



On ABG: how can we reduce avoidable sampling?

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INTRODUCTION

Arterial Blood Gas (ABG) is the most frequently ordered test in the Intensive Treatment Unit. (1-3). As part of the Choosing Wisely initiative, intending to increase awareness on unnecessary medical tests, treatments, and procedures, some authors have described too frequent sampling routines. These can lead to iatrogenic anemia and other undesirable events. We aimed to monitor the number of ABG performed at Royal Papworth Hospital after cardiac and thoracic surgeries and to understand the reasons for sampling. Simultaneously, educational actions were undertaken. We wanted to assess the efficiency of such measures in terms of reduction in the number of ABG.

METHOD

The number of ABG was monitored from October 2018 to October 2019. In September 2019, educational efforts were undertaken to raise consciousness about this issue. In October 2019, we designed and distributed a 24-hour survey. It reported the time of the procedure, 11 checkable possible reasons, and the possibility to reflect if potential clinical actions were undertaken as a result. Data was collected in 6 sampling periods. 136 ABG were included, from 30 monitored patients. We used a statistical analysis to interpret the resulting information.

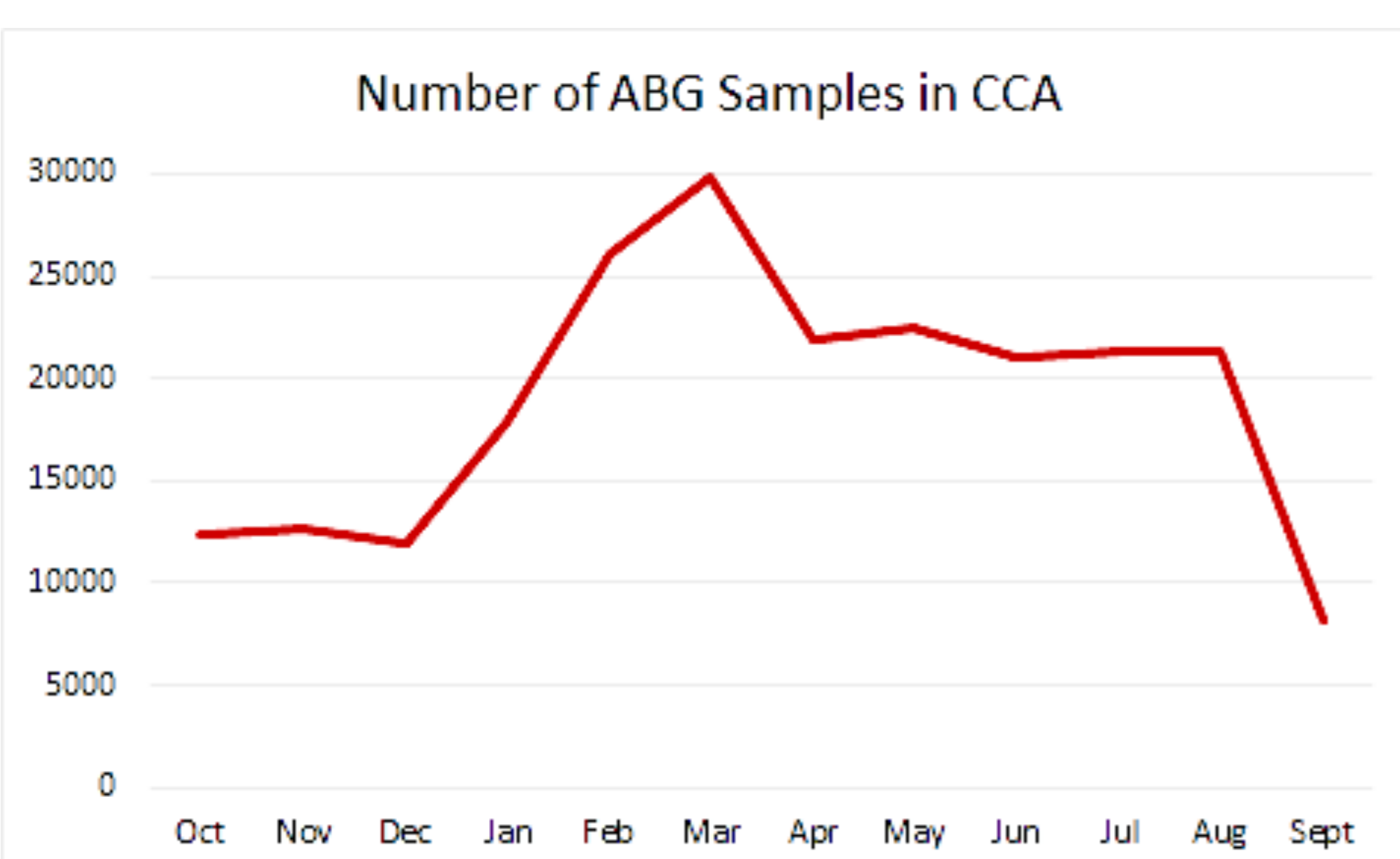


Figure 2. Number of ABG samples in CCA from October 2018 to September 2019

RESULTS

In September 2019, 8171 ABGs were performed in the Critical Care Area (CCA) (mean= 30.6). We analyzed 30 patients (n=30), 6 of them received 12 ABG or more. 136 ABG were performed and 65 (47.8%) were done between 8 am and 1 pm, 16.7%, and 3.7% sampled at the beginning and end of the shift respectively. The reasons for ABG and the percentage of each one is summarized in Figure 1. The three more frequent reason for ABG were: to check electrolyte levels (63.3%), to check blood sugar levels (52.7%) and to check lactate levels (28.6%). We noticed that these three reasons were often co-occurrent and therefore usually checked simultaneously. Moreover, nothing was done in terms of medical intervention as a result of 39% of the tests. The checking of electrolyte and blood sugar levels often led to clinical action (Table 1).

