Grant Public Health Potpourri

Grant-Adams Medical Society Meeting

Monday, April 14th, 2008

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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?

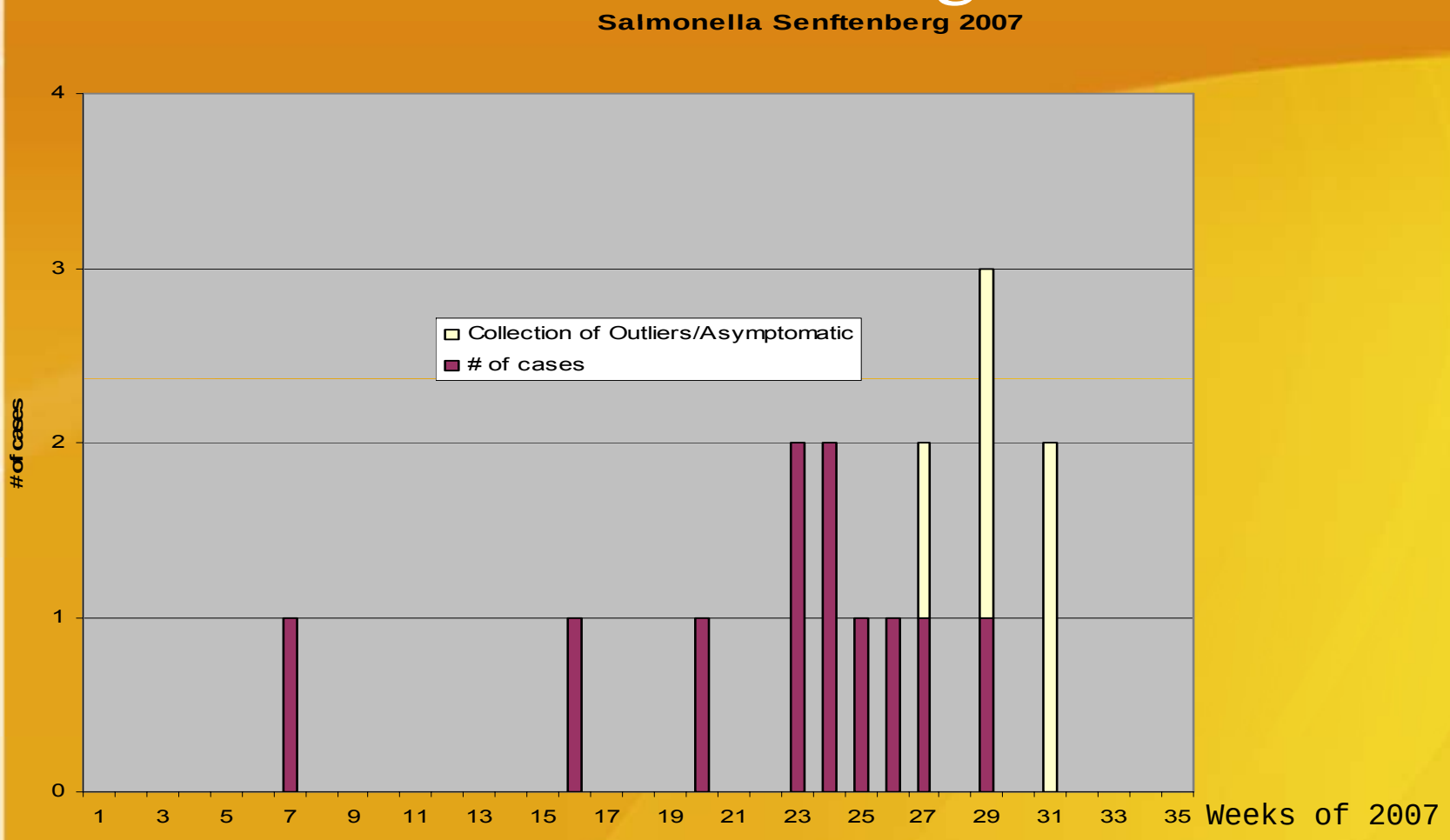
- February 2007: a case of Salmonella reported to health district (serovar Senftenberg).
- April 2007: a case of Salmonella reported to health district (serovar non-typhi, ID pending).
- Search: whole state of California: **47 cases** of Salmonella serovar Senftenberg in 2004.
- In 2007, England and Wales had an outbreak with at 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

2007 GC S. Senftenberg outbreak



- **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)

YEAR	Cases	Contacts	Prophylaxed Contacts
2005	4	20	20 (100.0%)
2006	1	8	7 (87.5%)
2007	4	240	222 (92.5%)
2008	2	82	75 (91.2%)
TOTAL	11	350	324 (92.6%)

- 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)

YEAR	Cases	Contacts	Prophylaxed Contacts
2005	1	8	8 (100.0%)
2006	0	0	0
2007	1	148	148 (100.0%)
2008	2	67	65 (97.0%)
TOTAL	**4**	**223**	**221 (99.1%)**

- **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)

YEAR	Cases	Contacts	Prophylaxed Contacts
2006	110	600+	300 (GCHD only)
2007	3	20+	
2008	9	40+	

- **2006 Outbreak affected Warden, Ephrata, Moses Lake school districts**
- **2006 Outbreak: $30,000**

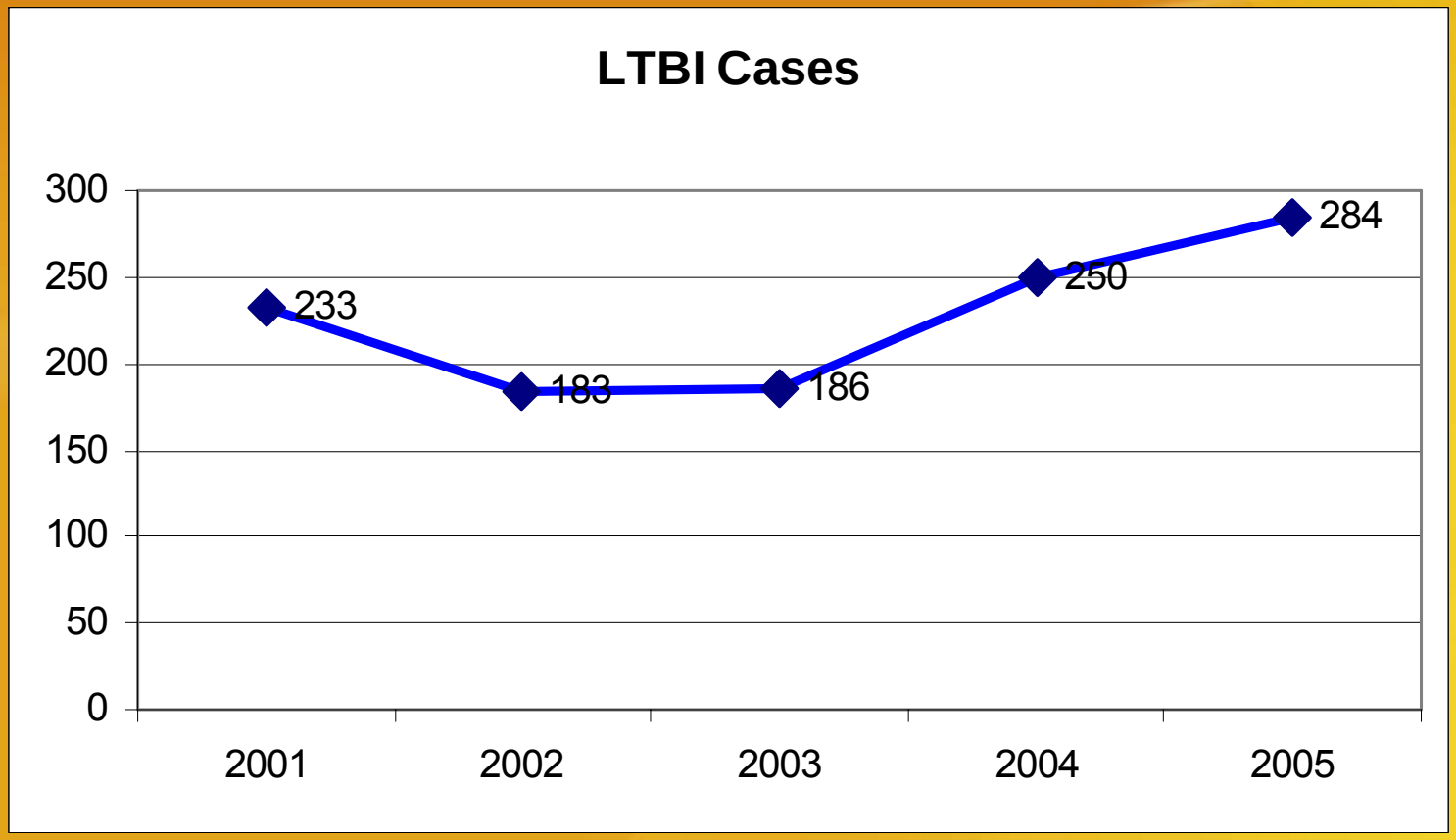
GC ACTIVE TUBERCULOSIS (2005-2008)

YEAR	Cases	Contacts
2005	3	48
2006	1	58
2007	2	20
2008	0	0
TOTAL	6	126

- 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

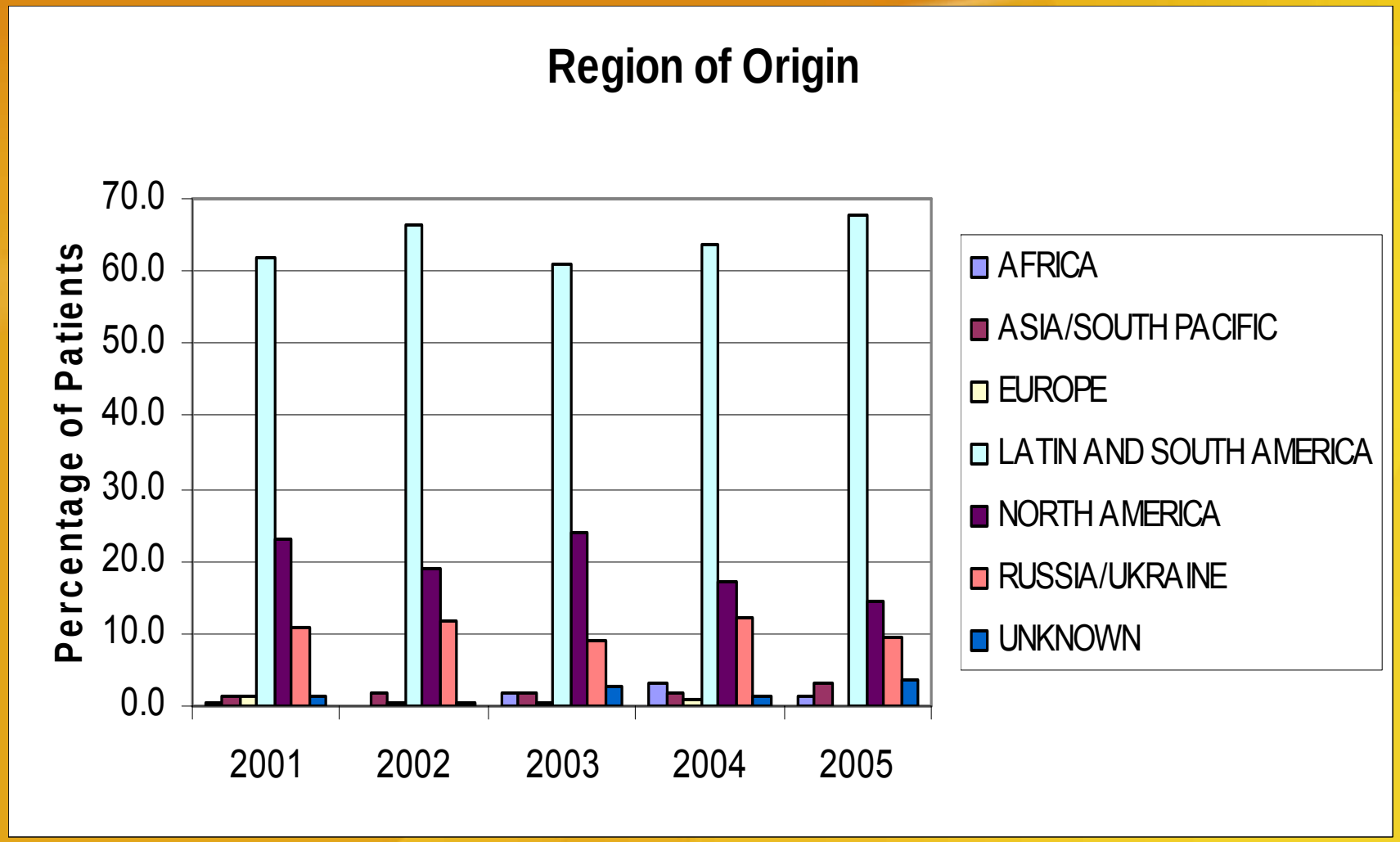
Dasgupta et al. 2005

GC LATENT TB (LTBI)

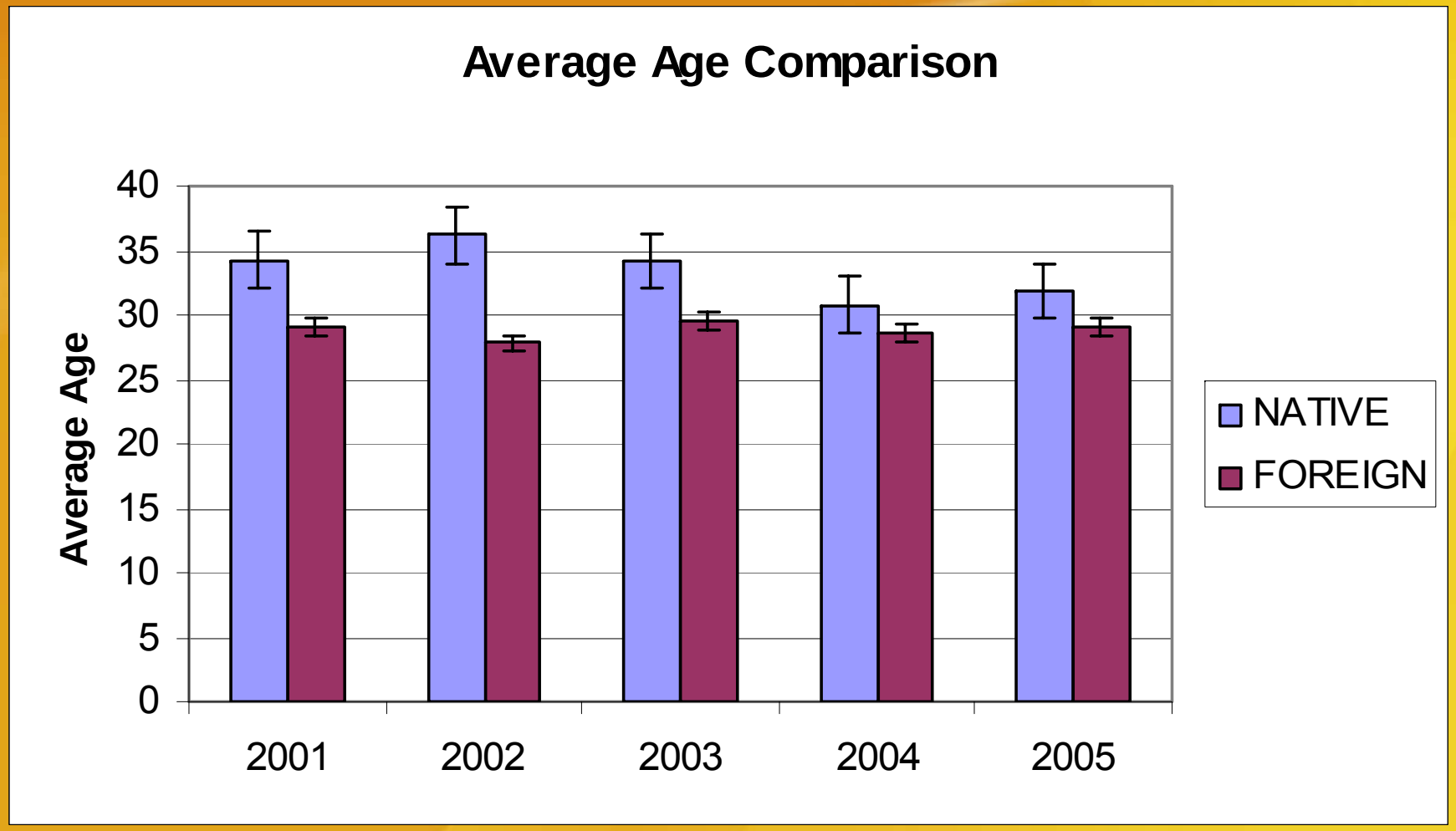


2006: 210 LTBI cases
2007: 228 LTBI cases

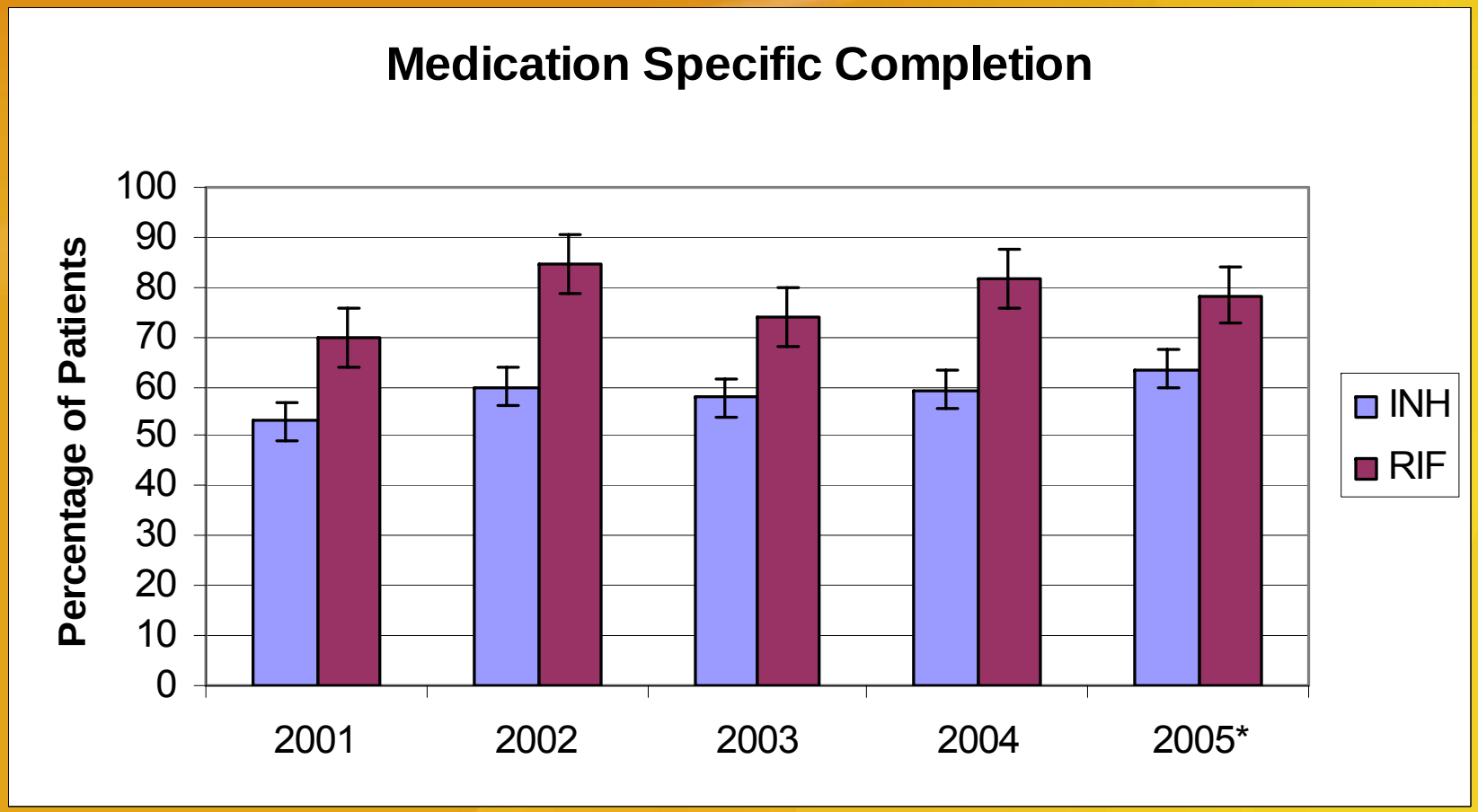
GC LATENT TB (LTBI)



