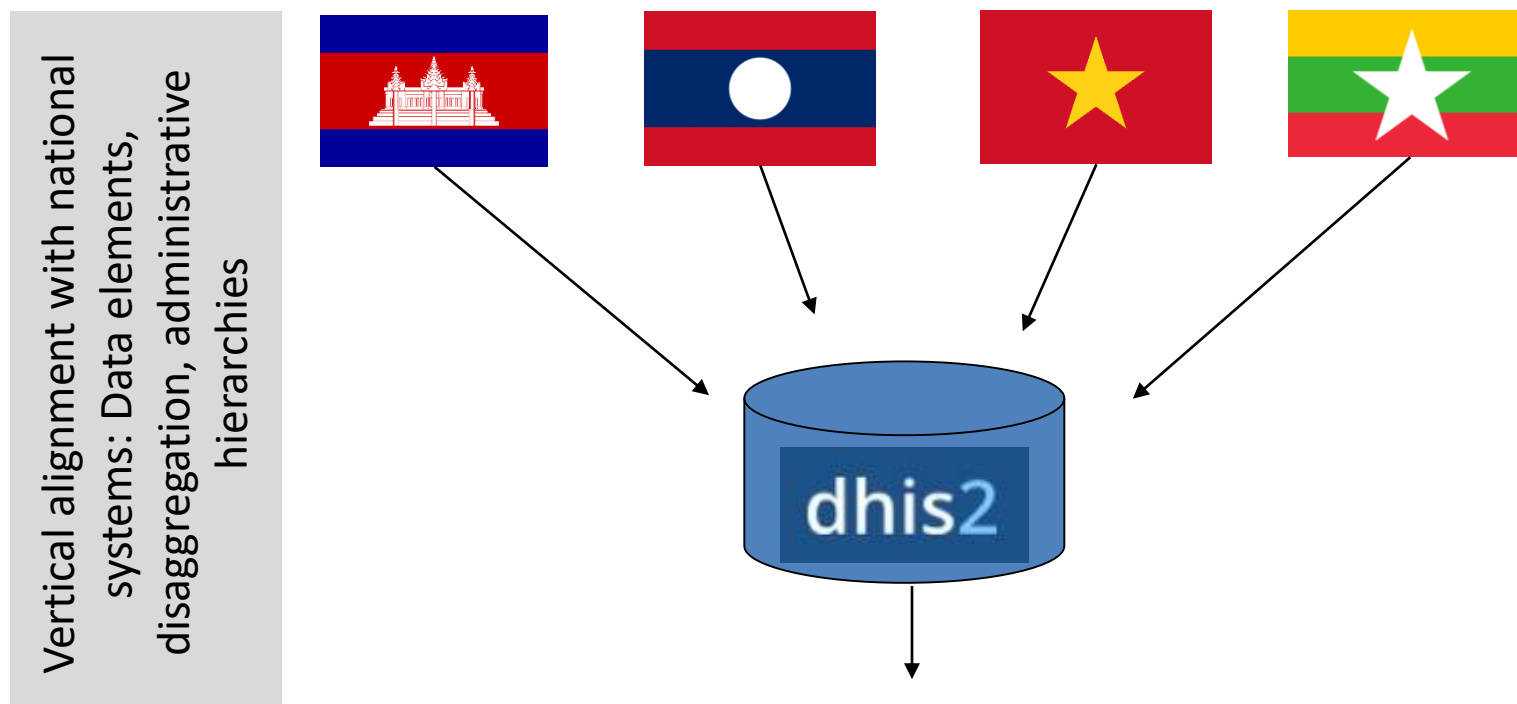
After transition to DHIS2...

