ENHANCED QUALITY IMPROVEMENT & PATIENT SAFETY (EQUIPS)™

NHL-VS CAMPUS PROGRAM 2017

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Dr. Sanjay Bhatt, LAC/USC, Los Angeles, CA, USA
OVERVIEW

- Broad Outline & Recap to date
- Team Members / Team Work
- Departmental/Champions Updates
- Infection Control
- Peer Review
- Best Practices
- Closing
Broad Outline
Team Members
EQuIPS (Enhanced Quality Improvement and Patient Safety)

A Team Effort Between Doctors / Nurses / Allied Health Leadership Who Believe
High quality safe patient-care can be provided in spite of a high demand, challenging environment and limited resources

Infection Control
Universal Measures
3 Step Approach
1. Hand Washing / Gloves / Masks / Head Up
2. De-escalation, Cultures, Aseptic Technique
3. Procedures / Awareness / Critical Results

Peer Review
Incident Log
Sentinel Event
Internal M&M
Root Cause Analysis
Quality Improvement

Best Practices
Guidelines / Algorithm to Care Checklists and Templates

Goals: Increase Awareness, Enhanced Patient Safety, Education, Process Improvement
TEAM

- DEAN / MS / HODs
- LEADERSHIP
- QUALITY COUNCIL

Collaboration with:
- Nursing
- Allied Health
- Dept. of Microbiology
- Infection Control
- Department of PSM
- Others on invitation

- CQM Faculty Champions
  - Medicine: Dr. Palat
  - Medicine: Dr. Suthar
  - Surgery: Dr. Kushwala
  - Surgery: Dr. Vyas
  - OBG: Dr. Jani
  - EMD: Dr. Jarwani
  - Others on invitation
FOCUS ONE

INFECTION CONTROL

Introduction
Antibiogram
Antibiogram Observations
3 Step Approach
ANTIBIOGRAM

- Information: Specimen Culture & Sensitivity Reports
  - % of samples for a given organism which were sensitive to certain antibiotics
- Dates: 1\textsuperscript{st} January 2016 - 31\textsuperscript{st} December 2016
USE OF AN ANTIBIOGRAM

- Prepare an antibiotic policy
- To Initiate empirical treatment
- Detection of emergence of new hospital isolates
- Detection of changes in resistance patterns
Total Samples for Culture = 21631
Total No. of Isolates obtained = 6816 (31.51%)
WHO’s “DIRTY DOZEN” JUST ANNOUNCED

SEE WHO Feb 2017 released report with regional data

WHO PRIORITY PATHOGENS

CRITICAL: Acinetobacter Baumannii – Carbp res
Pseudomonas Aeruginosa – Carbp res
Enterobacteriaceae Carbp’ res ESBL

HIGH: Enterococcus, Staph MRSA, QR-Salmonella, Hb/Cb/NG

MEDIUM: Strep /Hemoph/ Shigella
## Urine

<p>| Organism                    | % of isolates | Amikacin | Anamisol/Clavulanic acid | Ampicillin/Sulbactam | Aztreonam | Cefepime | Cefoperazone/Sulbactam | Cefotaxime | Ceftazidime | Ceftriaxone | Cefotaxime | Chloramphenicol | Ciprofloxacin | Cinoxacin | Colistin | Dapsone | Erythromycin | Gentamicin | Imipenem | Levofloxacin | Linezolid | Moxifloxacin | Nitrofurantoin | Oflloxacin | Oxytetracycline | Piperacillin | Piperacillin/Tazobactam | Polymyxin B | Tetracycline | Tobramycin | Trimethoprim/Sulfamethox | Vancomycin |
|-----------------------------|---------------|----------|--------------------------|-----------------------|------------|----------|--------------------------|------------|-------------|-------------|------------|----------------|---------------|-----------|----------|---------|---------------|-----------|---------|----------------|----------|---------------|----------------|-------------|---------------------|----------|----------------|---------|-----------------------|------------|
| <strong>GRAM-NEGATIVE ORGANISMS</strong> |               |          |                          |                       |            |          |                          |            |             |             |            |                |               |           |          |         |                |           |         |               |          |               |                |             |                     |          |               |         |                       |           |
| Escherichia coli            | 55%           | 77       | -                        | 45                    | -          | 36       | 68                       | -          | 20          | -            | 21          | 100             | 25             | 74        | -         | 49      | 56             | 73        | 22      | -              | 73       | 25            | 77             | -          | -                    | 55       | 100           | -        | -                    | 28       |
| Klebsiella pneumoniae       | 12%           | 58       | -                        | 30                    | -          | 32       | 60                       | -          | 21          | -            | 28          | 100             | 29             | 41        | -         | 48      | 53             | 56        | 28      | -              | 56       | 29            | 46             | -          | -                    | 73       | 100           | -        | -                    | 23       |
| Pseudomonas aeruginosa      | 7%            | 30       | -                        | -                     | 31         | 24       | 30                       | -          | 24          | -            | 23          | 100             | -              | -         | -         | 33      | 35             | 25        | -       | -              | 35       | -             | -                | 33         | 25                  | 99        | -            | -        | -                    | 26       |
| Klebsiella sp.              | 4%            | 53       | -                        | 30                    | -          | 30       | 40                       | -          | 25          | -            | 31          | 100             | 28             | 48        | -         | 39      | 48             | 48        | -       | -              | 48       | 28            | 44             | -          | -                    | 100      | -            | -        | -                    | 33       |
| <strong>GRAM-POSITIVE ORGANISMS</strong> |               |          |                          |                       |            |          |                          |            |             |             |            |                |               |           |          |         |                |           |         |               |          |               |                |             |                     |          |               |         |                       |           |
| Staphylococcus aureus       | 2%            | -        | 60                       | 0                     | -          | -        | -                        | -          | -           | -            | -          | 100             | 100            | 65        | -         | -       | 77             | 100       | -       | 65              | -       | 100           | 65             | -          | 50                   | 58       | 0                    | -        | -                   | -        | 66           | 45       | 100                  | -        |</p>
<table>
<thead>
<tr>
<th>Organism</th>
<th>No.</th>
<th>%</th>
<th>100% Sensitive</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gram negative bacilli</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Escherichia coli</strong></td>
<td>870</td>
<td>55%</td>
<td></td>
</tr>
<tr>
<td><strong>Klebsiella pneumoniae</strong></td>
<td>189</td>
<td>11.55%</td>
<td>Colistin, Polymyxin B</td>
</tr>
<tr>
<td><strong>Pseudomonas aeruginosa</strong></td>
<td>104</td>
<td>6.57%</td>
<td></td>
</tr>
<tr>
<td><strong>Klebsiella sp.</strong></td>
<td>61</td>
<td>3.85%</td>
<td>Linezolid, Vancomycin, Clindamycin, Chloramphenicol</td>
</tr>
<tr>
<td><strong>Gram Positive cocci</strong></td>
<td></td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td><strong>Staphylococcus aureus</strong></td>
<td>31</td>
<td>1.96%</td>
<td></td>
</tr>
</tbody>
</table>

