MRSA control – do we need universal screening?

Stephan Harbarth

Geneva University Hospitals
« Ever gave a talk on MRSA screening? »
Agenda

• **Good news from Europe**
  – Recent epidemiological data?
  – Role of universal screening?

• **Recently published intervention studies**
  – Effect of universal screening?
  – Screening methods?

• **Economic evaluations**
  – Data about benefit of universal screening?
MRSA bacteremia trends in Europe, 2007

Country code (average number of isolates reported per year) & year of start surveillance#

Courtesy: Grundmann et al. (EARSS Oct 2008)
NHS superbug infections down by a third in a year

The MRSA superbug, the government said cases had fallen by a third over the last year.
MRSA bacteremia surveillance (UK, 2001-2007)
Most important determinants of success?

B. Cookson:
- Changes in legislation to reinforce Code of Practice
- Involvement of all HCW in IC
- Huge resources available

A. Holmes:
- External reinforcement
- Corporate responsibility and leadership
- Improvements: Contact isolation, environmental control, hand hygiene
Estimated average procurement of Alcohol Hand Rub and Liquid Soap in mls per bed-day July 2004-December 2007 in 148 acute NHS Trusts

- 3-fold increase in combined use to 60 mls per pt-day
- Analysis shows highly sig. association between each ml of AHR used & percentage fall in MRSA BSI
- No other significant associations in a model incorporating many other national interventions such as DoH site visits.

Courtesy: S. Stone, UK
Critics....

- No account on local priorities (e.g. CDAD)
- Not cost effective nor fair considering importance of other HCAI
- Doubts >>> MRSA BSI target as “spearhead” to control all HCAI?

Leading Edge: Lancet Infectious Diseases, Oct 2008; 8: 583
Reply: Duerden B; J Hosp Infect 2008; 69: 6-7
Role of universal MRSA screening?

“I do believe that screening for MRSA is crucial (...). We announced in November that we would screen all elective patients for MRSA by the end of next year and all emergency patients by 2011.”
LEADER

Considering the introduction of universal MRSA screening
S.J. Dancer*

Major difficulties & obstacles:
• Staff recruitment
• Working time arrangements in the laboratory
• Accuracy of laboratory methods
• Lack of isolation facilities
• Management of MRSA-colonised patients
• Ethical issues
% MRSA in *S. aureus* from bacteremias in the 3 French networks participating in EARSS, 2001-2007
(19 Univ hosp all country, 9 general hosp Paris area, 25 general hosp all country)

Determinants of success

- Leadership & commitment
- Nation-wide implementation of IC programs
  - Dedicated and coordinated IC networks providing training, surveillance & evaluation
  - Ministry of Health: Resources and incentives
- Recommendations & initiatives:
  - Promotion of hand hygiene since 1998
  - Screening & isolation of high-risk patients
  - Universal screening in ICUs only

Source: V. Jarlier & B. Coignard
MRSA in acute care hospitals
1994 - 2007

Hospitals with min. 5 participations since 1994

Source: B.Jans; M.Struelens (IPH surveillance report 2007)
Proportion of Belgian hospitals performing admission MRSA screening, 1996-2006

Screening Practices (in 2007):
On Admission: 5.2% of pts
During Hospitalization: 3.6% of pts

Source: B.Jans; M.Struelens (IPH surveillance report 2007)
Any lessons to be learned?

- Changes in:
  - Process of care & organizational issues
  - Resources & political commitment
  - Leadership & accountability

- Targeted screening & isolation, no need for universal MRSA screening

- Improved basic infection control
  - Effective hand hygiene practices
Alcohol-Handrub Policy Predicts Low Hospital MRSA Rate

- Linear regression modelling of general infection control policies to predict local MRSA rate
- adjusted for antibiotic consumption, case-mix, hospital size and teaching status:
  - Alcohol-based hand disinfection (mean difference -10.3 % MRSA rate; p=0.005)

Significant reductions in methicillin-resistant *Staphylococcus aureus* bacteraemia and clinical isolates associated with a multisite, hand hygiene culture-change program and subsequent successful statewide roll-out