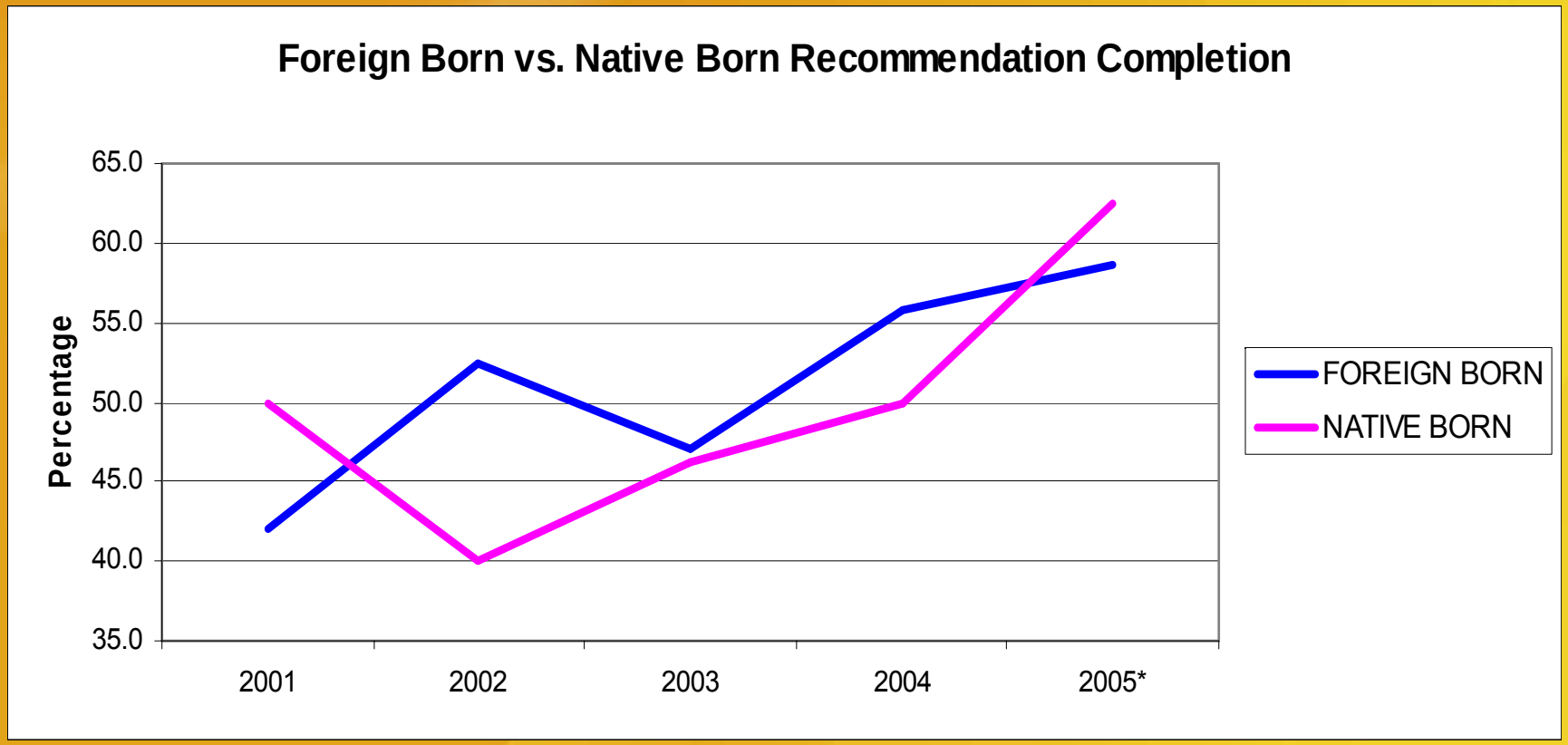
GC LATENT TB (LTBI)



LTBI Treatment Completion rates in GC by Medication



Completion Rates for LTBI in GC by Country of Origin



ANIMAL BITES /VECTOR CTRL.

YEAR	Cases (bites)	PEP recommended	Animals tested (bats, cats, skunks, dogs, etc.)
2006	145	1	8
2007	116	8	8
TOTAL	261	9	16

- 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

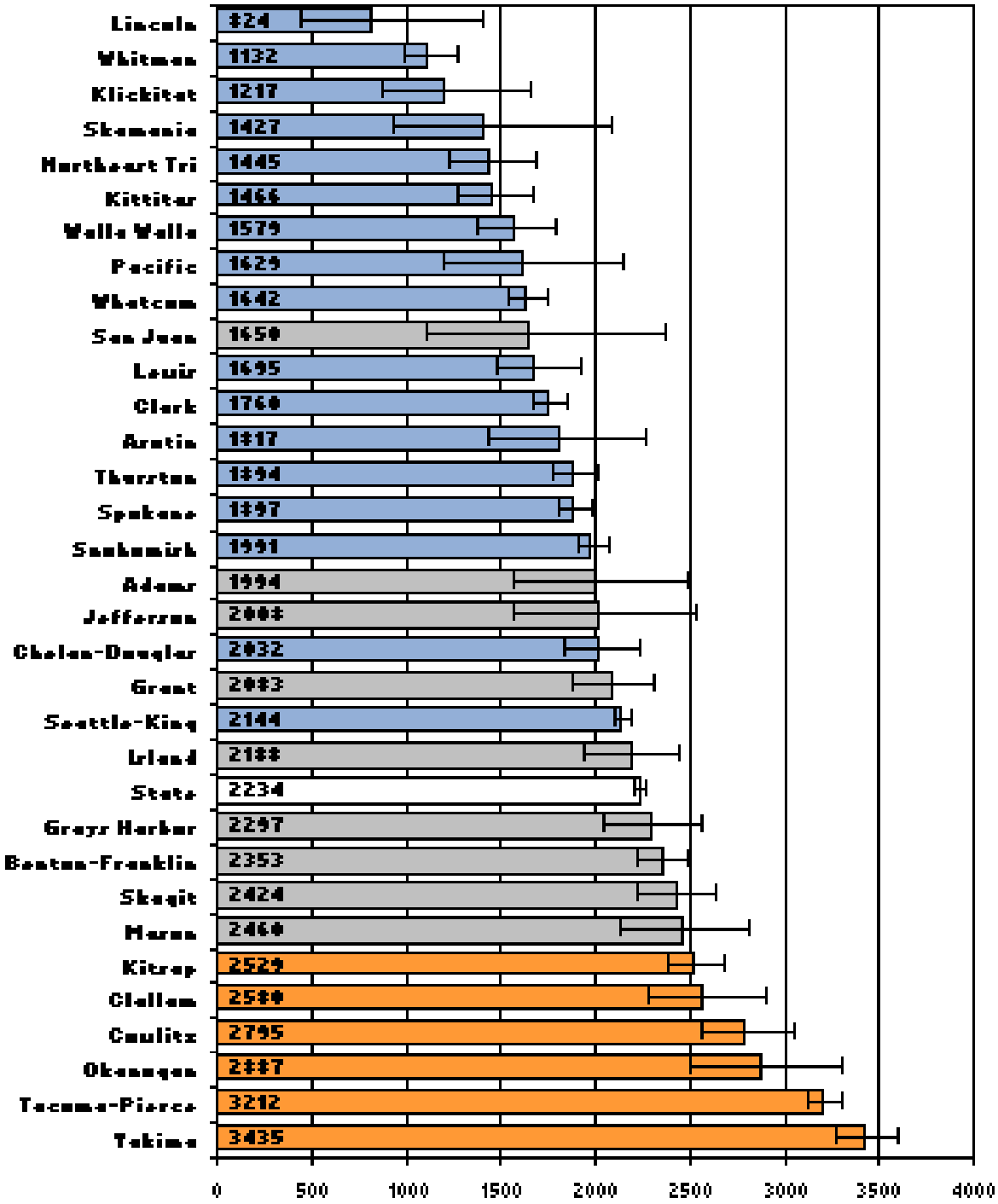
- **TIMELY REPORTING**
  - **immediate VS. within 3 days VS. later (consult the list of notifiable conditions: http://www.doh.wa.gov/Notify**
- **PROPER TEST SELECTION**
  - **CDC laboratory definition criteria: IgM for hep A, etc.**
- **PROPER TREATMENT**
  - **Health Officer Directive**
  - **CDC /ACIP, AAP Red Book**

NEED YOUR HELP

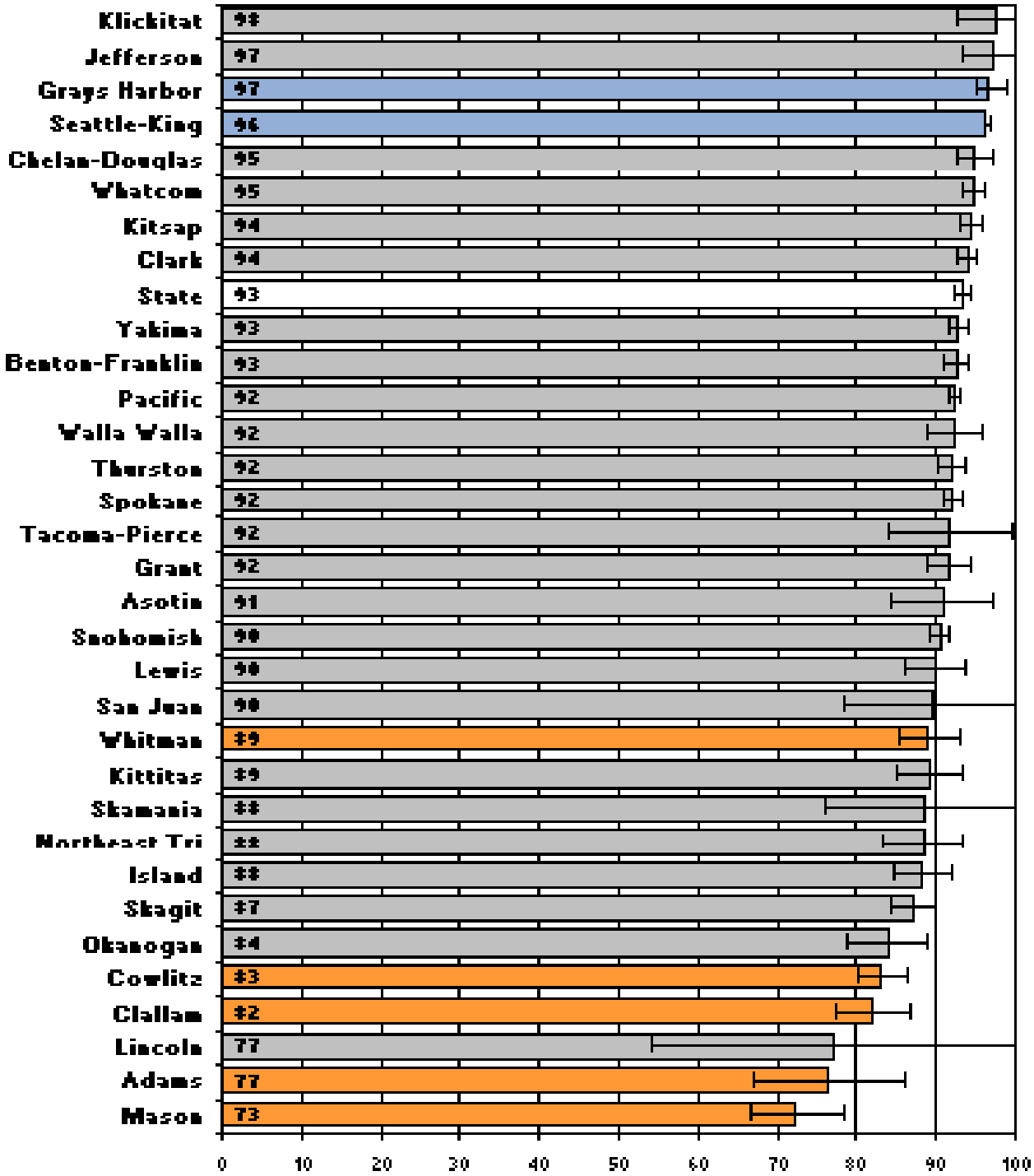
WE NEED YOU!

2008-2010 CHALLENGES

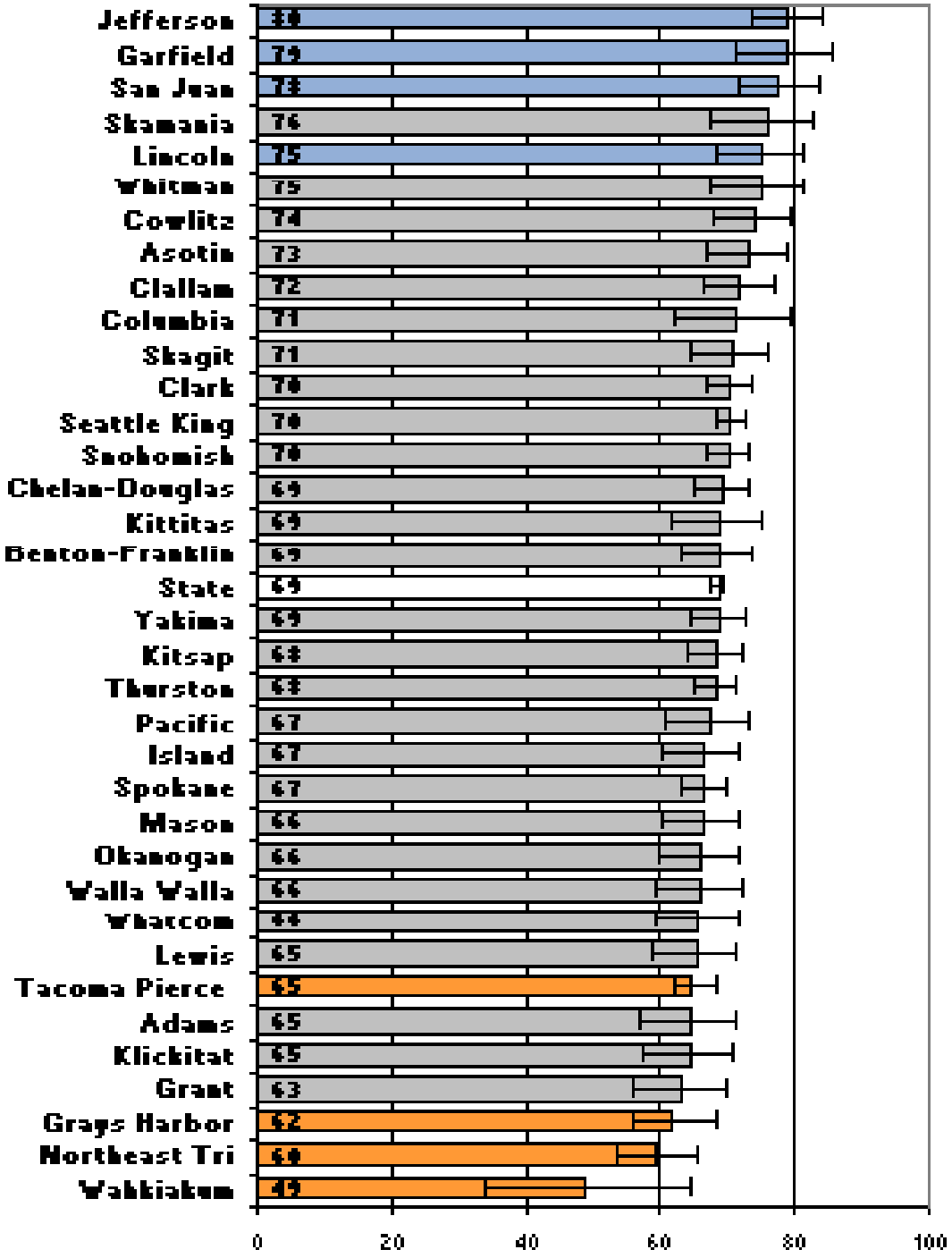
- Department of Health submitted three performance measures to the legislature:
- **#1 INCREASE USE OF UNDERUTILIZED VACCINES (i.e DTaP, Tdap, pedi FLU, VZV)**
  - plus INCREASE PARTICIPATION AND USE OF CHILD PROFILE®
- **#2 IMPROVE TIMELY AND COMPLETE REPORTING, INVESTIGATION OF NOTIFIABLE CONDITIONS**
- **#3 COMMUNITY OBESITY INTERVENTIONS**