An ecosystem of tools grounded in DHIS2 that swiftly moves data from field-to-fingertips, supports feedback loops and increases access to data across the region



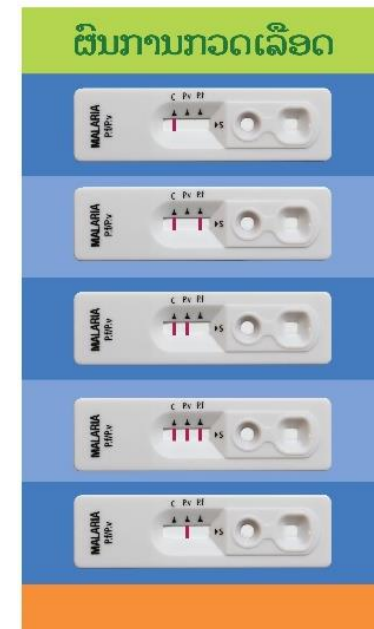
Transition to DHIS2: Challenges

Standardization while maintaining flexibility for country-level needs



Malaria Case Surveillance App

End user: Sochea, worksite malaria provider



User friendly, multi-lingual reporting app

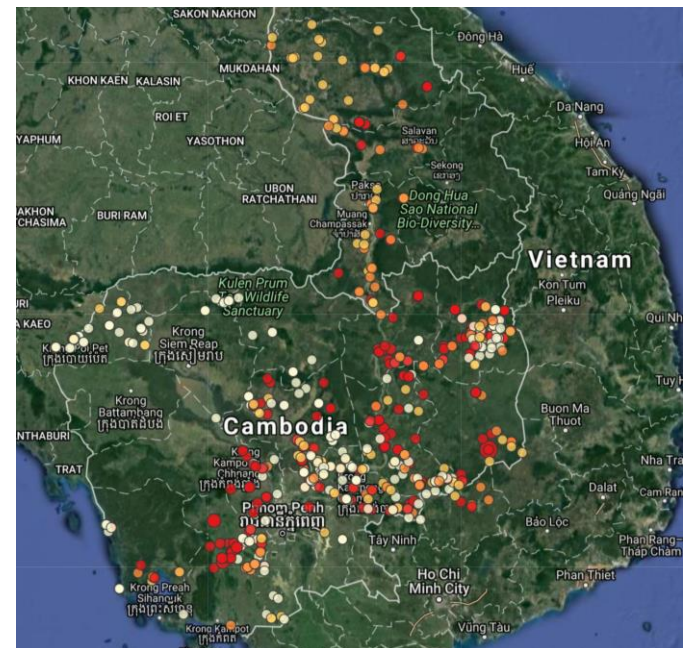
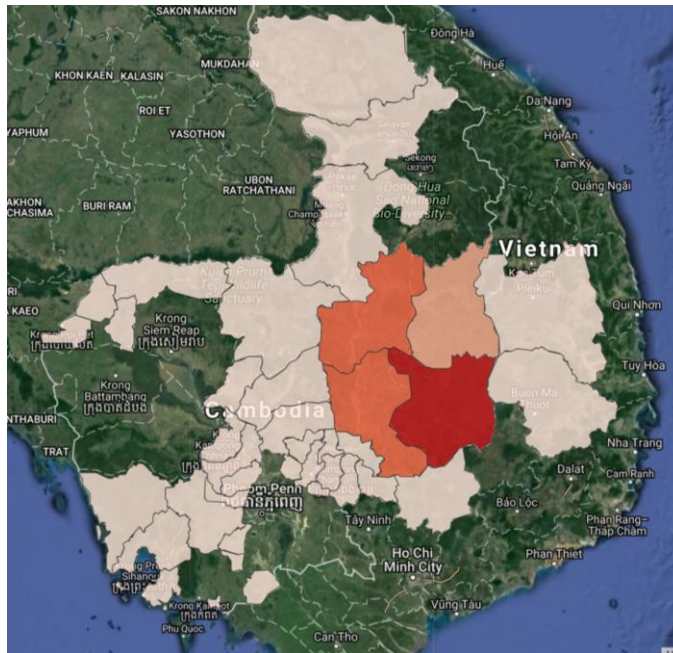
Sends geolocated case based data to DHIS2 in real time

