

## Supplementary Materials

### Methods S1. Survey

The survey was conducted online. The survey launched on September 21, 2020, and was open to invited members of the COPD PPRN registry for 7 weeks, closing on November 10, 2020. The estimated time required to complete the survey was 10–15 minutes for Part 1 and 8 minutes for Part 2, including 5 minutes to watch the video (total for Parts 1 and 2: 18–23 minutes). Participants did not see the skip patterns indicated and progressed through the study automatically conditional on their responses.

#### **Part 1**

Screening question: Do you live in the U.S.?

Yes [**Proceed**]       No [**If No, Exit**]

1. What is your age in years? \_\_\_\_\_ years [**If <50, Exit**]
2. What is your gender?  
 Male    Female    Prefer not to answer    Other: [Text box \_\_\_\_\_]
3. How would you rate your overall level of health? (*Please choose one answer*)  
 Excellent    Very Good    Good    Fair    Poor
4. Thinking about your physical health, which includes COPD and other physical illness or injury, for how many days during the past 30 days was **your physical health not good**?  
(Enter number of days: 0 to 30)  
\_\_\_\_\_ days
5. Thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was **your mental health not good**?  
(Enter number of days: 0 to 30)  
\_\_\_\_\_ days
6. During the past 30 days, how many days did poor physical or mental health keep you **from doing your usual activities**, such as self-care, work or hobbies or play?

(Enter number of days: 0 to 30)

\_\_\_\_\_ days

7. In the past 12 months, have you had any COPD exacerbations OR times when your COPD symptoms worsened, and you were treated with antibiotics or steroid pills?

\_\_\_\_\_ Yes [**Go to question 8**]      \_\_\_\_\_ No [**Skip to question 9**]

8. If **Yes**, number of episodes

9. Have you heard of shingles (also called herpes zoster), a disease causing a blistering skin rash that is often painful and usually in a band-like area on one side of the body?

\_\_\_\_\_ Yes [**Go to question 10**]      \_\_\_\_\_ No [**Go to question 16**]

10. Have you ever had shingles or herpes zoster?

\_\_\_\_\_ Yes, once [**Skip to question 12**]

\_\_\_\_\_ Yes, more than once [**Go to question 11**]

\_\_\_\_\_ No [**Skip to question 13**]

11. Number of times you have had shingles or herpes zoster?

12. When you had shingles, did you experience or do any of the following?

*(Please choose an answer in each line)*

	No or not very much	Yes, for up to 1 or 2 weeks	Yes, for more than 2 weeks
Skin rash			
Moderate or severe pain or itching			
Could not work or do usual activities			
Trouble sleeping			
Had to miss social activities			
Scarring of skin after rash			
Eye problems from shingles			

Increased COPD symptoms			
Increased shortness of breath			
Caused a COPD flare or exacerbation			

	Yes	No
Needed to see doctor or other health care professional in clinic		
Needed to go to the emergency room		
Was admitted to the hospital		
Went to Urgent Care		
Had to get medicines for the shingles or shingles pain		
Had long lasting pain (more than 3 months)		

13. Have any of your family, friends or other people you know ever had shingles (the disease causing a blistering skin rash that is often painful and localized to a band-like area on one side of the body)?

Yes [**Go to question 14**]  No [**Skip to question 16**]  Not sure [**Skip to question 16**]

14. If yes, how many total family members, friends or people you know have had shingles?

1  2-3  4-5  More than 5 [**Go to question 15**]

15. Thinking of all the people you know who had shingles, did ANY of them have the following problems: *(Please choose an answer in each line)*

	Yes	No	I don't know
Skin rash due to shingles			
Moderate or severe pain or itching due to shingles			
Could not work or do usual activities due to shingles			
Trouble sleeping due to shingles			
Had to miss social activities due to shingles			
Scarring of skin after rash due to shingles			
Eye problems from shingles due to shingles			
Increased COPD symptoms due to shingles			
Increased shortness of breath due to shingles			
Caused a COPD flare or exacerbation due to shingles			

	Yes	No	I don't know
Needed to see doctor or other health care professional in clinic			

Need to go to the emergency room			
Was admitted to the hospital			
Went to Urgent Care			
Had to get medicines for the shingles or shingle pain			
Had long lasting pain (more than 3 months)			

16. How **bothersome** do you think the following are or would be for **people with COPD** who get shingles? (Choose an answer between 1 to 5 for each line - 1 being not bothersome at all to 5 very bothersome)

