Frequently Asked Questions (FAQs): WHO COVID-19 Essential Supplies Forecasting Tool (COVID-19 ESFT)
17 April 2020

General questions

What are the key characteristics of COVID-19 ESFT?
The WHO COVID-19 Essential Supplies Forecasting Tool (COVID-19 ESFT) is meant to help countries forecast essential supplies for their COVID-19 response including personal protective equipment (e.g., masks and gloves), biomedical equipment for case management (e.g., ventilators and oxygen concentrators), diagnostic agents and equipment, essential drugs for supportive care, and consumable medical supplies. The tool is best suited for estimating essential supply needs over a short time period (12 weeks or fewer) but can be used for longer. COVID-19 ESFT does not quantify or account for resources already available locally or those pending delivery. Users should monitor the website for updates to COVID-19 ESFT.

Is COVID-19 ESFT an epidemiology model?
COVID-19 ESFT is not an epidemiological model. The inputs, such as doubling rates and clinical attack rates, are based on available information that has been shared by experts and academic groups, and are generalized to fit ongoing trends in global disease burden.

Where do COVID-19 ESFT’s assumptions come from and how are they used?
Assumptions for the volume of patient testing, equipment use, staffing needs, infrastructure required, and oxygen demand, have been informed by clinical guidance, current practice, and international standards (e.g., estimates of hospital beds and health care workers from the World Bank). Assumptions are subject to change as new data are presented.

What does COVID-19 ESFT NOT do?
Although COVID-19 ESFT estimates the need for treatments associated with COVID-19 symptoms and co-morbidities, COVID-19 ESFT does not project the need for treatments, experimental or otherwise, used to target COVID-19 directly.

Getting started

How can I get started and use COVID-19 ESFT to forecast essential supplies for my needs?
First, download the tool here. Second, review the FAQ in this document for a brief overview of its functionality, limitations and user guidance. Third, open the model and toggle to the “DISCLAIMER” tab. Please read and click “I understand” to each of the options before proceeding. Fourth, toggle to the “User Dashboard” tab and complete the ‘User Input’ section (row 11 to 32) in accordance to the parameters you wish to model. Guidance is available below on this. Finally, it may be necessary to collect data for entry within the “User Dashboard” tab, particularly if running a ‘Manual’ population (e.g., at sub-national level or in a humanitarian setting). Review the input parameters required and pause to collect and/or verify data for your setting.

Version 1.2
Users should monitor the website for updates to COVID-19 ESFT.

User inputs
How can I model the COVID-19 essential supplies needs for a specific population?
If the user is looking to model needs at a country level, select the country name from the drop down in cell C17 on the “User Dashboard”. Note that countries are listed with the names as reported in World Bank datasets.
If the user is looking to model needs at a sub-national level, or for a specific population (e.g., humanitarian needs in a refugee camp), select ‘Manual’ from the bottom of the dropdown list in cell C17. Then enter the total population size of the population to be modelled in cell C19.

How does COVID-19 ESFT estimate the expected number of cases per week if I select “Exponential Growth”?
These user inputs are available under Step 2 of the USER DASHBOARD tab.
Exponential growth is an automated way to calculate the number of cases over time, considering two elements: disease doubling times, and clinical attack rates, explained below.
Doubling time: the estimated number of days it takes for the number of cases to double. This will essentially serve as a basic way to model the speed at which the epidemic growth curve develops over time.
Clinical attack rate: the proportion of the population estimated to contract the disease and present with clinical symptoms. This will essentially serve as an upper limit to the total number of cases possible within a population.
The doubling rates, and attack rates, are based on the available information on current trends that has been shared by experts and academic groups.

What is the difference between “Exponential Growth” and “Manual” or the case estimation method?
“Exponential growth” is an automated method COVID-19 ESFT uses to calculate the number of cases over time using an exponential growth trajectory summarized above. Users should select this in the absence of any other method available.
If specifically designed tools and epidemiological models are available to the user, they may choose to manually input the predicted cases by selecting the “Manual Entry”. Once “Manual Entry” is selected in the dropdown menu, the user should enter the weekly predicted case load estimates into column C of the MANUAL PATIENT CALCS tab.

What should I choose as the testing strategy option?
There are two available testing strategy options including “All Suspected Cases” and “Targeted” as user inputs under Step 2 of the USER DASHBOARD tab.
“All Suspected Cases”: this testing strategy assumes that tests will be given to all presenting suspected cases. The current assumption is that for every positive CoVID-19 case detected there will be three negative tests conducted.
“Targeted”: this testing strategy assumes that all suspected cases will be tested until 1,000 cumulative cases are reached. From this point forward, tests are prioritized for the proportion of all cases that are estimated to develop severe (15%) and critical (5%) disease, plus an additional 10% to allow testing of vulnerable populations at risk. For more information on testing strategy, please refer to the WHO Laboratory testing strategy recommendations.

