

## **Simulation game:**

**"Vaccination availability from next week on, we are asked to manage distribution of this vaccine."**

As a horror scenario, masks were distributed chaotically during the first wave with advantages for certain states as well as disadvantages for others → this should not happen again when it comes to vaccination

- AstraZeneca: 300 million vaccine doses, Sanofi: 300 million vaccine doses, Johnson & Johnson: 200 million vaccine doses, commission is continuing on discussing further agreements with CureVac, Moderna and BioNTech/Pfizer) → ca. 1,1 billion
- x vacc doses can be produced in y weeks → 1 billion doses over a year?



Task Force: World Savers  
Operation Silver Needle

## **Pharma Companies -> EU**

Who buys (makes the contract with the companies)? Who's legally in charge? How expensive is it? How fast will production be? What about the rest of the world?

### **1. Maurice**

Results:

- COVAX initiative by WHO (156 nations joined, incl. China, EU excl. UK, US)

Concept of financial pooling, so that smaller countries are not left behind in the game of bidding on the right vacc candidate (production lines have to be built in advance of knowing which candidate will be approved)

→ deficits in funding

→ first priority: African countries

→ regardless of their participation in funds

Ensure vacc 3% of population in first months, 20% until end of 2021 for all participating countries

-still: imbalance between high-income countries vs. middle- and low-income countries

EU commission contracts with pharma companies

## **EU -> member states**

How will the EU commission manage the distribution? (Germany takes all or equal distribution?) Can single countries bail out and return to a national approach as the UK and US? Countries trying to get the biggest piece of cake? Distribution between countries on what criteria? General population number? Number of risk patients? Financial share?

1. Jan-Hendrick

Results:

-initial distribution according to population size, not according to financial inputs or vulnerability / risk groups in between countries (see 1)

### **Profile of risk groups across countries**

Epidemiology of the different countries? Which countries are most vulnerable based on age of population / wealth / weak health care systems / climate ?

1. Axel

Results:

-the 3 Main factors are: percentage of People over 65, spread of obesity, amount of Tourist in Relation of the Population  
-most vulnerable countries: Belgium, Britain, Spain, also african countries  
-lots of different factors to look at  
-still: distribution of vaccination **NOT** based on vulnerability

### **Infrastructure**

Over general practitioners (Italy) or by building regional vaccination centers with high throughput (germany), cooling chain and other logistics? Will the people have to pay?

1. Maria

2. Florian

Results:

-state-of-the-art cooling chain needs to be even cooler  
-lack of infrastructure especially in developing countries → 2/3 of global infrastructure  
-transnational transport of patients

### **Strategic immunization to achieve free economy and social life again**

What risk groups come first? How long does it take until risk groups are safe? How many doses are needed, to provide such level of immunization that infection can be again tracked by state and life can return to normal as it was in summer 2020?

1. Stella, Zae-Young

Results:

- model suggests emphasis of high-risk groups over high-exposure groups  
- vaccinating "high-spread"-groups such as children, their parents and young adult, under certain circumstances (enough vaccines (for 50% of the population) with sufficient efficacy (around 60%)), can prevent more deaths than vaccinating risk groups

-low supply with high demand → chaotic market conditions? → adequate structure is mandatory in order to avoid chaos (e.g. management via digitization)

## Links

### **Pharma Companies -> EU (what about the rest of the world?)**

Who buys (makes the contract with company)? Who's legally in charge? How expensive is it?

COVAX: 156 nations (incl. China and EU, not the U.S. and Russia)

The goal of COVAX is to have 3% of every country initially vaccinated, 20% by the end of 2021.

<https://www.politico.com/newsletters/global-pulse/2020/10/29/the-covid-vaccines-tricky-politics-490737>

The U.S. announced Tuesday that it would not join an international coalition to find and distribute a Covid-19 vaccine worldwide

<https://www.forbes.com/sites/tommybeer/2020/09/01/us-wont-join-global-coronavirus-vaccine-effort-because-its-led-by-the-who/?sh=211a64d75876>

### **EU -> member states**

How will the EU commission decide the distribution? (Germany takes all or equal distribution?)

Can single countries bail out and return to a national approach? How to avoid stealing by countries from each other? Distribution between countries on what criteria? General population?

Number of risk patients? Financial share?