M Lindsay Grayson, Lisa J Jarvie, Rhea Martin, Paul D R Johnson, Meryanda E Jodoim, Celene McMullan, Roger H C Gregory, Kaye Bellis, Katie Cunnington, Fiona L Wilson, Diana Quin and Anne-Maree Kelly, on behalf of the Victorian Quality Council’s Hand Hygiene Study Group and Hand Hygiene Statewide Roll-out Group
Hand Hygiene Culture Change Program (HHCCP)

Pilot Program
Oct 2002 – Sep 2004 (2 years)
6 sites (2379 beds)

Statewide roll-out
From Mar to July 2006 (1 year)
75 sites (6154 beds)

MJA 2008; 188: 633–640
Effect on HH compliance

6 Statewide roll-out: hand hygiene (HH) compliance before and after introduction of the HHCCP, by health service type*

MJA 2008; 188: 633–640
Effect on MRSA incidence

4 Pilot program: number of clinical MRSA isolates per 100 patient discharges (PD) per month before and after introduction of the HHCCP*

8 Statewide roll-out: patients with MRSA bacteraemia per 100 patient discharges (PD) per month before and after introduction of the HHCCP*

MJA 2008; 188: 633–640
Agenda

- **Good news from Europe**
  - Recent national data?
  - Role of universal screening?

- **Recently published intervention studies**
  - Effect of universal screening?
  - Screening methods?
Early identification of MRSA carriers and subsequent contact isolation may decrease MRSA cross-infection.
Universal Screening for Methicillin-Resistant Staphylococcus aureus at Hospital Admission and Nosocomial Infection in Surgical Patients

Stephan Harbarth, MD, MS
Carolina Fankhauser, MS
Jacques Schrenzel, MD
Jan Christenson, MD
Pascal Gervaz, MD
Catherine Bandiera-Clerc, RN
Gesuele Renzi, MS
Nathalie Vernaz, PharmD
Hugo Sax, MD
Didier Pittet, MD, MS

Context  Experts and policy makers have repeatedly called for universal screening at hospital admission to reduce nosocomial methicillin-resistant Staphylococcus aureus (MRSA) infection.

Objective  To determine the effect of an early MRSA detection strategy on nosocomial MRSA infection rates in surgical patients.

Design, Setting, and Patients  Prospective, interventional cohort study conducted between July 2004 and May 2006 among 21,754 surgical patients at a Swiss teaching hospital using a crossover design to compare 2 MRSA control strategies (rapid screening on admission plus standard infection control measures vs standard infection control alone). Twelve surgical wards including different surgical specialties were enrolled according to a prespecified agenda, assigned to either the control or intervention group for a 9-month period, then switched over to the other group for a further 9 months.
Objective

To determine the effect of a universal rapid MRSA detection strategy on nosocomial MRSA infection rates in a large surgical department with endemic MRSA
Methods

Prospective, interventional cohort study with crossover design (July 04 – June 06)

- Two study groups with 6 surgical wards each and a total of 12,000 annual admissions were enrolled

1. Group I - orthopedics, neurosurgical, plastic, cardiovascular & thoracic surgery
2. Group II – urology, abdominal & transplant surgery
## Results (I): MRSA infections

<table>
<thead>
<tr>
<th></th>
<th>qMRSA period</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orthopedics</td>
<td>27</td>
<td>17</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Neurosurgery</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Abdominal</td>
<td>38</td>
<td>32</td>
</tr>
<tr>
<td>Urology</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>Others</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>93</strong></td>
<td><strong>76</strong></td>
</tr>
</tbody>
</table>

Harbarth et al. JAMA 2008;299:1149-57
# Results (II): Incidence of MRSA infections

<table>
<thead>
<tr>
<th></th>
<th>qMRSA</th>
<th>Control</th>
<th>Adjusted RR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Incidence of MRSA NI</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(per 1000 pt-days)</td>
<td>1.11</td>
<td>0.91</td>
<td>1.2 (0.9-1.7)</td>
</tr>
<tr>
<td><strong>Sites of MRSA infection</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surgical site</td>
<td>70</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Urinary tract</td>
<td>14</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Respiratory tract</td>
<td>2</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Bacteremia</td>
<td>4</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>13</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td><strong>Rate of MRSA SSI</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(per 100 procedures)</td>
<td>1.14</td>
<td>0.99</td>
<td>1.2 (0.8-1.7)</td>
</tr>
</tbody>
</table>

