

# **School-based Avian Influenza Prevention and Control in Thailand: a Randomized Controlled Trial**

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# Avian influenza (AI)



- Infectious disease of birds caused by type A strains of the influenza virus, recently causing severe respiratory disease in humans (WHO, 2007)
- Globally, 384 confirmed cases and 243 deaths since 2003 (WHO, 2008)
- In Thailand, 25 confirmed cases and 17 deaths since 2003, the 5<sup>th</sup> most affected country (WHO, 2008)
- Children <15 years have higher morbidity & mortality (Areechokchai D, 2006)
- People who commonly have contact with dead or infected poultry are at high risk for AI (Abbate R, 2006)

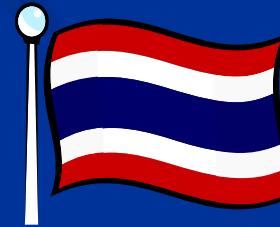
# Prevention & Control of AI

## ■ Global key infection control measures



- Community education
- Personal protective equipments
- Antiviral drags
- Vaccine

## ■ Infection control in Thailand



- Preemptive culling
- Strengthened disease surveillance
- Public awareness campaigns

# Health promoting school (HPS)

- All stakeholders of the school community work together to provide students with integrated and positive experiences (WHO, 1996)
- Assessment: Gold, Silver, Bronze, Underdeveloped (MoPH & MoE, Thailand, 1998)
- In Thailand, 90% of primary schools join HPS (MoPH Thailand, 2006)
- Effective in inducing positive health behavior (Joongsuksuntigul P 2005, Okabayashi H 2006)

# Rational of the study

- Rapid elimination of the AI virus in poultry & other risk-reduction interventions are essential
- Few educational interventions have been reported  
(Olsen SJ 2005, UNICEF 2006)
- Few studies investigated impact of different ranks of HPS on school-based health programs  
(Lee A 2006)
- 10-19 years old highest mortality rate of AI
- Schools offer a useful setting

# Objectives

- To evaluate the effectiveness of school-based AI prevention and control program on students, parents and teachers
- To examine the impact of different ranks of HPS on school-based AI prevention and control program on students, parents and teachers

# Methods

- Study site
- Participants

10 potentially eligible districts

Bang Pla Ma district  
allocated to control

U Thong district  
allocated to intervention

Randomized  
Baseline data collection

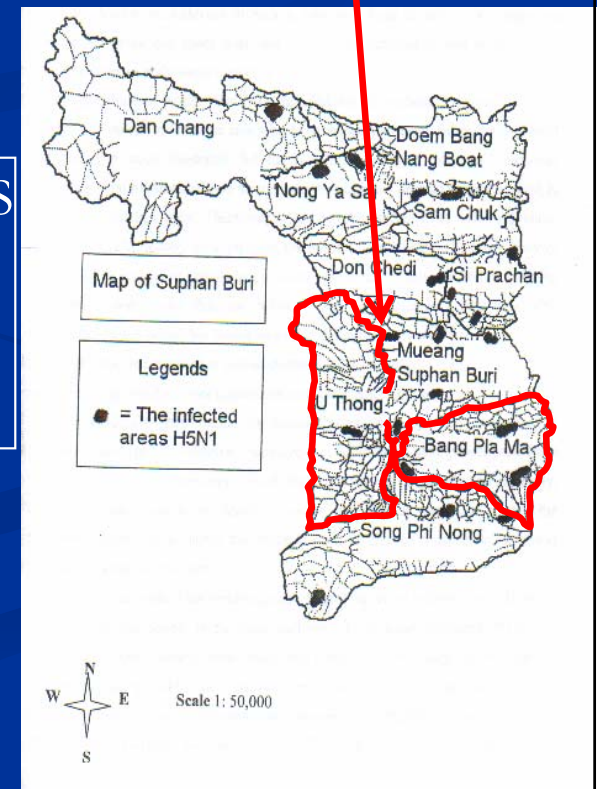
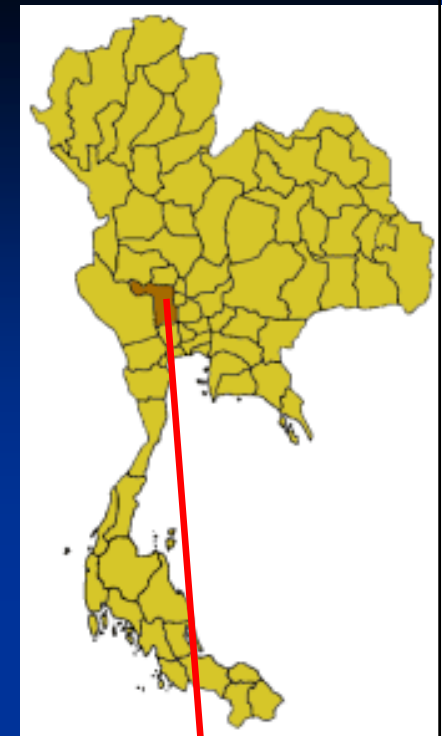
3 schools from each rank of HPS  
651 students (94%)  
605 parents (87%)  
62 teachers (83%)

