Grant Public Health Potpourri

Grant-Adams Medical Society Meeting
Monday, April 14th, 2008

Alexander L. Brzezny, MD, MPH, FAAFP
Health Officer
Grant County Health District

CONFLICTS OF INTEREST: nothing to disclose
OBJECTIVES

• Through numbers and comparisons, reaffirm that Grant (and Adams) County is indeed a “whole another country.” (didn’t we know?)
• Outline why public health challenges are healthcare challenges.
• Discuss the “superbug” and its continued rise to fame also in our backyard.
• Honorably mention the pandemic flu.
CASE #1: deli sandwich anyone?

- February 2007: a case of Salmonella reported to health district (serovar Senftenberg).
- April 2007: a case of Salmonella reported to health district (serovar non-typhi, ID pending).
- Search: whole state of California: 47 cases of Salmonella serovar Senftenberg in 2004.
- In 2007, England and Wales had an outbreak with a total of 30 cases...
- May 2007: two cases of Salmonella (serovar Senftenberg) reported to health district.
CASE #1 (Quiz)

- What (where) is Senftenberg?
- Do we have an outbreak?
- What would you do next?
  - Commence an investigation?
  - Call the state department of health?
  - Call the CDC?
  - Stop eating food?
  - All of the above?
Senftenberg, Brandenburg, D, EU
• Epi investigation: highest probability of the source a restaurant in ML (June)
• Food prep process investigated step by step: meat slicer cultures + for S.S.
• So far: **19 cases** of Salmonella Senftenberg Dec 2006-Mar 2008
• Cost to date: ~$30,000
## GC PERTUSSIS (2005-2008)

<table>
<thead>
<tr>
<th>YEAR</th>
<th>Cases</th>
<th>Contacts</th>
<th>Prophylaxed Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>4</td>
<td>20</td>
<td>20 (100.0%)</td>
</tr>
<tr>
<td>2006</td>
<td>1</td>
<td>8</td>
<td>7 (87.5%)</td>
</tr>
<tr>
<td>2007</td>
<td>4</td>
<td>240</td>
<td>222 (92.5%)</td>
</tr>
<tr>
<td>2008</td>
<td>2</td>
<td>82</td>
<td>75 (91.2%)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>11</td>
<td>350</td>
<td>324 (92.6%)</td>
</tr>
</tbody>
</table>

- Approximately **30 contacts per case**
- Approximately **$10,000 per case**
- Cost of **DTaP (or Tdap) 10-pack: $12.65-$13.75 ($30-75-$31.75); CDC $$
- Tdap recommended once in a lifetime 11-12y.o. & once 19-65y.o. (ACIP)
### N. Meningitidis (2005-2008)

<table>
<thead>
<tr>
<th>YEAR</th>
<th>Cases</th>
<th>Contacts</th>
<th>Prophylaxed Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>1</td>
<td>8</td>
<td>8 (100.0%)</td>
</tr>
<tr>
<td>2006</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2007</td>
<td>1</td>
<td>148</td>
<td>148 (100.0%)</td>
</tr>
<tr>
<td>2008</td>
<td>2</td>
<td>67</td>
<td>65 (97.0%)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>4</td>
<td>223</td>
<td>221 (99.1%)</td>
</tr>
</tbody>
</table>

- Approximately 35 contacts per case
- Approximately $14,000 per case
- Tetravalent MENACTRA® to 11-18 y.o. ($75.35 for 5-pack) with Tdap
## GC VARICELLA (pedi: 2005-2008)

<table>
<thead>
<tr>
<th>YEAR</th>
<th>Cases</th>
<th>Contacts</th>
<th>Prophylaxed Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>110</td>
<td>600+</td>
<td>300 (GCHD only)</td>
</tr>
<tr>
<td>2007</td>
<td>3</td>
<td>20+</td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>9</td>
<td>40+</td>
<td></td>
</tr>
</tbody>
</table>

- 2006 Outbreak affected Warden, Ephrata, Moses Lake school districts
- 2006 Outbreak: $30,000
<table>
<thead>
<tr>
<th>YEAR</th>
<th>Cases</th>
<th>Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>3</td>
<td>48</td>
</tr>
<tr>
<td>2006</td>
<td>1</td>
<td>58</td>
</tr>
<tr>
<td>2007</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>2008</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>6</td>
<td>126</td>
</tr>
</tbody>
</table>

- Approximately 21 contacts per case
- Approximately $22,305 in TST’s and CXR’s to detect one case
- Cost per ONE case prevented $10,627 for CXR’s and $66,750 for TST’s