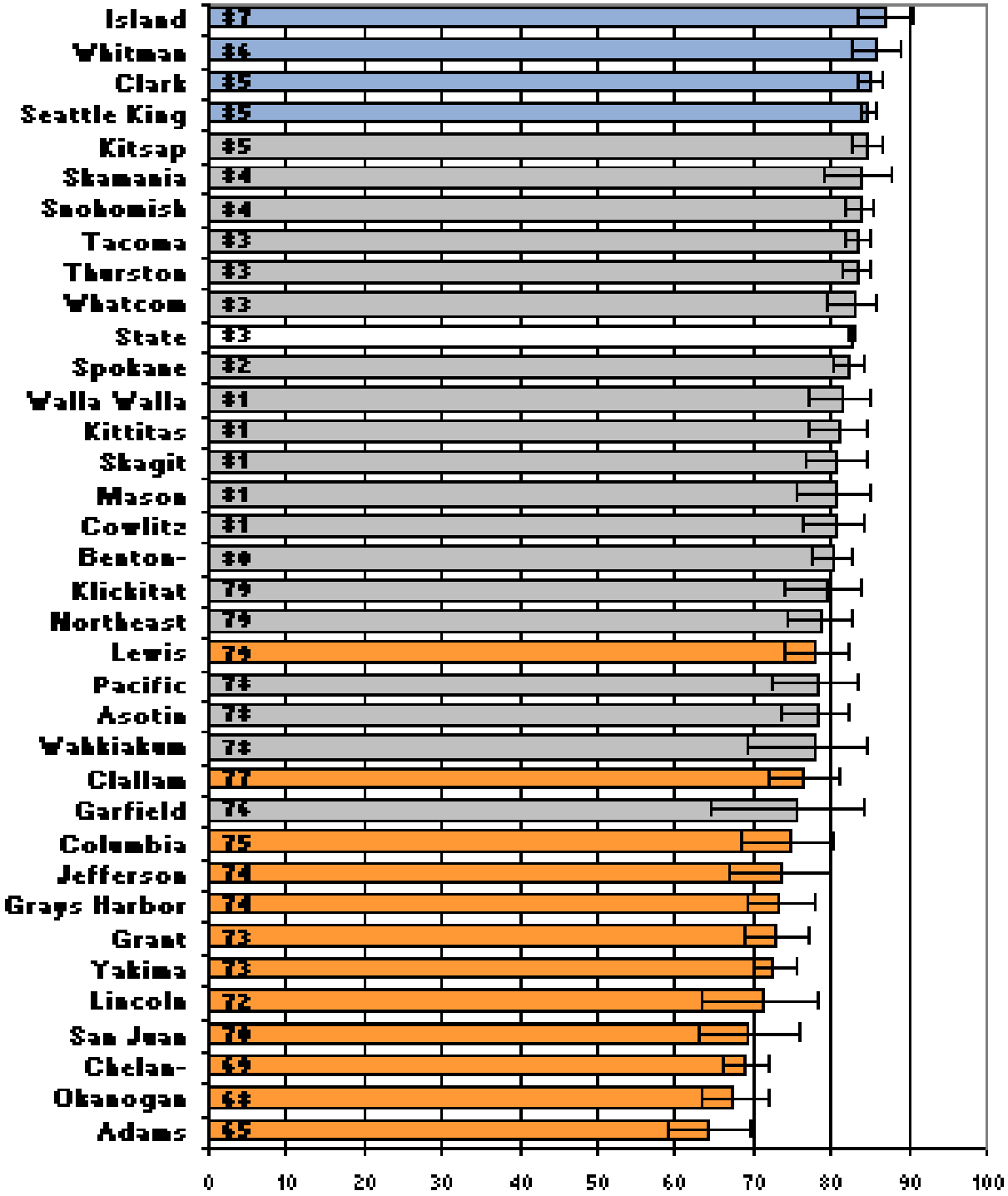
- **Chlamydia—reported disease (15-24; per 100K)**
  - Grant: 2,083
  - Adams: 1,994
  - Yakima: 3,435
  - Lincoln: 824
  - SE Asia: 4,289
  - EU: ~522



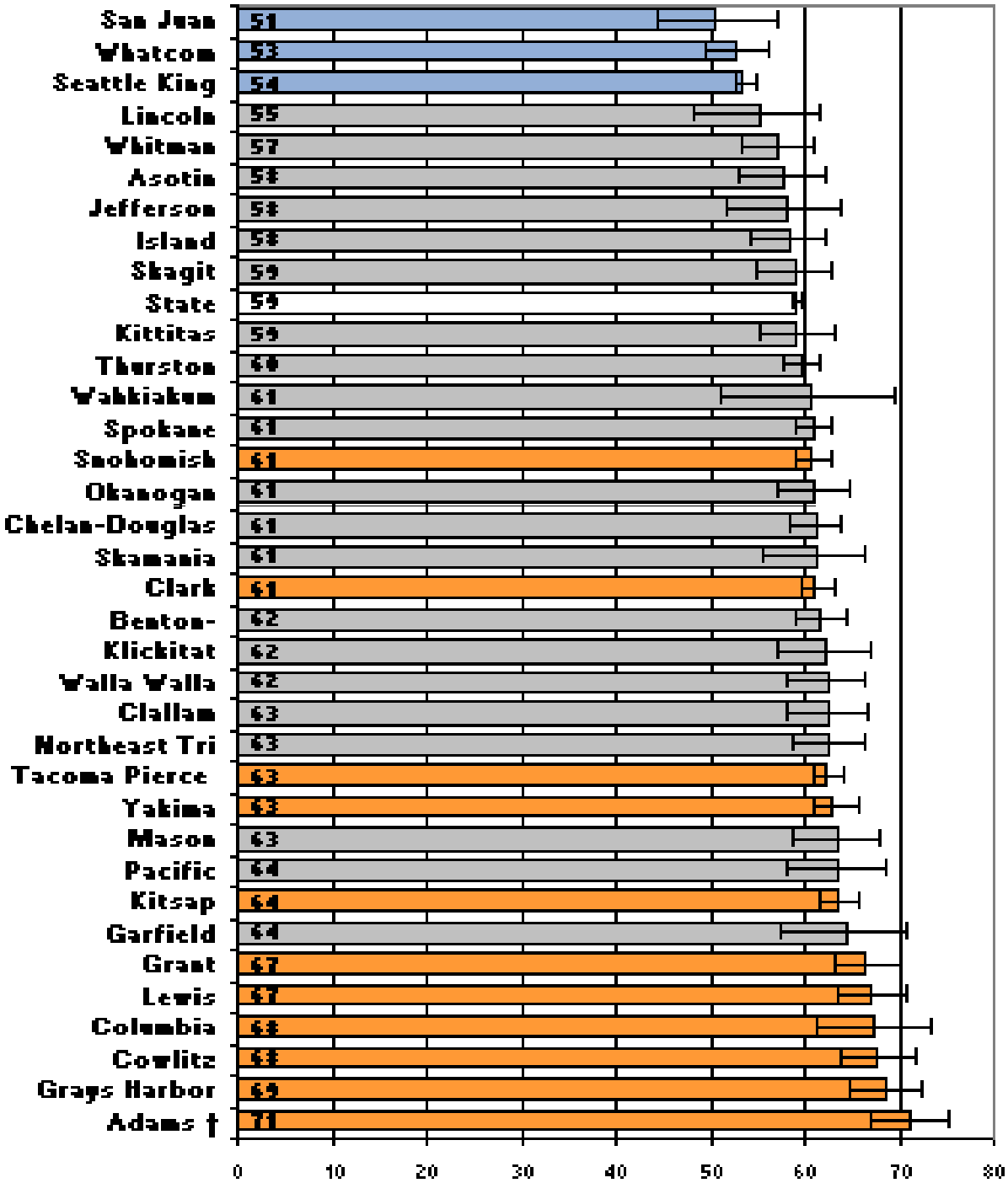
- **Chlamydia-treated (15-24)**
  - Grant: 92%
  - Adams: 77%
  - SKing: 96%



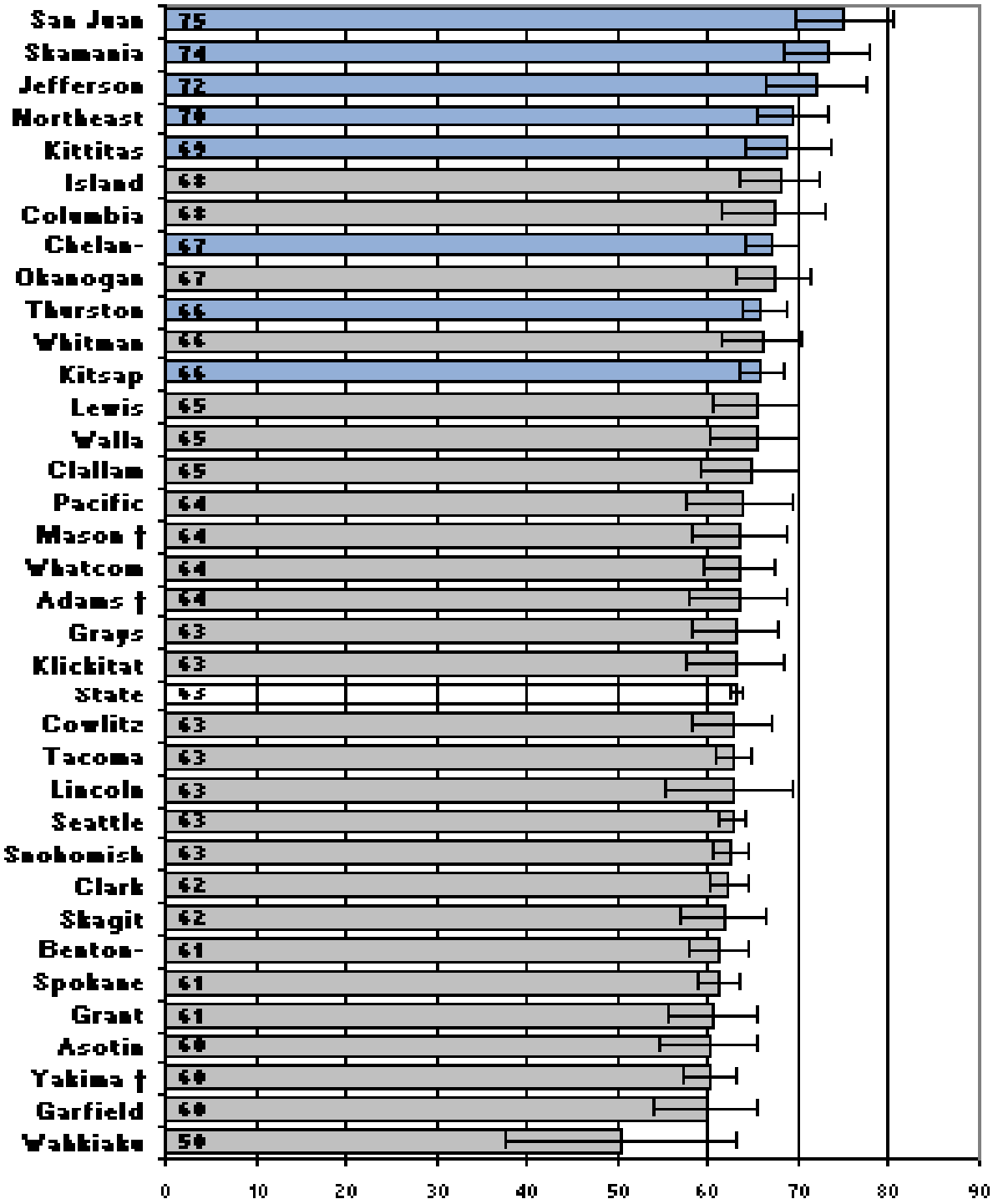
- **Influenza Vaccine (>65)**
  - Grant: 63%
  - Adams 65%
  - Jefferson: 78%
  - Germany: 60%



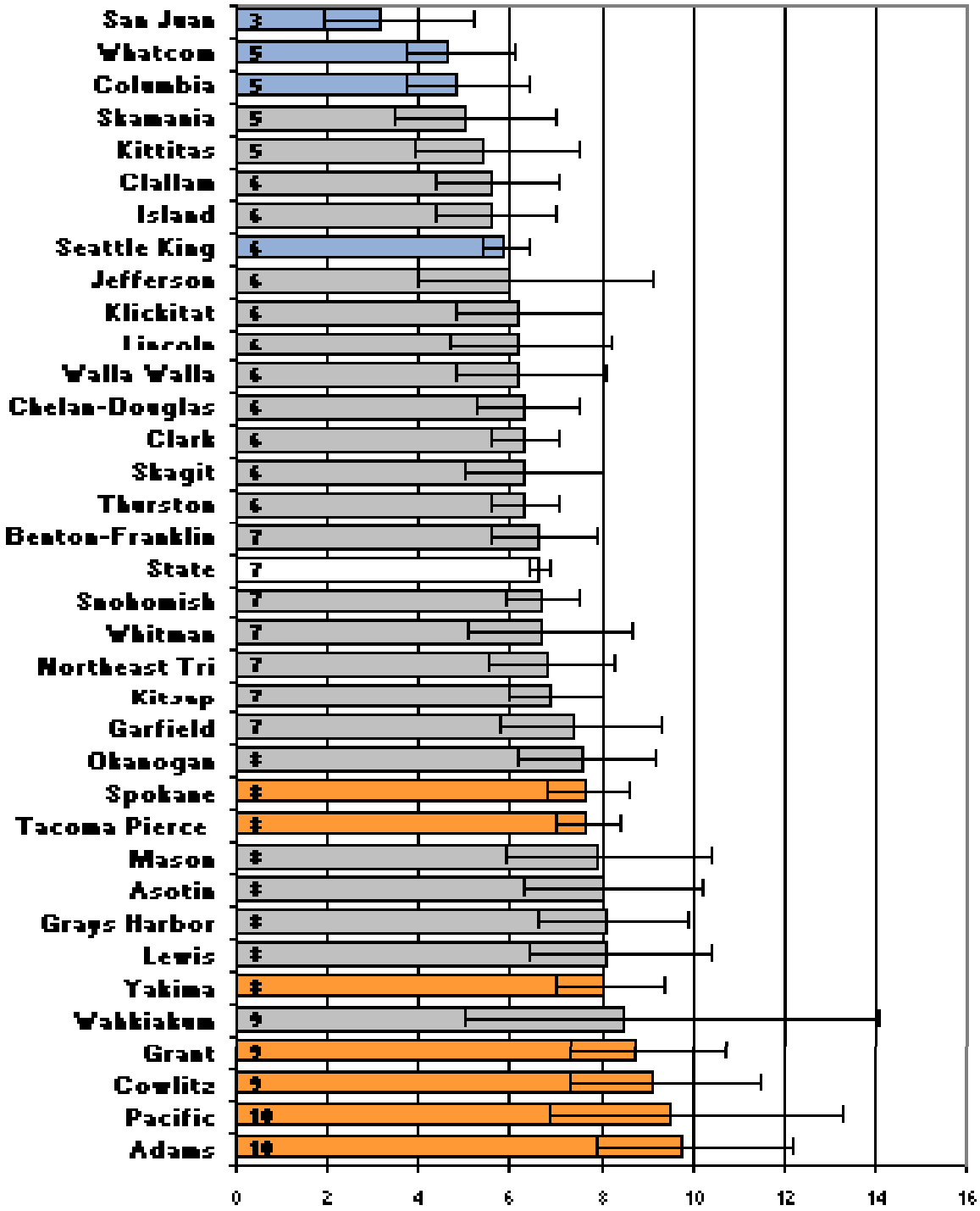
- **Health Insurance (18-64)**
  - Grant: **73%**
  - Adams: **65%**
  - S.King: **85%**



