

# Highly Pathogenic Avian Influenza A(H5N1) Virus Infection among Workers at Live Bird Markets, Bangladesh, 2009–2010

## Technical Appendix 1

International Centre for Diarrhoeal Disease Research, Bangladesh

Sero-prevalence of antibodies to avian influenza A viruses among poultry market workers

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1. Name of Interviewer: \_\_\_\_\_
2. Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_ (dd /mm /yy)
3. Location:       Netrokona                       Chittagong                       Rajshahi                       Dhaka
4. Market ID \_\_\_\_\_
5. Market worker available (For *follow-up sample collections*)?  
 Yes     No
6. Initial visit?                                       Yes     No (if no, skip to 9)
7. Consent to participate?                       Yes (if yes, skip to 9)  No
8. If refused consent provide reason: \_\_\_\_\_ (Stop and thank interviewee)

### Generic risk factors:

9. How old are you: \_\_\_\_ (years)
10. Sex:       Female                       Male (if male, skip to 11)
  - a. *If female*, Are you pregnant, that you are aware?       Yes                       No
11. What is your ethnicity: \_\_\_\_\_
12. Height: \_\_\_\_ (meters)                      (*Use tape measure*)
13. Weight: \_\_\_\_ (Kg)                              (*Use bathroom scale*)
14. Do you smoke?  Yes       No (if no, skip to 17)
15. How many sticks a day do you smoke \_\_\_\_\_
16. How many years have you smoked? \_\_\_\_\_
17. Do you use: (*read and select all that apply*)  
 Betel leaf or betel nuts                       gul (remains of tobacco-cake mixed with molasses)  
 khoini (hand-made tobacco dust)                       None of the above
18. Has a doctor ever told you that you have any of the following conditions?:  
 Asthma                       Diabetes                       Chronic heart disease                       Chronic lung disease

- Chronic kidney disease       Chronic liver disease       Immune problems        
 Cancer       None of the above

**Environmental risk factors:**

19. Is there any hand washing station in the market (interviewer to observe and record)?  
 Yes       No
20. Do you have running water in the market?       Yes       No  
*(skip to Q22)*
21. Approximately how far is your water source in the market? \_\_\_\_ ( Meters  Feet)(should be blank for the skipped ones)
22. Did you wash your hands with soap and water while in the market yesterday?       Yes  
 No
23. Daily, do you use ash or mud to wash your hands?       Yes       No
24. If you washed your hands yesterday, when did you do so: (read all the key times)
- |  |   |
|--|---|
| Before meals?                              | <input type="checkbox"/> Always <input type="checkbox"/> Often <input type="checkbox"/> Seldom <input type="checkbox"/> Never |
| After returning home?                      | <input type="checkbox"/> Always <input type="checkbox"/> Often <input type="checkbox"/> Seldom <input type="checkbox"/> Never |
| After defecating?                          | <input type="checkbox"/> Always <input type="checkbox"/> Often <input type="checkbox"/> Seldom <input type="checkbox"/> Never |
| Before touching your eyes, nose, or mouth? | <input type="checkbox"/> Always <input type="checkbox"/> Often <input type="checkbox"/> Seldom <input type="checkbox"/> Never |
25. Daily, how often do wash your hands with ash or mud: (read all the key times)
- |  |   |
|--|---|
| Before meals?                              | <input type="checkbox"/> Always <input type="checkbox"/> Often <input type="checkbox"/> Seldom <input type="checkbox"/> Never |
| After returning home?                      | <input type="checkbox"/> Always <input type="checkbox"/> Often <input type="checkbox"/> Seldom <input type="checkbox"/> Never |
| After defecating?                          | <input type="checkbox"/> Always <input type="checkbox"/> Often <input type="checkbox"/> Seldom <input type="checkbox"/> Never |
| Before touching your eyes, nose, or mouth? | <input type="checkbox"/> Always <input type="checkbox"/> Often <input type="checkbox"/> Seldom <input type="checkbox"/> Never |

**Poultry worker risk factors:**

26. Do you handle poultry?       Yes       No (if no stop and thank interviewee)
27. Where do you handle poultry (check all that apply)?  
 Home (       Market       Farm       Other \_\_\_\_\_
28. What kind of tasks do you do when you handle poultry? (read and select all that apply)
- |  |  |
|--|--|
| Transport poultry                          | <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Never |
| Feed poultry                               | <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Never |
| Clean feeding tray                         | <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Never |
| Clean water container                      | <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Never |
| Slaughter poultry                          | <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Never |
| Defeather poultry                          | <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Never |
| Eviscerate poultry                         | <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Never |
| Collect or transport feces                 | <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Never |
| Cleaning feces from where poultry are kept | <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Never |
29. Do you use any personal protective equipment when handling poultry?
- |                  |   |
|------------------|---|
| Protective apron | <input type="checkbox"/> Always <input type="checkbox"/> Often <input type="checkbox"/> Seldom <input type="checkbox"/> Never |
| Gloves           | <input type="checkbox"/> Always <input type="checkbox"/> Often <input type="checkbox"/> Seldom <input type="checkbox"/> Never |

