Arab Republic of Egypt

Ministry of Health and Population
Preventive and Endemic Diseases Sector
Epidemiology and Disease Surveillance Unit **(ESU)**

Experience Gained From Avian Flu Outbreaks in Egypt

Early Detection Of Cases,
Female Bias Especially In Fatalities, Managing The Outbreak

Luxembourg 24-27 September 2007

Dr. Abdel-Nasser Abdel-Ghafar
Executive Director, Epidemiology and Surveillance Unit
Member of National Supreme Committee for Combating Avian Influenza
IHR Focal Person

Background

- As highly pathogenic avian influenza (HPAI) – caused by the type A H5N1 virus – moved across Asia and into the Middle East in early 2006
- Ministers and senior officials in the Government of Egypt braced themselves for a major outbreak
- The poultry sector had expanded rapidly in the last 25 years in Egypt

Start Of Outbreak

- On 17 February 2006, Egypt confirmed the first cases of H5N1 virus in domestic poultry
- Seven outbreaks of infected birds were discovered in three governorates.
- The virus was detected in 23 out of the 27 governorates.
- 858 farms and 221 backyards were known to be affected in the succeeding three months
- Over 30 million birds have been culled
- Poultry industry was badly damaged; costs estimated between 2 and 3 billion USD

Start of outbreak

- Affected the income of the 1.5 million individuals whose livelihoods depend on poultry
- Reduced access to poultry meat (which had provided more than 50 per cent of the households protein consumed by Egyptians).
- It is estimated that 4-5 million families out of a population of 75 million keep their own poultry

Avian Influenza In Human

- Avian Influenza in humans was discovered on 15 March 2006.
- Egypt was the ninth country to report laboratory-confirmed human cases
- From 15 March until now, 2047 suspected human cases of AI had been isolated to hospitals,
- 38 were confirmed positive and there has been 15 fatalities

Early Detection of Cases

METHODS – DATA FLOW

National Egyptian Disease Surveillance System (NEDSS)