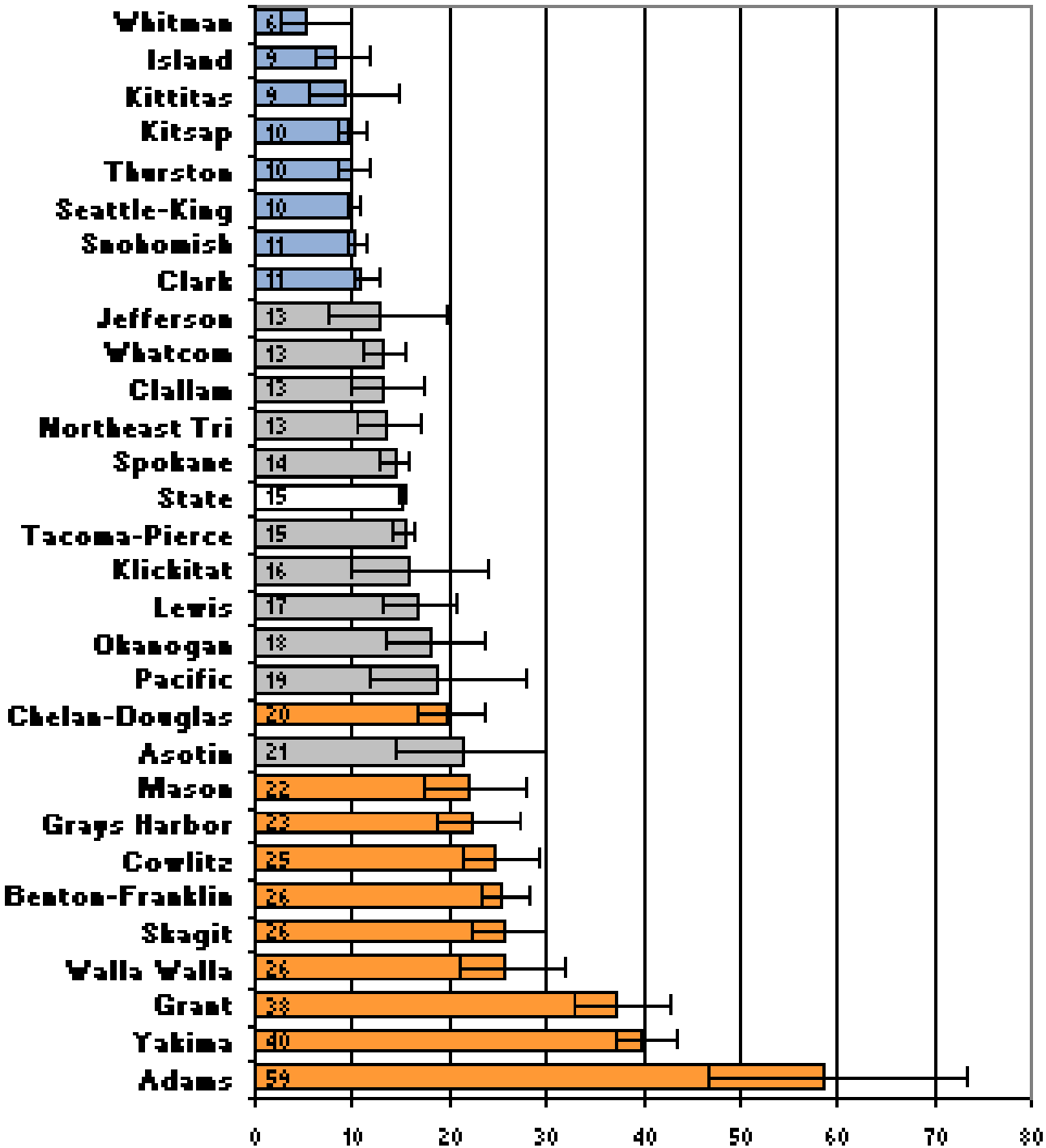
- **Adult Overweight /Obese**
  - Grant: **67%**
  - Adams: **71%**
  - San Juan: **51%**
  - Ireland: 57%



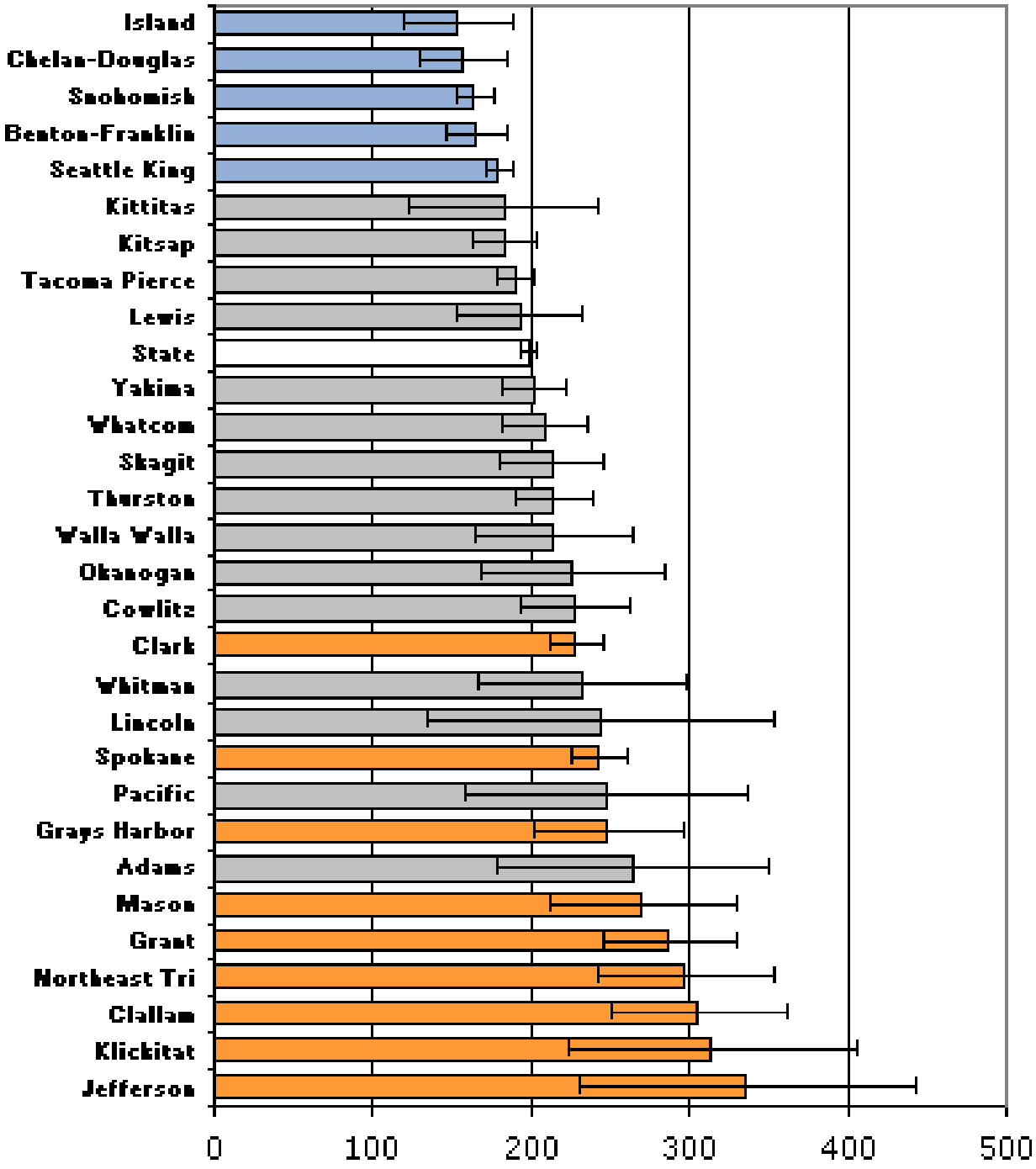
- **Physical Exercise (>18)**
  - Grant: 61%
  - Adams: 64%
  - S. Juan: 75%



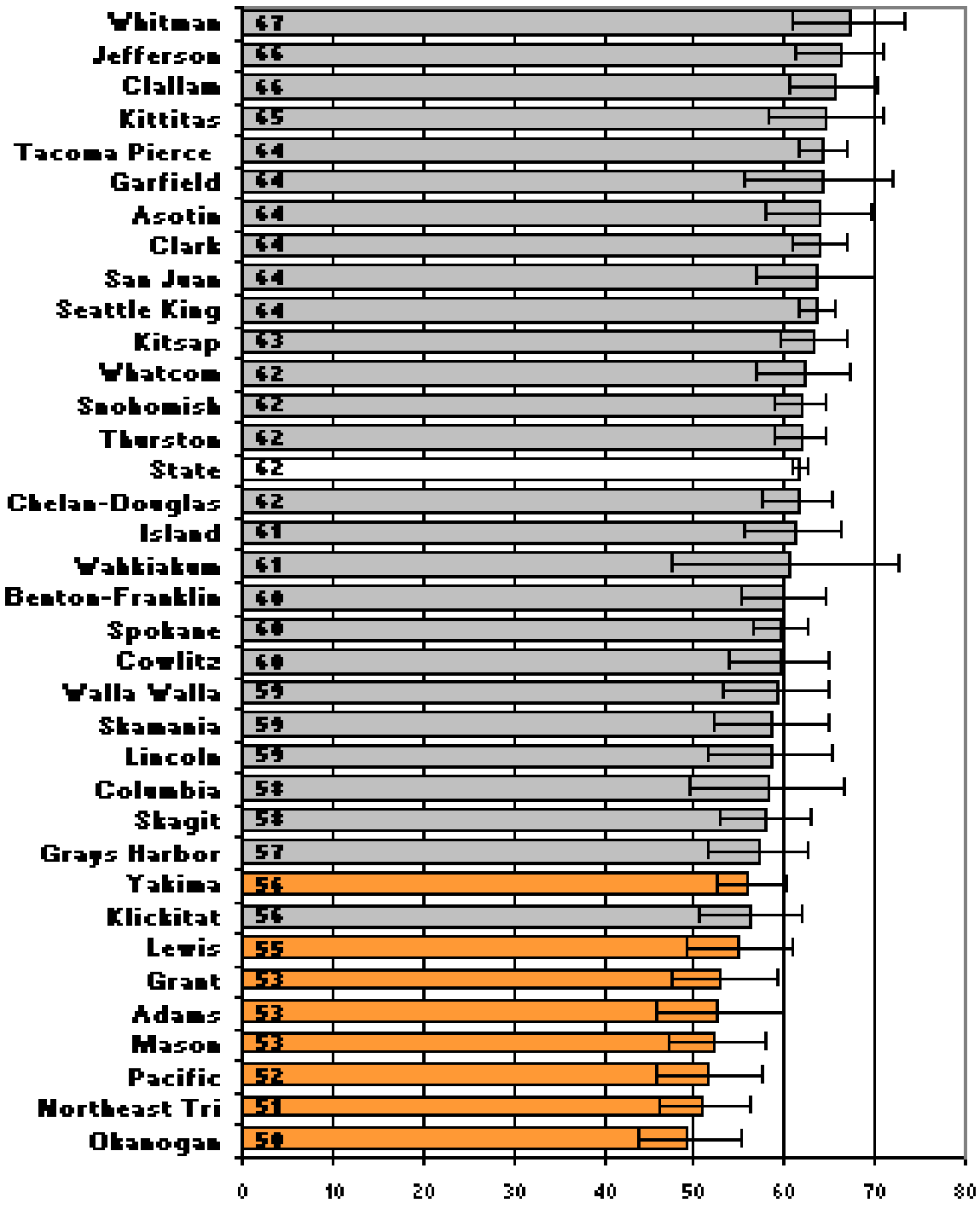
- **Diabetes (>18)**
  - Grant: **9%**
  - Adams: **10%**
  - SKing: **6%**
  - S. Juan: **3%**
  - India: 6%



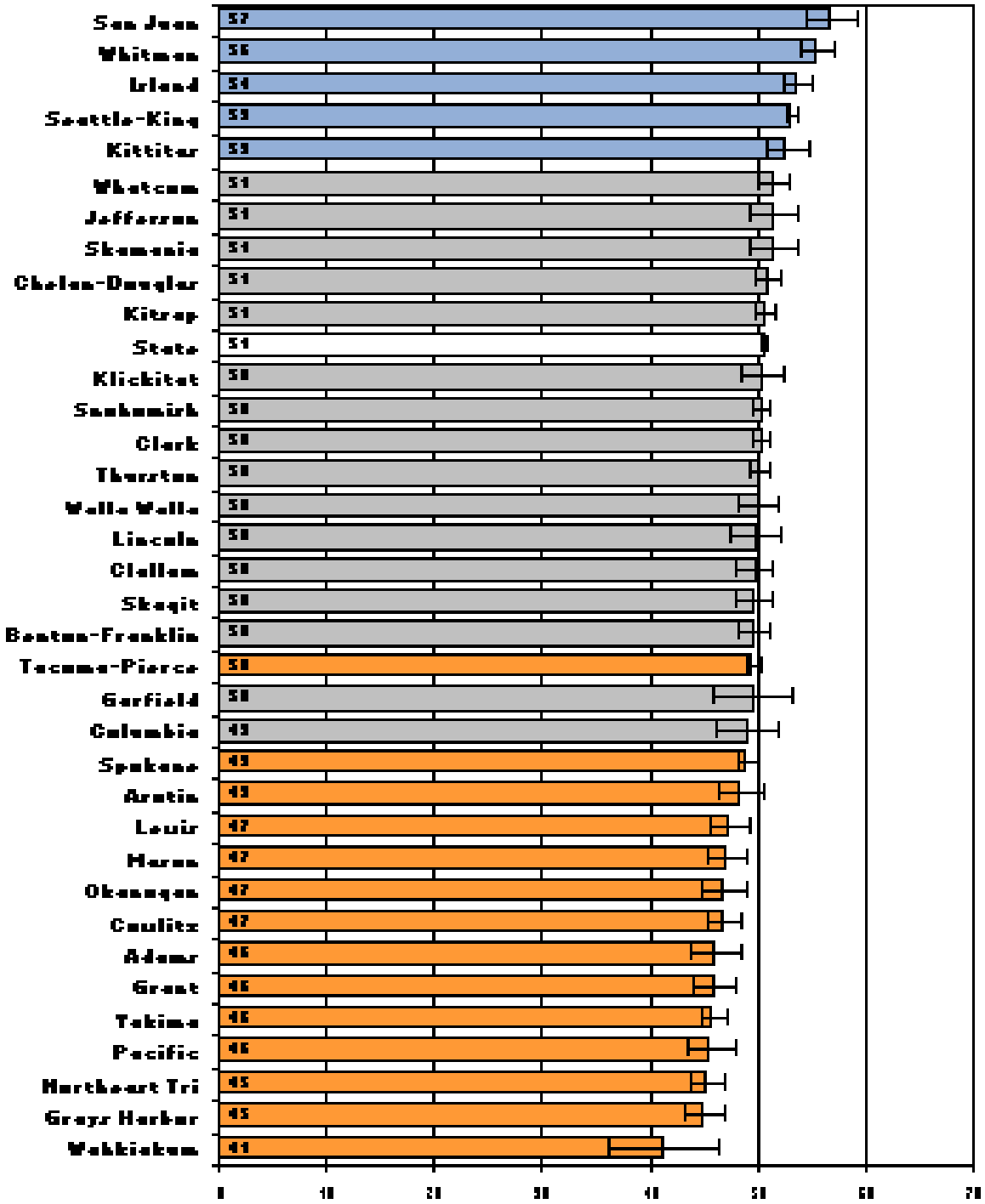
- **Teen Birth (per 10K)**
  - Grant: **38**
  - Adams: **59**
  - SKing: **10**
  - Japan: **4**
  - UK: 33
  - Bulgaria 59



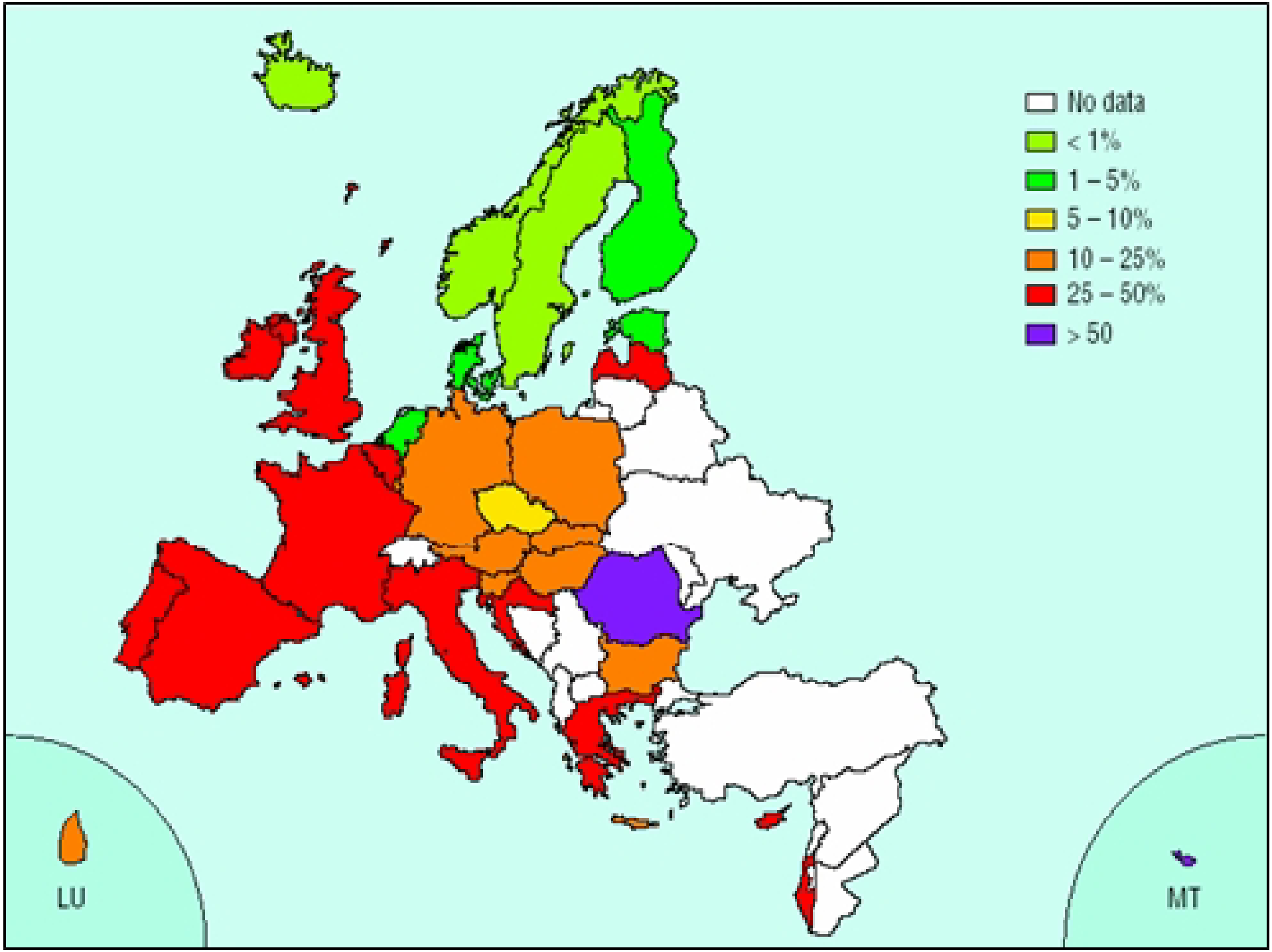
- **PEDI Un-intentional Injury (per 100K)**
  - Grant: **290**
  - Adams: **260**
  - Island: **155**
  - C-Doug: **160**
  - S.Korea: 256
  - UK: 61