Total = 6055 with 1581 Isolates (26.11%)
## Blood isolates - % Susceptible

| % of isolates | Amikacin | Ampicillin/Clavulanic acid | Amoxicillin/Clavulanate | Aztreonam | Ceftazidime | Cefotaxime | Cefuroxime | Chloramphenicol | Ceftazidime | Colistin | Doxycycline | Erythromycin | Gentamicin | Imipenem | Levofloxacin | Linezolid | Metronidazole | Minocycline | Nitrofurantoin | Ofloxacin | Gentamicin | Piperacillin | Piperacillin/Tazobactam | Polymyxin B | Telocepil | Tetracycline | TobraMycin | Trimethoprim/Sulfamethoxazole | Vancomycin |
|--------------|---------|---------------------------|------------------------|------------|-------------|------------|------------|----------------|-------------|----------|-------------|-------------|------------|----------|-----------|-------------|----------|----------------|-------------|----------------|-------------|------------|-------------|----------------|----------------|----------------|-------------|
| **GRAM-POSITIVE ORGANISMS** |         |                           |                        |            |             |            |             |                 |             |          |             |             |            |          |            |             |          |                 |             |                |             |           |             |                |                |                |             |
| Coagulase-negative staphylococci | 21%     | -                         | 42                     | 31         | -           | -          | -          | -               | -           | -        | -            | -            | 88         | 62       | 68        | -            | 64       | -               | 30          | -               | 76          | 100       | -            | 64                 | 55            | 43            | 13          |          |             |                |                |                |
| Staphylococcus aureus | 21%     | -                         | 60                     | 36         | -           | -          | -          | -               | -           | -        | -            | -            | 88         | 76       | 82        | -            | 72       | -               | 36          | -               | 80          | 100       | -            | 72                 | 68            | 60            | 16          |          |             |                |                |                |
| **GRAM-NEGATIVE ORGANISMS** |         |                           |                        |            |             |            |             |                 |             |          |             |             |            |          |           |             |          |                 |             |                |             |           |             |                |                |                |             |
| Klebsiella pneumoniae | 18%     | 40                        | 19                     | -          | 15          | 32         | 11         | 11              | 10          | 50       | 22          | 100         | 16         | 51       | -          | 39          | 24       | 37              | 22          | 50              | 16          | 17          | 50          | 100                 | -            | 0              | 18          |          |             |                |                |                |
| Acinetobacter baumannii | 9%      | 28                        | 40                     | -          | 26          | 71         | 7          | 11              | 0           | 0        | 26          | 100         | 28         | 33       | -          | 39          | 28       | 32              | 26          | 32              | 28          | -           | -          | -                 | 100         | -              | 29          | 26            |             |                |                |                |                |
| Escherichia coli | 7%       | 74                        | 46                     | -          | 42          | 72         | 0          | 26              | 25          | 71       | 42          | 100         | 15         | 68       | -          | 61          | 58       | 68              | 42          | 68              | 15          | -           | 0          | -                 | 0           | 100            | -            | 0              | 33            |                |                |                |                |
| Klebsiella sp. | 5%       | 41                        | 11                     | -          | 11          | 30         | -          | 11              | 11          | 70       | 28          | 100         | 19         | 54       | -          | 50          | 19       | 48              | 26          | 54              | 19          | -           | -          | -                 | -           | 100            | -            | 13            | -            |                |                |                |                |
## Blood

(total = 4439 ; no. of isolates = 675 (15.2%))

<table>
<thead>
<tr>
<th>Organism</th>
<th>No.</th>
<th>%</th>
<th>100% Sensitive antibiotics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gram Positive cocci</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staphylococcus, coagulase negative</td>
<td>139</td>
<td>9%</td>
<td>Linezolid, Vancomycin</td>
</tr>
<tr>
<td>Staphylococcus aureus</td>
<td>137</td>
<td>20.5%</td>
<td></td>
</tr>
<tr>
<td><strong>Gram negative bacilli</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Klebsiella pneumoniae</td>
<td>119</td>
<td>17.62%</td>
<td>Colistin, Polymyxin B</td>
</tr>
<tr>
<td>Acinetobacter baumannii</td>
<td>58</td>
<td>8.59%</td>
<td></td>
</tr>
<tr>
<td>Escherichia coli</td>
<td>46</td>
<td>6.81%</td>
<td></td>
</tr>
<tr>
<td>Klebsiella sp.</td>
<td>36</td>
<td>5.33%</td>
<td></td>
</tr>
</tbody>
</table>
# Swab Isolates – % Susceptible

