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Clinicians' KAP Survey in East Jakarta and Bogor Districts Indonesia

July 11, 2012

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Technical Report

Clinicians' KAP Survey in East Jakarta and Bogor Districts

Strategies Against Flu Emergence - DAI
Johns Hopkins University Center for Communication Programs

In collaboration with

Center for Disease Control
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University of Indonesia Center for Health Research

Jakarta, Indonesia

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INTRODUCTION

Infection from H5N1, the highly pathogenic avian influenza (AI) virus, results in high case fatality rates. Indonesia has the highest number of confirmed human cases of AI and one of the highest case fatality rates in the world, 83 percent as of 29 May 2012.[1] This high case fatality rate is widely attributed to delays in care seeking, diagnosis and initiation of treatment for respiratory disease, but the basis for those claims is not well-established. Respiratory disease and influenza-like illnesses (ILIs) are extremely common in Indonesia and experts estimate that the actual number of H5N1 cases may be several times higher than the confirmed total with many cases unidentified, misidentified or unreported. More than 68 percent of all human cases in Indonesia occurred in Western Java. While human-human transmission of H5N1 is rare, the virus is endemic in animal populations in Indonesia, raising the possibility that H5N1 could at some point evolve into a form more easily transmissible between humans, causing a pandemic that could kill millions. Both direct and indirect exposure to live and domesticated birds, to poultry waste and to poultry in wet markets is extremely common throughout Indonesia.

The USAID-funded SAFE project is designed to reduce these risks by simultaneously working to (1) improve biosecurity practices in the poultry industry, to reduce bird-bird transmission and (2) improve hygiene and poultry handling practices among the general public, to reduce bird-human transmission, while (3) encouraging rapid care seeking and faster initiation of appropriate treatment as early as possible after the onset of symptoms of respiratory disease.

Under the umbrella of the USAID *Strategies Against Flu Emergence* (SAFE) project and in conjunction with the Center for Disease Control and the World Health Organization Indonesia, two surveys were conducted in East Jakarta and Bogor Districts: (1) a community-based household survey and (2) a survey of clinician knowledge, attitudes and practices related to ILI diagnosis and treatment.

This report presents findings from the Clinicians KAP survey.

[1] http://www.who.int/influenza/human_animal_interface/H5N1_cumulative_table_archives/en/index.html

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BACKGROUND TO THE CLINICIANS KAP SURVEY

Enhanced Clinical Surveillance

The Ministry of Health in Indonesia, in collaboration with local and international partners (CDC and WHO), currently conducts enhanced surveillance for human cases of seasonal influenza and highly pathogenic avian influenza A (H5N1) among residents of East Jakarta Municipality.

The purpose of this surveillance is to assess the burden of influenza-like illnesses (ILIs), and H5N1 in particular, in East Jakarta Municipality, an area experiencing an on-going epizootic threat of H5N1 virus infections among poultry. Patients seeking care for ILIs in a network of 4 primary care community health centers (*puskesmas)* and 6 hospitals (patients hospitalized for severe acute respiratory infection) are enrolled 5 days per week, sampled, and tested for evidence of influenza virus infection, including H5N1 virus.

KAP Survey

To complement the clinical surveillance, a survey was conducted among primary care (outpatient) and hospital-based physicians (providing medical care for in-patients) in East Jakarta Municipality who provide adult and pediatric medical care, to determine their knowledge, attitudes and practices (KAP) regarding identification, treatment and referral of patients with suspected infection with highly pathogenic avian influenza A (H5N1) virus. Physicians were also asked about their knowledge of seasonal and pandemic (H1N1) influenza. The findings of this clinician survey will be used to inform clinician education efforts to improve H5N1 case-patient detection and earlier antiviral treatment.

The companion survey of household care seeking and utilization behavior (HUS) was conducted in the same areas of East Jakarta, as well as in Bogor District (reported separately). For this reason, an additional purposive sample of clinicians was also obtained in Bogor District.

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OBJECTIVES OF THE KAP SURVEY

•To determine the extent to which physicians in East Jakarta and Bogor District are knowledgeable about influenza-like illnesses (ILIs);
•To determine the extent to which physicians in East Jakarta and Bogor districts are knowledgeable about the H5N1 case definition in Indonesia and risk factors for H5N1 virus infection (i.e., direct contact: touching, slaughtering sick or dead poultry; indirect contact: close contact with sick/dead poultry or visiting a wet poultry market; direct or close contact with a sick human H5N1 patient);
•To describe the clinical practices of physicians in East Jakarta and Bogor related to ILIs in general and H5N1 in particular (e.g. ever diagnosed a patients as a suspect H5N1 case (or any confirmed H5N1 case), the disposition of patient (e.g., referred to designated H5N1 hospital, what specimens were collected, oseltamivir antiviral treatment prescribed, infection control measures followed, where specimens are sent); and
•To determine the knowledge and clinical practices of physicians in East Jakarta and Bogor related to seasonal or pandemic influenza. For example, what are the practices of clinicians for patients with influenza-like illness or severe acute respiratory infection? Have they ever diagnosed an ill patient who has influenza-like illness with seasonal or pandemic influenza, or influenza-related pneumonia, or worsening of underlying medical conditions related to seasonal or pandemic influenza? Have they ever referred a patient with severe acute respiratory infection for hospitalization for influenza complications, ever prescribed antiviral treatment to a patient with a diagnosis of seasonal or pandemic influenza, ever tested a patient for seasonal or pandemic influenza?

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METHODOLOGY

- The study used a cross-sectional design and face-to-face interviews
- The study population was licensed physicians who provide adult and/or pediatric medical care in government and private sector health facilities in East Jakarta and Bogor districts.
- The sampling frame included general practitioners, pediatricians, internists, pulmonologists, ENTs, cardiologists and Obstetricians/gynecologists. This list was constructed based on data from District Health Office.
- A purposive sample of 300 physicians in each study area was proportionally allocated to general practitioners and specialist groups. Then a simple random sample of physicians was drawn from the sampling frame in each group.

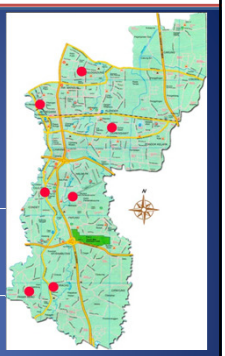

Fig. 1: East Jakarta

Fig. 2: Bogor

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Data Collection

The recruitment and data collection process was made difficult by several factors, including physicians' lack of time, refusal by some doctors and hospitals to participate, the extended time required to obtain permission to interview some hospital-based doctors, and outdated contact information for some doctors. This resulted in interviewers needing more time to acquire accurate and current data. The refusal rate to participate in the study in was 44% in East Jakarta and 55% in Bogor District. The next two slides provide a flow diagram of data collection.

Table 1: Total number of sample

Type of Physician	East Jakarta	Bogor District	Total
General Practitioner	210	274	484
Specialist	29	41	70
Total	239	315	554

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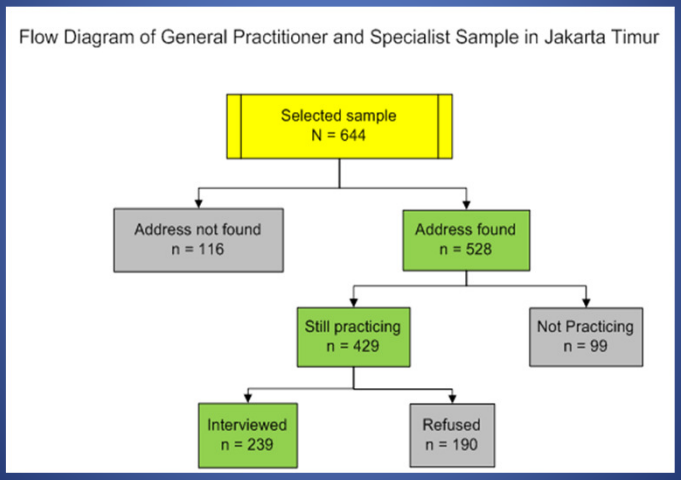
Data Collection– East Jakarta

Figure 3



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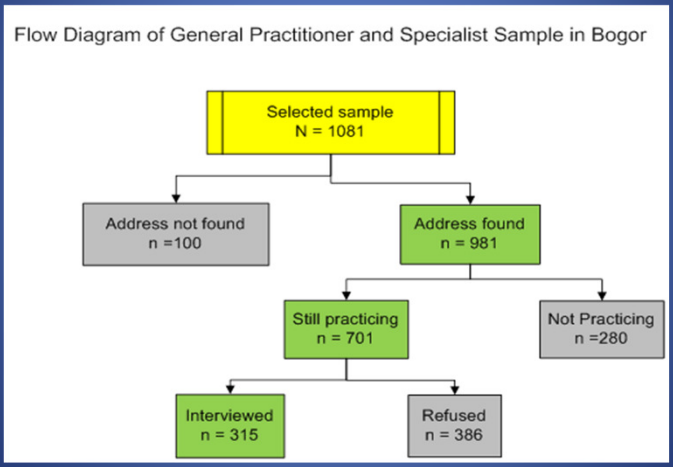
Data Collection – Bogor District

Figure 4



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INSTRUMENT DEVELOPMENT

The instrument was developed in collaboration with USAID/Jakarta, CDC/Atlanta, CDC/Jakarta, WHO/Indonesia and SAFE and was designed to measure the following:

- Number of inpatient and outpatient cases of seasonal, pandemic (H1N1) and avian (H5N1) influenza suspected, diagnosed, referred for testing or treatment and/or treated;
- Knowledge of clinical features of the three types of ILIs (common symptoms, transmission vectors);
- Knowledge of the World Health Organization and Indonesian suspect H5N1 case definition;
- Knowledge of recommended infection control practices for suspect/confirmed H5N1 patients, respiratory specimens for H5N1 virus testing;
- Knowledge of types of tests and procedures for sample collection and shipping;
- Knowledge of clinical management practices, including antiviral treatment, and knowledge of where to refer a patient with ILI and suspected H5N1 including those with exposure to sick and dying poultry;
- Actual clinical management of patients with ILI (outpatients) or SARI (in-patients);
- Knowledge of risk factors for severe illness and death from seasonal, pandemic and avian influenza in Indonesia; and
- Whether physicians have ever received influenza vaccination (including seasonal trivalent influenza vaccine or monovalent 2009 pandemic H1N1 vaccine), and whether they have received influenza vaccination in the past year, and if not, assess barriers to influenza vaccination of physicians.

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INSTRUMENT DEVELOPMENT (cont.)

The instrument was translated into Bahasa Indonesia before being pre-tested with clinicians including general practitioner and specialists in December 2011.

Pre-testing of the instrument was conducted by researchers from Pusat Penelitian Kesehatan-Universitas Indonesia /*PPK-UI*, in Puskesmas Cimanggis, Depok, West Java and Setya Bhakti General Hospital . These areas/facilities were not included in the study sample but were selected based on their similarity to the field sites where data collection would actually be conducted.

Pre-testing was designed to confirm the wording, flow and time spent for each respondent, and to ensure that respondents could answer each question. The pre-testing results were then sent to all partners for input. Detailed feedback on KAP pre-tests, including suggested revisions to specific questions were addressed.

DATA COLLECTION MANAGEMENT

Prior to data collection activities, SAFE and *PPK-UI* obtained ethical clearance for implementing the survey from the Research Ethics Committee at the Faculty of Public Health of the University of Indonesia on December 20, 2011, and from the CDC Atlanta Institutional Review Board on March 7, 2012.

A three-day training program was conducted for all field personnel on January 18-20, 2012. To speed up data collection process, PPK-UI added more interviewers and conducted additional training for them on 12-13 April 2012.

Data collection was conducted from March 14, 2012 to June 6,2012. A total of 554 respondents were interviewed. The average interview time per respondent was about 30 minutes.

DATA ENTRY MANAGEMENT

Data was managed using EpiData software. A special template for this survey was developed for data entry. Data entry was conducted by four data entry personnel who used double data entry procedure.

Data cleaning was done before analysis. In data cleaning process, the two data files from double data entry process were compared. When there was any discrepancy between the two data sets, rechecking and correction was done by looking at the hard copy of the questionnaire. Beside comparing the two files, data cleaning was also done by creating frequency distribution of all variables and cross tabulation of related variables (to check their consistencies).

CLINICIAN CHARACTERISTICS

Characteristics of the clinicians who were interviewed are summarized in Table 2.

There were some differences in clinician characteristics between East Jakarta and Bogor. Respondents were slightly younger on average in East Jakarta compared to Bogor. Women made up more than two-thirds of the sample in East Jakarta but only half in Bogor.

There were no significant differences by district in terms of educational level, but physicians in Bogor were more likely to see only outpatients, while physicians in East Jakarta were more likely to see both inpatients and outpatients.

The modal response for length of time in one's current facility in both districts was 1-4 years, but clinicians in Bogor had been longer in their current location on average.

Table 2: Respondent Characteristics by survey area

Clinician characteristics	East Jakarta (n=239)	Bogor (n=315)	Total (n=554)
Gender			
Male	32.2	48.9	41.7
Female	67.8	51.1	58.3
Age categories			
25-34	46.4	20.6	31.8
35-44	18.4	37.8	29.4
45-54	18.4	25.4	22.4
55-64	12.1	7.9	9.7
Over 64	3.3	2.2	2.7
Refused to answer	1.3	6.0	4.0
Educational level			
Medical school	87.9	87.0	87.4
Subspecialty	12.1	13.0	12.6
Kind of care provided			
Outpatient only	60.3	78.7	70.8
Inpatient only	4.6	0.6	2.3
Both inpatient and outpatient	35.1	20.6	26.9
Length of time in current place			
< 1 year	10.9	3.2	6.5
1-4 years	51.5	41.0	45.5
5-9 years	12.6	29.8	22.4
10-14 years	9.2	14.9	12.5
>15 years	15.1	10.2	12.3
Refused to answer	0.8	1.0	0.9

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CLINICIAN CHARACTERISTICS (Cont.)

