

UCSF

UC San Francisco Previously Published Works

Title

Triage: making the simple complex?

Permalink

<https://escholarship.org/uc/item/5x3902z5>

Journal

Emergency Medicine Journal, 36(2)

ISSN

1472-0205

Author

Weber, Ellen J

Publication Date

2019-02-01

DOI

10.1136/emered-2018-207659

Peer reviewed

Triage: Making the simple complex?

One of the hallmarks of an emergency department, compared to an urgent care, or a physician's office, is that patients are seen by the clinicians in order of acuity, not arrival. When there are plenty of caretakers and few patients, determining the order is less important; everyone gets seen quickly. But when there are more patients than there are staff, some form of prioritization is needed to prevent a critically ill patient deteriorating in the waiting room. Thus triage is a critical need when there aren't enough clinicians to go around. And as our departments become more and more crowded, our waits longer, there appears to be a greater and greater need for triage.

At the same time, triage itself, or at least the way we are told to practice it, also soaks up resources. In most ED's where emergency medicine is practiced, one form or another of a multi-level triage scale is used to sort patients into 3, 4 or 5 categories. Usually, only experienced nurses are allowed to perform triage, but only after special training. However, despite their extensive experience, these nurses are then asked to follow an algorithm rather than utilizing their clinical judgment. Moreover, we hand to triage tasks that could be done by others: in some cases a quick registration, taking observations which could be done by a technician, or handling complaints from waiting patients, which would be better solved by a security guard, or, better yet, a kindly volunteer offering a cup of tea. Moreover, the nurses are asked to sort to a degree that at best marginally contributes to an orderly flow of patients, requiring at times Talmudic judgments about whether a patient is a level 4 or a 5, a green or a blue.

In this month's issue, Iversen et al¹ report results from an investigation from Denmark that suggest that we can do better, and if we can't do better, we can pretty much do the same thing with less time and cost. These researchers compared the accuracy of triage decisions by nurses who adhered to the DEPT (a Danish triage system) with a non-systematic "eyeball triage" performed by phlebotomists and medical students working as phlebotomists from the Department of Clinical Biochemistry. The phlebotomists were instructed to look at the patient and if possible ask for a chief complaint, then assign the

patient to a DEPT colour-coded acuity based on based on who needed the most immediate attention. The authors then compared the accuracy of the triage scores of the nurses and the phlebotomists in predicting mortality. “Eyeball triage” was more accurate.

There are certainly several caveats to this study –it was performed at a single centre, with a triage system that is not widely used internationally. The authors used the proxy of mortality, because there is no gold standard for “acuity” – how quickly a patient needs treatment. However, this is a problem with all triage studies. There was no assessment of reliability (how often the nurses agreed with each other or the phlebotomists agreed with each other). Yet the study should make us rethink our current process and the evidence behind it.

Unlike many of our current decision rules, most triage algorithms were built by consensus, and their validity tested after. As described by Challen,² they are difficult to evaluate because there is no gold standard for acuity and many different proxies have been used. While in general you find a correlation between acuity ratings and admission/mortality rate, most validation studies find “low acuity” patients are admitted. Storm Versloot and colleagues found that ESI had an under-triage rate of 13.5%, and MTS an undertriage rate of 11.2%, with sensitivity for Urgency 2 (using a reference standard) of 36 and 34%, respectively.³ This 2011 study compared these two systems to an informally structured system of triage performed by nurses, and found the unstructured system had the lowest undertriage rate (8.3%), and highest sensitivity for Level 2 (47%) without sacrificing specificity. Not surprisingly, triage systems work better on populations they were developed for.⁴ A recent review in our pages demonstrated that Manchester Triage Scale (MTS) had sensitivities in the range of 60 to 70% for children compared with a reference standard of expert consensus.⁵ A study by Twomey et al found that SATS was 91% sensitive, but 54.5% specific, risking over-triage.⁶ A further study on SATS showed only moderate sensitivity and specificity for this system in Haiti and Afghanistan.⁷ It's also not clear our current systems are fit for current purpose. A recent study in our pages demonstrated that the MTS had poor sensitivity and specificity for identifying sepsis.⁸ At the same time that all-out efforts are being made to minimise door

to needle time, most triage systems would classify patients with ischaemic stroke as level 2.