Used by 1,000+ providers in Cambodia, Lao PDR and Myanmar

50,000 surveys pushed in 2017 to date

Malaria Case Surveillance App

Leap-frogging toward elimination-ready surveillance



- Aggregate, district level data
- 2 month lag time between case detection and availability in central system
- Manual aggregation & entry

- Geolocated, case-based data
- Cross border infections
- Real-time, 24 hour notification
- Eliminates manual data entry and aggregation errors

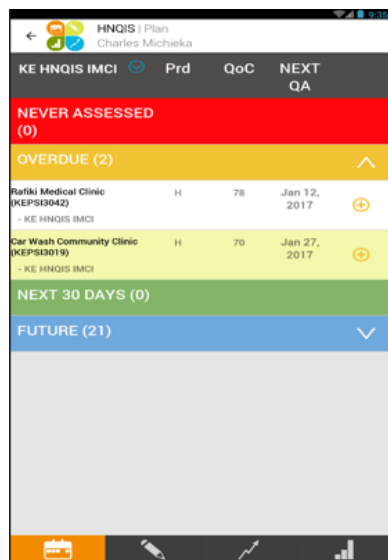
HNQIS: Quality Assurance App

End user: Su Su, Health Services Officer



HNQIS: Quality Assurance App

End user: Su Su, Health Services Officer



Inquiry and Physical Examination

Introduction

Provider obtains personal history (incl name, age) ☒ Yes ☐ No

Provider asks reason for visiting health facility ☐ Yes ☒ No

Inquiry

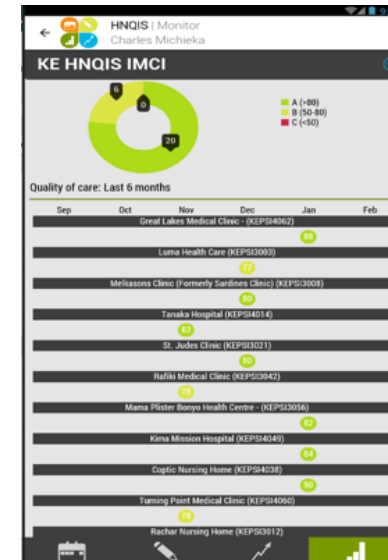
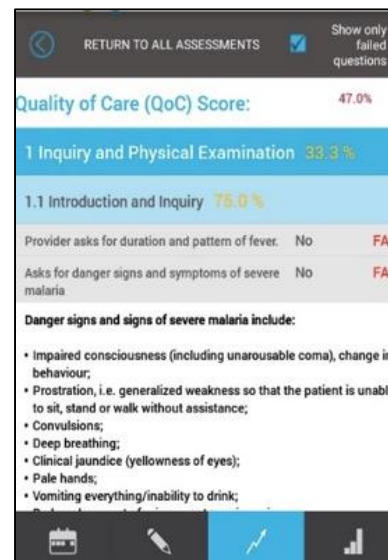
Provider asks for duration and pattern of fever. ☒ Yes ☐ No

Asks for associated symptoms: chills/rigors, headache, joint pains, loss of appetite, nausea ☒ Yes ☐ No

Asks for danger signs and symptoms of severe malaria ☒ Yes ☐ No

Asks for other symptoms that could indicate other focus of infection: cough, painful urination, painful ear, stiff neck, diarrhoea ☒ Yes ☐ No

Provider asks for medication history including antimalarials for this illness ☐ Yes ☒ No



