



Impact of clinical algorithms for HIV-related meningoencephalitis in Lilongwe, Malawi: Experience from the DREAMM project

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HIV LEARNING NETWORK
The CQUIN Project for Differentiated Service Delivery

- Implementation Project in 5 Ministry of Health (MoH) supported hospital settings in Tanzania, Malawi & Cameroon.
- Led by key local African hospital personnel and run by frontline healthcare workers (HCWs).

OBJECTIVES:

- Reduce mortality from HIV-related meningoencephalitis in resource limited hospital settings.
- Devise a model of care for PLHIV presenting with probable meningoencephalitis tailored to frontline HCWs.
- Prospectively describe the epidemiology of HIV-related meningoencephalitis in Tanzania, Malawi and Cameroon.
- Evaluate new diagnostics (semi-quantitative Cryptococcal antigen lateral flow assay (CrAg LFA), Gene Xpert ULTRA etc...) for the diagnosis of HIV-related meningoencephalitis.
- Determine the role of concomitant sepsis, tuberculosis and syphilis.

- 1) Health system strengthening (including mapping and optimising of clinical and laboratory pathways, and increased physician-laboratory communication).
- 2) Delivery of a co-designed education program for frontline HCWs focused on mortality-reducing interventions.

Open-access online clinical and laboratory resources for cryptococcal meningitis module (in-depth training module, 2 supporting workshops, 5 teaching posters):

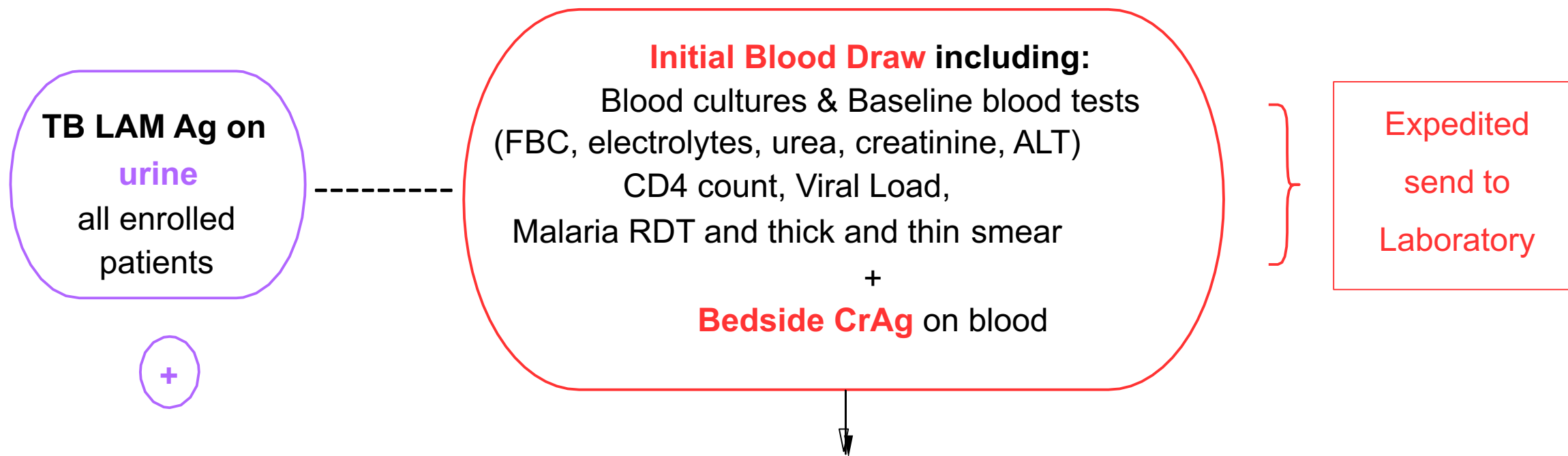
Link: <https://www.sgul.ac.uk/about/our-institutes/infection-and-immunity/research-themes/working-internationally/dreamms-of-implementation>

- 3) **Implementation of an algorithm for diagnosis and treatment of HIV-related meningoencephalitis (using bedside RDTs alongside standard microbiology), according to latest WHO guidance on AHD and cryptococcal meningitis.**
- 4) Infectious diseases/AHD mentorship and laboratory capacity building.



