# UN MEDICAL DIRECTORS
# UN COVID-19 VACCINE COUNTRY PRIORITIZATION MODEL

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## AIM

A key element of the UN's COVID-19 vaccination strategy is the decision to encourage UN personnel to rely primarily on their local authorities' COVID-19 vaccination program, and to limit the UN's self-procurement effort only to a smaller number of priority countries in which the UN community would be excluded from the national vaccination plan.  This UN Medical Director's document aims to elaborate on the methodology for creating such a ranking of priority countries based on health and medical criteria for the purpose of UN's own COVID-19 vaccine deployment efforts.

## BACKGROUND

UN's vaccine deployment effort presented the need to rank the countries whose UN personnel had had no guarantee by local authorities' to COVID-19 vaccine access.  Such a ranking would help support the Vaccine Deployment Team at UNHQ on identifying the most critical countries where from a health and medical perspective vaccines should be sent first.

To guide the process of selecting these countries, a **COVID-19 Vaccine Country Prioritisation Model** was created.  This is an indicator-based tool that scored countries across several criteria.  Through this methodology, an initial list of "priority" countries would be identified, followed by additional countries identified for allocation of UN vaccines at a later stage as increasing resources allow.  *(It should be noted that countries where local authorities expressed in writing that their national vaccine program would include UN personnel and dependents would be excluded from this list of countries for prioritisation.)*

## PRINCIPLES OF INDICATOR SELECTION

Selection of indicators has been based upon factors that reflected **challenges or inadequate access to vaccines in-country**; comprise indicators over different dimensions.  A literature review has showed that key factors for a country's lack of vaccine access included, amongst others, inadequate or collapse of local public health and medical infrastructure; inadequate training of local health care workers; conflict and violence setting; inadequate transport infrastructure and electricity supply to preserve cold chain and high vaccine prices (which was not as relevant here due to COVAX).  Other factors for consideration included the scale of impact of a successful vaccination effort.

With the above overarching principles in mind, the following six indicators were selected on the basis of the above factors. The indicators were drawn from a range of existing metrics both within and without the UN[1].

1. **FLOD Index**
2. **DSS Security Level System**
3. **UN MEDEVAC Rates**
4. **ICSC Mobility and Hardship Category**
5. **UN Case Rates**
6. **Human Development Index (HDI)**

Definitions of each of the above indicators can be found in **Annex 1**.  After selection, the data relevant to these indicators were then standardized and re-scaled using a simple method of min-max normalisation.  Where an indicator was a composite of more than one measure, a simple average was taken (e.g. for ICSC categories and DSS security level system).[2]

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[1] Due consideration was made to the inclusion of local host country data on COVID-19 case rates.  However, as case data was often reliant on the robustness of a public health system and the availability of systematic in-country testing, it was felt that such an indicator would not align with factors that challenged local vaccine access.

[2] It should be noted that this Country Prioritisation Model is only applied to a pool of countries in which local host authorities have not yet provided to the UN formal letters of agreements of coverage of UN personnel for the COVID-19 vaccine.

# GENERATING SCORES

Through a process of exploring the model and discussion, the UN Medical Directors agreed on the following weightages of each of the six indicators.

1. FLOD Index (weightage **30%**)
2. DSS Security Level System (weightage **25%**)
3. UN MEDEVAC Rates (weightage **20%**)
4. ICSC Mobility and Hardship Category (weightage **10%**)
5. UN Case Rates (weightage **10%**)
6. Human Development Index (HDI) (weightage **5%**)

The metrics of these six indicators was then used to generate individual country scores through simple addition of all indicator metrics, in the varying weightages as agreed upon by the UNMDs. See **Annex 2** for the top 50 countries produced from this model.

# IMPLEMENTATION

Whilst this model produces a standardised and risk-based list of countries, **there may be countries that need assessment on a case-by-case basis**, with real-life context changes in country circumstances and other factors taken into consideration. Where there are significant shifts in country context, such a priority country list should be amended accordingly. Further, it should be noted that the Country Prioritization Model is a "living" and dynamic model. New data (e.g. case rates and medevac rates) influencing each indicator may be changing at any one point-in-time as new data comes in.

Additional factors that may influence implementation would be considered at an operational level, but could include elements such as number of UN staff on the ground, mechanism by which the UN would be able to administer vaccination (e.g. via UN clinics), ability to import vaccination into the country etc.

# CONCLUSION

This document outlined the process by which the UN COVID-19 Vaccine Country Prioritization Model was developed by DHMOSH and endorsed by the UNMD, including elaborating on the principles of indicators selection and mechanics of generating individual country scores. The priority list should be considered as a dynamic tool, including/excluding countries as indicators evolve and national vaccination programs are being introduced. It is expected that generation of such a ranking of countries would be the first step in the exercise, as further operational indicators would need to be considered and further overlaid atop this priority list.