How do the inputs for determining the forecast period work?
These inputs are found under Step 3 of the USER DASHBOARD.
“Delivery lead time until shipments received” allows users to enter a lag time of up to one week in order to account for any delay of shipment to the country destination.
“Max # of weeks needed to forecast equipment” is the week number at which the total possible number of cases, as determined by the clinical attack rate, will be reached in the given population. The speed at which this is reached is based on the input parameters for growth rate of the epidemic. “Enter # of weeks to forecast equipment” is the total number of weeks that the tool will be able to quantify supply needs.

What are the editable health system parameters?
This calculator includes editable assumptions about limitations of health systems to absorb the projected number of patients, found specifically in Step 4 and Step 5 of the USER DASHBOARD tab. Users can manually input the known number of available healthcare workers and laboratory staff in step 4 on the USER DASHBOARD tab or use the auto-populated values from a linked dataset estimates these numbers. The user can also designated the proportion of these staff dedicated to COVID-19 response.

Users can manually input the known number of available hospital beds in step 5 of the USER DASHBOARD tab or use the auto-populated values from a linked dataset estimates these numbers. The user can also assign a proportion of those total hospital beds as designated ICU beds for critical cases.

Outputs

Where do I find the high-level results of the forecast?
A high-level summary of the forecasted results is available on the USER DASHBOARD tab, under on the “High-Level Output” header. The total number of forecasted cases, by case severity, are visualized in a bar graph. The peak bed capacity for severe and critical cases are visualized in a bar graph. The total number of tests are forecast over the defined period in a bar graph. A tabulated breakdown of the total number of cases by patient severity, max number of beds expected at peak occupancy, and total number of tests are also presented in a high-level results table.

Where do I find the full quantification of supplies that COVID-19 ESFT estimates?
Within the USER DASHBOARD tab, a table under the “Detailed Equipment Quantification” is available with quantification of each line item. Within the table, various supplies are quantified for personal protective equipment, diagnostics, hygiene, drugs and consumables, and biomedical equipment. Note that two items – the “Drugs modules 40 patients” and “Medical supply, consumables, 40 patients” are packages of drugs and consumables respectively. The breakdown of detailed items within these packages can be found by toggling to the “COMMODITY DETAILS ->” tabs.

What is the “drug module for 40 patients” and what is included in this?
This is the total amount of drugs that would be packaged together for the full of care of 40 patients as needed by either severe or critical patients. A detailed breakdown of the full list is available in another tab called REQUIRED DRUG PACKAGE, which includes a line itemized list of 89 different drugs, including cold chain dependent and controlled drugs.

What is the “medical supply consumables for 40 patients” and what is included in this?
This is the total amount of consumable medical supplies that would be packaged together for the full of care of 40 patients as needed by either severe or critical patients.
A detailed breakdown of the full list is available in another tab called REQUIRED CONSUMABLES PACKAGE, which includes a line itemized list of 30 different products needed for patient care.

**Where did the $USD cost values come from and can I modify the line item costs?**
Each line item in the detailed equipment quantification has an estimated cost listed in $USD. These costs are price estimates that were available to WHO at the time the tool was designed and should be considered as suggested prices.
Any price may be modified as needed by the user, should they decide more accurate pricing information is available or if costs have changed over time. These prices cannot be guaranteed and the market for many commodities has evolved significantly during this pandemic, and is likely to continue to do so.

**Calculations**

**What are the “summary tabs” and how do I interpret the information displayed within?**
The COVID-19 ESFT tool requires a number of mid-point calculations in order to quantify the final supply needs displayed in the USER DASHBOARD tab. The dark blue summary tabs are sets of mid-point interim calculations that will feed into the final formulas to help calculate the displayed output. There are three main tabs for such calculations to calculate the number of patients by case severity, and the number of healthcare workers and other related cadres involved in the model. The weekly total and cumulative total number of patients and various staff accounted for by the model are also broken down in detail within these tabs.

**What are the “Assumptions” tabs and how do I interpret the information displayed within?**
The COVID-19 ESFT tool requires a range of assumptions on case severity and length of stay, testing scenarios, health care worker and infrastructure configuration, equipment usage. These have been entered in the “Assumptions” tabs, and are not editable to users. These inputs have been informed by clinical guidance, current practice, and the most reliable statistics and numbers available at the time of publication.
Future iterations of the model will likely allow additional flexibility for users to adapt some of these parameters to their setting.

**What are the “Patient calcs” tabs and how do I interpret the information displayed within?**
The COVID-19 ESFT tool is built from estimating patient case load over time in the “Patient calcs” tabs, as per the descriptions on doubling time and clinical attack rate above.
The user can only edit the “Manual Patient Calcs” tab, when selecting ‘Manual’ in the ‘Cumulative Case Estimation Method’ on the ‘User Dashboard’.

**What are the “Commodity Details” tabs and how do I interpret the information displayed within?**
These tabs detail the equipment lists presented in the ‘User Dashboard’ output, including breaking down the drugs and consumables packages into their constituent parts.
The items in these commodity lists will be updated over time to reflect clinical guidance for patient management.

**What are the “Reference data” tabs and how do I interpret the information displayed within?**
These tabs include the datasets from the World Bank, WHO and UN that are used to provide infrastructure and health care worker estimations for each country.