| Organism                  | % of isolates | Amikacin | Ampicillin/Clavulanic acid | Ampicillin/2β-lactamase | Aztreonam | Cefepime | Ceftazidime | Ceftazidime/Clavulanic acid | Cefoxitin | Cefuroxime | Chloramphenicol | Ciprofloxacin | Ciprofloxacin | Cefotin | Doxycycline | Erythromycin | Erythromycin | Flucloxacillin | Gentamicin | Imipenem | Lincomycin | Linezolid | Meropenem | Minocycline | Nitrofurantoin | Oxacillin | Pencillin G | Piperacillin | Piperacillin/2β-lactamase | Polymyxin B | Tobramycin | Trimethoprim/Sulfamethoxazole | Vancomycin | |
|---------------------------|---------------|----------|---------------------------|-------------------------|-----------|----------|------------|-----------------------------|------------|------------|---------------|----------------|---------------|---------|------------|-------------|-------------|-------------------|-----------|---------|-----------|---------|----------|------------|-----------------|----------|---------|-----------|-----------------|----------------|---------|----------------|-------------|
| **Gram-Negative Organisms** |               |          |                           |                         |           |          |            |                             |             |            |               |               |               |         |            |             |             |                   |           |         |            |        |          |            |                |          |---------|            |        |          |            |                |          |---------|            |        |          |
| *Pseudomonas aeruginosa*  | 25%           | 24       | -                         | 0                       | 32        | 32       | 22         | -                           | 21          | 0          | 0             | 13             | -               | 100     | 0          | 0            | 0            | 22                | 42        | 19       | -          | 43       | 0        | -          | 23               | -         | 23       | -          | 20       | 37       | 100        | -               | -         | 21       | -          | 0        | -        |
| *Klebsiella pneumoniae*   | 25%           | 30       | -                         | 14                       | -          | 15       | 32         | 21             | 0            | 8          | 6             | 39             | 14             | -         | 100       | 15           | 32           | 41                | 22        | 31       | 13          | -         | 31       | 15          | -                | -         | 18       | 18          | -        | 18       | 60          | 100              | -         | 10       | 14          | -        | -        |
| *Escherichia coli*        | 14%           | 64       | -                         | 24                       | -          | 18       | 48         | 10             | -            | 4          | 3             | 66             | 6              | -         | 100       | 17           | 68           | 38                | 46        | 56       | 7           | -         | 56       | 17          | -                | -         | 33       | 64          | -        | 67       | 16          | -                | -         | 16       | -          | -        | -        |
| *Acinetobacter baumanii*  | 10%           | 7        | -                         | 21                       | -          | 5        | 46         | 1              | 2            | 0          | 0             | 6              | 6              | -         | 100       | 10           | 0            | 18                | 5         | 7        | 6           | -         | 7        | 10          | -                | -         | -        | -          | -        | -        | -          | 100              | -         | -        | 68          | -        | 8        |
| *Klebsiella spp.*         | 5%            | 20       | -                         | 3                        | -          | 8        | 27         | -              | 5            | 3          | 47            | 9              | 100             | 13       | 41         | -            | 26           | 18                | 37        | 12       | -           | 38       | 13       | -          | -                | -         | -        | -          | -        | -        | -          | -                | -         | -        | -          | -        | -        |
| **Gram-Positive Organisms** |               |          |                           |                          |            |          |            |                             |             |            |               |               |               |         |            |             |             |                   |           |         |            |        |          |            |                |          |---------|            |        |          |
| *Staphylococcus aureus*   | 15%           | -        | 50                        | -                         | -          | -        | -          | -              | -            | -          | -             | -              | -              | 61       | 50         | 70           | -            | -84                | 30        | 68       | -           | 60       | 100      | -          | 64               | 42        | 50       | 4           | -        | -        | 99          | -                | -         | 33       | -100         | -        | 100      | -          | -                | -         | -        | -100         | -        | -        |
### Swab

(Total = 3543 ; No. of isolates = 1890 (53.34%))

<table>
<thead>
<tr>
<th>Organism</th>
<th>No.</th>
<th>%</th>
<th>Antibiotics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gram Negative bacilli</td>
<td></td>
<td></td>
<td>Colistin, Polymyxin B</td>
</tr>
<tr>
<td><em>Pseudomonas aeruginosa</em></td>
<td>483</td>
<td>25.5</td>
<td>Colistin, Polymyxin B</td>
</tr>
<tr>
<td><em>Klebsiella pneumoniae</em></td>
<td>373</td>
<td>19.73</td>
<td>Linezolid, Vancomycin, Teicoplanin, Chloramphenicol</td>
</tr>
<tr>
<td><em>Escherichia coli</em></td>
<td>268</td>
<td>14.17</td>
<td></td>
</tr>
<tr>
<td><em>Acinetobacter baumannii</em></td>
<td>192</td>
<td>10.15</td>
<td></td>
</tr>
<tr>
<td><em>Klebsiella sp.</em></td>
<td>101</td>
<td>5.34</td>
<td></td>
</tr>
<tr>
<td>Gram positive cocci</td>
<td></td>
<td>15.13</td>
<td></td>
</tr>
<tr>
<td><em>Staphylococcus aureus</em></td>
<td>286</td>
<td>15.13</td>
<td></td>
</tr>
<tr>
<td>Organism</td>
<td>% of isolates</td>
<td>Amikacin</td>
<td>Amoxicillin/Clavulanic acid</td>
</tr>
<tr>
<td>--------------------------</td>
<td>---------------</td>
<td>----------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Staphylococcus aureus</td>
<td>43%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Escherichia coli</td>
<td>21%</td>
<td>78</td>
<td>-</td>
</tr>
<tr>
<td>Klebsiella pneumoniae</td>
<td>14%</td>
<td>47</td>
<td>-</td>
</tr>
<tr>
<td>Pseudomonas aeruginosa</td>
<td>8%</td>
<td>46</td>
<td>-</td>
</tr>
<tr>
<td>Klebsiella sp</td>
<td>4%</td>
<td>26</td>
<td>-</td>
</tr>
<tr>
<td>Acinetobacter baumannii</td>
<td>3%</td>
<td>20</td>
<td>-</td>
</tr>
</tbody>
</table>
Pus

