Efficiency of Fluoroscopy's Alternative Devices for PICC and PORT's Placements
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Background
The atrio-cava junction is the best position for central venous catheters (CVC). But is this position always easy to obtain? It can be challenging. The endocavitary ECG method has proven very useful in obtaining atrio-cava junction tip position, but is it easy to change our current placement habits?

METHODS
Three steps:
1/In April 2012, one endocavitary ECG device (Nautilus) was made available in the operating room where the CVCs are placed. Training was given to the implanters (nurses and physicians) regarding use of the machine. What are the limits? In 2012, we chose to verify the tip of CVC at the end of insertion with a fluoroscopy maneuver in the operating room. Prospectively, we noted the radiation for each CVC placement by the IV nurse team; every month we noted the average radiation exposure for <CVCs placed. We also recorded the percentage of PICCs and PORTs placed with ECG method (without fluoroscopy).

2/In February 2013, Sherlock for PICCs became available. We discussed and decided to limit fluoroscopy for all CVC and for PICCs. The control of good placement of CVC was made in radiology unit with another team in a dedicated and protected area.

3/In February 2014, we bought another Sherlock and another Nautilus.

RESULTS
We saw the average radiation level decrease progressively. Between 2013 and 2014, the PICC average rate radiation exposure per month fell from 34.7 to 1.5 cgray/m2; for the PORTs it fell from 47.3 to 3.3. In 2012, all the PICCs and PORTs were implanted with fluoroscopy to finalise the placement. In 2013 and 2014, progressively 90-95% of CVC have been implanted without any radiation in operating room.
Conclusion

Pragmatically we can apply this technique in a nurse IV Team. If these tracking machines are available, radiations for everybody dramatically decreased while we saw an increase in obtaining accurate atrio-cavo tip positioning, for PICCs and PORTs.
Reduction of radiation rate

Radiation level (mGray/cm²) for PICC placement 2012-2014
PICC placement with ECG
Reduction of radiation rate

Radiation level (mGray/cm²) for PORT placement 2012-2014
Port a cath placement with ECG

Evolution of using ECG exclusively for port and PORT placements

- % Fluoroscopy PORTs
- % ECG Ports
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RESULTS with PICC

RESULTS with PORT a CATH

Conclusion
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