

MSFCalc: an online tool to forecast NCD medical supplies

Demo at: <http://msfcalc.justdatathings.co.uk/>

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Project Context

The process of forecasting and preparing medication orders is manual and time-consuming: involving loads of discussion, the exchange of various Excel files back and forth and the validation from multiple stakeholders at multiple levels. Also, differences in prescription habits among doctors from different locations and cultures can result in significant gaps between forecasted and actual consumption. In the context of a new mission or a new program this task is even more challenging, because of the lack of reliable prescription (consumption) data to guide the forecast. When there is no consumption data, MSF staff do not know what to expect and it is extremely hard for them to make an informed guess to prepare the first order.

Currently, within MSF there are no tools for the calculation of specific groups of medications, such as NCDs (Non-Communicable Diseases). NCDs are particularly challenging as there can be many variations within a class of drugs and because individual patient medication needs /doses change over time. MSFCalc aims to support potentially less experienced users in creating their first NCD supply estimation to start with.

The broader goal of the project is to create a digital workflow to estimate medical supplies for NCDs that can be adapted to different local & disease contexts in order to improve efficiency and streamline the medical supply prediction and ordering process.

What MSFCalc aims to achieve



Who is it for

MSF medical staff (MTLs & MedCos) who need to estimate NCD medical supplies for a new mission or a new NCD program, without access to reliable consumption data (e.g. patient prescriptions, actual consumption data)



Problem to solve

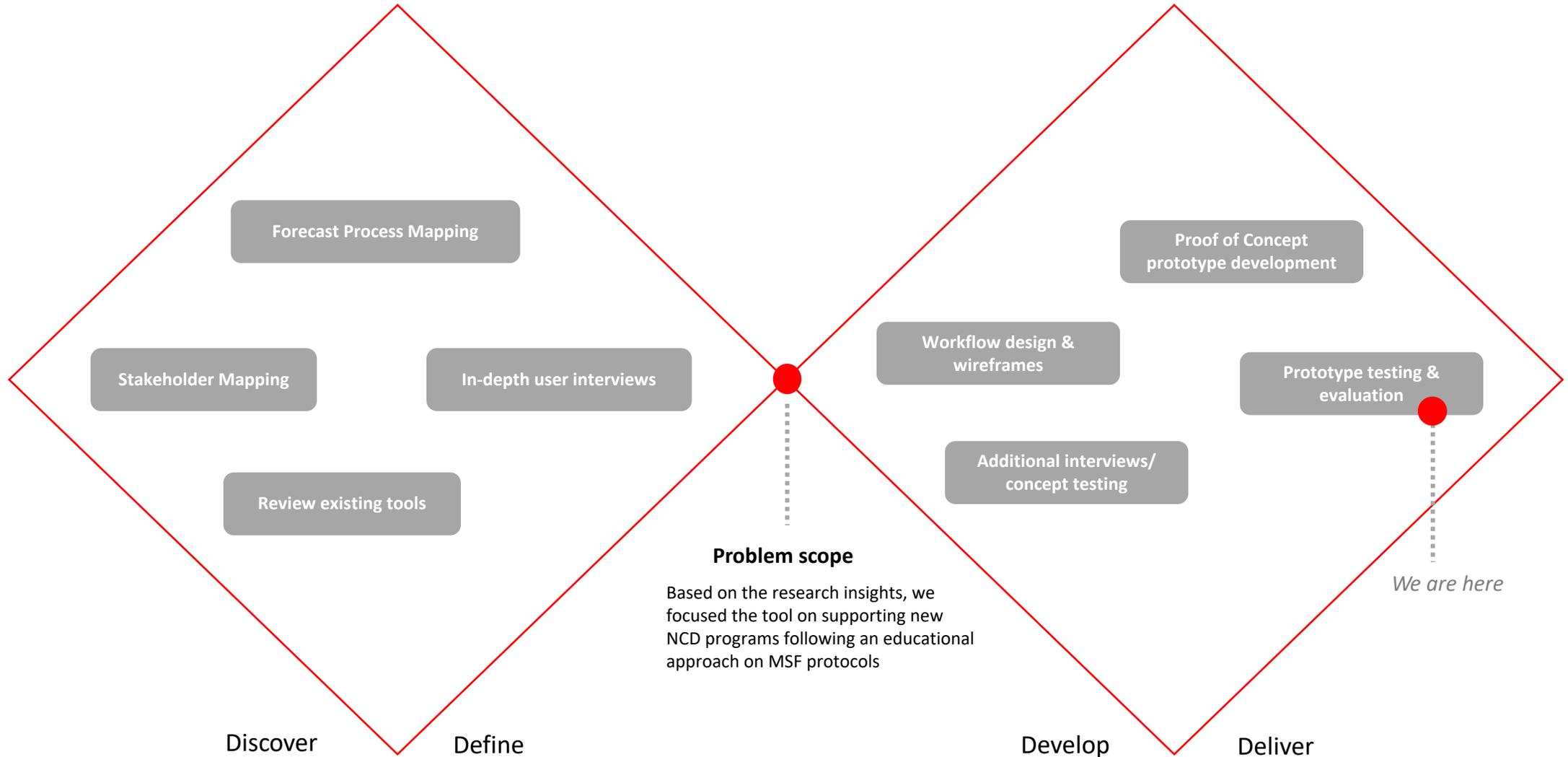
Help end-users to create a first estimation of MSF approved NCD medications – currently only for diabetes – accounting for patient cohort growth and based on the MSF lines of treatment protocols.