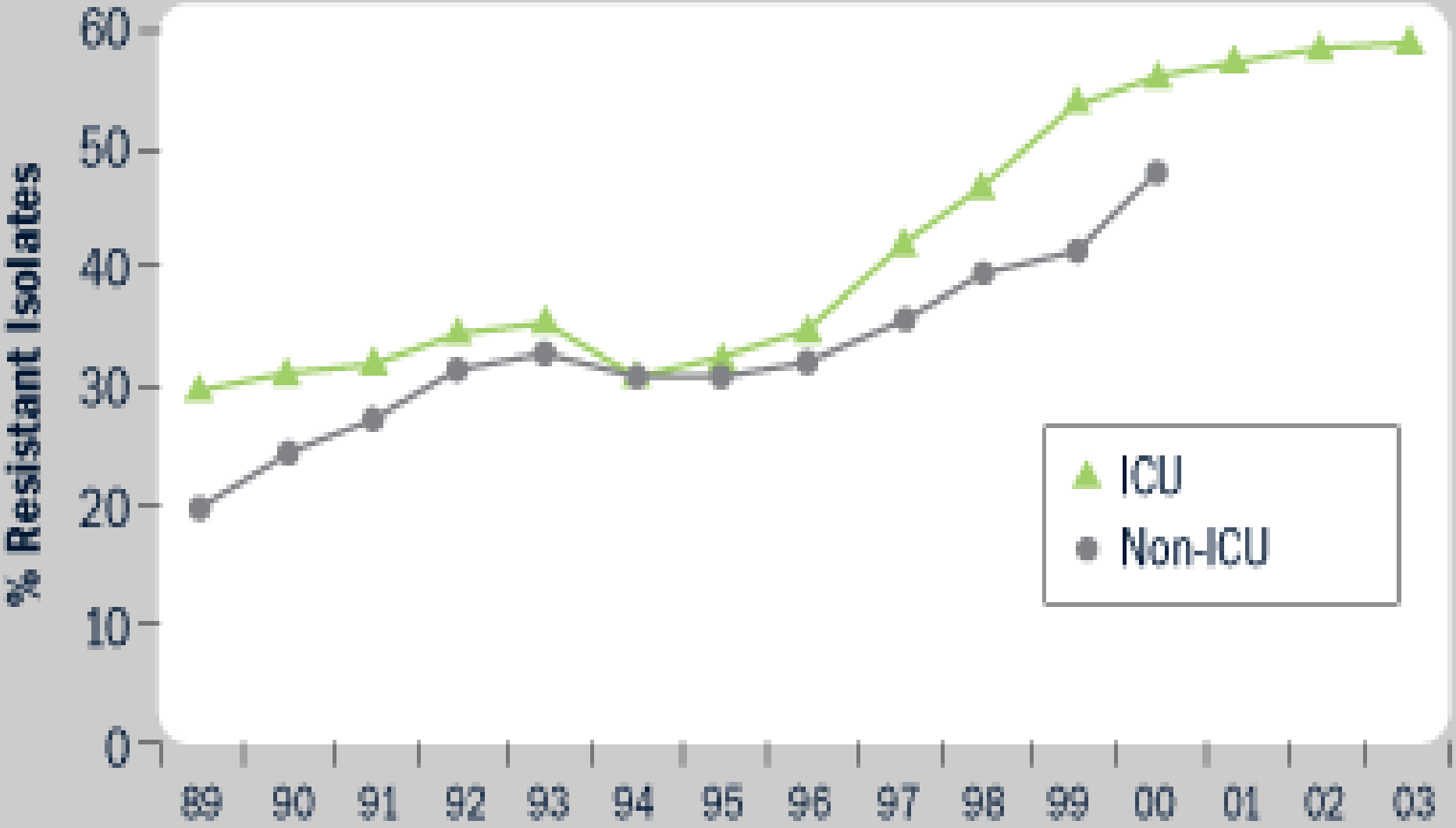
- **Colorectal CA screen (>50; FOB or endo)**
  - Grant: **53%**
  - Adams: **53%**
  - Whitman: **67%**



- **Expected years of life at 20 y.o.**
  - Grant: 46
  - Sea-King: 53
  - S. Juan: 57
  - Mexico: 55
  - Iceland: 61


No data
< 1%
1 – 5%
5 – 10%
10 – 25%
25 – 50%
> 50
LU
MT

Proportion of *S. aureus* nosocomial infections resistant to oxacillin (MRSA)[1]



1. National Nosocomial Infections Surveillance (NNIS) System Report,January 1992 through June 2004, issued October 2004. *Am J Infect Control.* 2004;32:470-485.

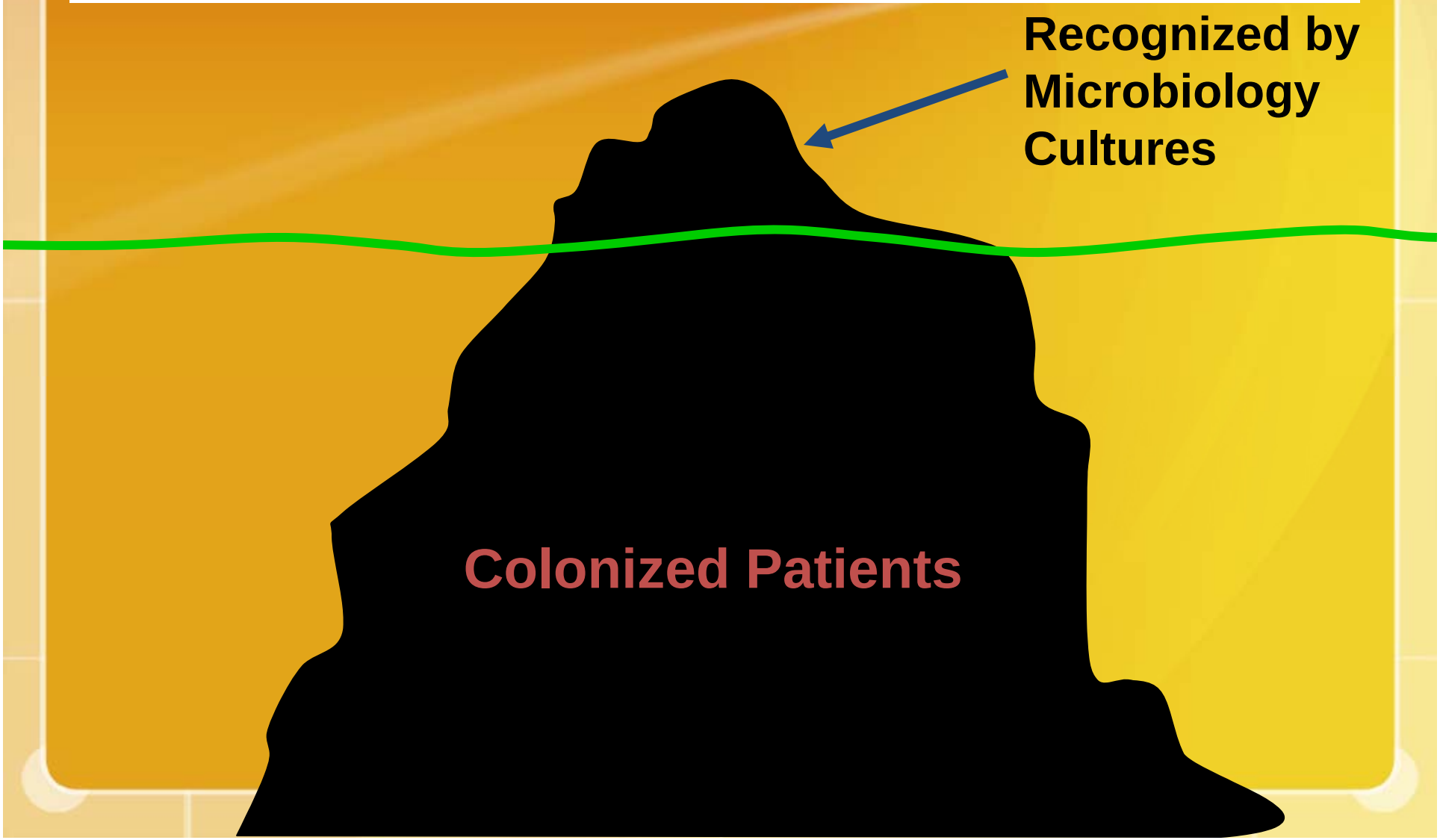
Community MRSA (CA-MRSA)

- 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 in hospitalized children.
- 2007 random sample of HEALTHY individuals (Chicago): **4%** MRSA colonization (carriers).
- Estimated overall U.S. MRSA carriers: **2.6%**; healthcare: **4.6%**

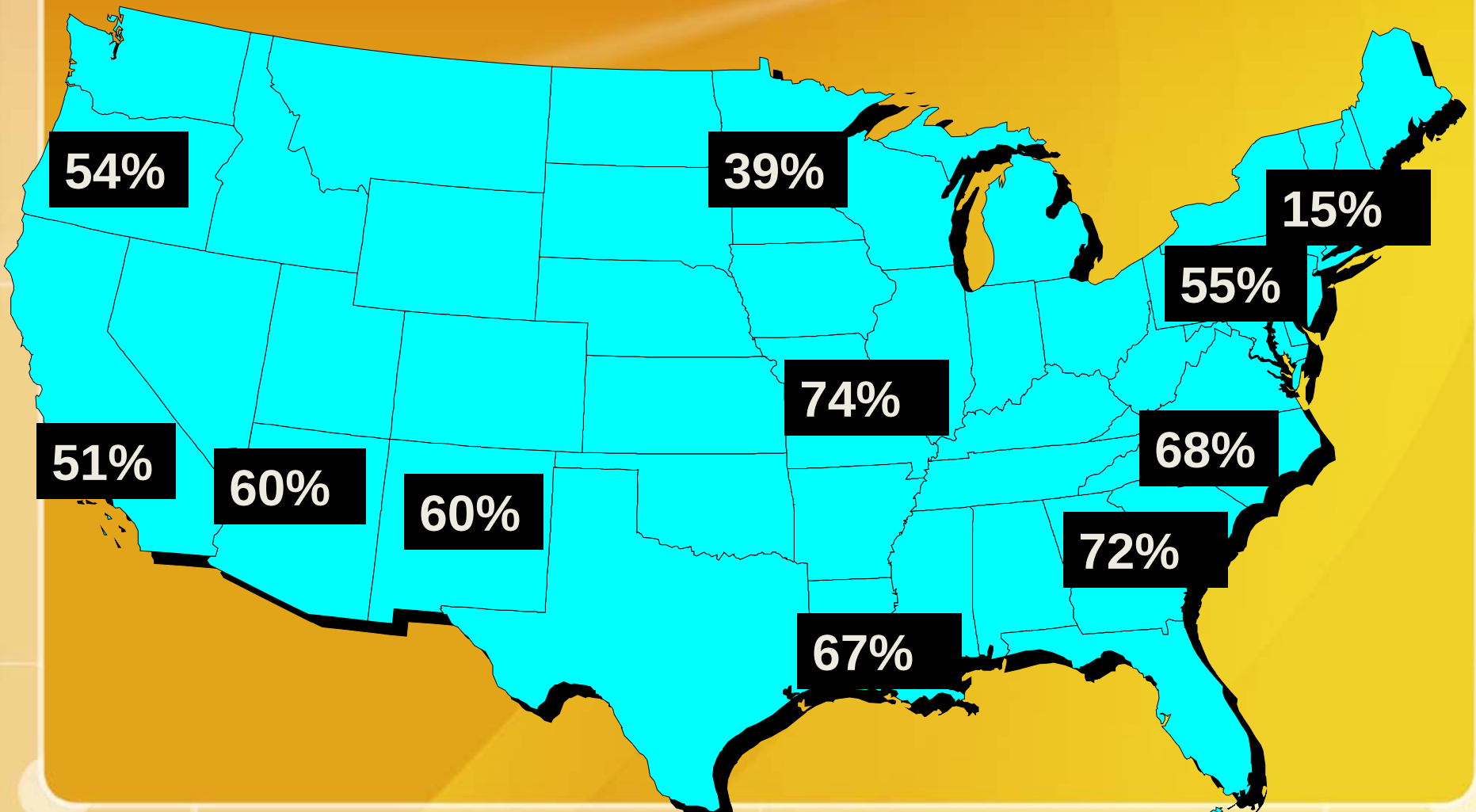
Community-Acquired MRSA

- Bacteriologic characteristics
  - Resistant to fewer antimicrobial classes
  - Different toxin genes (Panton-Valentine leukocidin)
  - Gene complex = Staph cassette chromosome *mec* (contains the methicillin-resistance gene)
    - SSC*mec* 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



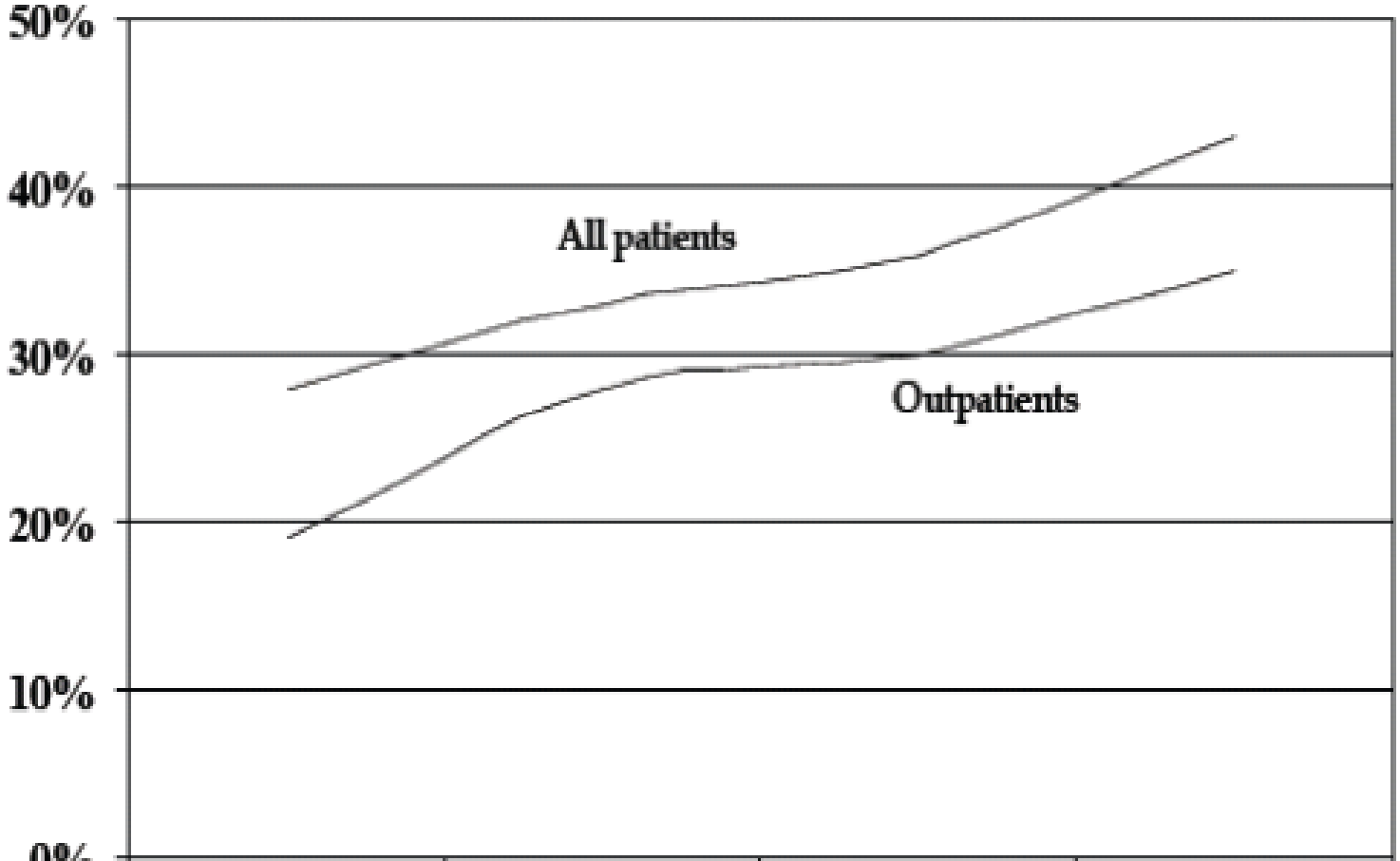
Prevalence of MRSA as cause of SSTI in Adult ED Patients – *EMERGE*ncy ID Net, Moran GJ, et al, SAEM 2005



Slide courtesy of Rachel Gorwitz and Greg Moran

Washington Two Year MRSA Trend

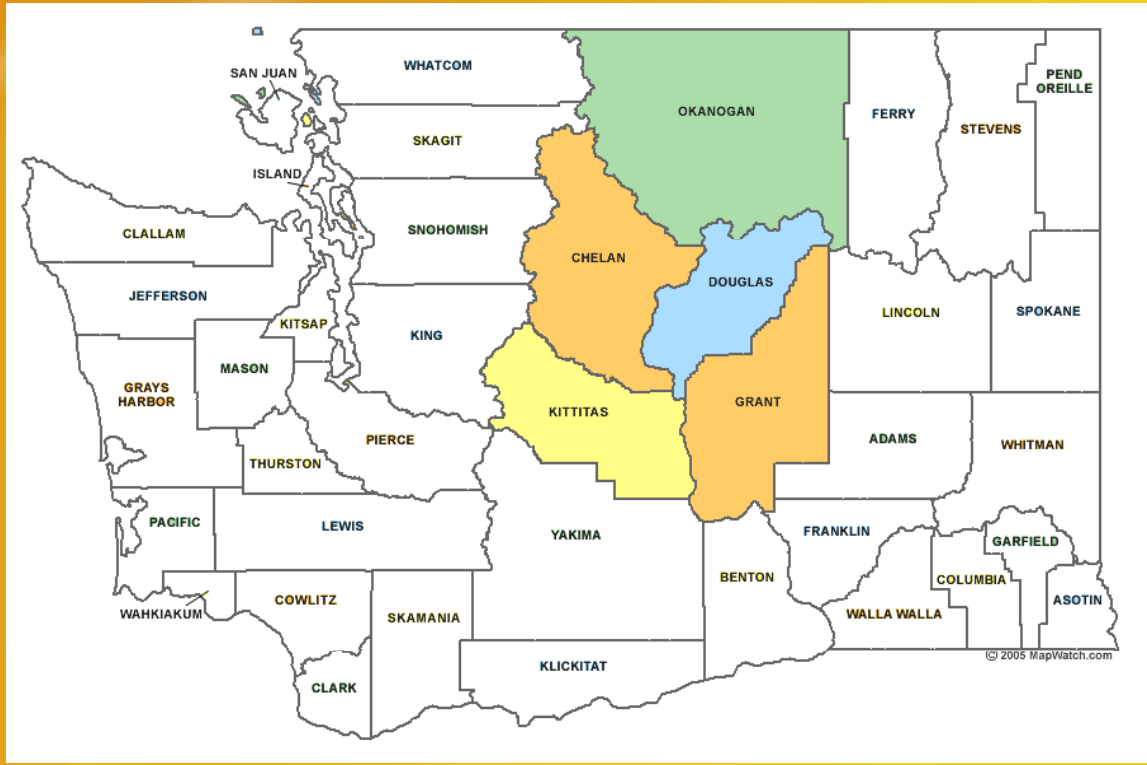
Antibiotic Resistance Sentinel Network 2003 - 2004