Harbarth et al. JAMA 2008;299:1149-57
**Results (III): MRSA acquisition**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Among patients with any type of MRSA-infection:</td>
<td>93</td>
</tr>
<tr>
<td>Newly identified MRSA carriers by admission screening</td>
<td>17</td>
</tr>
<tr>
<td>Previously known MRSA carriers</td>
<td>23</td>
</tr>
<tr>
<td>MRSA-free at admission and identified by clinical isolate during hospitalization</td>
<td>53</td>
</tr>
</tbody>
</table>

Harbarth et al. JAMA 2008;299:1149-57
Why did the intervention fail?
Limitations (1)

- The majority of MRSA-infections occurred in patients negative on admission
  - Postoperative contamination important
  - Consider weekly screening in the future
- Not all MRSA patients received vancomycin ABP
  - Emergency surgery
  - Reluctance of surgeons
- No preemptive isolation used
- Relatively low MRSA infection rates
MRSA bacteremia rates

[Bar chart showing rates per 10,000 bed days for various departments, with peaks in Cardiology and Elderly Care.]
Limitations (2)

- Excellent hand hygiene compliance
- Rapid PCR test:
  - false-negatives / false-positives
- Not screened:
  - Throat
  - HCW
Universal Surveillance for Methicillin-Resistant *Staphylococcus aureus* in 3 Affiliated Hospitals

Ari Robicsek, MD; Jennifer L. Beaumont, MS; Suzanne M. Paule, BS; Donna M. Hacek, BS; Richard B. Thomson Jr., PhD; Karen L. Kaul, MD, PhD; Peggy King, RN, MBA; and Lance R. Peterson, MD
Objective

- To examine the effect of 2 expanded surveillance interventions on MRSA disease in a 3-hospital trust in Chicago
Main interventions

- PCR–based nasal MRSA surveillance followed by topical decolonization therapy and contact isolation of MRSA-positive patients
Segmented Poisson regression model:
Aggregate hospital-associated MRSA prevalence density

Compared to baseline (8.9):
- MRSA decreased during ICU surveillance (7.4, p=0.15)
- MRSA significantly decreased during universal surveillance (3.9, p<.001)
Conclusions

- The introduction of universal admission surveillance for MRSA was associated with a large reduction in MRSA disease during admission and 30 days after discharge.
Impact of routine surgical ward and intensive care unit admission surveillance cultures on hospital-wide nosocomial methicillin-resistant *Staphylococcus aureus* infections in a university hospital: an interrupted time-series analysis

Iris F. Chaberny\(^1\), Frank Schwab\(^2\), Stefan Ziesing\(^1\), Sebastian Suerbaum\(^1\) and Petra Gastmeier\(^1\)

Admission screening policy months 31–60, (months 31–36 implementation period not analysed)

Slope before INT

Conservative estimate for reduction

Change in level

Slope after INT

---–--- Observed
Limitations of these studies

- No conventional cultures to confirm positive results of the molecular tests
- No random assignment of individual wards to the study arms
- No discharge screening
Impact of rapid screening tests on acquisition of meticillin resistant *Staphylococcus aureus*: cluster randomised crossover trial

Dakshika Jeyaratnam, research fellow,¹,² Christopher J M Whitty, professor,³ Katie Phillips, medical laboratory assistant,¹ Dongmei Liu, medical statistician,³ Christina Orezzi, information analyst,¹ Uchechukwu Ajoku, research assistant,¹ Gary L French, professor of microbiology¹,²
Methods

- **Objective**: To compare rapid MRSA screening vs. conventional cultures
- **Design**: Cluster-randomized clinical trial in 10 wards
- Admission & discharge screening
- **Main outcome**: acquisition rates
Results

- 6’888 included patients (72%)
- MRSA carriage on admission: 6.7%

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reporting (h)</td>
<td>46</td>
<td>22</td>
</tr>
<tr>
<td>Inadequate preemptive isolation (d)</td>
<td>399</td>
<td>277</td>
</tr>
<tr>
<td>MRSA acquisition</td>
<td>108</td>
<td>99</td>
</tr>
</tbody>
</table>

→ Rates of MRSA transmission, wound infection, and bacteraemia not statistically different
Study protocol

A study of the efficacy and cost-effectiveness of MRSA screening and monitoring on surgical wards using a new, rapid molecular test (EMMS)