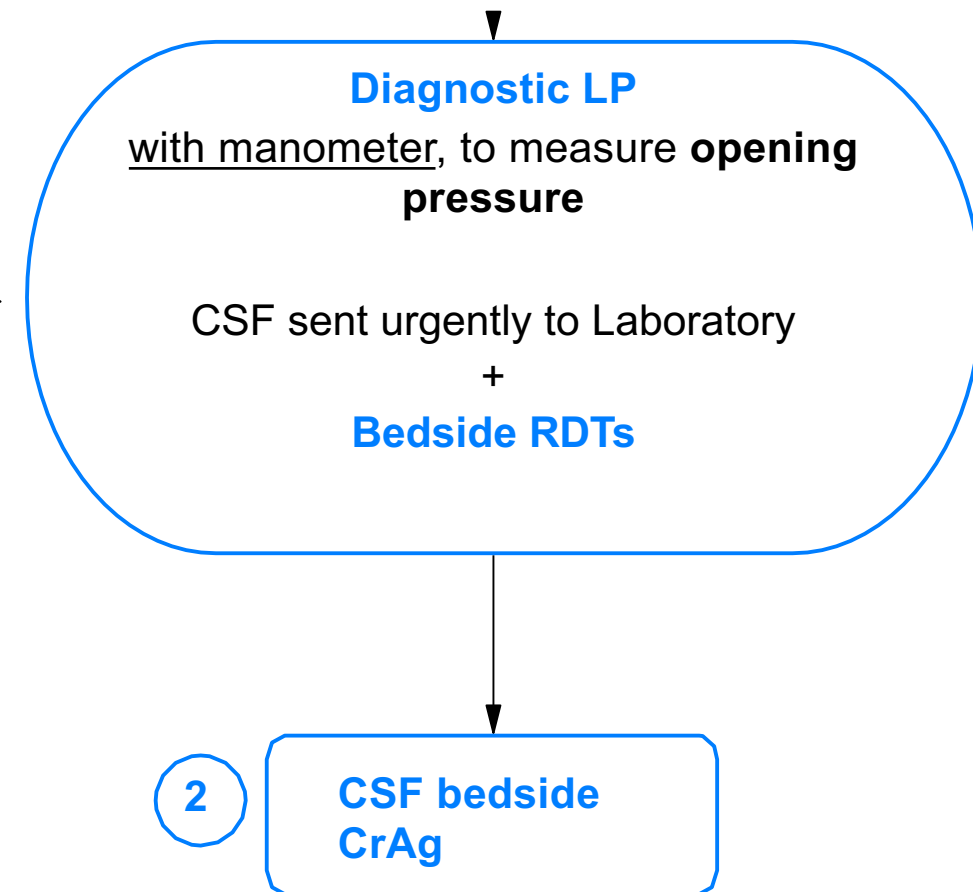
DREAMM algorithm: Initial bedside RDT testing in blood and urine & routine bloods

- All PLHIV with probable meningoencephalitis receive bedside CrAg testing in blood and CSF as well as urinary TB-LAM testing
- In parallel, CSF goes to the laboratory for routine microbiology (Gram stain, India ink, culture (bacterial & fungal), repeat CrAg testing etc...)

