



Improving patient management and organisation in a Paediatric Emergency Department using combined FBC and CRP point of care testing

Dr. Hester Yorke, Dr. Holly Cooper

Chelsea & Westminster NHS Foundation Trust, UK

Introduction

In a paediatric emergency department (PED) setting a CRP (C-reactive protein) is a commonly used blood test to assist with clinical decision making, particularly as a proxy indicator of bacterial infection and inflammation. CRP results alone can sometimes be misleading in paediatric patients but the addition of full blood count (FBC) provides a more comprehensive profile. The Microsemi CRP (HORIBA Medical) produces a combined FBC and CRP result in 4 minutes on 18µl of capillary blood.

The instrument was used to test for CRP and FBC in three pre-identified patient groups, with the aim to determine if the earlier availability of these results would improve decision making, patient flow and patient outcomes, and prevent unnecessary admissions in the Department.

Results

The initial assessment confirmed that the instrument was suitable for use, stable and produced comparable results to the routine pathology laboratory.

Average overall time saving as compared with laboratory results was **1hr 28 minutes**.

The CRP Result contributed to a diagnosis being made or confirmed in **89%** of cases.

Use of POCT:

- allows early discharge in up to 83% of the limping children group
- allows earlier specialty referral in the abdominal pain group as a whole, and facilitated discharge in 58%
- in the PUO group resulted 16 fewer admissions for IV antibiotics

Methods

Before commencing the study. The instrument results were compared to those of the routine pathology laboratory and the quality control and stability of the instrument was assessed.

Routinely taken Full Blood Count samples (K2EDTA) were analysed using the Microsemi CRP analyser sited in the PED before sending to the main Pathology Laboratory as normal.

The study was conducted over 24 weeks in the PED, collecting data from 133 children in three groups:

1. Limping children with suspected underlying infective or inflammatory mechanism (24 children)
2. Children with abdominal pain and suspected appendicitis (56 children)
3. Children (over 3 months of age) with pyrexia of unclear origin. (53 children)

Results obtained on the point of care instrument were compared with those of the laboratory as was the time taken for the results to be available. Also recorded was whether the pathology results affected diagnosis as well as decision and time for admission/discharge.

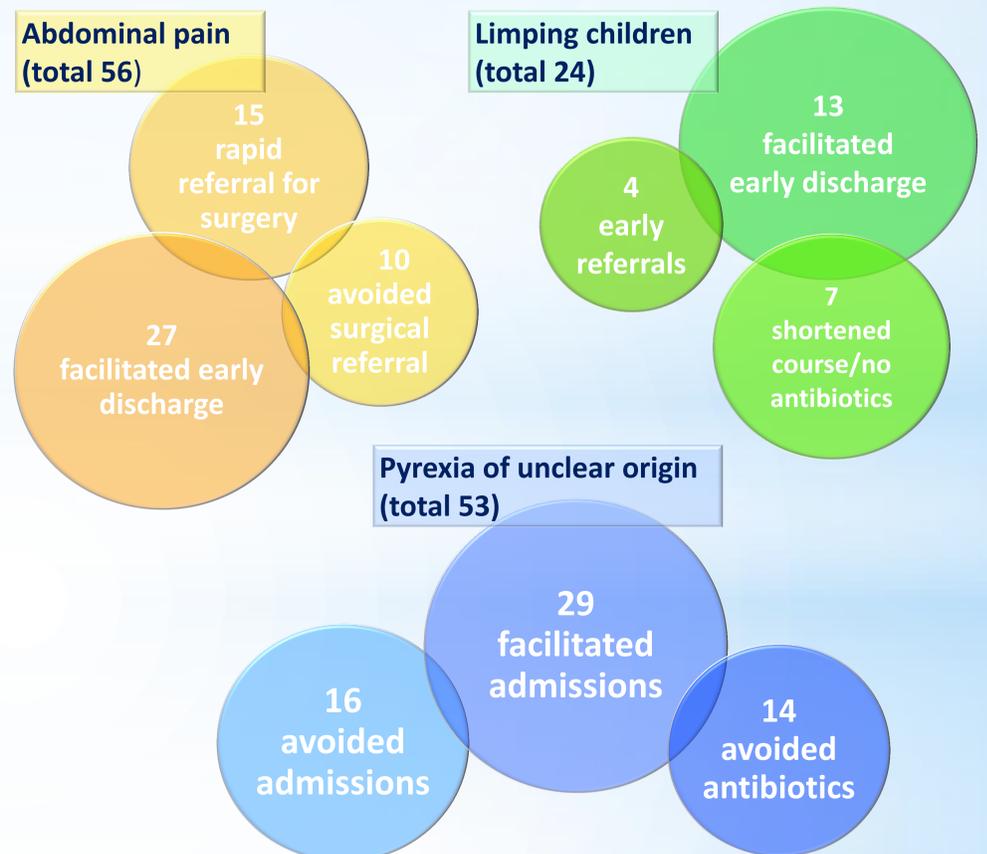
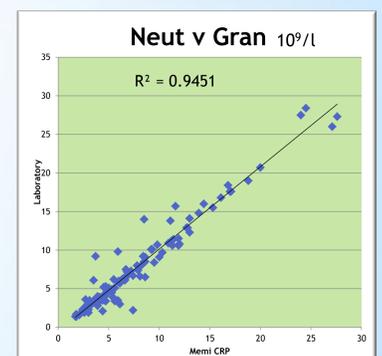
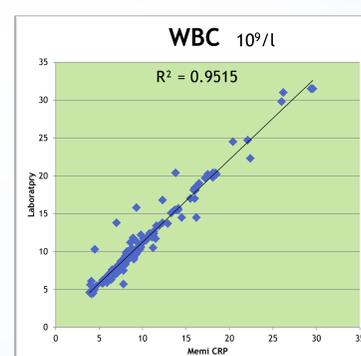
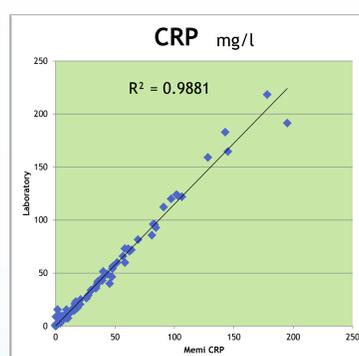


Fig. 1
Microsemi CRP instrument from HORIBA Medical



Fig. 2
Paediatric FBC bottle (500µl) vs adult FBC bottle (2ml)
The Microsemi CRP can process both bottle sizes, aspirating 18 µl of blood



Conclusion

Appropriate use of point of care testing can improve the quality and effectiveness of patient management.

The use of FBC and CRP point of care testing in the PED can be demonstrated to speed up and improve the patient pathway. Indeed it optimized discharge time, prevented unnecessary admission and helped control antibiotics administration to where it was really necessary.

Acknowledgements

Laura Mitcham at HORIBA UK Ltd.