	1—not bothersome	2	3	4	5—very bothersome
Shingles rash					
Shingles pain for 1 to 4 weeks					
Shingles pain for more than 4 weeks to 3 months					
Shingles pain for more than 3 months					
Fear of infecting others					
Persistent feelings of sadness or anxiety					
Missing work or usual activities					
Missing social activities					
Increased COPD symptoms					
COPD flare or exacerbation					

17. How **important** do you think it is for **people with COPD** to prevent symptoms and problems related to shingles? (Choose an answer between 1 to 5 for each line - 1 being not important at all to 5 very important)

	1—not important	2	3	4	5—very important
Shingles rash					
Shingles pain for 1 to 4 weeks					
Shingles pain for more than 4 weeks to 3 months					
Shingles pain for more than 3 months					
Fear of infecting others					
Persistent feelings of sadness or anxiety					
Missing work or usual activities					
Missing social activities					
Increased COPD symptoms					
COPD flare or exacerbation					

18. Compared to other people your age without COPD, what do you think is your risk of getting shingles or getting it again? (choose the best answer for you)

- A lot less risk than other people my age without COPD
- A little less risk at other people my age without COPD
- The same risk as other people my age without COPD
- A little greater risk than someone my age without COPD
- A lot greater risk than someone my age without COPD
- I don't know

19. Do you know that a vaccine or shot is available for preventing shingles in older adults?

- Yes **[Go to question 20]**
- No **[Skip to question 27]**
- Unsure **[Skip to question 27]**

20. How did you hear or learn about the shingles vaccine/shot(s)? If a response does not apply to you check the "Does not apply" box for that line. *(Please choose an answer in each line)*

Site	Yes	No	Does not apply / Don't remember
At primary care office			
At pulmonologist's office			
At a pharmacy			
At an emergency room visit			
At an urgent care visit			
At a hospital stay			
At a chiropractor's office			
Information at senior center			
On Internet			
TV/Magazine ads			
Heard from family or friends			

If you heard about the shingles vaccine/shots(s) from another source, please specify.

Specify other: <i>[free text field]</i>
---

21. Have you had either of the shingles vaccine/shot(s)?

- Yes [**Go to question 22**]  
 No [**Skip to question 24**]

22. When did you get the shingles vaccine/shot(s)?

- More than 3 years ago  
 Within the past 3 years

23. Which kind of the shingles vaccine or shots did you get or have started getting?

- The one-shot kind (Zostavax) [**Skip to question 27**]  
 The two-shot kind (Shingrix) [**Skip to question 27**]  
 Both kinds [**Skip to question 27**]  
 I don't know what kind [**Skip to question 27**]

24. How interested are you in getting the vaccine/shot(s) to prevent shingles (herpes zoster)?

- Undecided [**Go to question 25**]  
 Not at all interested [**Go to question 25**]  
 Somewhat interested [**Go to question 25**]  
 Very interested [**Skip to question 26**]

25. Please share why you are undecided, not at all interested or only somewhat interested in getting the shingles vaccine/shot? (Please check all that apply) [**Skip to question 27**]

<input type="checkbox"/>	My doctors/nurse didn't recommend it
<input type="checkbox"/>	No one else suggested I get it
<input type="checkbox"/>	I am not old enough
<input type="checkbox"/>	Costs too much
<input type="checkbox"/>	Worry about side effects
<input type="checkbox"/>	Worry that the shots could give you shingles
<input type="checkbox"/>	Do not think it protects against shingles very well
<input type="checkbox"/>	Do not know enough about the shingles shot
<input type="checkbox"/>	Bad experience with other vaccine
<input type="checkbox"/>	My family/friends had bad experience with shingles shot
<input type="checkbox"/>	My doctor or nurse said I did not need the shingle shot
<input type="checkbox"/>	Have not been able to find a place that has the shingles vaccine to give me
<input type="checkbox"/>	I dislike shots
<input type="checkbox"/>	Not convenient to get shingles shot
<input type="checkbox"/>	Not covered by my insurance
<input type="checkbox"/>	I do not get any vaccines
<input type="checkbox"/>	Other reason: [free text field]

26. Why have you not received the shingles shot(s) even though you are **very interested** in getting it? *(Please check all that apply)*