Katherine J Hardy*, Ala Szczepura, Ruth Davies, Andrew Bradbury, Nigel Stallard, Savita Gossain, Paul Walley and Peter M Hawkey

Open Access
MRSA-Screening: Another UK trial

**Design:**
- Cluster-randomized cross-over study
- 8 months intervention phase then crossover
- Endpoint: MRSA transmission & acquisition
- Screening of all patients on discharge
- Funding: Industry

MRSA-Screening: Another UK trial

**Intervention:**
- PCR-based on-admission screening for MRSA vs. conventional screening
- Repeat screening in 4 days intervals
- Decolonisation: Mupirocin & chlorhexidin for 5 days

**Study population:**
- 12,682 surgical patients in 7 services
- Screening compliance: 90.8%

## Results: MRSA-Screening

<table>
<thead>
<tr>
<th></th>
<th>Standard arm</th>
<th>PCR arm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients</td>
<td>6848</td>
<td>5884</td>
</tr>
<tr>
<td>MRSA+ on admission</td>
<td>187</td>
<td>266</td>
</tr>
<tr>
<td>Time to notification (d)</td>
<td>3.3</td>
<td>0.9</td>
</tr>
<tr>
<td>Nosocomial MRSA+</td>
<td>157</td>
<td>111</td>
</tr>
<tr>
<td>Decolonisation</td>
<td>142</td>
<td>268</td>
</tr>
</tbody>
</table>

**Important results:**
- Only 17% of MRSA-patients underwent contact isolation
- After adjustment for confounding, MRSA transmission rates were **1.5 times higher** in the standard screening arm (compared to PCR)

Possible explanations

- Study Design
- HH Compliance
- Detection rate
- Baseline rates
- Patient Population
- Decolonization
- MRSA infection rates

Possible explanations for MRSA infection rates include:

- Study Design
- HH Compliance
- Detection rate
- Baseline rates
- Patient Population
- Decolonization
Economic Evaluation of Universal MRSA Screening

Thanks to Anant Murthy
(Johns Hopkins / Geneva)
It is not clear from the current literature if, when, for whom universal MRSA screening is cost-effective

Common limitations of existing studies:
• No explicit goal or decision choice
• No clear perspective (Hospital? Payer? Society?)
• Poor costing methods
• Limited clinical & economic data available
Complications with Economic Analyses of MRSA Screening

- **Limited availability of cost data**
  - “What does an MRSA infection cost?”
    - Attributing costs to MRSA is not easy
    - Controlling for confounders difficult to achieve
    - Endogeneity bias* (correlation between infection risk and length of stay)
  - Overestimation of direct MRSA infection costs
  - Underestimation of indirect MRSA costs

Economics of screening (ICU): *costs of screening versus cost of MRSA infections*

<table>
<thead>
<tr>
<th>Study</th>
<th>Setting</th>
<th>Cost Factors Studied</th>
<th>Conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clancy 2006</td>
<td>Endemic MRSA, ICU</td>
<td>Universal ASC and CP</td>
<td>Avoiding $19,714/month in excess MRSA costs</td>
</tr>
<tr>
<td>Harbarth 2006</td>
<td>Endemic MRSA, SICU &amp; MICU</td>
<td>Universal ASC and CP</td>
<td>Effective and probably cost saving in the MICU but not SICU</td>
</tr>
<tr>
<td>Lucet 2003</td>
<td>Endemic MRSA, ICU</td>
<td>Universal ASC and CP</td>
<td>Cost-beneficial if MRSA prevalence 2 to 20% in ICU</td>
</tr>
<tr>
<td>Karchmer 2002</td>
<td>Epidemic MRSA, NICU</td>
<td>Universal ASC and CP</td>
<td>Cost saved 19 to 27 fold more than cost of program</td>
</tr>
<tr>
<td>Chaix 1999</td>
<td>Endemic MRSA, ICU</td>
<td>Universal ASC and CP</td>
<td>Cost-effective if MRSA infections ↓14%</td>
</tr>
</tbody>
</table>
Cost-benefit analysis of detecting MRSA carriers on ICU admission

- A prospective study in 14 French ICUs for 6 months found that only universal screening detected MRSA carriage with acceptable sensitivity.
- A cost-benefit analysis confirmed that universal screening and preventive isolation saved money.