Central

Governorate

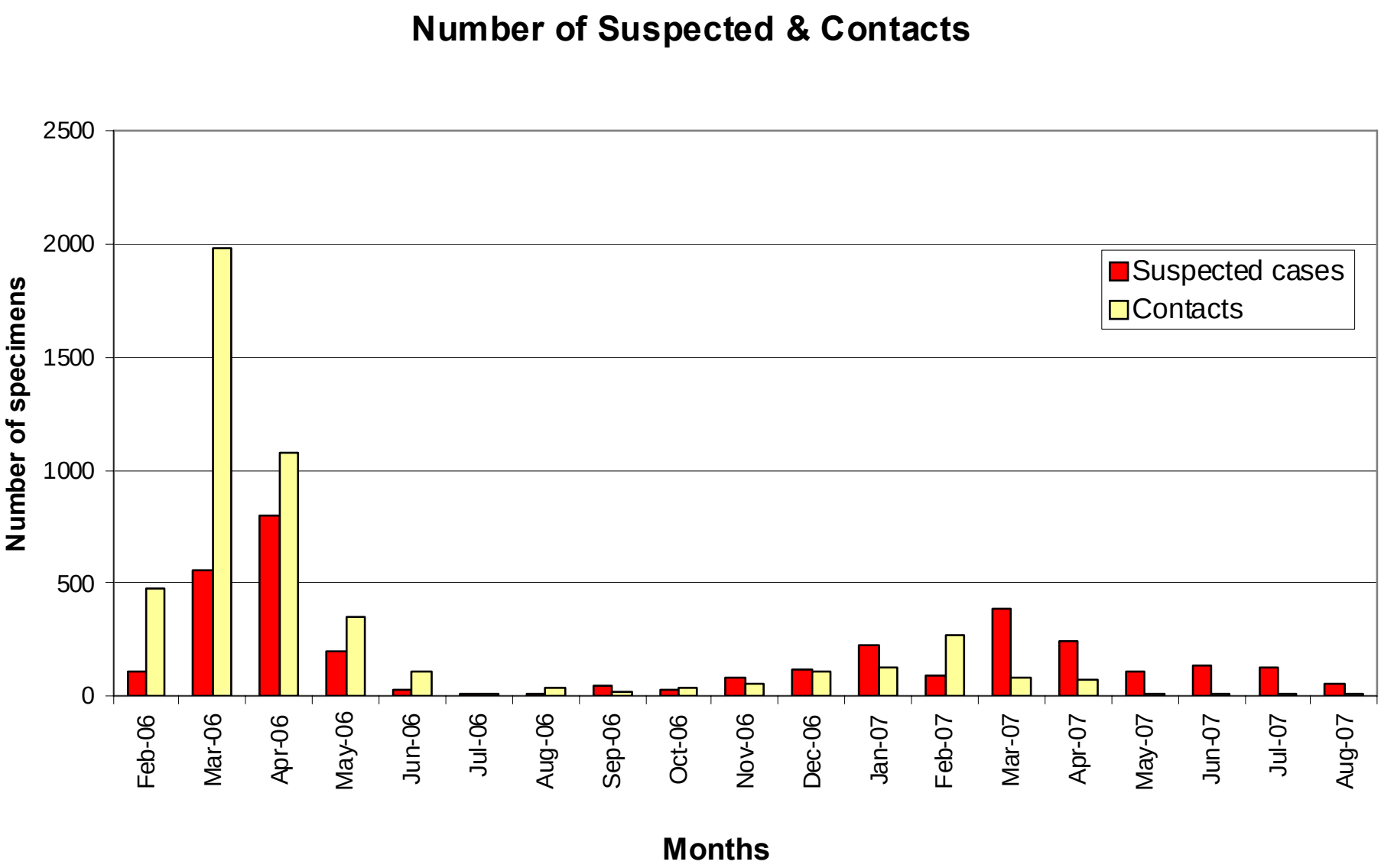
27

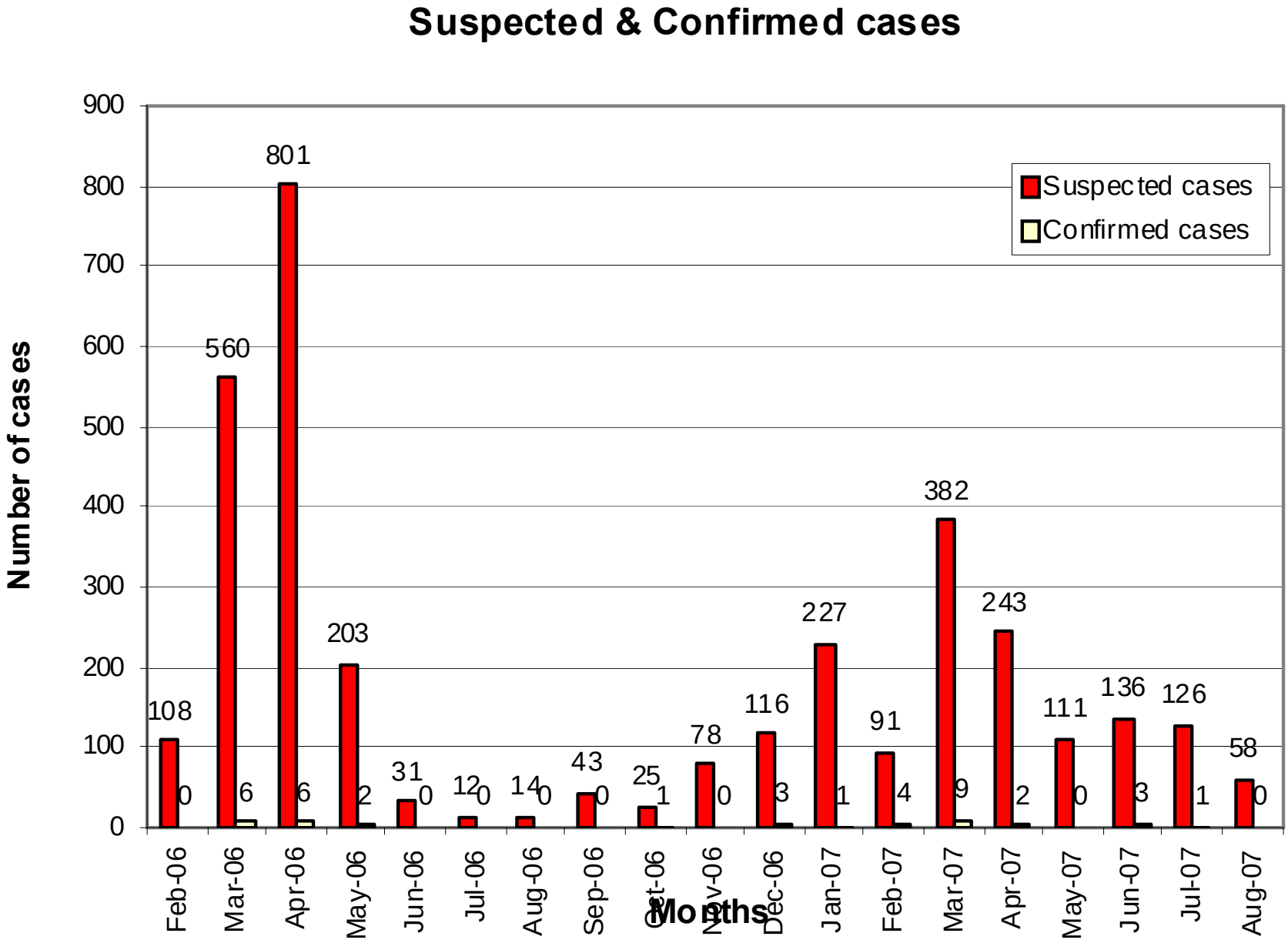
District

254

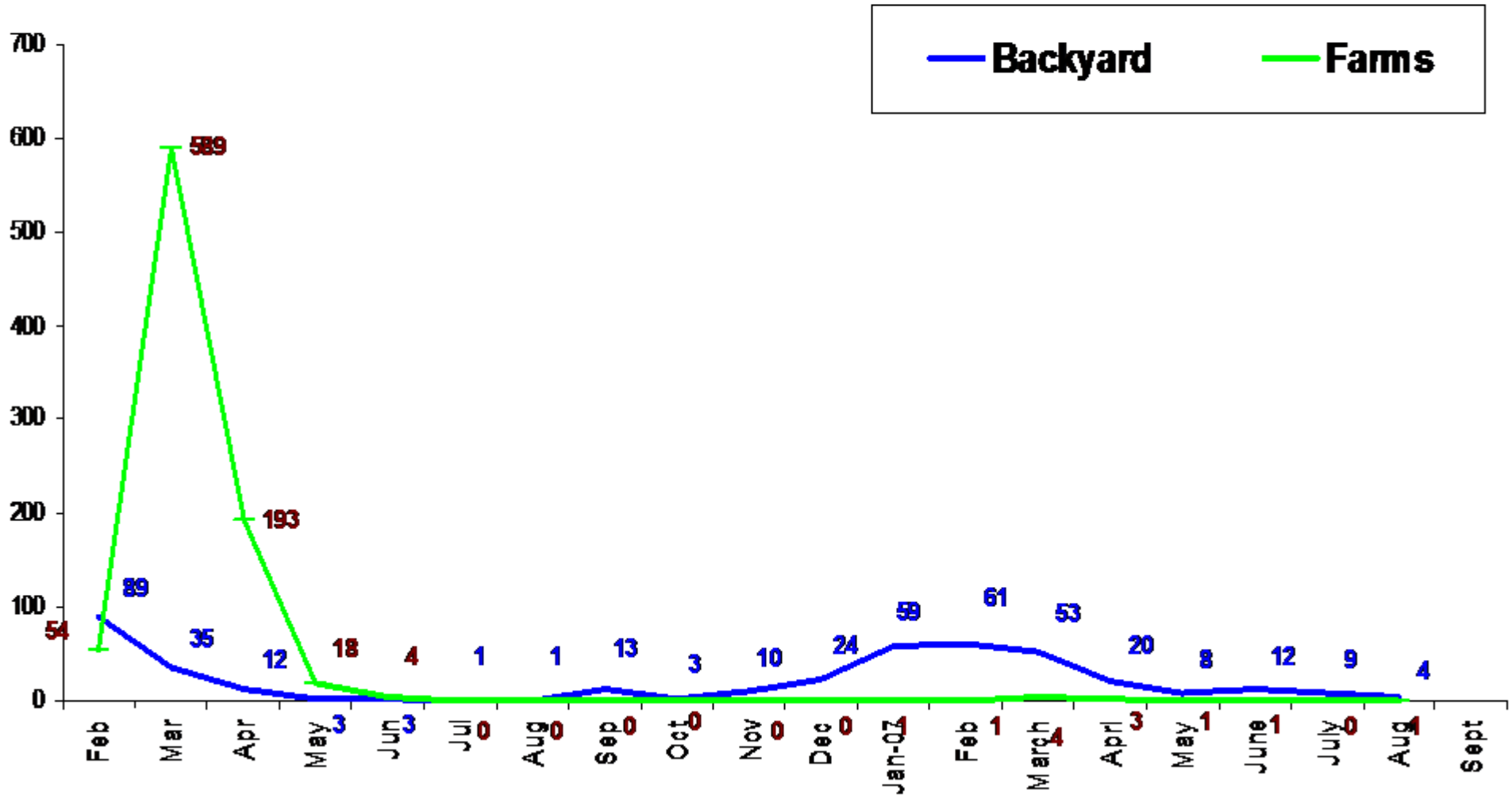
Facilities

6530

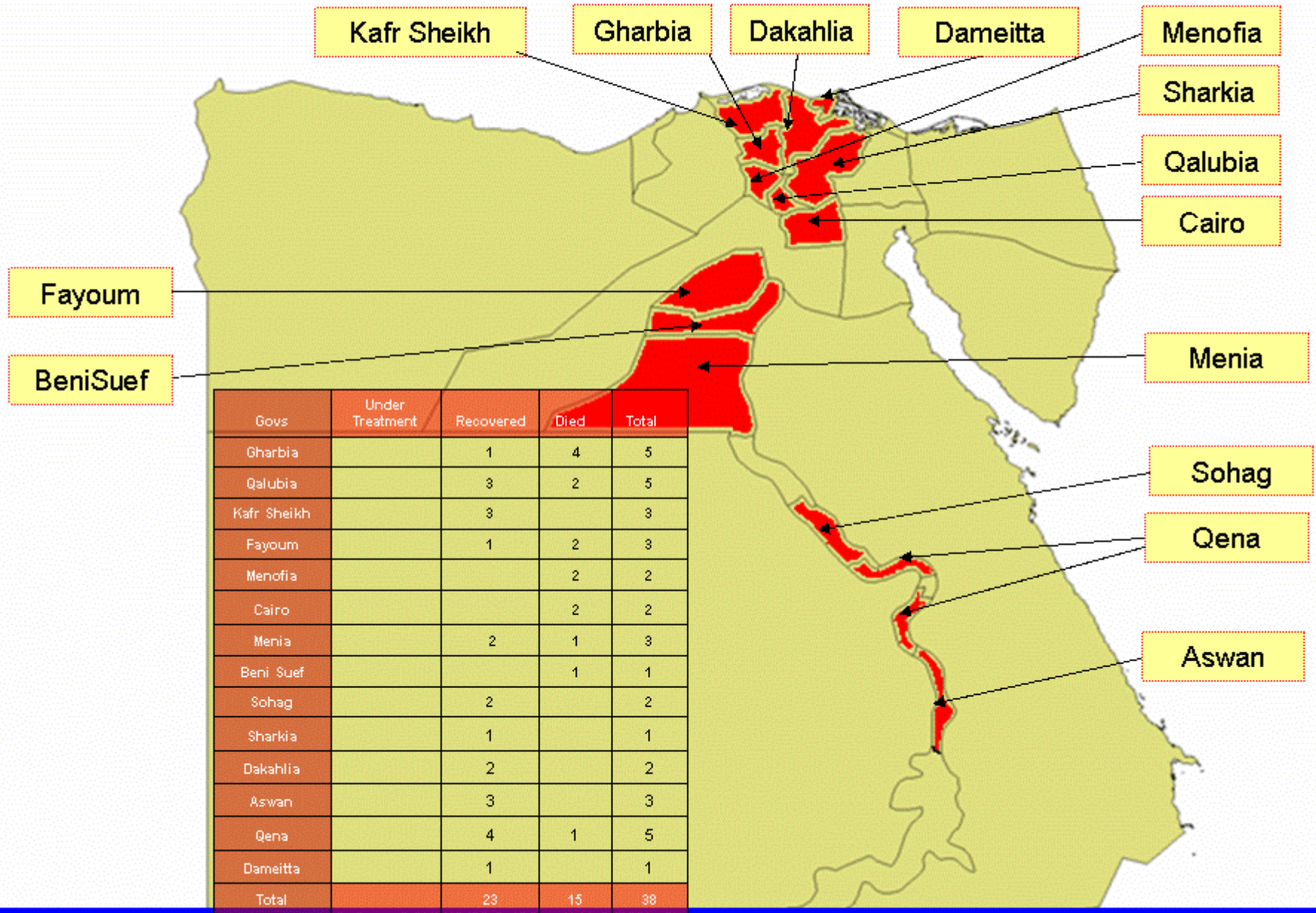

Number of Suspected & Contacts
2500
2000
1500
1000
500
0
Number of specimens
Suspected cases
Contacts
Feb-06
Mar-06
Apr-06
May-06
Jun-06
Jul-06
Aug-06
Sep-06
Oct-06
Nov-06
Dec-06
Jan-07
Feb-07
Mar-07
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Months


Suspected & Confirmed cases
Number of cases
Months
Suspected cases
Confirmed cases
900
800
700
600
500
400
300
200
100
0
108
0
560
6
801
6
203
2
31
0
12
0
14
0
43
0
25
1
78
0
116
3
227
1
91
4
382
9
243
2
111
0
136
3
126
1
58
0
Feb-06
Mar-06
Apr-06
May-06
Jun-06
Jul-06
Aug-06
Sep-06
Oct-06
Nov-06
Dec-06
Jan-07
Feb-07
Mar-07
Apr-07
May-07
Jun-07
Jul-07
Aug-07

Number of Infected Foci Distributed by Breading Type, (Feb. 17,2006 – Sep. 9, 2007)



Confirmed H5N1 Human Cases , 2006-2007- Distributed by Governorates

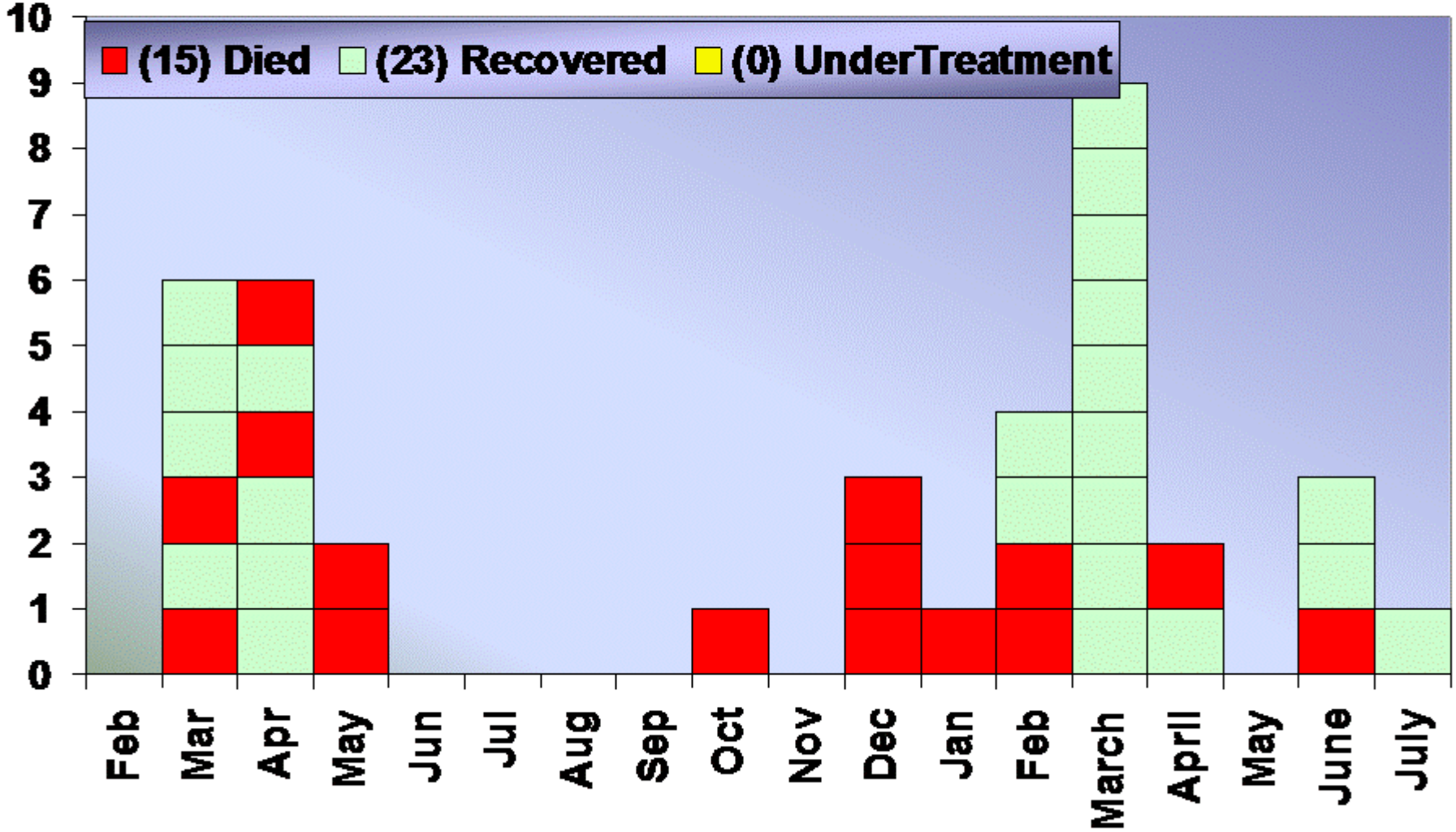


Govs	Under Treatment	Recovered	Died	Total
Gharbia		1	4	5
Qalubia		3	2	5
Kafr Sheikh		3		3
Fayoum		1	2	3
Menofia			2	2
Cairo			2	2
Menia		2	1	3
Beni Suef			1	1
Sohag		2		2
Sharkia		1		1
Dakahlia		2		2
Aswan		3		3
Qena		4	1	5
Dameitta		1		1
Total		28	15	38

Positive H5N1 Human Cases, Egypt "06 – "07

- According to Sex & Sex specific death rate:
  - 26 were Female [14 deaths (54%)]
