

## **Online Supplement**

### **Attitudes Towards Vaccination for Coronavirus Disease 2019 in Patients with Severe Alpha-1 Antitrypsin Deficiency**

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<b>Table of contents</b>	<b>Page</b>
Acknowledgements	2
Reasons for declining the offer of vaccination with ChAdOx1 nCoV-19	2
Counseling at time of vaccine offer	3
Supplementary tables	4
Table S1. Reasons for declining an initial offer of vaccination with ChAdOx1 nCoV-19	4
Table S2. Individual percentage values for vaccine motivation data presented in main manuscript	5
Table S3. Individual percentage values for vaccine hesitancy data presented in main manuscript	5
Table S4. Breakdown of cohort sizes by age and sex	6
Supplementary figures	7
Figure S1. Vaccine preferences in the cohorts.	7

### *Acknowledgements*

We thank the study participants for engaging with this project, Beaumont Hospital Ethics Committee (BHEC) for their input regarding the study protocol and questionnaire, and the healthcare provider colleagues who facilitated the study on a goodwill basis.

### *Reasons for declining the offer of vaccination with ChAdOx1 nCoV-19*

Although the number of patients who declined the offer of vaccination with ChAdOx1 nCoV-19 was small (9 patients with Pi\*ZZ AATD, 14 patients with Pi\*MM COPD), the reasons for declining provided by these patients do provide some insights into the decision-making process. Of the 9 patients with Pi\*ZZ AATD who declined, 7 were female, of whom 5 were of reproductive age. While none of the Pi\*ZZ females surveyed considered it to be their reason for declining a vaccine, 4 said they would consider a COVID-19 vaccine to be potentially unsafe in pregnancy. Of the 14 Pi\*MM COPD patients who declined a vaccine, 8 were female. The primary reason for declining the offer of vaccination, along with additional reasons (if any), are provided in Table S3 below. At the time of writing, 2 of these patients (both Pi\*MM COPD) have died following hospitalization for COVID-19, while the remainder have remained unvaccinated.

*Counseling at time of vaccine offer*

All prospective study participants received counseling regarding the COVID-19 vaccine, using a standardized template provided by the Health Service Executive (HSE) of Ireland. This material is available via the following links:

<https://www2.hse.ie/screening-and-vaccinations/covid-19-vaccine/vaccine-types/>  
<https://www2.hse.ie/screening-and-vaccinations/covid-19-vaccine/side-effects/>  
<https://www.hse.ie/eng/services/covid-19-resources-and-translations/covid-19-vaccine-materials/covid-19-vaccine-materials.html>

**Supplementary tables**

<b>Table S1. Reasons for declining an initial offer of vaccination with ChAdOx1 nCoV-19</b>					
	<b>Diagnosis</b>	<b>Age</b>	<b>Sex</b>	<b>Primary reason</b>	<b>Other reasons</b>
D1	Pi*ZZ AATD	26	F	Did not trust overall safety profile	Personal inconvenience
D2	Pi*ZZ AATD	36	F	Specific concern regarding risk of thrombosis	None
D3	Pi*ZZ AATD	49	M	Preferred to wait for BioNTech/Pfizer vaccine	None
D4	Pi*ZZ AATD	55	M	Prior vaccine-associated AE	None
D5	Pi*ZZ AATD	43		Did not trust overall safety profile	None
D6	Pi*ZZ AATD	29	F	Did not believe ChAdOx1 nCoV-19 was effective	Specific concerns regarding risk of sore arm
D7	Pi*ZZ AATD	18	F	Considered getting COVID-19 to be preferable/more effective	Distrust of government/health authorities
D8	Pi*ZZ AATD	36	F	Did not believe COVID-19 vaccines in general were effective	None
D9	Pi*ZZ AATD	24	F	Did not trust overall safety profile	Did not believe ChAdOx1 nCoV-19 was effective
D10	Pi*MM COPD	68	F	Personal inconvenience	None
D11	Pi*MM COPD	54	F	Concerns regarding future consequences of vaccine (specifically cancer)	None
D12	Pi*MM COPD	60	F	Did not believe ChAdOx1 nCoV-19 was effective	None
D13	Pi*MM COPD	65	F	Preferred to wait for BioNTech/Pfizer vaccine	None
D14	Pi*MM COPD	59	M	Did not believe COVID-19 vaccines were effective	Distrust of government/health authorities
D15	Pi*MM COPD	66	M	Specific concern regarding risk of thrombosis	None
D16	Pi*MM COPD	68	M	Considered getting COVID-19 to be preferable/more effective	Did not believe COVID-19 vaccines in general were effective
D17	Pi*MM COPD	63	M	Distrust of government/health authorities	None
D18	Pi*MM COPD	67	M	Prior vaccine-associated AE	None
D19	Pi*MM COPD	58	F	Did not trust overall safety profile	Did not believe COVID-19 vaccines in general were effective

