

**2023 Harvard/University of Global Health Equity  
Mathematical Modeling for Infectious Disease Planning**

**Evaluate and summarize interventions**

**Time: 1 hour 15 minutes**

At the end of the activity, you would have:

- i) applied to your model the considerations discussed in the lecture,
- ii) applied the summary tips presented in the lecture to your model results.

**For this exercise, please limit your interventions under consideration to no more than 3 interventions. For many groups, you will only consider 1 intervention. If you do have more than one, please list interventions in order of priority, starting with your primary intervention of interest.**

**1. Considerations to improve realism of interventions**

- a) Consideration 1: Are intervention rates realistic?

Consideration 2: When is the intervention implemented and who is directly affected?

- i. List the intervention(s) evaluated in your model and the assumptions (if any) underlying the intervention(s).

Intervention	Assumptions

- ii. Consideration 1: For each intervention listed above, review the associated rates (if applicable) and assess whether the rate values are realistic. For rates assessed to be unrealistic, set realistic values.

1. Intervention	2. Associated rate (if applicable). E.g, hospitalization rate	3. Rate value	4. Is rate value realistic* ? (Yes/No)	5. Explain answer in previous column (i.e., why is rate unrealistic/realistic?). If not realistic, what needs to change, or why are you using this value?

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*\*Hint: Refer to slides on Consideration 1 and to check 6 in “Sanity checks” lecture.*

- iii. Consideration 2: For each intervention listed above, answer the following: “which group/compartment does this intervention directly affect?”. Then, review model diagram to ensure that intervention is applied to the relevant group. Complete the table below with your responses.

1. Intervention	2. Which group/compartment is directly affected by intervention? E.g., intervention: hospitalization; group: symptomatic individuals	3. Type “Yes” if model diagram reflects the answer in column 2. If not, what changes are needed in the model diagram?

2. a) List the intervention levels being evaluated in your model. For each intervention or combination of interventions, assess at least 4 levels. Complete the table below.

Intervention	Relevant parameter symbol	Parameter interpretation (unit)	Levels	Other notes (if any)
<b>Example:</b> Hospitalization	$h$	hospitalization rate ( $\text{day}^{-1}$ )	$h = 0.2 \text{ day}^{-1}$ $h = 0.4 \text{ day}^{-1}$ $h = 0.6 \text{ day}^{-1}$	

- b) How would you present the results obtained from a): figures, tables or both, and why?

c) Applying the summary tips presented in the lecture, present your intervention results below using your choices in prompt 2b). Ensure that results are presented in terms of your main outcome(s) of interests.