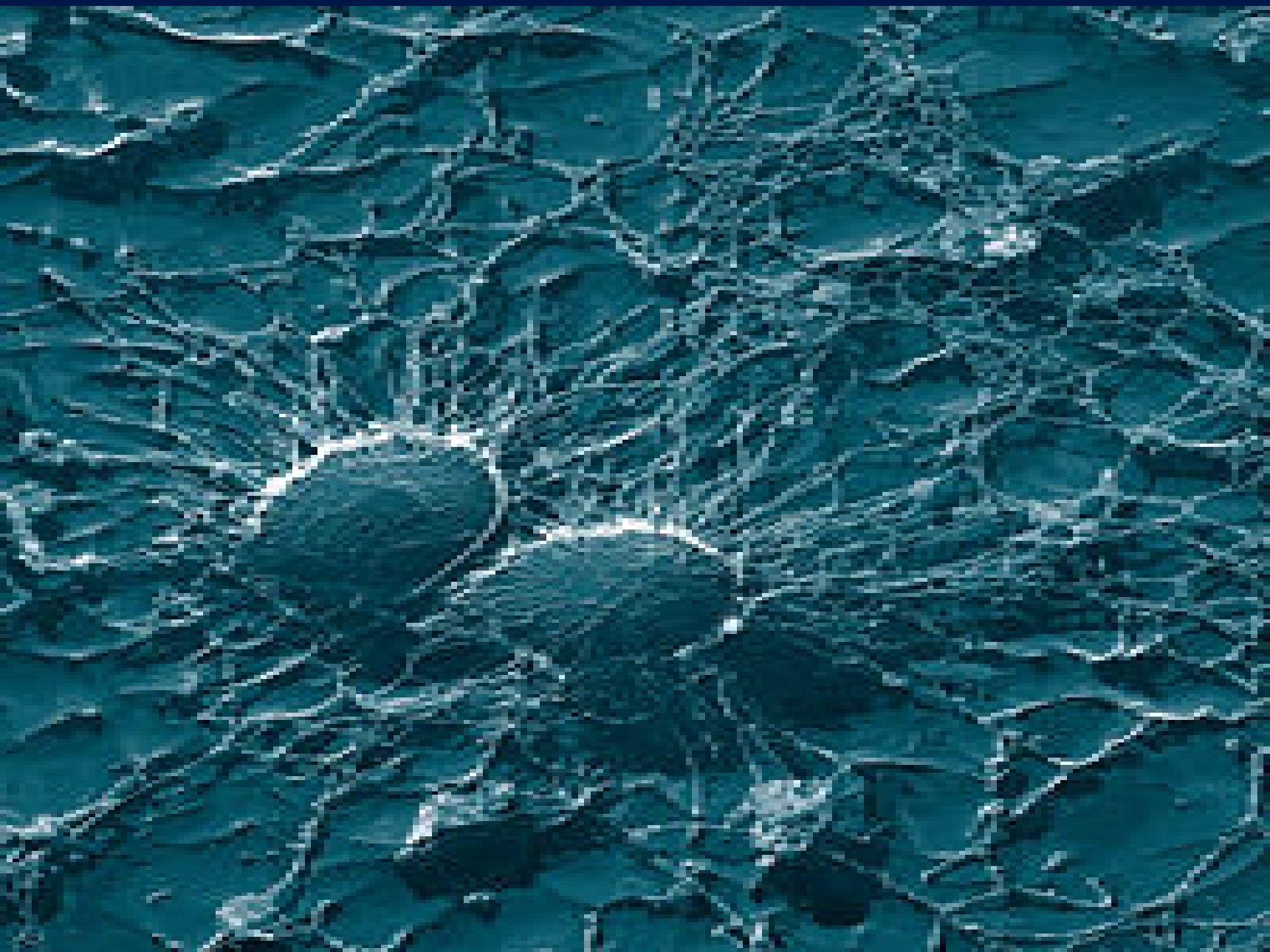


# The Super Bug?

Alexander L. Brzezny, MD, MPH  
Health Officer  
Grant County Health District  
September 4<sup>th</sup>, 2007

