News Release

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Poster session time: 8:15-4:00 p.m. May 17
Location: CC-Area G, Hall G (First Level), Morial Convention Center

High School Student Presents Research Challenging the Use of Routine Repeated Chest X-rays in Certain Patients

ATS 2010, NEW ORLEANS— You expect to find leading experts in the fields of pulmonary, critical care and sleep medicine presenting their research at the annual ATS International Conference—physicians and professors, basic scientists, fellows and post-docs, certainly. High school students? Not so much.

But this year, Wynton Kun, who turned 18 in April and will graduate from high school on May 28, will be presenting his original research on the medical necessity and cost effectiveness of repeated chest x-rays in children who are dependent on home mechanical ventilation (HMV). He will present his data at a thematic poster session on May 17 from 8:15 to 4:00.

A couple of years ago, Wynton did not fit the profile of the precocious young researcher who would be presenting the findings of his scientific investigation at the American Thoracic Society's annual meeting. "To be honest, I used to be one of those kids who played video games all day," he said.

But then he had an epiphany that he had to get off the couch and do something with his life, he explained. It did not take much prodding to get his mother, Sheila Kun, a pulmonary registered nurse at Children's Hospital Los Angeles to agree to help.

When he told her he was interested in her field of expertise, she turned to her mentor, Thomas G. Keens, M.D., a well-known pediatric pulmonologist at Children's Hospital Los Angeles, for help. "Can we think of a research project that will help kill time in the summer for Wynton?" she asked. Dr. Keens, who is also professor of pediatrics, physiology and biophysics at the University of Southern California's Keck School of Medicine, was happy to assist.

And so, between his sophomore and junior year, Wynton put the video games aside and instead began working with Dr. Keens on developing his own research project. "Dr. Keens showed me a whole new world—he told me to go out every day and do something useful," said Wynton. "He drove me to explore and gave me the direction and help I needed."

After considering many different research project possibilities, Wynton decided to look into the effects of repeated x-rays in HMV children admitted to the hospital with pneumonia. Using the hospital database, he analyzed the records of 28 pediatric HMV patients, who ranged in age from eight months to 16 years, specifically focusing on the number of chest x-rays they received and whether those x-rays prompted changes in their treatment plans.

"Children requiring HMV are complex patients, usually with conditions such as central hypoventilation syndrome, chronic lung disease or neuromuscular diseases," said Wynton. "These kids are often admitted to the hospital with pneumonia during viral winter seasons. During their hospital course, chest x-rays are frequently used to assess their lung condition, but we do not know how often they should be used or whether they are helpful in prompting changes in treatment."

Wynton found that, on average, the 28 patients who were readmitted for pneumonia received five chest x-rays over a single hospitalization, but two thirds of those x-rays did not result in any change in therapy within 24 hours and the majority of discharges were not contingent on x-ray findings.

"It's interesting to note that some European physicians only use x-rays if they think something is going wrong, but here in the United States, x-rays are used to follow a patient's progress," said Wynton. "Based on this observation, we can speculate that lowering the frequency of chest x-rays could be beneficial to patients, as they are not the sole predictors of how a respiratory patient's treatment course should be changed. We should critically evaluate the economical and clinical outcomes of chest x-rays being taken on the population of children with pneumonia who are dependent on HMV."

And Wynton is an old hand at receiving praise for his scientific accomplishments. During his preliminary research, he was recognized by the Saban Research Institute of Children's Hospital Los Angeles, and last March, he attended the 12th International Conference on Home Mechanical Ventilation in Spain. The latter, he said, "would have been fun if I had not been so jet-lagged."

But the ATS International Conference represents a new level of achievement for Wynton. He received a Minority Trainee Travel Award (MTTA) from the Society. Supported by an educational grant from Merck, the MTTA program provides travel scholarships for underrepresented minorities to attend the annual ATS meeting. Awardees also receive one year of ATS in-training membership and will be recognized at the 2010 Diversity Forum on Sunday, May 16, at noon.

He calls the ATS meeting “the Super Bowl of pulmonary health.” “I am one of the little fans getting exposure to all of these stars, going to meet all these doctors and experts in the field. I just want to draw in as much of the experience as I can.”

After this summer, which he plans to spend traveling, possibly to Vietnam, Wynton will begin college at the University of California at Davis. Although he has not decided whether he will pursue a clinical or research career, he thinks his interest in the intersection of economics and best-practice medicine will serve him well. “With healthcare reform, it will be increasingly important to review costs and benefits,” he said.

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“Do Sequential Chest X-Rays Prompt Changes in Therapy for Home Mechanical Ventilation Children Admitted for Pneumonia (Session B55, Monday, May 17, 8:15-4:00 p.m., CC-Area G, Hall G (First Level), Morial Convention Center; Abstract 1211)

**Please note that numbers in this release may differ slightly from those in the abstract. Many of these investigations are ongoing; the release represents the most up-to-date data available at press time.*

Abstract 1211

DO SEQUENTIAL CHEST X-RAYS PROMPT CHANGES IN THERAPY FOR HOME MECHANICAL VENTILATION CHILDREN ADMITTED FOR PNEUMONIA?

Type: Scientific Abstract

Category: N) PEDIATRICS / 14.01 - Clinical Studies: General Pediatrics (PEDS)

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Abstract Body

How many chest x-rays prompt changes in therapy for home mechanical ventilation (HMV) patients admitted to the hospital for pneumonia? Since HMV patients are more complex than those with simple community acquired pneumonia, it is not known how many chest x-rays are needed for optimal management. To answer this, we reviewed all HMV patients admitted for pneumonia from July, 2007, through June, 2008. Demographic data, sequential chest x-rays, and changes in respiratory orders within 24 hours were recorded. CHLA followed 180 HMV patients. 28 patients (16%) were admitted (36 admissions). 25 of these patients (90%) required full-time HMV. 18 patients (64%) had the diagnosis of chronic lung disease. Mean age was 5.0±4.9 years, (0.7-16 years). Mean hospital stay was 14.0±10.1 days, (4-61 days): 20% in ICU. One patient died. The average number of chest x-rays performed per admission was 4.6±6.6. 165 chest x-rays were taken. 84 (65%) of 129 sequential chest x-rays prompted no changes in respiratory treatment within 24 hours. 26 (20%) prompted an increase in therapy, and 18 (15%) prompted a decrease in therapy. 35 (27%) noted improvement in their chest x-ray findings, 43 (33%) had worsening conditions, and 51 (40%) had no changes. Upon discharge, 24 patients (66%) had residual pneumonia on chest x-rays. We conclude that HMV patients averaged 5 chest x-rays per pneumonia admission. Two thirds of the chest x-rays did not prompt subsequent changes in respiratory therapy. Over one third of the chest x-rays found no interval changes. The majority of discharges were not contingent on resolution of the chest x-rays findings. We speculate that the frequency of chest x-rays could be less, and that chest x-rays were not the sole predictors of changes in respiratory treatment or the decision to discharge.

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