EU commission:

[https://ec.europa.eu/info/live-work-travel-eu/health/coronavirus-response/public-health/coronavirus-vaccines-strategy\\_en](https://ec.europa.eu/info/live-work-travel-eu/health/coronavirus-response/public-health/coronavirus-vaccines-strategy_en)

[https://ec.europa.eu/health/sites/health/files/vaccination/docs/2020\\_strategies\\_deployment\\_en.pdf](https://ec.europa.eu/health/sites/health/files/vaccination/docs/2020_strategies_deployment_en.pdf)

<https://www.ecdc.europa.eu/en/covid-19/latest-evidence/epidemiology>

EU members to receive COVID-19 vaccines under same conditions and according to their populations, say top EU bureaucrats

<https://www.aa.com.tr/en/europe/eu-agrees-on-distribution-process-for-vaccines/2024059>

All EU Member States will have access to vaccines at the same time

<https://www.portfolio.hu/en/economy/20201015/covid-19-all-eu-member-states-will-have-access-to-vaccines-at-the-same-time-453072>

national stockpiling of face masks (go to section 'Germany')

<https://www.ft.com/content/efdadd97-aef5-47f1-91de-fe02c41a470a>

"Vaccine nationalism will prolong the pandemic, not shorten it."

<https://abcnews.go.com/Health/world-health-organization-announces-distribution-plan-covid-19/story?id=73031332>

Eu commission funding cross border transport of covid patients

<https://www.thehindu.com/news/international/eu-agrees-to-fair-distribution-of-covid-19-vaccine-s-once-available/article32977171.ece>

### **Profile of risk groups across countries**

Epidemiology of the different countries? How long does it take until risk groups are safe?

Covid19 Epidemiology by age:

<https://www.medrxiv.org/content/10.1101/2020.05.24.20111765v1.full.pdf> (p.7, 13)

Covid19 Risk-Groups (by medical conditions):

[https://covid19-surveillance-report.ecdc.europa.eu/#3\\_risk\\_groups\\_most\\_affected](https://covid19-surveillance-report.ecdc.europa.eu/#3_risk_groups_most_affected)

Our aim was to identify the countries across Europe that have populations at highest risk from COVID-19

<https://archpublichealth.biomedcentral.com/articles/10.1186/s13690-020-00433-y>

### **Approval process**

EU member states prepare for pre-approval use of vaccinations

In fact, given the speed at which the EMA is moving, pre-approval distribution may not happen — purely because the bottleneck for vaccine distribution is more likely to be manufacturing, not regulatory approval.

<https://www.politico.eu/article/europe-eyes-loophole-for-early-distribution-of-unlicensed-corona-virus-vaccine/>

### **Infrastructure**

Over general practitioners (Italy) or by building regional vaccination centers with high throughput (Germany)? cooling chain and other logistics also manageable for developing countries? Will the people have to pay?

“Preparing for the challenge of COVID-19 vaccine logistics”

<https://www.dhl.com/global-en/home/about-us/delivered-magazine/blog/delivered-blog-larry-stonge/preparing-for-the-challenge-of-covid-19-vaccine-logistics.html>

“Moderna and Pfizer’s COVID-19 vaccine candidates require ultra-low temperatures, raising questions about storage, distribution”

<https://www.marketwatch.com/story/moderna-and-pfizers-covid-19-vaccine-candidates-require-ultra-low-temperatures-raising-questions-about-storage-distribution-2020-08-27>

“The World’s Supply Chain Isn’t Ready for a Covid-19 Vaccine”

<https://www.bloomberg.com/news/articles/2020-07-25/the-supply-chain-to-save-the-world-is-unprepared-for-a-vaccine>

Eu commission funding cross border transport of covid patients

<https://www.thehindu.com/news/international/eu-agrees-to-fair-distribution-of-covid-19-vaccine-s-once-available/article32977171.ece>

Germany readies exhibition halls, mobile teams for COVID-19 vaccination

<https://www.reuters.com/article/us-health-coronavirus-germany-inoculation-idUSKBN27J16L>

### **Strategic immunization to achieve restraint-free economy again**

What risk groups come first? How many doses are needed, to provide such level of immunization that infection can be again tracked by state and life can return to normal as it was in summer 2020?

Without A Vaccine, Researchers Say, Herd Immunity May Never Be Achieved

<https://www.npr.org/sections/health-shots/2020/07/24/894148860/without-a-vaccine-researchers-say-herd-immunity-may-never-be-achieved?t=1604701469936>

First vaccinate the non-risk groups, cut transmission

<https://www.nytimes.com/2020/11/05/magazine/who-gets-covid-vaccine.html>

which groups should receive the earliest covid-19 vaccines first? (USA)

<https://www.msn.com/en-us/news/us/opinions-the-biggest-problem-isn-e2-80-99t-when-a-vaccine-is-ready-it-e2-80-99s-how-to-distribute-it/ar-BB1aqMyZ>

Strategy for fighting transmission and mortality

<https://www.medrxiv.org/content/10.1101/2020.09.08.20190629v1>

The Optimal Allocation of Covid-19 Vaccines

<https://www.medrxiv.org/content/10.1101/2020.07.22.20160143v1>