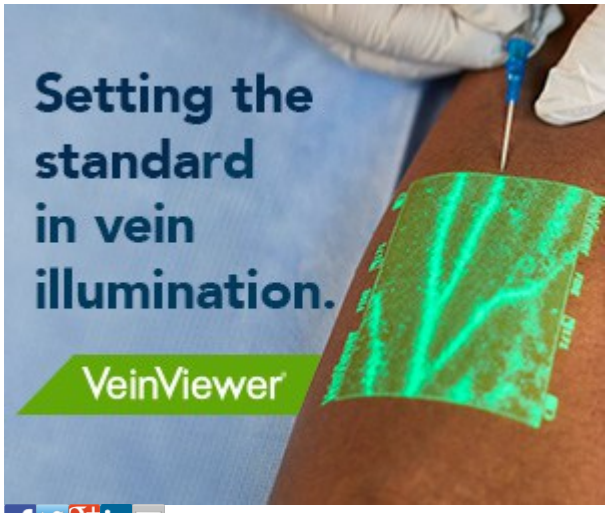

To determine whether a novel, 2-part, clinical practice guideline could decrease the rates of total blood cultures and cultures collected from central venous catheters in critically ill children and to examine the effect of the guideline on patient outcomes" Woods-Hill et al (2016).

Abstract:

IMPORTANCE: Sepsis and septic shock are common and, at times, fatal in pediatrics. Blood cultures are often obtained when clinicians suspect sepsis, yet are low-yield with a false-positive rate up to 50%.

OBJECTIVES: To determine whether a novel, 2-part, clinical practice guideline could decrease the rates of total blood cultures and cultures collected from central venous catheters in critically ill children and to examine the effect of the guideline on patient outcomes.

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DESIGN, SETTING, AND PARTICIPANTS: A retrospective cohort study was performed to determine the effect of a new clinical practice guideline on blood culture practices in a 36-bed, combined medical/surgical pediatric intensive care unit of an urban, academic, tertiary

care center from April 1, 2013, to March 31, 2015. All patients admitted to the pediatric intensive care unit with length of stay of 4 hours or more were evaluated (4560 patient visits: 2204 preintervention, 2356 postintervention visits).

INTERVENTIONS: Two documents were developed: (1) fever/sepsis screening checklist and (2) blood culture decision algorithm. Clinicians consulted these documents when considering ordering blood cultures and for guidance about the culture source.

MAIN OUTCOMES AND MEASURES: Primary outcome was the total number of blood cultures collected per 100 patient-days.

RESULTS: Of the 2204 children evaluated before the intervention, 1215 were male (55.1%); median (interquartile range) age was 5 (1-13) years. Postintervention analysis included 2356 children; 1262 were male (53.6%) and median (interquartile range) age was 6 (1-13) years. A total of 1807 blood cultures were drawn before the intervention during 11 196 patient-days; 984 cultures were drawn after the intervention during 11 204 patient-days (incidence rate, 16.1 vs 8.8 cultures per 100 patient-days). There was a 46.0% reduction after the intervention in the blood culture collection rate (incidence rate ratio, 0.54; 95% CI, 0.50-0.59). After the intervention, there was an immediate 25.0% reduction in the rate of cultures per 100 patient-days (95% CI, 4.2%-39.7%; P = .02) and a sustained 6.6% (95% CI, 4.7%-8.4%; P < .001) monthly decrease in the rate of cultures per 100 patient-days. Significantly fewer cultures were collected from central venous catheters after vs before the intervention (389 [39.5%] vs 1321 [73.1%]; P < .001). Rates of episodes defined as suspected infection and suspected septic shock decreased significantly after the intervention, but patients meeting these criteria underwent cultures at unchanged frequencies before vs after the intervention (52.1% vs 47.0%, P = .09, compared with 56.7% vs 55.0%, P = .75). In-hospital mortality (45 [2.0] vs 37 [1.6]; P = .23) and hospital readmissions (107 [4.9] vs 103 [4.4]; P = .42) were unchanged after the intervention.

CONCLUSIONS AND RELEVANCE: A systematic approach to blood cultures decreased the total number of cultures and central venous catheter cultures, without an increase in rates of mortality, readmission, or episodes of suspected infection and suspected septic shock.

Reference:

Woods-Hill, C.Z., Fackler, J., Nelson McMillan, K., Ascenzi, J., Martinez, D.A., Toerper, M.F., Voskertchian, A., Colantuoni, E., Klaus, S.A., Levin, S. and Milstone, A.M. (2016) Association of a Clinical Practice Guideline With Blood Culture Use in Critically Ill Children. JAMA Pediatrics. December 12th. .

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