What Psychiatrists Need to Know about Ebola and Other Epidemics

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Disclosure Outlines

• No relevant disclosures

• Need to be careful of “Intellectual name calling” in the name of good science or what the scientific data shows

• Remember doctor groups cannot agree on proper screening for prostate or breast cancer after years of double blind studies let alone screening for Ebola which is much less understood
Outline

– Role from other recent outbreaks
– General information
– Historical EBOLA review/comparison to current outbreak
– Psychiatric responses
– Take-home messages
Role for Psychiatry

[Rutherford] said that psychiatrists are needed . . ., to deal with mental health consequences associated the virus, such as posttraumatic stress disorder and stigma, which many patients and families in West Africa are now dealing with. However, he emphasized, the mental health consequences associated with Ebola are not geographically restricted. “There is also this exaggerated stigma and hyperanxiety about casual exposure [to Ebola] in the US... particularly in hospitals,”
Modern Day Disaster Models

• Have to overcome notions of hubris

• Have to overcome notion of “Could Not Happen Here”

• Models prove it can happen here
  – Hurricane Katrina (2007)
  – Avian Flu/H5N1 (2003-2008)
  – Swine Flu/H1N1 (2009 not 1918)
Spring of Fear: SARS 2003

• SARS emerged from jungles of central China.
• Killed 44 in **Ontario**, infected 375 others.
• **Vancouver** had a case caught early, no outbreak
• Forced thousands into quarantine (airport screening)
• Affected health system of greater Toronto
  – Hospitals closed
  – Patients denied visitors
  – Cancer treatments interrupted
  – Heart and other surgeries postponed
  – Clinics canceled
• Sick and dying suffered without consolation of their families.
• Dead disposed of quickly in the absence of family and friends.
Spring of Fear, Continued

- No ready diagnostic test.
- Produced economic disaster for Canada, Ontario, and greater Toronto.
- Totally devastating on family life.
- **65% of nurses in Ontario felt their health and safety were compromised** (per Ontario Nurses Association survey).
- 55% of nurses felt they and their work were not adequately respected and that the system didn’t care about them.
- “Nobody listens to nurses.”
Spring of Fear, Continued

- Nurses reported a greater impact on morale, psychological stress, and job dissatisfaction than MDs.
- Doctors found support outside hospital, while nurses relied more on peer support.
- Nurses felt less powerful, more helpless, more frustrated, less informed, and less involved in decision making than doctors.
- Nurses felt infection-control procedures were not strict enough. Physicians were satisfied with procedures.
Risk Factors for Development of Significant Post-epidemic Psychiatric Symptoms (Toronto) – PTSD, ASD, Reactive Depression, GAD, Substance Abuse

• Being a nurse.
• **Having to wear full protective clothing over long periods, which increased isolation.**
• Having children. (worries of infecting loved ones)
• Direct contact with known SARS or suspected SARS patients.
• Being quarantined.
Risk Factors (Toronto) continued

• Having “attachment insecurity” (i.e., anxious dependent with difficulty sharing thoughts and feelings)
• Experiencing job stress or conflict during and/or post epidemic
• Experiencing social rejection at work or home
• Coping through avoidance of crowds and colleagues
• Previously strained marriage
• Isolation
• Past history of anxiety, depression, or substance abuse, particularly alcohol; borderline personality traits.
7 Systemic Problems Seen in “Every Hospital and Government Agency”

- Communication
- Planning and preparation
- Accountability: Who is in charge? Who decides who does what? Who listens to who?
- Worker safety
- Systems: infection control, surveillance, independent safety inspections
- Resources: people, systems, money, labs, infrastructure
- **Precautionary principle: Action to reduce risk should not await scientific certainty (?)**
The Distribution of Cases in the Severe Acute Respiratory Syndrome (SARS) Outbreak in Ontario, Canada, from February 23 to June 12, 2003.