PLAN

& prioritize visits based on QA score + caseload

ASSESS

Quality of care using a standardized checklist

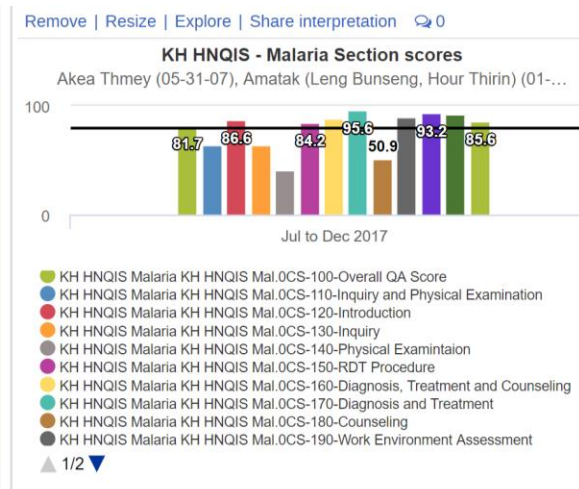
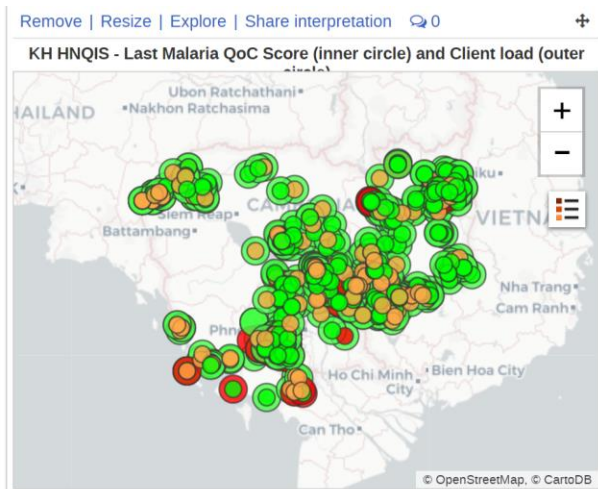
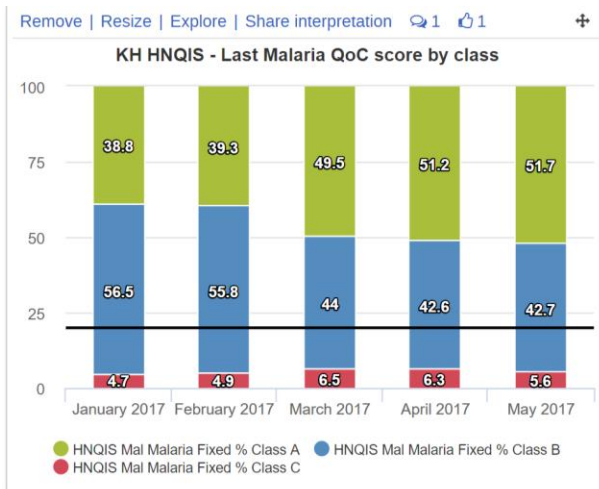
IMPROVE

