Donald Gessling presents:
Fundamentals of Pulse Oximetry

Sponsored by: Fluke Biomedical
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PRESENTER: DONALD GESSLING, FLUKE BIOMEDICAL

Donald Gessling, Senior Engineer at Fluke Biomedical has been designing biomedical test equipment since 1977, Don began his career at the Dempsey Company, and has developed test devices for Dynatech Nevada, and Fluke Biomedical. Currently, he’s responsible for the embedded firmware that is used to drive Fluke Biomedical patient simulators, defibrillator analyzers, and other test equipment. He earned a Bachelor of Science in Electrical Engineering from the University of California, Santa Barbara.

WEBINAR AGENDA: Pulse oximetry is an important patient monitoring technology based on the simple technique of shining light through a patient’s finger to measure oxygen saturation levels or SpO2.

Learn why this simple procedure is extremely important, and how it works. This one-hour webinar will also cover the basics of pulse oximetry, along with the concepts of light wavelengths, calculations, R-curves, and the most reliable way to test SpO2.

Three Key Takeaways:
  1. History of pulse oximetry and how the need to test evolved from the operating room.
  2. How a pulse oximeter, non-invasively measures oxygen saturation.
  3. Ranges of testing that can be performed.

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Patient care and safety are top of mind for hospital quality assurance professionals. Vital signs monitors affect patient care. These critical medical devices are used in diagnoses that influence patient treatment. Incorrect diagnoses due to inaccurate readings from a poorly-performing patient monitor could put a facility at risk for costly litigation.

Performance checks for patient monitors are required by a variety of standards, and are a primary area of focus for groups like The Joint Commission, AAMI and ECRI. Below are a selection of standards you can reference when building your patient monitor quality assurance plan.

The Joint Commission (JC) hospital accreditation manual in Environment of Care (EC) section

- EC.02.02.01 EP 2
  - Requires Clinical Engineering maintain an inventory, including any new devices introduced to the system
- EC.02.02.01 EP 3
  - Requires a maintenance system is in place that assures reliable equipment function
- EC.02.02.01 EP 4
  - Requires a documented plan for maintenance intervals
- EC.02.02.01 EP 6
  - Requires written procedures for managing equipment failures
- EC.02.04.03 EP 1
  - Requires that all equipment is checked for safety and functionality before initial use
- EC.02.04.03 EP 2
  - Requires that life support equipment is maintained, within schedule, at 100%
- EC.02.04.03 EP 3
  - Requires maintenance on all non-life support, within the department’s own guidelines
- EC.04.01.01 EP15
  - Requires an annual evaluation of the equipment management plan, with revisions

NIBP and ECG standards

  - R-16-2: Standard for non-invasive automated sphygmomanometers
  - R-90: Electrocardiographs: Metrological Characteristics – Methods and Equipment for Verification
  - Standard for electronic or automated sphygmomanometers
  - Standard for cardiac monitors, heart rate meters, and alarms
- China JIG 692 2009
  - Standard for non-invasive electronic sphygmomanometers
Pulse Oximetry standards

- ISO 9919:2005(E)
  - Medical electrical equipment: particular requirements for the basic safety and essential performance of pulse oximeter equipment for medical use. (International Organization for Standardization)
- ISO 80601-2-61 (publication pending)
  - Medical electrical equipment - Part 2-61: Particular requirements for the basic safety and essential performance of pulse oximeter equipment for medical use. (International Organization for Standardization)
- United States Food and Drug Administration (1992)
  - General guidance document, device: non-invasive pulse oximeter
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Our presenters will end today’s webinar with a Q&A session. If you have a question, please submit it early by emailing webinar@mdpublishing.com.

All questions will be addressed at the end of today’s presentation or the presenter will follow up with you offline.

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