**CRITICAL APPRAISAL**

**EASTERN DEANERY EMERGENCY MEDICINE TRAINEES’ DAY, APR 2012**

**ACCURACY OF NON-INVASIVE MULTIWAVE PULSE OXIMETRY COMPARED WITH CARBOXYHEMOGLOBIN FROM BLOOD GAS ANALYSIS IN UNSELECTED EMERGENCY DEPARTMENT PATIENTS**

Roth, et al, Ann Emerg Med 2011;58:74-79

1. Summarise the paper in no more than 200 words.

(8 marks)

1. Give 6 features of this study that are in-keeping with STARD (Standards for Reporting Diagnostic Studies)

(1/2 mark each to max 3)

1. What evidence is there that multiwave pulse oximetry is comparable to blood gas analysis with regard to carboxyhaemoglobin levels?

(3 marks)

1. Complete the 2x2 table for a cut-off of 6.6% SpCO in all patients using the results in the text.

|  |  |  |
| --- | --- | --- |
|  | **Test Positive** | **Test Negative** |
| **Disease Positive** |  |  |
| **Disease Negative** |  |  |

1. With reference to the ROC curve:
   1. Name 2 test characteristics that can be derived from the curve

(2 marks)

* 1. Given Sensitivity is True Positive rate, what is 1-Specificity?

(1 mark)

* 1. The paper states that the cut-off of SpCO was focused ‘primarily on high sensitivity; specificity secondary’. How might this affect the false positive rate and what impact will it have on its usefulness as a screening tool?

(3 marks)

1. Assuming a sensitivity of 90% and a specificity of 80%, what would be the positive likelihood ratio?

(2 marks)

1. List 4 reasons for not adopting multiwave pulse oximetry for screening unselected ED patients for CO poisoning given the findings in this study.

(4 marks)