Source: The SARS Commission Executive Summary, Dec 2006 (AKA Spring of Fear)
Scope of Recent Outbreak

- First identified case March 2014(?)
- As of April 2015, there were 25,611 cases with **10,611 fatalities** in just Guinea, Liberia, Sierra Leone
- ~800 health care workers infected and ~ 500 Died (April 8th)
- 14 Doctor without boards (Died)
- United States has had 11 reported Ebola cases
- 30 new cases reported in first week in April 2015. No new cases in Liberia for roughly 21 days

Number of cases of Ebola viral disease (n = 398*), by week of symptom onset — Guinea, 2014

Again see a little bite of a wave pattern

http://www.cdc.gov/mmwr/preview/mmwrhtml/figures/m6325a4f1.gif
Locations of Previous Ebola Outbreaks as of 2007

| Table 1. Countries with reported cases of Ebola infections and years of occurrence |
|---------------------------------|----------------------------------|
| Sudan—1976, 1979, 2004           |
| Uganda—2000-2001                |
| South Africa—1996              |
| United States—1989, 1996*       |
| Philippines—1992*              |
| Ivory coast—1994               |
| Italy—1992*                    |
| England (lab tech studying viruses)—1976 |
| *Primate infections only.       |

Hemorrhagic Fever Viruses

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<th>Filoviridae</th>
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<td>• Marburg</td>
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<th>Arenavirida</th>
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<td>• New World Arenaviruses</td>
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<td>• Rift Valley fever</td>
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<td>• Kyanasur forest fever</td>
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Ebola is a . . .

*Filoviridae (Fee-loh-vee-ri-deh) virus*

- Single strand negative-sense RNA
  - Need polymerase to make mRNA
  - RNA viruses generally have high mutation rate
  - *May be hard to make vaccine for* (e.g. Hep C also RNA virus but so are most flu viruses)
  - Easy to kill? (e.g. bleach)

- Name comes from Latin (filum) for filament 17
Ebola Types

1. Ebola-Zaire (70-90% fatality rate, 1976)
2. Ebola-Sudan (40-70% 1979)
3. Taï Forest ebolavirus (formerly Ebola-Côte d’Ivoire, 1994)
4. Ebola-Reston (infects primates but not humans, 1989)
5. Ebola-Bundibugyo (2001)
Transmission Reservoir

- Unknown

- **Do not think** it is an insect vector (?)

- Likely contenders
  - **Bats (most likely)**
  - Non-human primates
  - Pigs/boars(? Other *Filoviridae use as reservoir*)
Transmission: 2 Requirements

- **Susceptible surface**
  - Mucus membrane
  - Broken skin

- **Infected secretions**
  - Blood
  - Saliva
  - Emesis
  - Sperm (?)
  - Feces
  - Sweat
  - Urine
  - Breast milk
  - “Bushmeat”?
Advice from the CDC

“Although Ebola virus has been detected in semen after patients have recovered, it is not known if the virus can be spread through sex (including oral sex). As a precaution, men who have recovered from Ebola are advised to abstain from sex (including oral sex) for three months. If abstinence is not possible, condoms may help prevent the spread of disease.

CDC Ebola Fact sheet 11/20/2014
“India Quarantines Ebola Survivor Because Of Infectious Semen”

“At the Delhi airport, the 26-year-old immediately told officials his medical history: He was successfully treated for Ebola in Liberia and released from a health facility back in late September. . . The man's blood tested negative for Ebola three times at the airport. But the virus was still lingering in one bodily fluid — his semen, health officials said”
CDC Prevention Tips . . . Paging Captain Obvious

- Careful hygiene (e.g. wash hands, avoid contact with blood and body fluids . . . Duh)
- Do not handle contaminated items
- Avoid burial rituals that require handling the body
- Avoid contact with bats and nonhuman primates or blood, fluids, and raw meat prepared from these animals
- Avoid facilities in West Africa where Ebola patients are being treated. The U.S. embassy or consulate is often able to provide advice on facilities
- **After you return, monitor your health for 21 days and seek medical care immediately if you develop symptoms of Ebola.**