Value for end users

MSF protocols for NCDs describe the various lines of treatment, but they are also open to interpretation. The tool delivers a pedagogic value for field projects, by translating these protocols into groups of medications that treat different conditions/ levels of severity. Rather than ask “how many boxes of x medication I should order”, the end user needs to think, how many patients with diabetes will I be able to treat in the 1st line, 2nd line etc? How many for cholesterol?

The research & design process for MSFCalc



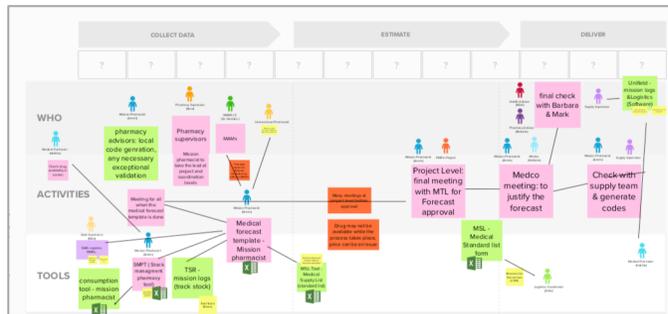
Process in detail

Stakeholder & Process Mapping

We started with online workshops to better understand the current practice, how NCD supplies are estimated, who are the key stakeholders and the tools used, to map out the entire process end-to-end.

Outcomes:

A high level mapping of the NCD medical supply forecasting process and dependencies, based on Jordan as a case study.

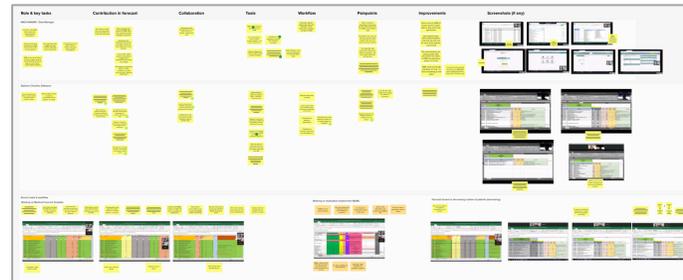


In-depth user interviews

Carried out 14 remote 1:1 interviews to understand how different roles participate in the forecasting process, their needs and current painpoints. Deep dive in tools, data and workflows.

Outcomes:

Workflow description for different profiles, identification of user needs and painpoints. Opportunities to provide value through a digital tool.

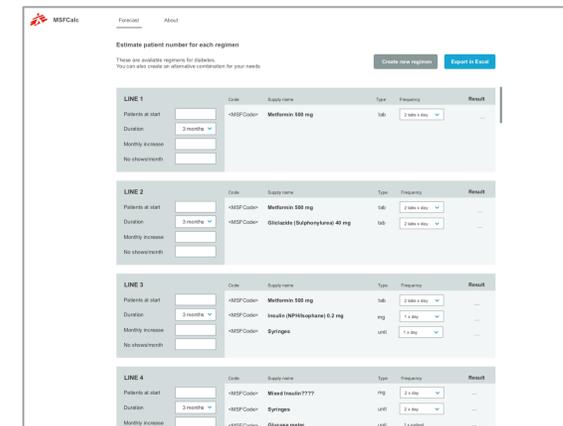


Design & Development

We designed and developed a prototype that translates MSF medical treatment line protocols in a way that helps MSF staff to estimate diabetes medications for new NCD programs/ new missions.

Outcomes:

A proof of concept prototype to evaluate with MSF staff (MedCos & MTLs) following an educational approach on treatment line protocols.