Performance by targeting constructive feedback to low-scoring components

MONITOR

Performance with built-in analytics

HNQIS Dashboard in DHIS2



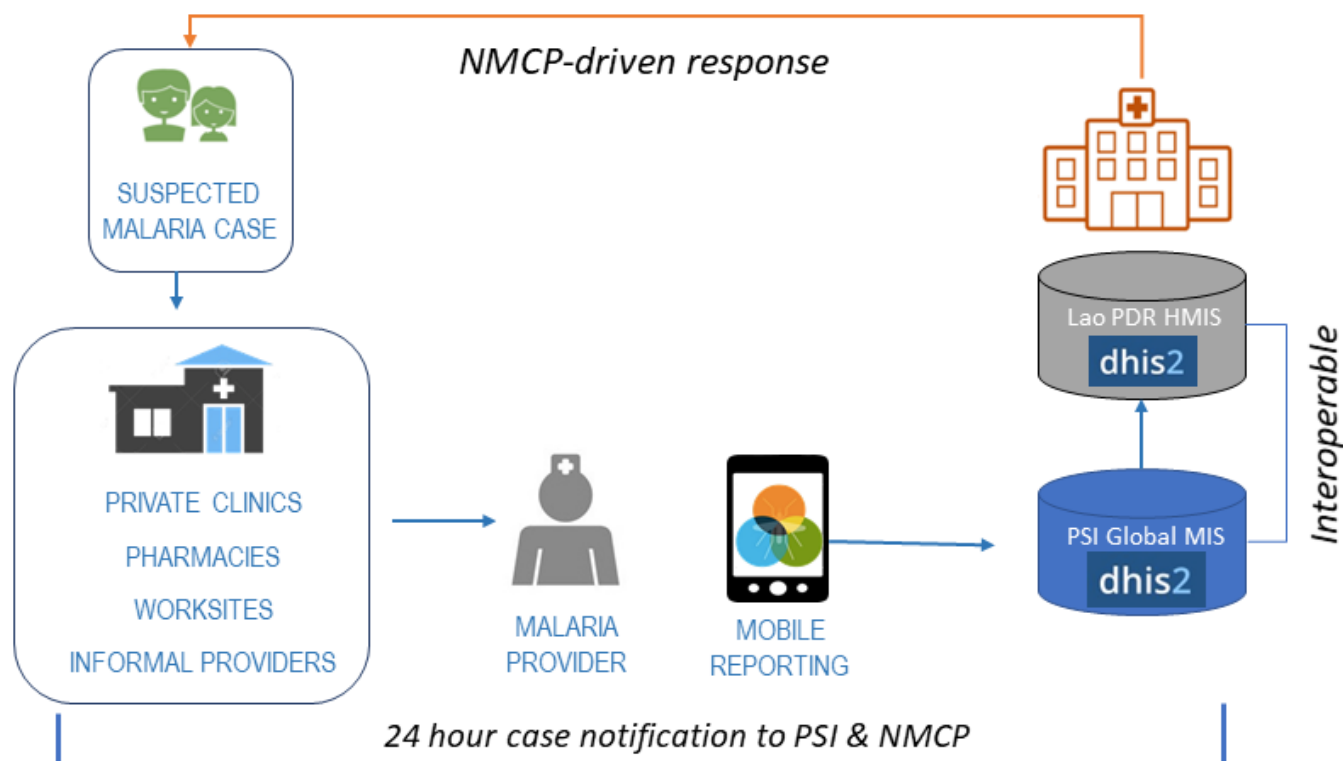
4,700 malaria providers (worksites, pharmacies, clinics, community health workers, informal providers) assessed in Cambodia, Lao PDR and Myanmar this year

Scaling up mobile tools: challenges

- **Creating a strong enabling environment**
 - (Unpredictable) user behaviors
 - Sustaining support systems & feedback loops
 - Training + re-training
 - Continuous bug fixing
 - Upgrading apps in the field
- **Change management**
 - Scaling up too fast
 - Motivation
 - Resistance to cutting off parallel paper-based systems

Integrating private sector data with national surveillance systems & HMIS

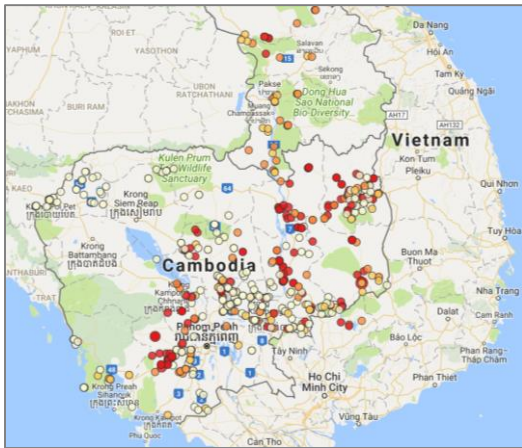
Electronic integration between PSI DHIS2 and Lao PDR HMIS



