

Table 2
End result of naloxone prescription.

| Prescription outcome | Number of patients |
|--|--------------------|
| Brought naloxone prescription to pharmacy, (%) | 14 (25.5) |
| Completed training and obtained naloxone (CTON), total (%) | 10 (18.2) |
| CTON with primary diagnosis of overdose, (%) | 4 (18.2) |
| CTON with other diagnosis than overdose, (%) | 6 (18.2) |
| CTON and had other prescriptions, (%) | 6 (24) |
| CTON and only had a naloxone prescription, (%) | 4 (13.3) |

be considered the gold standard for delivery where one patient trained equals one equipped to prevent an overdose death. These programs are associated with improving survival from an overdose [5]. The hospital environment is a much more complicated entity, and must follow regulations that can preclude easy dispensing of medications such as naloxone for out of hospital use. Medications intended for home use must involve a licensed pharmacy unless a more complicated process is developed in the ED to be in compliance with state prescribing and dispensing regulations. Given the constraints of the hospital ecosystem we have identified a barrier to deliver naloxone to patients for out of hospital use as successfully as community-based programs.

Another potential barrier to successful receipt of medication is the cost of a minimal dispensing fee charged at our pharmacy; however this can be waived one time for patients without the ability to pay. The major problem in our series is patients did not present to the pharmacy as expected. Understanding why the adherence with the process is poor in this patient population is multifactorial.

In light of this data, point-of-care delivery systems of naloxone should be developed. This may be accomplished by manually logging all dispensing in accordance with hospital policy and state regulations. However, this will add additional administrative burdens on an already busy ED staff. Additional steps should be taken at the legislative level to simplify point-of-care distribution by amending pharmacy and provider practice acts. This is needed in order to combat the opioid epidemic.

To our knowledge, this is the first retrospective study evaluating the rate of naloxone obtainment with a standardized process of prescribing in the ED and dispensing from an onsite pharmacy. We have provided observational evidence that even with a standardized process in place to expand the distribution of naloxone to a vulnerable patient population, the ability of patients to obtain the life-saving medication is poor. Hospital-based prescribing is complex, but hospital-based delivery of naloxone must become as efficient in delivery as community-based programs.

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The electrocardiogram in pulmonary embolus: Diagnostic applications



To the Editor,

We read the article by Omar et al. [1], with great interest. We would like to stress the importance and usefulness of electrocardiographic (EKG) changes in pulmonary embolism (PE), as these were not brought out by the authors [1]. The authors may state that EKG is neither sensitive nor specific to confirm or refute the diagnosis of PE, as it may be normal in around 18% of PE [2]. Invariably EKG of PE patients may reveal features of S1Q3T3, new RAD, RBBB or T-wave inversions which shall make the treating physician to suspect PE, and proceed for further diagnostic testing [3] and intervention.

In fact, Daniel's [4] twenty-one-point EKG scoring system has a sensitivity and specificity of 23.5 and 97.7% respectively to recognize high risk PE and the severity of pulmonary hypertension too.

Meta-analysis of over 3000 patients of PE, Qaddoura et al. [5], identified six key EKG findings to prognosticate PE and majority of their findings overlapped with Daniels [4] score. Quite a few other studies [6–9] have confirmed the predictive value of ST elevations in lead aVR and described these as an independent predictor of mortality in PE. Furthermore, T wave inversions in both lead III and v1 (the two rightmost leads) occurs more frequently in PE with 88% of patients, but 1% of patients with ACS [10].

In addition, several EKG findings have an odds ratio for circulatory collapse [11] which is higher than echo findings of RV strain or an elevated troponin. Radiologically, confirmed cases of PE too had EKG changes. Moreover resolution of anterior T-wave inversion was considered as a possible marker of pulmonary reperfusion following thrombolysis.

To conclude, EKG is less expensive and helpful at the bedside to suspect and manage pulmonary embolism especially in resource limited environ and more so those with syncope of undetermined origin and also helped for risk stratification.

Above all, students of health sciences were taught and trained to look/search for EKG changes in PE. Hence, their knowledge shall be utilized towards diagnosis, risk stratification and intervention. Since EKG changes portend poor prognosis, care givers shall be informed about the possible outcome in the era of enhanced expectations from care providers.

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Conflict of interest

Nil.

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Non-invasive ventilation in patients with community acquired pneumonia in the emergency department: Author's response


We thank the authors for their interest in our manuscript and would like to take the time to address some of the valid concerns that have been raised.

We agree that the patient's severity of acute respiratory failure has bearing on prognosis in community acquired pneumonia and subsequently the intervention (NIV) applied. We provided information on the baseline severity of acute respiratory failure in Table 1 (PaO₂/FiO₂ ratio, mean (SD): Whole Cohort 145(91.1), Successful NIV 161.3 (95.8), Failed NIV 133.1 (86.3); P = value 0.10). However, given the retrospective nature of our study, there was a large amount of missing arterial blood gas data. We excluded it from the main analysis as over 50% of patients did not have an arterial blood gas. Multiple imputation is a potential solution for missing data but given the large amount missing it was not advisable.

Our study demonstrates that most patients who presented to the ED with CAP and respiratory failure received NIV as first line ventilatory therapy. The study which was conducted in two centres with an experience in the use of NIV showed that NIV failed in 50% of cases. As such, caution is even more advisable when using NIV in centers with less experience.

We do agree that NIV in our study may not have been used in the same population as what has been conducted in trials of NIV in hypoxic respiratory failure. That is most trials use NIV earlier and almost prophylactically. This may not be the case in our population but we feel strongly that it represents the “real world” application of NIV in an emergency room population. Furthermore, although the systematic review by Keenan and colleagues [1] of randomized trials suggest that patients with acute respiratory failure are less likely to be intubated when NIV support is added to the standard medical treatment, those randomized studies were conducted in ICU setting and of heterogeneous group of patients which totally different from our study's population and setting. As we illustrated in the discussion section of the paper, most of the other previous reports on NIV and CAP are from a small sample size and single centers with most studies showing a high NIV failure rate, defined as a need for intubation and ventilation, ranging from 38% to 66%.

Finally, the aim of the study was to provide both an epidemiological description and an analysis of the predictors of NIV failure in patients with CAP who receive NIV in the ED as a first line ventilatory therapy. We are in complete agreement with the authors that more studies, particularly randomized controlled studies, are needed to evaluate NIV use in patients with community acquired pneumonia.

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