(Total = 1211; Number of isolates = 534 (44.09%))

<table>
<thead>
<tr>
<th>Organism</th>
<th>No.</th>
<th>%</th>
<th>100% Sensitive antibiotics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gram positive cocci</td>
<td></td>
<td></td>
<td>Linezolid, Vancomycin, Teicoplanin</td>
</tr>
<tr>
<td>Staphylococcus aureus</td>
<td>227</td>
<td>42.50%</td>
<td></td>
</tr>
<tr>
<td>ss. aureus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gram negative bacilli</td>
<td></td>
<td>48.00%</td>
<td>Colistin, Polymyxin B, Piperacillin, Piperacillin-tazobactam, Tetracycline</td>
</tr>
<tr>
<td>Escherichia coli</td>
<td>111</td>
<td>20.78%</td>
<td></td>
</tr>
<tr>
<td>Klebsiella pneumoniae</td>
<td>76</td>
<td>14.23%</td>
<td>Colistin, Polymyxin B, PIP-TAZ, TET</td>
</tr>
<tr>
<td>Pseudomonas aeruginosa</td>
<td>41</td>
<td>7.67%</td>
<td></td>
</tr>
<tr>
<td>Klebsiella sp.</td>
<td>19</td>
<td>3.55%</td>
<td></td>
</tr>
<tr>
<td>Acinetobacter baumannii</td>
<td>15</td>
<td>2.80%</td>
<td></td>
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</tbody>
</table>
# Sputum

<table>
<thead>
<tr>
<th>Organism</th>
<th>% of isolates</th>
<th>Amikacin</th>
<th>Ampicillin/Sulbactam</th>
<th>Aztreonam</th>
<th>Cefepime</th>
<th>Cefoperazone/Sulbactam</th>
<th>Cefotaxime</th>
<th>Ceftriaxone</th>
<th>Cefuroxime</th>
<th>Chloramphenicol</th>
<th>Ciprofloxacin</th>
<th>Colistin</th>
<th>Doxycycline</th>
<th>Ettapenem</th>
<th>Gentamicin</th>
<th>Imipenem</th>
<th>Levofoxacin</th>
<th>Meropenem</th>
<th>Minocycline</th>
<th>Oftoxacin</th>
<th>Piperacillin</th>
<th>Piperacillin/Tazobactam</th>
<th>Polymyxin B</th>
<th>Tetracycline</th>
<th>Tobramycin</th>
<th>Trimeprinil/Sulfacetazone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Klebsiella pneumoniae</td>
<td>22%</td>
<td>31</td>
<td>31</td>
<td>39</td>
<td>31</td>
<td>32</td>
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<td>61</td>
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<td>100</td>
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<td>61</td>
<td>42</td>
<td>61</td>
<td>100</td>
<td>61</td>
<td>61</td>
</tr>
<tr>
<td>Pseudomonas aeruginosa</td>
<td>16%</td>
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<td>76</td>
<td>81</td>
<td>68</td>
<td>-</td>
<td>-</td>
<td>73</td>
<td>100</td>
<td>-</td>
<td>-</td>
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<td>61</td>
<td>61</td>
<td>61</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Escherichia coli</td>
<td>11%</td>
<td>87</td>
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<td>67</td>
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<td>5</td>
<td>4</td>
<td>73</td>
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<td>83</td>
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<td>40</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Acinetobacter baumanii</td>
<td>9%</td>
<td>13</td>
<td>26</td>
<td>10</td>
<td>50</td>
<td>0</td>
<td>-</td>
<td>0</td>
<td>21</td>
<td>100</td>
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<td>13</td>
<td>11</td>
<td>13</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>
## Sputum

(Total = 1800; no of isolates = 534 (29.66%))

<table>
<thead>
<tr>
<th>Organism</th>
<th>No</th>
<th>%</th>
<th>Antibiotics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gram negative bacilli</strong></td>
<td></td>
<td>56%</td>
<td>Colistin, PolymyxinB (*Piperacillin-tazobactam)</td>
</tr>
<tr>
<td>Klebsiella pneumoniae</td>
<td>115</td>
<td>21.53%</td>
<td></td>
</tr>
<tr>
<td>Pseudomonas aeruginosa</td>
<td>84</td>
<td>15.73%</td>
<td></td>
</tr>
<tr>
<td>Escherichia coli*</td>
<td>60</td>
<td>11.23%</td>
<td></td>
</tr>
<tr>
<td>Acinetobacter baumannii</td>
<td>48</td>
<td>8.98%</td>
<td></td>
</tr>
<tr>
<td>Klebsiella sp.</td>
<td>36</td>
<td>6.74%</td>
<td></td>
</tr>
</tbody>
</table>
## Fluid