D20	Pi*MM COPD	65	F	Did not trust overall safety profile	None
D21	Pi*MM COPD	68	M	Preferred to wait for BioNTech/Pfizer vaccine	None
D22	Pi*MM COPD	61	F	Specific concern regarding risk of thrombosis	Did not believe ChAdOx1 nCoV-19 was effective  Preferred to wait for BioNTech/Pfizer vaccine
D23	Pi*MM COPD	69	F	Preferred to wait for BioNTech/Pfizer vaccine	None

Patients declining vaccine identified as D1, D2, etc.

M – male

F – female

AATD – alpha-1 antitrypsin deficiency

COPD – chronic obstructive pulmonary disease

**Table S2. Individual percentage values for vaccine motivation data presented in main manuscript**

Figure	Afraid of severe illness or death	Want to return to work	Want to socialize	Want to travel	Afraid of transmitting SARS-CoV-2	Societal pressures
1A	62	11	12	4	7	4
1B	60	5	20	4	4	7
1C	51	12	21	6	5	5
2A	27	21	27	14	2	9
2B	15	16	34	16	4	15
3A	16	19	36	22	1	6
3B	52	13	17	7	10	1

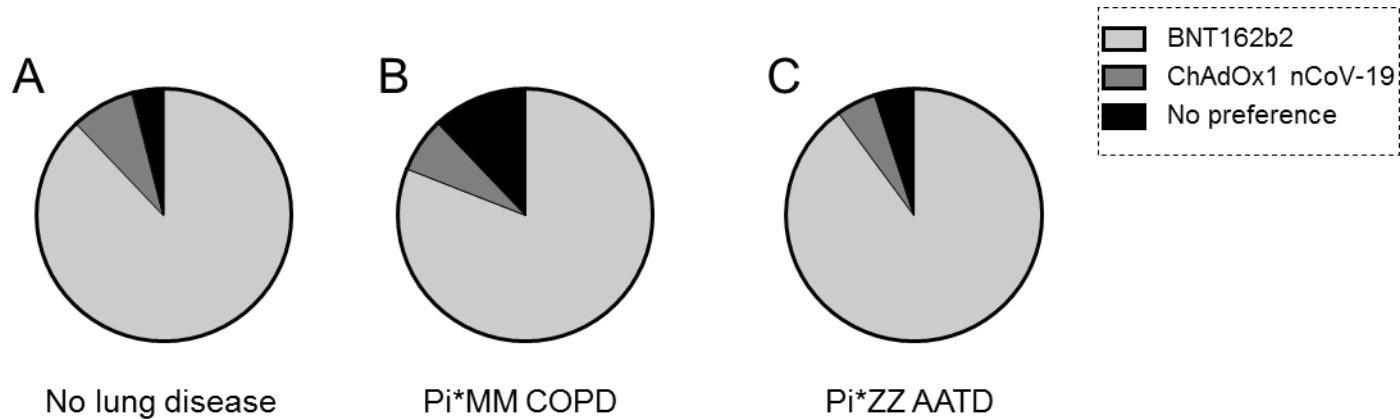
**Table S3. Individual percentage values for vaccine hesitancy data presented in main manuscript**

Reason specified	Percentage
Severe/ prolonged AE	10
Insufficient response to report of prior AE	6
Insufficient social incentive	40
Logistical difficulties	5
Need for future boosters	3
Lack of protection against escape variants	35

**Table S4. Breakdown of cohort sizes by age and sex**

	Pi*ZZ AATD	Pi*MM COPD	Non-lung disease controls
Total number	170	150	140
<50 years	81	N/A	70
Male	41	N/A	36
Female	40	N/A	34
≥50 years	89	150	70
Male	46	78	35
Female	43	72	35

**Supplementary figures**



**Figure S1. Vaccine preferences in the cohorts.**

Patients were asked to identify their preferred choice of vaccine prior to first-dose ChAdOx1 nCoV-19. In patients without lung disease (BNT162b2 = 88%; ChAdOx1 nCoV-19 = 8%; no preference = 4%; Panel A), Pi\*MM COPD (BNT162b2 = 81%; ChAdOx1 nCoV-19 = 7%; no preference = 12%; Panel B) and Pi\*ZZ AATD (BNT162b2 = 90%; ChAdOx1 nCoV-19 = 5%; no preference = 5%; Panel C), BNT162b2 was preferred to ChAdOx1 nCoV-19.