  - 12 were Male [1 death (8%)]
- According to Age
  - Mean : 16 years
  - Median 15
- Range: from 1 to 75 years
- 68 % of cases were under age of 18 years (children)

Confirmed H5N1 Human Cases , 2006-2007



Positive H5N1 Human Cases, Egypt "06 – "07
CFR by Age Group and Gender

Variable	Years	Number Of Cases	Deaths	Case Fatality Rate
Age group	5 ≤	11	0	0%
	5 - < 15	8	1	12.5
	15 - 45	17	12	70%
	> 45	1	1	100%
Gender	Male	12	1	14%
	Female	26	12	70.5%
Total		38	15	39%

Risk Behavior for AI Human Transmission

- **Direct contact:**
  - Mouth to mouth feeding of the sick chicken: case no. 16
  - Crawling & playing on ground contaminated with infected ducks and chicken's excreta then hand to mouth, eye and nose : cases no. 8,9
  - Hand contact with slaughtered or dead birds & their wastes then eating afterwards without hand hygiene: case no. 23

Risk Behavior For AI Human Transmission

- **Air-born-inhalation:**
  - children entering a backyard where infected ducks and chicken live with infection-free pigeons; Pigeons flap their wings causing increase density of infected dust to fly around and spread of infected micronuclei into the backyard atmosphere: case no. 4

  - Raising poultry inside houses and giving them freedom of all the rooms' increases time of contact and exposure to infected poultry and their excreta. Moreover, sweeping and dry whipping of these rooms increase the chance of air-born transmission.

