Swiss TPH

SysRef - Digital system for better refugee health management (SysRef) in Chad

Montolnan Alladiguimbai, MD, MPH
SysRef Project Coordinator

CDSS Symposium of 08 February 2023

Objectives

Main objective

To improve the provision and quality of health care for refugees and displaced persons in Chad and similar contexts.

Specific objectives

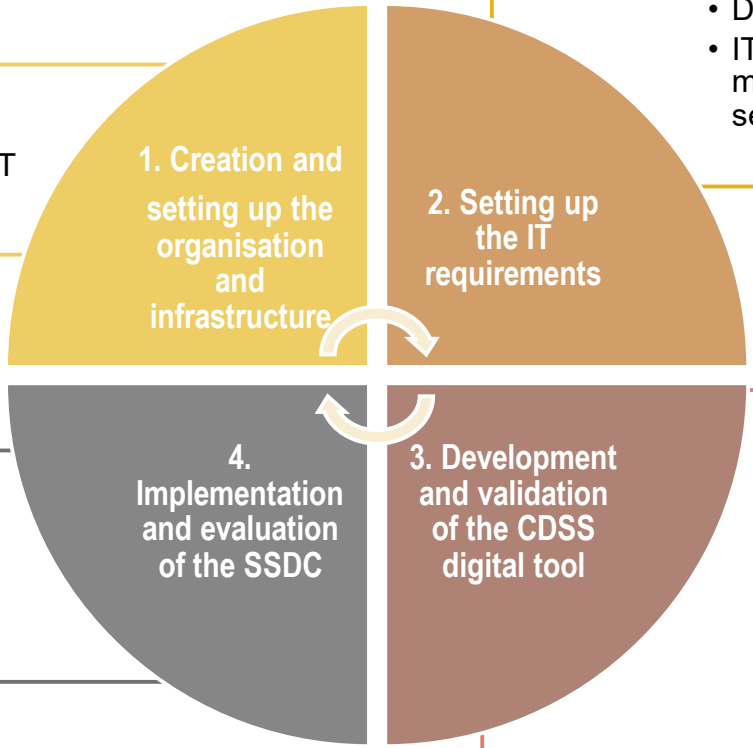
- Develop, validate and implement a digital clinical decision support system (CDSS) for the diagnosis and treatment of common health problems;
- Experimenting with a system of medical data recording and electronic medical record;
- Install and use a digital system for recording and monitoring vaccinations;
- Establish a surveillance system for diseases with epidemic potential (monitor diseases with epidemic tendencies).

Photo: S. Djekorgee /Swiss/STJF/Fairpicture

TARGET POPULATION	TOOL	MODULE (package)	PHASE	OUTPUT
Children 2m-5a	CLINICAL DECISION SUPPORT SYSTEM	Integrated management of childhood illnesses	●	JUNE 21 MAY 22
Adolescents and adults		Integrated management of adolescent and adult illness (including mental health)	●	MARCH 23
Pregnant women		Management of pre- and post-natal complications	●	JULY 22
Pregnant women	ELECTRONICAL REGISTER	Pre- and postnatal consultations Vaccination	●	JULY 22 JUNE 22
Children 0-11m		Vaccination	●	JUNE 22
Data generated	DHIS 2	Epidemiological (surveillance) database	●	JULY 21

● Use ● Validation

Conceptual framework for the development and implementation stages of the CDSS



- Situation analysis
- Setting up partnerships and experts (panel, clinician and IT pool)

- Digital solution and architecture
- IT framework (data management, protection and security)

- Mapping of clinical guidelines
- Approval of options (expert panel)
- Design of clinical algorithms
- External review and approval of algorithms
- Digitisation of algorithms
- Validation testing, prototype piloting

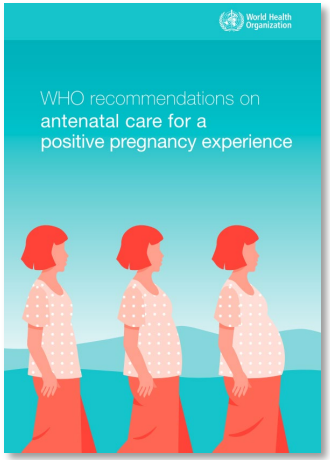
- User training
- Launch of the CDSS
- Evaluation, monitoring of use
- Updating and adapting content