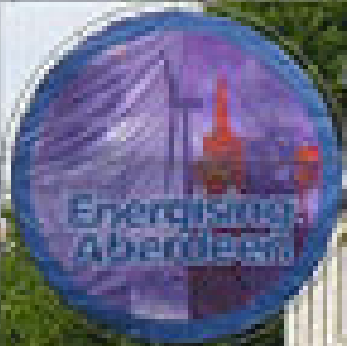




# Definitions (MRSA etc.)

- **SA**
  - **S**taphylococcus **A**ureus (Golden Staph)
- **MRSA**=“Super Bug”
  - **M**ethicillin-**R**esistant **S**taph **A**ureus
- **CA-MRSA**
  - **C**ommunity **A**cquired-MRSA
- **HCA-MRSA**
  - **H**ealthcare **A**ssociated MRSA
- **MSSA**
  - **M**ethicillin-**S**usceptible **S**taph **A**ureus





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# History I (Staphylococcus)

- Staphylococcus Aureus
  - one of the most common skin microbes (“bugs” or bacteria)
  - discovered in Aberdeen, Scotland in 1880 by Sir Alexander Ogston in pus from wound abscesses
  - large, round, golden-yellow growth in Petri dish
  - easily treated by PENICILLIN antibiotic when first introduced in 1943 (Alexander Fleming)
  - Can be found living and causing **NO** harm on about **30%** of all of us (skin, nose, nails)

The Gross Clinic  
Thomas Eakins  
Philadelphia 1875  
(Thomas Jefferson  
University)



# History II (Antibiotic Resistance)

- **Antibiotic**=substance or chemical compound capable of causing a bug (bacteria) to die
- **Antibiotic resistance**=when the bug learns how to split, digest, eat, destroy, etc. the antibiotic
- By 1950's about **40%** of all hospital Staph was **RESISTANT** to Penicillin ("PRSA")
- By 1960's this number increased to **80%**  
(Chambers et al. 2001)



# Healthcare MRSA (HCA-MRSA)

- First recognized in the 1970's causing outbreaks in healthcare settings
- Generally resistant to most common antibiotics
- Increased chance for HCA-MRSA:
  - Long hospital stay
  - Care in an intensive care unit
  - Long use of antibiotics
  - Surgical procedures
- Usually considered an infection of chronically ill, hospitalized patients