Use data to take action with DHIS2

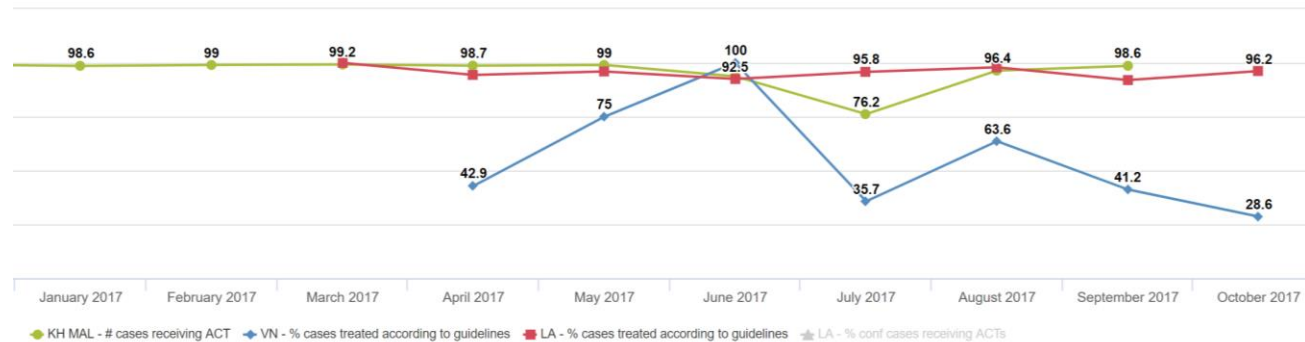
Real-time regional dashboard

dhis2

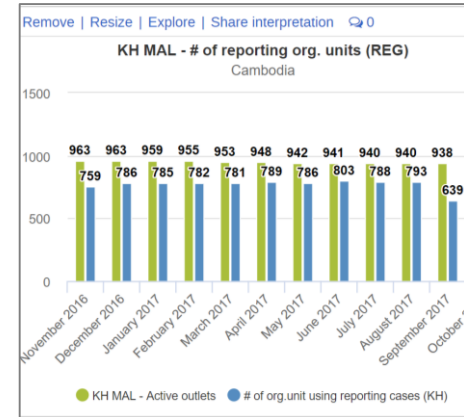
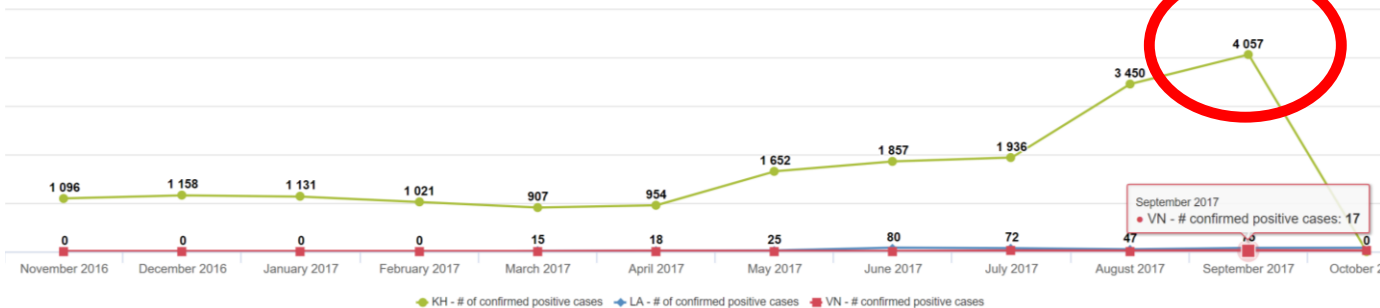


ation 2

GEMS - Regional case management according to guidelines, last 12 months
Cambodia, Laos, Viet Nam

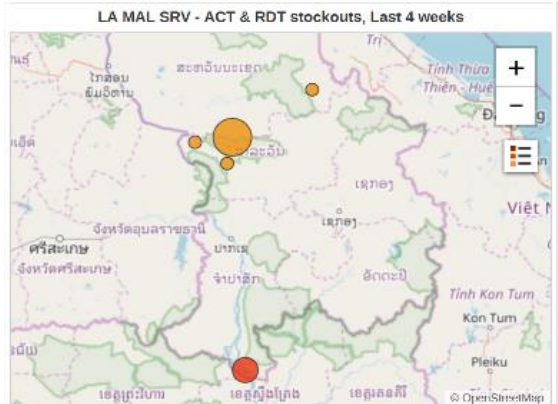


confirmed malaria cases, last 12 months
Viet Nam, Laos, Cambodia



Data-to-action with DHIS2 Interpretations

Data-to-action (D2A) frameworks establish clear, consistent expectations for data users embedded into DHIS2 dashboards

