Reporting Antibiotic Prescription Patterns Back to Providers Improves Adherence to IDSA Guidelines for Treatment of Streptococcal Pharyngitis and Outpatient Antibiotic Stewardship

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BACKGROUND

On September 9th, 2012 the IDSA released its "Clinical Practice Guideline for the Diagnosis and Management of Group A Streptococcal Pharyngitis," with a goal of encouraging better outpatient antimicrobial stewardship. Cook Children's Physician Network has integrated its 80 primary care pediatricians and mid-level providers through the AthenaNet® on-line electronic medical record with e-prescribing capability. Driven by an increase in urinary tract infections resistant to oral antibiotics among children in our community, we decided to inform our network providers of their prescription patterns for one of many common pediatric infections, streptococcal pharyngitis.

Methods

Antibiotic prescriptions for Group A Streptococcal pharyngitis were tabulated by provider from September 1st, 2011 thru August 31st, 2012. On October 5th, 2012, the coded spreadsheet, the Guideline, a cover letter discussing our network results and need for better antibiotic stewardship, and each providers key were mailed to each provider for review. We characterized antibiotics as 1) the most narrow spectrum therapy (pen VK, Bicillin, amoxicillin), 2) an alternative first generation cephalosporin (cefadroxil, cephalexin), and 3) effective, but too broad for the purposes of antimicrobial stewardship (amoxicillin/clavulanate, azithromycin, cefaclor, cefdinir, cefixime, cefpodoxime, cefprozil, ceftibuten, cefuroxime, ciprofloxacin, clarithromycin, erythromycin), which we defined as our target for better stewardship. We chose not to examine charts and assumed all diagnoses to be based on sound clinical or lab basis.

We compared the data for the subsequent 6 months. Our clinics began to switch their rapid strep test from Quidel QuickVue to Osom in September 2012.

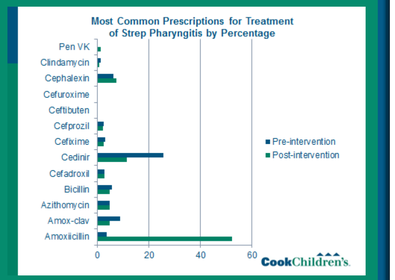
Osom: 96% sensitivity, 98% specificity versus culture.
Quidel Quickvue: 92% sensitivity, 98% specificity versus culture.

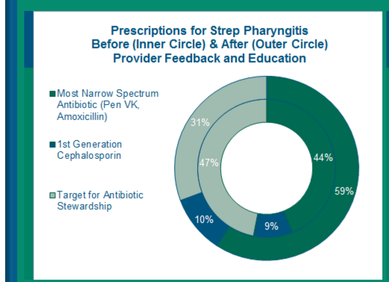
RESULTS

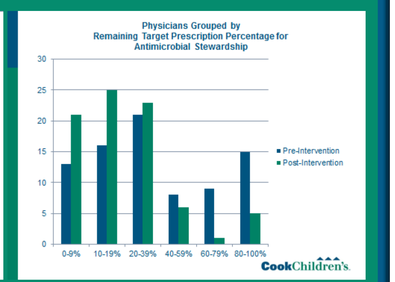
Review Period	Total Prescriptions for Streptococcal Pharyngitis	Most Narrow Spectrum Antibiotic (Penicillin or Amoxicillin)	First Generation Cephalosporin (cefadroxil, cephalexin)	Target for Better Antimicrobial Stewardship (All Other Effective Antibiotics)
Sep. 1,2011 - Aug.31-2012	23,345	10,178 (44%)	2,121 (9%)	10,916 (47%)
Oct. 15, 2012 - Apr. 15, 2013	8,205	5,097 (62%)	837 (10%)	2,243 (27%)

Most Common Prescriptions for Treatment of Strep Pharyngitis

	Amoxicillin	Amox-clav	Azithomycin	Bicillin	Cefadroxil	Cedinir	Cefixime	Cefprozil	Ceftibuten	Cefuroxime	Cephalexin	Clindamycin	Pen VK
Total Prev. 12 months	874	2034	1112	1342	640	5950	716	808	67	49	1481	358	122
Total Next 6 months	4518	399	400	399	218	934	208	200	7	6	619	80	117
% Pre	3.8	8.8	4.8	5.8	2.8	25.6	3.1	2.6	0.3	0.2	6.4	1.5	0.1
% Post	52.2	4.9	4.9	4.9	3.0	11.4	2.5	2.4	0.1	0.1	7.5	1.0	1.4
Δ	52.2	-3.9	.1	0.9	0.2	-14.2	0.6	-0.2	-0.3	-0.1	1.1	-0.5	1.3







Provider Email Feedback:

"Marc, Good afternoon. I have reviewed the data attached to my designated number. I am concerned that the data is not mine, however, as the provider whose data I am reviewing shows a significant number of Azithromycin prescriptions for strep throat, and I do not use Azithromycin for GAS pharyngitis. Can my data please be verified. I am shocked to see a report of 21 prescriptions of Azithromycin ascribed to myself."