CDSS development process

Algorithm development

Review of the literature

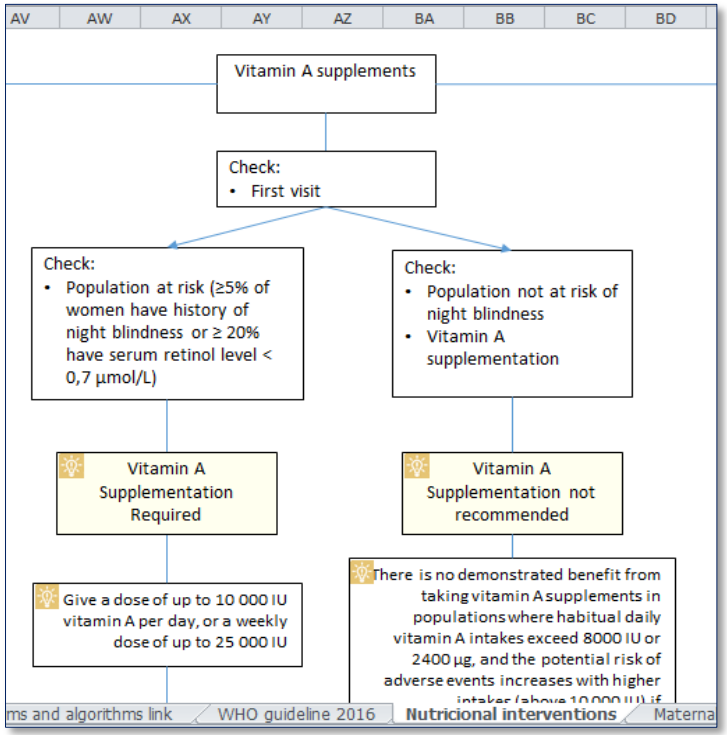
- International norms and standards (WHO and other partners);
- National guides, guidelines and decision trees



Photos: Mark Leong/ HRP

Design example:

SysRef vaccination algorithm



CDSS development process

Setting up the panel of national experts

- Set up by the Ministry in charge of health;
- Composition (doctors, health programme managers, partners (UNHCR, WHO), provincial and district health staff;
- Algorithm review and validation workshop.

Review and validation of algorithms

Photos: Y. Toubangue/SysRef

CDSS development process

Coding of algorithms

- Coding of algorithms reviewed and validated by IT;
- Manual coding, then automatic with a program;
- Publication of the algorithms for testing.

Example of a coded algorithm

A	B	O	P
type	name	calculation	repeat_count media
calculate	next_vpo	max(if(${date_vpo3}!='','2999-12-31', if(${date_vpo2}!='',date(decimal-date-time	
calculate	next_penta	max(if(${date_penta3}!='','2999-12-31', if(${date_penta2}!='',date(decimal-date-	
date	e_date_vpo0	Veuillez entrer la date de VPO 0	
date	e_date_vpo1	Veuillez entrer la date de VPO 1	
date	e_date_vpo2	Veuillez entrer la date de VPO 2	
date	e_date_vpo3	Veuillez entrer la date de VPO 3	
begin group	g_vaccin_bcg	Vaccin BCG	
select_one oui_non	is_dose_bcg	L'enfant a t-il déjà reçu le vaccin BCG?	
note	label_bcg_warning	Le vaccin BCG est contre indiqué pour cet enfant: Sa mére est séropo	
select_one oui_ruptur	dga_bcg	Pouvez-vous administrer une dose du vaccin BCG?	
note	label_bilan_vpi	VPI Reçu le : ${date_bilan_vpi}	
calculate	date_bilan_var		
note	label_bilan_var	Vaccin anti-rougeoleux Unique dose réçue le : ${date_bilan_var}	
calculate	date_bilan_men_a		
note	label_bilan_men_a	Vaccin Anti-meningitique A Unique dose réçue le : ${date_bilan_men_a}	
calculate	date_bilan_vita		
note	label_bilan_vita	Vitamine A Unique dose réçue le : ${date_bilan_vita};	
calculate	date_bilan_vaa		
note	label_bilan_vaa	Vaccin Anti-Amarile Unique dose réçue le: ${date_bilan_vaa};	

CDSS development process

Validation of CDSS and local adaptation

- Identification of experts for validation (national and international);
- Development of clinical vignettes;
- Testing and comparison of decision trees (on paper) with coded algorithms using clinical vignettes;
- IT incorporates observations made by clinicians on several occasions;
- Pilot field testing by users and integration of observations

CDSS development process

User training

- Development and validation of the syllabus and training modules;

- Training of trainers, then users;
  - Clinical training (recognition of symptoms, signs and practice of laboratory tests...);
  - IT training (handling of tablets, interpretation and use of data, etc.).