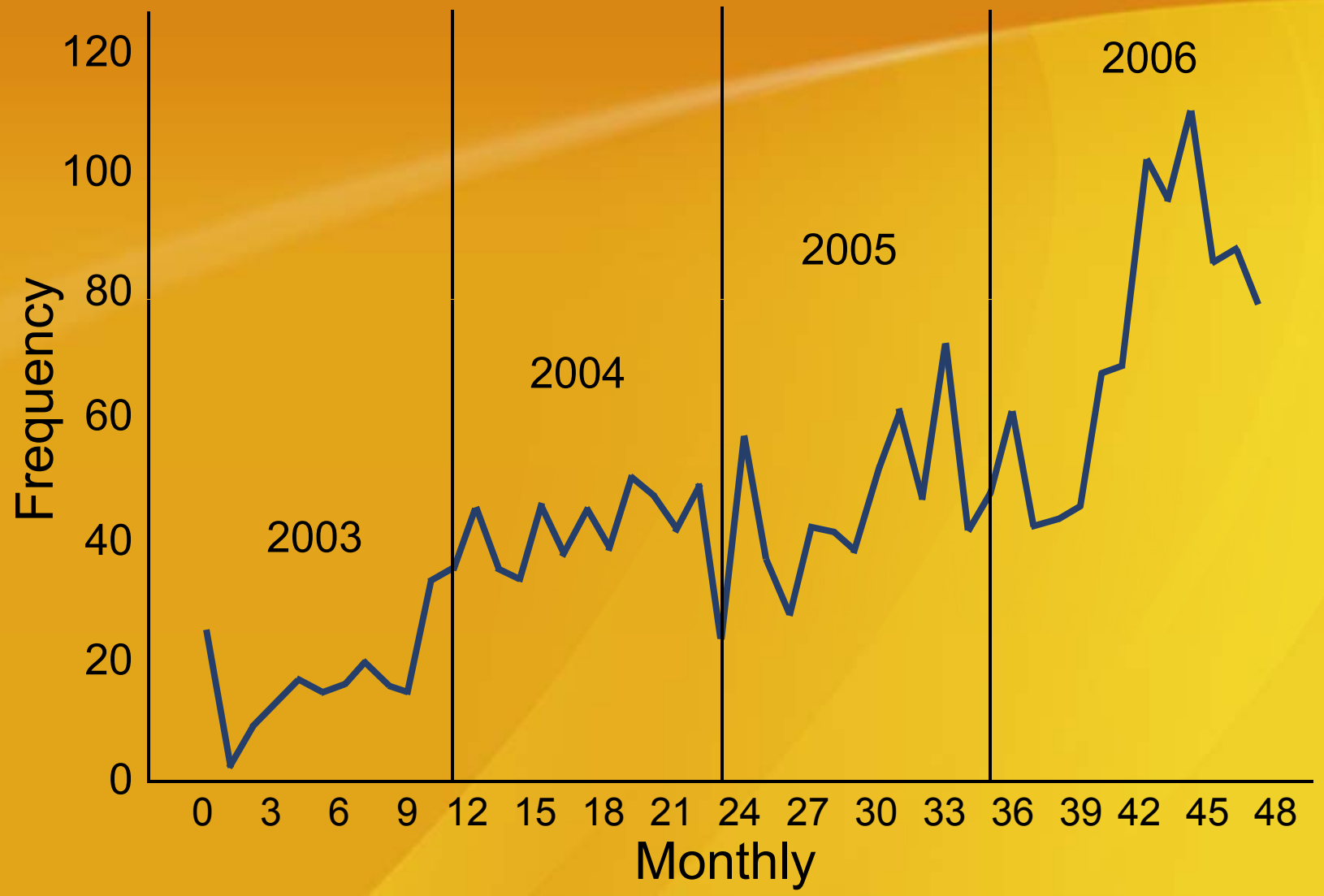
	2002-2nd	2003-1st	2003-2nd	2004-1st
— All patients	28%	33%	36%	43%
— Outpatients	19%	28%	30%	35%

Current Study

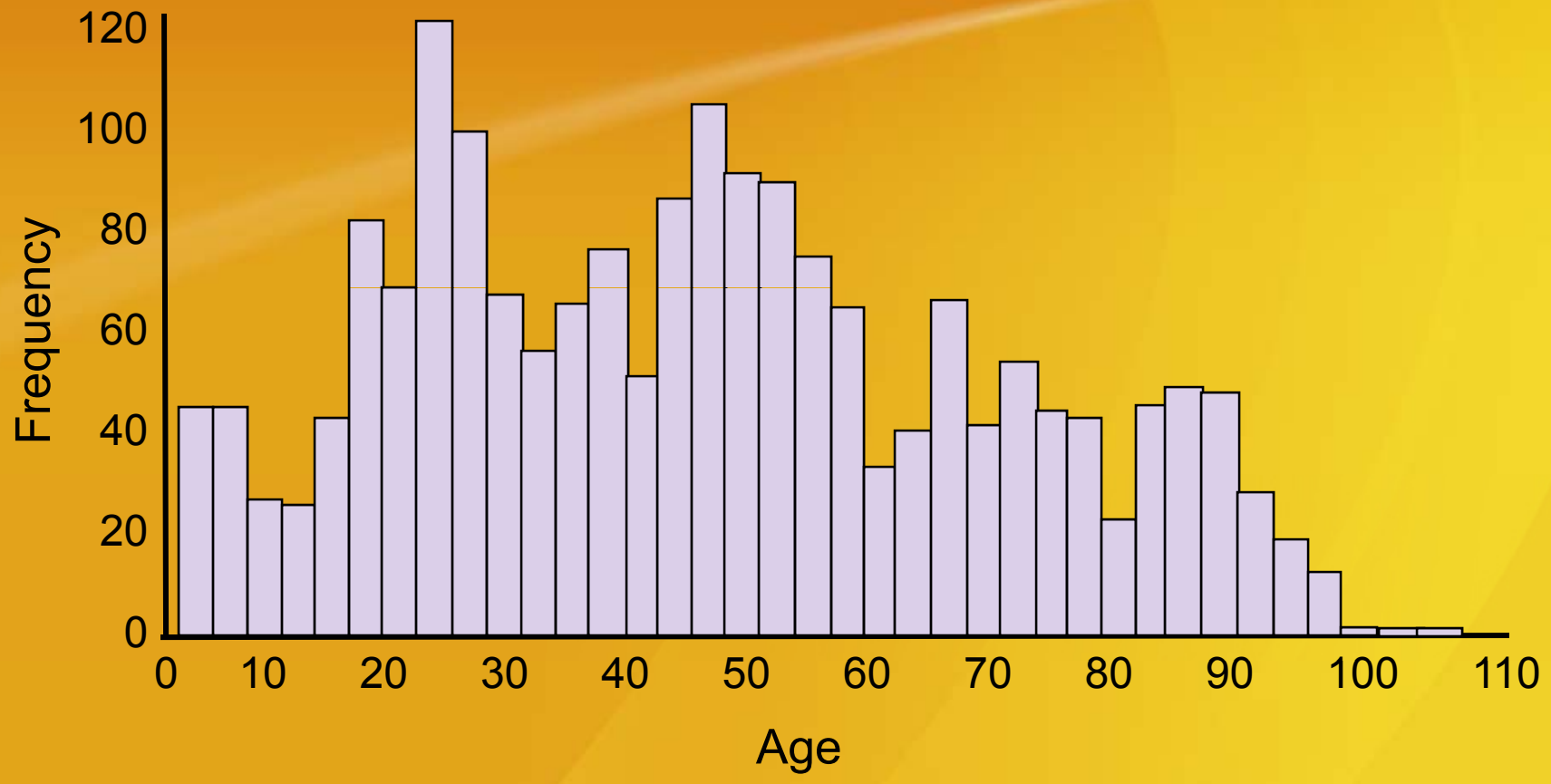
- Washington State Department of Health North Central Region 7
  - Five counties:
    - Chelan
    - Douglas
    - Grant
    - Kittitas
    - Okanogan
- Data sources:
  - 11 hospitals
  - 3 clinics
  - 2 labs
- 2003–2006 medical records



Region 7 MRSA Trend



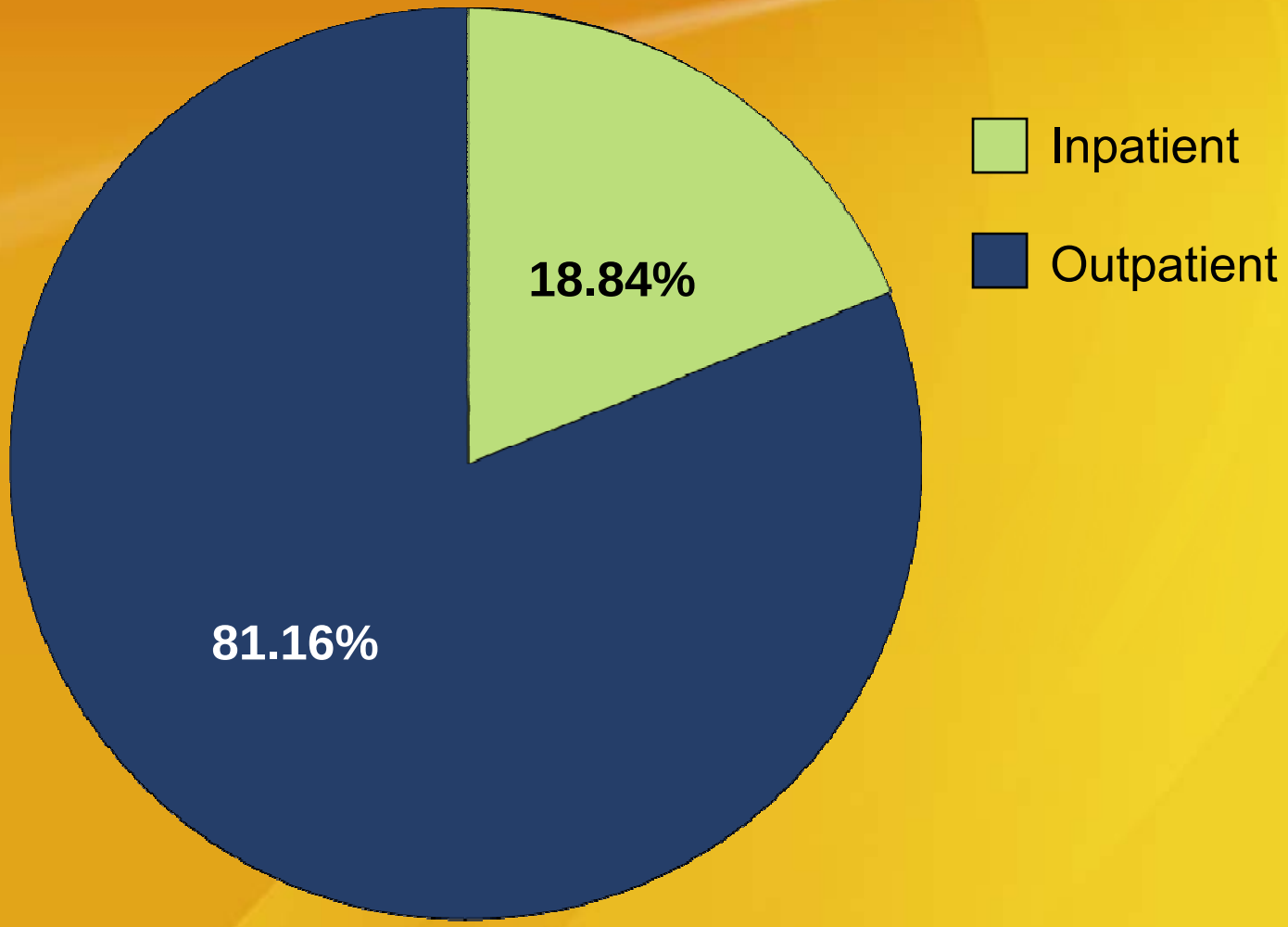
Region 7 MRSA Study: 2003–2006



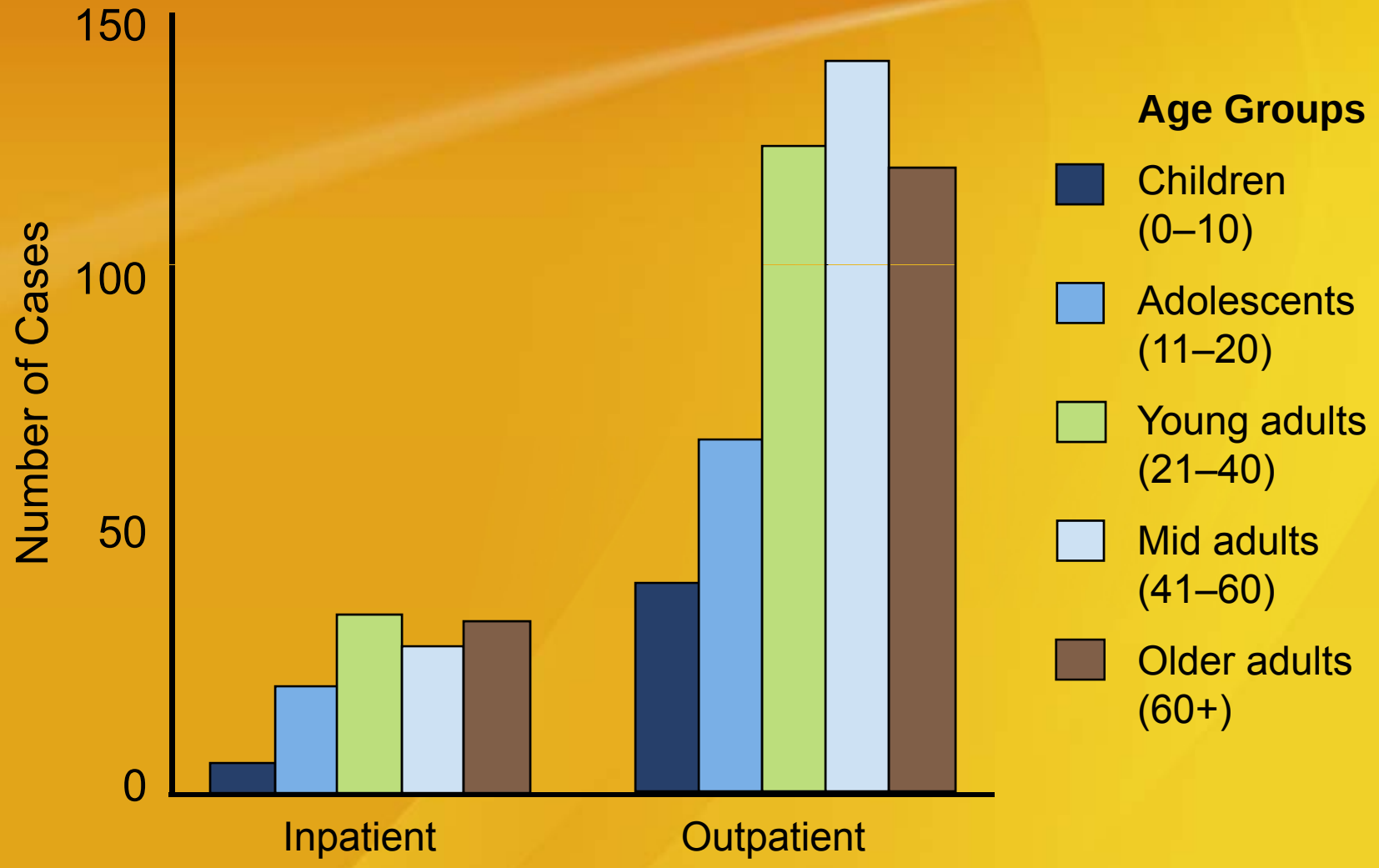
Summary:

