ORCHESTRA

Connecting European Cohorts to I
ncrease Common
and Effective Response to SARS-
CoV-2 Pandemic

# DELIVERABLE 10.7

# WP10_D10.7,

# Automated emails service for stakeholders

# University Hospital Cologne (UHC)

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## Project Classification

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|---|---|
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## Document Classification

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## History of Changes

| Version | Date | Created/Modified by |
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| 0.1 | 15 May 2022 | Sina Hopff, Nick Schulze, Marlene Nunnendorf, Jörg Janne Vehreschild |
| 1.0 | 20 May 2022 | Sina Hopff |
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# Table of contents

# Executive summary

This document describes the deliverable number 10.7 (D10.7) of the project "ORCHESTRA cohort: Connecting European Cohorts to Increase Common and Effective response to SARS-CoV-2 Pandemic". The task is issued by the University Hospital Cologne (UHC) as well as the beneficiaries involved in WP10. In this task we develop target-group-specific analysis pipelines that will create full graphic reports on the current situation and progress of e.g. specific disease entities or effects of new treatment standards and send them in the requested periodicity to all given entities. This will allow early action and state-of-the-art advice, especially for vulnerable patient groups.

# Background

The main focus of ORCHESTRA lies on the creation of a new pan-European cohort built on existing and new large-scale population cohorts in European and non-European countries including SARS-CoV-2 infected and non-infected individuals of all ages and conditions. The project enables a retrospective evaluation of risk factors for the disease acquisition and progression of the disease. To better address specific research questions, the ORCHESTRA-Cohort includes adequately sampled representatives of general populations, COVID-19 patients and special 'at risk' populations of fragile individuals and health-care workers. This allows detailed examination of patient subgroups, identification of risk groups, and prediction of COVID-19 disease progression. ORCHESTRA uses available data sets, but also data prospectively collected during the project. The cohorts cover an international scale and thus provide insight not only into patient characteristic subgroups, but also geographical insights into the course of the pandemic. At the same time, ORCHESTRA is building an international network of scientists and physicians who continue to face new challenges in the pandemic. The analysis of the collected data in ORCHESTRA is time consuming and therefore, the provision of real-time data that can be used locally by the stakeholders is necessary.

# Implementation

## Contents of the e-mail service

With the help of the anonymous data set of ORCHESTRA (Public Use File, PUF), simple analyses can be realized in a short time and adapted to the interests of the stakeholders. The ORCHESTRA PUF is based on the German Corona Consensus Data Set (GECCO) standardized by the Charité Berlin, Germany [1]. It includes data on various patient characteristics such as demographics, comorbidities, and data on the disease course. The ORCHESTRA PUF is based on a special anonymization procedure that is described in more detail in Deliverable 10.4. Similar anonymous data sets have already been developed for national and international COVID-19 studies: the National Pandemic Cohort Network (NAPKON) and the Lean European Open Survey on SARS-CoV-2 infected patients (LEOSS) registry [2, 3].

Using the variables from the ORCHESTRA PUF, the filter criteria for the stakeholder email service were defined. Due to the different content interests of the stakeholders, the email service must be individualized. For this purpose, a survey was created in which the main topics of interest of the stakeholders are asked. The stakeholders can select the patient characteristics and the cohorts they are interested in. So far, three ORCHESTRA cohorts are implemented in the ORCHESTRA PUF and thus can be used for the email service: UNIVR, SAS and INSERM. More cohorts will follow as soon as the cohort data are available in the central data base of ORCHESTRA. The stakeholders have the opportunity to adopt the answers in the survey any time if their interests have changed or more cohorts were added. The emails are generated automatically on the basis of this survey. This ensures that each stakeholder receives a customized information service.

## Definition of filter criteria

1. **Patient characteristics**
   a. Patients with cardiovascular diseases
   b. Patients with chronic lung diseases
   c. Patients with liver diseases
   d. Patients with kidney diseases
   e. Patients with active cancer diseases
   f. Patients with rheumatological or immunological disease
   g. Patients with diabetes
   h. Patients with chronic neurological disease or psychiatric illness
   i. Patients with organ transplantation
2. **Cohort selection**
   a. UNIVR
   b. SAS
   c. INSERM
   d. ...

## Technical implementation

1. **Generate a call for population selection**

The first implementation step covers the creation of a flyer to call for population selection. The flyer invites the stakeholders to participate in the survey that is described in step 2. The creation of the flyer, using the webtool Canva [4], is already described in the milestone (MS) report of MS 58. The flyer will be published on the ORCHESTRA website and in the ORCHESTRA external newsletter and sent to stakeholders via email. The flyer includes a web link to direct stakeholders to the survey in which they collect the patient characteristics they are interested in.

