**1. Title**
Implementation of risk triaging in primary healthcare facilities in sub-Saharan Africa: A systematic review

**2. Language**
English

**3. Anticipated start date**
April 25, 2022

**4. Anticipated completion date**
July 29, 2022

**5. Stage of review**
Not yet commenced.

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**12. Funding source**
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**13. Conflict of interest**
The team members report no known conflicts of interest.

**14. Collaborators**
None.

**15. Review question**
How has risk triaging has previously been used in primary healthcare clinics in Africa and to what extent was this approach successful?

**16. Searches**
We will search for published studies and grey literature in MEDLINE, Cochrane Library, Web of Science, Embase, Scopus, and ClinicalTrials.gov. We will manually search reference lists from sources identified in the search. Unpublished studies (e.g. preprints) will be included. Searches will be limited to English language publications. The search period will be from January 1, 2018 to April 30, 2022.

**17. URL to search strategy**
File attached.

**18. Condition or domain being studied**
HIV treatment programmes in SSA face challenges in retaining patients on antiretroviral therapy (ART). A disproportionate share of attrition from HIV treatment occurs during the first six months known as the “early treatment period”.

For treatment programs to introduce effective interventions to improve retention during this period, it would be greatly advantageous to be able to target specific types of support to specific patients in need. One way to do this is to identify and rank individual patients’ risks of attrition at the time they start ART, so that problems can be addressed before the patient is lost to care. An effective “risk triaging” strategy is needed for this to succeed.

Prediction or risk scoring or triaging tools have a long history of use in hospitals, in high income countries, and for noncommunicable conditions. Results have been mixed, in terms of both accuracy and uptake by healthcare providers.

Prior to embarking on the development of a new tool to identify at ART initiation and later visits in the early treatment period patients at high risk of attrition, we will conduct a systematic review of the use of risk triaging tools at the primary healthcare level in SSA.

**19. Participants/population**

Inclusion: Examples of risk triaging for adults (≥18) seeking care for chronic conditions including NCDs, HIV, and TB in public or NGO sector primary healthcare facilities in SSA.

Exclusion: Examples of risk triaging for children < 18, at hospitals or other secondary or tertiary care facilities, for acute or pre/postnatal care, and/or in the private sector.

**20. Intervention(s), exposure(s)**

Implementation of risk triaging in primary healthcare facilities in SSA

**21. Comparator(s)/control**

No comparator - eligible studies need only report implementation and outcomes of risk triaging tools in primary health care settings.

**22. Types of study to be included**

We will include reports with primary, patient-level or facility-level data from retrospective or prospective studies collected under any study design (trial, observational) with or without a comparison group; reference lists from systematic reviews and meta-analyses will be hand-searched for additional sources. Case series or reports, treatment guidelines, mathematical models, editorials, commentaries, and study or trial protocols will be excluded. All included studies will be reporting on and/or evaluating a risk triaging tool or algorithm used for adults aged 18 or above in primary care facilities in SSA. White papers and published protocols with no data will be excluded. Results will be limited to English language.

**23. Context**

Implementation of risk triaging tools in primary health care settings in sub-Saharan Africa.

**24. Main outcome(s)**

1. Patient treatment outcomes including retention in care and clinical response to treatment following use of a triaging tool or approach
2. Effect on health system efficiency
    - Patient healthcare facility experience such as, waiting times
    - Provider performance through e.g. task shifting
3. Risk triaging tool performance metrics
    i. Sensitivity
    ii. Specificity
    iii. Negative predictive values
    iv. Positive predictive value

**25. Additional outcomes**

1. Risk triaging tool implementation process
    a. How was the tool implemented?
        - Electronic or paper-based

        - Checklist/colour codes/series of questions
    b. Which section of the clinic implemented the tool?
    c. Who delivered the tool?
        - Staff cadre
    d. At what point in the patient flow was the risk triaging tool applied?
2. Risk triaging tool contents
    a. How many items were included in the tool?
    b. How were the items derived?
    c. How was the tool validated?
3. Costs and cost-effectiveness of risk triaging tools in SSA
4. Experience scaling up such tools
    a. Sustainability and long-term impact of a scaled-up risk triaging tool

**26. Data extraction (selection and coding)**

Study records will be compiled and deduplicated in an Endnote reference library. Titles and abstracts will be screened using Rayyan and included citations will thereafter be exported to Mendeley reference library for full text screening. Two independent reviewers will be involved in screening the titles and abstracts with a third serving as a conflict reviewer. Title and abstract screening will include a pilot test to assess if the reviewers are able to achieve over 90% agreement on inclusion based on the eligibility criteria listed in this protocol. All three reviewers will participate in the pilot screening. Disagreements will be resolved through discussion among the three reviewers.

Data extraction will use a pre-determined template to capture required variables. We will extract descriptions of patients, timing of the risk triaging intervention in relation to provision of primary healthcare, facility location and type, service delivery models and services provided. We will further extract descriptions of the risk triaging tool and its performance, impact on patient outcomes and providers' performance, data on the tool's scalability, costs, and cost-effectiveness. and application of the tool at scale.

**27. Risk of bias in individual studies**

Bias will be assessed using the Joanna Briggs Institute (JBI) critical appraisal checklist for systematic reviews. The JBI checklist asks a set of 11 closed ended questions for every study included in a review to evaluate any bias in the design, conduct and analysis in the studies meeting the inclusion criteria (29).