Women

- Usually if they have symptom of flu they start medication at home (with antipyretics)
- They seek medical advise after 4 – 5 days when they are totally ill.
- Also, they deny having infected bird
- Most of diseased women were severely anemic , and two of them were pregnant

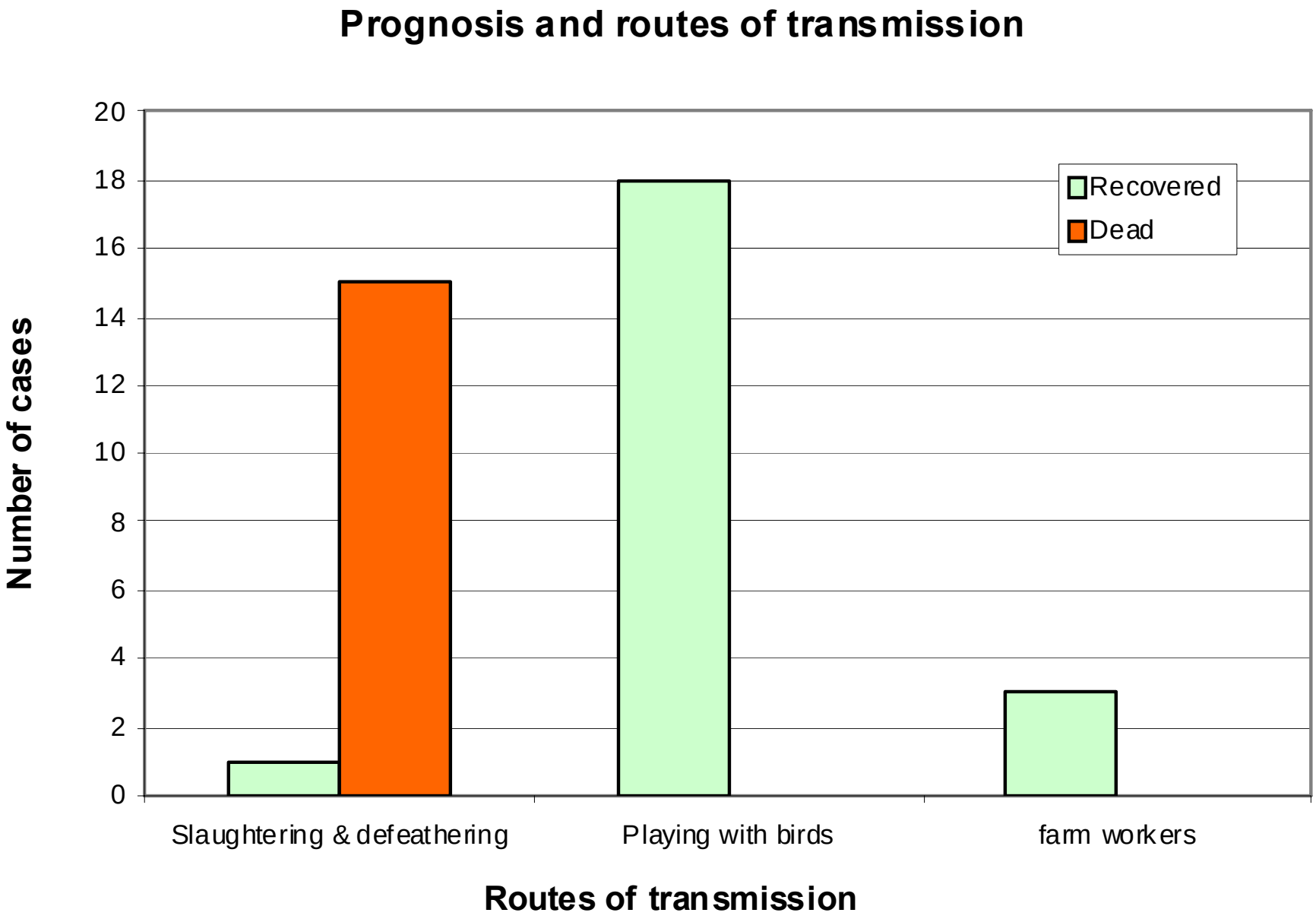
Children

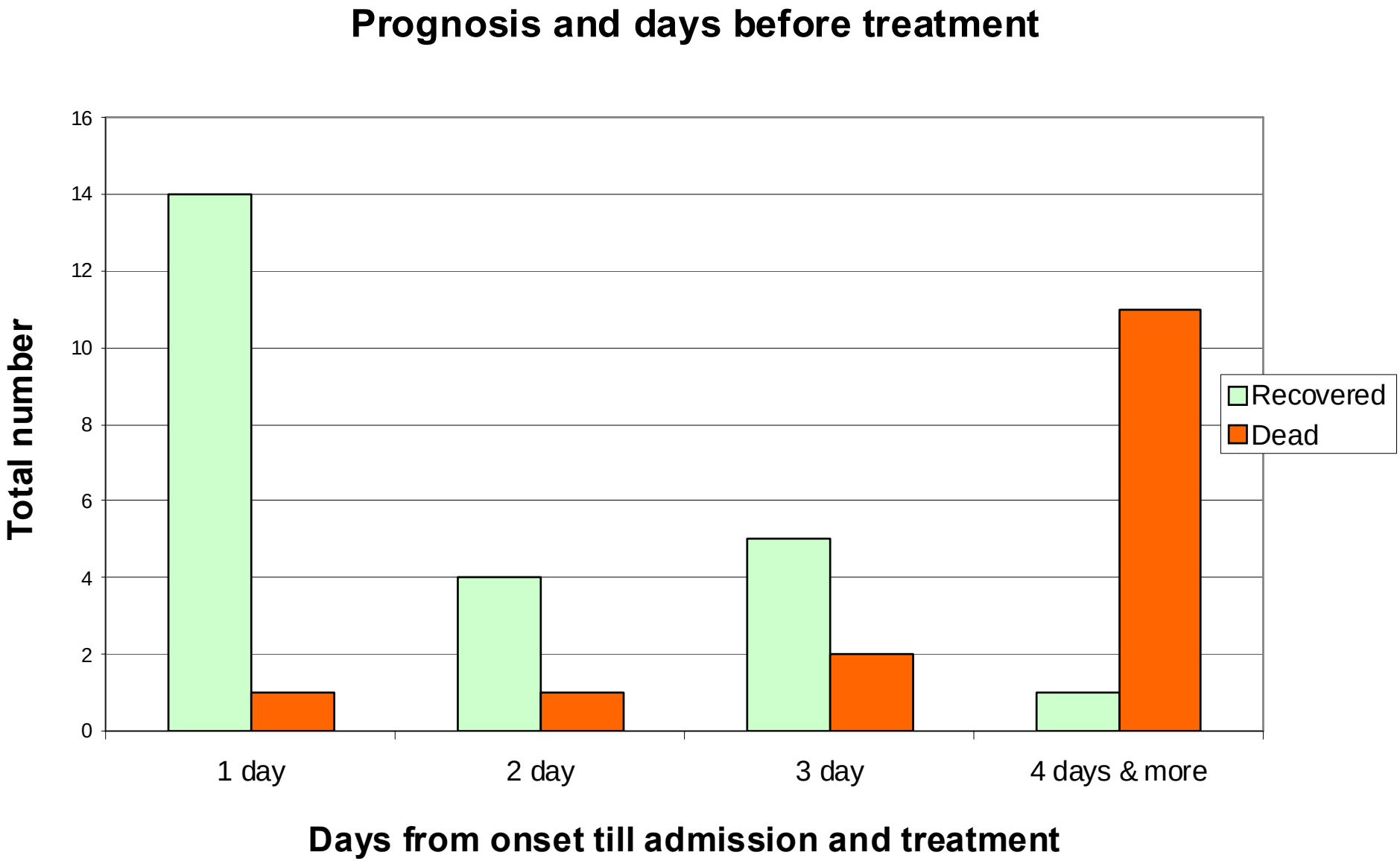
Starting treatment using anti viral within 48 hours of symptoms this is due to :