Photo: C. Dande/SysRef

CDSS development process

Consultation with tablets

Photo: C. Dande/Sysref

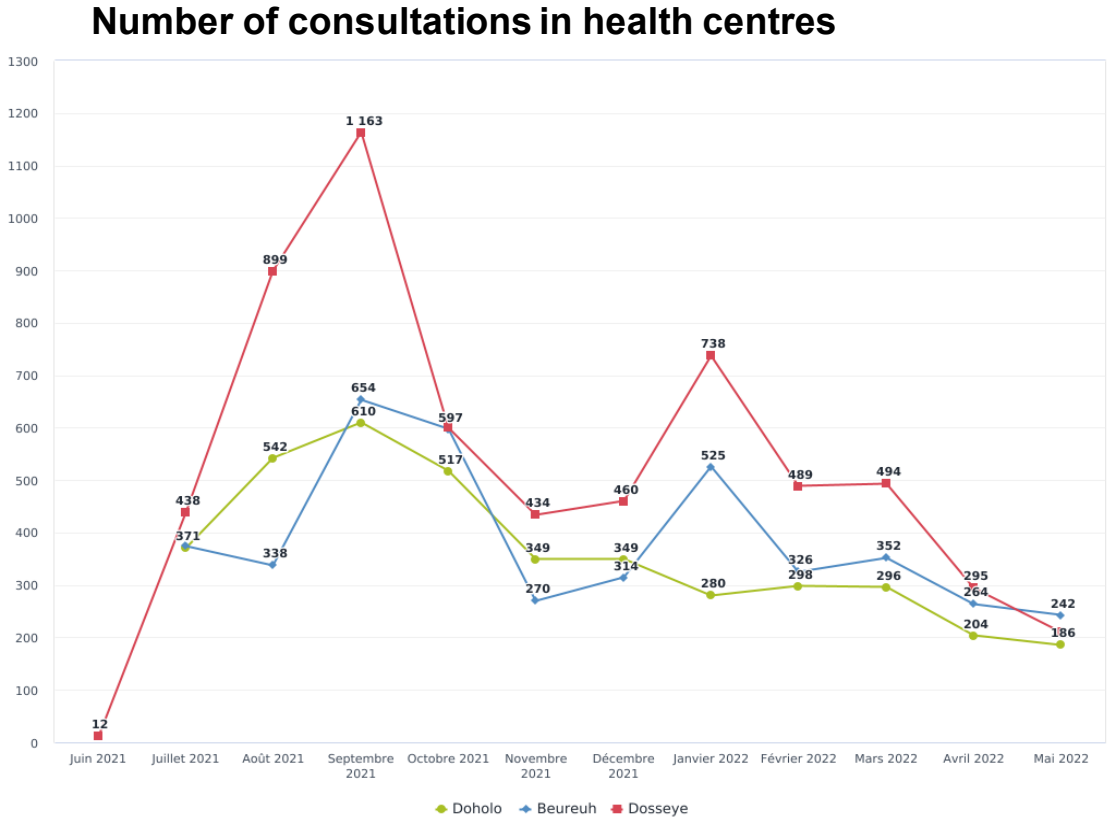
User tracking

- Telephone calls
- Supervision
- Management of feedback provided
- Inconsistencies identified are forwarded to the SysRef team;
- The content of the CDSS updated according to the feedback from the end users.

Results: Data

Uses of the data

- Visualization;
- Monitoring trends in emerging infectious diseases and NTDs (epidemiological surveillance);
- Analysis for decision making.



Results 1ère user satisfaction survey (January 2022)

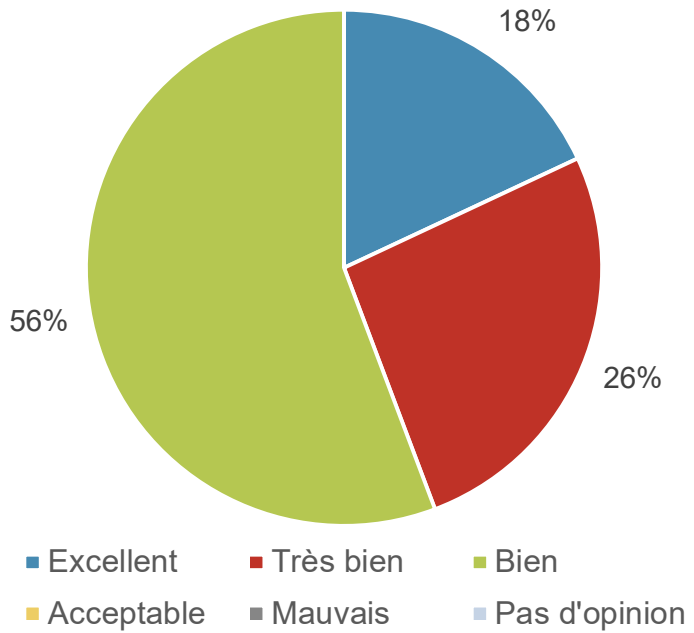
Participants:
40 direct users and 21 indirect users