<input type="checkbox"/>	My doctors/nurse didn't recommend it
<input type="checkbox"/>	I have had the first shot and waiting to get the second one
<input type="checkbox"/>	No one else suggested I get it
<input type="checkbox"/>	I am not old enough
<input type="checkbox"/>	Costs too much
<input type="checkbox"/>	Worry about side effects
<input type="checkbox"/>	Worry that the shots could give me shingles
<input type="checkbox"/>	Not sure it protects against shingles very well
<input type="checkbox"/>	Do not know enough about the shingles shot
<input type="checkbox"/>	Bad experience with other vaccine
<input type="checkbox"/>	My family/friends had bad experience with shingles shot
<input type="checkbox"/>	My doctor or nurse said I did not need the shingle shot
<input type="checkbox"/>	Have not been able to find a place that has the shingles vaccine to give me
<input type="checkbox"/>	I dislike shots
<input type="checkbox"/>	Not convenient to get shingles shot
<input type="checkbox"/>	Not covered by my insurance
<input type="checkbox"/>	I do not get any vaccines
Other reason: <i>[free text field]</i>	

27. Has anyone listed below suggested you should get the pneumococcal (sometimes called pneumonia) shot(s)/vaccine(s)? If a question does not apply to you check the "Does not apply" box for that line. *(Choose an answer in each line)*

Locations	Yes	No	Does not apply / Don't remember
At primary care office	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At pulmonologist's office	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At a pharmacy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At an emergency room visit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At an urgent care visit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At a hospital stay	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At a chiropractor's office	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Family or friends recommended	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If someone else suggested you should get the pneumococcal shots(s)/vaccine(s), please specify

Specify other: *[free text field]*

28. Has anyone listed below suggested you should get the yearly flu (influenza) shot? If a question does not apply to you check the “Does not apply” box for that line. (Choose an answer for each line)

Locations	Yes	No	Does not apply/ Don't remember
At primary care office			
At pulmonologist's office			
At a pharmacy			
At an emergency room visit			
At an urgent care visit			
At a hospital stay			
At a chiropractor's office			
Family or friends recommended			

If someone else suggested you should get the yearly flu (influenza) shot, please specify

Specify other: [free text field]

29. Has the COVID-19 pandemic changed your interest in getting any of these shots or vaccines? (Choose an answer for each line) **[Part 1 completed]**

	Yes, increased interest	Yes, decreased interest	No change
Shingles vaccine			
Influenza vaccine			
Pneumococcal/pneumonia vaccine			

- **Finish for those who answered they have received or started the two-shot HZ vaccine (Shingrix), responding “The two-shot kind (Shingrix)” or “Both kinds” to Q23. [Exit]**
- **Continue to Part 2 and the post-video questions if any of the following questions were answered with the indicated response(s):**
  - Q9 – “No”
  - Q18 – “A lot less risk”, “A little less risk”, “The same risk” or “I don't know”
  - Q19 – “No” or “Unsure”
  - Q21 – “No”
  - Q23 – “The one-shot kind (Zostavax)” or “I don't know what kind”**[Go to question 30]**

**Part 2**

**Please watch the following 5-minute video on COPD and herpes zoster and answer the questions after completing the video.**

**Embedded video**

**Questions presented after video:**

30. How useful was the information in the video about: *(Choose an answer for each line)*

	Not useful at all	Not very useful	Not sure	A little useful	Very useful
General information on the risk and burden of herpes zoster/shingles?					
Increased risk of shingles/herpes zoster in people with COPD?					
Complications of herpes zoster/shingles?					
Who to ask about herpes zoster/shingles shots?					
Recommendations for who should get the shingles/herpes zoster shots?					

31. Based on the information in the video, how does having COPD affect your risk of getting shingles?

- Decreases the risk
- Does not change the risk
- Increases the risk
- I am still not sure

32. After watching the video, has your level of interest in getting the shingles/herpes zoster shots changed?

- Less interested [**Go to question 33**]
- No change [**Skip to question 34**]
- More interested [**Skip to question 34**]

33. Why are you less interested?

[Free text field] [**Exit**]

34. Do you now plan to get the shingles vaccine?

- Yes, plan to get the shingles vaccine [Exit]
- Not sure but will talk to doctor or nurse [Exit]
- Not sure but will consider [Exit]
- No do not plan to get the shingles vaccine [Go to question 35]

35. Why will you not get the shingles vaccine?

[Free text field] [Exit]

[Survey end]

## **Methods S2. Educational video intervention**

The survey included an intervention phase in the form of a short (five-minute) educational video on the epidemiology, risk, burden, impact, and opportunities for HZ prevention through vaccination. The educational video can be viewed at: [ShiPPS Patient Video](#). Conditional on their answers to questions in Part 1 of the survey, participants who had not heard of HZ or HZ vaccines, those who had not received or started the two-shot HZ vaccine (Shingrix), and those who were unaware of the increased risk of HZ for people with COPD, were directed to and watched the video.

