|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date | 13/10/2023 | | | |
| Proposed study title | Vaccination coverage after a mass measles vaccination campaign among children aged 6 to 59 months, Kule refugee camp, Gambella, October 2023. | | | |
| Purpose of study | This purpose of the study is to assess coverage of the mass vaccination campaign of the target population against measles. | | | |
| Research question | What is the measles vaccination coverage in children aged 6 -59 months in Kule refugee camp, Gambella after the mass vaccination campaign against measles implemented by MSF and Ministry of Health? | | | |
| **Objectives** | The primary objective are:   * To estimate measles vaccination coverage among children 6 months to 59 months of age following a mass vaccination campaign in Kule refugee camp, Gambella, Ethiopia, October 2023.   The secondary objective is:   * To describe the reasons for non-vaccination during the measles mass vaccination campaign | | | |
| **Background/significance** | Measles vaccination coverage has improved substantially in Ethiopia over the past two decades, but gaps remain in reaching elimination goals. According to the WHO, national measles vaccination coverage increased from 14% in 1980 to 86% in 2020, with two doses of measles vaccine administered to children before their second birthday [1]. However, the target of 95% coverage has not yet been attained. Coverage also varies geographically, with lower rates achieved in rural and remote regions [2]. Periodic supplemental immunization activities, like mass vaccination campaigns, have been undertaken to complement routine childhood immunization [3]. Despite gains, large measles outbreaks still occur, including over 9,600 cases reported in 2019 [4]. Ongoing efforts are needed to achieve and sustain uniformly high, population-wide measles immunity.  In the Gambella region located in southwestern Ethiopia, measles vaccination coverage has been lower than the rest of the country. A coverage survey in 2014 found 77% of children aged 12-23 months received the first dose of measles vaccine [5]. Gambella also experienced a large measles outbreak from 2018-2020 with over 8,500 cases, highlighting suboptimal population immunity [6]. Specific strategies to increase access to routine immunization services as well as supplemental immunization activities are required to improve measles control in the region.  Since the first confirmed case of measles on October 7, 2023 in the Kule refugee camp in South Sudan, where Doctors Without Borders (MSF) had been providing primary healthcare to the South Sudanese refugee population, the number of measles cases has risen substantially. As of October10, 2023, the MSF Kule health center has treated 203 measles cases. This spike in cases is attributed to patients arriving late in the disease course with severe complications like severe acute malnutrition and malaria. Fourteen measles-related deaths have been registered so far, bringing the case fatality rate to 6.9%.  In collaboration with the Refugee Return Service, UNHCR, Goal International, and the Regional Health Bureau, MSF conducted an integrated mass measles vaccination campaign from September 25 to October 5, 2023, targeting children aged 6 months to 59 months in the Kule camp. In addition to measles vaccination, the campaign provided vitamin A supplementation, mid-upper arm circumference screening for malnutrition, and Albendazole deworming.  In conclusion, preliminary data from a post-campaign survey will provide vital insights into the success of vaccination campaign for the target population.. The Kule campaign and ensuing survey will provide an important case study for localized outbreak response and building immunity among hard-to-reach populations.  ***References:***  [1] <https://immunizationdata.who.int/pages/coverage/MCV.html?CODE=ETH>  [2] <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7189765/>  [3] <https://www.afro.who.int/news/ethiopia-launches-measles-rubella-vaccination-campaign>  [4] <https://reliefweb.int/report/ethiopia/suspected-measles-outbreak-affects-thousands-ethiopia-disease-outbreak-news>  [5]<http://ephi.gov.et/images/pictures/nationwide_measles_coverage_survey_report__june_2015.pdf>  [6]<https://reliefweb.int/report/ethiopia/measles-outbreak-humanitarian-response-plan-gambella-region-ethiopia-2018-2020>. | | | |
| ***Study topic***  *Check all that apply* | Is the study part of an approved OCA topical research agenda?  No  Yes, namely:  If yes, please provide a link to, or submit research agenda with this concept paper | | | |
| AMR  Cholera  Covid-19  Ebola  Environmental Health  Emergency  HIV  Leishmaniosis  Malaria  Nutrition  Other disease outbreak  If Other or Other disease outbreak, please state: | Maternal & women's health  Measles  Meningitis  Mental health  Mortality  NTDs (excluding leishmaniosis)  Neonatal & child health  Non-communicable diseases  Other | | Upper/lower respiratory tract disease (excluding Covid-19)  Sexual violence  Surgery  Tuberculosis  Vaccination  VHF (excluding Ebola)  Violence  Water & Sanitation |