Dasgupta et al. 2005
GC LATENT TB (LTBI)

2006: 210 LTBI cases
2007: 228 LTBI cases
GC LATENT TB (LTBI)

Region of Origin

<table>
<thead>
<tr>
<th>Year</th>
<th>Africa</th>
<th>Asia/South Pacific</th>
<th>Europe</th>
<th>Latin and South America</th>
<th>North America</th>
<th>Russia/Ukraine</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
GC LATENT TB (LTBI)

Average Age Comparison

- **NATIVE**
- **FOREIGN**


Average Age:
- 2001: 30
- 2002: 35
- 2003: 30
- 2004: 35
- 2005: 30
LTBI Treatment Completion rates in GC by Medication

Medication Specific Completion

Percentage of Patients

2001 | 2002 | 2003 | 2004 | 2005*

INH: 50% ± 10% | 60% ± 10% | 70% ± 10% | 80% ± 10% | 90% ± 10%
RIF: 80% ± 10% | 90% ± 10% | 100% ± 10% | 100% ± 10% | 100% ± 10%
Completion Rates for LTBI in GC by Country of Origin

<table>
<thead>
<tr>
<th>Year</th>
<th>Foreign Born</th>
<th>Native Born</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>35.0</td>
<td>40.0</td>
</tr>
<tr>
<td>2002</td>
<td>45.0</td>
<td>50.0</td>
</tr>
<tr>
<td>2003</td>
<td>55.0</td>
<td>60.0</td>
</tr>
<tr>
<td>2004</td>
<td>65.0</td>
<td>70.0</td>
</tr>
<tr>
<td>2005*</td>
<td>75.0</td>
<td>80.0</td>
</tr>
</tbody>
</table>

*Data for 2005 is estimated.
## ANIMAL BITES /VECTOR CTRL.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>Cases (bites)</th>
<th>PEP recommended</th>
<th>Animals tested (bats, cats, skunks, dogs, etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>145</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>2007</td>
<td>116</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>TOTAL</td>
<td>261</td>
<td>9</td>
<td>16</td>
</tr>
</tbody>
</table>

- There are no known rabies cases in humans or animals in Grant Co.
- There was a cat rabies case in Walla Walla in 2002.
- Any bat exposures = PEP if not available for testing.
- Any raccoon or other wild terrestrial carnivore = PEP if not available.
- Therefore, DON’T MESS WITH BATS, RACOONS, etc. (and Texas).
Healthcare Professionals’ Role

• TIMELY REPORTING
  ▪ immediate VS. within 3 days VS. later (consult the list of notifiable conditions: http://www.doh.wa.gov/Notify)

• PROPER TEST SELECTION
  ▪ CDC laboratory definition criteria: IgM for hep A, etc.

• PROPER TREATMENT
  ▪ Health Officer Directive
  ▪ CDC /ACIP, AAP Red Book
NEED YOUR HELP

WE NEED YOU!
2008-2010 CHALLENGES

- Department of Health submitted three performance measures to the legislature:
  - #1 INCREASE USE OF UNDERUTILIZED VACCINES (i.e. DTaP, Tdap, pedi FLU, VZV)
    - plus INCREASE PARTICIPATION AND USE OF CHILD PROFILE®
  - #2 IMPROVE TIMELY AND COMPLETE REPORTING, INVESTIGATION OF NOTIFIABLE CONDITIONS
  - #3 COMMUNITY OBESITY INTERVENTIONS
- **Chlamydia—reported disease (15-24; per 100K)**
  - Grant: 2,083
  - Adams: 1,994
  - Yakima: 3,435
  - Lincoln: 824
  - SE Asia: 4,289
  - EU: ~522
- **Chlamydia-treated (15-24)**
  - Grant: 92%
  - Adams: 77%
  - SKing: 96%
• Influenza Vaccine (>65)
  - Grant: 63%
  - Adams 65%
  - Jefferson: 78%
  - Germany: 60%
• Health Insurance (18-64)
  - Grant: 73%
  - Adams: 65%
  - S.King: 85%
• Adult Overweight /Obese
  - Grant: 67%
  - Adams: 71%
  - San Juan: 51%
  - Ireland: 57%
• Physical Exercise (>18)
  - Grant: 61%
  - Adams: 64%
  - S. Juan: 75%
- Diabetes (>18)
  - Grant: 9%
  - Adams: 10%
  - SKing: 6%
  - S. Juan: 3%
  - India: 6%
Teen Birth (per 10K)