Dedicated coveralls       Always  Often  Seldom  Never  
Mask                               Always  Often  Seldom  Never  
Boots                               Always  Often  Seldom  Never

30. Do you eat lunch or drink tea during or after working with poultry?       Always  Often  Seldom  Never
31. Do you smoke while working with poultry?       Always  Often  Seldom  Never
32. Do you carry hand poultry or hold poultry on your lap?       Always  Often  Seldom  Never
33. Do you carry baskets containing poultry on your head?       Always  Often  Seldom  Never
34. Do you change your clothes upon returning home after working with poultry?       Yes  No
35. Do you eat raw or undercooked poultry or eggs?       Always  Often  Seldom  Never

**Thank you for your cooperation and participation in the survey**

Technical Appendix 1 Figure 1. Questionnaire administered to poultry workers at live bird markets, Bangladesh, 2009–2010. The questionnaire was administered to all workers at baseline, and 12 months after baseline to workers at the market where avian influenza A(H5N1) virus was not detected through poultry surveillance during the study.

International Centre for Diarrhoeal Disease Research, Bangladesh

Sero-prevalence of antibodies to avian influenza A viruses among poultry market workers

Market worker questionnaire 21 days after animal surveillance recovers influenza

ID #	1					
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1. Name of Interviewer:
2. Date: \_\_\_\_ \_\_\_\_ \_\_\_\_ (dd mm yy)
3. Location:  Netrokona  Chittagong  Rajshahi  Dhaka
4. Market ID \_\_\_\_\_
5. Market worker available?  Yes  No

**Influenza like illness:**

6. Have you been sick in the past 21 days?  Yes  No (if no, skip to 22)
7. When did you first feel sick? Date \_\_\_\_ \_\_\_\_ \_\_\_\_ (dd mm yy)
8. Did you develop a sudden fever?  Yes  No
9. Did someone take your temperature?  Yes  No (if no, skip to 11)
10. What was your highest temperature? \_\_\_\_ F<sup>0</sup>
11. Did you develop:
  - a. Cough?  Yes  No
  - b. Sore throat?  Yes  No
  - c. Shortness of breath or difficulty breathing?  Yes  No
12. Did you seek medical attention?  Yes  No (if no, skip to 19)
13. Where did you seek medical attention?  Local clinic  Local hospital  Other \_\_\_\_\_
14. What were you diagnosed with?
  - d.  Cold  Pharyngitis  Bronchitis  Pneumonia  Dengue  Other \_\_\_\_\_
15. Were you told you needed hospitalization?  Yes  No
16. Have you taken oseltamavir (show case-patient sample blister pack) for this illness as twice a day for 5 days (or up to the time of the interview)?  Yes  No
17. Did a doctor obtain a clinical sample?
  - e. From nose or throat  Yes  No
  - f. Blood  Yes  No } (if no, skip to 19)
18. Where was this sample obtained?: \_\_\_\_\_
19. In the 3 days before symptom onset, had anyone **at home** had similar symptoms?  Yes  No
  - g. If yes, who \_\_\_\_\_

20. In the 3 days before symptom onset, did you know of anyone with similar symptoms?  
 Yes       No (if no Skip to 22)
21. In the 3 days before symptom onset, had you been close (< 3 feet/ 2 hands) to anyone you know with similar symptoms **outside** the home?       Yes       No (if no Skip to 22)
- h. If yes, where (check all that apply):  
 Market       School       Mosque/church/temple       Street       Other home  
 Other \_\_\_\_\_

**Potential risk factors for present illness**

22. In the 3 days before symptom onset/7 days before collecting the animal sample (mention the date), had you been around sick poultry?  Yes  No
23. Did you handle the sick poultry?       Yes       No (if no skip to 34)
24. Where did you handle sick poultry (check all that apply)?  
 Home (H)       Market (M)       Farm (F)       Other \_\_\_\_\_
25. What kind of tasks did you do when you handle the **sick poultry** and where (check all that apply and add location code [i.e. H,M,F])?
- |  |                              |                             |                 |
|--|------------------------------|-----------------------------|-----------------|
| Transport poultry                                | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Location: _____ |
| Feed poultry                                     | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Location: _____ |
| Clean feeding tray                               | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Location: _____ |
| Clean water container                            | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Location: _____ |
| Give medicine to the sick poultry                | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Location: _____ |
| Separate sick poultry                            | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Location: _____ |
| Slaughter poultry                                | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Location: _____ |
| Defeather poultry                                | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Location: _____ |
| Eviscerate poultry                               | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Location: _____ |
| Collect or transport feces                       | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Location: _____ |
| Cull poultry                                     | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Location: _____ |
| Stuff poultry in bags                            | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Location: _____ |
| Bury poultry carcasses                           | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Location: _____ |
| Burn poultry products                            | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Location: _____ |
| Cleaning feces from place where poultry are kept | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Location: _____ |