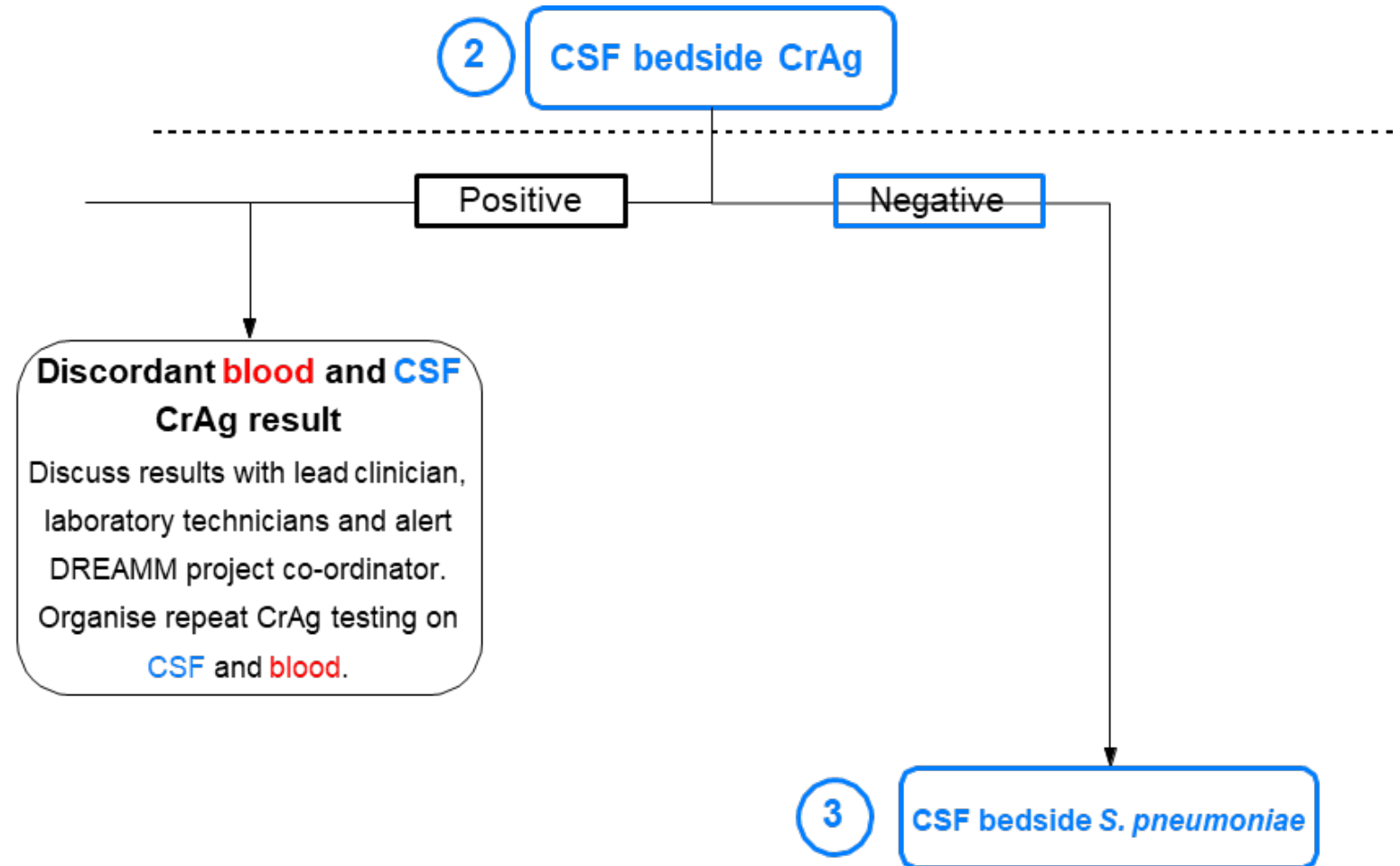


- Left-hand side of algorithm (CCM diagnosis and treatment, including implementation of latest WHO guidelines on cryptococcal disease).
- Manometer required to measure baseline opening pressure.
- Confirmation of CrAg positive result in CSF by the bedside.
- CSF sent for analysis including Gram stain, biochemistry + bacterial and fungal culture.