## Proportion of *S. aureus* nosocomial infections resistant to oxacillin (MRSA)<sup>1</sup>

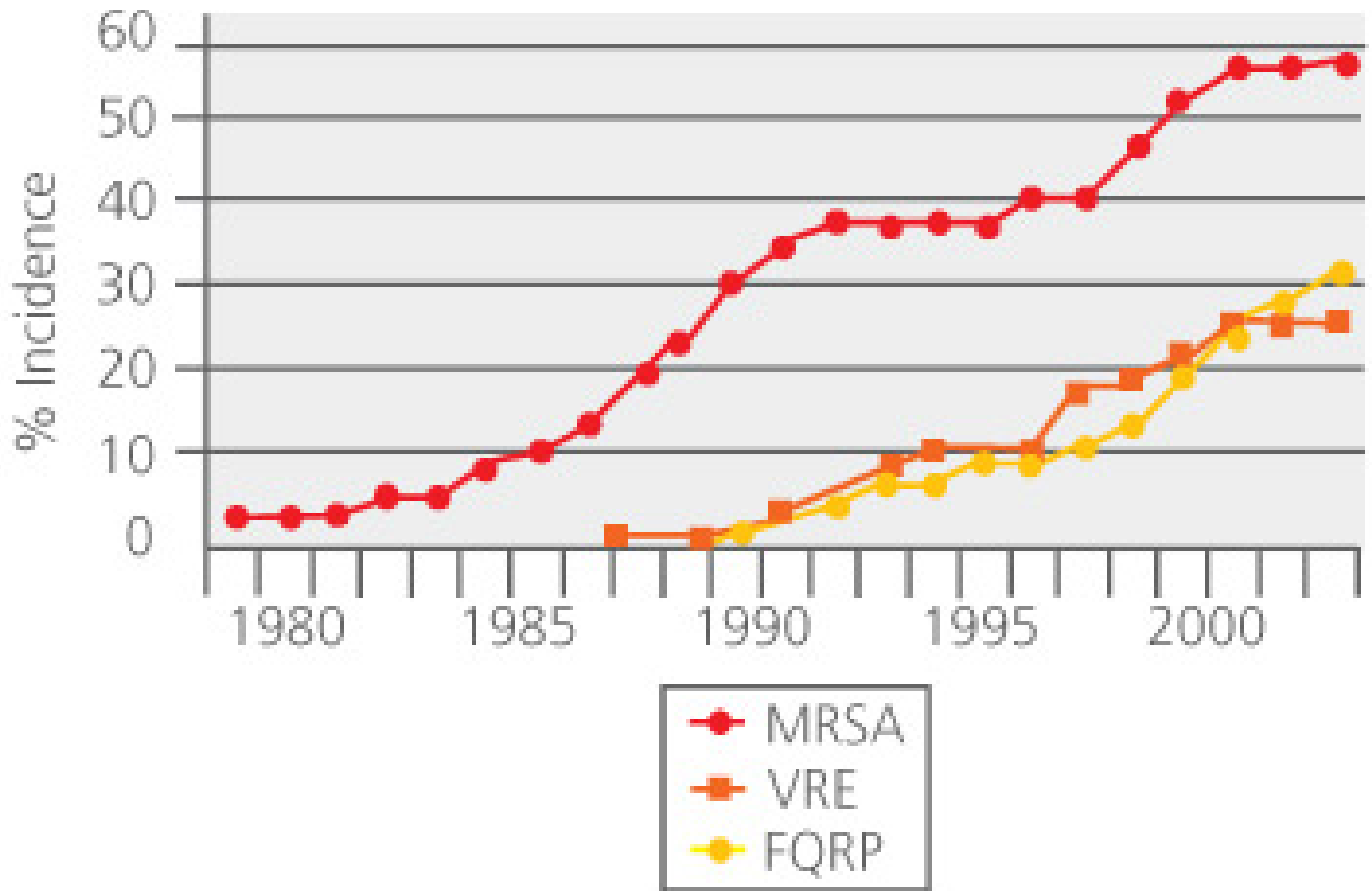


1. National Nosocomial Infections Surveillance (NNIS) System Report, January 1992 through June 2004, issued October 2004. *Am J Infect Control.* 2004;32:470-485.

# Community MRSA (CA-MRSA)

- Distinct and genetically different Staph (still MRSA but developed alongside HCA-MRSA)
- CA-MRSA to account for 30%-37% of all MRSA patients requiring a hospital stay
- In Los Angeles, 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%**





# What do those have in common?



**ChildrensHospitalLosAngeles**

*International Leader in Pediatrics*



# MRSA as a community and a hospital bug (blurring lines)

| CA-MRSA                                   | HCA-MRSA                                   |
|---|--|
| Invasive/High rate of infection           | High rate of colonization                  |
| High percentage of soft tissue infections | Less likely to cause soft tissue infection |
| Still susceptible some common antibiotics | Multi-resistant                            |
| Causes more destructive skin infection    | Growing cause of pneumonia                 |