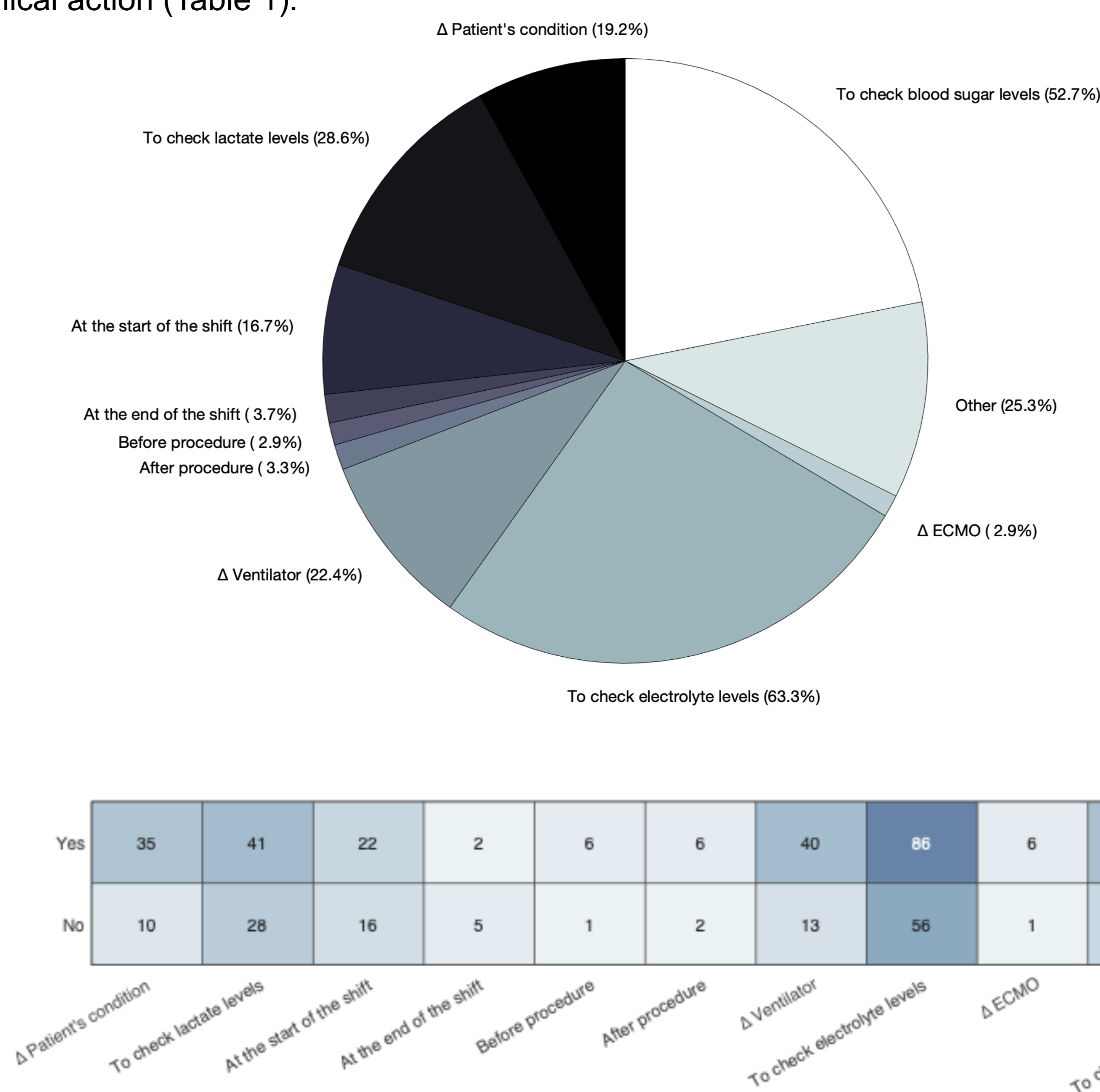


Figure 1. Reasons for ABG (percentage%)

Table 1. Proportion of clinical action as a result of ABG sampling

CONCLUSIONS

8171 and 9480 ABGs were performed during September and October respectively in the Critical Care Area (CCA). This significant reduction in the number of samplings (vs. 30000 ABGs in March, Figure 2) is due to educational strategies, monitoring and substantial increase of awareness on the need to avoid unnecessary testing. However, 39% of the testing doesn't lead to medical action and some ABGs remain redundant and therefore avoidable. This data encourages the implementation of educational efforts directed at maintaining low numbers of ABG and optimizing the sampling.

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