

CRT Study: The Power of Flash Mob Research



Dutch researchers studying the interobserver agreement on capillary refill time have demonstrated the effectiveness of using a novel methodology of research called "flash mob research" (FMR). They used FMR to recruit nearly 1,800 study participants in a single day, with the bulk of the data available for analysis within 24 hours. The results published in the journal *Chest* indicate that interobserver agreement on CRT is at best moderate. The journal report is available online as an accepted manuscript.

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Capillary refill time (CRT) is a clinical test used to evaluate the circulatory status of patients. A prolonged CRT is thought to be associated with an inadequate perfusion. CRT is measured at different sites and with different pressure times. In adult ICU settings application of pressure at the fingertip for 15 seconds is considered the standard and in children CRT is mostly measured at the sternum.

"Based on the results of our study, especially the low interobserver agreement on a test that is difficult to standardise, combined with the currently available evidence, we conclude that the value of CRT in clinical practice is limited, and its routine use should be reconsidered," according to the research team led by Jelmer Alisma, MD, who is affiliated with the Department of Internal Medicine, Erasmus University Medical Center Rotterdam.

Physicians in the Netherlands were recruited by word-of-mouth, conventional media and social media to participate in a nationwide, single-day, "nine-to-five", multicentre, cross-sectional, observational study to evaluate CRT. Patients 18 years and older presenting to the emergency department or hospitalised were eligible for inclusion. CRT, defined as the time necessary for the skin to regain its colour, was measured independently by two investigators at the sternum and distal phalanx after application of pressure for 5 (5s) and 15 seconds (15s).

The study was conducted on 29 October 2014 involving 458 investigators in 38 Dutch hospitals that enrolled 1,734 patients (mean age of 65 years). Investigators gave their subjective conclusion of: 1) the patient's hemodynamic status (adequate vs. inadequate) using all available clinical information; and 2) the observed CRT (normal vs. prolonged), without predefining normality.

According to the researchers, the subjective conclusion was chosen to resemble daily practice, as clinicians often present measured CRT with a dichotomous outcome. Pulse rate, blood pressure, respiratory rate, temperature and oxygen saturation were measured using local standard procedures.

The results showed that the mean CRT measured at the distal phalanx were 2.3 seconds (5s, SD1.1) and 2.4 seconds (15s, SD1.3). The mean CRT measured at the sternum were 2.6 seconds (5s, SD1.1) and 2.7 seconds (15s, SD1.1). Interobserver agreement was higher for the distal phalanx (κ -value 0.40) than for the sternum (κ -value 0.30).

"As expected, our study shows a correlation between the CRT measured at the distal phalanx and sternum. CRT measured at the distal phalanx is shorter than measured at the sternum, as is found in children, and we conclude that phalanx and sternum cannot be used interchangeably," the authors note.

Based on the study findings, Dr. Alisma and colleagues recommend uniform use of CRT and that CRT should only be measured at the distal phalanx with 5 seconds of pressure.

Regarding the use of FMR in their research, the authors say the FMR methodology proved to be an inexpensive, quick and reliable method to investigate "simple" clinical questions.

"With our study we also showed the power of FMR study design and its potential as a methodological tool for clinical research," they point out. " (FMR) facilitated inclusion of large numbers of patients from multiple centres – and the resulting data – within a short period of time. The inspiring and new research method combined with an appealing research question led to high participation of hospitals."

Source: [Chest](#)

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Published on : Tue, 13 Dec 2016

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