<table>
<thead>
<tr>
<th>Organism</th>
<th>% of isolates</th>
<th>Amikacin</th>
<th>Amoxicillin/Clavulanic acid</th>
<th>Ampicillin/Sulbactam</th>
<th>Acyclovir</th>
<th>Cotrimoxazole</th>
<th>Cefazolin</th>
<th>Cefoperazone/Sulbactam</th>
<th>Cefotaxime</th>
<th>Cefotaxime/Avibactam</th>
<th>Ceftriaxone</th>
<th>Ceftazidime</th>
<th>Cefuroxime</th>
<th>Cefuroxime/Avibactam</th>
<th>Cefuroxime/Peractam</th>
<th>Ceftriaxone/Avibactam</th>
<th>Ciprofloxacin</th>
<th>Clindamycin</th>
<th>Colistin</th>
<th>Dapsonac</th>
<th>Ertapenem</th>
<th>Erythromycin</th>
<th>Gentamicin</th>
<th>Imipenem</th>
<th>Linezolid</th>
<th>Meropenem</th>
<th>Minocycline</th>
<th>Minocycline/Clindamycin</th>
<th>Chloramphenicol</th>
<th>Clindamycin</th>
<th>Clindamycin/Clindamycin</th>
<th>Cloxacillin</th>
<th>PencillinG</th>
<th>Piperacillin/Tazobactam</th>
<th>Polymyxin B</th>
<th>Teicoplanin</th>
<th>Teicoplanin/Teicoplanin</th>
<th>Vancomycin</th>
<th>Vancomycin</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GRAM-NEGATIVE ORGANISMS</strong></td>
<td></td>
<td></td>
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<tr>
<td>E. coli</td>
<td>33%</td>
<td>68</td>
<td>-</td>
<td>15</td>
<td>-</td>
<td>13</td>
<td>58</td>
<td>0</td>
<td>5</td>
<td>5</td>
<td>65</td>
<td>13</td>
<td>72</td>
<td>-</td>
<td>35</td>
<td>58</td>
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<tr>
<td>Klebsiella pneumoniae</td>
<td>16%</td>
<td>35</td>
<td>-</td>
<td>6</td>
<td>-</td>
<td>15</td>
<td>37</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>35</td>
<td>5</td>
<td>100</td>
<td>6</td>
<td>0</td>
<td>30</td>
<td>15</td>
<td>32</td>
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</tr>
<tr>
<td>Acinetobacter baumannii</td>
<td>14%</td>
<td>12</td>
<td>-</td>
<td>12</td>
<td>-</td>
<td>12</td>
<td>35</td>
<td>20</td>
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<td>18</td>
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<tr>
<td>Pseudomonas aeruginosa</td>
<td>8%</td>
<td>44</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>56</td>
<td>56</td>
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<td>44</td>
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<tr>
<td><strong>GRAM-POSITIVE ORGANISMS</strong></td>
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</tr>
<tr>
<td>Staphylococcus aureus</td>
<td>15%</td>
<td>-</td>
<td>68</td>
<td>42</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>-</td>
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<td>100</td>
<td>58</td>
<td>39</td>
<td>79</td>
<td>42</td>
<td>88</td>
<td>63</td>
<td>100</td>
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<td>47</td>
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</tbody>
</table>
# Fluid

<table>
<thead>
<tr>
<th>Fluid</th>
<th>100% Sensitive Antibiotics</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Total = 523; isolates 124 (23.7%))</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Organism</th>
<th>Number of isolates</th>
<th>100% Sensitive Antibiotics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gram negative bacilli</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Escherichia coli</td>
<td>41</td>
<td>33% Colistin, PolymyxinB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[<em>Piperacillin-tazobactam</em>]</td>
</tr>
<tr>
<td>Klebsiella pneumoniae*</td>
<td>20</td>
<td>16.12%</td>
</tr>
<tr>
<td>Acinetobacter baumannii</td>
<td>17</td>
<td>13.70%</td>
</tr>
<tr>
<td>Pseudomonas aeruginosa</td>
<td>10</td>
<td>8.06% Linezolid, Vancomycin, Teicoplanin, Chloramphenicol</td>
</tr>
<tr>
<td><strong>Gram positive cocci</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staphylococcus aureus ss. aureus</td>
<td>19</td>
<td>15.32%</td>
</tr>
</tbody>
</table>
Coagulase negative staphylococci isolates in blood
  - Treat the infection, Not contamination
MRSA isolates 44%
Emergence of VISA & VRSA
GRAM NEGATIVE BACILLI

- Resistance to Fluoroquinolones 80%
- ESBL isolates = 90%
- CRE isolates = 30-70%
- MDR Acinetobacter baumanii & Pseudomonas aeruginosa
- Only 100% Sensitive drugs are Colistin & Polymyxin B
- Emergence of resistance to colistin & Polymyxin B
Observations

- MRSA / TB / Swine Flu Presentations
- High Incidence of S. Epidermidis in Blood Cultures
- Limited N95 Masks
- Limited De-Escalation of Antibiotic Therapy
- Increasing Resistance Pattern
  - Will and Should be followed over several years
Dr. Sanjay Bhatt

Presentation and Discussion
Infection Control

- **STEP 1**
  - Hand Washing / Gloves
  - Masks
  - Bed Up > 30°

- **STEP 2**
  - De-escalation of Antibiotics
  - Draw Cultures
  - Aseptic Technique

- **STEP 3**
  - Sterile Procedures
  - Awareness though Identifiers / Poster
  - Attention to critical labs / cultures
LAC + USC STORY
- HAND HYGIENE CAMPAIGN
SISTER: 48%
PHYSICIAN: 11%
OTHER: 81% !!

