Nancy A. Dreyer, MPH, PhD, FISPE
Quintiles Outcome, Global Chief of Scientific Affairs

Nancy Dreyer has more than 25 years of experience in the design, conduct and interpretation of epidemiologic research. She heads a team of researchers who design, conduct, and interpret observational and interventional research on comparative effectiveness and safety, outcomes research, and quality improvement programs.

Some of her high profile activities include serving as a senior editor of the AHRQ handbook, “Registries for Evaluating Patient Outcomes: A User’s Guide,” now in its second edition, and leading the GRACE Initiative which is developing guidance on Good Research Practices for Observational Studies of Comparative Effectiveness (www.graceprinciples.org).

In addition, she is a member of the Interim Steering Committee for the FDA’s new medical device epidemiology network (MDEpiNet), and is co-lead investigator for a study on developing new methodologies for pharmacovigilance, in collaboration with the European Medicines Agency. Prior to joining Quintiles, she was CEO of Epidemiology Resources, Inc. where she founded the peer reviewed journal, Epidemiology.

Nancy is a Fellow and Board Member of the International Society of Pharmacoepidemiology and also a director of the Drug Information Association.
Overview

• Influenza: sometimes serious, treatable, largely preventable

• Why are people afraid of vaccines, especially influenza?

• What can we do to alter the perception of the benefits and risk of flu vaccines?
H5N1 Avian Influenza

- Avian flu originates in wild aquatic birds
- When the H5N1 avian flu virus is passed to domestic poultry it can kill an entire population within 48 hours
- The H5N1 avian flu virus has infected humans causing severe disease, with ~60% mortality
- It’s still around.....
Avian Flu Registry Collaborators

4 Ministries of Health, 5 Physicians & 3 Academics

A Web-based Repository for Information on H5N1 Human Avian Influenza

This is an observational study of Avian Influenza A in humans. The registry collects information from many countries on symptoms, presentation, treatment, clinical course and survival.

Understanding Avian Influenza: Presentation, Prognosis and Treatments

This registry is designed as a collaborative study involving members of the international scientific and medical communities interested in better understanding the clinical course and effectiveness of current treatments of avian influenza in humans.

If you are a health professional who has treated a case that you believe is avian influenza, and you would like to learn how to participate in this registry, please contact info@avianfluregistry.org.

For more information, click here.

Presentations and Publications (in English)

www.avianfluregistry.org
### Registry Cases from 13 Countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Lab Confirmed</th>
<th>Possible or Likely</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MEDICAL RECORDS</strong></td>
<td></td>
<td></td>
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<tr>
<td>Azerbaijan</td>
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<td>9</td>
<td>18</td>
</tr>
<tr>
<td>Cambodia</td>
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<td>0</td>
<td>18</td>
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</tr>
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<td>1</td>
<td>2</td>
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<tr>
<td>Pakistan</td>
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<tr>
<td>Thailand</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td>84 (37%)</td>
<td>176 (27%)</td>
<td>260 (27%)</td>
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| **CLINICAL & FIELD INVESTIGATION RECORDS** |               |                    |       |
| Indonesia***     | 127           | 155                | 282   |
| Egypt            | 106           | 0                  | 106   |
| **TOTAL**        | 233 (57%)     | 155 (64%)          | 388 (60%) |

| **ONLY PUBLISHED CASE REPORTS** |               |                    |       |
| Bangladesh        | 1             | 0                  | 1     |
| China             | 26            | 1                  | 27    |
| Vietnam           | 55            | 1                  | 56    |
| **TOTAL**         | 82 (20%)      | 2 (1%)             | 84 (13%) |

*Cases from 1997, 2003, and 2010; WHO counts 2010 case as from China.*
*Likely Thai case based only on published case report*
*7 of these cases (6 lab-supported, 1 likely) are based only on published case reports*
Treating Influenza

Main findings

• Oseltamivir is most effective when used within 2 days of symptom onset, and even delayed initiation of treatment up to ~5 days) reduces the risk of death

• Even when controlling for other factors
  > No additional benefit was seen from adding corticosteroids or antibiotics
  > Respiratory failure was a strong predictor of mortality
  > Clade (which is a proxy for country) remains an important predictor of survival
  > Younger age gives a survival benefit
H5N1 Avian Influenza A

If there had been a vaccine, would information like this help convince people to take it?
Why are People Afraid of Vaccines?

• Vaccines are often highly complex, multi-component products manufactured from biological systems that are inherently variable over time and between manufacturers

• Routinely offered to everyone in a given pop’n via national programs. May achieve substantial coverage in given age groups relatively quickly

• Unique distribution channels make pharmacovigilance difficult

• Inevitable that rare or serious new illnesses will occur in temporal association with vaccination
Vulnerable Populations

• High priority targets include mothers, babies and the elderly.

• Worry about the number of injections and overloading the immune system

• Easy to follow principles of “first, do no harm.”
Difficult to Separate Fact from Fiction

• Challenging to assess risks, especially with widespread availability of information that is not always accurate

• Rumors persist, like MMR causing autism because of the preservatives in vaccines

  > After thimerosal was removed from MMR vaccines, cases of autism continued to increase, a finding replicated in several studies in different countries

Measles cases in England and Wales rose by 36% in 2008
Special Challenges for Influenza

• People don’t necessarily feel “at risk”

• Perception that flu vaccines are rushed through/not well tested

• Does it really benefit vulnerable populations?
  > E.g., elderly and immune-compromised?

• There have been well-publicized safety concerns
  > E.g., Guillain Barré, narcolepsy

• Not necessarily a convincing value proposition
  > E.g., is 60% effectiveness good?
Figure 2: Trends in seasonal vaccine uptake in target groups in Germany for seasons 2007/08 – 2010/11 according to GEDA09 and GEDA10 (filled symbols) and a follow-up sample of GEDA10 (empty symbols).  
1 Data source: GEDA09 (n=15,552) [12]; 2 Data source: GEDA10 (n=22,009); 3 Data source: GEDA10 (n=13,040); 4 Data source: GEDA follow-up survey (n=2,492).
We Need to Improve Communication on Benefits and Risks

1. Need systematic data collection and reporting, especially for subgroups not studied in RCT
2. Need more/better data about influenza consequences
3. Consistent and persistent communication outreach
Need systematic, cost-effective data collection, linkage & reporting

Technology options make large scale data collection and linkage a realistic approach, e.g.,

• Use **Electronic Health Records** from large integrated health delivery networks to link data on vaccines and effectiveness and safety

• Use **smart phones and tablets** to conduct cloud-based tracking by collecting data from health service providers

• Use **SMS text message** to follow-up on vaccines in rural settings with spotty internet access

• Use **social media** to assemble large cohorts of volunteers
Burden of Illness from Influenza

Percentages of Patient Visits for Influenza-like Illness and Number of Reported Deaths among Children for the 2012–2013 Season to Date and for Selected Previous Seasons.

Data are from the U.S. Outpatient Influenza-like Illness Surveillance Network, Centers for Disease Control and Prevention (http://www.cdc.gov/flu/weekly/fluactivitysurv.htm). Data for 2012–2013 are through January 12, 2013. NA denotes not available.
Better Information Will Promote Better Decision-making

“I long regretted bitterly, and still regret that I had not given it to him by inoculation. This I mention for the sake of parents who omit that operation, on the supposition that they should never forgive themselves if a child died under it, my example showing that the regret may the same either way, and that, therefore, the safer should be chosen.”

- Notes by Benjamin Franklin, an early critic of smallpox vaccination, after his son died of smallpox

Thank you!

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