**28. Strategy for data synthesis**

This review will be descriptive and therefore, there will be no meta-synthesis of data conducted. Where feasible, we will group the data by themes such as disease and similarity in contents or implementation of risk triaging tools. Summary of papers included in addition to the quality of individual papers will be presented using the Grading of Recommendations, Assessment, Development and Evaluations (GRADE) tool (30). Following the GRADE tool, studies will be rated based on risk of bias, imprecision, inconsistency, indirectness and publication bias.

**29. Analysis of sub-groups or subsets**

Depending on the number and types of sources identified, we may group the studies by the condition in question (e.g. hypertension, HIV, etc.) and/or by the type of risk triaging instrument used.

**30. Type and method of review**
Type: Epidemiological
Area: Public health

**31. Language**
English

**32. Country**
Countries in sub-Saharan Africa

**33. Other registrations**
None

**34. Reference to published protocol**
None

**35. Dissemination plans**
We intend to write up the results of this review for publication in a peer reviewed journal. We will also present them to stakeholders in sub-Saharan Africa and elsewhere, such as policy makers, program managers, funders, and technical experts who may be able to utilize the results.

**36. Keywords**
Systematic review; public health care; primary health care; risk triaging; risk scoring

**37. Details of any existing review of the same topic by the same authors**
None

**38. Current review status**
Due to commence

**39. Additional information**
None

**40. Details of final report**
(TBD)

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**Table 1: Proposed search strategy**

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|---|---|
| Population | (adult[MeSH] OR " adult population"[MeSH]<br><br>**AND**<br>("Primary health care" OR "PHC" OR "Community Health" OR "Outpatient care" OR "Outpatient" OR "Public health" OR "Public-sector primary care" OR "primary care facility" OR "Care, Primary Health" OR "Health Care, Primary" OR "Primary Healthcare" OR "Healthcare, Primary" OR "Primary Care" OR "Care, Primary" OR "Community Health Service" OR "Health Service, Community" OR "Service*, Community Health" OR "Health Services, Community" OR "Community Health Care" OR "Care, Community Health" OR "Health Care, Community" OR "Community Healthcare*" OR "Healthcare*, Community" OR "Care, Ambulatory"OR "Care, Outpatient"OR "Health Service*, Outpatient" OR "Outpatient Health Service*" OR "Service, Outpatient Health" OR "Outpatient Service*" OR "Services, Outpatient Health" OR "Urgent Care" OR "Care*, Urgent" OR "Clinic Visit*" OR "Visit*, Clinic)) |
| Intervention | ("Risk triaging" OR "Risk triag*" OR "Risk scor*" OR "Algorithm" OR "Predictive algorithm" OR "Predictive score" OR "Predictive model" OR "Risk model" OR "Patient screen" OR "Risk screening" OR "Score, Risk" OR "Risk Factor Score*" OR "Score, Risk Factor*"<br><br>**AND**<br>"Factor, Time" OR "Time Factor*" OR "Time Series" OR Longitudinal OR "Longitudinal Stud*" OR "Stud*, Longitudinal" OR "Follow Up Stud*" OR Follow-Up Stud*" OR "Stud*, Follow-Up" OR "Followup Stud*" OR "Stud*, Followup") |
| Outcomes | ("Clinical outcome" OR "Treatment success" OR "Retention in care" OR "Re-engagement in care" OR Mortality OR "Clinic performance" OR "Clinic waiting times" OR "waiting times"OR "Resource utilization" OR "cost" OR "Resource utilisation" OR "Health Resource" OR "Resource, Health" OR "Resources, Health" OR Resources OR Resource OR "Program outcome" OR "Task shifting")<br><br>**OR**<br>("Performance metrics" OR "Test metrics" OR Sensitivity OR Specificity OR "Positive predictive value" OR "Negative predictive value" OR "Area under the curve" OR "Random operator curve" OR "Accuracy" OR "Precision") |
| Context | (Africa[MeSH:noExp] OR Sub-Saharan-Africa* OR Subsaharan-Africa* OR Africa South of the Sahara[MeSH] OR Central-africa* OR Eastern-africa* OR East-africa* OR Southern-africa* OR South-africa* OR Western-africa* OR West-africa* OR Cameroon* OR Central-african-republic* OR Chad* OR Congo* OR DRC OR Equatorial-guinea* OR Gabon* OR Sao-Tome-and-Principe* OR Burundi* OR Djibouti* OR Eritrea* OR Ethiopia* OR Kenya* OR Rwanda* OR Somalia* OR South-sudan* OR Sudan* OR Tanzania* OR Uganda* OR Angola* |

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|---|---|
| | OR Botswana* OR Eswatini* OR Swaziland* OR Lesotho* OR Malawi* OR Mozambique* OR Namibia* OR Zambia* OR Zimbabwe* OR Benin OR Burkina-Faso* OR Cabo-Verde* OR Cote-d'Ivoire* OR Ivory-Coast* OR Gambia* OR Ghana* OR Guinea* OR Guinea-Bissau* OR Liberia* OR Mali* OR Mauritania* OR Niger* OR Nigeria* OR Senegal* OR Sierra-Leone* OR Togo*) |