**Attitudes towards vaccination against COVID-19 in Irish patients – Participant questionnaire form**

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Prior to administering questionnaire, confirm:

- Patient consent completed
- Date vaccination offer accepted
- Date of vaccination appointment
- Patient ID code

Patient ID code

Thank you for completing the following survey. The information disclosed on this form will not be passed on to any third party, and you will not be identifiable based on it.

Please answer all questions truthfully. If you are unsure about the meaning of a question, you are encouraged to ask the study team member administering the survey to explain it further. However, the answers provided must be yours – members of the study team are not permitted to answer questions for you, or advise you on what answers to give.

You will previously have been consented to participate in this survey. You are free to withdraw your consent for the answers and information you provide to be used in the study analysis at any time. You are also entitled to remove your answers and information from the study database at any time.

NOTE: All questions marked with an asterisk (\*) are required. Questions that are not marked with an asterisk are optional.

### Section 1: Your basic details

1. Please state your age in years in the box provided

2. Please select your sex

- Male
- Female
- Prefer not to say

3. Have you previously been diagnosed with SARS-CoV-2 or coronavirus disease 2019 (COVID-19)?

- Yes
- No

4. Have you previously received a COVID-19 vaccine dose?

- Yes
- No

## Section 2: The COVID-19 vaccine offered to you

There are currently two vaccines against COVID-19 that are licensed for use in Ireland – ChAdOx1 nCoV-19 (AstraZeneca) and BNT162b2 (BioNTech/Pfizer). The type of COVID-19 vaccine available to a person in Ireland currently depends on their age and, in some cases, their medical history. You have recently accepted an offer of vaccination with ChAdOx1 nCoV-19 (AstraZeneca).

1. If given the choice, which of these two vaccines would you prefer to receive?

- ChAdOx1 nCoV-19 (AstraZeneca)
- BNT162b2 (BioNTech/Pfizer)
- No preference

2. Are you satisfied with ChAdOx1 nCoV-19 (AstraZeneca) as your assigned vaccine?

- Yes
- No

3. Do you believe the ChAdOx1 nCoV-19 (AstraZeneca) vaccine is safe?

- Yes
- Not sure, but willing to proceed with vaccination anyway
- No, but willing to proceed with vaccination anyway

### Section 3: Your main reason for getting vaccinated

What was the single most important factor motivating you to accept the offer of vaccination with ChAdOx1 nCoV-19 (AstraZeneca)?

**NOTE: select only ONE answer**

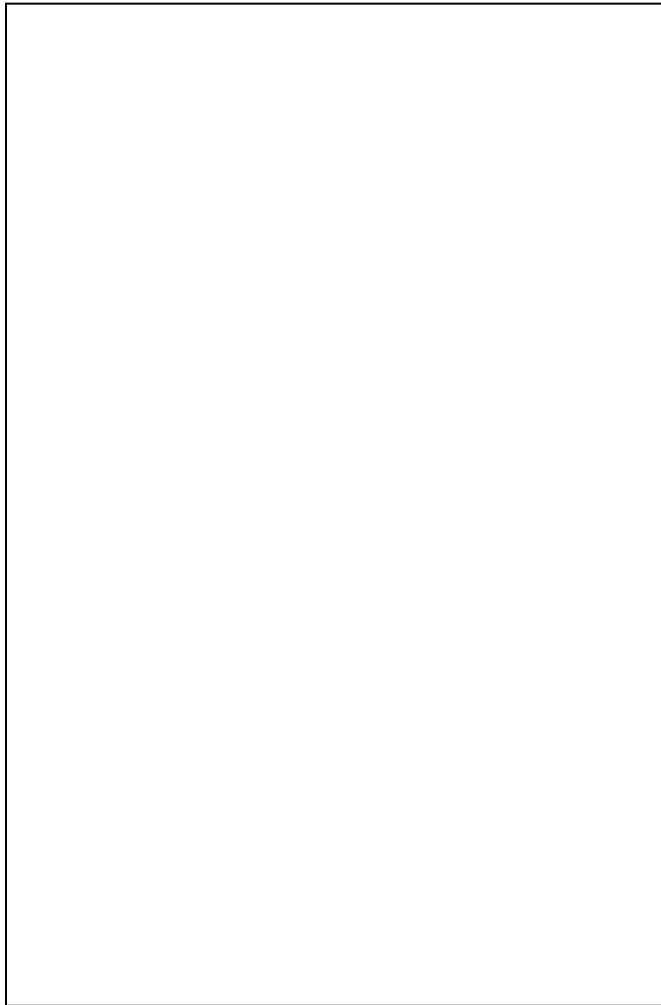
- Afraid of severe illness or death due to COVID-19
- Want to return to work
- Want to socialize
- Want to travel
- Afraid of transmitting SARS-CoV-2 to another person or more vulnerable person
- Feel pressure from society<sup>†</sup> to get vaccinated
- Other (please specify in the box provided)

