CHILDREN'S OUTCOMES

A Publication of the Children's Hospital Outcomes Program & Information Resource Group (IRG).

Clinical Care Guidelines – An Extreme Makeover!

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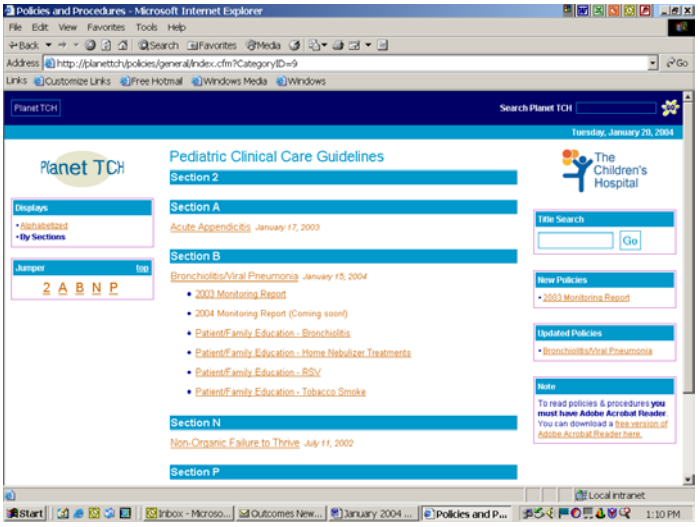
The Bronchiolitis/Viral Pneumonia Clinical Care Guideline (CCG) just got an "Extreme Makeover"! The result is a more concise and user-friendly tool for clinicians. A similar transformation is planned in the upcoming months for other TCH CCG's like Acute Appendicitis and Asthma.

Here is a run down of the improvements made to the Bronchiolitis/Viral Pneumonia CCG. First, the main body of the document has been shortened to just two pages long. There are several figures that follow the main body. Next, standard admission orders were designed and will be piloted on 4 North during the month of February. Finally, patient/family education materials have been incorporated into the CCG.

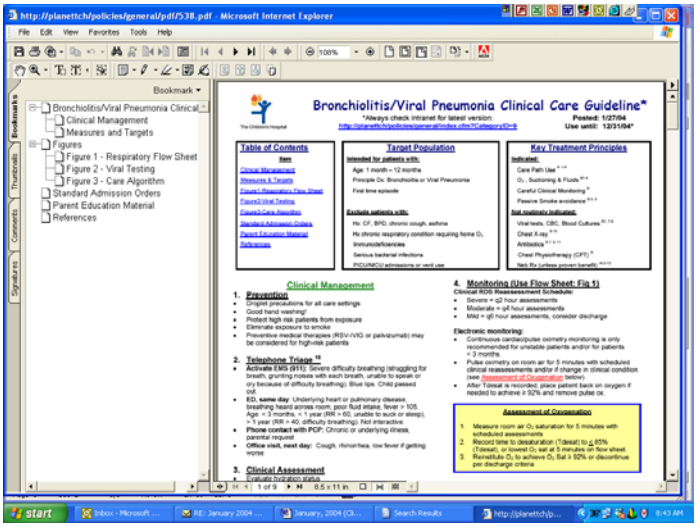
CCG's have traditionally been designed and used as paper documents. One further key improvement made to the Bronchiolitis/Viral Pneumonia CCG is that it takes advantage of intranet functionality. Clinicians can easily access this CCG on TCH intranet. To do so, go to Planet TCH, click on Policies and Procedures, and then click on Pediatric Clinical Care Guidelines. The CCG's are sorted alphabetically.



Clinicians will immediately notice that the Bronchiolitis/Viral Pneumonia CCG is followed by a number of related links. Monitoring Reports which track TCH compliance with the CCG can be found here. These reports were designed last year and were released to clinicians every two weeks during the 'respiratory season'. 2004 Monitoring Reports are coming soon and will be updated every two weeks.

Links to patient/family education handouts can also be found here. There are handouts on Bronchiolitis, Home Nebulizer Treatments, RSV, and Tobacco Smoke.

The Bronchiolitis/Viral Pneumonia CCG is stored as a PDF file on the intranet. Electronic bookmarks have been placed throughout the document. In order to take advantage of these bookmarks, users should open up the 'Bookmarks' tab over on the left side of their screen. In addition, there are hyperlinks found within the body of the CCG. These enhancements will hopefully make navigation easier and add to the user-friendliness of the CCG.



As mentioned earlier, this new CCG format will soon be applied to the other TCH CCG's. In addition, plans for the creation of new CCG's are underway. These include a General Pharmaceutical Use, a Spinal Fusion, and a Urinary Tract Infection (UTI) CCG.

TCH has implemented CCG's in order to ensure that evidence-based clinical management principles are more uniformly and reliably applied in practice. We have shown that CCG's and clinical pathways decrease unnecessary utilization and improve patient outcomes. Now, we are hoping that the ease of access and intranet functionality will make the CCG's even more effective.