Cost-benefit analysis of detecting MRSA carriers on ICU admission

Screen and isolate:
- All patients
- Transferred patients only
- Transferred patients and directly-admitted patients with one risk factor
- Transferred patients and directly-admitted patients with two risk factors

Effect of MRSA screening in ICUs
-- Systematic review --

• 16 observational studies and 4 economic analyses
• Only 2 of the observational studies had a control group

• **Important gaps in the literature – identified needs:**
  • Clear implementation protocols
  • Rigorous economic evaluations

• **Existing evidence favors the use of ASCs, but:**
  • The evidence is of rather poor quality
  • Definitive recommendations cannot be made

## Economics of screening (non-ICUs):

*Costs of screening versus cost of MRSA infections*

<table>
<thead>
<tr>
<th>Study</th>
<th>Setting</th>
<th>Cost Factors Studied</th>
<th>Conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diller 2008</td>
<td>Sporadic MRSA, hospital-wide</td>
<td>Targeted ASC and CP</td>
<td>Approximately €20,000 saved / year</td>
</tr>
<tr>
<td>West 2006</td>
<td>Endemic MRSA, hospital-wide</td>
<td>Targeted ASC and CP</td>
<td>Cost saved $1,548,740 over 15 months</td>
</tr>
<tr>
<td>Gavalda 2006</td>
<td>Endemic MRSA, hospital-wide</td>
<td>Targeted ASC and CP</td>
<td>Economically justified if 4 MRSA infections prevented (€50 to screen each high-risk patient vs. €2730 treatment)</td>
</tr>
<tr>
<td>Wernitz 2005</td>
<td>Endemic MRSA, hospital-wide</td>
<td>Targeted ASC and CP</td>
<td>35 excess cases prevented, saving €110,236 per year; cost-effective if 3 MRSA infections prevented / year</td>
</tr>
<tr>
<td>Bjorholt 2004</td>
<td>Epidemic MRSA, hospital-wide</td>
<td>Standard vs. intensive control</td>
<td>Cost effective after 36 months</td>
</tr>
</tbody>
</table>
Cost-savings of a universal MRSA screening programme in Surgery

Assumptions:
• Annual cost of screening: £302’500
• Treatment costs:
  MRSA BSI: £3’500
  MRSA SSI: £4’000
• Daily labour costs of MRSA infected patient:
  £314 (general ward) to 1’390 (ICU)

Cost-savings of a universal MRSA screening programme in Surgery

<table>
<thead>
<tr>
<th>MRSA</th>
<th>Blood</th>
<th>Wound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected numbers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Based on 2005 figures</td>
<td>86</td>
<td>384</td>
</tr>
<tr>
<td>Based on 2000–2005 figures</td>
<td>86</td>
<td>317</td>
</tr>
<tr>
<td>Observed numbers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>53</td>
<td>277</td>
</tr>
<tr>
<td>Cost savings (£)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Versus 2005 figures</td>
<td>£115,500</td>
<td>£429,926</td>
</tr>
<tr>
<td>Bed-year equivalents</td>
<td>1.58</td>
<td>5.89</td>
</tr>
<tr>
<td>Versus 2000–2005 figures</td>
<td>£115,500</td>
<td>£160,720</td>
</tr>
<tr>
<td>Bed-year equivalents</td>
<td>1.58</td>
<td>2.20</td>
</tr>
</tbody>
</table>

PCR vs. conventional methods for MRSA screening

- Significant reduction of TAT time by PCR
- Increased costs of MRSA control: from Can$605,034 to Can$771,609
- Of 290 PCR-positive patients, 120 (41.4%) were placed under contact precautions unnecessarily (false-positives) increasing costs
- **Cost per patient higher with detection by PCR (Can$96) than by culture (Can$67)**

*Conterno L et al. ICHE 2007; 28: 1134-41*
PCR vs. conventional methods for MRSA screening

• PCR tests are valuable for the rapid detection of MRSA carriers, but high costs require the careful evaluation of their use.

• In patient populations with low MRSA endemicity, the broad use of PCR is not cost-effective.