Overall, more than half of clinicians surveyed work in a private practice or clinic (57%). Just over two thirds of clinicians surveyed in Bogor (68%) practice in private or clinic settings. Conversely, in East Jakarta more clinicians work in puskesmas and public hospitals than do those in Bogor.

Table 3 : Respondent Characteristics by survey area and facility type

Facility type	East Jakarta (n=239)	Bogor (n=315)	Total (n=554)
Puskesmas (Community Health Center)	14.6	9.5	11.7
Private Practice/Clinic	42.3	67.9	56.9
Public Hospital	19.2	5.4	11.4
Private Hospital	23.8	17.1	20.0

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FINDINGS

Knowledge of Clinical Sign and Symptoms of Seasonal Influenza, Pandemic Influenza (H1N1) and H5N1

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KNOWLEDGE OF CLINICAL SYMPTOMS OF SEASONAL FLU

The most commonly mentioned symptoms of seasonal flu for inpatients and outpatients alike were fever, cough, runny nose, blocked nose, sneezing, muscle aches and sore throat. Clinical features of flu for hospitalized patients compared to outpatients were more likely to include chest congestion, shortness of breath and nausea or vomiting.

Clinicians in Bogor were more likely than those in E. Jakarta to recognize shortness of breath and chest congestion, nausea and diarrhea as inpatient features of seasonal flu, but less likely to mention some of the more minor symptoms like blocked nose, headache and loss of appetite. They were also more likely to mention runny nose, earache and diarrhea as outpatient symptoms.

Table 4: Knowledge of clinical symptoms of seasonal influenza by district & type of patient (%)

Clinical features: seasonal flu	East Jakarta (n=239)		Bogor (n=315)		Total (n=554)	
	OUT	IN	OUT	IN	OUT	IN
Short breath	6.3	15.1	7.9	30.2	7.2	**23.6**
Congestion	17.2	40.2	19.7	57.8	18.6	**50.2**
Fever	97.1	95.8	95.6	94.0	96.2	94.8
Cough	84.9	82.8	85.7	78.4	85.4	80.3
Muscle ache	47.3	46.0	53.0	50.8	50.5	48.7
Sore throat	50.2	50.2	47.0	47.0	48.4	48.4
Blocked nose	64.4	64.4	64.1	53.3	64.3	**58.1**
Runny nose	65.7	63.6	81.6	70.5	**74.7**	67.5
Sneezing	54.8	51.5	60.6	49.8	58.1	50.5
Earache	2.5	5.0	6.7	7.6	**4.9**	6.5
Rash	1.3	1.7	2.9	3.2	2.2	2.5
Nausea	3.3	8.4	6.0	16.2	4.9	**12.8**
Diarrhea	0.4	3.8	3.2	9.5	**2.0**	**7.0**
Headache	19.7	11.7	10.8	4.4	14.6	**7.6**
Weakness	3.8	3.8	3.2	1.0	**3.4**	**2.2**
Low appetite	2.1	6.3	1.9	2.2	2.0	**4.0**
Other	4.2	18.8	4.1	7.9	4.2	**12.6**

Red indicates significant difference between East Jakarta and Bogor

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KNOWLEDGE OF CLINICAL SYMPTOMS OF PANDEMIC (H1N1) INFLUENZA

The most commonly mentioned symptoms of pandemic H1N1 flu for inpatients and outpatients alike were fever, cough, chest congestion, muscle aches, runny nose, blocked nose, sore throat and sneezing. Clinical features for hospitalized patients compared to outpatients were more likely to include shortness of breath, chest congestion and nausea or vomiting.

Clinicians in Bogor were more likely than those in E. Jakarta to mention shortness of breath as both an inpatient and outpatient symptom, while those in E. Jakarta were more likely to mention fever, cough and sore throat as both inpatient and outpatient symptoms.

Table 5: Knowledge of clinical symptoms of pandemic (H1N1) influenza by district & type of patient (%)

Clinical features: pandemic flu	East Jakarta (n=239)		Bogor (n=315)		Total (n=554)	
	OUT	IN	OUT	IN	OUT	IN
Short breath	13.8	21.3	23.8	42.5	**19.5**	**33.4**
Congestion	52.3	60.7	52.4	66.3	52.3	63.9
Fever	93.3	91.6	81.0	79.0	**86.3**	**84.5**
Cough	74.1	73.6	60.0	56.5	**66.1**	**63.9**
Muscle ache	51.9	52.3	53.0	51.7	52.5	52.0
Sore throat	45.2	47.7	36.5	34.0	**40.3**	**39.9**
Blocked nose	53.6	54.8	34.0	31.7	**42.4**	**41.7**
Runny nose	51.5	50.6	47.9	45.7	49.5	47.8
Sneezing	42.7	41.0	31.4	28.6	**36.3**	**33.9**
Earache	2.5	4.2	5.7	6.7	4.3	5.6
Rash	2.5	3.3	7.6	7.6	**5.4**	**5.8**
Nausea	5.9	12.6	13.7	18.4	**10.3**	15.9
Diarrhea	2.9	8.8	6.0	10.2	4.7	9.6
Headache	7.1	7.1	4.8	3.8	5.8	5.2
Weakness	2.9	2.9	1.3	1.6	2.0	2.2
Low appetite	1.3	2.1	0.6	1.0	0.9	1.4
Other	13.8	12.1	6.3	7.9	**9.6**	9.7

Red indicates significant difference between E. Jakarta and Bogor

KNOWLEDGE OF CLINICAL SYMPTOMS OF AVIAN (H5N1) INFLUENZA

Clinicians seem to be aware of some critical differences between H5N1 and other forms of flu. For example, they were more likely to associate the acute symptoms of shortness of breath and chest congestion with avian flu than with seasonal or H1N1 flu.

The most commonly mentioned symptoms of avian influenza for inpatients and outpatients alike were fever, chest congestion, and coughing. Also mentioned were muscle aches, runny nose, shortness of breath, blocked nose, sore throat and sneezing. Symptoms for hospitalized patients were more likely to include shortness of breath and chest congestion.

Respondents in East Jakarta were more likely to mention sore throat and blocked nose, while those in Bogor were more likely to mention difficulty breathing and nausea/vomiting.

Table 6: Knowledge of clinical symptoms of avian (H5N1) influenza by district & type of patient (%)

Clinical features: avian flu	East Jakarta (n=239)		Bogor (n=315)		Total (n=554)	
	OUT	IN	OUT	IN	OUT	IN
Short breath	30.5	41.4	45.4	64.1	**39.0**	**54.3**
Congestion	73.2	79.1	73.3	80.3	73.3	79.8
Fever	91.2	92.5	90.5	88.3	90.8	90.1
Cough	77.4	77.8	70.5	67.9	73.5	**72.2**
Muscle ache	51.0	51.9	56.2	54.6	54.0	53.4
Sore throat	47.7	49.8	38.4	37.8	**42.4**	**43.0**
Blocked nose	54.4	55.2	39.0	35.6	**45.7**	**44.0**
Runny nose	51.0	50.6	57.5	50.8	54.7	50.7
Sneezing	41.0	41.8	35.6	32.4	37.9	**36.5**
Earache	3.8	3.8	9.2	9.2	**6.9**	**6.9**
Rash	2.5	2.5	7.0	7.9	**5.1**	**5.6**
Nausea	7.1	10.0	17.8	22.9	**13.2**	**17.3**
Diarrhea	2.5	4.6	7.9	12.7	**5.6**	**9.2**
Headache	6.7	5.9	4.1	2.9	5.2	4.2
Weakness	4.2	4.2	1.3	1.0	**2.5**	**2.3**
Low appetite	0.0	1.7	0.6	1.0	0.4	1.3
Contact w birds	2.1	1.3	1.3	2.9	1.6	2.2
Pneumonia	2.5	2.5	0.3	0.0	**1.3**	**1.1**
Fainting	2.5	1.3	0.6	0.6	1.4	0.9
Other	9.6	12.6	4.4	6.7	**6.7**	**9.2**

Red indicates significant difference between E. Jakarta and Bogor

Diagnosis, Testing & Treatment

AWARENESS OF GROUPS AT HIGHEST RISK FOR AVIAN FLU COMPLICATIONS

Clinicians identified children under 5 years of age as the group most susceptible to AI complications, followed by young children, the elderly and people who are immunosuppressed. Pregnant women, those with chronic lung disease and health care workers were also mentioned by less than 50% of clinicians.

Clinicians in East Jakarta were more likely than those in Bogor to identify immunosuppressed persons and health care workers as groups at high risk.

Table 7: Groups at highest risk of AI complications by district (% mentioned)

GROUPS	East Jakarta (n=239)	Bogor (n=315)	Total (n=554)
Children under 5 years old	90.4	93.0	91.9
Young children	73.6	77.8	76.0
Pregnant women	40.6	48.6	45.1
Elderly people	68.6	61.0	64.3
Immunosuppressed persons	71.5	58.7	**64.3**
Health care workers	46.0	34.9	**39.7**
Person with chronic lung disease	42.3	39.7	40.8
Person with heart disease	19.7	14.9	17.0

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AWARENESS OF RISK FACTORS ASSOCIATED WITH AVIAN FLU

The most common diagnostic questions clinicians said they asked suspected patients were: have you handled dead chickens in the past 7 days (59%), have you been exposed to wild birds or wild bird feces near the home in the past 7 days (53%), have you handled live (39%) or slaughtered (25%) birds at a wet market in the past 7 days, and have you eaten raw poultry products in the past 7 days (37%). Even though the risk of human-human transmission is low, 54% of clinicians said they asked suspected patients about contact with another suspected bird flu patient in the past 7 days.

In each case, these questions were mentioned slightly more often by clinicians in Bogor than by those in East Jakarta, suggesting greater sensitivity to or concern about AI in Bogor.

Table 8: Awareness of AI risk factors by district

Type of contact in past 7 days	East Jakarta (n=239)	Bogor (n=315)	Total (n=554)
Handled dead chickens	52.7	63.8	**59.0**
Cared for avian flu patient	49.0	57.8	**54.0**
Exposed to wild birds/feces	43.5	59.4	**52.5**
Handled live birds at wet market	32.6	44.1	**39.2**
Ate raw poultry products	28.9	43.5	**37.2**
Handled meat at wet market	19.7	28.3	**24.5**
Slaughtered chickens	18.8	23.5	21.5
Visited traditional market	11.3	22.5	**17.7**
Ate cooked chicken	12.1	17.1	15.0
Bought meat at traditional market	7.1	18.7	**13.7**
Contact with suddenly dead birds	18.4	7.9	**12.5**
Been in wet market	1.7	14.0	**8.7**
Contact with poultry	10.0	5.7	7.6
Ate cooked eggs	6.3	8.6	7.6
Travel from high risk area	9.2	4.8	**6.7**
Keep poultry at home	7.1	2.2	**4.3**

Red indicates significant difference between East Jakarta and Bogor

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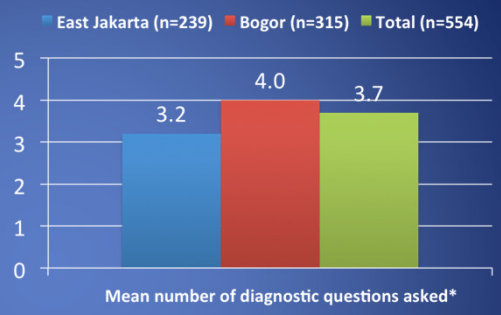
DIAGNOSTIC EFFORT

We define "diagnostic effort" as the number of diagnostic questions clinicians say they ask patients to determine if a person who presents with the clinical features of avian influenza has had contact with potential sources of H5N1 (see previous slide).

Clinicians in Bogor asked significantly more diagnostic questions on average compared to clinicians in E. Jakarta.

Figure 5: Diagnostic effort by district



As shown in the previous slide, clinicians in Bogor were more likely to inquire about consumption of raw poultry products, about having been at a wet market, about handling slaughtered poultry at a wet market, about having been at a traditional market and about exposure to wild birds or bird feces.

In spite of the fact that wet markets are the primary source of potential exposure to H5N1 in East Jakarta and the fact that virtually all households have at least weekly contact with a wet market (see *Healthcare Utilization Survey Report*, 2012), this is a less common diagnostic question in East Jakarta compared to Bogor.

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CLINICAL DIAGNOSIS AND TREATMENT RECOMMENDATIONS FOR SEASONAL INFLUENZA

Over 90% of clinicians reported ever clinically diagnosing seasonal influenza in outpatients (n of clinicians=512) while only 1 in 10 or less (n of clinicians=46) had ever diagnosed a hospitalized case of seasonal flu.

The most commonly recommended treatment for seasonal flu was prescribed over the counter or symptomatic medication, slightly less so for hospitalized cases. A little less than half of the clinicians said they recommend antibiotics for outpatients, rising to over 60% for inpatients. Vitamin therapy was also fairly common, especially for inpatients in Bogor. Very few recommended antiviral treatment for seasonal flu.

Table 9: Clinical diagnosis, number of cases and recommended treatment for seasonal influenza by district & type of patient

	East Jakarta (n=239)		Bogor (n=315)		Total (n=554)	
	OUT	IN	OUT	IN	OUT	IN
Ever made diagnosis	90.8% (n=217)	10.5% (n=25)	93.7% (n=295)	6.7% (n=21)	92.4% (n=512)	8.3% (n=26)
N of cases in past year						
1-9	4.6	16.0	2.0	19.0	3.1	17.4
10-19	2.8	24.0	1.7	0.0	2.1	13.0
20-29	7.8	20.0	1.7	9.5	4.3	15.2
30-39	6.0	8.0	2.7	4.8	4.1	6.5
40-49	4.6	4.0	3.1	0.0	3.7	2.2
50 or more	72.4	24.0	79.3	52.4	76.4	37.0
Don't remember	1.8	4.0	9.5	14.3	6.2	8.7
Usual treatment recommendation						
No treatment	0.5	0.0	0.7	0.0	0.6	0.0
OTC/ symptomatic meds	93.5	88.0	91.5	81.0	92.4	84.8
Antiviral	5.1	4.0	1.7	4.8	**3.1**	4.3
Antibiotic	47.0	64.0	45.1	66.7	45.9	65.2
Vitamins	18.0	16.7	23.1	57.1	21.0	**35.6**
Other	5.1	16.0	3.1	9.5	3.9	13.0

Red indicates significant difference between East Jakarta and Bogor

The most common antiviral treatment recommended were Acyclovir and Isoprinosine.

