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SETTING THE WORLD ON FHIR®

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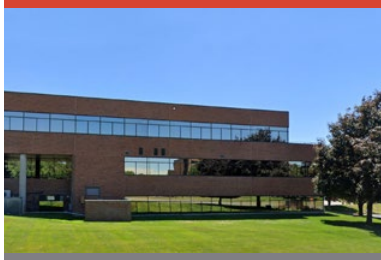
A series of case studies illuminating how HIT professionals are using HL7®FHIR® to improve and advance modern healthcare



CASE STUDY

UNIVERSITY OF UTAH HEALTH

University of Utah's Department of Biomedical Informatics in Salt Lake City, Utah, USA, has 50 years of history exploring the underlying science of designing and implementing decision support systems that provide cognitive support for clinicians at the point of care across several health delivery systems. It is a national leader in the development and implementation of standards-based tools that integrate smart algorithms and interfaces into vendor electronic health record (EHR) systems.

Goal

- To improve neonatal bilirubin management and prevent neurotoxicity

Opportunity

- To develop an EHR add-on app for neonatal bilirubin management that can save clinicians time and improve patient care

Bili App retrieves, summarizes and visualizes relevant data automatically to promote patient safety and relieve providers' cognitive load.

— Kensaku Kawamoto, MD, PhD, MHS, associate chief medical information officer, associate professor of Biomedical Informatics, University of Utah

Project

Managing newborn bilirubin levels is important because untreated severe hyperbilirubinemia can lead to brain damage. Timely administration of phototherapy is necessary when indicated. To minimize the risk of disabling brain damage, the American Academy of Pediatrics (AAP) developed a guideline that recommends bilirubin screening and management for all newborns.

Collecting the relevant data and evaluating that data against age- and risk-based phototherapy treatment thresholds, however, can be tedious and time consuming. Without assistance from health IT tools, screening results and relevant risk factors must be retrieved manually by physicians in nurseries and outpatient clinics, adding to their already overwhelming workload. A technical solution was needed to ensure the safety of newborns and reduce physicians' cognitive load.

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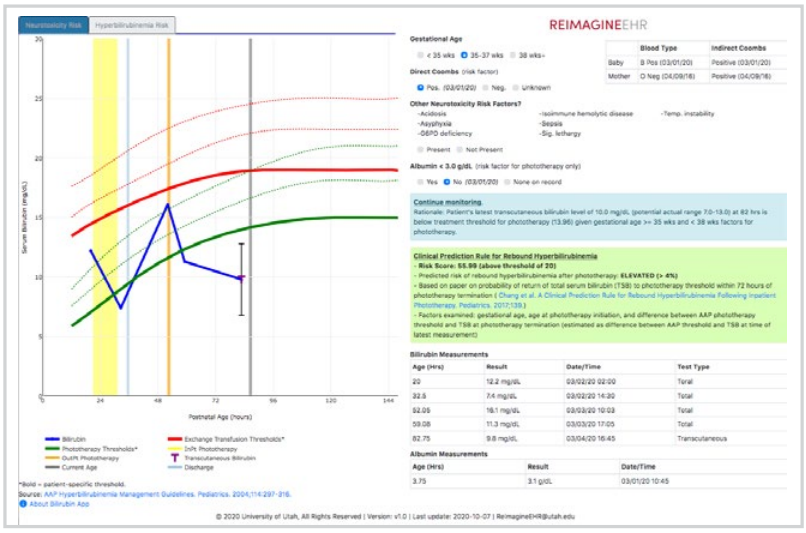
In 2016, the University of Utah ReImagine EHR team worked with pediatric physicians at University of Utah Health to develop an app to support neonatal bilirubin management based on AAP's clinical guideline. An existing app from Intermountain Healthcare was enhanced substantially with iterative feedback from physicians.



The resulting neonatal bilirubin management application, called the Bili App, is an HL7® SMART on FHIR® enabled app that allows single sign-on and integration with the EHR user interface, as well as the HL7 FHIR data interface standard to pull in relevant patient data automatically.

The app was also designed to support known success factors for clinical decision support (CDS) systems, including providing CDS at the time and location of decision-making, providing recommendations rather than just assessments, integrating with the EHR, and minimizing the need for additional clinician data entry.

The Bili App was released systemwide for clinical use in April 2017.

Results

After two years in clinical use, the app is used extensively by providers, saves time, improves patient care and is highly rated by clinicians (https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2755484). It won the AMIA/HL7 FHIR Applications Showcase competition in 2019.

If deployed nationwide, Bili App has the potential to improve the safety of newborns and save over 300,000 hours of provider time every year. Currently, the app has already changed the care for newborns at University of Utah Health and was used over 20,000 times in 2018 by newborn care providers.

Well-designed EHR add-on apps, like the award-winning Bili App, save clinicians time and improve patient care.

— Polina Kukhareva, PhD, MPH, MS,
senior clinical informaticist, University of Utah

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