## Supplementary Tables

**Table S1.** Associations between increased rates of COPD-related symptoms and baseline characteristics

Baseline characteristic	Increased COPD symptoms, % (n)			Increased dyspnea, % (n)			Increased exacerbations, % (n)		
	Yes	No	p-value*	Yes	No	p-value*	Yes	No	p-value*
<b>Poor physical health</b>									
0–5 days/month (n=79)	7.6 (6)	92.4 (73)		11.4 (9)	88.6 (70)		3.8 (3)	96.2 (76)	
6–15 days/month (n=45)	24.4 (11)	75.6 (34)	0.002	35.6 (16)	64.4 (29)	<0.001	17.8 (8)	82.2 (37)	0.006
16–30 days/month (n=68)	27.9 (19)	72.1 (49)		35.3 (24)	64.7 (44)		17.6 (12)	82.4 (56)	
<b>Poor mental health</b>									
0–5 days/month (n=121)	13.2 (16)	86.8 (105)		19.8 (24)	80.2 (97)		6.6 (8)	93.4 (113)	
6–15 days/month (n=40)	25.0 (10)	75.0 (30)	0.059	27.5 (11)	72.5 (29)	0.038	20.0 (8)	80.0 (32)	0.035
16–30 days/month (n=31)	32.3 (10)	67.7 (21)		45.2 (14)	54.8 (17)		22.6 (7)	77.4 (24)	
<b>Unable to work/do usual activities</b>									
0–5 days/month (n=99)	10.0 (10)	89.9 (89)		14.1 (14)	85.9 (85)		5.1 (5)	94.9 (94)	
6–15 days/month (n=41)	29.3 (12)	70.7 (29)	0.006	41.5 (17)	58.5 (24)	0.001	19.5 (8)	80.5 (33)	0.013
16–30 days/month (n=52)	26.9 (14)	73.1 (38)		34.6 (18)	65.4 (34)		19.2 (10)	80.8 (42)	
<b>Exacerbations in prior 12 months</b>									
0 episodes (n=76)	10.5 (8)	89.5 (68)		14.5 (11)	85.5 (65)		3.9 (3)	96.1 (79)	
1 episode (n=38)	10.5 (4)	89.5 (34)	0.005	21.1 (8)	78.9 (30)	0.003	5.3 (2)	94.7 (36)	0.002
2+ episodes (n=78)	30.8 (24)	69.2 (54)		38.5 (30)	61.5 (48)		23.1 (18)	76.9 (60)	

\*P-values derived from Welch's F-Test comparing the frequency of participants experiencing increased symptoms across the three indicated groups for each baseline characteristic.

*Abbreviations:* COPD, chronic obstructive pulmonary disease.

**Table S2.** Participants' reporting of the symptoms and problems experienced by the people they knew who had experienced HZ (N=492\*)

<b>Symptom/Problem†</b>	<b>Yes, % (n)</b>	<b>No, % (n)</b>	<b>Do not remember/ Do not know, % (n)</b>
Skin rash	93.1 (458)	2.0 (10)	4.9 (24)
Moderate/severe pain or itching	94.9 (467)	1.0 (5)	4.1 (20)
Scarring of skin	25.6 (126)	20.9 (103)	53.5 (263)
Unable to work/do usual activities	61.8 (304)	14.4 (71)	23.8 (117)
Missed social activities	60.4 (297)	7.1 (35)	32.5 (160)
Trouble sleeping	66.7 (328)	3.9 (19)	29.5 (145)
Eye problems	15.9 (78)	33.3 (164)	50.8 (250)
COPD: Increased symptoms	5.5 (27)	42.5 (209)	52.0 (256)
COPD: Shortness of breath	9.1 (45)	35.6 (175)	55.3 (272)
COPD: Exacerbation	5.1 (25)	41.3 (203)	53.7 (264)
Visited physician/HCP in clinic	86.4 (425)	4.5 (22)	9.1 (45)
Required medication for HZ/pain	83.3 (410)	2.0 (10)	14.6 (72)
Long-lasting pain (>3 months)	38.0 (187)	23.2 (114)	38.8 (191)

\*Participants who responded that they knew at least one other person who had had HZ.