CDC Ebola Fact sheet 11/20/2014
CDC Prevention Tips . . . Paging Dr. Obvious

- Wear appropriate Personal Protective Equipment (PPE).
- Practice proper infection control and sterilization measures (Great the 1998 or more relaxed 2007?)
- Isolate patients with Ebola from other patients
- Avoid direct contact with the bodies of people who have died from Ebola (unless that’s your job)
- Notify health officials if you have had direct contact with the blood or body fluids
Infection Timeline

- From time of infection - 2-21 days before becoming symptomatic
- Average time until symptomatic - 8-10 days
- Once symptomatic, people usually die within two to six days
- Survivors improve around two-week mark
- Convalescence can take 2-4 weeks
Identification

• Up to 3 days after becoming symptomatic before virus can become detectable

• Initial testing
  – Antigen-capture enzyme-linked immunosorbent assay (ELISA) testing
  – IgM ELISA
  – Serum neutralization test
  – Polymerase chain reaction (PCR)
  – Virus isolation
Initial Symptoms

- Fever (very nonspecific)
- Asthenia
- Myalgia
- Arthralgia
- Abdominal pain
- Diarrhea
- Headache
- Injected conjunctiva
- Maculopapular rash
- Bruising
- Sore throat

DDX
- Flu
- Malaria (Houston)
- Dysentery
  - Salmonella
  - Shigella
- Psychosomatic(?)
  - Headache
  - Fatigue
  - Muscle pains
- Typhoid fever
- Meningitis
- “Surgical Abdomen”
- Etc.

Advanced Symptoms

• Kidney failure
• Liver failure
• Hiccups
• Tachypnea
• Internal and external bleeding (DICish)
Treatment

• Primarily supportive
  – Intravenous fluids and balancing electrolytes (body salts)
  – Maintaining oxygen status and blood pressure
  – Treating other infections if they occur

• “Antibody” transfusions from survivors

• Experimental antivirals (none FDA approved)

• Vaccine (2 being developed/tested)

• Containment/isolation
Post Virus Complications?

• Joint pain
• Muscle pain
• Vision problems
Kikwit

- 164 identified cases - of which 134 died (82%)
- 63 health workers infected - of which 47 died (75%)
- Approximately 40% of cases were in health workers
- **In total, of the 36 healthcare workers on the isolation units, 8 died (22%)**
Kikwit

• City in the Democratic Republic of Congo, with population estimated at 200,000–400,000 inhabitants.

• The city had two hospitals.
  – Kikwit General (350 beds)
  – Kikwit II (100 beds).

• When the Ebola outbreak initially occurred, cause was not initially identified (e.g. mistaken for bacillary dysentery)
Kikwit

• Late April - A hospital employee was operated on for what was thought to be an acute abdomen.

• One week later - The operating staff began showing symptoms and dying.

• Many patients and staff members fled the hospital.

• The only people who remained were volunteer health workers and patients too sick to leave (e.g. TB ward).

• On May 4 - An isolation unit was created, but not turned into a truly effective unit until May 11-14 due to limited resources and knowledge. (93 new cases after this date)
Kikwit

The hospital had limited supplies of:
1. Protective-barrier supplies (masks, gowns, bed covers).
2. Fresh water (needed diesel fuel to power the pumps).
3. Electricity.
5. IV tubing and supplies.
Kikwit Hospital Management

1) Staff and their families were frequently isolated by the community

2) There was tremendous stress on staff

3) Work slow downs and threats of staff strikes

4) The media could become more of a hindrance than a help in preventing panic and disease spread

5) In part, supplies ran short because other hospitals did not want to share material or staff

6) The response would need to be maintained for an extended period of time. (nine months)
De Roo Study Survey Among Survivors

Psychological responses before diagnosis confirmed

- 50% fearful of being seriously ill
- 47% in some form of denial
- 21% fearful of stigmatization and isolation
- 15% experience shame

Study Survey Among Survivors Continued

• 80% shared anxiety with peers and family members

• **35% try to flee family and neighborhood**

• **9% minimize symptoms and exposure history when they presented to medical personnel**

