

WHO data on potential sources of human exposure to avian influenza H5N1

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World Health
Organization

caveat # 1

- Control of HPAI and LPAI in poultry populations is the first and most important step in reducing zoonotic risk and pandemic threat



background

- Specific risks for AI H5N1 infection in humans remain unknown
 - "direct contact with sick/infected poultry"
- Preliminary work (WHO and others) suggests also:
 - 'Indirect' contact with poultry/environmental contamination
 - Contact with healthy (appearing) poultry
- **Question:** What are the exposures/behaviors associated with the WHO-confirmed H5N1 influenza cases in humans?
 - Activities & living/working situations
 - Not modes of transmission

caveat # 2

- Even full understanding of the specific exposures of human cases of H5N1 will likely not explain the relatively small number of cases compared to the overall massive potential exposure of humans in areas where H5N1 virus is circulating
 - Virus remains difficult to transmit to humans
 - Are likely other, as yet unknown, ecological, inherent virus-related, or host-related variables
 - Not specifically what, but where to focus

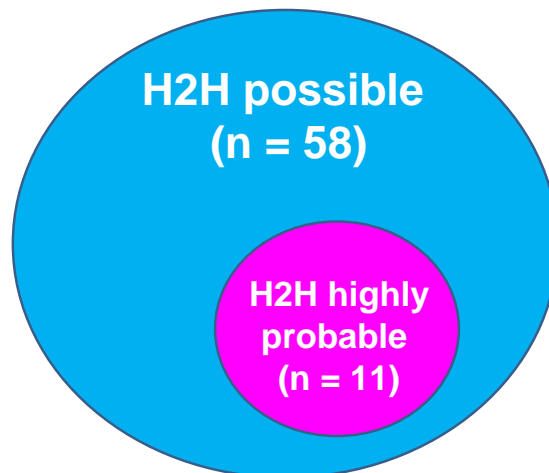
methods

- Collect all available information for each WHO-confirmed human case of AI H5N1 infection (**Dec 2003 – May 2008, n = 385**)
 - Occupation
 - Poultry/WB-related activities & possible contacts, LAM contacts, other details (e.g. timeframe relative to onset)
 - Assessment of H2H
 - Poultry outbreaks in area
- Sources: **official & non official**
 - Internal databases & other internal data (WHO web updates, WERs, mission reports, internal communications)
 - External data: Promed Digest, scientific literature, media, other published reports
 - OIE and MoA-confirmed reports (for poultry outbreaks)
- Qualitative/descriptive assessment

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results: human to human

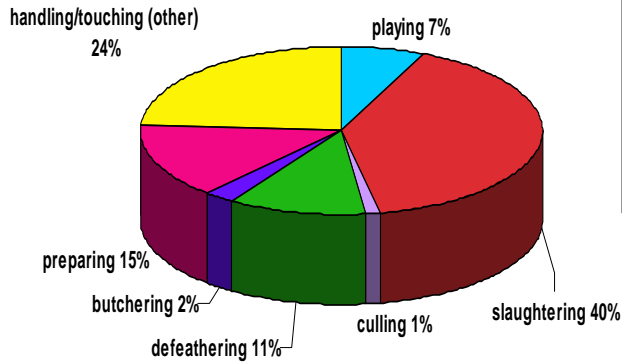


- Total cases: 385
- 8/11 cases also had contact with poultry

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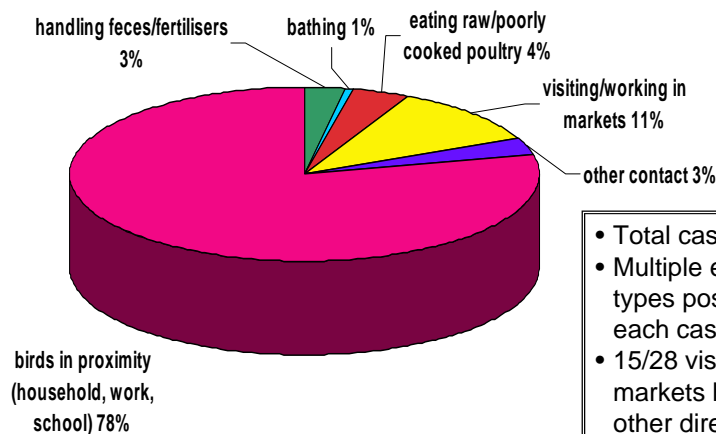


results: "direct" activities involving touching birds



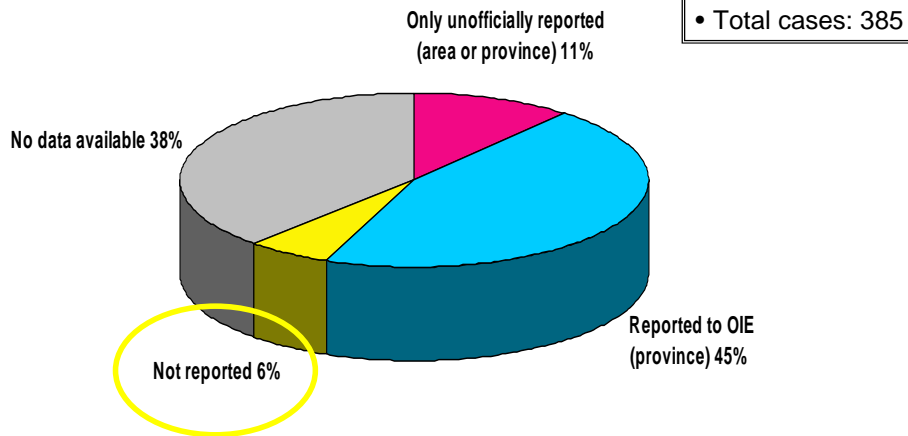
- Total cases: 142
- Multiple exposure types possible for each case
- Terminology can be difficult to define (e.g. "slaughter" vs. "butcher"...)