16/1 – 11/2
N = 620

VS HOSPITAL

23% AVERAGE
VS Hospital Cultures

- 2016 Data (~1000 beds total)
  - Urine Cultures
    - 6055 total
    - 17 Urine Cultures / Day
  - Blood Cultures
    - 4439 total
    - 12 Blood Cultures / Day
    - Without NICU (1580):
      - 8 / Day
Aseptic Technique (Blood culture)

- 21% S. Epidermidis
  - Normal Human Flora (not pathogenic except in IC)
Other Infection Control Measures

QUARTERLY Infection Control & Microbiology Newsletter ..... “The Flora”
- Web Access with updates
- Regular Infection Control Meetings
  - Every 3 months at least or more if needed
- Intensify Environmental Sanitation and Biomedical Waste Management within the hospital UNIT BY UNIT
- Ensure Availability of Supplies
INTEGRITY OF INFECTION CONTROL AT BEDSIDE PROCEDURES

- Ensure Sterile Precautions
  - Pre/Peri/Post Preparation
  - Checklist
  - Procedure Tray
  - Proper Documentation
  - Follow up

- Each Unit / Ward / Department is Responsible for Adherence

- Awareness through Posters/

- STUDENT/RESIDENT TEAM RESPONSIBLE AND ACCOUNTABLE TO FACULTY

- Recognize with Star Ratings by CQM
AWARENESS THROUGH IDENTIFIERS / POSTERS: Examples

- **Contact Precautions**
  - Wear gown when entering room
  - Wear gloves when entering room
  - Wash hands before leaving room
  - All visitors report to Nursing Station before entering room

- **Droplet/Contact Precautions**
  - Wear fluid resistant mask and eye protection when entering room
  - Wear gown when entering room
  - Wear gloves when entering room
  - Wash hands before entering and after exiting patient room
  - All visitors report to Nursing Station before leaving room

- **Airborne Precautions**
  - Wear respiratory protection when entering room
  - Keep door closed
  - Wash hands before leaving room
  - All visitors report to Nursing Station before entering room
Juzar ali Presentation and Discussion

A PIVOTAL ARM IN THE IMPLEMENTATION OF EQuIPS PROGRAM IS.......
EQuIPS (Enhanced Quality Improvement and Patient Safety)

A **Team Effort** Between Doctors / Nurses / Allied Health Leadership Who Believe

High quality safe patient-care can be provided in spite of a **high demand**, **challenging environment** and **limited resources**

---

**Infection Control**
- Universal Measures
- 3 Step Approach
  1. Hand Washing / Gloves / Masks / Head Up
  2. De-escalation, Cultures, Aseptic Technique
  3. Procedures / Awareness / Critical Results

**Peer Review**
- Incident Log
- Sentinel Event

**Best Practices**
- Guidelines / Algorithm to Care
- Checklists and Templates

**Goals**: Increase Awareness, Enhanced Patient Safety, Education, Process Improvement
IDENTIFY SENTINEL EVENT OR ANY DEVIATION IN PATIENT SAFETY OR QUALITY OF CARE IRRESPECTIVE OF LEVEL AT WHICH IT OCCURRED

- Review and identify potential critical clinical or operational problems
- If and What went wrong detected ...
- What could have been avoided…….
- What could be corrected……..

Method: Examples each Unit can adopt

- INCIDENT NOTIFICATION through LOG/ HOT LINE
- “Missed Call” /SMS   Number
- Create a   ...  NHL SAFE   ...  645 7233
- Or use or develop an App like  “Magpi”
BEST PRACTICES

IDENTIFICATION OF NEED, IMPLEMENTATION AND MONITORING

PUBLICATION OF DATA WITH ANALYSIS & RESULTS
WEB SITE, NEWS LETTER, JOURNALS
FOCUS 3 OF EQuIPS
BEST PRACTICES FOCI TO WORK AT

CHOOSE A TARGET BASED ON DATA & NEED & PRIORITY


1. PICK YOUR STARS FROM THE GALAXY

- EACH DEPT TO DECIDE and PICK A FOCUS EVERY QUARTER

- CREATE GUIDELINES/CHECKLISTS/TEMPLATES etc.
EQuIPS (Enhanced Quality Improvement and Patient Safety)

A Team Effort Between Doctors / Nurses / Allied Health Leadership Who Believe High quality safe patient-care can be provided in spite of a high demand, challenging environment and limited resources

Infection Control
Universal Measures
3 Step Approach
1. Hand Washing / Gloves / Masks / Head Up
2. De-escalation, Cultures, Aseptic Technique
3. Procedures / Awareness / Critical Results

Peer Review
Incident Log
Sentinel Event

Best Practices
Guidelines / Algorithm to Care Checklists and Templates

Internal M&M Root Cause Analysis Quality Improvement

Goals: Increase Awareness, Enhanced Patient Safety, Education, Process Improvement
CLOSING
ACTION
WHEN WHO AND WHERE?

- **NURSING / ALLIED HEALTH TEAM**
  - INFECTION CONTROL MEASURES
  - BEDSIDE PROCEDURE CHECK LIST

- **SENIOR STUDENTS / JUNIOR DOCTORS**
  - INCIDENT LOGS / PATIENT SAFETY STEPS CHECK LIST

- **FACULTY**
  - INTERNAL PEER REVIEW AND BEST PRACTICES DEVELOPMENT IN CONCENTRIC CIRCLES WITH RIPPLE EFFECT WITH ONE STEP AT A TIME, ONE BED AT A TIME, ONE UNIT AT A TIME, DEPARTMENTS
  - DEVELOP OR RESURRECT & ENERGIZE INFECTION CONTROL COMMITTEE / SUPPORT CQM

- **ADMINISTRATION**:
  - SUPPORT / RESOURCES / INCENTIVES/ RECOGNITION
  - PREP FOR INAUGURATION, ACCREDITATION
WHY?

HOW?