Patient distribution based on past NCD missions

The tool recommends an approximate patient distribution across the approved medications within each line of diabetes treatment. The patient ratios that are proposed, are based on calculations from past MSF NCD missions.

The user can adjust the patient numbers for each medication manually where and as needed.

Diabetes-1st Line Treatment Protocol

Duration (months):

Monthly increase: 0

Initial patients: 100 📅

MSF Code	Description	Packaging	Rec Dose	Patient Ratio	Dose:	Patients/drug:	Frequency of intake:	Total
DINJINSHB1VN	INSULIN HUMAN, BIPHASIC 30-70 IU/ml, 10ml, vial N	40 IU vial	40IU/day	10.0%	<input type="text"/>	<input type="text" value="10"/>	<input type="text" value="2 x day"/>	
DORAMETF5T-	METFORMIN HYDROCHLORIDE, 500 mg	500 mg tablet	2g/day	90.0%	<input type="text"/>	<input type="text" value="90"/>	<input type="text" value="2 x day"/>	

Calculate

Here we see a recommended 10% and 90% patient distribution (see 1). The end user can adjust those numbers, they are just a suggestion for a “best guess” - based on past MSF mission experiences with NCDs.

The bigger picture: research insights

Our research revealed some interesting “big picture insights” that are beyond the scope of the project:

- It is **extremely difficult to create a very first estimation for NCDs without any patient/ consumption data**. One needs to start by searching for available local data before using MSFCalc (e.g. from local health clinics, MoH, historic data, from other NGOs in the area) or consult an NCD expert within MSF.
- The forecasting process is fragmented and not end-to-end, so **additional Excel solutions are created ad hoc to address local needs**. Data needs to be transferred from one tool to another. For this reason, MSFCalc users can export their data in an Excel file.
- There is a **clear need to be able to digitise & track prescriptions**, in order to synthesise consumption data and use it to perform reliable forecasts. However, there are no standard tools for patient management, which results in each mission having different tools to fill in the gaps.
- The reality of the field can defeat even the most carefully crafted forecast. The **number of patients that can actually be treated in the first few months depends largely upon the available MSF resources**: the number of doctors and their working time at the clinic.

“It would be easier to track consumption if these tools were combined (patient data with consumption tools)”



Malaysia Mission

“People keep coming in increasing numbers when the word is out. An alternative practical approach would be to estimate patient numbers based on the available resources”



Myanmar Mission

Opportunities to make a difference

Based on the research insights and learnings with MSFCalc, we have identified these opportunities which could be addressed in future projects.

1. Create online protocol-based medical supply lists for estimations

Benefits:

- Consistency in how the protocol is being applied and interpreted
- Pedagogic approach for new MSF staff, speed & efficiency
- Accountability and transparency in prescription habits
- Connection to a single point of reference for medical supplies (MSF Green List)

2. Establish standards and tools for digitising & managing prescriptions

Benefits:

- Digitise and calculate data from new prescriptions
- Reliable consumption data and more accurate forecasts
- Improved patient treatment by giving doctors access to patient & prescription data

3. Estimate medical supplies based on MSF resources as an alternative

Benefits:

- Closer to the “field reality”
- Easy calculation of patient numbers based on “number of doctors” x “available time” (as suggested by research participants)
- A promising indicator on NCD supply needs for the early stages

“New diabetes patients need approx. 20-30 minutes with the doctor, repeat visits 10-15 minutes. A rough calculation could be done based on these timings to estimate patient numbers and the initial supplies needed”



Iraq Mission

Considerations for future adoption & scaling

- In order for the tool to be adopted in the field, it will need to **cover the full spectrum of possible NCDs**, not only diabetes, as well as **all types of medical supplies**.
- Most importantly, a **connection to the MSF General List database** will be required for the tool to be always up to date and to draw from the MSF approved list of medical supplies.
- **Looking beyond NCDs**, other conditions might require a **different template**, one that does not necessarily depend upon lines of treatment.
- There are hurdles that may hinder the success of such tools, e.g. frequently changing MSF codes for existing medications. **Consistency across protocols and medication data** is key for any tool like MSFCalc.

Thank you!

To try MSFCalc visit: <http://msfcalc.justdatathings.co.uk/>

You can [see a brief video introduction here](#).

MSFCalc is a proof of concept limited to diabetes and medications only. We hope to receive some honest feedback from you, to help us define the direction we should pursue in order to create a valuable NCD medical supply forecasting tool for the field.

Thank you in advance for your valuable feedback!

The MSFCalc Team