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CLINICAL DIAGNOSIS AND TREATMENT RECOMMENDATIONS FOR SEASONAL INFLUENZA (Cont.)

Clinicians at Puskesmas and in private practice were more likely than those in public or private hospital to prescribe over the counter or symptomatic medication to outpatient. Clinicians in public hospitals were more likely to prescribe antivirals to outpatients, while clinicians in private practice/clinics were more likely to prescribe antivirals to inpatients. Clinicians at puskesmas were less likely than other clinicians to prescribe antibiotics for outpatients, with a figure of only 28%.

Table 10: Clinical diagnosis and recommended treatment for seasonal influenza by facility type & type of patient

	Puskesmas (n=65)		Private Practice/ Clinic (n=315)		Public Hospital (n=63)		Private Hospital (n=111)		Total (n=554)	
	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN
Ever made diagnosis	87.7	6.2	95.9	1.9	87.3	15.9	88.3	23.4	92.4	8.3
Usual treatment recommendation	(n=57)	(n=4)	(n=302)	(n=6)	(n=55)	(n=10)	(n=98)	(n=26)	(n=512)	(n=46)
No treatment	0.0	0.0	0.3	0.0	3.6	0.0	0.0	0.0	**0.6**	0.0
OTC/ symptomatic meds	98.2	100.0	94.0	66.7	87.3	100.0	86.7	80.8	**92.4**	84.8
Antiviral	1.8	0.0	2.0	16.7	10.9	0.0	3.1	3.8	**3.1**	4.3
Antibiotic	28.1	50.0	50.0	83.3	43.6	40.0	44.9	73.1	**45.9**	65.2
Vitamins	21.1	75.0	20.2	33.3	20.5	22.2	23.5	34.6	21.0	35.6
Other	1.8	0.0	3.6	16.7	5.5	10.0	5.1	15.4	3.9	13.0

Red indicates significant difference among facility type

TESTING FOR SEASONAL INFLUENZA

Overall, about 17% of hospitalized seasonal flu cases were tested to determine the nature of the illness, compared to 2.3% of outpatient cases. Testing for seasonal influenza for out and inpatient was more likely ordered by clinicians in East Jakarta compared to Bogor.

The most common tests ordered were a nasal or throat swab, a blood test, and ILI test or the rapid influenza diagnostic test.

Clinicians were most likely not to order a test because they thought it was unnecessary, because it was unavailable or because it was too expensive. Expense was more of an issue for hospitalized patients in Bogor compared to East Jakarta. Availability was more of an issue for both inpatients and outpatients in Bogor and the perceived lack of need was more of an issue in East Jakarta.

Table 11: Testing, kind of test and reasons for not testing for seasonal flu by district & type of patient

	East Jakarta (n=239)		Bogor (n=315)		Total (n=554)	
	OUT	IN	OUT	IN	OUT	IN
N of clinicians ever made diagnosis in past year	(n=217)	(n=25)	(n=295)	(n=21)	(n=512)	(n=46)
Testing ordered	4.6% (n=10)	24.0% (n=6)	0.7% (n=2)	9.5% (n=2)	**2.3% (n=12)**	17.4% (n=8)
Kind of testing ordered						
Rapid diagnostic test	1/10	1/6	1/2	0/2	2/12	1/8
Immunofluoresence	1/10	0/6	0/2	0/2	1/12	0/8
RT-PCR	0/10	1/6	0/2	0/2	0/12	1/8
Viral culture	1/10	0/6	0/2	0/2	1/12	0/8
Other	1/10	1/6	1/2	0/2	2/12	1/8
Don't know/remember	1/10	0/6	0/2	1/2	1/12	1/8
Blood test	2/10	2/6	0/2	1/2	2/12	3/8
ILI test	2/10	0/6	0/2	0/2	2/12	0/8
Swab	3/10	2/6	0/2	0/2	3/12	2/8
Reasons for not ordering	(n=207)	(n=19)	(n=293)	(n=19)	(n=500)	(n=38)
Not available	12.6	21.1	52.6	63.2	**36.0**	42.1
Too expensive	43.0	21.1	47.8	47.4	45.8	**34.2**
No need to test	61.4	89.5	42.3	31.6	**50.2**	60.5
Testing not accurate	3.4	0.0	1.7	0.0	2.4	0.0
Patient refused	1.9	0.0	0.7	0.0	1.2	0.0
Other	3.9	5.3	1.7	5.3	2.6	5.3

Red indicates significant difference between East Jakarta and Bogor

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SAFE STRATEGIES AGAINST FLU EMERGENCE

DIAGNOSIS AND TREATMENT RECOMMENDATIONS FOR PANDEMIC (H1N1) INFLUENZA

Because of the small number of cases, we do not calculate percentages for this table.

Clinicians reported diagnosing very few cases of H1N1, a total of 10, nine diagnosed outpatient cases and only one of which was in Bogor.

As for seasonal flu, the most commonly recommended treatment for H1N1 flu was prescribed over the counter medication for fever and pain. In about half of the cases, clinicians said they recommended antibiotics for outpatients and one third recommended vitamin therapy. Antiviral treatment was recommended by three clinicians.

Table 12: Diagnosis, number of cases and recommended treatment for pandemic influenza (H1N1) by district & type of patient

	East Jakarta (n=239)		Bogor (n=315)		Total (n=554)	
	OUT	IN	OUT	IN	OUT	IN
Ever made diagnosis	3.3% (n=8)	0.3% (n=1)	0.3% (n=1)	0.0% (n=0)	1.6% (n=9)	0.2% (n=1)
N of cases in past year						
1-9	6/8	1/1	1/1	-	7/9	1/1
10-19	1/8	0/1	0/1	-	1/9	0/1
20-29	1/8	0/1	0/1	-	1/9	0/1
30-39	0/8	0/1	0/1	-	0/9	0/1
40-49	0/8	0/1	0/1	-	0/9	0/1
50 or more	0/8	0/1	0/1	-	0/9	0/1
Don't remember	0/8	0/1	0/1	-	0/9	0/1
Usual treatment recommendation						
No treatment	0/8	0/1	1/1	-	1/9	0/1
OTC /symptomatic meds	5/8	1/1	0/1	-	5/9	1/1
Antiviral	2/8	1/1	0/1	-	2/9	1/1
Antibiotic	4/8	1/1	0/1	-	4/9	1/1
Vitamins	3/8	0/1	0/1	-	3/9	0/1
Other	0/8	0/1	1/1	-	1/9	0/1

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SAFE STRATEGIES AGAINST FLU EMERGENCE

TESTING FOR PANDEMIC (H1N1) INFLUENZA

Of the 10 clinicians who diagnosed in- and out- patient pandemic influenza, five ordered testing (including the hospitalized case). None of the clinicians in Bogor ordered testing.

The tests ordered were a RT-PCR, a blood test, and an ILI test.

Clinicians were most likely not to order a test because it was unavailable or they thought it was not necessary.

Table 13: Testing, kind of test and reasons for not testing for pandemic flu by district & type of patient

	East Jakarta (n=239)		Bogor (n=315)		Total (n=554)	
	OUT	IN	OUT	IN	OUT	IN
N of clinicians who ever made diagnosis H1N1 in past year	(n=8)	(n=1)	(n=1)	(n=0)	(n=9)	(n=1)
Testing ordered	4/8	1/1	0/1	-	4/9	1/1
Kind of testing ordered	(n=4)	(n=1)	(n=0)	(n=0)	(n=4)	(n=1)
Rapid diagnostic test	0/4	0/1	-	-	0/4	0/1
Immunofluoresence	0/4	0/1	-	-	0/4	0/1
RT-PCR	1/4	1/1	-	-	1/4	1/1
Viral culture	0/4	0/1	-	-	0/4	0/1
Other	1/4	0/1	-	-	1/4	0/1
Don't know/remember	1/4	0/1	-	-	1/4	0/1
Blood test	1/4	0/1	-	-	1/4	0/1
ILI test	1/4	0/1	-	-	1/4	0/1
Reasons for not ordering	(n=4)	(n=0)	(n=1)	(n=0)	(n=5)	(n=0)
Not available	2/4	-	0/1	-	2/5	-
Too expensive	0/4	-	1/1	-	1/5	-
No need to test	1/4	-	0/1	-	1/5	-
Testing not accurate	0/4	-	0/1	-	0/5	-
Other	2/4	-	0/1	-	2/5	-

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CLINICAL DIAGNOSIS AND TREATMENT RECOMMENDATIONS FOR AVIAN INFLUENZA (H5N1)

Only 3.8% of clinicians indicated that they had ever made a clinical diagnosis of suspected H5N1 infection for an outpatient (21 clinicians) and just 1.3% for an inpatient (7 clinicians).

Of these, 10 clinicians prescribed antiviral treatment, 16 referred to a designated hospital, six referred to a hospital and 10 reported to the health authorities, including to the MOH, district and provincial health offices.

Table 12: Clinical diagnosis and recommended treatment for avian influenza (H5N1) by district & type of patient

	East Jakarta (n=239)		Bogor (n=315)		Total (n=554)	
	OUT	IN	OUT	IN	OUT	IN
Ever made diagnosis of suspected H5N1	3.8% (n=9)	1.7% (n=4)	3.8% (n=12)	1.0% (n=3)	3.8% (n=21)	1.3% (n=7)
Case management						
Prescribed antivirals	1/9	3/4	5/12	1/3	6/21	4/7
Referred to designated hospital	7/9	1/4	6/12	1/3	13/21	3/7
Referred to hospital	1/9	0/4	4/12	1/3	5/21	1/7
Contacted district health office	0/9	2/4	3/12	3/3	3/21	5/7
Contacted provincial health office	0/9	1/4	0/12	0/3	0/21	1/7
Contacted MOH	0/9	1/4	0/12	0/3	0/21	1/7
Reasons for not prescribing antivirals						
Not effective	2/8	0/1	0/7	0/2	2/15	0/3
Only works if started within 24 hrs	0/8	0/1	1/7	0/2	1/15	0/3
Only works if started within 48 hrs	0/8	0/1	0/7	0/2	0/15	0/3
Not available at my facility	2/8	0/1	3/7	0/2	5/15	0/3
Only available at H5N1 hospitals	1/8	0/1	4/7	1/2	5/12	1/3

CLINICAL DIAGNOSIS AND TREATMENT RECOMMENDATIONS FOR AVIAN INFLUENZA (H5N1) (Cont.)

Of the total clinicians, nearly a half of them prescribed antiviral treatment. Clinicians reported that antiviral treatment prescribed was Oseltamivir/Tamiflu and Acyclovir. The most common reasons for not prescribing antivirals were related to availability.

Regarding to knowledge of recommended antiviral treatment, more than half clinicians surveyed reported the recommended antiviral correctly. Oseltamivir was mentioned by around 64%, with a small percentage mentioning Zanamivir (3%). However, nearly 30% of clinicians did not know the recommended antiviral treatment (Data not shown)

Of 16 clinicians who referred the cases to a designated hospital, the most common referral hospital mentioned was Soeliyanti Suroso and Persahabatan hospital. There were six clinicians , particularly in Bogor that did not refer directly to AI referral hospital . The clinicians mentioned they referred them to the private hospital in their region.

Clinicians in Bogor only notified to the district health office about some of outpatient and inpatient cases while clinicians in East Jakarta were more likely to reported only inpatients cases to the health authorities.

TESTING FOR AVIAN (H5N1) INFLUENZA

There were a total of 28 clinicians who ever made diagnosis of suspected H5N1 in the past year. Of those, clinicians ordered testing for only 10 of them. Four clinicians who made diagnosis to inpatient ordered the test. For outpatient cases, only 3 clinicians who ordered in each region.

The most common tests ordered were a throat swab, a sputum test or a blood test. Other tests included a nasal or nasopharyngeal swab, an endotracheal aspirate test and a pleural fluid test.

Clinicians were most likely not to order a test because it was available only at the H5N1 referral hospitals and not at their own facility. This reason mostly mentioned by clinicians practice in private service/clinic.

Table 13: Testing, clinical specimens ordered and reasons for not testing for H5N1 by district & type of patient

	East Jakarta (n=239)		Bogor (n=315)		Total (n=554)	
	OUT	IN	OUT	IN	OUT	IN
N of clinicians who ever made diagnosis in past year	(n=9)	(n=4)	(n=12)	(n=3)	(n=21)	(n=7)
Clinical specimens ordered for H5N1 testing	3/9	1/4	3/12	3/3	6/21	4/7
Nasopharyngeal swab	1/3	0/1	1/3	1/3	2/6	1/4
Nasal swab	1/3	0/1	2/3	1/3	3/6	1/4
Throat swab	3/3	0/1	1/3	2/3	4/6	2/4
Sputum	2/3	1/1	2/3	1/3	4/6	2/4
Endotracheal aspirate	2/3	0/1	0/3	0/3	2/6	0/4
Pleural fluid	2/3	0/1	0/3	0/3	2/6	0/4
Blood	3/3	0/1	1/3	1/3	4/6	1/4
Other	2/3	0/1	0/3	0/3	2/6	0/4
Reasons for not ordering	(n=6)	(n=3)	(n=9)	(n=0)	(n=15)	(n=3)
Not available at my facility	4/6	0/3	7/9		11/15	0/3
Only available at referral hospital	5/6	0/3	6/9		11/15	0/3
Other	0/6	2/3	1/9		1/15	2/3

TIMING OF TREATMENT FOR PANDEMIC AND AVIAN INFLUENZA

Nearly two-thirds of clinicians (66% in East Jakarta and 63% in Bogor) said that a person infected with avian influenza should begin treatment within one day of the onset of symptoms, slightly more than said the same for pandemic flu (59% in E. Jakarta and 62% in Bogor), indicating a recognition that avian flu may be more dangerous than pandemic flu if allowed to go untreated.