Positive aspects:
- CDSS makes work easier
- the tablet gives the dosage of medicines
- The CDSS seems to be well appreciated by patients

"This device helps us to quickly find diagnoses after questioning and to quickly find the treatment with dosage and dietary advice for a patient in front of us." SFDE, Dosseye

"Patients (ndlr: not covered by the device) *are asking why the device has not been touched. That means that they themselves are asking to be consulted with the tablet even if it takes them some time. They are satisfied to be consulted with the tool."* IDE, Dosseye

Overall satisfaction with the CDSS tool among all user groups (N=61)



Results 2ème user satisfaction survey (Oct. 2022)

Participants: 35 direct users, 15 indirect users

Positive aspects:

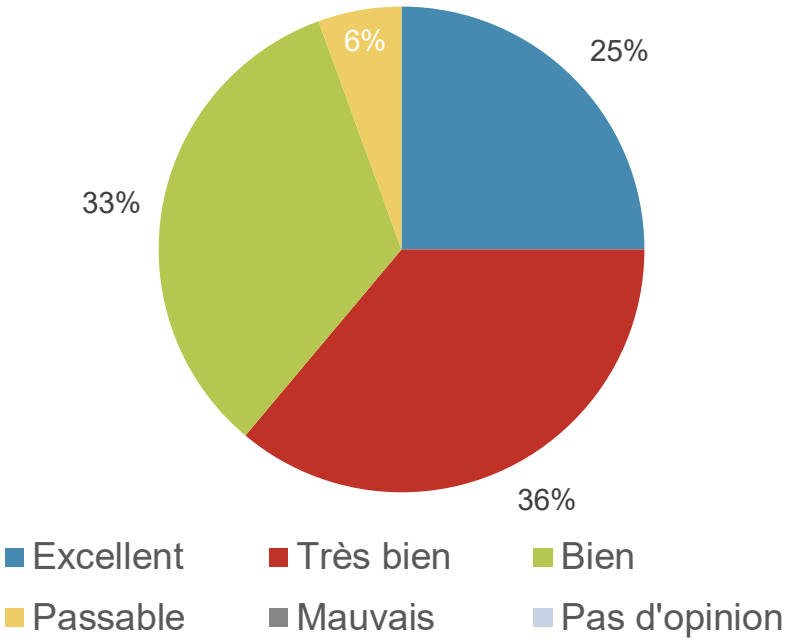
"The tablet helps to have control over the rationalisation of care" IDE, Dosseye

"In *relation to the level of satisfaction, I think it has increased, at the beginning there were many shortcomings, but as time went by, with the recommendations and suggestions, I think that many things have been added*" IDE Dosseye

Negative aspects reported by 1 respondent:

- «The tablet often offers referral even for cases that are manageable «

Overall satisfaction with the CDSS tool among all user groups (N=50)



Lessons learned (1/2)

Development, validation, updating of content

- A participatory development process has led to a common understanding of the concept and scope of the tools;
- Validation of CDSS and electronic registers based on
  - ...national experts' opinions and local context (content, language, local terms)
  - ... the development of clinical vignettes adapted to local health problems for testing
- Iterative process, costly in time and workload
- The CDSS tool reflects the realities on the ground and therefore requires continuous updating for refinement and sustainability.

Recommendation: Establish a national working group (experts in clinical, informatics, epidemiology, public health and related fields) for regular updating.

Lessons learned (2/2)

Approaches to stakeholder engagement and ownership

- Close collaboration between stakeholders (Ministry of Health at central, intermediate and district levels, national and international NGOs), experts and users from the outset:
  - Sharing mutual knowledge;
  - Capacity building and maintenance;
- Progressive launch of CDSS versions:
  - User familiarisation;
  - Testing the functionalities;
  - Identification and correction of technical errors.

Photo: Y. Toubangué

Obstacles to continuous use

- Assignment of trained health staff to other health centres or newly assigned health workers not trained in digital tools;
- Insufficient number of staff in a health centre.

Threats to sustainability

- Insufficient resources (human, financial, material) allocated to digital tools;
- There is no department dedicated to monitoring the operation and use of digital tools not present at some levels of the health pyramid.

Alladiguimbai MONTOLNAN (montolnan.alladiguimbai@swisstph.ch)

SysRef team: David Ngaradoumadji, Abakar Nassour, Christabelle Dande, Yannick Toubangue, Monique Léchenne, Damien Revault, Nora Monnier, Patrick Delcroix, Marco Pereira, Barbara Matthys