FYI 35% were hospital staff

Psychological Experience once Diagnosed with Ebola

All patients reported experiencing fear of various types
1. 56% were afraid of suffering
2. 53% were afraid of dying
3. 41% were fearful of isolation from relatives
4. 23% feared abandonment from family
5. One individual was fearful of being placed on the isolation unit because he felt he was misdiagnosed

Support of Patients

- 50% believed they would recover
- 85% of patients felt they received adequate support from medical staff
- 70% from family member
- 24% from another patient
- All patients reported receiving comfort from spiritual beliefs
- Most difficult experience was loss of friends and colleagues, many of whom died next to the survivor


Staff Psychological Issues

Staff working on the isolation units reported becoming psychologically isolated and stigmatized

1. Family (afraid of becoming ill, mothers could not nurse)

2. Neighbors (rumor that healthcare workers were intentionally killing people, not able to shop at local markets)

3. Medical staff not working on the isolation unit avoided those who did

Additional Staff Stress

Staff were taking care of colleagues who were infected and dying

- This was a constant daily reminder of personal risks
- This resulted in either isolating from sick colleagues or engaging in denial of own risks
- Infected staff who survived experienced terrible survivor’s guilt


Staff Stress

- **Many staff did well during the initial crisis**, but begin to show signs of psychological stress when the crisis became more routine.
- Post-emergency letdown even though crisis continues
- At that point, had to face issues of daily living (buying food), daily safety issues
- Less busy with more time to reflect
- Have time to appreciate loss of colleagues
- **Anticipation waiting for next wave of illness**


Helpful Factors

• Maintaining a sense of professionalism

• If an individual loses their professional identity, they are likely to be devastated if it was the only motivating or sustaining factor

• Need to maintain identity through
  – positive teamwork
  – support from colleagues
  – shared responsibilities
  – recognition of sacrifices made in the line of duty

First Case Parallels

The first case in a US hospital system was not appropriately identified

- Seen, sent home, then came back
- First world problem of EMR(?)s
- **Did not know or lied about exposure**
- Lived with a family with children, which created great community concern
First Case Parallels

Not appropriately managed

– Not initially wearing protective clothing
– Shortage of protective clothing
– Even when had clothing, not wearing appropriately (e.g. neck exposed, using tape)
– No clear training
– Nurses blamed for doing it wrong
– No initial CDC oversight, no Surgeon General
First Case Parallels

• Staff became infected
  – Transferred to specialty hospital (NIH)

• Community worried about staff being among them (e.g. infected nurse flew to Cleveland)

• Self-monitoring ineffective(?)
  – Quarantined family needed guards
  – Hard to track all exposure (e.g. school children)
  – Staff who reported early symptoms allowed to fly with infection control permission even when symptomatic (low-grade fever)
First Case Parallels

- Hospital with case saw dramatic reduction in admissions resulting in economic loss
- Surrounding hospitals saw a surge in admissions
- Shortages due to surrounding hospitals not releasing supplies while ground zero hospital using more than expected
  - Just-in-time supply network
  - Additional supplies not ordered because “first case contained” until two staff became infected
“Ebola Still Weighs on Texas Hospital”
Presbyterian Sees Patient Visits Decline Even as No New Cases Have Emerged

“In a regulatory document for bondholders Wednesday, Texas Health disclosed that net revenue at Presbyterian from Oct. 1 through Oct. 20 was down $8.1 million, or 26%, compared with an average figure during the previous nine months. Emergency-room visits fell 53%, surgeries fell 25%, and the hospital’s average daily occupancy fell to 337 from 428 for the period, Texas Health disclosed. . . Even in the medical offices that orbit Presbyterian, patient volumes have dropped as much as 15%, according to doctors there.”
First Case Parallels

• Distrust in the government
  – Told would not happen here
  – If did, would not spread
  – We know how to treat
  – Confusion on message with states and federal government disagreeing
  – Other countries taking stricter precautions (e.g. Belize)

How do you balance a message of confidence and appropriate concern?
Evidence based?