| **Methods - design**  *Check one study design* | Please consult the relevant study reporting guidelines\* listed at the end of this concept note. | | | |
| Observational study  Randomised trial  Systematic review  Case report  Diagnostic study  Cross-sectional community-based survey using random spatial sampling to select participating HHs. | | Mixed methods study  Qualitative research  Quality improvement study  Prediction model  Other | |
| **Methods - setting** | **Study location/setting:**  This study will be conducted in all seven zones of the Kule refugee camp in the Gambella region. As MSF is currently the primary healthcare facility providing case management and referral of all common morbidities, including measles cases, in the current measles outbreak, conducting such a study in this camp will help MSF to understand the overall measles vaccine coverage of the camp. This study will generate evidence-based, robust strategies for measles outbreak case prevention and management in future MSF activity plans.  **Context (1 paragraph):**  Doctors Without Borders (MSF) is the primary healthcare provider in the Kule refugee camp, delivering case management and referral services for common illnesses. In July 2023, a measles epidemic was reported within the camp. Since week 27, the MSF health centre has treated over 203 confirmed measles cases, sharing daily line lists with the Regional Health Bureau (RHB) and partners. In response, the RHB is mobilizing a mass vaccination, vitamin A supplementation, and deworming campaign across all refugee camps and surrounding host communities to control the outbreak.  To support containment of the Kule measles outbreak specifically, MSF collaborated with the RHB in conducting integrated immunization activities in the Kule camp beginning week 39. The campaign provided measles vaccination, vitamin A supplementation, and deworming to all children aged 6 months to 59 months in the camp. By integrating these interventions, the goal was to comprehensively improve the health and immunity of this vulnerable population. | | | |
| **Methods – participants, procedures, analysis**  *For retrospective analyses of routine data, if this section is sufficiently complete, this concept note will serve as the study protocol.* | **Study participants**:  **Study area**  The survey area will be the main refugee camp in the MSF-OCA Ethiopia Gambella project catchment area namely Kule camp.  **Study population**  The survey population will consist of all 6- 59 months children living in Kule camp.  Current under 5 population estimates based on last data prepared by UNHCR camp population in Kule camp is 8429 (16%) of the total population.  **Study design and study period**  Simple random spatial sampling technique will be used to estimate measles vaccination coverage.  The period of study will be in Oct 2023, after the MSF team conducted and finalized the mass vaccination campaign in Kule refugee camp.  Sample size estimation: sample size calculation was done by using ENA SMART software (SMART, 2020).  We will consider the following parameters for the sample size calculation   * Predicted 85% vaccine coverage post campaign * Confidence level of 95% * 1 as the design effect (simple random sampling), * 16% of children aged 6-59 months, * average household size of 5.2, * desired precision 5%, * and 10% non-response rate,   Our minimum sample size will be 196 children from a total of 291 households.  **Sampling procedure:**  We will use simple random spatial sampling (SRS) to select participants in Kule camp. This method is appropriate because it ensures that all households have an equal chance of being selected in the sample. The number of points will be proportional to zone populations, where available. If not, the 291 will be randomly distributed across all zones of the camp.  The household head (≥18 years) will be asked about the number of children in the household and the vaccination status of all children in the household aged 6 months to 59 months.  Inclusion criteria:   * A child between 6 months –59 months * Living in the household (see household definition below) selected based on simple geospatial sampling   Exclusion criteria:   * Person under 6 months or 5 years and above * Person not living in the GPS sampled household   Definition of household:  A household will be defined as a group of people who commonly live together and are under the responsibility of one person or head of household.  If a selected household will not be available after two visit attempts (morning and afternoon), or is not willing to respond, that household will not be replaced.  **Anticipated dates for data collection** are October, 2023.  The household head will be asked to provide consent for the survey questionnaire, which will collect information on the data variables for all children aged 6-59 months.  **Data variables (quant):**   * Demographics: Total number of household members, total number of children aged 6-59 months in the household, age, and sex * Measles vaccination status for all persons from 6 months to 59 months in the household (using vaccination card history, marked finger during vaccination campaign or oral history when vaccination cards are not available. * Measles vaccination status (Measles vaccination during recent mass vaccination campaign, Measles vaccination during routine EPI vaccination, Measles vaccination during any other SIA / catch-up vaccination campaigns) * Reasons for non-vaccination during the last mass vaccination campaign. * History of measles disease   **Data sources and collection:** A standardized pre-piloted questionnaire will be used to collect the following data for each child. Data collectors will use KoboCollect software on tablets during face to face interviews with household heads. Paper questionnaires will be available as backups. To ensure data quality, training and close supervision of data collectors will be assured. For data security and integrity, smartphones and paper questionnaires will be kept in a locked box in the in MSF offices (locked), databases will be password protected, and only study research team will have access.  **Data analysis:** Data cleaning will be done to check for inconsistencies in data entry and responses. Data analysis will be conducted using R. All indicators (e.g. sex and age of the survey population) will be calculated as proportions with 95% confidence intervals. | | | |
| **Resources/costs:** | * 20 data collectors (10 teams of 2 data collectors) for each zone and two data supervisors with a total of 22 team member. * Each team will complete 10-12 households per day * 2 cars: to transport teams of data collectors + 2 supervisors per zone to monitor and supervise the data collection. * 10 smart phones (1 smart phone per team) * Training materials (office space, projector, flip boards, small notebooks) * Recording materials (pens, paper quaternaries, clipboards, back packs) * Refreshment (food & drink ) for training days * Security materials (Visibility, radio) * Phone credit for communication with the teams | | | |
| **Planned dates**  *List proposed* ***start/end date******[mm/yyyy]*** *of each stage and any time restrictions* | * Protocol development: 5 working days from 16-22 Oct 2023 * Ethics review: Not needed * Study preparation: October 2023 * Data collection: October/November 2023 * Data analysis: November 2023 * Write up (report): November 2023 | | | |
| **Ethics - exemption from**  **review by the MSF ERB**  **(Ethics Review Board)** | **1. Is your study a retrospective review of routinely collected data and thus a candidate for exemption from MSF ERB review?**  **☒ No ☐ Yes**  **2. Will your study use an MSF Intersectional Standardised Survey Protocol?**  **☐ No, continue with question ☒ Yes, continue with question 3**  **3. If you used an MSF Intersectional Standardized Survey Protocol, does it meet the MSF ERB Exemption criteria for surveys?**  **☐ No ☒ Yes**  **4. Do you believe that your study is exempt from ERB review for another reason?**  **☒ No ☐ Yes, because:**  *Complete the OCA Ethics Review Exemption Template (see* ***Annex****) and submit with this concept paper.*  **Benefits:**  Assessing measles vaccination coverage helps MSF determine appropriate action in terms of outbreak prevention, surveillance, immunization modifications, and medical interventions based on the vaccination gaps found in the Kule camp population.  Analyzes result of vaccination activities in reaching target population and achieving desired coverage. This allows MSF to judge the success of the vaccination efforts in the camp and plan accordingly.  Supports outbreak preparedness and rapid response planning by estimating population immunity against measles. Allows MSF to project possible outbreak size and immunization needs  Helps guide MSF operational decisions regarding measles treatment preparedness, surveillance, Nutritional programming based on up-to-date immunization coverage data.  **Risks:**  There is no risk to the survey participants as no identifying data will be collected and the GPS coordinates are not retained with the survey data. However, the household interviews may cause brief intrusion, which some families may find uncomfortable. To mitigate this, interviewers will receive training on ensuring privacy and helping households feel at ease during the survey process.  Interviewers will also explain the voluntary nature of participation and that participants may refuse to participate or withdraw from the survey at any time  .**Involvement of / collaboration with relevant local stakeholders: *please describe the role that they will play***  Refugee return service and UNHCR provide permission to conduct the survey and facilitate on the survey.  The Refugee Camp Committee (RCC) chairman and zonal leaders will be informed before data collection commences. They will be asked to inform block representatives so that they can facilitate the smooth data collection.  **Obtaining informed Consent**:  After a brief description of the study objectives to the head of household, data collectors will ask if the head of household consents to take part in the survey. Consent will therefore be verbal.  **Confidentiality and privacy:**   * Digital data will be de-identified and stored on password protected devices, with encryption used during data transfer and aggregation. * All interviewers will receive training on ethical conduct and confidentiality safeguards. They will conduct interviews in a private setting within households. Participants will be assured that their personal information will be kept anonymous. * Protecting the confidentiality of survey participants will be a priority throughout the vaccination coverage assessment in Kule refugee camp. No individual identifiers, such as names, will be collected during interviews. Each surveyed household will receive a unique anonymous code for data collection purposes.   **How will the study demonstrate respect for study participants:** *including how findings are shared with them*   * Obtain informed consent from all participants prior to interviews, explaining the survey purpose and voluntary nature of participation. * Show courtesy by introducing team members, wearing appropriate clothing, minimizing household disruptions during interviews. * Conduct interviews in private settings to maintain dignity and confidentiality of participants. * Thank participants for their time and insights after completing questionnaires. * Results will be returned to the local community through zonal meetings and posters that will be placed in the MSF structures.  1. Has a protocol been submitted to or approved by National/ Local Ethics Review Committee(s)?   No/Not yet  Yes   1. If not yet submitted, please indicate when and to which committee the protocol will be submitted:  * Once the draft concept note is approved, it will be shared with the Gambella regional health bureau      1. If not planned to be submitted to local committees please note why not, and which alternative permissions have been obtained:   **Do you believe your study meets MSF ERB criteria for exemption from full review?**   1. No. 2. Yes, because it is a retrospective review of routinely collected data. If so, it must meet all [criteria to qualify for exemption](https://scienceportal.msf.org/assets/7964) 3. Yes, because it is a survey that follows the MSF Intersectional Standardized Survey Protocol. If so, it must meet the [exemption criteria](https://scienceportal.msf.org/assets/6996) 4. Yes, for any other reason (please explain here)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | |
| **Roles and responsibilities**  If responsibilities are split differently between the roles outlined below or held by other members of the research team, please describe clearly in the sections below. ReMIT responsibility must be held by an MSF staff member. | | | | |
| **Primary Investigator (PI)**  *Responsible for carrying out the study with support and consultation from research team. Will usually lead on all journal correspondence. TOR is* [*here*](https://msfintl.sharepoint.com/sites/OCA-dept-PHD/Shared%20Documents/Research%20%26%20Innovation/Operational%20Research%e2%80%8b%e2%80%8b/Research%20System%20Processes/Research%20Team%20ToR.pdf) | **Name: Yigremachew Girma (Epidemiologist)**  Email address: [kule-epidem@oca.msf.org](mailto:kule-epidem@oca.msf.org) | | | |
| **Study Coordinator (SC)**  *Overall responsible for study, must be MSF HQ staff, usually topic specialist. Responsible for: ensuring HA and PI have fulfilled their roles; ensuring everyone named in this CP is clear about their involvement; updating ReMIT, translating findings into impact, appropriately disseminating materials (see later section). TOR is* [*here.*](https://msfintl.sharepoint.com/sites/OCA-dept-PHD/Shared%20Documents/Research%20%26%20Innovation/Operational%20Research%e2%80%8b%e2%80%8b/Research%20System%20Processes/Research%20Team%20ToR.pdf) | **Name: Patrick Keating (Epidemiologist Advisor)**  Email address: patrick.keating@london.msf.org  Is the topic specialist / topic holder informed/involved? Yes  Kartini Gadroen, MSF-OCA  Email address: [Kartini.Gadroen@amsterdam.msf.org](mailto:Kartini.Gadroen@amsterdam.msf.org) | | | |
| **MSF research team** | Patrick Keating (Epidemiological Advisor) [patrick.keating@london.msf.org](mailto:patrick.keating@london.msf.org)  Alan Pereira (Medco Ethiopia) [ethiopia-medco@oca.msf.org](mailto:ethiopia-medco@oca.msf.org)  Serge Kisenga (Dep Medco Ethiopia) [ethiopia-medco-dep@oca.msf.org](mailto:ethiopia-medco-dep@oca.msf.org)  Birhanu Sahelie (Medco-assist) [ethiopia-medco-assist@oca.msf.org](mailto:ethiopia-medco-assist@oca.msf.org)  Joris van Oss (kule PC) [kule-pc@oca.msf.org](mailto:kule-pc@oca.msf.org)  David Tugizimana-B. (MTL Kule) [kule-mtl@oca.msf.org](mailto:kule-mtl@oca.msf.org) | | | |
| **Field involvement** | Are national/other field staff informed/included as co-investigators?  No  Yes  Will protocol development include field team input?  No  Yes  If no to either of above, please provide explanation:  Please describe any planned capacity building activities for national staff:  A two day training will be provided for data collectors, and supervisors | | | |