3 schools from each rank of HPS  
777 students (91%)  
712 parents (84%)  
43 teachers (83%)

10 months follow-up

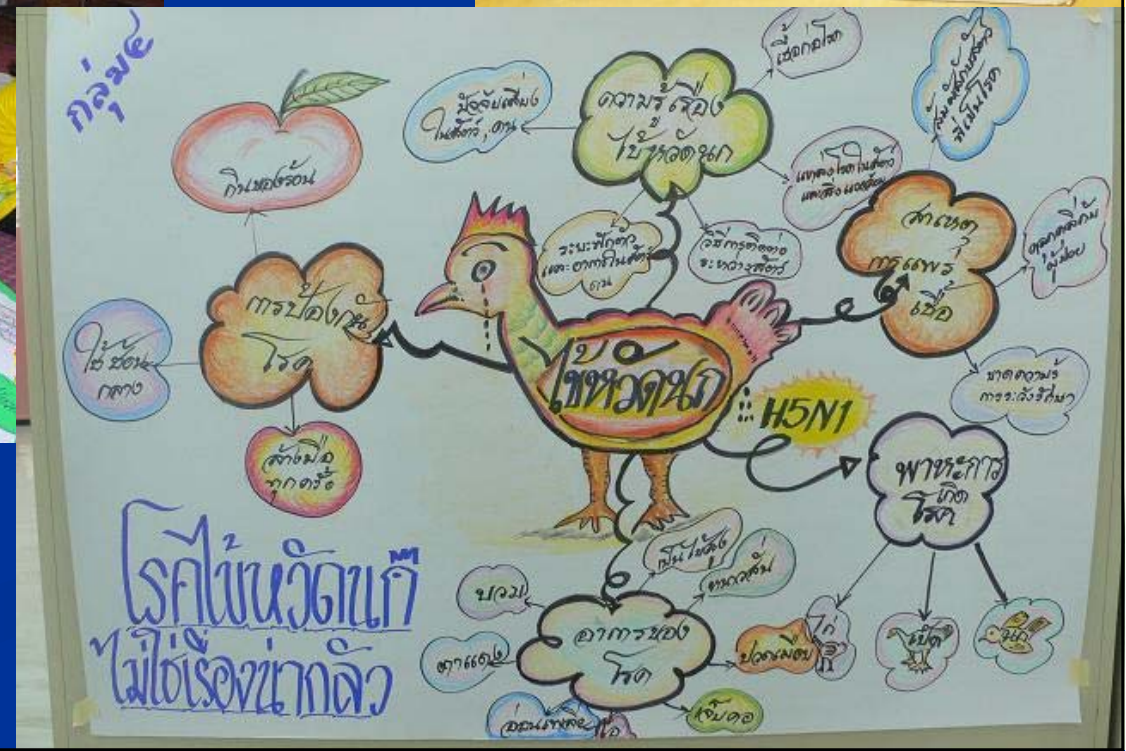
607 students (93%)  
547 parents (90%)  
51 teachers (82%)

761 students (98%)  
687 parents (96%)  
32 teachers (74%)



# Intervention (1)

- Teaching material development
- Teachers training





# Intervention (2)

- Activities of AI education at individual schools



# Intervention (3)

- AI campaign



# Data collection & Analysis

- Self-administered questionnaires (5 sections, 30 min)
  - Socio-demographic information (11~13 items)
  - Knowledge of AI (7~9 items)
  - Attitude towards AI (7 items)
  - Beliefs about AI (4~6 items)
  - Practices of AI (10~12 items)
- Data analysis
  - Scored → percentage of questions that were correctly/desirably answered
  - $t$  test,  $\chi^2$  test, mean, analysis of covariance (ANCOVA)

**Table 1. Participants' Sociodemographic Characteristics**

	N (%)				<i>p</i> value
	Control		Intervention		
<b>Students</b>	<b>(n=607)</b>		<b>(n=761)</b>		
Grade (Grade 5)	183	(30.3)	280	(37.0)	0.026
(Grade 6)	230	(38.1)	249	(32.9)	
Size of family ( $\leq 5$ )	342	(61.0)	484	(67.2)	0.020
Having poultry in/around house area (Yes)	249	(43.7)	417	(59.7)	<0.001
Source of Information was other people (Yes)	331	(57.2)	358	(47.4)	<0.001
Source of Information was mass media (Yes)	560	(96.7)	704	(93.1)	0.004
<b>Parents</b>	<b>(n=547)</b>		<b>(n=687)</b>		
Age, mean (SD) y	42.0	(11.0)	38.5	(9.3)	<0.001
Monthly income ( $\leq 4000$ Baht)	314	(57.8)	454	(66.1)	<0.001
Having poultry in/around house area (Yes)	205	(41.1)	352	(56.8)	<0.001
Relationship with someone who suffered from avian influenza (Yes)	44	(8.6)	81	(12.6)	0.032
<b>Teachers</b>	<b>(n=51)</b>		<b>(n=32)</b>		
NA					