**Dear Stakeholders,**

**we have set up an automated e-mail service for you that will inform you monthly about selected data that we draw from the central database.**
**You are invited to complete the survey**
**https://clinicalsurveys.net/uc/orchestra-stakeholder-survey**
**and select which COVID-19 patient groups you are interested in.**
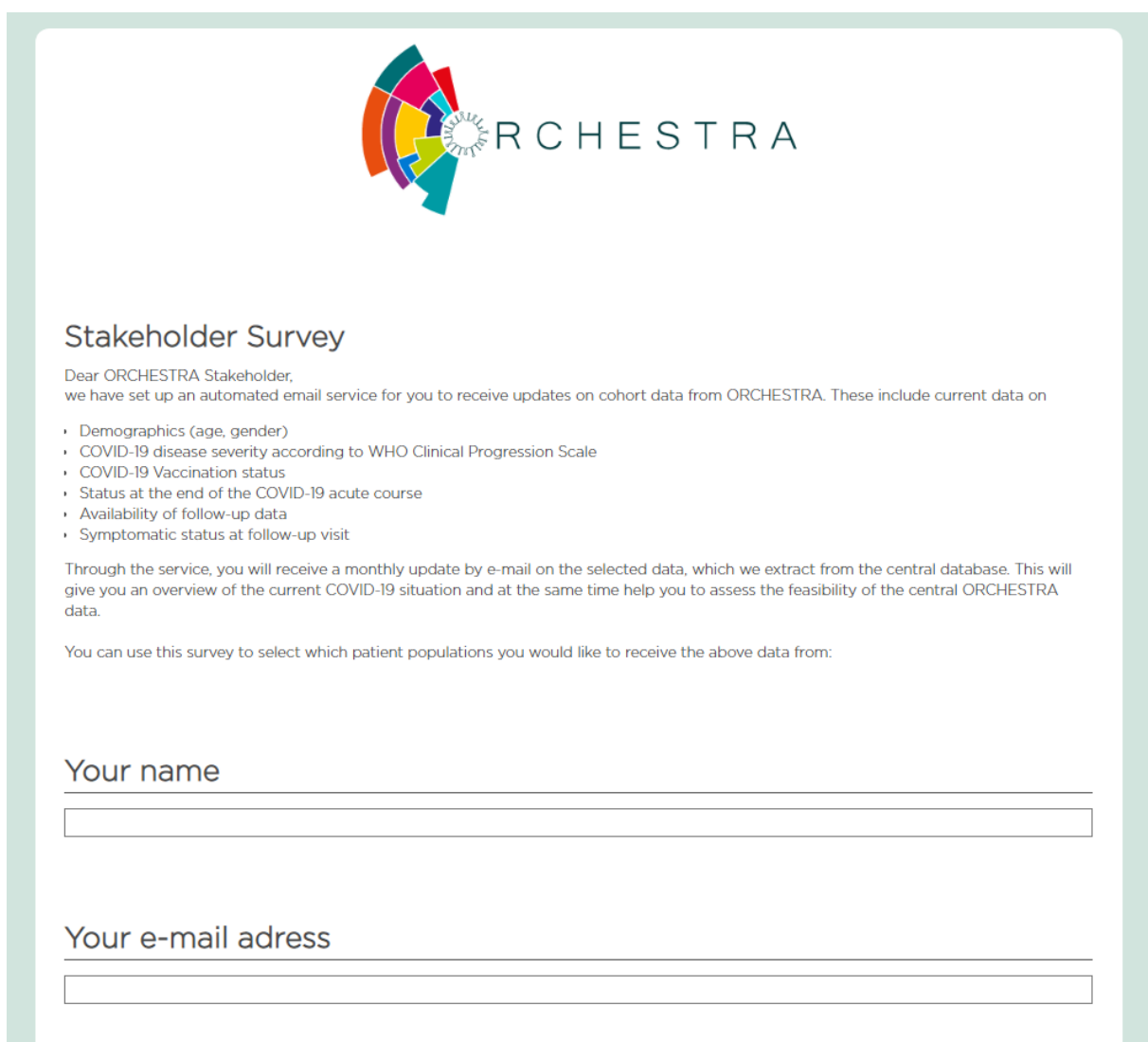
**Kind regards,**
**WP 10**

## 2. Create stakeholder survey to select the interested patient population(s)

The second implementation step includes the stakeholder survey implementation. The stakeholders have the opportunity to select the defined patient characteristics and cohorts they are interested in. For the individual selection, we set up a survey using the Clinical Survey platform [5].