- Grant: 38
- Adams: 59
- SKing: 10
- Japan: 4
- UK: 33
- Bulgaria: 59
- **PEDI Unintentional Injury (per 100K)**
  - Grant: 290
  - Adams: 260
  - Island: 155
  - C-Doug: 160
  - S.Korea: 256
  - UK: 61
- Colorectal CA screen (>50; FOB or endo)
  - Grant: 53%
  - Adams: 53%
  - Whitman: 67%
<table>
<thead>
<tr>
<th>Location</th>
<th>Expected Years of Life at 20 y.o.</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Juan</td>
<td>57</td>
</tr>
<tr>
<td>Whitman</td>
<td>56</td>
</tr>
<tr>
<td>Island</td>
<td>54</td>
</tr>
<tr>
<td>Seattle-King</td>
<td>53</td>
</tr>
<tr>
<td>Kittitas</td>
<td>53</td>
</tr>
<tr>
<td>Whatcom</td>
<td>51</td>
</tr>
<tr>
<td>Jefferson</td>
<td>51</td>
</tr>
<tr>
<td>Skamania</td>
<td>54</td>
</tr>
<tr>
<td>Chelan-Dougler</td>
<td>54</td>
</tr>
<tr>
<td>Kitrep</td>
<td>51</td>
</tr>
<tr>
<td>State</td>
<td>51</td>
</tr>
<tr>
<td>Klickitat</td>
<td>58</td>
</tr>
<tr>
<td>Somanishk</td>
<td>58</td>
</tr>
<tr>
<td>Clark</td>
<td>58</td>
</tr>
<tr>
<td>Thurstan</td>
<td>58</td>
</tr>
<tr>
<td>Walla Walla</td>
<td>58</td>
</tr>
<tr>
<td>Lincoln</td>
<td>58</td>
</tr>
<tr>
<td>Clallam</td>
<td>58</td>
</tr>
<tr>
<td>Skeqit</td>
<td>58</td>
</tr>
<tr>
<td>Bentum-Franklin</td>
<td>58</td>
</tr>
<tr>
<td>Tocum-Pierce</td>
<td>58</td>
</tr>
<tr>
<td>Garfield</td>
<td>58</td>
</tr>
<tr>
<td>Columbia</td>
<td>58</td>
</tr>
<tr>
<td>Spokane</td>
<td>48</td>
</tr>
<tr>
<td>Asahtin</td>
<td>47</td>
</tr>
<tr>
<td>Louis</td>
<td>47</td>
</tr>
<tr>
<td>Maren</td>
<td>47</td>
</tr>
<tr>
<td>Okanogen</td>
<td>47</td>
</tr>
<tr>
<td>Cowlitz</td>
<td>47</td>
</tr>
<tr>
<td>Adams</td>
<td>46</td>
</tr>
<tr>
<td>Grant</td>
<td>46</td>
</tr>
<tr>
<td>Yakima</td>
<td>46</td>
</tr>
<tr>
<td>Pacific</td>
<td>46</td>
</tr>
<tr>
<td>Northshore Tri</td>
<td>45</td>
</tr>
<tr>
<td>Greys Harbour</td>
<td>45</td>
</tr>
<tr>
<td>Wahkanum</td>
<td>44</td>
</tr>
</tbody>
</table>

- **Grant**: 46
- **Sea-King**: 53
- **S. Juan**: 57
- **Mexico**: 55
- **Iceland**: 61
Proportion of *S. aureus* nosocomial infections resistant to oxacillin (MRSA)\(^1\)

Community MRSA (CA-MRSA)

- Distinct and genetically different S. aureus.
- In L.A., CA-MRSA was the most common cause of skin infections coming seen in emergency rooms.
- A Houston study demonstrated that CA-MRSA accounted for 56% in 2000-2001, 57% in 2002 and 78% in 2003 of hospitalized children.
- 2007 random sample of HEALTHY individuals (Chicago): 4% MRSA colonization (carriers).
- Estimated overall U.S. MRSA carriers: 2.6%; healthcare: 4.6%
## Community-Acquired MRSA

- **Bacteriologic characteristics**
  - Resistant to fewer antimicrobial classes
  - Different toxin genes (Panton-Valentine leukocidin)
  - Gene complex = Staph cassette chromosome *mec*
    - Staph cassette chromosome *mec* (contains the methicillin-resistance gene)
      - *SSCmec* type IV and V
  - Small number of molecular strains identified by fingerprinting
  - Can survive on some surfaces for > seven months
Reservoir for the Spread of Antibiotic Resistant Pathogens