**Table 2. Adjusted follow-up KABP levels among students, parents and teachers**

Categories	Students <sup>†</sup>			Parents <sup>‡</sup>			Teachers <sup>§</sup>		
	Mean % correctly/ desirably answered		Between-Group Difference (95% CI)	Mean % correctly/ desirably answered		Between-Group Difference (95% CI)	Mean % correctly/ desirably answered		Between-Group Difference (95% CI)
	C	I		C	I		C	I	
Knowledge	49.4	49.3	-0.1 (-0.9 to 0.7) <sup>¶</sup>	93.0	96.8	3.8 (2.3 to 5.3) <sup>*</sup>	96.3	98.2	1.9 (-1.1 to 4.8) <sup>¶</sup>
Attitude	90.0	94.0	4.0 (2.8 to 5.3) <sup>*</sup>	90.2	95.3	5.1 (3.7 to 6.5) <sup>*</sup>	92.6	96.6	4.0 (-0.8 to 8.8) <sup>¶</sup>
Beliefs	86.1	91.1	5.1 (3.3 to 6.8) <sup>*</sup>	90.8	94.4	3.6 (1.5 to 5.7) <sup>*</sup>	96.5	91.5	-5.0 (-10.6 to 0.6) <sup>¶</sup>
Practices	68.5	73.9	5.4 (3.6 to 7.2) <sup>*</sup>	75.7	80.7	4.9 (2.9 to 7.0) <sup>*</sup>	62.0	73.4	11.3 (3.4 to 19.3) <sup>*</sup>

<sup>\*</sup> p-value <0.001, <sup>¶</sup> p-value >0.05

<sup>†</sup> Covariates: baseline scores, age, sex, grade, size of family, having poultry in/around house area, source of information was other people, mass media

<sup>‡</sup> Covariates: baseline scores, age, sex, income, having poultry in/around house area, relationship with someone who suffered from AI

<sup>§</sup> Covariates: baseline scores, age, sex

**Table 3. Adjusted follow-up KABP levels stratified by HPS status among students and parents**

Categories	Students <sup>†</sup>			Parents <sup>‡</sup>		
	Mean % correctly/desirably answered		Between-Group Difference (95% CI)	Mean % correctly/desirably answered		Between-Group Difference (95% CI)
	C	I		C	I	
<b>Awarded</b>	(n=479)	(n=585)		(n=430)	(n=525)	
Knowledge	44.9	44.9	-0.01 (-0.9 to 0.9) ¶	93.6	97.4	3.7 (2.1 to 5.4) *
Attitude	92.0	95.9	3.9 (2.4 to 5.4) *	92.8	96.4	3.7 (1.9 to 5.4) *
Beliefs	85.1	91.4	6.3 (4.3 to 8.3) *	90.3	94.0	3.7 (1.3 to 6.1) *
Practices	65.7	74.2	8.5 (6.6 to 10.4) *	74.2	80.8	6.5 (4.3 to 8.8) *
<b>Non-awarded</b>	(n=128)	(n=176)		(n=117)	(n=162)	
Knowledge	47.0	43.6	-3.3 (-5.5 to -1.1) *	93.3	92.0	-1.2 (-5.4 to 2.9) ¶
Attitude	91.0	91.2	0.2 (-3.2 to 3.6) ¶	91.7	94.3	2.6 (-0.9 to 6.1) ¶
Beliefs	89.0	90.7	1.7 (-1.8 to 5.3) ¶	92.7	95.7	3.0 (-1.2 to 7.1) ¶
Practices	78.2	73.4	-4.8 (-8.5 to -1.1) *	80.5	80.4	-0.1 (-5.3 to 5.0) ¶

•P value<0.001, ¶ p-value >0.05

<sup>†</sup>Covariates: baseline scores, age, sex, grade, size of family, having poultry in/around house area, source of information was other people, mass media

<sup>‡</sup>Covariates: baseline scores, age, sex, income, having poultry in/around house area, relationship with someone who suffered from AI

# Discussion

- Our school-based intervention program was effective in improving
  - student attitudes, beliefs, practices
  - parent knowledge, attitudes, beliefs, practices
  - teacher practices
    - Specialized AI teaching manual
    - Teachers training
    - AI campaign
    - Health Promoting School system
- The trend was
  - Found in Awarded (Gold, Silver, Bronze) HPS
  - Not found in Non-awarded (Underdeveloped) HPS

# Conclusion

- Our school-based intervention program was effective in improving
  - student attitudes, beliefs, practices
  - parent knowledge, attitudes, beliefs, practices
  - teacher practices...among awarded HPS, but not non-awarded HPS
- Scaling-up our intervention program to awarded HPS
- Tailored intervention program to non-awarded HPS (e.g. longer implementation period)  
...would contribute to prevent the further spread of AI



# Collaboration

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