Indicator	Objective	Action that follows	Visualization	Data inputs
RDT and ACT stockouts	To know which providers are stocked out; to facilitate rapid re-supply	<p>If red</p> <ul style="list-style-type: none"> - RDT stockout; call provider to confirm and coordinate re-supply <p>If orange</p> <ul style="list-style-type: none"> - ACT stock out; call provider to confirm and coordinate re-supply 		<p>Reason patient not tested = RDT stockout</p> <p>Treatment = Refer due to ACT stockout</p> <p>Source: MCS App</p> <p>Frequency: last 4 weeks</p>

What
data

Why
its important

How
it will be used

How
it will be presented

Where
it comes from

Data-to-action (D2A) with DHIS2 Interpretations

Program staff record insights and actions on the dashboard

Vila [redacted] 2017-08-25
ຂ້າງພາຍໃຕ້ການປະຕິບັດການ ຈຸດປະສົງໃຫ້ເຂົາ ຂອບໃຈ
1 people like this. 0 people commented.

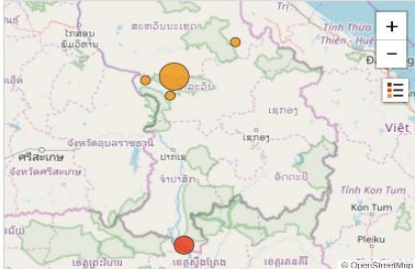
Malak [redacted] 2017-07-21
FYI, I contacted to MD [redacted] and Bouasone for Phoumy Pharmacy there was a case of client refuse, actually that was a simulated client because PPM practised how to use MCS app on the day of training (31/3/2017) as Boi Ms. Vilayphet's request. However, this case still not disappear. I deleted this simulated
1 people like this. 0 people commented.

Lat [redacted] 2017-07-21
Jue please ask MDs take action for 2 pharmacies immediately please investigate why client refuse to test in pharmacy Phoumy, does the provide
1 people like this. 0 people commented.

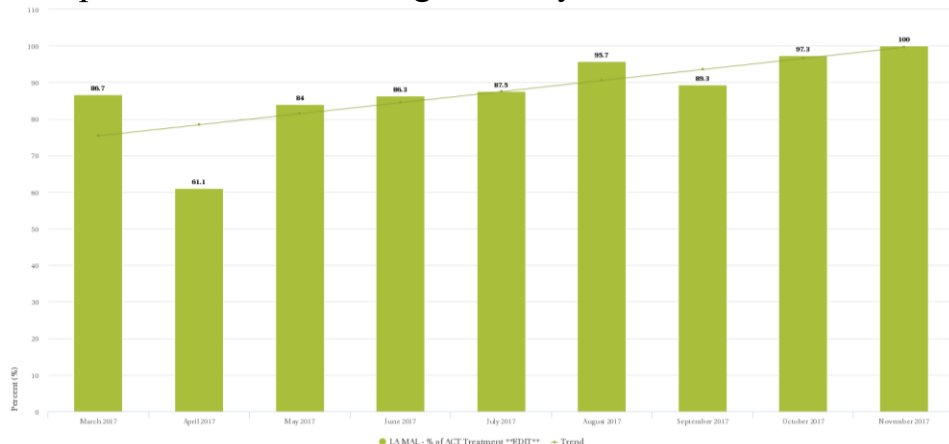
Th [redacted] 2017-07-21
Jue, MD should uncover the need of Phoumy pharmacy why client refuse and what pr
1 people like this. 0 people commented.

Th [redacted] 2017-07-21
Vi and Jue there is stock out for Phongsavanh pharmacy
0 people like this. 0 people commented.