results: "indirect" activities **not** involving touching birds

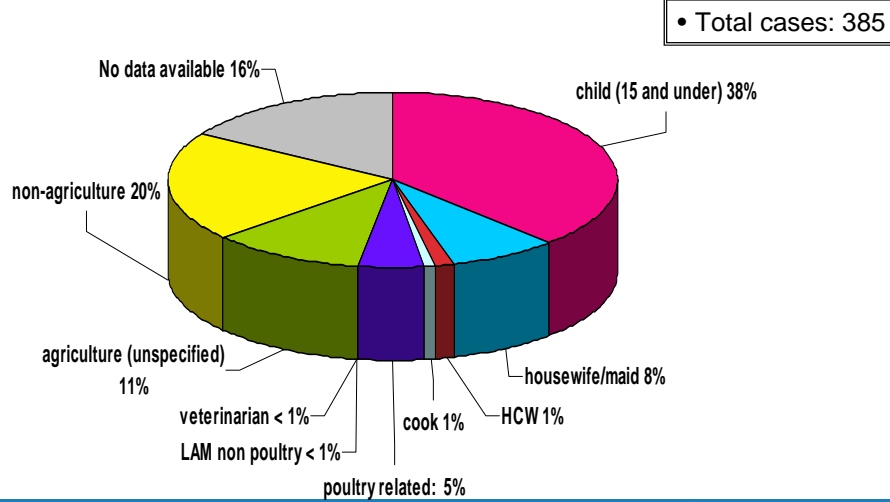


- Total cases: 262
- Multiple exposure types possible for each case
- 15/28 visiting markets had no other direct or indirect activities

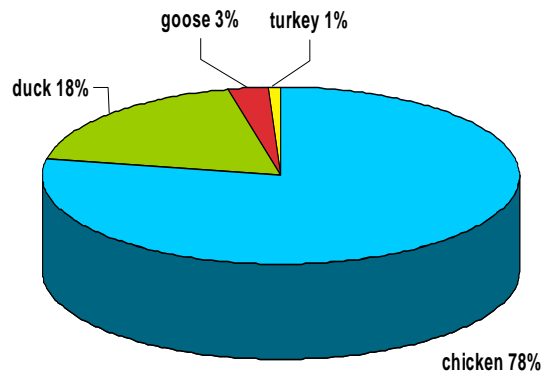
clinical disease reported in poultry in area



"occupational" exposure



poultry type



- Total cases: 207
- 24 cases mentioned > 1 type of poultry

other types of birds

- Other avian species mentioned as possible (but not necessarily likely) exposure sources:

- Pigeons (n = 13)
- Wild swans (n = 7)
- "Pet birds" (n = 5)
- Doves (n = 4)
- Swallows (n = 2)
- Wild birds (n = 2)
- Parakeet (n = 1)
- Pet eagle (n = 1)

The pathophysiology of H5N1 in these species is mostly unknown

- Fighting cocks mentioned in 13 cases in 3 countries

conclusions

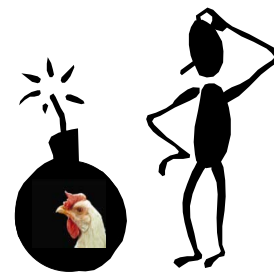
- "Direct" activities are important PH risks, but "indirect" exposure must be considered
 - Implications to time to hospitalisation & CFR when exposure part of definition
- Certain human sub populations are more at risk (likely differ by country)
 - Children? Housewives?
- "Occupational" risk appears minimal
 - May not appreciate true exposure
- Risk from food is minimal
 - handling/slaughter/preparation, skill level?
- Sector 4 & chickens do seem to be important to PH risk
 - differentiate AH risks- may be "rustic system" ducks?
- Disentangling data on specific risk activities is not currently possible

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constraints

- Caveat # 2 : Limited baseline for comparing risk variables (case control, KAP)
 - What is exposure for average population?
 - It's NORMAL to touch chickens, visit wet markets, have household poultry....
 - Q: What is different about cases?
- Nonstandardised data collected / available
 - Variables
 - 'no' vs no data
 - No standard definitions for activities
 - e.g. slaughter vs. butcher? "helped slaughter"?
 - Multiple exposures likely within each activity
 - No/limited data for first cases
- Data are frequently pre-analysed
 - Grouping of cases
 - Indirect/direct
 - Most likely exposure
- Practical aspects: What are we not asking that we should be asking?



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gaps and ways forward

- WHO epidemiological data collection tool
- Determine: what data required ⇒ develop rationale ⇒ inform practical measures (country-specific) ⇒ reduce PH risk
- Research:
 - Continue broad epi analysis (especially by country)
 - Compare exposure type with survival
 - Investigate national, ecological, inherent virus-related or host-related variables
 - Investigate modes of transmission

take home messages

- Control in animals is first step
- Consider indirect exposure
- Improve extent/quality of epi data collection & surveillance
- Develop practical rationale for PH measures and messaging that will have optimal impact
 - HOW????



Photo: K Prosenč



Photo: E. Mumford 2005

Thank you to:

- Mike Arget
- GIP
 - MAC
 - Keiji Fukuda
- MoH's of affected countries