While these scores may be able to distinguish the very sick from the minor illness, they have more trouble distinguishing patients with worrisome complaints who may deteriorate or need admission from those who need a bit of fluid and can be discharged. Like a saggy bed, too many patients fall to the center. In a five level system, the majority of patients will be assigned a middle score, so that the patients with acute cholecystitis, small bowel obstruction, pneumonia and syncope are assigned the same acuity as a patient with gastroenteritis needing a liter or two of fluid and an anti-emetic.

Sorting and often re-sorting of patients causes delays. When I was researching the four-hour target in 2009, several UK consultants told me that triage “just creates another queue.” Studying this phenomenon in my own department in the US, we found that nearly half of all high acuity patients hadn’t completed triage in the time frame that was recommended for them to see a physician.⁹ Triage has been called, in LEAN terms, MUDA (waste), causing re-work, overproduction, and mistakes. (In Swahili, by the way, muda means “time, another relevant translation.) Patients become frustrated with the constant repetition of their histories, and the multiple providers they need to see before they reach the physician. Patients may assume (rightfully so) that something they’ve told a nurse in triage is now in the chart, and the doctor will see it. But that is not always the case.

In short, we have adopted complex systems, that take up the time of highly qualified nurses, potentially delay care, to create what is probably, at best, a “*meh*” result. If CT scans performed this way, surely we would have continued to explore alternatives.. We need to ask ourselves in these days of rising medical costs and rising patient numbers if can we afford to continue doing it the way we’ve always done it if we can do it just as well or better a simpler way.

As our departments become more crowded, there are several reasons to rethink triage. Yes, it is more vital than ever, but can we really continue to devote the time and resources to this function when simpler solutions may be just as good—or even better? We may not be quite ready to hand this vital task over to individuals with little emergency experience, but this study, along with the undistinguished performance of most widely used triage systems, suggests that we best keep a very open mind.

References

- 1 Iversen AKS, Kristensen M; Østervig R et al; A simple clinical assessment is superior to systematic triage in prediction of mortality in the Emergency Department. *Emerg Med J* (date/issue to be added_
- 2 Challen K. How good is triage, and what is it good for? *Emerg Med J* 2017;34:702.
- 3 Storm-Versloot, M. N., Ubbink, D. T., Kappelhof, J. and Luitse, J. S. Comparison of an Informally Structured Triage System, the Emergency Severity Index, and the Manchester Triage System to distinguish patient priority in the Emergency Department. *Acad Emer Med*, 18: 822-829. doi:10.1111/j.1553-2712.2011.01122.x
- 4 Kuriyama A, Urushidani S, Nakayama T Five-level emergency triage systems: variation in assessment of validity. *Emerg Med J* 2017;34:703-710.
- 5 de Magalhães-Barbosa MC, Robaina JR, Prata-Barbosa A, et al Validity of triage systems for paediatric emergency care: a systematic review. *Emerg Med J* 2017;34:711-719.
- 6 Twomey M, Wallis LA, Thompson ML, et al. The South African Triage Scale (adult version) provides valid acuity ratings when used by doctors and enrolled nursing assistants. *African Journal of Emergency Medicine* 2012;2(1):3-12.
- 7 Dalwai M, Tayler-Smith K, Twomey M, et al Inter-rater and intrarater reliability of the South African Triage Scale in low-resource settings of Haiti and Afghanistan. *Emerg Med J* Published Online First: 16 March 2018. doi: 10.1136/emermed-2017-207062
- 8 Gräff I, Goldschmidt B, Glien P, et al Validity of the Manchester Triage System in patients with sepsis presenting at the ED: a first assessment. *Emerg Med J* 2017;34:212-218.
- 9 Weber EJ, McAlpine I, Grimes B. Mandatory triage does not identify high-acuity patients within recommended time frames. *Ann Emerg Med*. 2011; 58:137-142