The survey can be accessed using the following link: https://clinicalsurveys.net/uc/orchestra-stakeholder-survey

## I am interested in the following patient groups....

☐ Patients with cardiovascular diseases

☐ Patients with chronic lung diseases

☐ Patients with liver diseases

☐ Patients with kidney diseases

☐ Patients with active cancer diseases

☐ Patients with rheumatological or immunological disease

☐ Patients with diabetes

☐ Patients with chronic neurological disease or psychiatric illness

☐ Patients with organ transplantation

## I am interested in the following cohorts...

☐ UNIVR

☐ SAS

☐ INSERM

## You are welcome to name any suggestions for adjustments and additions here

> [text box]

CONTINUE

## 3. Implementation of the automated e-mail service

Each stakeholder will receive an individualized email according to their selection in the survey. We implemented an automated email service using the program Python [6]. The emails are sent in a monthly rhythm with updated information about the patient populations.

As an example, we have shown an email in which the following filters have been set by the stakeholder:

- Patient characteristics: Patients with cardiovascular diseases
- Cohorts: UNIVR, SAS

The email was prepared on the basis of the data export of May 16, 2022.

"Dear ORCHESTRA Stakeholder,

we have 37 new documented patients with cardiovascular diseases since the last update. There are in total 37 patients with cardiovascular diseases documented in ORCHESTRA central data base (including cohorts UNIVR, SAS).

- The mean age range at diagnosis was 40 - 59 years.
- Of the patients, 20 were men (54%) and 17 were women (45%).
- 20 patients (54%) had a mild, 5 patients (14%) a moderate and 12 patients (32%) a severe course of disease according to WHO Clinical Progression Scale.
- 3 patients (8%) received at least one COVID-19 vaccination before the COVID-19 infection.
- 20 patients (54%) were ambulant. 14 patients (38%) have been discharged as alive. 3 patients (8%) were referral to another institution.

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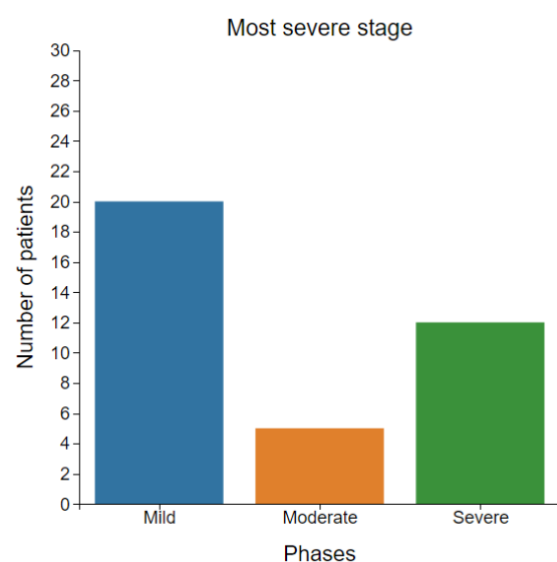
- The 6-month follow-up of 37 patients (100%) is already available. Of these 37 patients, 27 patients (73%) still have any symptoms.

For questions and comments please contact support@orchestra-cohort.eu.

With kind regards,

The team of WP10"

# Maintenance

The three technical implementation steps have already been fully implemented as described above. This means that all technical requirements for offering the stakeholder email service have been fulfilled. Due to the delayed availability of central data, the implementation of the PUF has been delayed. Since the email service is based on this task, the call to stakeholders has not yet been started. The email service will not provide valid information until a sufficient total case count has been achieved. It is expected that sufficient cases for the PUF will be available in the central ORCHESTRA database this summer. Therefore, the process to finalize the stakeholder email service will take place in summer 2022. After implementation, adding new cohorts, as well as adjusting the information provided to the current pandemic situation is possible at any time.

# References

1. Sass, J., et al., *The German Corona Consensus Dataset (GECCO): a standardized dataset for COVID-19 research in university medicine and beyond.* BMC Med Inform Decis Mak, 2020. **20**(1): p. 341.

2. NAPKON. *National Pandemic Cohort Network Statistics.* 2022; Available from: https://napkon.de/statistik/.

3. Jakob, C.E.M., et al., *Design and evaluation of a data anonymization pipeline to promote Open Science on COVID-19.* Sci Data, 2020. **7**(1): p. 435.

4. *Canva Flyers.* 2022; Available from: https://www.canva.com/create/flyers/.

5. *ClinicalSurveys Platform.* 2022; Available from: www.ClinicalSurveys.net.

6.      *Python*. 2022; Available from: https://www.python.org/.