Implementing the “CDC 12 Step Program for Hospitalized Adults To Prevent Antimicrobial Resistance” in the NICU.

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Background
Each year, ~2 million U.S. patients acquire an infection while hospitalized and ~90,000 of these infections are fatal. The CDC initiated its campaign “The 12 Steps to Prevent Antimicrobial Resistance in Hospitalized Adults” in 2002. Excess antibiotic use can lead to resistance. Adherence to guidelines for preventing antimicrobial-resistance in the health-care is not optimal.

The program focuses on four integrated strategies: (i) preventing infection, (ii) diagnosing and treating infection effectively, (iii) using antimicrobials wisely, and (iv) preventing transmission. The NICU at CHoNJ has successfully integrated many facets of these strategies in particular preventing infection and preventing transmission.

Objective/Aim
1. To implement the 12 steps and decrease nosocomial bacterial infections 50% by Dec 2013.
2. To focus on strategy (iii) “using antimicrobials wisely” and ensuring timely discontinuation.
3. To target clinicians and staff to translate these guidelines into routine practice behaviors.

Method/Description
1. The NICU Multidisciplinary Infection Prevention Team has continued to reinforce and monitor infection prevention practices introduced over the past few years
2. The team reviewed the relevant steps on using antimicrobials wisely and engaged and educated the staff with emphasis on treatment beyond 72 hours. Our objectives were to:
   A. Minimize use of broad-spectrum antibiotics
   B. Re-evaluate the need for continued therapy after 48-72 hours
   C. Stop antimicrobial treatment when cultures are negative and infection is unlikely.
3. Antibiotic use was documented for the initial course of ampicillin and tobramycin, and for subsequent courses of vancomycin and claforan from Jan to Dec, 2013. Ampicillin and claforan have standard dosing intervals and were used to index the length of these treatments.

Results:
1. Preventing infection and preventing transmission: Nosocomial bacterial blood stream infections (BSIs) decreased from 4.7% of admissions (37 BSIs) in 2011 to 1.32% (10 BSIs) in 2013. Over the same period, we have virtually eliminated central line associated BSIs (CLABSIs), having had 4 in 2011 and a rate of 0.74 per 1000 line days and only 1 in 2012 and 2013 with rates of 0.22 and 0.23 per 1000 line days respectively.
2. Using antimicrobials wisely: We reviewed antibiotic use for the calendar year 2013.
   Initial Course: 380 patients who were inborn and survived were treated and received 3,641 doses of ampicillin. 36 (9.5%) were treated for 7 or more days for blood culture positive sepsis (n=3) and for culture negative clinical sepsis (n=33). 238 (63%) received antibiotics for 72 hours or less. Of the 106 remaining (28%), 81 had a clinical reason for continuing antibiotics beyond 72 hours but <7 days. Thus only 25 of the 380 had additional doses of antibiotics for no obvious reason. They received a total of 51 additional and possibly unnecessary doses of the total 3641 doses (1.4%).
   Subsequent Courses: 104 patients were treated and received 152 courses of Vancomycin and Claforan. They received 1,579 doses of Claforan. Of the 152 total courses, 24 (15.8%) were treated for 7 days or more for blood culture positive sepsis (1) and for culture negative clinical sepsis (23). An additional 9 who had culture positive sepsis were treated with Claforan for <7 days and their course was completed with appropriate antibiotics. 59 (38.8%) were treated for <48 hours and 17 (11.2%) for ≤72 hours. Of the 43 remaining courses, 40 had a clinical reason for continuing for >72 hours but <7 days. Thus only 3 of the 152 courses (2.0%) had additional doses for no obvious reason. They received 13 unnecessary doses of the total 3,641 doses (0.36%).

Conclusion:
1. It would appear that we have translated the CDC guidelines into routine practice behaviors.
2. NICU clinicians and staff appear to have integrated antibiotic stewardship.
3. Our next goal is to limit antibiotics treatment to 48 hours in babies shown to not have sepsis.