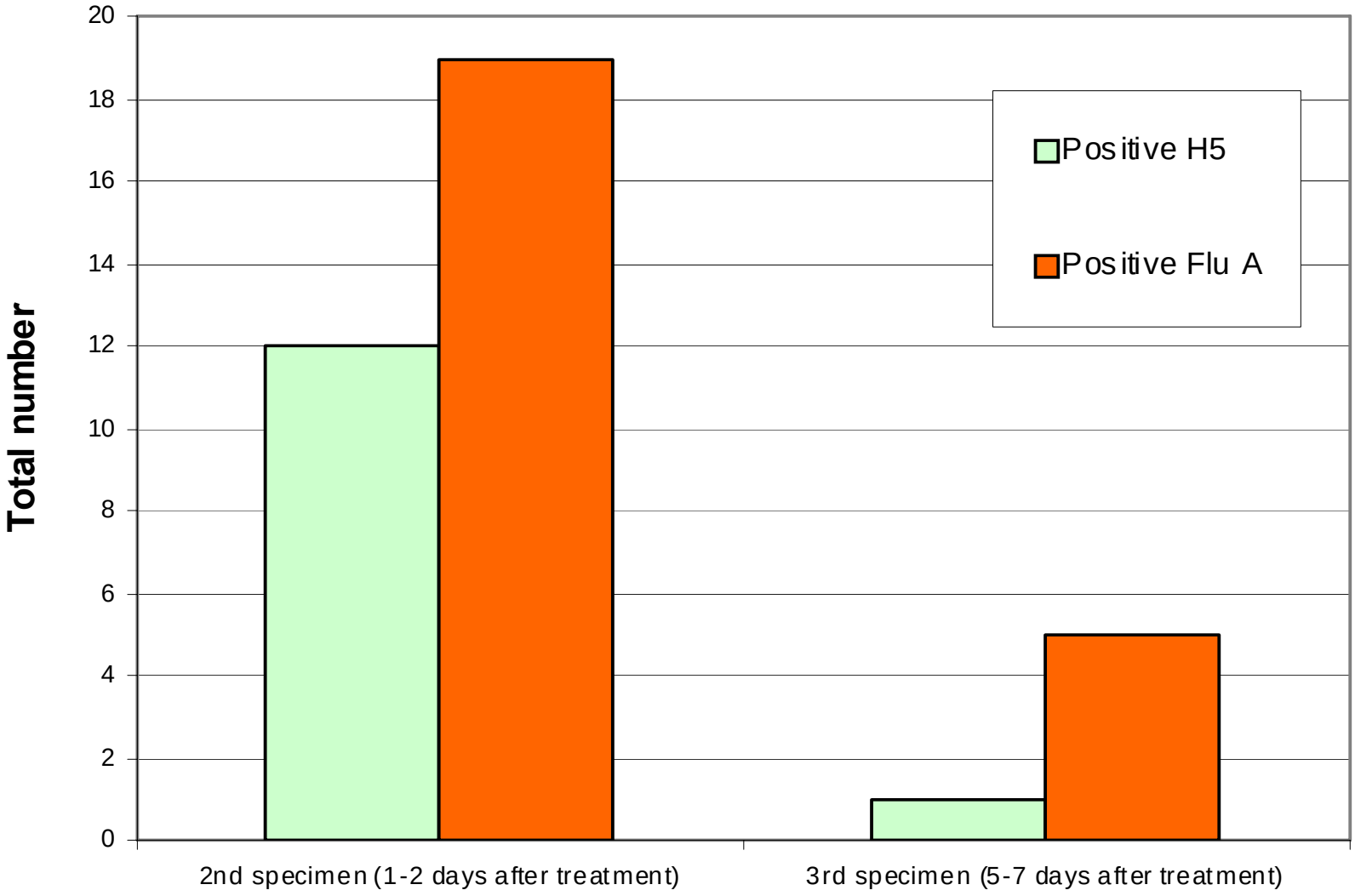
- Mothers take good care of their children specially in rural areas
- Once symptoms of flu started they go immediately to the hospital saying that they have infected or dead birds at home
- So the child starting medication with antiviral early (Oseltamivir gives effect if it started within 48 hours of symptoms)

Results : Some Risk Factor for Avian Flu Exposures

Factor	Death	Recovery	X^2	P. Value
Breading	7	4	1.8	0.04
Slaughter	11	1	12.4	0.002
Defeathering	11	1	12.4	0.002
Contact	8	9	5.2	0.7


Prognosis and routes of transmission
Number of cases
20
18
16
14
12
10
8
6
4
2
0
Recovered
Dead
Slaughtering & defeathering
Playing with birds
farm workers
Routes of transmission


Prognosis and days before treatment
Total number
16
14
12
10
8
6
4
2
0
1 day
2 day
3 day
4 days & more
Recovered
Dead
Days from onset till admission and treatment


Lab results of the 2nd and 3rd specimens
Total number
20
18
16
14
12
10
8
6
4
2
0
Positive H5
Positive Flu A
2nd specimen (1-2 days after treatment)
3rd specimen (5-7 days after treatment)

Managing The Outbreak


A-11
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1 3 2006

Pre - Epidemic

Capacity Building

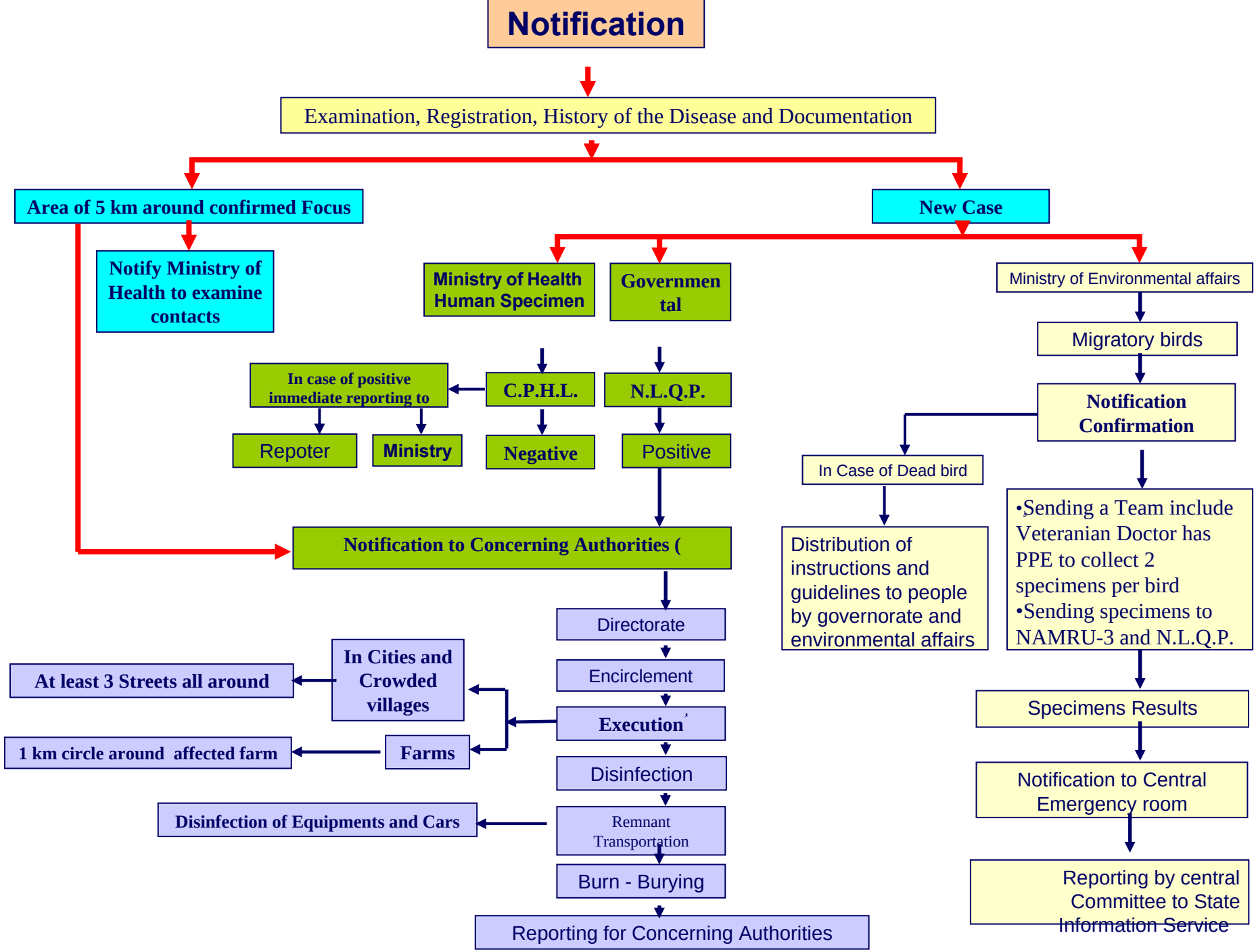
- Establishment of Rapid Response to Avian Flu,
- Inter-ministerial Consultation Workshop :
  - Ministry of Health and Population (MOHP), Ministry of Agriculture (MOA), Ministry of Environment (MOE), WHO, NAMRU-3, and USAID, (November 2005)
- Rapid Response Teams Training Workshops for the at the central level, health directorates, fever hospitals and chest hospitals, (January 2006)