More clinicians in East Jakarta than in Bogor said that treatment should begin as soon as possible (for both types of flu), but more clinicians in Bogor than in East Jakarta said they did not know how soon treatment should begin.

Table 14: How soon after the onset of illness should a person begin to receive treatment by district and type of influenza

Days after onset of illness		East Jakarta (n=239)	Bogor (n=315)	Total (n=554)
Pandemic influenza	1 day	58.6	62.2	**60.6**
	2 days	5.0	4.8	4.9
	3 days	8.8	4.4	6.3
	4 days	1.3	1.0	1.1
	5 days	1.3	2.5	2.0
	6 days	0.8	0.3	0.5
	7 days	1.3	3.5	2.5
	8-14	1.7	1.9	1.8
	No more than two weeks	0.0	2.2	1.3
	As soon as possible	14.6	4.1	**8.7**
	Don't know	6.3	11.4	**9.2**
Avian influenza	1 day	65.7	63.2	**64.3**
	2 days	4.2	4.1	4.2
	3 days	7.1	5.1	6.0
	4 days	0.4	0.6	0.5
	5 days	0.0	2.2	1.3
	6 days	0.8	0.0	0.4
	7 days	1.7	3.8	2.9
	8-14	0.4	2.2	1.4
	No more than two weeks	0.0	2.2	1.3
	As soon as possible	14.6	6.0	**9.7**
	Don't know	5.0	9.2	**7.4**

Preventative and self-protection measures

PREVENTING FURTHER SPREAD OF SEASONAL FLU INFECTIONS

The risk of human-human transmission is higher for seasonal and pandemic (H1N1) influenza than for avian flu, so a number of preventive measures are recommended to reduce the likelihood of spreading the influenza virus to others.

The most commonly actions that clinicians give to both outpatients and hospitalized patients are use of a face mask, covering the mouth and nose when sneezing or coughing and frequent hand washing with soap.

Clinicians in Bogor were more likely to recommend hand washing with soap for both out and inpatient compared to clinicians in East Jakarta. While social distancing was more likely recommended for outpatients by clinicians in East Jakarta compared to

Table 15: Practices recommended to seasonal flu patients to prevent them from infecting others by district and type of patient

Recommended preventive measures	East Jakarta		Bogor		Total	
	OUT (n=217)	IN (n=25)	OUT (n=295)	IN (n=21)	OUT (n=512)	IN (n=46)
Frequent hand washing with soap	27.6	28.0	50.2	66.7	40.6	45.7
Covering the nose and mouth during sneezing and coughing	45.6	60.0	49.5	76.2	47.9	67.4
Using face mask to cover the nose and mouth during interaction	57.6	68.0	63.7	85.7	61.1	76.1
Maintaining at least one meter distance with other healthy individuals	17.5	20.0	11.5	23.8	14.1	21.7
Limiting interaction with others	31.3	32.0	25.8	19.0	28.1	26.1
Eat nutritious food and drink a lot of liquids	16.6	0.0	12.5	0.0	14.3	0.0
Rest	16.1	0.0	19.3	0.0	18.0	0.0
Take vitamin/supplement	8.8	0.0	5.8	0.0	7.0	0.0
Healthy and hygienic life style	12.9	0.0	8.5	0.0	10.4	0.0
Maintain/improve immunity	4.6	0.0	3.4	0.0	3.9	0.0
Other	7.8	36.0	5.1	23.8	6.2	30.4

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PREVENTING FURTHER SPREAD OF PANDEMIC FLU INFECTIONS

Again, because there were so few reported cases of H1N1, we do not calculate percentages for this table.

The most commonly actions that clinicians recommended for both outpatients and hospitalized patients are use of a face mask, covering the mouth and nose when sneezing or coughing and and social distancing (limiting interaction with others).

Table 16: Practices recommended to pandemic flu patients to prevent them from infecting others by district and type of patient

Recommended preventive measures	East Jakarta		Bogor		Total	
	OUT (n=8)	IN (n=1)	OUT (n=1)	IN (n=0)	OUT (n=9)	IN (n=1)
Frequent hand washing with soap	2/8	1/1	0/1	-	2/9	1/1
Covering the nose and mouth during sneezing and coughing	5/8	1/1	0/1	-	5/9	1/1
Using face mask to cover the nose and mouth during interaction	5/8	1/1	1/1	-	6/9	1/1
Maintaining at least one meter distance with other healthy individuals	0/8	1/1	0/1	-	0/9	1/1
Limiting interaction with others	6/8	1/1	0/1	-	6/9	1/1
Other	2/8	0/1	0/1	-	2/9	0/1

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PREVENTING FURTHER SPREAD OF AVIAN INFLUENZA INFECTIONS

Even though human-human transmission of the H5N1 virus is very rare, clinicians recommended a number of preventive actions to their patients with suspected H5N1 infections. The most commonly actions that clinicians recommended for both outpatients and hospitalized patients are use of a face mask when in public, avoiding close contact with healthy others and staying away from common/public areas, and covering the mouth and nose when sneezing or coughing.

Table 17: Practices recommended to suspected H5N1 flu patients to prevent them from infecting others by district and type of patient

Recommended preventive measures	East Jakarta		Bogor		Total	
	OUT (n=9)	IN (n=3)	OUT (n=12)	IN (n=3)	OUT (n=21)	IN (n=6)
Avoid close contact with person who are not sick	5/9	1/3	7/12	1/3	12/21	2/6
Cover the nose and mouth during sneezing and coughing	5/9	1/3	5/12	2/3	10/21	3/6
Having only one person in the family as the assigned care taker	1/9	1/3	1/12	1/3	2/21	2/6
Stay out from a common area	3/9	1/3	3/12	0/3	6/21	1/6
Wash hands regularly	1/9	1/3	2/12	2/3	3/21	3/6
Wear a mask when you in a public place	4/9	1/3	7/12	2/3	11/21	3/6
Stay at home until one day after fever subsides	1/9	1/3	3/12	0/3	4/21	1/6
Other	2/9	3/3	3/12	0/3	5/21	3/6

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SELF-PROTECTION FROM AVIAN INFLUENZA INFECTIONS

Even though human-human transmission of the H5N1 virus is very rare, clinicians themselves exercised a number of preventive actions with patients suspected of being infected with avian influenza.

Clinicians most commonly wore a surgical mask, gloves and gown, and fitted the patient with a mask, as well. Other precautions included placing the patient in isolation or in a single patient room and minimizing contact with the patient. These precautions were exercised proportionally more often with hospitalized patients.

Table 18: Clinician self-protection behavior by district and type of patient

Recommended preventive measures	East Jakarta		Bogor		Total	
	OUT (n=9)	IN (n=3)	OUT (n=12)	IN (n=3)	OUT (n=21)	IN (n=6)
None	1/9	1/3	0/12	0/3	1/21	1/6
Wore gloves	5/9	1/3	7/12	3/3	12/21	4/6
Wore a gown	5/9	1/3	3/12	2/3	8/21	3/6
Wore a respirator	2/9	0/3	0/12	0/3	2/21	0/6
Wore a surgical mask	7/9	2/3	10/12	3/3	17/21	5/6
Wore eye protection	1/9	1/3	0/12	1/3	1/21	2/6
Placed the patient in a single room	4/9	1/3	4/12	3/3	8/21	4/6
Have the patient wear a mask	5/9	2/3	10/12	2/3	15/21	4/6
Minimize contact with the patient	5/9	1/3	3/12	0/3	8/21	1/6
Placed the patient in a special isolation room	5/9	2/3	5/12	1/3	10/21	3/6
Other	4/9	0/3	2/12	0/3	6/21	0/6

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VACCINATION FOR SEASONAL AND PANDEMIC INFLUENZA

Overall only about 1 in 10 clinicians reported a recent vaccination against influenza. Clinicians in Bogor were more likely to have received a flu vaccine of some kind within the past year, compared to clinicians in East Jakarta.

In both districts, the seasonal trivalent influenza vaccine was the most common, received by over 80% of those who were vaccinated at all.

The common explanation given for not getting a vaccine was that it was not considered important. More clinicians in East Jakarta expressed this opinion than those in Bogor. Clinicians in Bogor were more likely to say that lack of availability and low interest were the reasons they did not receive either vaccine.

Table 19: Clinician use of vaccination for seasonal and pandemic influenza by district

	East Jakarta (n=239)	Bogor (n=315)	Total (n=554)
Received any flu vaccination in past 12 months	7.5	13.3	**10.8**
Kind of flu vaccine received	(n=18)	(n=42)	(n=60)
Seasonal trivalent vaccine	83.3	81.0	81.7
2009 pandemic H1N1 vaccine	0	2.4	1.7
Other	0	2.4	1.7
Why did not receive vaccine	(n=221)	(n=273)	(n=494)
Not available	9.5	30.0	**20.9**
Not interested	19.0	34.1	**27.3**
Not important	70.1	37.7	**52.2**
Too expensive	10.9	10.3	10.5
Other	5.0	3.7	4.3

Red indicates significant difference between E. Jakarta and Bogor

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VACCINATION FOR SEASONAL AND PANDEMIC INFLUENZA (Cont.)

Clinicians in Puskesmas were less likely to have received vaccination compared to clinicians from other facility types.

Clinicians in public and private hospital perceived self vaccination for influenza was not important. More than half of clinicians from hospital mentioned this reason.
Lack of availability and expense were the issues that mostly said by clinicians in Puskesmas.

Table 19: Clinician use of vaccination for seasonal and pandemic influenza by facility type

	Puskesmas (n=65)	Private practice/ Clinic (n=315)	Public Hospital (n=63)	Private Hospital (n=111)	Total (n=554)
Received any flu vaccination in past 12 months	1.5	11.7	12.7	12.6	10.8
Kind of flu vaccine received	(n=1)	(n=30)	(n=6)	(n=12)	(n=60)
Seasonal trivalent vaccine	100.0	81.1	75.0	85.7	81.7
2009 pandemic H1N1 vaccine	0.0	2.7	0.0	0.0	1.7
Other	0.0	2.7	0.0	0.0	1.7
Do not remember	0.0	13.5	25.0	14.3	15.0
Why did not receive vaccine	(n=64)	(n=277)	(n=55)	(n=97)	(n=493)
Not available	28.1	26.4	10.9	6.2	**20.9**
Not interested	25.0	29.6	25.5	22.7	27.3
Not important	42.2	46.6	60.0	71.1	**52.2**
Too expensive	20.3	11.2	5.5	5.2	**10.5**
Other	3.1	4.0	5.5	5.2	4.3

Red indicates significant difference among facility type

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Media use and exposure

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Usual sources of general health information

Overall, the most common sources of health information were seminars/workshops, television and the internet, followed by newspapers and medical journals. About 25% cited MOH materials as a common source.

Clinicians in Bogor were more likely than those in East Jakarta to cite television, newspapers, the internet and educational lectures and courses, while clinicians in East Jakarta were more likely to cite medical books and journals as a common source of health information.

Table 20: Usual sources of general health information

Channel	East Jakarta (n=239)	Bogor (n=315)	Total (n=554)
TV	68.6	76.2	**72.9**
Radio	16.7	23.2	20.4
Newspaper	51.1	67.6	**60.5**
Pamphlets/Brochure	25.1	27.6	26.5
Poster	17.6	18.4	18.1
Internet Website	65.3	73.0	**69.7**
Email	8.8	6.0	7.2
Lecture/course	12.6	24.1	**19.1**
Seminar/workshop	77.4	82.9	80.5
MOH materials	21.8	27.0	24.7
Medical book	46.0	34.0	**39.2**
Medical journal	64.9	49.5	**56.1**
Colleague	35.6	27.6	**31.1**

Base: all clinicians

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Main sources of information about AI

Overall, clinicians cited seminars/workshops, television, the internet, newspapers and medical journals as their main sources of information about avian influenza.

Clinicians in Bogor were more likely than those in East Jakarta to cite television, radio, the internet educational lectures and seminar/workshops as main sources of avian flu information.

Table 21: Main sources of avian flu information

Channel	East Jakarta (n=239)	Bogor (n=315)	Total (n=554)
TV	51.5	64.1	**58.7**
Radio	5.0	14.9	**10.7**
Newspaper	28.5	50.5	**41.0**
Pamphlets/Brochure	13.4	16.5	15.2
Poster	12.6	12.4	12.5
Internet Website	46.4	63.8	**56.3**
Email	3.8	4.4	4.2
Lecture/course	5.4	10.2	**8.1**
Seminar/workshop	56.1	70.2	**64.1**
MOH materials	25.9	30.8	28.7
Medical book	20.9	18.4	19.5
Medical journal	39.3	39.7	39.5
Colleague	17.2	22.5	20.2

Base: all clinicians

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Main sources of information about AI (Cont.)

Printed materials including pamphlets, brochure and poster were more likely mentioned as main information sources by clinicians in Puskesmas and public hospital compared to clinicians in private services.

Seminar/workshop and MOH materials were cited mostly by clinicians in Puskesmas. Meanwhile internet website was less likely used as main sources of AI information by clinicians in public hospital.