Recognized by Microbiology Cultures

Colonized Patients

Slide courtesy of Rachel Gorwitz and Greg Moran
Washington Two Year MRSA Trend

Antibiotic Resistance Sentinel Network 2003 - 2004

<table>
<thead>
<tr>
<th></th>
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<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>All patients</td>
<td>28%</td>
<td>33%</td>
<td>36%</td>
<td>43%</td>
</tr>
<tr>
<td>Outpatients</td>
<td>19%</td>
<td>28%</td>
<td>30%</td>
<td>35%</td>
</tr>
</tbody>
</table>
Current Study

- Washington State Department of Health North Central Region 7
  - Five counties:
    - Chelan
    - Douglas
    - Grant
    - Kittitas
    - Okanogan
  - Data sources:
    - 11 hospitals
    - 3 clinics
    - 2 labs
  - 2003–2006 medical records
Region 7 MRSA Trend
Summary:

- 2049 cases
- 47% female, 53% male
- Mean age = 43.8 years
Region 7 MRSA: In- vs. Outpatient

- Inpatient: 81.16%
- Outpatient: 18.84%
Region 7 MRSA: In- vs. Outpatient by Age

Age Groups
- Children (0–10)
- Adolescents (11–20)
- Young adults (21–40)
- Mid adults (41–60)
- Older adults (60+)

Number of Cases

- Inpatient
- Outpatient
Region 7 MRSA: Type by Age

Age Groups
- Children (0–10)
- Adolescents (11–20)
- Young adults (21–40)
- Mid adults (41–60)
- Older adults (60+)

Number of Cases
- SST
- Respiratory
- Blood
- Urine
- Nasal
Antibiotic Resistance

“Awareness of local resistance patterns more important than categorizing community vs. hospital-acquired MRSA.”

CDC publication: Strategies for Clinical Management of MRSA in the Community
MRSA—Antimicrobial Resistance


- Erythromycin: DOH 96%, Region 7 93%
- Ciprofloxacin: DOH 82%, Region 7 66%
- Clindamycin: DOH 26%, Region 7 31%
- Gentamicin: DOH 7%, Region 7 3%
- Rifampin: DOH 2%, Region 7 2%
- Trimeth/ Sulfa: DOH 5%, Region 7 2%
- Tetracycline: DOH 5%, Region 7 7%

Legend:
- Green: DOH
- Brown: Region 7
Region 7: Multiple MRSA Infections

Multiple Infections

Cases

Number of Infections

- 171 cases of 2 infections
- 34 cases of 3 infections
- 7 cases of 4 infections
- 3 cases of 5 infections
- 2 cases of >5 infections
IT'S TIME AGAIN FOR EVERYONE'S LEAST FAVORITE GAME... FEAR OF THE WEEK!

TODAY, WE WELCOME JOHN SMIDDLESDORF, A DAIRY FARMER FROM WISCONSIN... JOHN, GIVE 'ER A SPIN!!

BIRD

FLU
PANDEMIC AND ALL-HAZARDS PREPAREDNESS
Grant County Healthcare Emergencies Alliance
Proposed healthcare re-organization*

- **Walk-In Individuals**
- **Phone Calls**
- **“STAY HOME”**
- **“GET SEEN”**
- **EMS**
- **HOSPITAL Separate Entry + TRIAGE**
- **MORGUE or FREEZER**
- **TRANSFER**
- **RECEIVING FACILITY**

*GCHD, 2006-2008
GRANT COUNTY PROPOSED TRIAGE SUBDIVISIONS

Ephrata 10K
Coulee City 1.2K
Grant Orchards
Lakeview Park
¼ Royal City 1K
Soap Lake 4K
Stratford 0.05K
Wilson Creek 0.3K
POP. 16,550

Grand Coulee 1.7K
Electric City 1K
Hartline 0.25K
Fordair
POP. 3,000+

Crescent Bar
George 0.7K
Quincy 12K
Trinidad
Vantage
Winchester
POP. 12,700+

Quincy Area
Triage (Quincy)

South County
Triage (Mattawa)

Ephrata
Area Triage (Ephrata)

Moses Lake Area
Triage (Moses L.)

