

Commissioning of a Home Oxygen Service- The value of POCT in delivering a community based service.

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Introduction

The respiratory team developed a business case in line with the Department of Health's (DH) Clinical Strategy for COPD (2009) for a home oxygen service. The business case includes a blood gas analysis which is performed in the patient's home as part of the clinical assessment. The POCT and respiratory team collaborated to ensure that all components needed to provide the diagnostic aspect of the service were identified and included. These were:

- Identifying current suitable devices on the market
- Assessing suitability for use and technical performance
- Connectivity
- EQA and IQC
- Sample collection
- Transport of kit

Service Evaluation

There were 2 devices on the market at the time that were identified as being suitable for supporting this service:

- Abbott iStat
- Alere Epoc

The respiratory team trialled both devices for a month to assess them for the following:

- Ease of use
- Maintenance and infection risk
- Storage and transportability
- Opportunity for errors
- Suitability for service delivery

The respiratory team evaluated the analysers during outpatient appointments based at the hospital and during some home visits. Patients had their arterial blood tested on the hospital gas analysers (IL GEM4000) and any remaining sample was analysed on the 2 trial devices during the OP appointment. The analytical results from the trial analysers were not reported or acted on and patient's permission was sought.

Findings

Ease of Use

iStat: Putting the cartridges into the analyser and applying the sample was an acquired skill. Once a few samples had been analysed then it was fairly straightforward.

Epoc; it was difficult to get a smooth motion when inserting the cards at first, again it was an acquired skill.

We identified that extra care needs to be taken with the arterial sample, once collected any excess air must be expired immediately and the sample mixed well with the anticoagulant. Both devices require the sample to be inserted into the analyser rather than a probe directly sampling the sample so these methods were more sensitive to small amounts of air.

Maintenance and Infection risk

Both devices were easy to clean and keep infection free. Arterial blood was applied to a disposable cartridge in both cases and then discarded after use so biological materials didn't come into direct contact with the device.

Storage and Transportability

Both devices were easy to transport and handle. The cartridges for both are stable at room temperature and can be transported easily.

Opportunity for Error

The opportunities for error that were identified were:

- Inserting the cartridges for both the iStat and Epoc is an acquired skill and takes a bit of practice to get right.
- If the calibration fails for the iStat a repeat sample is needed. This is not the case for the Epoc as the calibration process takes place before the sample is applied.
- Good sample collection with all the excess air removed is essential for accurate results for both devices.

Whilst the respiratory team found both devices suitable for their service needs they preferred the Epoc. This was mainly due to the fact that the sample is applied after calibration so a repeat sample is not required if the calibration fails.

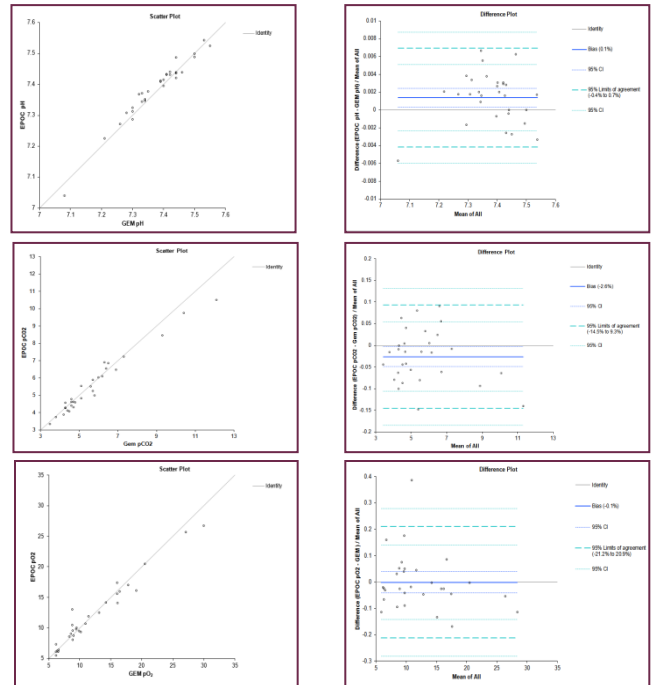


Figure 1: Correlation of the Epoc against the GEM4000 for pH, PCO₂, PO₂

Technical Evaluation

Once the respiratory team had evaluated the devices, the POCT carried out a method comparison with the hospital gas analysers; IL GEM 4000 to assess technical performance.

The method comparison against the Epoc showed (figure 1) :

- 0.1% (pH units) positive bias for pH towards the Epoc
- 2.6% negative bias for PCO₂ towards the Epoc
- No observable bias for PO₂

The method comparison against the iStat:

- 0.1% (pH units) positive bias for pH towards the iStat
- 1.6% negative bias for PCO₂ towards the iStat
- 3.6% positive bias for PO₂ towards the iStat

Based on it's functionality, technical performance and connectivity options we opted for the Epoc blood gas analyser for this service.

Conclusion

The need for a portable blood gas analyser was identified by the respiratory team as a necessary requirement for delivering a home based oxygen assessment service. Two analysers were compared for suitability and the Alere Epoc was selected as the device of choice. Whilst both analysers correlated well, the Epoc was selected owing to the transportability of the BGEM cards, performing the calibration check **before** the sample is applied and the device is connected to the HIS by AegisPOC. AegisPOC is a vendor neutral interface which as well as connecting the Alere Epoc is capable of interfacing an array of other POCT devices, regardless of the manufacturer.

By working closely with the respiratory team during the early stages of the development of the business case we were able to quickly identify the clinical need, identify suitable devices and assess them for use. This meant that we were able to include a comprehensive specification for the diagnostic aspect of the service. We were also able to develop a plan of action to ensure that training and quality met CPA standards, a requirement to ensure that we uphold our POCT CPA accreditation.

The service was approved and commissioned by the PCT as it was cost neutral overall but enabled care to be delivered in the home omitting the need for an outpatient attendance. This service complies with our trust's strategy to delivering more clinical services in the community and reducing hospital attendance whilst being cost effective.