MRSA = meticillin-resistant *S aureus*

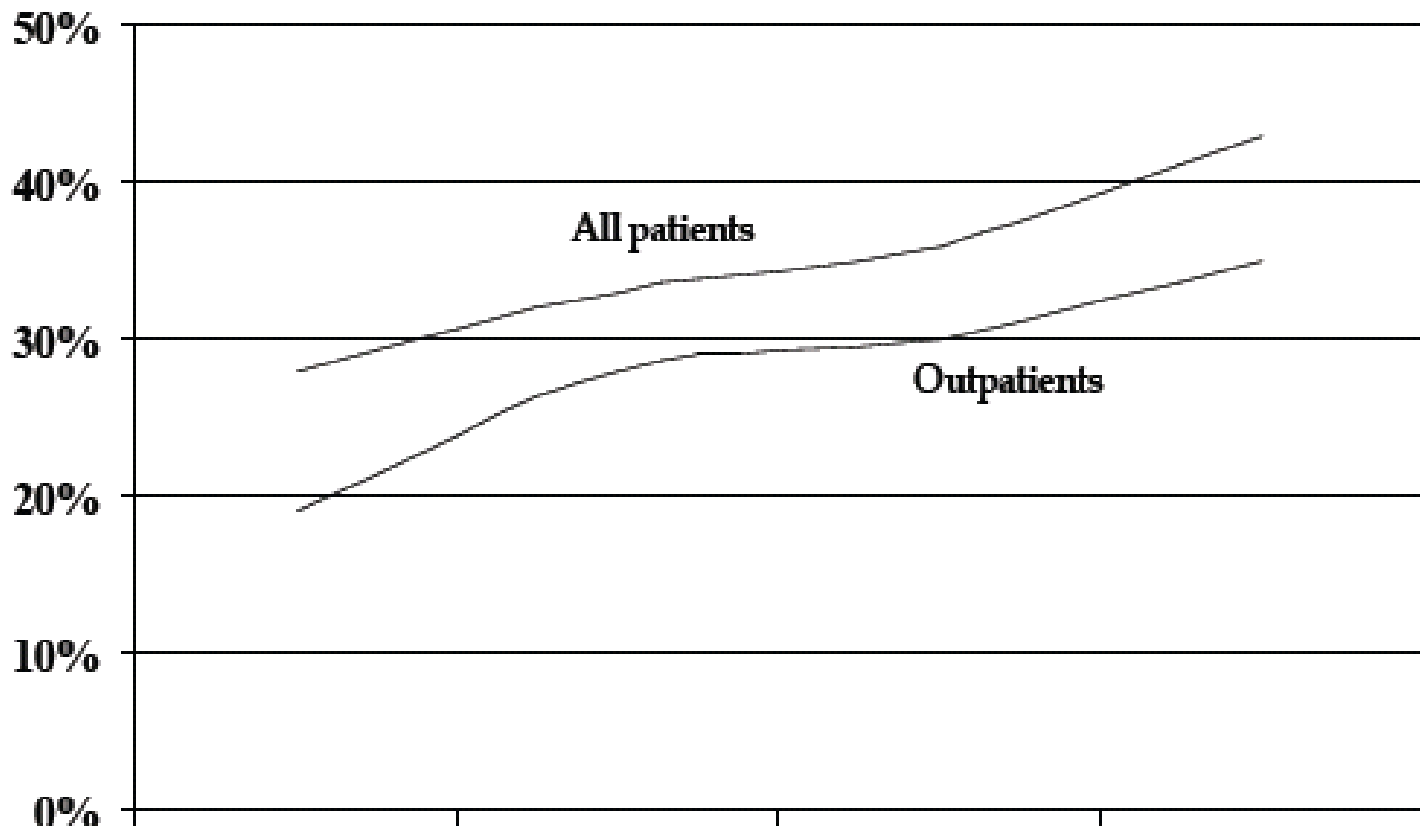
CAMRSA = community-acquired MRSA (Invading the hospital)

HCARSA = hospital-acquired MRSA



# 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%      |

# CA-MRSA symptoms

- Most often causes skin and soft tissue infections: cellulitis, boils, or furuncles often in the thighs and buttocks.
- It looks like a red, warm, painful boil
- May look like a “spider bite.”
- Children may present with a severe pneumonia.
- More serious infections of the blood stream, joint, bone, or heart are possible but rare





Medicine 101 - more multiple spots



yo Foundation for Medical Education



# CA-MRSA in your community

- Total year to date at CBH: 19 cases (11 in August) = 4.38 cases per 1000 (Ephrata alone) or about **1.5 to 2.8 cases per 1000 per year** (greater Ephrata area)
- 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 E-ta is MRSA (2007, year-to-date)**
- CA-MRSA is firmly establishing itself and is **HERE TO STAY**



# Is it treatable?

–YES

- CAN IT COME BACK?

–YES

- SHOULD ALL FAMILY MEMBERS BE ROUTINELY TESTED?

–NO (2006 CDC recommendation)



# What can you do?

- Keep your hands clean by washing thoroughly with soap and water (“Happy Birthday” twice)
- Consider using an alcohol-based hand sanitizer
- Keep cuts and scrapes clean and covered with a bandage until healed
- Avoid contact with other people’s wounds or bandages (not contact with other people)
- Avoid sharing personal items such as towels or razors



# RESOURCES

- [http://www3.doh.wa.gov/here/materials/PDFs/12\\_AntPost\\_B02L.pdf](http://www3.doh.wa.gov/here/materials/PDFs/12_AntPost_B02L.pdf)
- <http://www.doh.wa.gov/topics/antibiotics/MRSA.htm>
- <http://www.tpchd.org/files/library/2357adf2a147d1aa.pdf>