• Was she asymptomatic (Yes/?/No?)
  – Airport screen elevated temperature (false negative, similar problem SARS screening)
  – Potential exposure (absolutely)

• At Kikwit: “In the emergency room, an algorithm was developed based on the presence of physical symptoms and history, such as exposure history, injection of the conjunctivae and presence of bloody diarrhea, to determine who would be admitted to the isolation unit. The algorithm was based on readily identifiable symptoms and did not rely on labs.”
Harvard School of Public Health Study
October 20, 2006 regarding Flu

- 78% of population would follow public health directives to curtail activities for one month.
- 98% would avoid people infected with flu.
- 85% would isolate entire family if any one member became ill.
- 24% would have no one to care for them if they became ill.
- 26% would experience severe financial problems if they missed even 7-10 days of work.
- 57% would be in serious financial trouble if they missed one month of work.

“Back in New York, the suffering I'd seen, combined with exhaustion, made me feel depressed for the first time in my life. I slept long hours and had a hard time connecting with old friends. I became fearful of the incredibly remote possibility that I could become sick and infect my fiancée, the person I love the most. . . Twice a day, I held my breath in fear when I put a thermometer in my mouth. I did all this worrying well before I ever had a fever or showed any symptoms of Ebola . . . My activities before I was hospitalized were widely reported and highly criticized. People feared riding the subway or going bowling because of me. . . and [the media] fabricated stories about my personal life and the threat I posed to public health, abdicating their responsibility for informing public opinion and influencing public policy.”

Craig Spencer, M.D., M.P.H Having and Fighting Ebola — Public Health Lessons from a Clinician Turned Patient. NEJM
What Media Reported

- Possibly symptomatic on Tuesday (“sluggish”)
- NYC’s health commissioner, Mary Bassett, said Spencer spent most of his time in his apartment, limiting his contact with people, but **he had gone on a 3-mile jog; taken the A, 1 and L subway trains; visited the High Line in Manhattan; stopped by the Blue Bottle Coffee Shop near the elevated park; and went to The Meatball Shop on Greenwich Avenue.** He also took an Uber delivery car to The Gutter bowling alley in Brooklyn on Wednesday night, where he bowled with some friends.
- "At the time he was at the bowling alley, he had no fever," Bassett stressed.

Who or What is the Right Thing?

- Dr. Spencer thought his risk of exposure was minimal while in Africa.
- Spencer participated in the enhanced screening at JFK and did not have fever or other Ebola symptoms (false negative).
- Doctors Without Borders said: “Self-quarantine is neither warranted nor recommended when a person is not displaying Ebola-like symptoms.”
- Military did 21-day isolation for troops returning.
- It cost New York City $20 million to respond and treat Spencer.

http://nymag.com/2014/11/16/schumer-to-obama-reimburse-nyc-for-20m-ebola-treatment/
http://nymag.com/2015/02/25/ebola-doc-speaks-out-i-was-never-a-public-hazard/
Craig Spencer, M.D., M.P.H. Having and Fighting Ebola — Public Health Lessons from a Clinician Turned Patient. NEJM
Factors in Disasters that Produce Especially High Rates of Severe and Persistent Psychological Effects

• Widespread injuries.
• Loss of life/fear of death.
• Massive property damage or disruption of social fabric.
• Massive financial strain on community or individuals.
• Prolonged helplessness.
• Uncertainty of future.
• Separation from family.
• Undefined prolonged threat (virus, radiation, etc.).
When the System is Overwhelmed, continued

- **Staff support services need to be:**
  - Flexible
  - Private
  - Collegial
  - Unintrusive

- **Administrators need to understand higher stress levels, particularly in nurses, and that healthcare workers were more concerned with health of families.**
Random negative interference by distant or unknown administrators was a significant negative stress on staff and magnified, rather than reduced, problems.

Let the teams work and support them.

Solve problems – don’t control.

The more negatively staff viewed administration, the less likely they were to reach out and ask for help or advice (instrumental social support).