| **Health Advisor (HA)**  *Responsible for facilitating study operationally, ensuring desk/field have agreed to study and feeding back to PI/SC.* | Name of relevant HA(s): Agatha Bestman  Is/are the HA(s) supporting the study on behalf of the countries they manage?  No  Yes | | | |
| **External partners/MoH**  *Name, position, role of external collaborators.* | **International: UNHCR**  **Local:** *e.g. Ministry of Health, NGO*  RRS & Regional health bureau  **Community**: *if relevant, describe consultation with a body representing the community.*  Refugee Camp Committee (RCC)  Are **resource agreements in place**, e.g. Open Access publication costs?  No  Yes, namely: | | | |
| **Competing interests** | *NA* | | | |
| **Data management and sharing**  *Contact details of those responsible for ensuring data are managed and shared in accordance with MSF’s Health Data Protection Policy and GDPR* | Name: Patrick Keating  Email: patrick.keating@london.msf.org  Data management plan: *describe how data will be managed and stored.*  Data will be collected using KoBoCollect questionnaires on smartphones or tablets. The data will be downloaded in CSV format and password protected before being exported to R software for analysis. After the survey is completed, the paper questionnaires will be stored at coordination and the electronic database will be stored on the Project operational research sharepoint folder for 5 years.  Will data be shared with an external partner such as an academic institution  No  Yes, namely:*Complete the* [*OCA Data Sharing Agreement*](https://msfintl.sharepoint.com/:w:/s/Researchsystem/EUzjH4uorYtApQ2oduCHxO0BQXa7WT97eyajiqacMxr-1w?e=tnvzUh) *and submit for Medical Director signature.* | | | |
| **Opting out**  *All concept papers and/or (ERB approved) protocols are made available on ReMIT and the MSF Field Research website*. Questions about ReMIT? Email  *oca.research@london.msf.org* | This concept paper and/or accompanying protocol cannot be made available on:  ReMIT; because:  MSF Field research website; because: | | | |
| **Implementation/ impact and dissemination**  Responsibility of the Study Coordinator (unless otherwise noted in roles/responsibilities section) | | | | |
| **Implementation/impact** | The goal is to fully leverage the survey insights both operationally within MSF and strategically amongst partners to align efforts to improve vaccination coverage in the camp population. | | | |
| **Dissemination**  *Note on journal publication - MSF has an Open Access (OA) journal publication policy. Fee reduction must be requested* ***at article submission.*** *See* [*guidance*](https://msfintl.sharepoint.com/:b:/r/sites/OCA-dept-PHD/Shared%20Documents/Research%20%26%20Innovation/Operational%20Research%E2%80%8B%E2%80%8B/Publication%20and%20Dissemination/Publication%20and%20data%20advice.pdf?csf=1&web=1&e=lCVTiD) *on publication.* | **Dissemination of findings:** *Describe how findings will be disseminated:* *including translation of research into booklets or other advocacy materials as appropriate.*  MSF – project, mission, headquarters: Through shared survey report and highlighting findings at MST and project level meetings  Community: Results will be shared to the local community through zonal meetings and posters that will be placed in the MSF structures.  In country partners (including MoH): An executive summary will be shared with the regional health bureau, UNHCR and other camp authorities  International dissemination (including WHO and other agencies, scientific publication): NA  Authorship: *list possible authors (at least 1st and last):*  Has the dissemination plan got the support of the Health Advisor (HA)?  No  Yes  *Research outputs must be sent in parallel, before wider distribution, to the OCA Research Committee for quality review and to the HA, who will have 1 week to raise any context concerns with the Committee. Context concerns arising since Concept paper approval or quality of output likely the main reasons to postpone outputs.* | | | |

|  |  |
| --- | --- |
| **\*Study Reporting Guidelines**  To assist authors in writing up their studies to meet scientific journal criteria | |
| Observational studies – [STROBE](http://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.0040296) ([& extensions](http://www.equator-network.org/?post_type=eq_guidelines&eq_guidelines_study_design=0&eq_guidelines_clinical_specialty=0&eq_guidelines_report_section=0&s=+STROBE+extension&btn_submit=Search+Reporting+Guidelines))  Randomised trials – [CONSORT](http://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1000251) ([& extensions](http://www.equator-network.org/reporting-guidelines/consort/))  Systematic reviews – [PRISMA](http://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1000097) ([& extensions](http://www.equator-network.org/reporting-guidelines/prisma/))  Case reports – [CARE](http://jmedicalcasereports.biomedcentral.com/articles/10.1186/1752-1947-7-223) | Qualitative research – [SRQR](http://journals.lww.com/academicmedicine/Fulltext/2014/09000/Standards_for_Reporting_Qualitative_Research___A.21.aspx) ([& extensions](http://intqhc.oxfordjournals.org/content/19/6/349.long))  Diagnostic studies – [STARD](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4623764/)  Quality improvement studies – [SQUIRE](http://qualitysafety.bmj.com/content/17/Suppl_1/i3.long)  Prediction model studies - [BMJ](http://www.bmj.com/content/350/bmj.g7594.long) |

