



# ***Biomedical Informatics Grand Rounds***

**Wednesday, February 28, 2024**

**3:00 pm – 4:00 pm**

## **Child Health Improvement through Computer Automation: The CHICA Experiments**

*Stephen Downs, MD, MS*

*Professor of Pediatrics, Vice-chair, Pediatric Learning Health Systems*

*Co-Director, Informatics, CTSI*

*Wake Forest University School of Medicine*

*Winston-Salem, NC*

### **Remote Access**

**Join Zoom Meeting** <https://stonybrook.zoom.us/j/95617197636?pwd=KytzZ2pVRG9SZGpKZUtpNXJISjNjZz09>

Meeting ID: 956 1719 7636 Passcode: 924293

**Bio:** Dr. Stephen Downs is a Professor and Vice Chair for Pediatric Learning Health Systems and a Co-Director of the informatics program for the Wake Forest University CTSI. He received his medical degree and master's in medical informatics from Stanford University and completed his residency in pediatrics and a Robert Wood Johnson Clinical Scholars fellowship at the University of North Carolina at Chapel Hill, where he served on the faculties of pediatrics, biomedical engineering, and public health. He was the founding director of the Children's Health Services Research Section at Indiana University for 19 years.

His work is at the interface of decision sciences and medical informatics. He has published scores of articles on decision analysis, cost-effectiveness analysis, utility theory, and computer-based clinical decision support over the last 30 years. He is the chair of the Partnership for Policy Implementation at the American Academy of Pediatrics (AAP) and an elected fellow of the American College of Medical Informatics (ACMI). He received the AAP Oberst award for significant contributions to the field of clinical information technology and the John M. Eisenberg Award for Practical Application of Medical Decision Making Research from the Society for Medical Decision Making.

**Abstract:** Child Health Improvement through Computer Automation (CHICA) is, perhaps, the most well studied and successful pediatric clinical decision support system (CDSS). First deployed in November of 2004, CHICA has been the subject of a dozen randomized controlled trials and 54 (and counting) peer reviewed publications demonstrating its effectiveness in improving care and the utility of the patient-reported and physician-reported data it captures.

Designed for outpatient pediatrics, CHICA supports Patient-Centered Outcomes Research (PCOR) guidelines from the US Preventive Services Task Force, the American Academy of Pediatrics, the AHRQ Effective Health Care Program, the Centers for Disease Control and Prevention, and others. At each patient encounter, CHICA processes patient information to present 20 questions - tailored to the patient's unique risk profile - for the patient or family to complete on electronic tablets in the waiting room. Using a decision analytic framework, CHICA integrates patient/family-reported data with research evidence and guidelines to generate a prioritized 6-item agenda for the physician that is displayed in the patients' electronic medical record (EMR) paired with CDS tools to guide decision-making and management and simplify documentation.

CHICA has always leveraged health information technology standards, utilizing Arden Syntax Medical Logic Modules and HL7 version 2 network communications. In the last year, we have built out Fast Healthcare Interoperability Resources (FHIR). In this talk, I will discuss the underpinnings of the system, where it has worked, and challenges to dissemination.

### **Educational Objectives:**

1. Explain why tailoring and prioritizing clinical services is necessary for effective computer-based clinical decision support.
2. Outline controlled trial designs for computer decision support systems
3. Describe how a computer system can support a learning health system.

**Disclosure Statement:** Dr. Downs is the co-founder, co-owner, and CEO of Digital Health Solutions, LLC, a company created to make the CHICA software more widely available.

**Continuing Medical Education Credits:** The School of Medicine, State University of New York at Stony Brook, is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians. The School of Medicine, State University of New York at Stony Brook designates this live activity for a maximum of **1 AMA PRA Category 1 Credits™**. Physicians should only claim credit commensurate with the extent of their participation in the activity.