# Improving the health of children in Nigeria

ALgorithm for the MANAgement of CHildhood illness (ALMANACH)
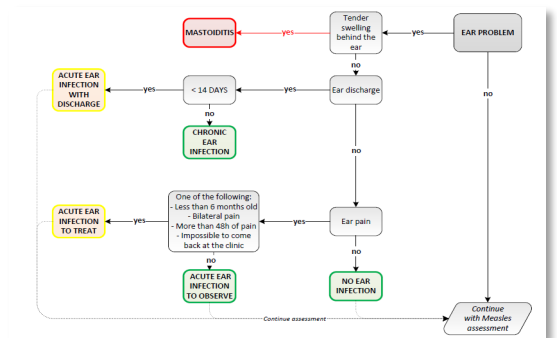
## Mobilising innovation

In the 1990's, WHO and UNICEF jointly developed guidelines for the management of childhood diseases in resource-limited settings: Integrated Management of Childhood Illness (IMCI). Integrated Management of Childhood Illness aims at reducing mortality in children under 5 years and offers disease specific guidance to identify children in need for antimalarials or antibiotics. Since its introduction, IMCI was associated with a 15% reduction in child mortality. Evaluations have however shown that IMCI is not reaching its full potential because of the limited flexibility of the guidelines and the lack of adaptability to local contexts. Moreover, IMCI has the inconvenience of being a cumbersome paper-based tool.





ALMANACH: Clinical algorithms turned into a powerful decision support system

## Enabling guidelines to work

The ALgorithm for the MANAgement of CHildhood illness (ALMANACH) is an innovation developed by Swiss Tropical and Public Health Institute. ALMANACH is an enhanced digitalised version of WHO's IMCI guidelines which can be run on tablets and smartphones and fully exploits IMCI's potential. The digitial version includes conditions relevant to Nigeria's epidemiological picture and it is tailored to both the Ministry of Health's clinical guidelines as well as the resources available locally at the primary health care facilities in terms of drug supply, equipment andstaff. and With a stepwise, user-friendly format, the ALMANACH's algorithms guide healthcare providers (from hospital doctors to community health workers in remote, resource scarce locations) to take clinical history and to performe physical examinations, leading to the diagnosis and treatment.

ALMANACH recommends which examinations to perform, when to refer, when to use a rapid diagnostic test, what treatment to prescribe and at what dosage (based on age and/or weight). For health workers already aware of IMCI, only two days training are needed to learn how to use the tool.

ALMANACH's records of consultations are uploaded to a Health Management Information System (DHIS2) and are available in real time to health workers and health managers, empowering them to monitor more closely cases of malnutrition, oversight of case management, trends of diseases like malaria as well as other outbreak-prone diseases. In general, they are more aware of any change in the epidemiological profile in the paediatric population. An epidemiological bulletin from the health facilities implementing ALMANACH is issued regularly and can be requested from the Adamawa State Primary Healthcare Development Agency, Nigeria (ADSPHCDA).



Diseases and health services trend data are available real time to guide health managers
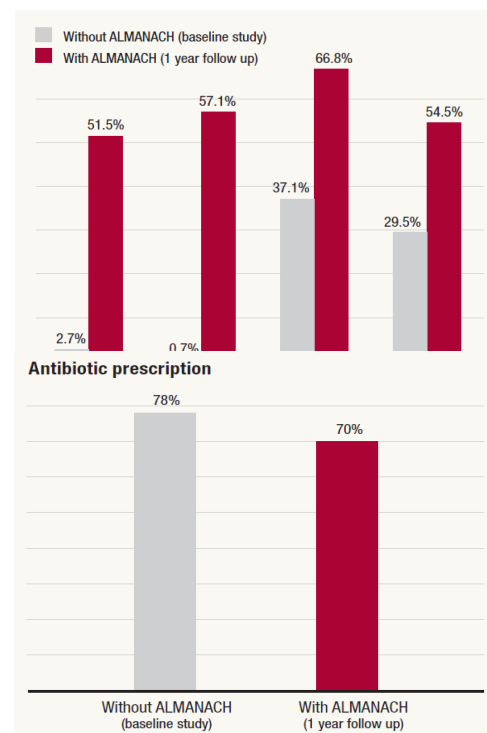
# Applications to date

ALMANACH was developed based on a literature review, the findings of a study on etiologies of fever conducted in Tanzania as well as expert opinion and before Nigeria it has been sucessfully implemented in Afghanistan. ALMANACH was shown to be a user-friendly tool that improved the quality of consultations and markedly reduced antimicrobial prescription in paediatric patients.

From December 2016 to mid 2018, ALMANACH has been running in 11 health facilities and in one hospital outpatient department (OPD) in Adamawa State Nigeria with the support of the Adamawa State Primary Healthcare Development Agency, the State Ministry of Health and ICRC.

In 2018 scale up activities were initiated, resulting in ALMANACH being implemented in 304 health facilities and over 138,000 consultations of young children and infants being supported by the use of the tool's digital algorithms by July 2020. The use of the tool was well acepted from the health workers and without any inconvenience to their daily workflow. The attended children benefited from a well structured consultation with improved preventative measures, appropriate physical examination and treatment in adherence with the national and international guidelines.



|  | Before ALMANACH | With ALMANACH |
|---|---|---|
| *Children weighed* | 5 - 25% | > 75% |
| *Malnourishment screening* | < 25% | 80% |
| *Vitamin A administer (prevention)* | 3% | 60% |
| *Deworming (prevention)* | 10% | 70% |
| *Vaccination status checked* | 8 - 50% | > 95% |
| *Physical examination properly performed* | 25% | 85% |
| *Right treatment received* | 40-45% | 90% |
| *At least one antibiotic prescribed* | 70% | < 30% |

Main indicators before and after the implementation of ALMANACH in Adamawa

ALMANACH has various distinct advantages: The training of train health care practioners in connection with the CDSS proved to be efficient as the skills upgrade relates to daily health services challenges. Further, supervisors are enabled to remotely monitor the care at health facility level.p As such ALMANACH is able to improve medical practice even in remote or inaccessible areas. This is especially pertinent for health care providers working in fragile and post conflict countries.

As the feasibility, usability and efficacy of ALMANACH has been proven, the rollout and sustainability on a wider scale to embrace over 400 primary health care facilities is currently realised in Adamawa State, Nigeria.

In July 2017, ALMANACH received the Award of Excellence for "its outstanding contributions to the development of primary Health Care in Adamawa State" by the Governor of Adamawa.

Effect of ALMANACH use in Adamawa State, Nigeria: preventative measures, quality of care and reduction of antibiotic over-prescription was improved significantly

| Issues of Concern | Almanach Solutions |
|---|---|
| Guidelines – no updates, not followed in daily practice | Updated protocols, including available diagnostic tests. Clinical decision support used in daily routine care. |
| Antibiotic overuse and resistance | Reduction of antibiotics prescription by more than 50% |
| Staff motivation: often down, leading to low quality care | Staff motivation boost through supervision and supportive technology |
| No quality data, no targeted improvement decisions | Valuable data timely available through a powerful analysis and graphic visualization platform. |
| eHealth pilots as niche add-ons | eAlmanach became a daily, routine support tool |
| Lack of efficient knowledge and progressive skill training | Efficient skills training and continuous education available on tablet computer |
| Data security: low attention and potential threats to patients | Patients not traceable through Highest possible data security standards |

ALMANACH proved to address essential concerns and issues of healthcare providers, health workers and patients