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Recent Outcomes Abstracts From TCH/UCHSC

Hampers, L. C. and S. G. Faries (2002). "Practice variation in the emergency management of croup." Pediatrics. 109(3): 505-8.

OBJECTIVE: To explore the effect of physician training background on the emergency management of croup. METHODS: Two community hospitals with a general emergency department (ED) staffed by board-certified emergency medicine (EM) practitioners were the setting for this study. At both sites, pediatricians (PED) or pediatric emergency medicine specialists (PEM) managed acute pediatric visits during evening and weekend hours. Retrospective patient cohorts (6 months to 6 years) with a primary discharge diagnosis of croup were identified from a 1-year period. Data abstraction was performed by a registered nurse who was blinded to the study hypothesis. RESULTS: There were 229, 92, and 209 patients in the PED, PEM, and EM cohorts, respectively, reflecting the practice of 69 physicians (19 PED, 12 PEM, and 38 EM). The groups had similar rates of admission and prescription of steroids at discharge. In regression models that incorporated all recorded clinical variables, EM patients were more likely to have received a chest radiograph (odds ratio [OR]: 6.6; 95% confidence interval [CI]: 3.1--14), racemic epinephrine (OR: 6.5; 95% CI: 3.1--14), albuterol in the ED (OR: 3.0; 95% CI: 1.4--6.4), and parenteral steroids (OR: 3.6; 95% CI: 2.1--6.3) and were less likely to have received oral steroids (OR: 0.41; 95% CI: 0.26--0.64). For the EM cohort, adjusted mean length of ED visit was 40 minutes longer (95% CI: 6.8--72) and mean direct costs were $90 higher (95% CI: $27--$153). Regression models comparing the PEM and PED cohorts revealed no significant management differences. CONCLUSION: Compared with physicians with a pediatric background, rates of resource utilization were higher for EM-trained physicians who managed uncomplicated cases of croup.

Hay, W. W., Jr., D. J. Rodden, et al. (2002). "Reliability of conventional and new pulse oximetry in neonatal patients." Journal of Perinatology. 22(5): 360-6.

OBJECTIVES: Pulse oximetry is widely used in the NICU, but clinicians often distrust the displayed values during patient motion, i.e., questionable oxygen saturation (SpO(2)) and pulse rate (PR) values. Masimo Corporation (Irvine, CA) has developed pulse oximetry with claims of resistance to sources of interference. To test this premise, we compared the performance of the Masimo SET pulse oximeter to a conventional device, Nellcor N-200, and then with three other new-generation pulse oximeters, Nellcor N-395, Novametrix MARS, and Philips Viridia 24C. STUDY DESIGN: We studied 26 nonsedated NICU infants who were on supplemental oxygen and/or mechanical ventilation. ECG heart rate (HR) from a bedside monitor and SpO(2) and PR from the two pulse oximeters were captured by a PC for a total of 156 hours. The ECG HR and pulse oximeter spectral waveform were analyzed at alarms for hypoxemia (SpO(2)< or = 85%) and/or bradycardia (HR< or = 80 bpm). We then compared the performance of the Masimo SET to three other new-generation pulse oximeters, Agilent Viridia 24C, Nellcor N-395, and Novametrix MARS, in a similar population of seven infants for a total of 28 hours. We added to the test criteria the ability of the various pulse oximeters to track acute changes in HR. RESULTS: Compared with Nellcor, Masimo SET had 86% fewer false alarms, which also were shorter in duration, resulting in 92% less total alarm time. Masimo SET also identified nearly all bradycardias versus 14% for the Nellcor. Compared with the new-generation pulse oximeters, false desaturations, data drop-outs, and false bradycardias were lowest for Masimo SET, as was the capture of true desaturations and bradycardias. Notably, the new-generation devices differed greatly in their ability to detect changes in HR (i.e., the frequency of frozen PR during times of ECG HR change was 0, 6, 11, and 46 for Masimo, Nellcor, Philips, and Novametrix, respectively). CONCLUSIONS: Masimo SET pulse oximetry recorded markedly fewer false SpO(2) and PR alarms and identified more true hypoxic and bradycardic events than either conventional or other new-generation pulse oximeters. Masimo SET also most closely reflected the ECG rate irrespective of accelerations or decelerations in HR. SPECULATION: Routine use of Masimo SET pulse oximetry in the NICU could improve clinician confidence in the parameter leading to more judicious titration of oxygen with possible reductions in hypoxic (e.g., pulmonary hypertension) and hyperoxic (e.g., retinopathy of prematurity) pathology. Additionally, a more trustworthy technology should equate with fewer confirmatory arterial blood gas analyses (less blood loss), and faster weaning from the mechanical ventilation (less chronic lung disease).

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