Capacity Building

- Training Workshop for Rapid Response to combat Avian Flu out break,
  - Teams from MOH, MOA, and MOE on governmental level, (January – February 2006)
  - Quarantine Staff, January 2006
- Infection Control Procedures for Main Fever Hospitals, (January 2006)

Establishment of Surveillance Tools

- Data base
- Case definition
- Guidelines on Influenza (Flu) Epidemics and Response
- Investigation forms for poultry farms and backyards
- Investigation forms for human cases
- Investigation forms for lab
- Fever / chest hospitals reporting form
- Poultry active survey reporting list


Notification
Examination, Registration, History of the Disease and Documentation
Area of 5 km around confirmed Focus
New Case
Notify Ministry of Health to examine contacts
Ministry of Health Human Specimen
Governmental
Ministry of Environmental affairs
Migratory birds
Notification Confirmation
In case of positive immediate reporting to
C.P.H.L.
N.L.Q.P.
Repoter
Ministry
Negative
Positive
In Case of Dead bird
Distribution of instructions and guidelines to people by governorate and environmental affairs
•Sending a Team include Veteranian Doctor has PPE to collect 2 specimens per bird
•Sending specimens to NAMRU-3 and N.L.Q.P.
Notification to Concerning Authorities (
Directorate
Encirclement
Execution
Disinfection
Remnant Transportation
Burn - Burying
Reporting for Concerning Authorities
In Cities and Crowded villages
At least 3 Streets all around
Farms
1 km circle around affected farm
Disinfection of Equipments and Cars
Specimens Results
Notification to Central Emergency room
Reporting by central Committee to State Information Service

During Epidemic

Training

- Orientation Workshop for discussing human cases of Avian Flu, and standardizing management protocol of AI cases in fever and chest hospitals.
- One-day orientation training course, on risk-related, universal precautions of avian flu infection, and safe disposal of dead poultry.

Training

- One-day orientation training course, on Safe Disposal of Dead Poultry for Community Leader.
- One-day orientation training course, on human cases for Private sector physicians.


11 4 2006


الدورة التدريبية على
إجراءات الوقاية و مكافحة مرض الطيور
19 4 2006


11 4 2006


11 4 2006

Published Material for Avian Flu

- We published two issues on Avian Flu in the ESU “Eye on Epidemiology” magazine.
- “Avian Flu Control and Management Guidelines” that distributed them in Egypt according to training program
- Posters on prevention and Control of Avian Flu
  - Q and A about disease
  - Brochures
  - Central instructions and news letters

Hotlines

أنفلونزا الطيور

معلومات للمتعاملين مع الطيور الحية

لحماية نفسك وأسرتك من أنفلونزا الطيور اتبع الخطوات التالية

- الوقاية
- التعرف
- إحتواء المرض
- الإبلاغ

الوقاية

ابعد الأطفال عن الطيور.

استخدام ملابس واقية عند التعامل مع الطيور : قفاز-قناع واقي- مريلة- حذاء واقي او كيس بلاستيك.

غسل اليدين بالماء والصابون دائما.

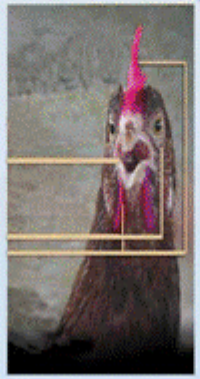
إن الطرق الشائعة لنقل العدوى إلى البشر هي مخلفات وزرق الطيور المصابة لذلك ينصح بتنظيف الأحذية بصفة دائمة قبل دخول المنازل.

صحتك ... ثروتك

أنفلونزا الطيور

صحتك ... ثروتك

التعرف



الأعراض في الطيور:
ضعف
حمى
إسهال
عطس وكحة
فقدان للشهية
عطش شديد
تورم وانتفاخ في الوجه وتورم في الأرجل
تغير في لون العرف والتقارير إلى بنفسجي
انتفاخ في الريش
الموت الفجائي
إقلال شديد في وضع البيض

إحتواء المرض

وضع الطيور النافقة في أكياس بلاستيك سميكة ومزدوجة ثم إبلاغ السلطات المعنية لعمل اللازم.

الإبلاغ

إذا شكيت إن الطيور التي لديك مصابة أو أي شخصا من المتعاملين مع الطيور مصاباً قم بالابلاغ الفوري على الأرقام التالية:

٠٨٠٠٥٥٥٣٥٥٥
٠٢٧٩٢١٠٦٠ \ ٠٢٧٩٢٣٦٠٨ \ ٠٢٧٩٢٣٧٣٩

USAID

مشروع الاتصال للصحة

Filed activities

- Active surveillance in bird in collaboration with Vet.
- Follow up of culling procedures applied in positive foci

Summary
and
Lessons Learnt

Preparedness and Prevention

- Training of investigation and response teams at the level of Governorates increased the level of preparedness
- Provision of teams with PPEs has encouraged quick and safe field interventions
- Incompliance with global safety standards in poultry sector contributed in:
  - quick spread of disease in birds
  - Increase in human exposure
- Implementation of the national preparedness plan is a collective responsibility

Diagnosis and Detection

- Establishment of laboratory facilities in two Governorates facilitated the diagnosis, confirmation and surveillance of AI cases (Decentralization)
- Delay in getting information on the exposure status of human cases resulted in:
  - Negative prognosis
  - Difficulty in revising/updating case definition

Surveillance

- Effective surveillance and investigation in the affected Governorates resulted in:
  - Immediate reporting of all suspected cases
  - Promptness and accuracy of epidemiological investigation
  - Quickness in sending lab specimens to CPHL
  - Development/Implementation of an effective comprehensive surveillance plan at all levels
  - Involvement of private sector in diagnosis and referral of cases

Referral of Patients

- Decentralization of human AI cases referral system is of importance in expediting the diagnosis, confirmation and treatment;
  - Ministry of Health and population in Egypt is preparing 57 hospitals with all resources needed to function in all governorates

Epidemiological Investigation

- Rural areas were severely hit
- Domestic birds were the major source of transmitting the infection to human beings
- All cases were closely exposed to infected birds