Table 22: Main sources of information about AI by facility type

Channel	Puskesmas (n=65)	Private Practice/ Clinic (n=315)	Public Hospital (n=63)	Private Hospital (n=111)	Total (n=554)
TV	64.6	58.1	54.0	59.5	58.7
Radio	12.3	11.1	14.3	6.3	10.6
Newspaper	43.1	42.9	30.2	40.5	41.0
Pamphlets/Brochure	23.1	12.7	28.6	9.9	**15.2**
Poster	18.5	10.5	23.8	8.1	**12.5**
Internet Website	60.0	59.0	36.5	57.7	**56.3**
Email	4.6	3.5	4.8	5.4	4.2
Lecture/course	9.2	7.9	9.5	7.2	8.1
Seminar/workshop	72.3	67.9	50.8	55.9	**64.1**
MOH materials	43.1	24.1	38.1	27.9	**28.7**
Medical book	23.1	14.3	27.0	27.9	**19.5**
Medical journal	36.9	42.5	46.0	28.8	**39.5**
Colleague	24.6	18.4	19.0	23.4	20.2

Base: all clinicians

Most reliable source of information about AI

Overall, clinicians cited seminars/ workshops as their most reliable source of AI information.

Clinicians in Bogor were more likely than those in East Jakarta to said they relied on television and the internet, while clinicians in East Jakarta were more likely to say they relied on seminars/workshops, MOH materials and medical journals.

Table 23: Most reliable AI information sources

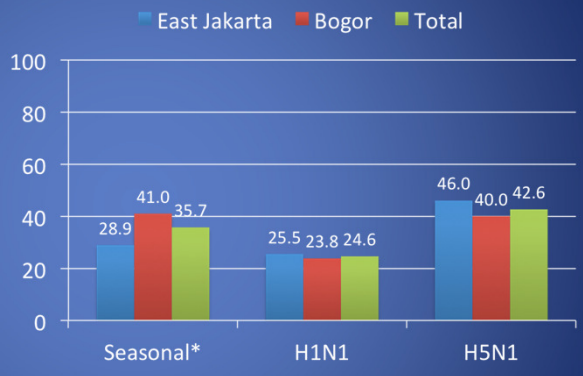
Channel	East Jakarta (n=239)	Bogor (n=315)	Total (n=554)
TV	3.8	14.0	**9.6**
Newspaper	1.3	1.9	2.6
Pamphlets/Brochure	0	1.0	0.5
Poster	0.4	0	0.2
Internet Website	7.5	15.6	**12.1**
Lecture/course	1.3	1.0	1.1
Seminar/workshop	38.9	31.8	**34.8**
MOH materials	20.5	14.3	**17.0**
Medical book	5.0	5.4	5.2
Medical journal	14.6	10.5	**12.3**
Colleague	4.2	2.9	3.4

Base: all clinicians

Received guidance information

Overall, clinicians were more likely to have received information about case management for avian influenza than for seasonal or pandemic influenza. They were least likely to say they had received guidance information about pandemic flu (H1N1).

Figure 6:
Percent of clinicians who received guidance information by type of influenza and district



Clinicians in Bogor were more likely than those in East Jakarta to say they had received case management guidance information about seasonal influenza, otherwise there were no differences by district.

Base: all clinicians

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Sources of guidance information—Seasonal influenza

Overall, clinicians were most likely to have received information about case management for seasonal influenza from a professional medical association, followed by MOH print materials and medical journals. They were least likely to cite provincial and district health offices as sources.

Clinicians in Bogor were more likely than those in East Jakarta to cite a medical association as a source, while those in East Jakarta were more likely to cite MOH print materials.

Table 24: Sources of guidance information—Seasonal influenza by district

Source	East Jakarta (n=69)	Bogor (n=129)	Total (n=198)
Ministry of Health	17.4	19.4	18.7
Indonesian professional medical association	11.6	68.2	48.5
Medical journal	26.1	17.1	20.2
Medical conference in Indonesia	14.5	14.0	14.1
Medical information on the internet	8.7	8.5	8.6
District Health Office	5.9	5.4	5.6
Provincial Health Office	1.5	5.4	4.0
MOH print materials	42.0	10.1	21.2

Base: clinicians who had received any guidance material about seasonal influenza

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Sources of guidance information—H1N1

Overall, clinicians were most likely to mention district and provincial health offices as sources of guidance on H1N1 case management. The MOH and medical conferences were also cited as sources, as well as a variety of "other" sources that included contacts at specific hospitals, clinics and universities.

Clinicians in Bogor were more likely than those in East Jakarta to cite the district health office as a source, while those in East Jakarta were more likely to cite "other" contacts.

Table 25: Sources of guidance information—Pandemic (H1N1) influenza by district

Source	East Jakarta (n=61)	Bogor (n=75)	Total (n=136)
Ministry of Health	19.7	22.7	21.3
Provincial Health Office	26.2	24.1	25.0
District Health Office	11.5	54.7	35.3
Indonesian professional medical association	8.2	9.3	8.8
Medical journal	3.3	6.7	5.2
Medical conference in Indonesia	23.0	22.7	22.8
Medical information on the internet	4.9	8.0	6.6
Other	41.0	16.0	27.2

Base: clinicians who had received any guidance material about H1N1influenza

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Sources of guidance information—H5N1

Overall, clinicians were most likely to mention district and provincial health offices as sources of guidance on avian flu case management, followed by the MOH and medical conferences. A variety of "other" sources were also mentioned that mostly included contacts at specific hospitals and universities.

Clinicians in Bogor were more likely than those in East Jakarta to cite the district health office as a source, while those in East Jakarta were more likely to cite the provincial health office and "other" contacts.

Table 26: Sources of guidance information—Avian (H5N1) influenza by district

Source	East Jakarta (n=110)	Bogor (n=126)	Total (n=236)
Ministry of Health	20.0	24.7	22.5
Provincial Health Office	32.7	20.6	26.3
District Health Office	19.1	50.8	36.0
Indonesian professional medical association	7.3	7.9	7.6
Medical journal	4.6	8.7	6.8
Medical conference in Indonesia	18.2	25.4	22.0
Medical information on the internet	2.7	6.4	4.7
Other	24.6	4.0	13.6

Base: clinicians who had received any guidance material about avian influenza

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Adequacy of knowledge, resources & equipment

Clinicians generally said that they had adequate knowledge and resources to diagnose and treat seasonal flu. They were least knowledgeable and equipped to diagnose and treat pandemic (H1N1) influenza.

About half of the clinicians said they had the knowledge to diagnose AI and about 25% said they had the knowledge to treat it. However, less that 10% said they had the equipment and resources to do so—more in East Jakarta than in Bogor, where less than 5% said they were adequately equipped.

Table 27: Adequacy of knowledge resources & equipment by type of flu and by district

	East Jakarta (n=239)	Bogor (n=315)	Total (n=554)
SEASONAL INFLUENZA			
Knowledge to diagnose	96.2	91.1	93.3*
Knowledge to treat	97.5	93.0	95.0*
Equipment/resources to diagnose	93.3	67.0	78.3*
Equipment/resources to treat	92.9	70.8	80.3*
PANDEMIC H1N1 FLU			
Knowledge to diagnose	33.5	35.9	34.8*
Knowledge to treat	19.7	19.4	19.5*
Equipment/resources to diagnose	15.1	5.5	9.6*
Equipment/resources to treat	13.8	3.8	8.1*
H5N1 AVIAN INFLUENZA			
Knowledge to diagnose	49.8	52.0	51.1
Knowledge to treat	24.7	27.3	26.2
Equipment/resources to diagnose	16.7	4.4	9.8*
Equipment/resources to treat	12.1	2.5	6.7*

Base: all clinicians

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Adequacy of knowledge, resources & equipment

Clinicians in private practice/clinic were least knowledgeable and equipped to diagnose and treat pandemic (H1N1) influenza and H5N1 compared to clinicians in other facility types.

Clinicians in Puskesmas and public hospital were more likely had the knowledge to diagnose and treat H5N1 compared to clinicians in private services. Clinicians in public hospital were more equipped to diagnose and treat H5N1, however only a small percentage of clinicians in private practice that they were adequately equipped.

Table 28: Adequacy of knowledge resources & equipment by type of flu and by facility type

	Puskesmas (n=65)	Private Practice/ Clinic (n=315)	Public Hospital (n=63)	Private Hospital (n=111)	Total (n=554)
SEASONAL INFLUENZA					
Knowledge to diagnose	96.9	94.6	88.9	90.1	93.3
Knowledge to treat	96.9	95.6	93.7	92.8	95.0
Equipment/resources to diagnose	86.2	76.5	82.5	76.6	78.3
Equipment/resources to treat	87.7	79.4	82.5	77.5	80.3
PANDEMIC H1N1 FLU					
Knowledge to diagnose	47.7	30.5	39.7	36.9	34.8
Knowledge to treat	30.8	14.0	28.6	23.4	19.5*
Equipment/resources to diagnose	13.8	3.5	31.7	11.7	9.6*
Equipment/resources to treat	13.8	2.2	28.6	9.9	8.1*
H5N1 AVIAN INFLUENZA					
Knowledge to diagnose	67.7	45.7	57.1	53.2	51.1*
Knowledge to treat	47.7	19.0	36.5	27.9	26.2*
Equipment/resources to diagnose	12.3	2.9	30.2	16.2	9.8*
Equipment/resources to treat	12.3	1.0	25.4	9.0	6.7*

Base: all clinicians

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Causal analysis:

Effects of information exposure on clinician knowledge and risk perception

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SAFE STRATEGIES AGAINST FLU EMERGENCE

CAUSAL ANALYSIS

In this section, we describe some examination of factors that predict better knowledge, attitudes and practices related to influenza diagnosis, testing and treatment.

We used several different approaches to determining if receiving official case management guidance information and/or influenza information from other sources resulted in improved knowledge of influenza signs and symptoms, risk perceptions and practices.

Knowledge and attitude measures we used as predictors included correct knowledge of signs and symptoms of seasonal flu, pandemic H1N1 flu and avian (H5N1) flu, beliefs about the severity of an AI infection, beliefs about whether different strains of flu could cause pneumonia, as well as confidence in one's knowledge and resources to diagnose and treat patients.

Practices we examined included asking more diagnostic questions (what we have referred to as "diagnostic effort", or taking more time and care to determine if a suspected AI patient had had any of the potential contacts that indicate the likelihood of AI on top of the well-known clinical features of fever, sore throat and shortness of breath) and the likelihood of ordering tests.

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SAFE STRATEGIES AGAINST FLU EMERGENCE

Overview: Informational Sources Impacting Knowledge and Diagnostic Behaviors

A variety of factors were considered for possible influences on clinicians' knowledge and diagnostic behaviors. Guidance information and other sources of information (professional resources, media) were the factors that emerged as most frequently having a significant effect on these outcomes. It appears that these outcomes are further improved with higher "doses" from a variety of sources.

The following pages describe, in detail, how the number and type of information sources influence knowledge, risk perceptions, and diagnostic behaviors among clinicians. These data are presented by district and distinguish between clinicians' knowledge of outpatient and inpatient symptoms.

In short, findings reveal that providing clinicians with guidance information impacts:
- Accurate recall of signs and symptoms of seasonal influenza, H1N1, and H5N1 for outpatients;
- Accurate recall of signs and symptoms of H1N1 and H5N1 for inpatients;
- Perceptions that H1N1 can be fatal;
- The likelihood of asking about certain exposures to H5N1;
- The likeihood of testing for H5N1 after learning about a variety of exposures.

A greater number of sources of guidance information is beneficial for:
- Accurate recall of signs and symptoms of seasonal influenza, H1N1, and H5N1 for outpatients and inpatients;
- Perceptions that seasonal flu and H1N1 can be fatal;
- Perceptions that H1N1 can cause pneumonia;
- The likelihood of asking about certain exposures to H5N1;
- The likelihood of testing after learning about certain exposures, in East Jakarta but not Bogor.

For H5N1, a greater number of sources of other information (professional resources, media) is perhaps even more beneficial, as evidenced by improvements in:
- Accurate recall of signs and symptoms for outpatients and inpatients;
- Perceptions that H5N1 can be fatal;
- The likelihood of asking about exposures for almost every possible risk factor for H5N1;
- The likelihood of testing for H5N1 after learning of certain exposures.

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Guidance information determines knowledge about signs/symptoms and accurate risk perceptions.

Overall, receiving guidance information improved knowledge of signs and symptoms for each type of flu, but only increased risk perception for H1N1.

Significantly more clinicians who had received ANY guidance on case management knew all the correct outpatient signs of seasonal flu (48.4%) and H5N1 (20.3%) than clinicians who had not received guidance information. They were also more likely to know all the correct inpatient signs of H1N1 (43.4%) and H5N1 (25.4%) and to believe that pandemic H1N1 flu could be fatal (97.1%).

Receiving guidance information did not significantly impact risk perceptions for H5N1, which was high among both groups of clinicians, nor seasonal influenza which was perceived to present a lower risk than other types of flu by both groups.

Table 29: Percent of clinicians who received any guidance who know signs, symptoms or have correct risk perceptions, by type of flu and by district

	East Jakarta (n=239)	Bogor (n=315)	Total (n=554)
SEASONAL INFLUENZA			
Knows all outpatient SS	50.7	47.3	48.4*
Knows all inpatient SS	48.1	50.7	49.0
Believes it is potentially fatal	82.6	87.6	85.9
Believes it can cause pneumonia	87.0	82.2	83.8
PANDEMIC H1N1 FLU			
Knows all outpatient SS	54.1*	38.7*	45.6
Knows all inpatient SS	57.4*	32.0*	43.4*
Believes it is potentially fatal	98.7	95.1*	97.1*
Believes it can cause pneumonia	100.0	100.0	100.0
H5N1 AVIAN INFLUENZA			
Knows all outpatient SS (except pneumonia)	16.4	23.8	20.3*
Knows all inpatient SS (except pneumonia)	22.7	27.8	25.4*
Believes it is potentially fatal	100.0	100.0	100.0
Believes it can cause pneumonia	98.2	100.0	99.2

* Significantly greater compared to clinicians who did not receive guidance information.