TEAMWORK
Individually, we are one drop. Together, we are an ocean.
SUMMARY

- Teamwork: Top Down /Bottom Up
- Leadership at all levels
- Patient Care: It is the right thing to do
- HealthCare Team: It deserves this
- Possible: It can be done
- Act as a role model
  - Follow a procedure, rules and guidelines as a DEMAND
  - To create and then COMMAND a team following
  - Don’t worry about naysayers and initial non followers
  - THEY WILL FOLLOW.....BELIEVE IT
- It has been shown to be Evidence Based Practice
- Long Term Effect:
  - A few extra minutes today pays off in the long term in Safety, Quality, Resources & Recognition
Prior to opening of the New Hospital

- Have Processes in Place (Require starting now)
- 2017 Inauguration
  - Officials and Bureaucrats
  - Health Teamwork
    - We can showcase our work thus far
    - Main Presentation will be part of the inauguration
    - Poster Show in New Hospital during Inauguration
RESPECTFUL PLEA

- You have the **Manpower / Material / Means / Monies**
  - All you need is the **Motivation**

- **Danger in the Status Quo**
  - Please don’t use the limitations of the system, environmental challenges, and the patient population you serve as a CRUTCH to maintain Status Quo

- Keep the Passion to Cynicism ratio **HIGH**

- Thank you
RESOURCES / REFERENCES

Also in Folder submitted to CQM Lead
INFECTION CONTROL

- Resource

Outline of the evidence and considerations on medical glove use to prevent germ transmission

Definitions

The impact of wearing gloves on adherence to hand hygiene policies has not been definitively established, since published studies have yielded contradictory results. However, the recommendation to wear gloves during an entire episode of care for a patient who requires contact precautions, without considering indications for their removal, such as an indication for hand hygiene, could actually lead to the
GLOVES

- Worn to:
  - To reduce the risk of contamination of health-care workers hands
  - To reduce the risk of germ dissemination
    - To the environment
    - Transmission from the health-care worker to/from the patient
    - From one patient to another.

- Gloves should therefore be used during all patient-care activities that may involve exposure to blood and all other body fluid (including contact with mucous membrane and non-intact skin), during contact precautions and outbreak situations.
KEY POINTS

- Glove use does NOT replace alcohol-based product or hand-washing
- Wear gloves when anticipated contact with blood or other body fluids, mucous membranes, non-intact skin or potentially infectious material
- Do not wear the same pair of gloves for more than one patient.
- Change gloves if moving from a contaminated body site to another body site
- Do not reuse gloves
STERILE GLOVES INDICATED

Any surgical procedure; vaginal delivery; invasive radiological procedures; performing vascular access and procedures (central lines); preparing total parental nutrition and chemotherapeutic agents.

EXAMINATION GLOVES INDICATED IN CLINICAL SITUATIONS

Potential for touching blood, body fluids, secretions, excretions and items visibly soiled by body fluids.

DIRECT PATIENT EXPOSURE: Contact with blood; contact with mucous membrane and with non-intact skin; potential presence of highly infectious and dangerous organism; epidemic or emergency situations; IV Insertion and removal; drawing blood; discontinuation of venous line; pelvic and vaginal examination; suctioning non-closed systems of endotracheal tubes.

INDIRECT PATIENT EXPOSURE: Emptying emesis basins; handling/cleaning instruments; handling waste; cleaning up spills of body fluids.

GLOVES NOT INDICATED (except for CONTACT precautions)

No potential for exposure to blood or body fluids, or contaminated environment

DIRECT PATIENT EXPOSURE: Taking blood pressure, temperature and pulse; performing SC and IM Injections; bathing and dressing the patient; transporting patient; caring for eyes and ears (without secretions); any vascular line manipulation in absence of blood leakage.

INDIRECT PATIENT EXPOSURE: Using the telephone; writing in the patient chart; giving oral medications; distributing or collecting patient dietary trays; removing and replacing linen for patient bed; placing non-invasive ventilation equipment and oxygen cannula; moving patient furniture.
<table>
<thead>
<tr>
<th>Gloves on</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1) Before a sterile procedure</td>
</tr>
<tr>
<td></td>
<td>2) When anticipating contact with blood or another body fluid, regardless of the existence of sterile conditions and including contact with non-intact skin and mucous membrane</td>
</tr>
<tr>
<td></td>
<td>3) Contact with a patient (and his/her immediate surroundings) during contact precautions.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gloves off</th>
<th>Indication</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1) As soon as gloves are damaged (or non-integrity suspected)</td>
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<tr>
<td></td>
<td>2) When contact with blood, another body fluid, non-intact skin and mucous membrane has occurred and has ended</td>
</tr>
<tr>
<td></td>
<td>3) When contact with a single patient and his/her surroundings, or a contaminated body site on a patient has ended</td>
</tr>
<tr>
<td></td>
<td>4) When there is an indication for hand hygiene.</td>
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</tbody>
</table>
STERILILUM

- Pathogens may gain access to the caregivers’ hands via small defects in gloves or by hand contamination during glove removal.
- Hand hygiene by rubbing or washing ensures hand decontamination.
CONTACT PRECAUTIONS

- Gloves / Sterilium
- Norovirus
- Rotavirus
- Generalized rash
- Draining wounds
- Uncontrolled secretions
- Pressure ulcers
- Ostomy tubes
- Clostridium difficile
- Acidobacteria
- ESBL
- MRSA (44%)
Droplet Precautions

- **Standard Mask**
- **Travel 1 meter from the patient**
  - Deposited on the host’s nasal mucosa, conjunctivae or mouth

- Pertussis
- Influenza
- Diphtheria
- *Neisseria Meningitidis*
AIRBORNE PRECAUTIONS

- N95 Mask
- Measles
- Severe Acute Respiratory Syndrome (SARS)
- Varicella (chickenpox)
- Swine Flu
- Mycobacterium tuberculosis
**Bed Up > 30°**

- Decrease the incidence of aspiration pneumonia and pressure ulcers

  - Bed Up decreased rates of aspiration of gastric contents four-fold

  *Lancet* 1999; 354:1851-1858
  - 34% in supine position developed VAP compared with 8% of patients in the head up group
Bed Up > 30°