Awareness and Social Mobilization

- One spokesperson
- Condensation of awareness campaigns in the affected Governorates assisted in reducing exposure
- The desire and insistence of the community to deal with live birds (raising and slaughtering) has increased the possibility of human infection
  - Refusing the idea of frozen birds
- Rumors and inadequate communication to the public could be detrimental and wasteful of resources

Treatment and Prognosis

- Adherence to WHO guidelines for treatment and clinical management has saved lives
- Implementation of infection control guidelines in health facilities helped in reducing the spread of disease among humans
- The delay in reporting and referral to designated health facilities has affected negatively the prognosis
- Early detection and reporting of AI cases among children by mothers helped in quick recovery

Coordination

➢Supreme National Committee:

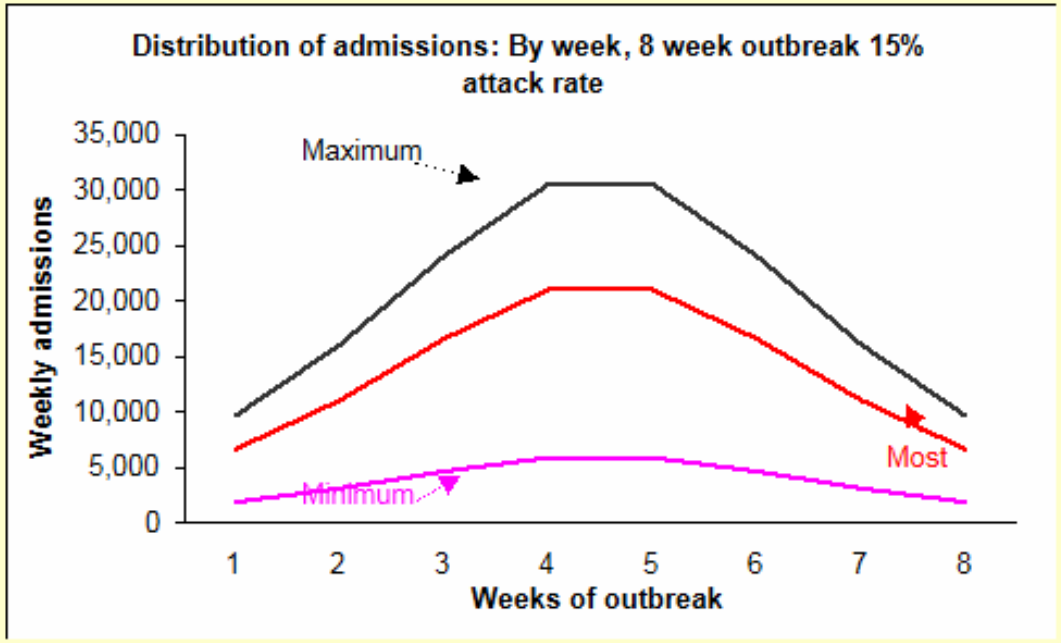
- Supreme National Committee with regular meetings and getting information on the situation of the virus as well as action taken and/or constraints encountered
- **Supreme National Committee members** (25 member) **:**
  - Minister Of Health
  - Minister Of Agriculture
  - Minister Of Environment
  - Officials From GVO, MOH, SIS, ..etc
  - Governors and others governmental officials, including Military, Police…etc
  - Representatives from WHO, FAO And NAMRU-3.

Coordination

- In July 2004, MOHP established a center for Influenza Surveillance in the CPHL as a cooperative centre with WHO and CDC
- approximately 3,500 samples from influenza patients are examined annually
- causative viruses are isolated, classified and part of the examined samples are sent twice a year to the referral labs in CDC and WHO
- Influenza Surveillance Center in CPHL is one of six regional centers on the Eastern Mediterranean Region.

Risk of Pandemic on Egypt

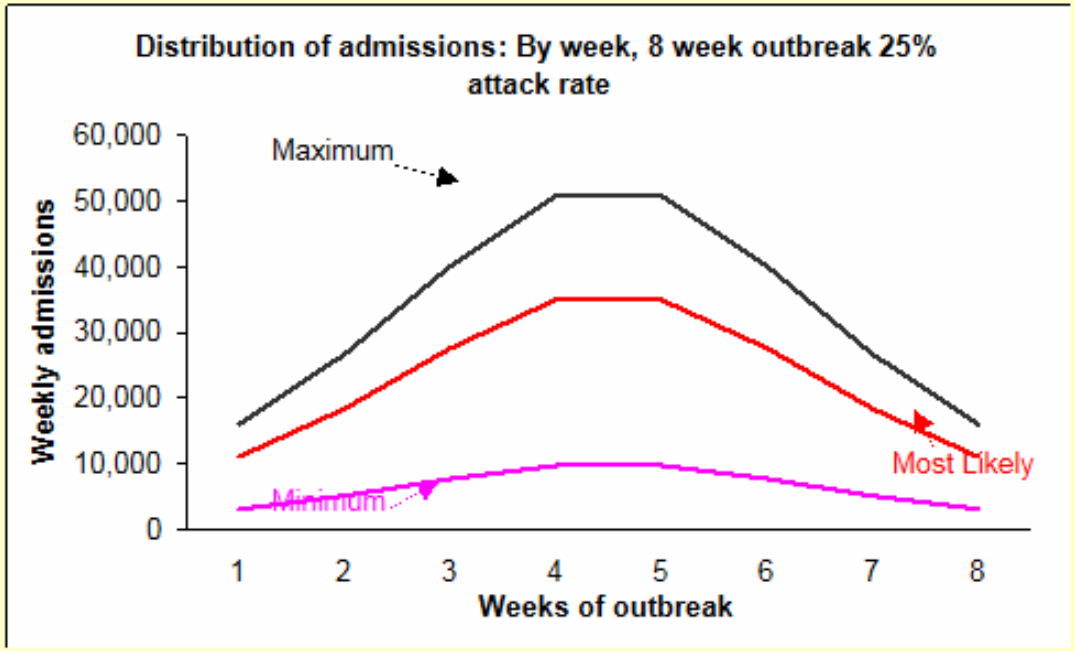
Pandemic Influenza Impact / Attack Rate	15%
Total Hospital Admissions	
Most Likely Scenario	110,463
Minimum Scenario	30,718
Maximum Scenario	160,486
Total Deaths	
Most Likely Scenario	17,857
Minimum Scenario	6,114
Maximum Scenario	36,557



Hosp Adm. / Week	1	2	3	4	5	6	7	8
Most Likely Scenario	6,628	11,046	16,569	20,988	20,988	16,569	11,046	6,628
Minimum Scenario	1,843	3,072	4,608	5,836	5,836	4,608	3,072	1,843
Maximum Scenario	9,629	16,049	24,073	30,492	30,492	24,073	16,049	9,629

Risk of Pandemic on Egypt

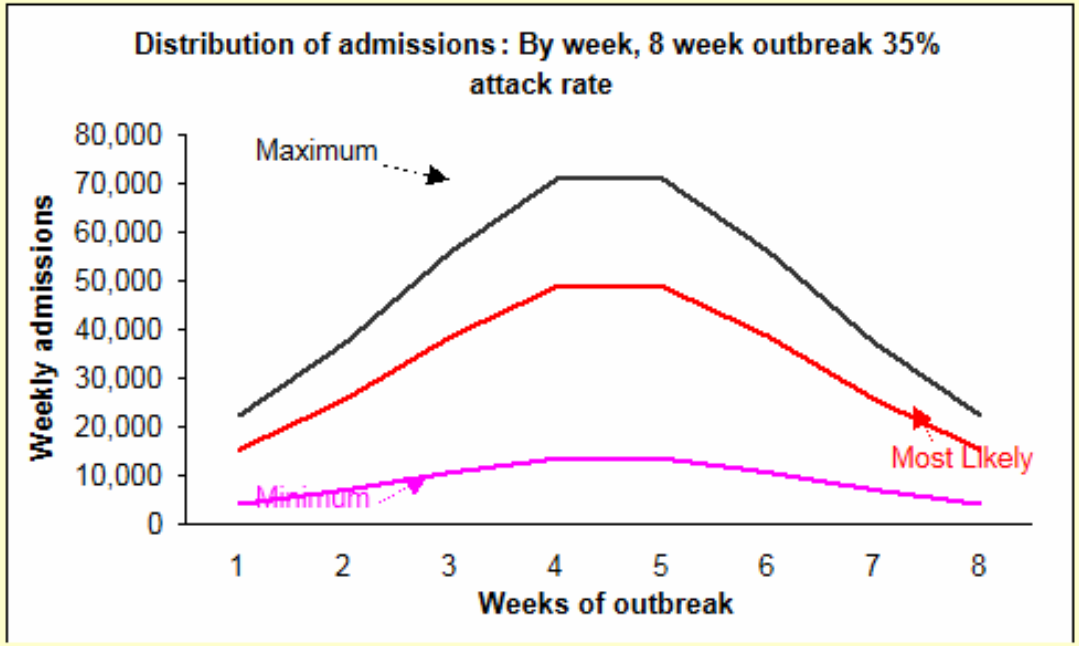
Pandemic Influenza Impact / Attack Rate	25%
Total Hospital Admissions	
Most Likely Scenario	184,105
Minimum Scenario	51,197
Maximum Scenario	267,476
Total Deaths	
Most Likely Scenario	29,761
Minimum Scenario	10,190
Maximum Scenario	60,928