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SAFE STRATEGIES AGAINST FLU EMERGENCE

Knowledgeable clinicians report more sources of guidance information: Seasonal Influenza

Although most clinicians did not receive any guidance information on seasonal flu, a greater number of sources of guidance was beneficial for improving knowledge of signs and symptoms of seasonal influenza, as well as perceptions of its fatal potential.

The mean number of sources of guidance received was higher for those who could name all of the correct symptoms (fever, cough, sore throat) for outpatients (0.63 sources of guidance) and inpatients (0.62 sources), compared to clinicians who could not (who received an average of 0.29 for outpatients and 0.41 sources for inpatients). The mean number of sources for those who believe that seasonal flu can be deadly was 0.54, significantly higher number than among those who do not believe it can be fatal (0.31 sources). There was no effect on

Table 30: Mean number of case management information sources among clinicians who do and do not know signs of seasonal flu and believe it can be severe, by district

	East Jakarta (n=239)	Bogor (n=315)	Total (n=554)
SEASONAL INFLUENZA: Mean # of sources of guidance among clinicians who…			
Know all outpatient SS	0.44	0.77*	0.63*
Do not know all outpatient SS	0.31	0.48	0.29
Know all inpatient SS	0.44	0.76	0.62*
Do not know all inpatient SS	0.31	0.49	0.41
Believes it is potentially fatal	0.40	0.65	0.54*
Does not believe it is potentially fatal	0.26	0.36	0.31
Believes it can cause pneumonia	0.38	0.62	0.52
Does not believe it can cause pneumonia	0.32	0.53	0.43

* Significantly different mean number of sources between clinicians with and without knowledge/beliefs.

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SAFE STRATEGIES AGAINST FLU EMERGENCE

Knowledgeable clinicians report more sources of guidance information: Pandemic H1N1 Flu

Clinicians who could recall all signs and symptoms of pandemic H1N1 influenza in outpatients reported getting guidance information from more sources compared to clinicians who could not name all the correct symptoms.

As shown in earlier slides, the majority of clinicians had received no guidance information about pandemic H1N1 influenza; about 15% said they had received it from one source, while 8% had received it from 2 or more sources.
Overall, those who believed that H1N1 could be fatal reported more sources of information (0.40 sources, compared to 0.10 sources among those who did not believe it to be fatal) as did those who believed that H1N1 could cause pneumonia (0.42 sources, compared to no sources, on average, among those who did not believe it could cause pneumonia).

Table 31: Mean number of case management information sources among clinicians who do and do not know signs of pandemic flu and believe it can be severe, by district

	East Jakarta (n=239)	Bogor (n=315)	Total (n=554)
PANDEMIC H1N1 INFLUENZA: Mean # of sources of guidance among clinicians who…			
Know all outpatient SS	0.49*	0.57*	0.53*
Do not know all outpatient SS	0.27	0.32	0.30
Know all inpatient SS	0.54	0.59	0.57
Do not know all inpatient SS	0.23	0.32	0.29
Believes it is potentially fatal	0.37	0.44*	0.40*
Does not believe it is potentially fatal	0.18	0.05	0.10
Believes it can cause pneumonia	0.38*	0.44*	0.42*
Does not believe it can cause pneumonia	0.00	0.00	0.00

* Significantly different mean number of sources between clinicians with and without knowledge/beliefs.

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Smaller facilities benefit from guidance information for Seasonal Influenza and H1N1.

Clinicians in puskesmas who received guidance information possessed significantly greater knowledge of all signs and symptoms of seasonal influenza, as well as knowledge of outpatient symptoms for H1N1.

In private clinics, clinicians had significantly greater knowledge of H1N1 inpatient symptoms. Belief that H1N1 was fatal was significantly higher in clinicians in each of these facilities. Guidance information did not impact clinicians' knowledge or attitudes significantly in other facilities.

Table 32: Percent of clinicians who received any guidance who know signs, symptoms or have correct risk perceptions, by type of flu and by facility type.

	Puskes-mas (n=65)	Private clinic (n=315)	Govern-ment hospital (n=63)	Private hospital (n=111)	Total (n=554)
SEASONAL INFLUENZA					
Knows all outpatient SS	55.9*	45.8	50.0	50.0	48.4*
Knows all inpatient SS	52.9*	45.8	50.0	57.7	49.0
Believes it is potentially fatal	91.2	84.8	85.0	84.6	85.9
Believes it can cause pneumonia	91.2	83.1	80.0	80.8	83.8
PANDEMIC H1N1 FLU					
Knows all outpatient SS	61.5*	40.9	47.8	38.1	45.6
Knows all inpatient SS	50.0	40.9*	47.8	38.1	43.4*
Believes it is potentially fatal	100.0*	98.5*	86.9	100.0	97.1*
Believes it can cause pneumonia	100.0	100.0	100.0	100.0	100.0
H5N1 AVIAN INFLUENZA					
Knows all outpatient SS (except pneumonia)	26.0	15.0	26.5	23.1	20.3*
Knows all inpatient SS (except pneumonia)	26.0	21.2	44.1	20.5	25.4*
Believes it is potentially fatal	100.0	100.0	100.0	100.0	100.0
Believes it can cause pneumonia	100.0	98.2	100.0	100.0	99.2

* Significantly greater compared to clinicians who did not receive guidance information.

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Knowledgeable clinicians report more sources of guidance information: H5N1 Avian Influenza

As discussed previously, more clinicians had received guidance information for avian influenza than for H1N1, but even so, 58% reported receiving none. Nearly a third (32%) received it from one source and 10% said they had received it from 2 or more sources.

Clinicians who could name all correct outpatient or inpatient symptoms had received guidance information from significantly more sources (0.77 and 0.76 sources, respectively), compared to those who could not name all symptoms (0.55 sources for those who couldn't name all symptoms in outpatients, 0.54 for inpatients).

Table 33: Mean number of pandemic flu information sources among clinicians who do and do not know signs of pandemic flu and believe it can be severe, by district

	East Jakarta (n=239)	Bogor (n=315)	Total (n=554)
AVIAN INFLUENZA:			
Mean # of sources of guidance among clinicians who…			
Know all outpatient SS	0.64	0.85*	0.77*
Do not know all outpatient SS	0.59	0.53	0.55
Know all inpatient SS	0.71	0.80*	0.76*
Do not know all inpatient SS	0.56	0.53	0.54
Believes it is potentially fatal	0.60	0.60	0.60
Does not believe it is potentially fatal (n=6)	0.00	0.00	0.00
Believes it can cause pneumonia	0.60	0.61	0.60
Does not believe it can cause pneumonia (n=11)	0.40	0.00	0.18

* Significantly different mean number of sources between clinicians with and without knowledge/beliefs.

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Clinicians in puskesmas who know all signs and symptoms of H5N1 Avian Influenza report significantly more sources of guidance than clinicians without this knowledge.

Clinicians in puskesmas received the greatest number of guidance documents, on average, compared to clinicians in other facility types. Those in puskesmas who knew all signs and symptoms of H5N1 avian influenza reported a particularly high number of sources of guidance, significantly more so than their colleagues in puskesmas who did not know all signs and symptoms.

Table 34: Mean number of case management information sources among clinicians who do and do not know signs of H5N1 avian influenza and believe it can be severe, by facility type

	Puskes-mas (n=65)	Private clinic (n=315)	Govern-ment hospital (n=63)	Private hospital (n=111)	Total (n=554)
H5N1 AVIAN INFLUENZA: Mean # of sources of guidance among clinicians who…					
Know all outpatient SS	2.07*	0.55	0.63	0.55	0.77*
Do not know all outpatient SS	0.98	0.48	0.68	0.46	0.55
Know all inpatient SS	2.14*	0.62*	0.75	0.38	0.76*
Do not know all inpatient SS	0.96	0.46	0.62	0.51	0.54
Believes it is potentially fatal	1.22	0.50	0.68	0.49	0.60
Does not believe it is potentially fatal	1.22	0.00	0.00	0.00	0.00
Believes it can cause pneumonia	1.22	0.50	0.68	0.49	0.60
Does not believe it can cause pneumonia	1.22	0.25	0.00	0.00	0.18

* Significantly different mean number of sources between clinicians with and without knowledge/beliefs.

Knowledgeable clinicians report more sources of other professional resources and media: H5N1 Avian Influenza

Besides official guidance information, clinicians receive information about H5N1 from a variety of other sources including media (i.e., newspapers, television, radio), workshops or seminars, and medical journals.

Clinicians who knew all signs and symptoms for H5N1, including the characteristic difficult breathing/tightness of chest symptom, report a higher number of these sources (4.87 for those who knew symptoms in outpatients, 4.71 for inpatients) than clinicians who could not list all symptoms (3.58 sources for outpatient symptoms and 3.54 for inpatient). Those that believe that H5N1 has the potential to be fatal reported receiving information from a significantly greater number of sources than clinicians who did not (3.85, compared to 1.67). There were no significant differences in number of sources depending on the belief that H5N1 can cause pneumonia.

Table 35: Mean number of AI information sources among clinicians who do and do not know signs of pandemic flu and believe it can be severe, by district

	East Jakarta (n=239)	Bogor (n=315)	Total (n=554)
H5N1 AVIAN INFLUENZA: Mean # of media sources among clinicians who…			
Know all outpatient SS	3.58	5.58*	4.87*
Do not know all outpatient SS	3.26	3.84	3.58
Know all inpatient SS	3.61	5.42*	4.71*
Do not know all inpatient SS	3.23	3.79	3.54
Believes it is potentially fatal	3.32	4.23*	3.84*
Does not believe it is potentially fatal (n=6)	2.67	0.67	1.67
Believes it can cause pneumonia	3.31	4.23	3.84
Does not believe it can cause pneumonia	3.00	2.50	2.72

* Significantly different mean number of sources between clinicians with and without knowledge/beliefs.

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Asking about exposures for H5N1 avian influenza is not improved by just receiving any guidance information, but asking about duration of symptoms does improve.

Clinicians asked an average of 3-4 diagnostic questions to determine possible sources of H5N1 exposure. Clinicians who received guidance information were not more likely to ask particular questions, with a few exceptions. A greater proportion of clinicians who received guidance information asked about contact with dead poultry (18.2% reported asking this question, significantly more than those who received no guidance). Over 11% who received guidance asked about duration of symptoms, significantly more than those receiving no guidance.

In East Jakarta, clinicians receiving guidance information were more likely to ask about handling live birds at wet markets and about contact with dead poultry, while in Bogor more clinicians who received guidance information asked about keeping poultry in the home, compared to clinicians receiving no guidance.

Table 36: Diagnostic effort by exposure to ANY guidance information and by district	East Jakarta (n=239)	Bogor (n=315)	Total (n=554)
ASKS PATIENT ABOUT H5N1 EXPOSURES (past 7 days)			
Overall # of questions asked (mean)	3.46	4.26	3.89
Handled dead chicken (% ask)	59.1	64.3	61.9
Cared for H5N1 patient (%)	55.5	52.4	53.8
Exposed to wild birds/feces (%)	50.0	62.7	56.8
Slaughtered chicken (%)	16.4	28.6	22.9
Eaten raw poultry (%)	28.2	44.4	36.9
Been to wet market (%)	0.9	14.3	8.1
Handled live birds at wet market(%)	39.1*	45.2	42.4
Handled slaughtered birds at wet market	15.5	34.1	25.4
Visited traditional live bird market	10.9	22.2	17.0
Bought poultry meat at traditional market	6.4	21.4	14.4
Eaten cooked chicken(%)	9.1	17.5	13.6
Eaten cooked eggs (%)	6.4	9.5	8.1
Contact with dead poultry (%)	26.4*	11.1	18.2*
Contact with poultry (%)	9.1	7.1	8.1
Keep poultry in the home (%)	6.4	4.8*	5.5
Duration of symptoms (%)	15.5	7.9	11.4*
Travel from high-risk area (%)	7.3	5.6	6.4
Other questions (%)	30.9	9.5	19.5

* Significantly greater compared to clinicians who did not receive guidance information.

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SAFE STRATEGIES AGAINST FLU EMERGENCE

Asking about <u>certain</u> exposures for H5N1 avian influenza is improved by a greater number of sources of guidance information in Bogor in particular.

As already noted, clinicians did not receive many sources of guidance information (mean=0.59 sources). Nonetheless, a higher number of these sources is particularly beneficial for clinicians in Bogor.

In Bogor, the number of sources of guidance was a significant predictor of certain diagnostic questions, while in E. Jakarta it was not. Clinicians in Bogor who had received guidance from more sources were more likely to ask about slaughtering chickens, handling live or slaughtered birds at wet markets, buying poultry meat at a traditional market, and eating cooked chicken.

Table 37: Mean number of guidance information sources and diagnostic effort by district	East Jakarta (n=239)	Bogor (n=315)	Total (n=554)
NUMBER OF GUIDANCE SOURCES AMONG CLINICIANS WHO ASKED ABOUT PAST 7-DAY EXPOSURES (mean):			
Handled dead chicken	0.66	0.66	0.66*
Cared for H5N1 patient	0.68	0.64	0.66
Exposed to wild birds/feces	0.63	0.68	0.66
Slaughtered chicken (%)	0.42	0.91*	0.72
Eaten raw poultry (%)	0.55	0.74*	0.67
Been to wet market (%)	0.24	0.77	0.73
Handled live birds at wet market(%)	0.63	0.73*	0.69*
Handled slaughtered birds at wet market	0.46	0.94*	0.78*
Visited traditional live bird market	0.67	0.76	0.73
Bought poultry meat at traditional market	0.47	0.92*	0.82*
Eaten cooked chicken(%)	0.44	0.85*	0.71
Eaten cooked eggs (%)	0.53	0.77	0.69
Contact with dead poultry (%)	0.77	0.80	0.78
Contact with poultry (%)	0.63	0.61	0.62
Keep poultry in the home (%)	0.53	0.86	0.63
Duration of symptoms (%)	0.79	0.76	0.78
Travel from high-risk area (%)	0.50	0.53	0.51
Other questions (%)	0.64	0.38	0.55

* Significantly greater number of sources of guidance information than among clinicians who did not ask.