**Annex 1. OCA Ethics Review Exemption Template**

|  |
| --- |
| **Research exemption proposal**  **Template to be filled out and submitted to OCA Research Committee along with a concept paper when requesting exemption from ERB review. See MSF ERB guidance on exemption criteria. Please use the MSF Research Ethics Framework – Guidance document to answer the questions below.** |
| **Title (same as for Concept paper):** To conduct a Vaccination coverage survey after mass vaccination campaign (MVC) against measles in  Kule refugee camp, Gambella, from Oct-Dec 2023. |
| **Name of Primary Investigator (PI):** Yigremachew Girma (Epidemiologist) |
| ***Has a protocol been submitted to or approved by National/ Local Ethics Review Committee(s)?***  ***☒ No ☐ Yes***  ***If not yet submitted, please indicate when and to which committee the protocol will be submitted:***  *Protocol will not be submitted to any ethical review board.*  ***If not planned to be submitted to local committees, please note why:***  ***The authorization for the intervention in Kule camp is provided by RRS & UNHCR to MSF-H includes mention of a Measles vaccination coverage survey to be carried out by MSF-H after the mass vaccination campaign.*** |
| **1. Exemption Criteria** |
| * 1. **Is the study based on routinely-collected clinical data from pre-existing, established programmes?**   **☒ No ☐ Yes** |
| * 1. **Is the study descriptive/evaluative or a targeted evaluation?**   **☐ No ☒ Yes** |
| * 1. **Explain here how confidentiality is respected – how you will ensure that no individual patient identifiers are revealed or used?**   Protecting the confidentiality of survey participants will be a priority throughout the vaccination coverage assessment in Kule refugee camp. No individual identifiers, such as names, will be collected during interviews. Each surveyed household will receive a unique anonymous code for data collection purposes. |
| **(1.4) What are anticipated harms? Ensure you acknowledge any that are relevant or state ‘no harms anticipated’. Can these be kept**  **Minimal?**  The survey poses minimal risk to participants' privacy, as no identifying information is collected or linked to survey data. However, the household interviews may cause brief intrusion that some families could find uncomfortable. To mitigate this, interviewers will receive training on ensuring privacy and helping households feel at ease during the survey process. |
| * 1. **Describe potential benefits to the programme, community, and if publication is the goal, to a wider audience:**   At the program level, the survey will generate vital data on vaccination coverage among camp residents. The results can guide planning for any additional immunization efforts needed to fill gaps, The survey will also provide insights into strengths and weaknesses in service delivery and utilization during the campaign. These learnings can inform strategies to bolster routine immunization activities in the camp going forward. By elucidating potential outbreak risks, the findings will support preparedness plans for surveillance, case management, and community mobilization.  For the refugee community, the coverage assessment can identify pockets of low vaccination coverage and vulnerable groups for targeted action. Raising immunity across the board will protect all residents against measles. Communication of results can promote further vaccination demand and uptake. The participatory process and community-level analysis will empower residents to take ownership of immunization programs in their camp.  If published, the survey can make important contributions to the evidence base on optimal immunization approaches in humanitarian emergencies. Documenting methodology and results from the refugee camp setting will inform guidelines and best practices for implementing effective vaccination campaigns during complex crises. Ultimately this helps raise immunization standards for refugee populations globally. |
| * 1. **Describe any collaborative involvement and, if applicable, authorship from a local authority or partner (Ministry of Health, DHO, other NGO); if relevant and applicable, describe consultation with a body representing the community:**   **None** |
| **2. Ethics Statement** |
| Once exemption has been granted by the OCA Research Committee, the authors can insert into their article the following statement that has been approved by the MSF ERB:  “*This research fulfilled the exemption criteria set by the Médecins Sans Frontières Ethics Review Board for a*  *Posteriori analyses of routinely collected clinical data and thus did not require MSF ERB review. It was conducted with permission from (Medical Director, Operational Centre) Médecins Sans Frontières.”* |