26. Did you take precautions when handling ill poultry (check all that apply)?
- |                     |                                 |                                |                                 |                                |
|---------------------|---------------------------------|--------------------------------|---------------------------------|--------------------------------|
| Protective apron    | <input type="checkbox"/> Always | <input type="checkbox"/> Often | <input type="checkbox"/> Seldom | <input type="checkbox"/> Never |
| Gloves              | <input type="checkbox"/> Always | <input type="checkbox"/> Often | <input type="checkbox"/> Seldom | <input type="checkbox"/> Never |
| Dedicated coveralls | <input type="checkbox"/> Always | <input type="checkbox"/> Often | <input type="checkbox"/> Seldom | <input type="checkbox"/> Never |
| Mask                | <input type="checkbox"/> Always | <input type="checkbox"/> Often | <input type="checkbox"/> Seldom | <input type="checkbox"/> Never |
| Boots               | <input type="checkbox"/> Always | <input type="checkbox"/> Often | <input type="checkbox"/> Seldom | <input type="checkbox"/> Never |

27. Did you eat during or after working with ill poultry?       Yes       No
28. Did you smoke while working with ill poultry?       Yes       No

29. Did you use: *(read and select all that apply)*

- Betel leaf or betel nuts                       gul (remains of tobacco-cake mixed with molasses)  
 khoini (hand-made tobacco dust)         None of the above

30. Did you hand carry sick poultry or hold poultry on your lap?                       Yes    No

31. Did you carry baskets containing sick poultry on your head?                       Yes    No

32. Did you wash your hands at the market after working with ill poultry?                       Yes    No

33. Did you change your clothes upon returning home after working with ill poultry?                       Yes    No

34. Did you eat raw or undercooked poultry or eggs?                       Yes    No

**Thank you**

Technical Appendix 1 Figure 2. Questionnaire administered to poultry workers at follow-up during a study of avian influenza A(H5N1) virus infection among workers at live bird markets, Bangladesh, 2009–2010.

International Centre for Diarrhoeal Disease Research, Bangladesh

Sero-prevalence of antibodies to avian influenza A viruses among poultry market workers

Non-poultry workers questionnaire

ID #						
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1. Name of Interviewer:
2. Date: \_\_\_/ \_\_\_/ \_\_\_ (dd/mm/yy)
3. Name of the Organization of control:
4. Consent to participate?  Yes (if yes, skip to 7)  No
5. If refused consent provide reason: \_\_\_\_\_ (Stop and thank interviewee)

Generic risk factors:

6. How old are you: \_\_\_ \_\_\_ (years)
7. Have you owned or handled poultry during the past 2 years?  Yes (if yes thank and stop)  No
8. Have you worked in influenza field studies during past 2 years?  Yes (if yes thank and stop)  No
9. Sex:  Female  Male (if male, skip to 11)
  - a. If female, Are you pregnant, that you are aware?  Yes  No
10. What is your ethnicity: \_\_\_\_\_
11. Height: \_\_\_\_\_ (meters) (Use tape measure)
12. Weight: \_\_\_\_\_ (Kg) (Use bathroom scale)
13. Do you smoke?  Yes  No (if no, skip to 18)
14. How many sticks a day do you smoke \_\_\_\_\_
15. How many years have you smoked? \_\_\_\_\_
16. Do you use: (read and select all that apply)
  - Betel leaf or betel nuts  Gul (remains of tobacco-cake mixed with molasses)
  - Khoini (hand-made tobacco dust)  None of the above
17. Do you have any of the following conditions?:
  - Asthma  Diabetes  Chronic heart disease  Chronic lung disease

- Chronic kidney disease       Chronic liver disease       Immune problems        
 Cancer       None of the above

**Environmental risk factors:**

18. Daily, do you use soap to wash your hands?       Yes       No
19. Daily, do you use ash or mud to wash your hands?       Yes       No
20. Daily, how often do wash your hands: (read all the key times)
- |  |                                 |                                |                                 |                                |
|--|---------------------------------|--------------------------------|---------------------------------|--------------------------------|
| Before meals?                              | <input type="checkbox"/> Always | <input type="checkbox"/> Often | <input type="checkbox"/> Seldom | <input type="checkbox"/> Never |
| After returning home?                      | <input type="checkbox"/> Always | <input type="checkbox"/> Often | <input type="checkbox"/> Seldom | <input type="checkbox"/> Never |
| After defecating?                          | <input type="checkbox"/> Always | <input type="checkbox"/> Often | <input type="checkbox"/> Seldom | <input type="checkbox"/> Never |
| Before touching your eyes, nose, or mouth? | <input type="checkbox"/> Always | <input type="checkbox"/> Often | <input type="checkbox"/> Seldom | <input type="checkbox"/> Never |

**Poultry risk factors:**

21. Have you ever handled poultry?       Yes       No (*Stop and thank interviewee*)
22. Where have you handled poultry (*check all that apply*)?
- Home       Market       Farm       Other \_\_\_\_\_

**Thank you**

Technical Appendix 1 Figure 3. Questionnaire administered to nonpoultry workers during a study of avian influenza A(H5N1) virus infection among workers at live bird markets, Bangladesh, 2009–2010.