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Clinicians in puskesmas and private clinics who received a greater number of guidance documents made greater diagnostic effort for H5N1 avian influenza.

Receiving a greater number of guidance documents was significantly associated with asking about appropriate exposures in puskesmas in particular, and an increased diagnostic effort was evident for some exposures in private clinics and government hospitals.

Table 38: Mean number of guidance information sources and diagnostic effort by district	Puskes-mas (n=65)	Private clinic (n=315)	Govern-ment hospital (n=63)	Private hospital (n=111)	Total (n=554)
NUMBER OF GUIDANCE SOURCES AMONG CLINICIANS WHO ASKED ABOUT PAST 7-DAY EXPOSURES (mean):					
Handled dead chicken	1.37	0.52	0.73	0.55	0.66*
Cared for H5N1 patient	1.56*	0.50	0.78	0.52	0.66
Exposed to wild birds/feces	1.34	0.57	0.67	0.47	0.66
Slaughtered chicken	1.17	0.74*	0.25*	0.57	0.72
Eaten raw poultry	1.62*	0.54	0.65	0.49	0.67
Been to wet market	2.80*	0.53	0.50	0.33	0.73
Handled live birds at wet market	1.52	0.59	0.61	0.54	0.69*
Handled slaughtered birds at wet market	1.76*	0.70*	0.44	0.55	0.78*
Visited traditional live bird market	1.79*	0.63	0.58	0.27	0.73
Bought poultry meat at traditional market	1.90	0.65	0.60	0.70	0.82*
Eaten cooked chicken	0.80	0.71	0.50	0.57	0.71
Eaten cooked eggs	0.80	0.50	1.00	0.42	0.69
Contact with dead poultry	1.00	0.76*	0.63	0.73	0.78
Contact with poultry	0.75	0.61	0.60	0.60	0.62
Keep poultry in the home	0.00	0.47	2.00*	0.75	0.63
Duration of symptoms	1.50	0.70	0.00	0.75	0.78
Travel from high-risk area	0.50	0.50	1.00	0.43	0.51
Other questions	1.00	0.47	1.00	0.44	0.55

* Significantly greater compared to clinicians who did not receive guidance information.

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Asking about many exposures for H5N1 avian influenza is improved by a higher number of professional and media sources, especially in Bogor.

Compared to official sources of guidance, the number of other sources of information about H5N1 was a stronger predictor of diagnostic effort. 'Other sources' include mass media, workshops and trainings, and medical journals.

In the overall sample, the relationship between physicians who report a high number of sources having a higher likelihood of asking about an exposure is significant for every possible exposure, with the exception of fairly standard questions (i.e., whether patients had cared for someone with H5N1, whether they had contact with dead poultry, or whether they had contact with any poultry), for which clinicians who asked and did not ask did not differ in reported number of other sources.

The influence of these other sources for H5N1 information was especially evident in Bogor, for which two-thirds of questions asked were associated a significantly higher mean number of 'other' sources.

Table 39: Diagnostic effort by number of media sources of AI information and by district	East Jakarta (n=239)	Bogor (n=315)	Total (n=554)
NUMBER OF OTHER SOURCES AMONG CLINICIANS WHO ASKED ABOUT PAST 7-DAY EXPOSURE (mean):			
Handled dead chicken (%)	3.45	4.69*	4.21*
Cared for H5N1 patient (%)	3.32	4.70	4.16
Exposed to wild birds/feces (%)	3.60*	4.78*	4.35*
Slaughtered chicken (%)	3.69	6.15*	5.22*
Eaten raw poultry (%)	3.42	5.03*	4.50*
Been to wet market (%)	3.25	5.43*	5.25*
Handled live birds at wet market(%)	3.62*	4.94*	4.47*
Handled slaughtered birds at wet market	3.77*	5.64*	5.00*
Visited traditional live bird market	4.19*	5.80*	5.34*
Bought poultry meat at traditional market	3.76	5.72*	5.29*
Eaten cooked chicken(%)	3.38	5.5*	4.75*
Eaten cooked eggs (%)	3.47	4.96*	4.43*
Contact with dead poultry (%)	3.43	3.52	3.46
Contact with poultry (%)	3.25	4.00	3.57
Keep poultry in the home (%)	2.41*	2.71	2.50*
Duration of symptoms (%)	2.89*	3.00*	2.93*
Travel from high-risk area (%)	3.00	3.20	3.08*
Other questions (%)	3.13	3.00*	3.08*

* Significantly greater number of other sources of information than among clinicians who did not ask.

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Asking about many exposures for H5N1 avian influenza is improved by more sources of professional and media information in all facilities except government hospitals.

Table 40: Mean number of other information sources (professional and media) and diagnostic effort by facility type	Puskes-mas (n=65)	Private clinic (n=315)	Govern-ment hospital (n=63)	Private hospital (n=111)	Total (n=554)
NUMBER OF OTHER SOURCES AMONG CLINICIANS WHO ASKED ABOUT PAST 7-DAY EXPOSURE (mean):					
Handled dead chicken (%)	4.91*	4.23*	4.08	3.78	4.21*
Cared for H5N1 patient (%)	4.91*	4.22*	4.00	3.70	4.16
Exposed to wild birds/feces (%)	5.21*	4.28*	4.08	4.15*	4.35*
Slaughtered chicken (%)	5.72*	5.22*	4.67	5.10*	5.22*
Eaten raw poultry (%)	5.58*	4.47*	4.08	4.11*	4.50*
Been to wet market (%)	7.60*	4.87*	5.50*	5.11*	5.25*
Handled live birds at wet market (%)	5.76*	4.31*	4.23	4.31*	4.47*
Handled slaughtered birds at wet market (%)	6.29*	4.87*	4.56	4.75*	5.00*
Visited traditional live bird market (%)	6.43*	5.25*	4.25	5.67*	5.34*
Bought poultry meat at traditional market (%)	6.60*	5.35*	4.70	4.54*	5.29*
Eaten cooked chicken (%)	4.69	4.84*	5.83*	4.24	4.75*
Eaten cooked eggs (%)	4.30	5.05*	3.75	3.14	4.43*
Contact with dead poultry (%)	3.58	3.47	3.38	3.40	3.46
Contact with poultry (%)	2.75	3.22	5.60*	3.53	3.57
Keep poultry in the home (%)	2.00	2.65**	1.50**	2.50	2.50**
Duration of symptoms (%)	3.50	2.87**	2.50	2.88	2.93**
Travel from high-risk area (%)	3.25	2.88**	3.50	3.57	3.08**
Other questions (%)	3.00	2.91**	3.25	3.41	3.08**

* Significantly greater number of other sources of information than among clinicians who did not ask.

** Significantly fewer number of other sources of information than among clinicians who did not ask.

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SAFE STRATEGIES AGAINST FLU EMERGENCE

Clinicians who receive any guidance information report a higher likelihood of testing for H5N1 avian influenza after learning of certain exposures.

Receiving any guidance information significantly increased the self-reported likelihood that clinicians would test patients for H5N1, but only if they determined that the patient had been potentially exposed in certain ways. Overall, clinicians were more likely to test patients who had handled dead chicken or eaten raw poultry if they had received some guidance information.

They were less likely to order testing of patients who had eaten cooked chicken (not a risk factor).

In East Jakarta, clinicians were more likely to test patients who handled live birds at a wet market if they had received guidance information. Clinicians in Bogor were less likely to test patients who had eaten cooked chicken if they had received guidance information.

Table 41: Likelihood of ordering H5N1 tests by exposure to ANY guidance information and by district	East Jakarta (n=239)	Bogor (n=315)	Total (n=554)
REPORTED LIKELIHOOD OF TESTING PATIENTS FOR H5N1 AFTER LEARNING OF EXPOSURE (in past 7 days) (mean, 1=very unlikely, 3=neutral, 5=very likely)			
Handled dead chicken	4.95	4.90	4.93*
Cared for H5N1 patient	4.86	4.86	4.86
Exposed to wild birds/feces	4.85	4.79	4.82
Slaughtered chicken	4.60	4.40	4.49
Eaten raw poultry	4.88*	4.79	4.83*
Been to wet market	4.11	4.03	4.07
Handled live birds at wet market	4.83*	4.54	4.67
Handled slaughtered birds at wet market	4.58	4.64	4.61
Visited traditional live bird market	4.36	4.36	4.34
Eaten cooked chicken	3.41	3.52**	3.08**
Eaten cooked eggs	3.04	2.74	2.89

* Reported greater likelihood of testing when receiving guidance information, compared to clinicians who received no guidance.

** Reported lower likelihood of testing when receiving guidance information, compared to clinicians who received no guidance.

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SAFE STRATEGIES AGAINST FLU EMERGENCE

Clinicians who receive more guidance information are more likely to test for H5N1 avian influenza after learning of certain exposures in East Jakarta in particular.

The odds of testing suspected cases was higher for clinicians who reported more sources of guidance information, but only if they determined that the patient had been potentially exposed in certain ways. Overall, clinicians who learned that patients had handled dead chickens were more than twice as likely to order tests if they had received guidance information from more sources and were 1.32 times more likely to order tests for patients who bought poultry meat at a traditional market if they received guidance information from more sources.

Clinicians who reported more sources of guidance were less likely to test for patients who had eaten cooked eggs (not a risk indicator).

Differences were stronger between clinicians in East Jakarta than in Bogor. No effect of number of sources was detected when looking in Bogor alone, but in East Jakarta, clinicians who received at least one source of guidance were more than twice as likely to test patients who had handled live birds at a wet market. With every increase in number of sources of guidance, they were 1.52 times more likely to test for patients who had bought poultry meat at a traditional market.

Table 42: Likelihood of ordering H5N1 tests by number of guidance information sources and by district	East Jakarta (n=239)	Bogor (n=315)	Total (n=554)
ODDS OF TESTING FOR EXPOSED PATIENTS, AS NUMBER OF SOURCES OF GUIDANCE INFORMATION INCREASES (Odds Ratio):			
Handled dead chicken	2.53	1.80	2.07*
Cared for H5N1 patient	1.11	1.15	1.14
Exposed to wild birds/feces	1.47	1.26	1.34
Slaughtered chicken	1.24	1.06	1.12
Eaten raw poultry	2.14	1.23	1.48
Been to wet market	1.04	0.96	0.98
Handled live birds at wet market	2.14*	0.89	1.08
Handled slaughtered birds at wet market	1.00	1.34	1.18
Visited traditional live bird market	1.39	0.93	1.06
Bought poultry meat at traditional market	1.52*	1.22	1.32*
Eaten cooked chicken	0.70	0.90	0.86
Eaten cooked eggs	0.74	0.82	0.79*

* Odds of testing vary significantly as number of sources of guidance information increases.

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SAFE STRATEGIES AGAINST FLU EMERGENCE

Clinicians who reported more sources of other professional resources and media about H5N1 avian influenza were more likely to test after learning of many exposures.

Receiving AI information from a higher number of other professional resources and media had a significant impact on testing for a larger variety of exposures than was found for guidance information, both in Bogor and East Jakarta.

Overall, each additional source of 'other' information increased the odds of testing for patients who had handled dead chicken (in increase times 1.29 for each additional information source), had been exposed to wild birds or feces (increase by 1.31), had slaughtered chicken (by 1.24), had visited a traditional live bird market (by 1.15), or had bought poultry meat from a traditional market (by 1.14)

In Bogor, the number of sources was related to testing for the same kinds of potential exposure, while in East Jakarta testing was more likely only if the potential exposures came from wild birds/feces, or eating cooked eggs.

Table 43: Likelihood of ordering H5N1 tests by number of media sources of AI information and by district	East Jakarta (n=239)	Bogor (n=315)	Total (n=554)
ODDS OF TESTING FOR EXPOSED PATIENTS, AS NUMBER OF SOURCES OF GUIDANCE INFORMATION INCREASES (Odds Ratio):			
Handled dead chicken	1.16	1.38*	1.29*
Cared for H5N1 patient	1.15	1.24	1.20
Exposed to wild birds/feces	1.51*	1.25*	1.31*
Slaughtered chicken	1.17	1.29*	1.24*
Eaten raw poultry	0.96	1.15	1.09
Been to wet market	0.94	1.03	1.01
Handled live birds at wet market	1.09	1.15	1.12
Handled slaughtered birds at wet market	1.06	1.03	1.04
Visited traditional live bird market	1.05	1.19*	1.15*
Bought poultry meat at traditional market	0.97	1.22*	1.14*
Eaten cooked chicken	0.94	1.05	1.03
Eaten cooked eggs	0.84*	1.01	0.95

* Odds of testing vary significantly as number of sources of guidance information increases.

Clinicians who received guidance information had more confidence about diagnosing and treating H1N1 and H5N1.

For all strains of influenza, clinicians had greater confidence in their knowledge about diagnosis and treatment than in the adequacy of the equipment and resources they had to do so. Confidence was generally high for seasonal influenza (i.e, about 95% of clinicians were confident about their ability to diagnose and treat), but clinicians' confidence was lower in their knowledge of how to diagnose (59.6% for H1N1, 62.7% for H5N1) and treat (38.2% for H1N1, 39.4% for H5N1). Confidence in equipment and resources was extremely low, especially for H5N1.

Overall and in each district, clinicians who had received guidance information reported significantly greater confidence in their knowledge about diagnosis and treatment pandemic and avian flu, but these effects didn't differ for seasonal flu. Guidance information did not increase confidence in the adequacy of equipment and resources for diagnosing H5N1, but it did improve perceptions that equipment and resources were adequate for treating it.