# ACKNOWLEDGMENTS

# ANNEX 1: DEFINITION OF THE SIX SELECTED INDICATORS

1.  **FLOD Index (weightage 30%)**

    This is an indicator which measures access of UN personnel locally to the local UN/other health care services based on qualitative assessment by the UN's FLOD team. It is rated from 1 – 5.

2.  **DSS Security Level System (weightage 25%)**

    **Key Message:** The Security Level System (SLS) is an addition to the SRM framework. The SLS assigns a security grade or level. This is used to identify the over-all level of threat or danger in an area where the UN operates. It improves threat assessment in a specific context.

    **The SLS evaluates the five categories of threats:**

    1) Armed conflict
    2) Terrorism
    3) Crime
    4) Civil unrest
    5) Hazards – natural and human-made

    **The SLS then identifies the overall resulting security levels, using a scale of 1-6 (from lowest to highest).**

    Each level has a name:

    1 - Minimal
    2 - Low
    3 - Moderate
    4 - Substantial
    5 - High
    6 - Extreme

3.  **UN MEDEVAC Rates (weightage 20%)**

    This is a rate-based indicator which comprised of the number of COVID-19 medical evacuations that occurred amongst UN personnel, dependents and iNGO personnel, divided by the total corresponding population in that country.

4.  **ICSC Mobility and Hardship Category (weightage 10%)**

    **Consolidated List of Entitlements**

    All duty stations are categorized into one of six categories, H and A to E.

    - H locations are either at headquarters and other similarly designated locations where the United Nations has no development/humanitarian assistance programmes, or in member countries of the European Union. The hardship allowance does not apply at H duty stations.

    - A to E duty stations are rated on a scale that assesses the difficulty of working and living conditions from A to E, with A being the least and E the most difficult. Categories are arrived at through an assessment of the overall quality of life. In determining the degree of hardship, consideration is given to local conditions of safety and security, health care, housing, climate, isolation and level of amenities/conveniences of life. The hardship allowance is paid for assignments at B, C, D and E duty stations; there is no hardship allowance at A duty stations.

5.  **UN Case Rates (weightage 10%)**

    This is a rate-based indicator which comprised of the number of COVID-19 cases amongst UN personnel and dependents divided by the total corresponding population in that country.

6.  **Human Development Index (HDI) (weightage 5%)**

    The Human Development Index (HDI) is an index that measures key dimensions of human development. The three key dimensions are:[1]

    – A long and healthy life – measured by *life expectancy.*

    – Access to education – measured by *expected years of schooling* of children at school-entry age and *mean years of schooling* of the adult population.

    – And a decent standard of living – measured by *Gross National Income per capita* adjusted for the price level of the country.

# ANNEX 2: LIST OF TOP 50 COUNTRIES GENERATED BY THE COVID-19 VACCINE COUNTRY PRIORITISATION MODEL

| No. | Country |
|---|---|
| 1 | Central African Republic |
| 2 | Syrian Arab Republic |
| 3 | Burkina Faso |
| 4 | South Sudan |
| 5 | Yemen |
| 6 | Equatorial Guinea |
| 7 | Afghanistan |
| 8 | Mali |
| 9 | Guinea |
| 10 | Guinea-Bissau |
| 11 | Mauritania |
| 12 | Somalia |
| 13 | Libya |
| 14 | Eritrea |
| 15 | Ethiopia |
| 16 | Haiti |
| 17 | Comoros |
| 18 | Sudan |
| 19 | Uganda |
| 20 | Chad |
| 21 | Iraq |
| 22 | Bangladesh |
| 23 | Venezuela (Bolivarian Republic of) |
| 24 | Congo Brazzaville |
| 25 | Angola |
| 26 | Nepal |
| 27 | Niger |
| 28 | Democratic Republic of the Congo |
| 29 | Uzbekistan |
| 30 | Mozambique |
| 31 | Armenia |
| 32 | Turkmenistan |
| 33 | Kyrgyzstan |
| 34 | Tajikistan |
| 35 | Cape Verde |
| 36 | Burundi |
| 37 | Algeria |
| 38 | Democratic People's Republic of Korea |
| 39 | Jamaica |
| 40 | Malawi |
| 41 | Pakistan |
| 42 | Cameroon |
| 43 | Papua New Guinea |
| 44 | Liberia |
| 45 | Madagascar |
| 46 | Côte d'Ivoire |
| 47 | Myanmar |
| 48 | Zimbabwe |
| 49 | Honduras |
| 50 | Sierra Leone |