<sup>†</sup> *For the purpose of this survey, “pressure from society” refers to pressure you may feel from your peers/social media/news outlets, and/or a fear of being judged by your peers.*

**Section 4: Other things you considered when making your decision**

You have already selected the factor that influenced/motivated your decision to get vaccinated the most. However, some people may be motivated (to a lesser degree) by multiple additional factors.

Please list any additional factors that motivated you in the box provided:

A large, empty rectangular box with a thin black border, intended for the user to list additional factors that motivated their decision to get vaccinated.

## Section 5: How you felt when making your decision

1. Did you feel pressure from your peers/social media/news outlets when making your decision to get vaccinated?\*

- Yes  
 No

2. Did you fear being judged by your peers if you decided not to get vaccinated?\*

- Yes  
 No

3. If you had a severe side-effect following a COVID-19 vaccine, would you feel comfortable reporting it?\*

- Yes  
 No

4. If you had a severe side-effect following a COVID-19 vaccine, would you be afraid of being described as “anti-vaccine” for reporting it?\*

- Yes  
 No

5. When making your decision to accept or decline vaccination with ChAdOx1 nCoV-19 (AstraZeneca), did you trust the information provided by the Irish government/Department of Health?\*

- Yes  
 No

6. When making your decision to accept or decline vaccination with ChAdOx1 nCoV-19 (AstraZeneca), did you trust the information provided by the Health Service Executive (HSE)?\*

- Yes  
 No

7. When making your decision to accept or decline vaccination with ChAdOx1 nCoV-19 (AstraZeneca), did you trust the information provided by the National Public Health Emergency Team (NPHE)?\*

- Yes
- No

8. When making your decision to accept or decline vaccination with ChAdOx1 nCoV-19 (AstraZeneca), did you trust the information provided by your physician?\*

- Yes
- No

9. If a safety issue with ChAdOx1 nCoV-19 (AstraZeneca) were to arise, would you trust the Irish government/Department of Health to disclose this information to you in an honest and transparent manner?\*

- Yes
- No

10. If a safety issue with ChAdOx1 nCoV-19 (AstraZeneca) were to arise, would you trust the Health Service Executive (HSE) to disclose this information to you in an honest and transparent manner?\*

- Yes
- No

11. If a safety issue with ChAdOx1 nCoV-19 (AstraZeneca) were to arise, would you trust the National Public Health Emergency Team (NPHE) to disclose this information to you in an honest and transparent manner?\*

- Yes
- No

12. If a safety issue with ChAdOx1 nCoV-19 (AstraZeneca) were to arise, would you trust your physician to disclose this information to you in an honest and transparent manner?\*

- Yes
- No

## Section 6: Your vaccine history

1. Have you previously received the influenza (“flu”) vaccine?

- Yes  
 No

2. Have you received a vaccine of any description in the past 5 years?

- Yes  
 No

3. If you answered “Yes” to the previous question, please select which vaccines you received in the past 5 years from the following list (if you answered “No” to the previous question, please skip to question 4 in this section)

- Influenza (“flu”) vaccine  
 Pneumococcal vaccine  
 Hepatitis A/Hepatitis B vaccine  
 Human papillomavirus (HPV) vaccine  
 Tetanus (“lockjaw”) vaccine  
 Rubella (“German measles”) vaccine  
 *Haemophilus influenzae* type B (HiB) vaccine  
 Herpes zoster (“shingles”) vaccine  
 Varicella (“chickenpox”) vaccine  
 Diphtheria, tetanus, and pertussis (“DTaP”) vaccine  
 Measles, mumps and rubella (“MMR”) vaccine  
 Yellow fever vaccine  
 Dengue vaccine  
 Polio vaccine  
 Other (please specify in the box provided)

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4. Have you ever had an adverse event or side-effect following a vaccine?

Yes

No

If yes, please specify in the box provided:

*Thank you for taking the time to complete this survey. If you have any questions or comments related to the content of the survey, please notify the study team member administering the survey, or alternatively cont*