Marlin/Ruff/Krupp 0.35K
McDonald
Moses Lake 32.5K
1/3 Royal City 1.34K
Stratford 0.051K
Sand Dunes
Wilson Creek 0.3K
Warden 4K
Wheeler
POP. 38,541+

Beverly 0.6K
Crab River
Desert Aire
Mattawa 10K (Est.)
¼ Royal City 1K
Scha worm
Smyrna
EST. POP. 11,600+
Triage Facility Layout

- **ENTRY**
- **AMBULANCE DOCK**
- **TRIAGE**
- **WAIT AREA (3ft of space)**
- **AMBULATORY TREATMENT AREA**
- **NON-AMBULATORY TREATMENT AREA**
- **EDUCATION AND DISCHARGE AREA**
- **PHARMACY**
- **LABORATORY**
- **LOCK DOWN AREA**
- **ADMIN COMM PHONES**
- **STORAGE**

**Directions:**
- From **ENTRY** to **AMBULANCE DOCK**
- From **AMBULANCE DOCK** to **TRIAGE**
- From **TRIAGE** to **AMBULATORY TREATMENT AREA**
- From **AMBULATORY TREATMENT AREA** to **NON-AMBULATORY TREATMENT AREA**
- From **NON-AMBULATORY TREATMENT AREA** to **STORAGE**
- From **STORAGE** to **EXIT**
Spectrum of Disease

- Fever
- >80% skin and soft tissue infection (SSTI)
  - Abscesses
  - Furuncles
  - Carbuncles
  - Cellulitis
- Local swelling, redness, heat
- Painful lesion or pimple with or without drainage
- Misdiagnosed as spider bites
(Quick) Case #3

If you saw this lesion on the star high school football player's arm three days before the next game, what would you recommend?

A. Immediate medical evaluation and care
B. Cultures and antimicrobial sensitivity testing of any isolates of *Staph. aureus*
C. Consideration of restricting his playing in the game
D. All of the above
Spectrum of Disease

- Severe / invasive infection sites
  - Lungs
  - Bloodstream
  - Bone
  - Joints
  - Surgical sites

- Complications of preceding SSTIs or viral respiratory tract infections (especially flu)

- Invasive MRSA is a REPORTABLE DISEASE
MRSA (the bad and the ugly)
MRSA: Direct Transmission

• Usually spread by physical contact
  - Hands
  - Wound
MRSA: Indirect Transmission

Touching of contaminated objects

- Sheets
- Towels
- Clothes
- Equipment
- Dressings
- Bar soap
- Personal items (ex: razor)
Community-Acquired MRSA

- Rapid emergence of CA-MRSA
- Patients presenting to emergency departments or clinics in increasing numbers
- Epidemiological definition
  - Onset in the community
    - No recent hospitalization
    - No out-patient surgery
    - No residence in long-term care facility
    - No dialysis
    - No invasive medical devices
Colonization

• Nasal colonization = 0.8% (non-institutionalized individuals)

• Few data on the association between MRSA colonization and infection in the community

• MRSA colonization occurs:
  ▪ Nose
  ▪ Pharynx
  ▪ Axilla
  ▪ Rectum
  ▪ Perineum

• Nasal colonization not always present in individuals with active MRSA infection
Colonization (cont.)

- Few data on the effectiveness of decolonization to prevent infection in the community or in families.
- Healthcare: intranasal mupirocin can be effective at eliminating colonization in the short term.
- Recolonization is common.
- Compliance is poor in community setting.
- Resistance develops to topical and systemic agents.
Protect Yourself: Personal Hygiene

- Wash hands thoroughly with soap and water.
- Use alcohol-based hand gel (>62%) if soap and water are not available.
- Take regular baths or showers.
- Do not share personal hygiene items.
If You Have MRSA: No Pools!

• Avoid whirlpools, hydrotherapy pools, cold tubs, swimming pools if you have an open wound

• **Wash your hands!**
MRSA and Your Pet
Prevention Is Most Important

The single most important thing you can do to prevent the spread of disease:

WASH YOUR HANDS!
CA-MRSA in your community

- 4.38 cases per 1000 (E-ta, ML) or about 1.5 to 2.8 cases per 1000 per year
- Total cases under-reported plus other labs not fully traceable = estimate 1/500 to 1/200 to cases (0.2%-0.5%) per year
- 35.2% Staph in Grant County is MRSA (2008, year-to-date)
- CA-MRSA is HERE TO STAY
GOWNS PREVENT HCWs FROM CONTAMINATING THEIR CLOTHES / HANDS

14 (40%) of 35 HCWs’ gowns were culture (+) for MRSA and ARE on exiting room (2-200 colonies recovered). Clothing underneath was culture (-). 11 (69%) of 16 HCWs wearing freshly laundered white coats had detectable contamination. 3 of 11 developed (+) hand cultures after touching the white coat.