"You had 203 prescriptions. Amoxil 13, amox-clav 14, azithro 21, bicillin CR 3; Bicillin LA 6, cefdinir 99, cefixime 40, ceftibuten 6, clarithromycin 1. I am wondering if you were coding Strep throat in addition to something else that you were treating with azithromycin. Are you attaching your prescriptions to the right diagnosis in Athena? " Thanks, Marc" [list of encounters provided to provider by IT].

"Howdy. I reviewed every encounter, and noted an interesting pattern on my part. Mostly, I am shocked that I reached for Azithromycin as much as I did, because I have never considered it a "good choice" for strep, thus my statement that I never use it (when in fact I do)! I want to thank you – I have been enlightened!"

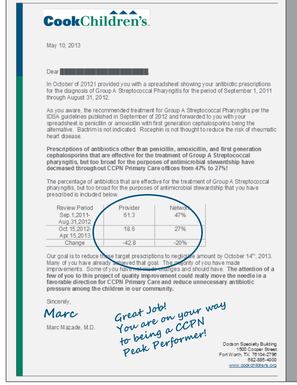
Conclusions

Reporting of comparative antibiotic prescribing patterns to providers reduced network prescriptions for streptococcal pharyngitis that were effective, but too broad for the purposes of antimicrobial stewardship from 47% to 27% for 6 months. More feedback is planned.

CCPN Primary Care Pediatricians prefer to use oral amoxicillin when compared to either oral or injectable penicillin.

During the first 6 months of the post-intervention period, Group A Streptococcal Pharyngitis was diagnosed less frequently than the pre-intervention period data might have portended. When providers were asked to what contributed to the difference, some responded that the post-intervention period was considered a relatively light "strep season." Others suspected that the higher sensitivity of the Osom rapid Strep test (96% sensitivity compared with 92% for the Quidel QuickVue) may have ruled out more disease and resulted in fewer prescriptions. We wondered if knowledge of provider prescription tracking and an overall emphasis on outpatient antimicrobial stewardship resulted in more judicious use of antibiotics.

SAMPLE FOLLOW-UP LETTER



CookChildren's

May 10, 2013

Dear [redacted]

In October of 2012 I provided you with a spreadsheet showing your antibiotic prescriptions for the diagnosis of Group A Streptococcal Pharyngitis for the period of September 1, 2011 through August 31, 2012.

As you aware, the recommended treatment for Group A Streptococcal Pharyngitis per the IDSA guidelines published in September of 2012 and forwarded to you with your spreadsheet is penicillin or amoxicillin with first generation cephalosporins being the alternative. Bactrim is not indicated. Rocephin is not thought to reduce the risk of rheumatic heart disease.

Prescriptions of antibiotics other than penicillin, amoxicillin, and first generation cephalosporins that are effective for the treatment of Group A Streptococcal pharyngitis, but too broad for the purposes of antimicrobial stewardship have decreased throughout CCPN Primary Care offices from 47% to 27%!

The percentage of antibiotics that are effective for the treatment of Group A Streptococcal pharyngitis, but too broad for the purposes of antimicrobial stewardship that you have prescribed is included below:

Review Period	Provider	Network
Sep 1,2011 - Aug.31,2012	61.3	47%
Oct. 15,2012 - Apr. 15,2013	16.5	27%
Change	-42.8	-20%

Our goal is to reduce these target prescriptions to neighborhood amount by October 14th, 2013. Many of you have already surpassed that goal. The majority of you have made improvements. Some of you have room for improvement and should have. The attention of a few of you to this project of quality improvement could really move the needle in a favorable direction for CCPN Primary Care and reduce unnecessary antibiotic pressure among the children in our community.

Sincerely,

Marc

Great Job! You are on your way to being a CCPN Peak Performer!

Marc Mazade, M.D.

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ABSTRACT

- **Background:** On September 9th, 2012 the IDSA released its "Clinical Practice Guideline for the Diagnosis and Management of Group A Streptococcal Pharyngitis," with a goal of encouraging better outpatient antimicrobial stewardship. Cook Children's Physician Network has integrated its 80 primary care pediatricians and mid-level providers through the AthenaNet® on-line electronic medical record with e-prescribing capability. Driven by an increase in urinary tract infections resistant to oral antibiotics among children in our community, we decided to inform our network providers of their prescription patterns for one of many common pediatric infections, streptococcal pharyngitis, while presenting to them a copy of the Guideline to see how that might effect antimicrobial stewardship.
- **Methods:** Antibiotic prescriptions for Group A Streptococcal pharyngitis were tabulated by provider from September 1st, 2011 thru August 31st, 2012. On October 5th, 2012, the coded spreadsheet, the Guideline, and a cover letter discussing our network results, a need for better antibiotic stewardship, and each provider's key were mailed to each provider for review. We characterized antibiotics as 1) the most narrow spectrum therapy (pen VK, Bicillin, amoxicillin), 2) an alternative first generation cephalosporin (cefadroxil, cephalexin), and 3) effective, but too broad for the purposes of antimicrobial stewardship (amoxicillin/clavulanate, azithromycin, cefaclor, cefdinir, cefixime, cefpodoxime, cefprozil, ceftibuten, cefuroxime, ciprofloxacin, clarithromycin, erythromycin), which we defined as our target for better stewardship. We compared the data for the subsequent 6 months.
- **Results:**

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