LA MAL SRV - ACT & RDT stockouts, Last 4 weeks



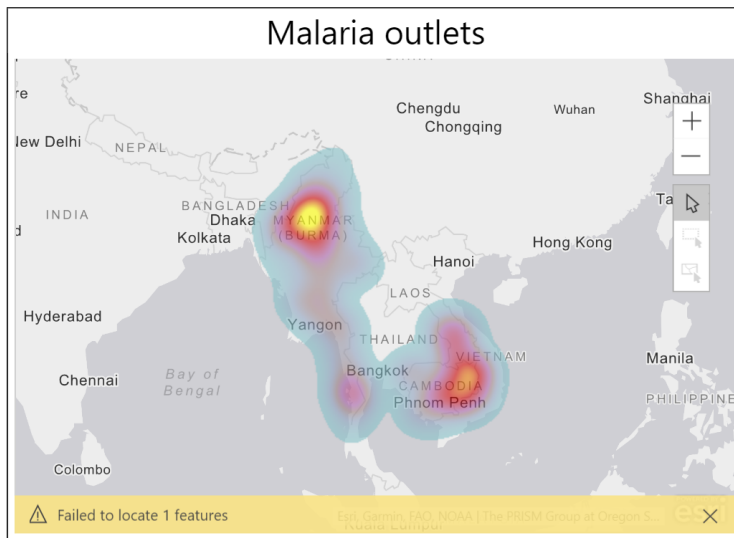
% positive cases receiving ACTs by month, Lao PDR



**End user: Tik,
Surveillance Officer**

Increasing access to data for action

Interactive surveillance bulletins with PowerBI



GMS Malaria Cases

Total Positive Cases

9321

Start and end date

11/1/2016 11/3/2017

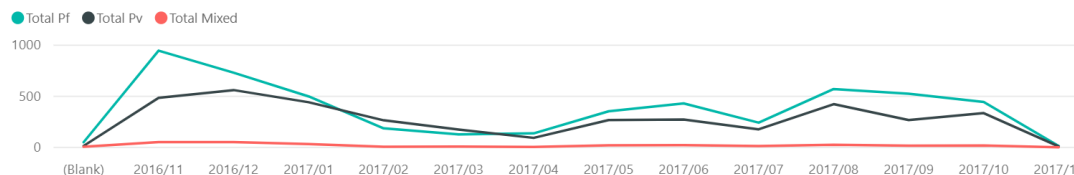
Country

- ☐ Cambodia
- ☐ Laos
- ☐ Myanmar
- ☐ Vietnam

Malaria outlets

Code	Total Positive Cases
02-00-29	1088
03-50-44	268
00-92-21	174
05-27-73	169
02-01-09	163
05-27-77	136
02-00-96	131
02-00-88	121
01-98-25	115
05-28-45	106
05-28-55	105
05-27-76	101
01-98-43	95
02-00-61	95
05-28-54	94
05-28-71	94
01-98-27	92
03-49-41	91
02-01-65	89
05-28-52	87
05-27-74	86
05-26-13-1	85
02-01-08	83
Total	9321

Specie per month



Adapting & scaling field-tested innovations through partners

From hard coded to generic, configurable tools:

One-off innovations become globally sustainable solutions

Myanmar
(Save the Children)

Lao PDR

Cambodia



Save the Children



UiO : University of Oslo



Healthy lives. Measurable results.

Adapting & scaling field-tested innovations through partners

Interpretations available to all DHIS2 users (from v 2.25)



Key takeaways

Technology alone will not transform malaria surveillance into a core intervention.

1. Tools and systems should be designed to optimize data *use*
2. Co-creation with end users results in a better product for all: test, fail, learn, iterate, repeat!
3. Supportive enabling environments, motivation and continuous capacity building are needed
4. Field-tested innovations that adhere to principles of digital development can become sustainable solutions



Thank you!

connect with us



VISIT US
psi.org



LIKE US
[facebook.com/
PSIHealthyLives](https://facebook.com/PSIHealthyLives)



SEE OUR IMPACT
psiimpact.com



FOLLOW US
[@PSIimpact](https://www.instagram.com/PSIimpact)



FOLLOW US
[@PSIimpact](https://twitter.com/PSIimpact)



FOLLOW US
[linkedin.com/company/
population-services-international](https://linkedin.com/company/population-services-international)

Lorina McAdam
lmcadam@psi.org