Hosp Adm. / Week	1	2	3	4	5	6	7	8
Most Likely Scenario	11,046	18,410	27,616	34,980	34,980	27,616	18,410	11,046
Minimum Scenario	3,072	5,120	7,680	9,727	9,727	7,680	5,120	3,072
Maximum Scenario	16,049	26,748	40,121	50,820	50,820	40,121	26,748	16,049

Risk of Pandemic on Egypt

Pandemic Influenza Impact / Attack Rate	35%
Total Hospital Admissions	
Most Likely Scenario	257,747
Minimum Scenario	71,675
Maximum Scenario	374,467
Total Deaths	
Most Likely Scenario	41,666
Minimum Scenario	14,265
Maximum Scenario	85,300



Hosp Adm. / Week	1	2	3	4	5	6	7	8
Most Likely Scenario	15,465	25,775	38,662	48,972	48,972	38,662	25,775	15,465
Minimum Scenario	4,301	7,168	10,751	13,618	13,618	10,751	7,168	4,301
Maximum Scenario	22,468	37,447	56,170	71,149	71,149	56,170	37,447	22,468

Conclusions

- An outbreak of avian influenza in humans in Egypt caused by H5N1, the same strain causing the concurrent epizootic in poultry
- High CFR in women (69%)
- Storing dead poultry at home and exposure to sick birds caused the highest risk for H5N1 infection


Lake Burullus
Al Iskandariyah
Lake Idku
Lake Maryut
Al Iskandariyah
Gulf
Al Buhayrah
Lake Manzala
Bur Sa'id
Bur Said
Ad Daqahliyah
Suez Canal
Al Gharbiyah
Al Minufiyah
Great Bitter Lake
Little Bitter Lake
Madinat Ash Shuruq
Epidemiology and Disease Surveillance Unit (ESU)
Al Qahirah
As Suways
57 mi
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Image © 2007 TerraMetrics
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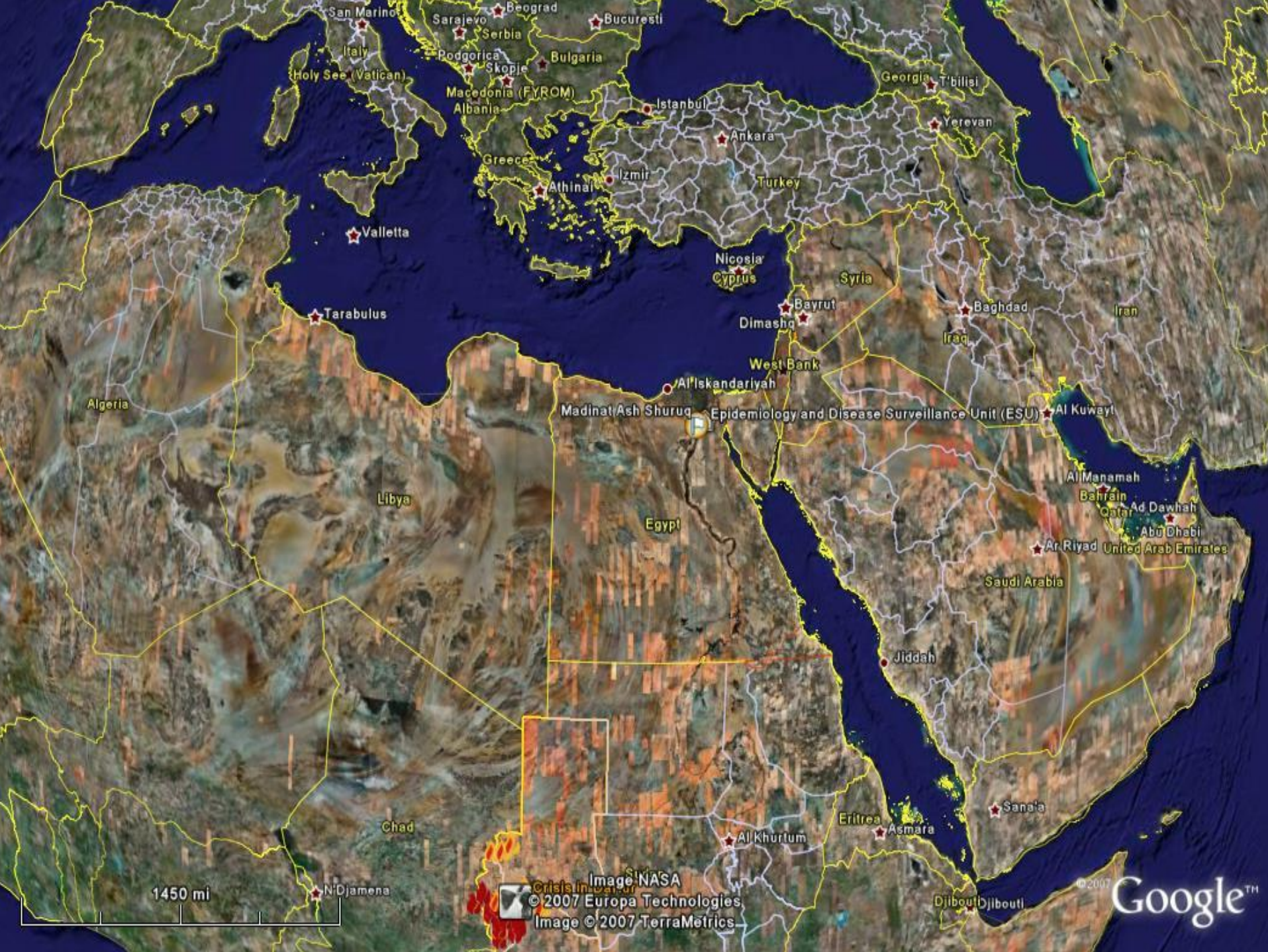
San Marino
Beograd
Sarajevo
Serbia
Bucuresti
Italy
Podgorica
Skopje
Bulgaria
Holy See (Vatican)
Macedonia (FYROM)
Albania
Georgia
T'bilisi
Istanbul
Yerevan
Ankara
Greece
Izmir
Turkey
Athinai
Valletta
Nicosia
Cyprus
Syria
Tarabulus
Bayrut
Dimashq
Baghdad
Iran
Iraq
West Bank
Al Iskandariyah
Algeria
Madinat Ash Shuruq
Epidemiology and Disease Surveillance Unit (ESU)
Al Kuwayt
Al Manamah
Bahrain
Qatar
Ad Dawhah
Abu Dhabi
Libya
Egypt
Ar Riyad
United Arab Emirates
Saudi Arabia
Jiddah
Chad
Eritrea
Asmara
Sana'a
Al Khurtum
Crisis in Darfur
N'Djamena
Djibouti
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Migratory Bird Station in Port Saied
North Egypt
Thanks
31 1 2006