RISTRA Febrile Infant FAQs

Q: What is the RISTRA Febrile Infant Application?

Answer: It is a new addition to the RISTRA portfolio – a collaboration with Pediatric Infectious Diseases and Pediatric HBS. This is the Phase 2 rollout for use in the ED by emergency physicians and pediatric consultants.

Q: Hey, I am new here and this my first RISTRA enrollment. What's this I hear about a gift card?

Answer: Yes! Check with your CREST site investigator.

Q: Why should I use this app?

Answer: Well, first of all, to support KPNC home-grown clinical research. But, also, to make your evaluation of the febrile infant simpler and more informed. The RISTRA app will pull all the relevant data in KPHC for the encounter from the problem list, vital signs and labs. It will provide structured data collection with precise definitions and a handy cut-and-paste clinical summary at the end.

Q: Are you providing decision support?

Answer: Of course! That is what we do at CREST. We have a specialty-approved algorithm called the CA FIRST (California Febrile Infant Risk Stratification Team) 2.0 algorithm.

Q: Tell me more about this algorithm?

Answer: It is a living algorithm that incorporates aspects of the American Academy of Pediatrics (AAP) Clinical Practice Guideline (CPG) and previously validated work in KPNC (The Roseville Protocol) and incorporates evolving evidence that improves performance in our KPNC population. It is meant to be assistive, and not a substitute for sound clinical judgement!

Q: Tell me about the AAP Febrile Infant Clinical Practice Guideline (CPG)?

Answer: The AAP Febrile Infant CPG, published in August 2021, is the compilation of almost a decade's work of a multidisciplinary team of national experts. The CPG incorporates many studies from the preceding years to create an approach to infants 8-60 days with fever. [https://pediatrics.aappublications.org/content/early/2021/07/16/peds.2021-052228] The Roseville Protocol was an earlier iteration of the AAP CPG and so there are many similarities between the two algorithms.

Q: Okay, I am a bit confused. Tell me how you modified Roseville and AAP to come up with CA FIRST?

Answer: The Roseville Protocol was validated with KPNC infants with excellent outcomes; however, this protocol was less conservative than the AAP CPG. In addition, there were other minor differences with definitions, exclusions and risk. We modified the Roseville Protocol to incorporate this AAP CPG and renamed this CA FIRST. CA FIRST also provides targeted decision support for specific scenarios not addressed by the AAP or Roseville protocol – for example the KPNC-setting risk estimates for infants who are "ill-appearing." We have in progress comparisons of the Roseville protocol and AAP performance characteristics in our patient population and these data should be published in 2022.

Q: I don't work in Roseville; can you tell me more about this Roseville Protocol?

Answer: It is a protocol developed and validated at ROS/SAC by our own pediatric hospitalists Tran Nguyen and Bev Young and published in 2020 (https://hosppeds.aappublications.org/content/early/2020/12/15/hpeds.2020-0187). Note that this protocol, like the AAP, applies only to previously healthy, well-appearing infants, and clinicians should always use their clinical judgment. See below for more specific Q&A on the Roseville Protocol.

Q: The AAP Febrile Infant CPG and Roseville Protocol only include previously healthy, well-appearing infants aged 7-60 days. Can you provide me with guidance on infants that fall outside these protocols?

Answer: Yes. Our CA FIRST protocol includes guidance for infants 61-90 days, 'high-risk' infants, infants with bronchiolitis or COVID-19, and infants who have received immunizations in the preceding 48 hours.

Q: Why aren't we using the PECARN prediction rule?

Answer: There are two major downsides to using PECARN: 1) Their protocol places infants of all ages with positive UA into a high-risk group. Studies show that infants 29-60 days with positive UA do not have an increased risk of meningitis. 2) It requires procalcitonin, a lab that is not currently available with quick facility-lab turnaround in KPNC.

Q: What are these "Ill-Appearing" and "Well-Appearing" definitions?

Answer: "Ill-Appearing" is an exclusion in the AAP and ROS protocols and RISTRA provides specific definitions. Ill-appearance automatically enters the infant into a CA FIRST high risk algorithm. On the other hand, "Well-Appearing," which is required in certain circumstances to discharge home or forego an LP, does not have a measure or adequate definition. If it is challenging to assess the "well appearance" of an infant, we do not suggest following any low-risk algorithm that requires "Well-Appearing."

Q: What type of UA specimen is considered appropriate?

Answer: There is an entire screen dedicated to this topic which was adapted from the AAP and approved by our pediatric ID group.

Q: What is the best way to order blood cultures?

Answer: We suggest using the "neonatal blood culture" order in all infants < 1 month old through the order set as this allows the hospital team to get blood culture results faster and may decrease hospital length of stay. Older infants can have a routine blood culture order.

Q: My gestalt for invasive bacterial infections (IBI = bacteremia and bacterial meningitis) is really low; should I even bother to obtain cultures?

Answer: Yes. Unfortunately, the appearance and past medical history of the infant alone is not adequate to exclude IBI. We recommend testing based on best practices when inclusion criteria are met. In prior work with other conditions, we have noted that our physicians are extremely good at identifying very low risk patients and we intend to study and publish our findings on this febrile infant group.

Q: What about when to obtain a CXR?

Answer: Our protocol does not specifically address use of CXR in infants < 90 days but does provide guidance for those over 90 days old.

Q: What about viral causes like RSV, influenza and COVID-19?

Answer: Our protocol provides guidance, definitions and resources. For those infants with known or suspected bronchiolitis, RSV or COVID-19, we have specific algorithms that recommend cultures based on age. We acknowledge that these infants are at low risk of having a concomitant bacterial infection and the algorithms reflect this low risk.

Q: How about the bug juice?

Answer: We have information dedicated to guidance on antibiotic choices. These recommendations have been developed and approved by our regional pediatric ID group.

<u>Roseville Protocol Specific Q&A</u>

- **Have you found that most 29-60-day old infants with fever are getting LPs and being admitted?**
    - North Valley experience – no, most do not
    - Decision to be made based on clinical gestalt, temp, follow up, viral symptoms/exposures, etc.
- **Have any cases been missed using this protocol, leading to a bad outcome?**

    - North Valley experience – no
    - Every protocol misses some cases
    - Negative predictive value (NPV) of Roseville Protocol is comparable to PECARN: 99.5%
- **What antibiotics are recommended?**
    - Older infants discharged home on antibiotics for UTI, use of antibiotics without CSF penetration is preferred: cephalexin recommended over ceftriaxone (and this is what is already being done in clinic)
- **If patients are sent home, how soon and for how long do you recommend outpatient follow up?**
    - 12-24 hours ideal for first follow up after ED discharge
    - Daily until cultures are negative x 24-48 hours and fever has resolved
- **Do you get pushback from the ED re: doing LPs in infants?**
    - No – especially since Roseville Protocol limits number of LPs required