†A response was required for each of the listed symptoms/problems.

*Abbreviations:* COPD, chronic obstructive pulmonary disease; HCP, healthcare professional; HZ, herpes zoster.

**Table S3.** Percentage of participants who reported that they remember discussion about or receiving recommendations for specific vaccines at the locations they have attended

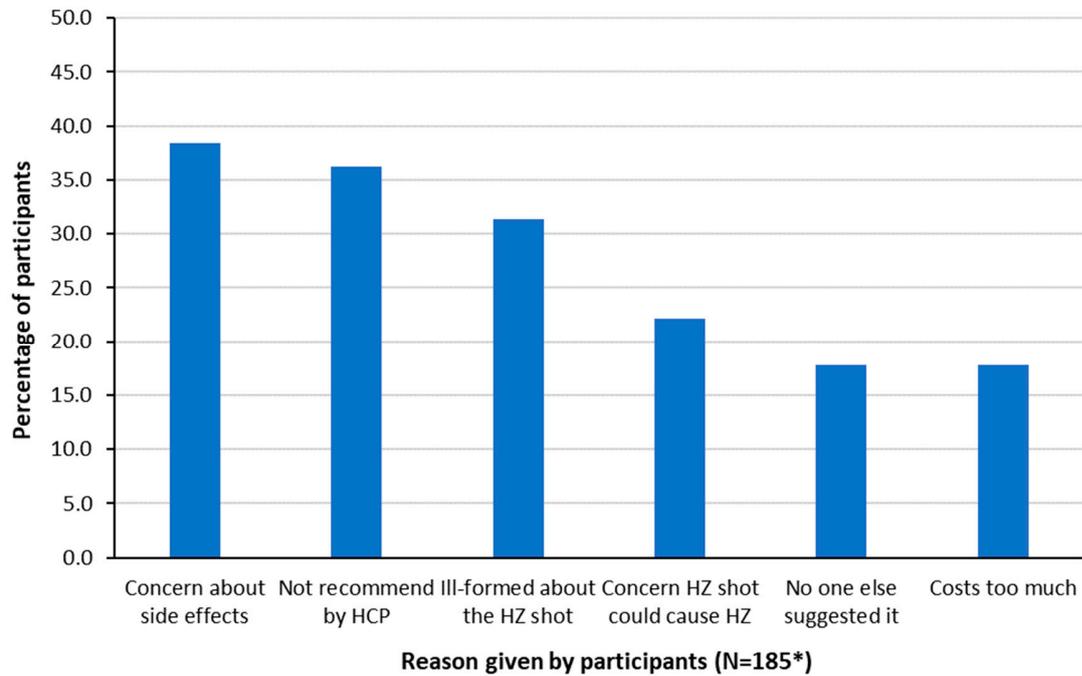
<b>Location/Source*</b>	<b>Herpes zoster immunization % Yes, (n)</b>	<b>“Pneumonia” immunization % Yes, (n)</b>	<b>Influenza immunization % Yes, (n)</b>
At primary care office	68.8 (425)	88.7 (618)	94.4 (670)
At pulmonologist’s office	26.6 (149)	71.0 (450)	75.1 (489)
At a pharmacy	48.5 (283)	36.7 (217)	60.9 (389)
At a hospital stay	5.2 (25)	23.1 (118)	24.9 (123)
On the internet	42.1 (236)	NA	NA
TV/Magazine advertisement	50.8 (287)	NA	NA
Family or friends	55.3 (330)	29.5 (166)	44.8 (267)

\*The total N for each location or source is based on those who answered the question and did not respond that the location/source did not apply or that they did not remember.

*Abbreviations:* NA, not asked; TV, television.

## Supplementary Figures

**Figure S1.** Most frequently reported barriers to participants with COPD getting the HZ vaccination



Shown are the five most common reasons that participants with COPD were undecided, not interested or only somewhat interested in getting the HZ vaccine.

\*N=185 participants who were unvaccinated and responded they were undecided, not interested, or only somewhat interested in vaccination.

*Abbreviations:* COPD, chronic obstructive pulmonary disease; HCP, healthcare professional; HZ, herpes zoster.