Table 44: Perceived adequacy of knowledge and resources by exposure to ANY guidance information, by type of influenza and by district	East Jakarta (n=239)	Bogor (n=315)	Total (n=554)
SEASONAL INFLUENZA			
Sufficient knowledge for diagnosis (%)	93.8	97.1	94.9
Sufficient knowledge for treatment (%)	97.1	94.6	95.5
Adequate equipment and resources for diagnosis (%)	95.7	69.8	78.8
Adequate equipment and resources for treatment (%)	95.7	74.4	81.8
PANDEMIC H1N1 INFLUENZA			
Sufficient knowledge for diagnosis (%)	54.1*	64.0*	59.6*
Sufficient knowledge for treatment (%)	32.8*	42.7*	38.2*
Adequate equipment and resources for diagnosis (%)	29.5*	13.3*	20.6*
Adequate equipment and resources for treatment (%)	29.5*	9.3*	18.4*
H5N1 AVIAN INFLUENZA			
Sufficient knowledge for diagnosis (%)	61.8*	63.5*	62.7*
Sufficient knowledge for treatment (%)	34.6*	43.7*	39.4*
Adequate equipment and resources for diagnosis (%)	22.7*	6.4	14.0
Adequate equipment and resources for treatment (%)	17.3*	3.2	9.8*

* Significantly greater compared to clinicians who did not receive guidance information.

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Clinicians who received guidance information from a greater number of sources were more confident about adequacy of their knowledge and resources for diagnosing and treating H1N1 and H5N1.

Clinicians who reported confidence in their knowledge and equipment/resources for diagnosis and treatment of H1N1 also reported a higher mean number of sources of guidance information compared to clinicians who perceived inadequacies.

With the exception of perceived access to diagnostic equipment in Bogor, these relationships were significant in both districts. For H5N1, clinicians with greater confidence in their knowledge and equipment/resources reported a higher mean number of sources of guidance information, although for perceived adequacy of equipment and resources for treatment, this was only significant among clinicians in Bogor.

Table 45: Mean number of sources of guidance information and perceived adequacy of knowledge and resources, by type of influenza and by district	East Jakarta (n=239)	Bogor (n=315)	Total (n=554)
SEASONAL INFLUENZA			
Sufficient knowledge for diagnosis	0.37	0.64	0.52
Sufficient knowledge for treatment	0.37	0.63	0.51
Adequate equipment and resources for diagnosis	0.37	0.61	0.49
Adequate equipment and resources for treatment	0.38	0.63	0.51
PANDEMIC H1N1 INFLUENZA			
Sufficient knowledge for diagnosis	0.58*	0.76*	0.68*
Sufficient knowledge for treatment	0.55*	1.05*	0.83*
Adequate equipment and resources for diagnosis	1.18*	0.56	0.75*
Adequate equipment and resources for treatment	0.64*	1.25*	0.80*
H5N1 AVIAN INFLUENZA			
Sufficient knowledge for diagnosis	0.76*	0.79*	0.78*
Sufficient knowledge for treatment	0.86*	1.06*	0.97*
Adequate equipment and resources for diagnosis	0.76*	1.00*	0.83*
Adequate equipment and resources for treatment	0.93	0.50*	0.84

* Significantly greater number of sources of guidance information than among clinicians who perceive inadequacies.

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Guidance information did not appear to have a significant influence on clinicians' confidence in diagnosing and treating H1N1 and H5N1 in puskesmas, but did in private clinics and private hospitals.

Table 46: Perceived adequacy of knowledge and resources by exposure to ANY guidance information, by type of influenza and by type of facility	Puskes-mas (n=65)	Private clinic (n=315)	Govern-ment hospital (n=63)	Private hospital (n=111)	Total (n=554)
SEASONAL INFLUENZA					
Sufficient knowledge for diagnosis (%)	94.1	94.1	95.0	100.0	94.9
Sufficient knowledge for treatment (%)	94.1	95.8	95.0	96.2	95.5
Adequate equipment and resources for diagnosis (%)	88.2	73.7	85.0	84.6	78.8
Adequate equipment and resources for treatment (%)	94.1	78.0	85.0	80.8	81.8
PANDEMIC H1N1 INFLUENZA					
Sufficient knowledge for diagnosis (%)	61.5	54.6*	65.2*	66.7*	59.6*
Sufficient knowledge for treatment (%)	42.3	34.9*	39.1	42.9*	38.2*
Adequate equipment and resources for diagnosis (%)	23.1	7.6	47.8*	28.6*	20.6*
Adequate equipment and resources for treatment (%)	19.2	6.1*	43.5	28.6*	18.4*
H5N1 AVIAN INFLUENZA					
Sufficient knowledge for diagnosis (%)	72.0	54.9*	64.7	71.8*	62.7*
Sufficient knowledge for treatment (%)	50.0	32.7*	44.1	41.0*	39.4*
Adequate equipment and resources for diagnosis (%)	10.0	3.5	44.1*	23.1	14.0
Adequate equipment and resources for treatment (%)	12.0	0.9	35.3	10.3	9.8*

* Significantly greater compared to clinicians who did not receive guidance information.

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SAFE STRATEGIES AGAINST FLU EMERGENCE

Clinicians who received information from a greater number of other professional and media sources were more confident about adequacy of their knowledge for diagnosing and treating H5N1 Avian Influenza.

Overall, the mean number of 'other' sources of H5N1 information (i.e., mass media, workshops, medical journals) was significantly higher among clinicians who perceived that they had sufficient knowledge about H5N1 to make a diagnosis and to treat H5N1.

Additionally in Bogor, clinicians who perceived that they had access to adequate equipment and resources for both diagnosis and treatment of H5N1 reported a higher mean number of 'other' sources of H5N1 information than clinicians in Bogor who perceived inadequacies. As a district, clinicians in Bogor who felt that their knowledge and resources were adequate reported a higher mean number of 'other' sources compared to those in E. Jakarta.

Table 47: Mean number of other sources of H5N1 information and perceived adequacy of knowledge and resources for diagnosing and treating H5N1, by district	East Jakarta (n=239)	Bogor (n=315)	Total (n=554)
H5N1 AVIAN INFLUENZA			
Sufficient knowledge for diagnosis	3.24	4.60*	4.03*
Sufficient knowledge for treatment	3.25	4.92*	4.24*
Adequate equipment and resources for diagnosis	3.00	5.71*	3.70
Adequate equipment and resources for treatment	3.34	6.00*	3.92

* Significantly greater number of sources of 'other' information than among clinicians who perceived inadequacies.

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Clinicians in puskesmas who received a greater number of other sources (professional resources, media) reported greater confidence in treating H5N1.

In contrast to guidance information, which did not improve confidence for clinicians in puskesmas, a greater number of professional and media resources was associated with increased confidence in ability to treat H5N1 in puskesmas. Confidence in knowledge about diagnosis and treatment was also associated with a greater number of these resources in clinicians in private clinics, with less of an effect observed for hospital clinicians.

Table 48: Mean number of other sources of H5N1 information and perceived adequacy of knowledge and resources for diagnosing and treating H5N1, by district	Puskes-mas (n=65)	Private clinic (n=315)	Govern-ment hospital (n=63)	Private hospital (n=111)	Total (n=554)
H5N1 AVIAN INFLUENZA					
Sufficient knowledge for diagnosis	4.70	4.08*	3.61	3.64	4.03*
Sufficient knowledge for treatment	5.32*	4.45*	3.39	3.39	4.24*
Adequate equipment and resources for diagnosis	5.25	4.00	3.74	2.83*	3.70
Adequate equipment and resources for treatment	6.25*	3.67	3.31	3.10	3.92

* Significantly greater number of sources of 'other' information than among clinicians who perceived inadequacies.

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CONCLUSIONS & STRATEGIC COMMUNICATION IMPLICATIONS

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Strategic implications and priorities

1. Knowledge of influenza signs and symptoms

- Physicians do make distinctions among the different types of influenza, recognizing the greater severity of avian influenza.
- In particular, they recognize the acute respiratory symptoms that are characteristic of H5N1 infections.
- There is somewhat greater sensitivity to the severity of AI in Bogor compared to East Jakarta

Implications: Continue to educate physicians about the main danger signs of H5N1 infections, perhaps downplaying some of the lesser symptoms that may confuse H5N1 diagnoses with seasonal and H1N1 influenza.

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Strategic implications and priorities

2. Awareness of risk factors

- Awareness of the H5N1 case definition is nearly universal, and most clinicians know the main clinical features of AI, but a little less clear about the "contacts" part of the definition
- Most clinicians seem to overemphasize the risk of human-human transmission
- Considering the many potential sources of exposure to the H5N1 virus, clinicians tend to ask relatively few diagnostic questions (on average 3-4) to determine if suspected cases were exposed.
- Most common questions concerned handling of dead chickens, exposure to wild birds and exposure to infected humans.
- Clinicians in Bogor asked more questions.

Implications: Programs may need to emphasize potential sources of exposure at the wet market, especially in East Jakarta, where wet market exposure is high.

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Strategic implications and priorities

3. Testing practices

- Testing for seasonal flu was rare, but more common in East Jakarta
- Main reasons given for not testing: no perceived need, too expensive, not available
- Testing for H1N1 was proportionally more common
- Main reason given for not testing: not available
- Only about 1/3 of suspected H5N1 cases were tested
- Main reason given for not testing: not available

Implications: MOH together with WHO and CDC may need to decide if testing should be more widely available and encouraged.

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Strategic implications and priorities

4. Timing (urgency) of treatment

- Just less than 2/3 of clinicians said that treatment for H1N1 and H5N1 should begin within one day of the onset of symptoms, slightly more for H5N1 cases than for H1N1 cases.

Implications: MOH with CDC and WHO may need to decide how important rapid initiation of treatment should be within the Indonesian health care system and increase its emphasis on rapid initiation of treatment.

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Strategic implications and priorities

5. Preventive & protective practices

- For seasonal and H1N1 influenza, clinicians emphasize hygiene practices (hand washing), covering the mouth and nose, use of masks and social distancing.
- For H5N1, clinicians tend to emphasize use of a face mask and avoiding contact with infected patients, even though human-human transmission risk is low.

Implications: MOH with CDC and WHO may need to decide how much emphasis to place in Indonesian guidance documentation on the risks of human contact and H5N1 transmission.

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Strategic implications and priorities

6. Clinician vaccinations

- Most clinicians do not get vaccinated for any kind of influenza because they don't think it is important.
- Three out of 10 don't get vaccinated because the vaccine is not available or too expensive.

Implications: MOH with CDC and WHO may need to decide how to prioritize the availability of seasonal flu vaccines, if not vaccines for the other strains, as well.

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Strategic implications and priorities

7. Sources of guidance and information

- Clinicians tend to rely on seminars, television, the internet, newspapers and medical journals for general health information as well as for information about AI
- The more rural character of Bogor and smaller professional networks may make clinicians there rely a little more on mass media compared to clinicians in East Jakarta.
- Seminars and workshops and MOH materials are considered the most reliable sources about AI, although MOH materials are not the most widely used.

Implications: The MOH may want to revisit the mix of channels they use to disseminate information about avian flu.

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Strategic implications and priorities

8. Case management guidance information

- Less than half of clinicians surveyed said they had received official AI case management guidance; even fewer said they had received guidance for seasonal or H1N1 influenza.
- Information about seasonal flu tended to come to physicians more through professional association meetings, while information about H1N1 and H5N1 tended to come more from government sources and from medical conferences.

Implications: The MOH may want to strategize how to coordinate dissemination of case management guidance across public and private sector delivery platforms.

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Strategic implications and priorities

9. Adequate knowledge, equipment and resources

- The vast majority of clinicians said they had enough knowledge, equipment and resources to diagnose and treat seasonal flu; equipment and resources were somewhat less adequate in Bogor.
- Knowledge of how to diagnose and treat H1N1 and H5N1 was weaker compared to seasonal flu.
- Very few felt well-equipped to diagnose and treat either H1N1 or H5N1.

Implications: The MOH with CDC and WHO may need to reassess the need for more diagnostic and treatment equipment and resources.

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Strategic implications and priorities

10. Effects of case management guidance information and other sources of influenza information

- Clinicians who reported receiving any guidance information were generally more knowledgeable about flu symptoms, had more realistic risk perceptions about the severity of ILIs, asked more diagnostic questions to determine potential sources of H5N1 exposure and felt more confident about their knowledge and resources to diagnose and treat flu patients.
- These effects were generally greater among clinicians who reported receiving case management guidance information from more sources and who reported more other sources of flu information.

Implications: Information programs can improve clinician knowledge, attitudes and practices and should be part of a strategic plan to improve ILI-related caregiving.

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Conclusion and general program observations

Reducing mortality rates associated with H5N1 infections in Indonesia will require a combined supply side and demand side strategy.

The Healthcare Utilization Survey (HUS) that was a companion study to this Clinicians KAP survey indicated some knowledge gaps on the part of the public about differences between types of influenza, about risk factors (in particular, the high levels of exposure to potential H5N1 sources in the wet market), and about what the most critical signs to look for are that should motivate immediate careseeking.

The Clinicians KAP survey found some similar gaps in knowledge among physicians, particularly about risk factors. Relatively few clinicians ask enough diagnostic questions about the varieties of potential exposure to the H5N1 virus that are described in the Indonesian suspected H5N1 case definition. Clinicians may also be overly concerned about human-human transmission when this is, in fact, an unlikely occurrence. These gaps in knowledge and priorities can largely be remedied through communication and information dissemination.

On the infrastructural side, it is clear that many physicians perceive gaps in the availability of resources and equipment needed to properly diagnose and treat avian and pandemic influenza. Whether these gaps are real and the extent to which they pose real risks may be a matter requiring further consultation and strategizing between Indonesia's Ministry of Health and its international counterpart agencies.

We hope this report and the companion HUS report can be a positive contribution to these further discussions.