Cost-Effectiveness of MRSA screening
-- Systematic review --

**Laboratory tests:**
Screening agar vs. Chromogenic agar vs. Real-time PCR

**Screening strategies included in the model:**
1) Screen all hospitalized patients
2) Screen all ICU-patients only
3) Screen all ICU-patients & high-risk patients elsewhere
Cost breakdown of screening strategies (mean costs)

Ritchie K et al. HTA report 9. NHS Quality Improvement Scotland, 2007
Cumulative infections over 5 years using chromogenic agar

- Screen all
- Screen ICU
- Screen ICU & Risk profile other wards

Strategy 2
- Year 1
- Year 2
- Year 3
- Year 4
- Year 5

Strategy 3

Strategy 5
Cost-Effectiveness of MRSA screening
-- Systematic review --

- **Model:** screening of all patients admitted to hospital with preemptive isolation of potential carriers proved most effective at reducing MRSA prevalence.
- Screening all patients by laboratory test without pre-emptive isolation was only marginally less effective.

*Ritchie K et al. HTA report 9. NHS Quality Improvement Scotland, 2007 (www.nhshealthquality.org)*
Cost-Effectiveness of MRSA screening
-- Systematic review --

• Screening of only those patients admitted to high-risk units was least effective.

• Using chromogenic agar for all tests was:
  – The most clinically effective method (high sensitivity and specificity)
  – The most cost-effective method of screening

Ritchie K et al. HTA report 9. NHS Quality Improvement Scotland, 2007
(www.nhshealthquality.org)
Cost-Effectiveness of MRSA screening -- Sensitivity analyses --

• Model sensitive to:
  – Baseline prevalence of MRSA
  – MRSA transmission rate
  – Number of isolation beds available
  – Average length of stay

Cost-Effectiveness of MRSA screening
-- Major uncertainties --

- Analyses performed before new high-quality evidence available
- Variable sensitivity and specificity of MRSA tests
- MRSA decolonisation rates not accurately known
- Great variations in the prevalence of MRSA
- Inter-hospital variability of control strategies and isolation capacities
- Impact of other MRSA containment policies

Ritchie K et al. HTA report 9. NHS Quality Improvement Scotland, 2007
Summary

• Great progress in MRSA control possible
  – Universal screening not a mandatory prerequisite to reduce MRSA infections

• MRSA screening:
  – Conflicting recent evidence
  – Use of targeted active surveillance is probably cost-effective (independent of method) if linked to rapid action
  – Competing IC strategies need to be evaluated
A European Integrated Project (FP-6) for *Mastering Hospital Antimicrobial Resistance* and its spread in the community

*FP6-2005-LIFESCIHEALTH-7
LSH-2005-2.1.2-1: Control of antimicrobial resistance in hospital-acquired and other health care-associated infections
**MOSAR (WP4, 10 hospitals):** An interventional study to evaluate the impact and cost-effectiveness of two strategies in preventing nosocomial MRSA infection.

**Diagram:**
- **Baseline**
- **Rapid MRSA Screening + decolonisation***
- **Enhanced infection control**
- **Wash-out**

**Timeline:**
- 6 mo.
- 12 mo.
- 6 mo.

**Determination of MRSA infection rates and secondary outcomes**
Strategies to Prevent Transmission of Methicillin-Resistant
Staphylococcus aureus in Acute Care Hospitals

David P. Calfee, MD, MS; Cassandra D. Salgado, MD, MS; David Classen, MD, MS; Kathleen M. Arias, MS, CIC; Kelly Podgorny, RN, MS, CPHQ; Deverick J. Anderson, MD, MPH; Helen Burstin, MD; Susan E. Coffin, MD, MPH; Erik R. Dubberke, MD; Victoria Fraser, MD; Dale N. Gerding, MD; Frances A. Griffin, RRT, MPA; Peter Gross, MD; Keith S. Kaye, MD; Michael Klompas, MD; Evelyn Lo, MD; Jonas Marschall, MD; Leonard A. Mermel, DO, ScM; Lindsay Nicolle, MD; David A. Pegues, MD; Trish M. Perl, MD; Sanjay Saint, MD; Robert A. Weinstein, MD; Robert Wise, MD; Deborah S. Yokoe, MD, MPH
• Specific recommendation regarding universal screening for MRSA cannot be made
  – Conflicting results from recent studies
  – Differences among hospitals and patient populations
SHEA/IDSA Practice Recommendations

• Active surveillance as a single intervention in the absence of a multifaceted approach to MRSA control unlikely to be effective

• Active surveillance potentially useful in facilities with optimized adherence to basic MRSA control but still high MRSA rates