**To:** (10)(2e) [(10)(2e)@rivm.nl]
**Cc:** (10)(2e)@trin.cam.ac.uk[(10)(2e)@trin.cam.ac.uk]
**From:** (10)(2e)@btinternet.com
**Sent:** Mon 5/18/2020 9:12:40 AM
**Subject:** Dear (10)(2e) (10)(2e) suggested you might be able to help me - risk management in the global COVID-19 vaccine "portfolio"
**Received:** Mon 5/18/2020 9:12:48 AM
Vaccine portoflio project summary for policy audience v8.pdf

Dear (10)(2e)

I hope you don't mind me emailing you. (10)(2e) suggested you might be able to help. With some collaborators, I am trying to build a good simulation model of the global covid-19 vaccine pipeline. It may help with policy development and risk management. After all, when there are lots of candidates for the same disease, managing correlated risks becomes more important than picking another *"winner"*. If you want more details, the attached PDF, a Financial Times article we wrote (*here*) and our short technical note (*here*), may help.

Our small team has some experience in analysing drug pipelines, risk analysis, and in ***certain*** aspects of vaccine R&D and manufacturing. However, we need to speak to ~10 or so vaccine experts to measure their views on a range of factors such as:

- The tractability and timing of vaccine development for COVID-19 versus viral pathogens in general and versus SARS and MERS in particular
- The main operational, efficacy, and safety risks for the various leading COVID-19 candidates (and vaccine platforms) through R&D, manufacturing, and deployment
- Plausible timetables for clinical development, manufacturing, and subsequent deployment, and major risks to these timetables
- The quality and "predictive validity" of preclinical evidence in COVID-19 vaccine candidates (e.g., neutralising antibody titres, design of macaque tests, degree of confidence that ADE and other adverse events can be avoided) versus other COVID-19 candidates and versus vaccines for other viral infections
- What we should be looking for in Phase I and Phase II data as it emerges in order to anticipate the likelihood of deployment and the clinical profile
- What safety data will be required for different levels of deployment (e.g., "emergency" use in health care professionals and high risk groups, versus general prophylaxis in the wider population) and how long will such data take to collect
- And correlated risks or bottlenecks that spread across projects (e.g., if one or two mRNA vaccines fail, how much more cautious should we be about other mRNA vaccines? Manufacturing supply constraints?)

I realize you are extremely busy, but might you be able to help us? I realize that not all experts will have confident views on all of the topics.

I am sending a similar email to various vaccine experts (10)(2a) but do you think there is anyone in particular we should try to talk with?

Yours sincerely

(10)(2e)