- Indications:
  - Altered Sensorium / Overdose
  - Nausea / Vomiting
  - Intubated / Peri-Intubation

- Contraindications
  - Neurosurgical Approaches
  - Ischemic Stroke (First 24 hours if tolerated)
MRSA Resistance Rates from Studies in India Vary but Appear to Increase Over Time
WHO’s “DIRTY DOZEN”

SEE WHO Feb 2017 released report with regional data

WHO PRIORITY PATHOGENS
CRITICAL : Acinetobacter Baumannii – Carbp res
          Pseudomonas Aeruginosa – Carbp res
          Enterobacteriaceae Carbp’ res ESBL
HIGH : Enterococcus , Staph MRSA, QR-
       Salmonella, Hb/Cb/NG
MEDIUM : Strep / Hemoph/ Shigella
Antibiotic de-escalation

- Mechanism whereby the provision of effective initial antibiotic treatment is achieved while avoiding unnecessary antibiotic use that would promote the development of resistance

- Based on microbiology results around the day 3 therapy point

- The empiric antibiotics that were started are stopped or reduced in number and/or narrowed in spectrum

- Clinically effective and appropriate
De-escalation of Antibiotics (43%)


Antibiotic strategies in severe nosocomial sepsis: why do we not de-escalate more often?
Heenen S¹, Jacobs F, Vincent JL.

Abstract

OBJECTIVES: To assess the use of antibiotic de-escalation in patients with hospital-acquired severe sepsis in an academic setting.

DESIGN: We reviewed all episodes of severe sepsis treated over a 1-yr period in the department of intensive care. Antimicrobial therapy was considered as appropriate when the antimicrobial had in vitro activity against the causative microorganisms. According to the therapeutic strategy in the 5 days after the start of antimicrobial therapy, we classified patients into four groups: de-escalation (interruption of an antimicrobial agent or change of antibiotic to one with a narrower spectrum); no change in antibiotherapy; escalation (addition of a new antimicrobial agent or change in antibiotic to one with a broader spectrum); and mixed changes.

SETTING: A 35-bed medico-surgical intensive care department in which antibiotic strategies are reviewed by infectious disease specialists three times per week.

PATIENTS: One hundred sixty-nine patients with 216 episodes of severe sepsis attributable to a hospital-acquired infection who required broad-spectrum β-lactam antibiotics alone or in association with other anti-infectious agents.

MEASUREMENTS AND MAIN RESULTS: The major sources of infection were the lungs (44%) and abdomen (38%). Microbiological data were available in 167 of the 216 episodes (77%). Initial antimicrobial therapy was inappropriate in 27 episodes (16% of culture-positive episodes). De-escalation was applied in 93 episodes (43%), escalation was applied in 22 episodes (10%), mixed changes were applied in 24 (11%) episodes, and there was no change in empirical antibiotic therapy in 77 (36%) episodes. In these 77 episodes, the reasons given for maintaining the initial antimicrobial therapy included the sensitivity pattern of the causative organisms and previous antibiotic therapy. The number of episodes when the chance to de-escalate may have been missed was small (4 episodes [5%]).
**Draw Cultures**

- Indications for Blood Cultures
- Balance between wasteful and useful
  - Based on Pre-Test Probability (Cellulitis 2%+ to Shock 69%+)
  - **Suspicion** of bacteremia or fungemia
    - Especially Important: Sepsis, meningitis, osteomyelitis, arthritis, endocarditis, peritonitis, pneumonia, and fever of unknown origin

PROCEDURES AND PPE

1. HCP washes hands
2. HCP dons gown
3. HCP dons mask (if applicable)
4. HCP dons face shield or goggles (if applicable)
5. HCP dons gloves
6. HCP enters the room
HCP washes hands → HCP dons gown → HCP dons mask (if applicable) → HCP dons face shield or goggles (if applicable) → HCP dons gloves → HCP enters the room
संक्रमण नियंत्रण
INFECTION CONTROL
चेप नियंत्रण प्रणाली

बिस्तर
स्वच्छता
BEDSIDE
HYGIENE

से संपर्क करें
एहतियात
CONTACT
PRECAUTION

संपर्क द्वारा चेप अटकावा

छोटी बुंद
एहतियात
DROPLET
PRECAUTION

हवाई
एहतियात
AIRBORNE
PRECAUTION

अलगाव
एहतियात
ISOLATION

जुदाई
एहतियात
SEPARATION
Glove up.

We're starting a major operation.

Mercy Health Partners has broken ground on one of its most important operations: A new state-of-the-art hospital designed to serve Cincinnati's west side.

The new facility will offer comprehensive care in nearly every specialty from cardiology and women's services to oncology and orthopedics. And, like other Mercy hospitals, it will deliver advanced medicine within a few miles of where patients and their families live.

This new hospital complements our growing network of primary care and specialty physician groups, sister hospitals, urgent care facilities, diagnostic centers and senior communities that provide a system of care for our entire community.

The Sisters of Mercy and The Franciscan Sisters of the Poor defined our mission in 1858, and for the past 132 years we have been dedicated to their vision. Today, we know they are proud.

e-mercy.com

Take me to my Mercy.
www.cdc.gov/HandHygiene
RECOMMENDATIONS

- Blood culture
  - In duplicate
  - Before starting antibiotic
- Urine
  - Midstream Early Morning urine sample
  - Mention in the form if catheterized sample is sent
- Sputum
  - Preferable Early morning sample
  - If report does not correlate clinically repeat sample
- Fluid
  - Leak proof sterile container
Recommendations (cont..)

- Avoid or minimize delay in transportation
- **Shift to Automation**
  - For culture & sensitivity
- **Critical reports** on personal contact
- **Descalation** of antibiotics
  - After getting Culture and sensitivity report