2049 cases • 47% female, 53% male • Mean age = 43.8 years

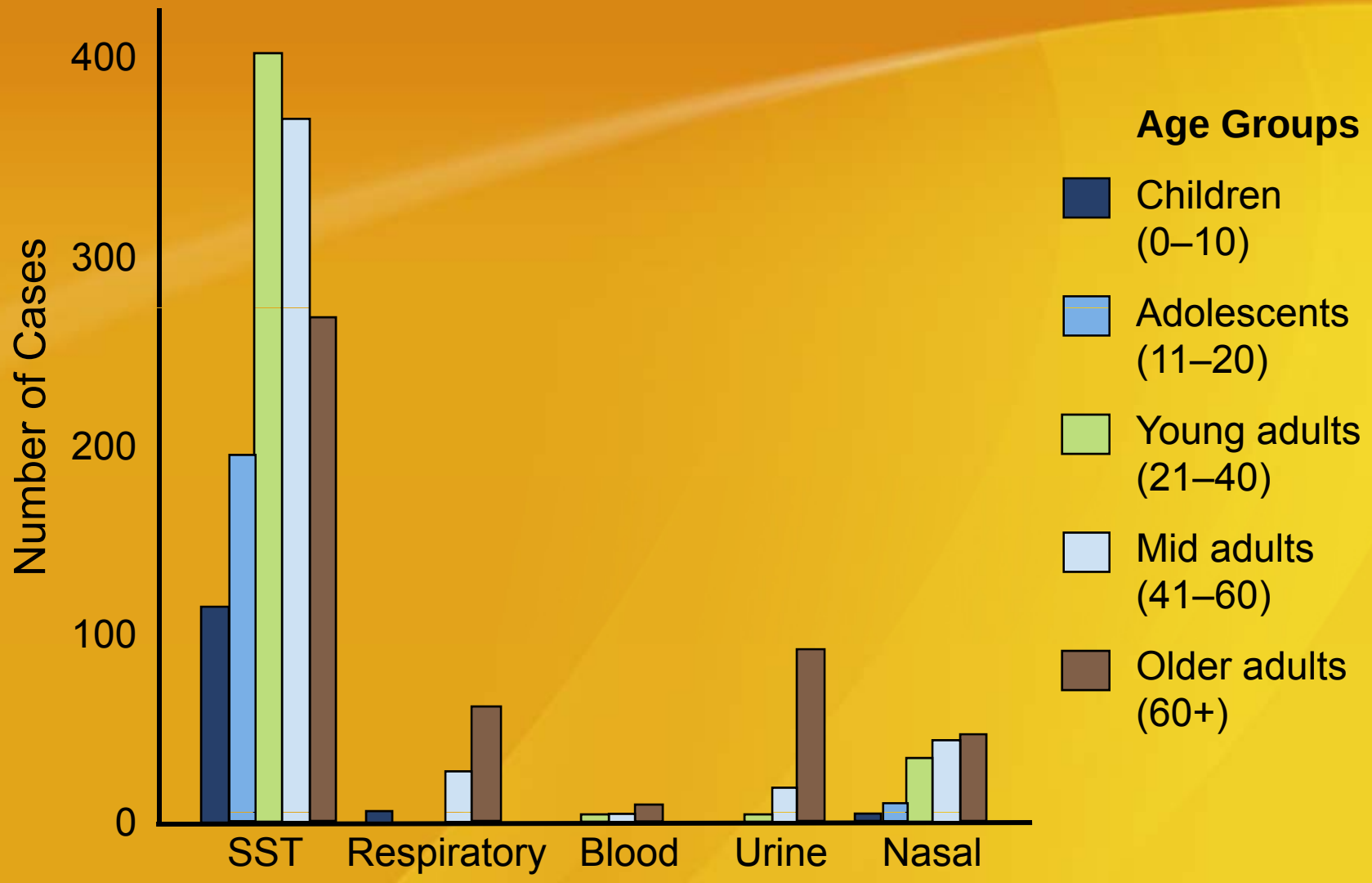
Region 7 MRSA: In- vs. Outpatient



Region 7 MRSA: In- vs. Outpatient by Age



Region 7 MRSA: Type by Age



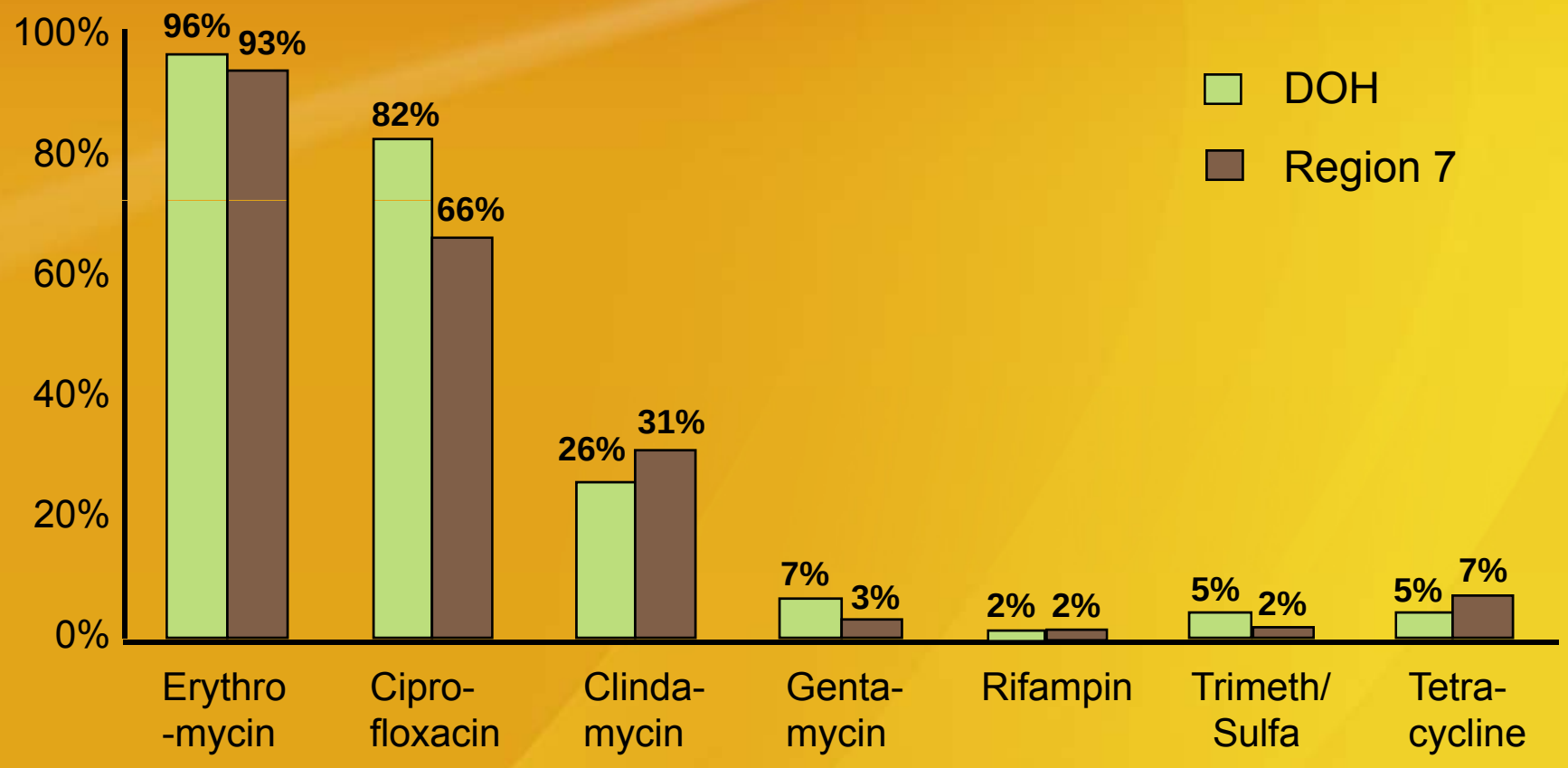
Antibiotic Resistance

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

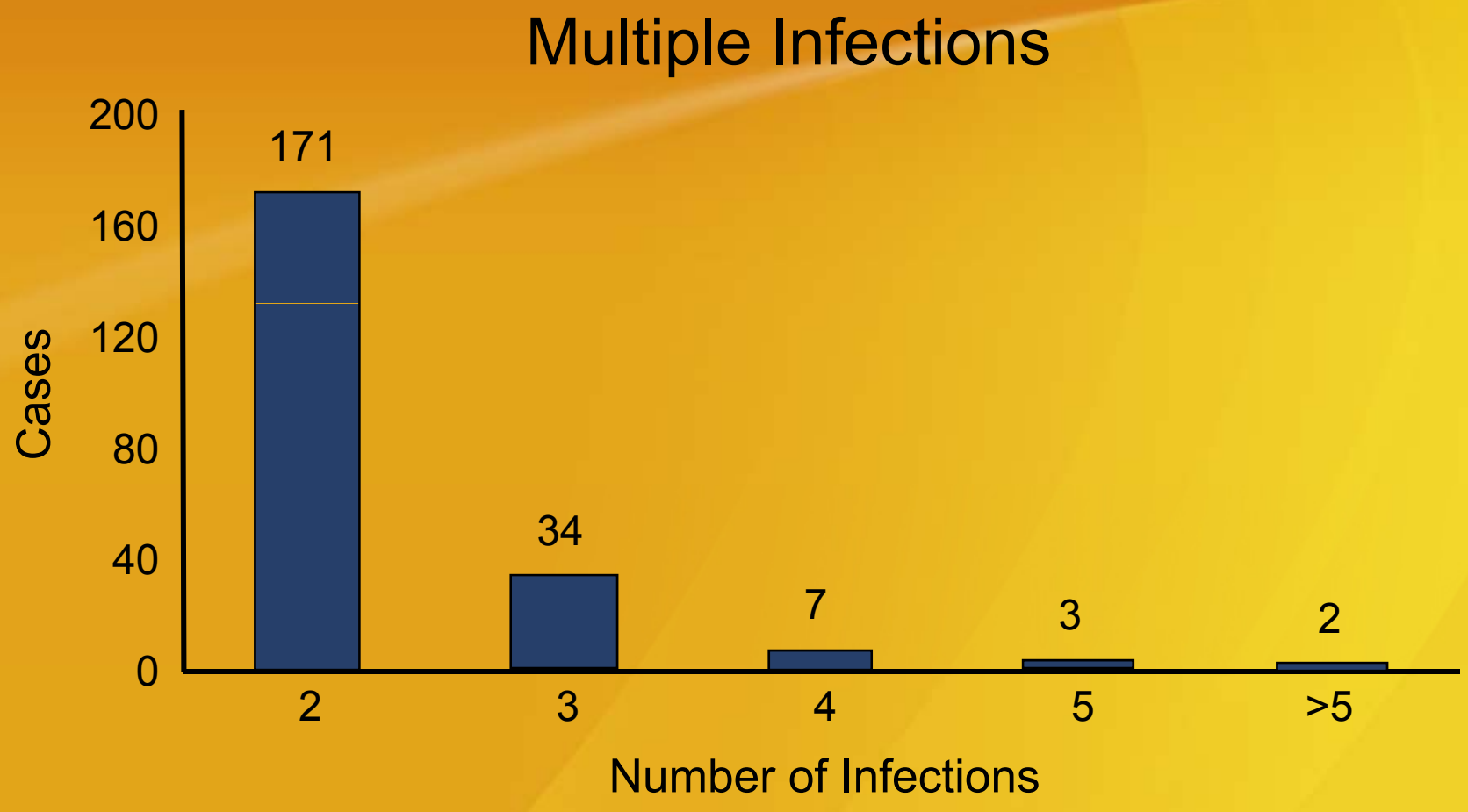
CDC publication: *Strategies for Clinical Management of MRSA in the Community*

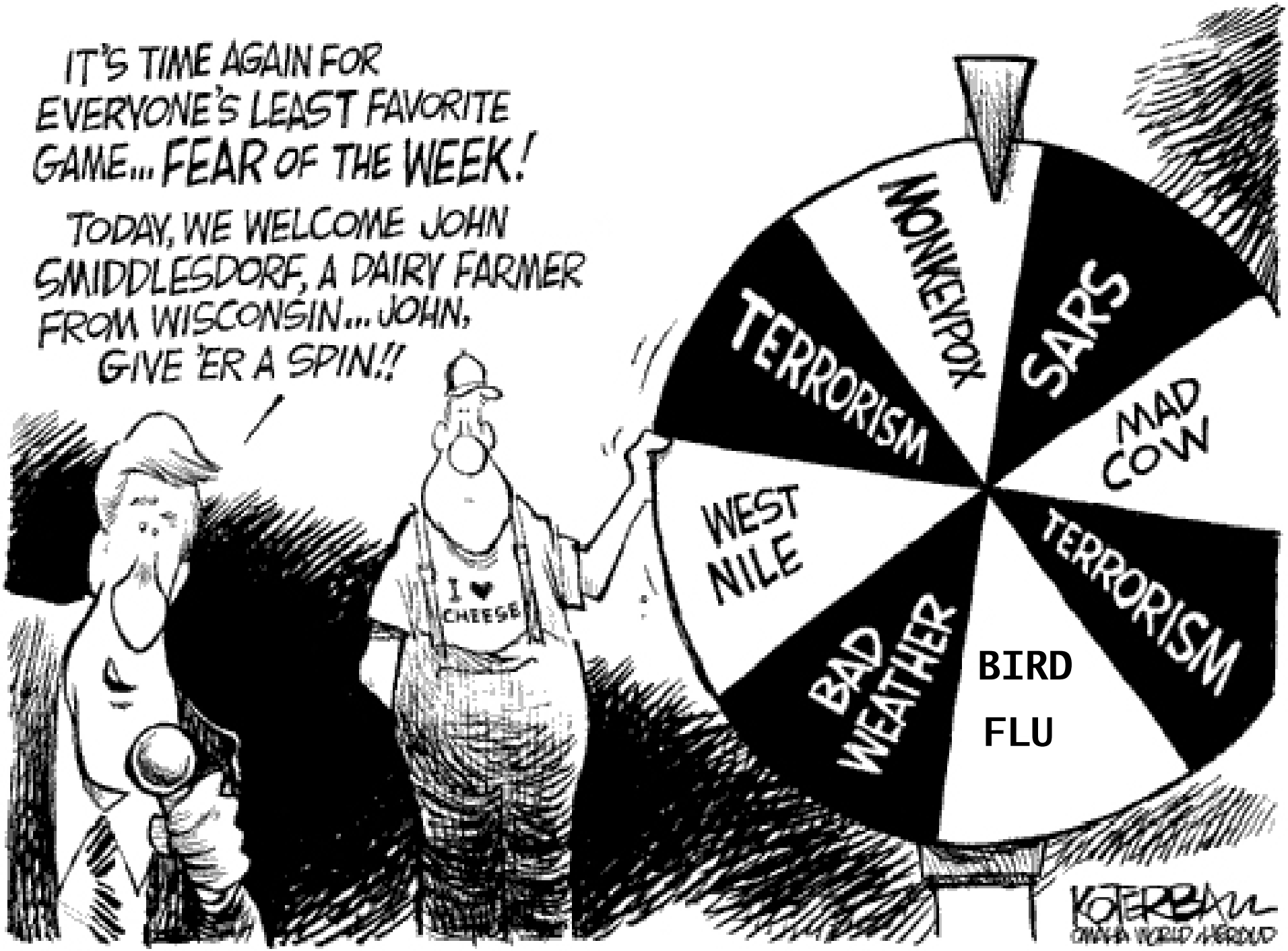
MRSA—Antimicrobial Resistance

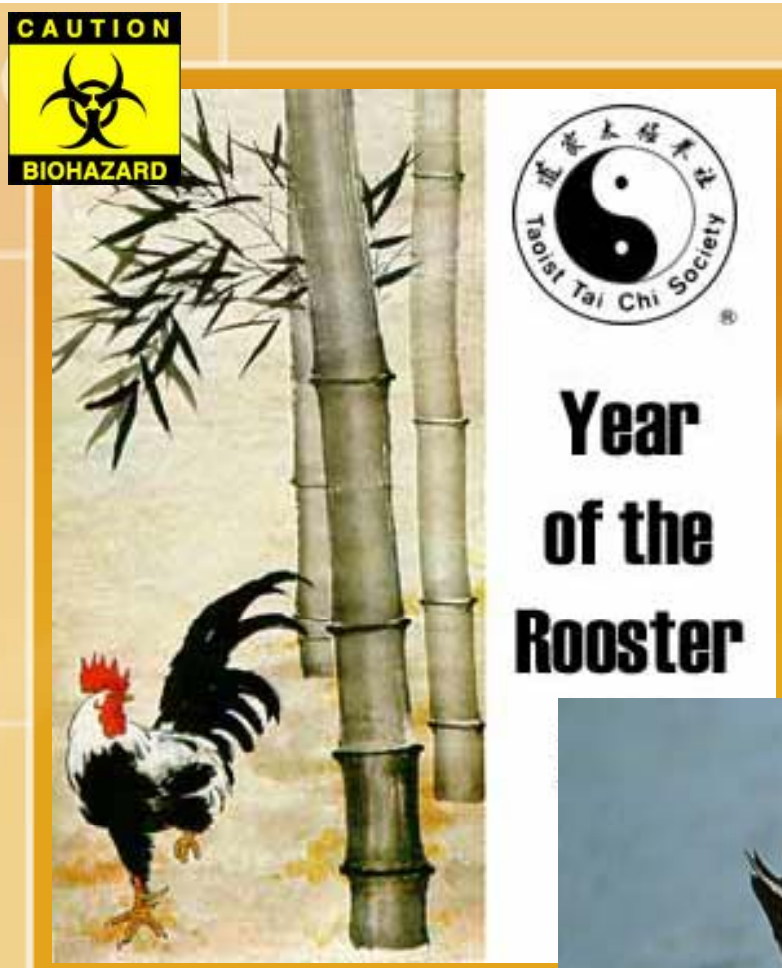
DOH Data (2003–2004) vs. Region 7 Data (2003–2006)