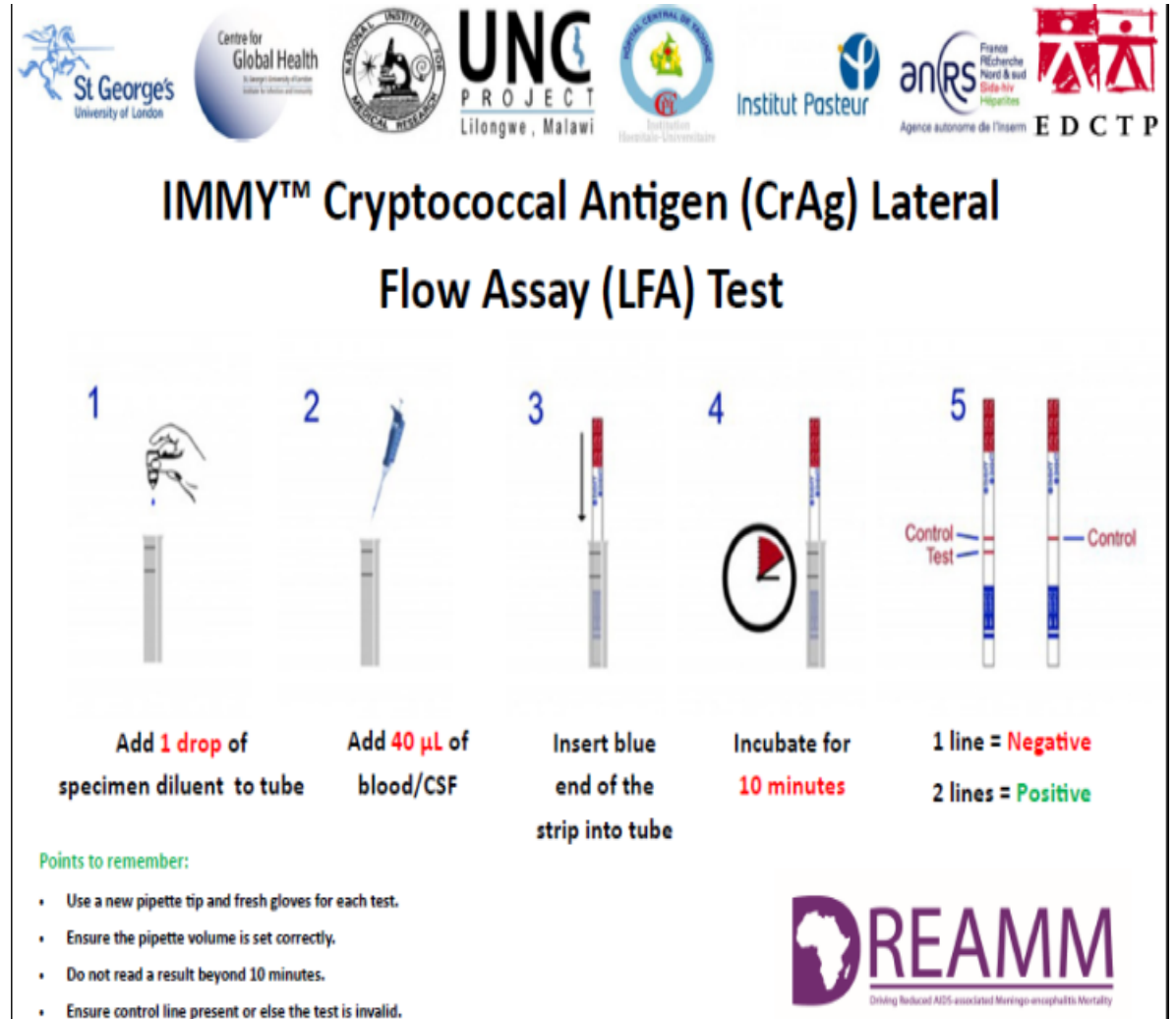
Contraindications for LP
e.g. focal neurological deficit
Consider brain CT scan



- Test CrAg in CSF.
- If CrAg positive in CSF, retest CrAg in blood and consult laboratory + clinician.
- If CrAg is negative in both blood and CSF, perform *S.pneumoniae* RDT.
- In parallel, send CSF to laboratory for routine microbiology (Gram stain, CSF biochemistry, CrAg, culture (bacterial, +/- TB culture) etc..).
- Refer to the right-hand side of the algorithm (diagnosis BM versus TBM diagnosis).



- Urinary TB LAM + Serum CrAg performed by nurses.
- CSF samples collected by clinician + CSF CrAg test performed by nurses in the mini laboratory in the admission room.
- Algorithms + Posters used by nurses pasted within the mini laboratory in the admission room for easy guide.
- RDT results documented in the patient's clinical file.
- QC controls by UNC Project Laboratory.
- Ongoing supervision by DREAMM study team to consolidate knowledge.




IMMY™ Cryptococcal Antigen (CrAg) Lateral Flow Assay (LFA) Test

- 1 Add 1 drop of specimen diluent to tube
- 2 Add 40 µL of blood/CSF
- 3 Insert blue end of the strip into tube
- 4 Incubate for 10 minutes
- 5 1 line = Negative
2 lines = Positive

Points to remember:

- Use a new pipette tip and fresh gloves for each test.
- Ensure the pipette volume is set correctly.
- Do not read a result beyond 10 minutes.
- Ensure control line present or else the test is invalid.



- Clinical algorithms for HIV-related meningoencephalitis consolidate frontline HCW's knowledge and act as a quick reference tool for busy medical units.
- They standardize diagnosis and management of common causes of HIV-related meningoencephalitis.
- Algorithms optimize management whilst reducing cost by streamlining testing and providing microbiologically driven diagnoses.
- Together with African leadership led health system strengthening, algorithms help in task differentiation and efficiency in management.
- Algorithms help provide consistent data to monitor epidemiological trends.
- Preliminary data from 3 MoH supported sites in Malawi and Tanzania suggest the DREAMM meningitis model of care for HIV-related meningoencephalitis substantially reduces mortality at 2 weeks and is sustainable. Final results expected Q2 2021.