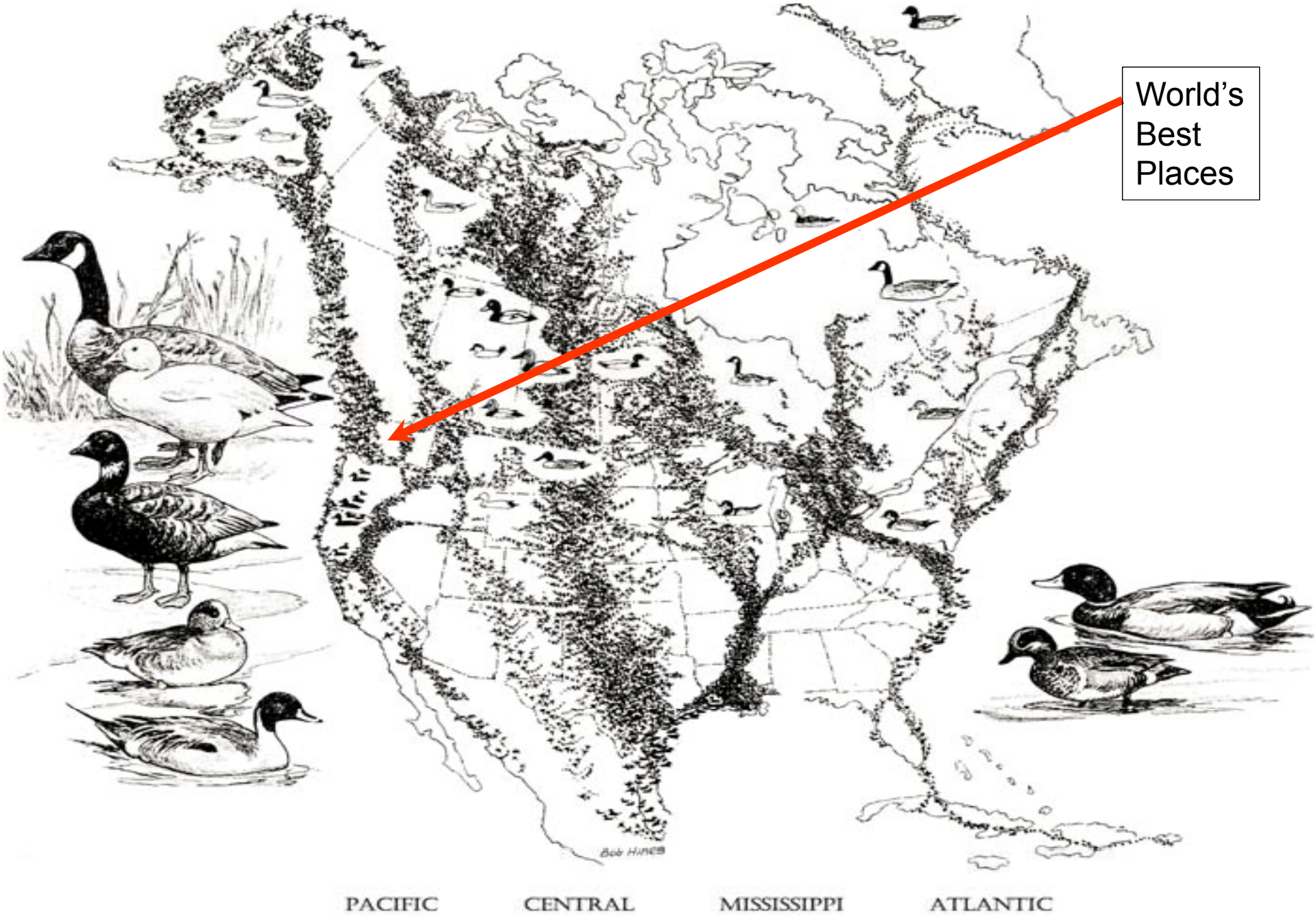
Region 7: Multiple MRSA Infections




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!!
I ♥ CHEESE
TERRORISM
MONKEYPOX
SARS
MAD COW
TERRORISM
BIRD FLU
BAD WEATHER
WEST NILE
KOTERBA
OMAHA WORLD-HERALD



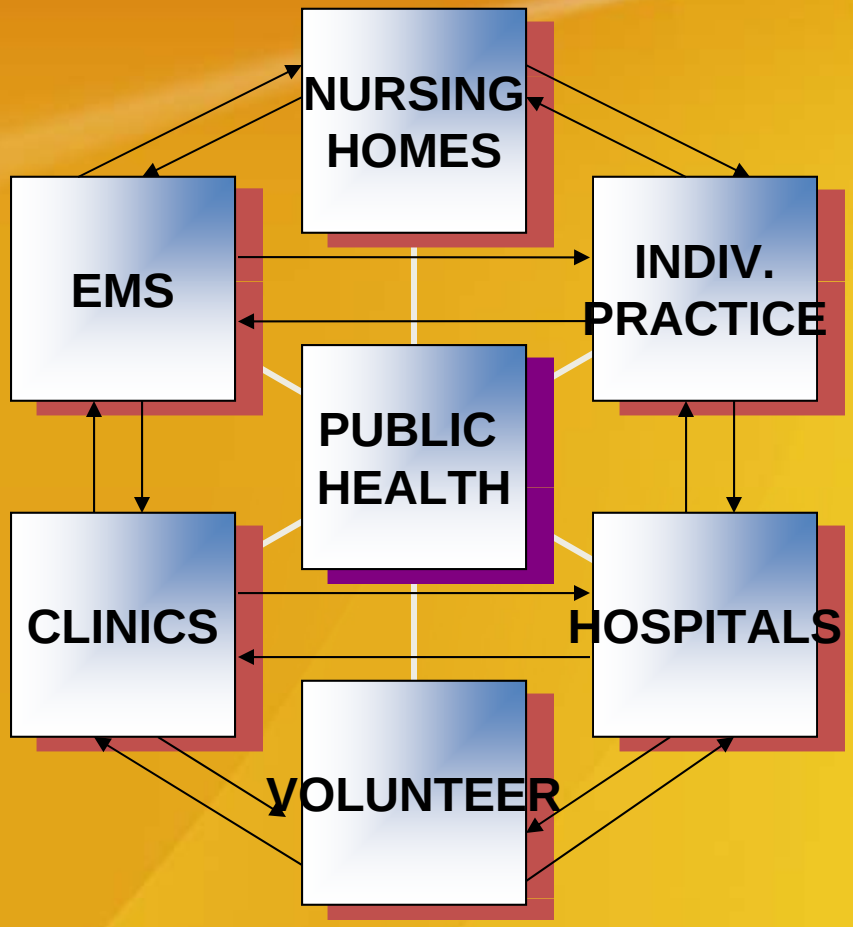
PANDEMIC AND ALL-HAZARDS PREPAREDNESS



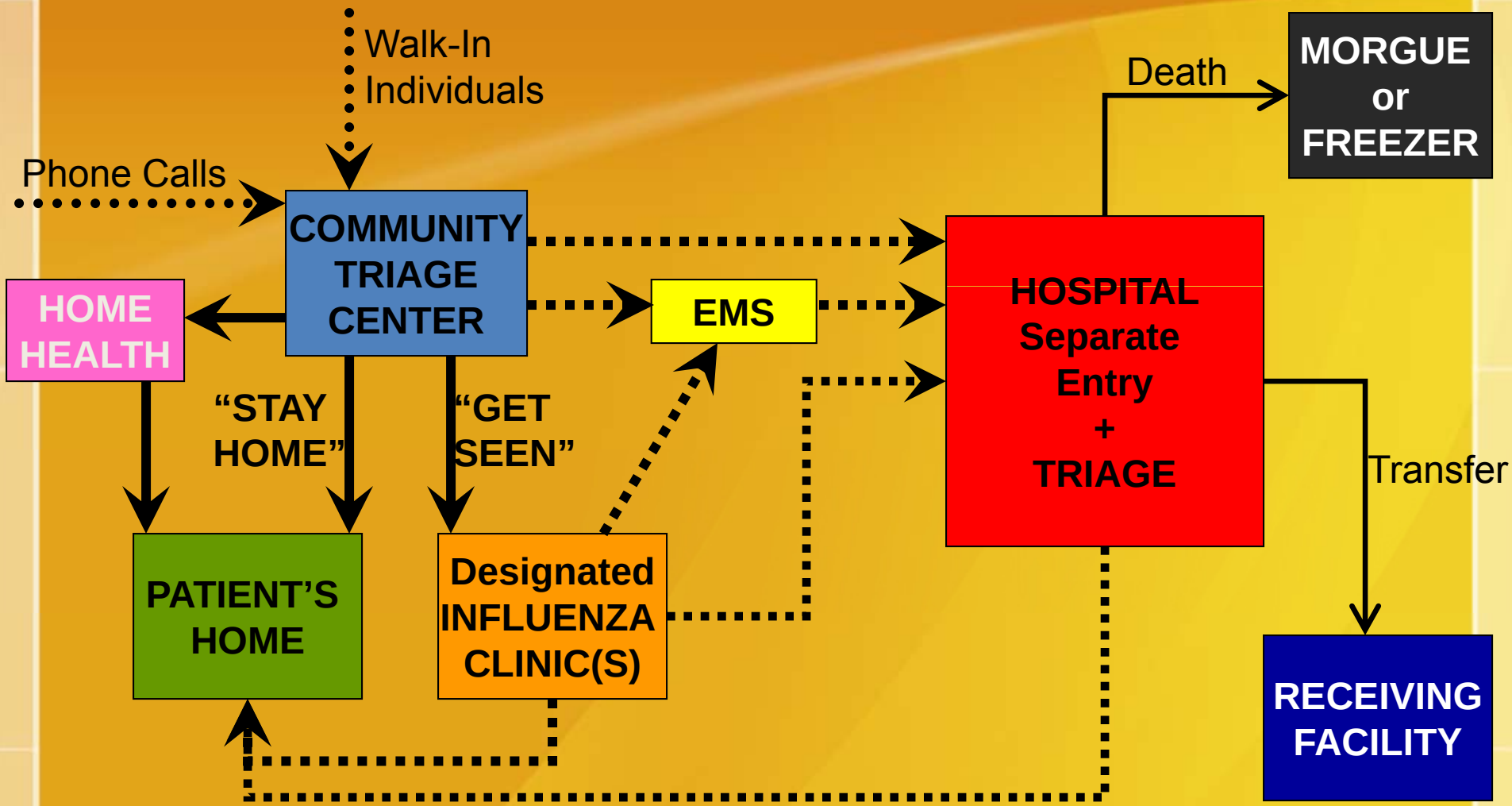
WATERFOWL FLYWAYS OF NORTH AMERICA

*DHHS, 2006

Grant County Healthcare Emergencies Alliance



Proposed healthcare re-organization*



*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

NORTH COUNTY TRIAGE (GRAND COULEE)

GRAND COULEE 1.7K
ELECTRIC CITY 1K
HARTLINE 0.25K
FORDAIR
POP. 3,000+

EPHRATA AREA TRIAGE (EPHRATA)

CRESCENT BAR
GEORGE 0.7K
QUINCY 12K
TRINIDAD
VANTAGE
WINCHESTER
POP. 12,700+

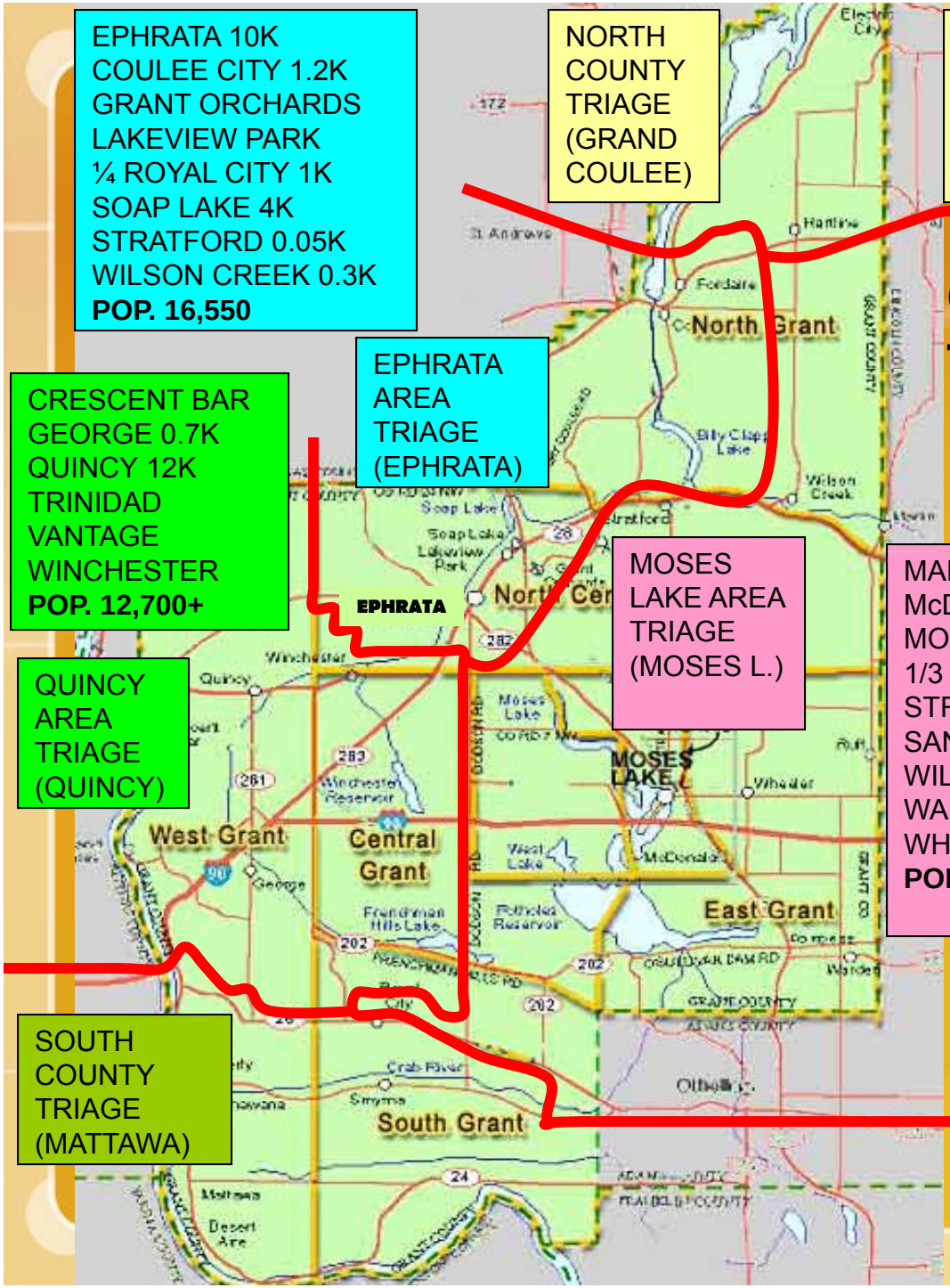
MOSES LAKE AREA TRIAGE (MOSES L.)

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+

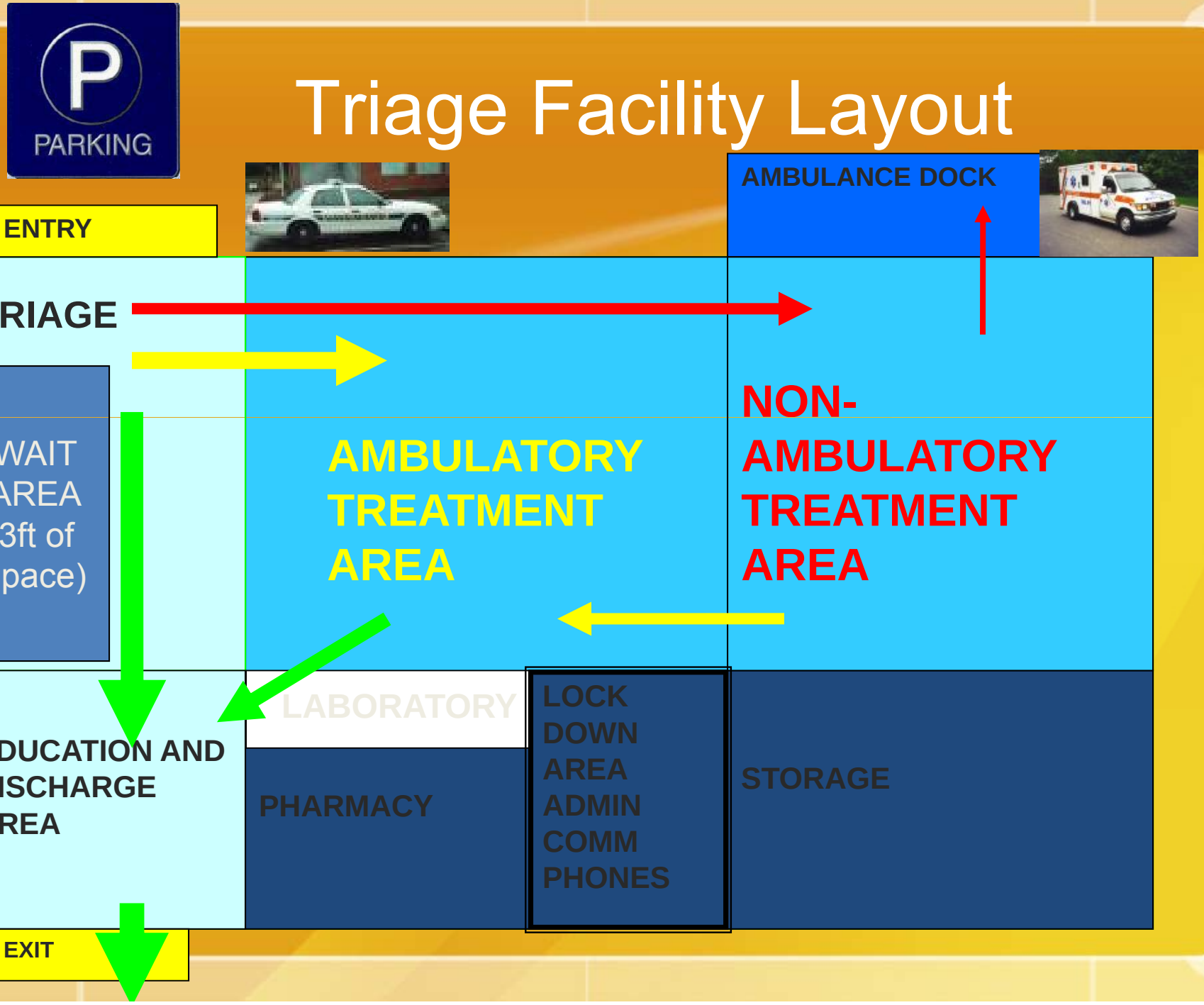
QUINCY AREA TRIAGE (QUINCY)

SOUTH COUNTY TRIAGE (MATTAWA)

BEVERLY 0.6K
CRAB RIVER
DESERT AIRE
MATTAWA 10K (EST.)
¼ ROYAL CITY 1K
SCHAWANA
SMYRNA
EST. POP. 11,600+



Triage Facility Layout



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.

Boyce, *et al.* SHEA 1998, Abstract S74.