Introduction to PRECON™

A New Device for Automating and Monitoring Remote Ischemic Conditioning

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Ischemic Conditioning Therapeutics, Inc.

Remote Ischemic Conditioning:
The time has come to harness its tissue-protective powers in patients.

Ischemic Conditioning

Non-Invasive

Short-term Therapy

- PCI
- CABG
- Other Cardiac Surgery (e.g. valve)
- Major Surgery
  - Thoracic (e.g. lung lobectomy)
  - Abdominal (e.g. pancreas)
  - Vascular (e.g. aortic aneursym)
- Chemotherapy (neurotoxic)
- Contrast dye injection (nephrotoxic)

Long-term Therapy

- Hypertension
- Diabetic neuropathy
- Cardiovascular fitness
- Vascular reactivity
- Pulmonary hypertension

Invasive

Extravascular

PreCon

- Surgical resection and anastomosis
  - Esophageal
  - Colon
- Organ procurement

PostCon

- Organ transplantation

Intravascular

PreCon

- Elective PCI
- Neurosurgery

PostCon

- Acute MI / PCI
- Acute CVA

Ischemic Conditioning

Non-Invasive

Remote Ischemic Conditioning (RIC)

Novel Applications

Short-term Therapy

- PCI
- CABG
- Other Cardiac Surgery (e.g. valve)
- Major Surgery
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Long-term Therapy

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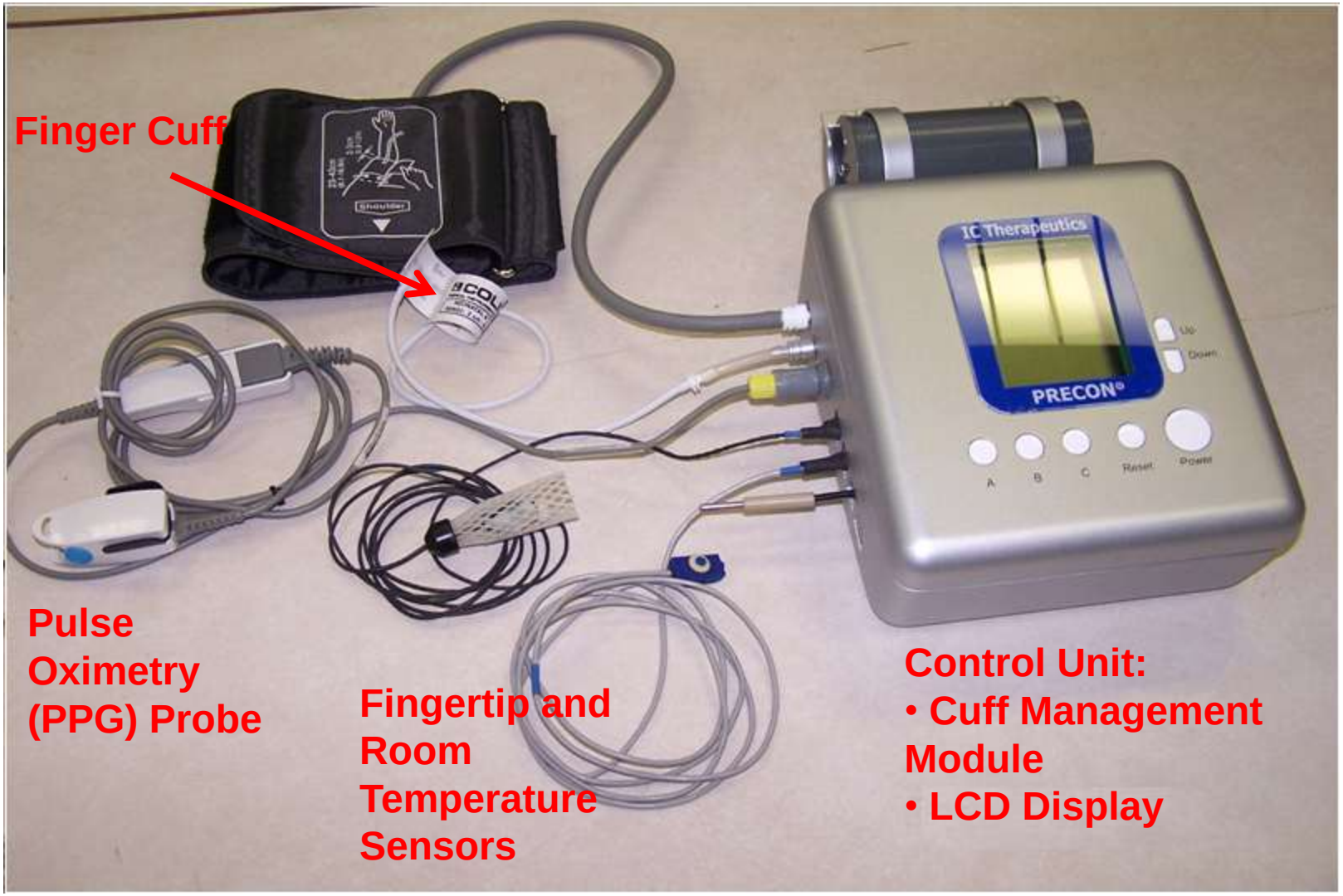
PRECON™ Features

- Non-invasive
- Automated, Easy to operate
- Programmable
- Portable
- Personalized RIC protocol
- Real-time data acquisition
  - Rate of blood deoxygenation:
    Artificial Pulse Oximetry (APO)
  - Temperature:
    Room and Fingertip RTD Temperature Sensors
  - Vascular reactivity:
    Based on fingertip temperature curve data
- PC connectivity and data analysis software

PRECON™ Design Concept

PRECON™ Prototype V2.1

Blood Pressure Cuff



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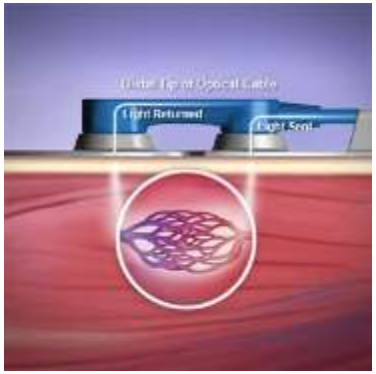
Real-time Data Acquisition of Unique Measurement Parameters

- Rate of blood deoxygenation:
  - Artificial Pulse Oximetry (APO)
- Temperature:
  - Room and Fingertip RTD Temperature Sensors
- Vascular reactivity:
  - Based on fingertip temperature curve data

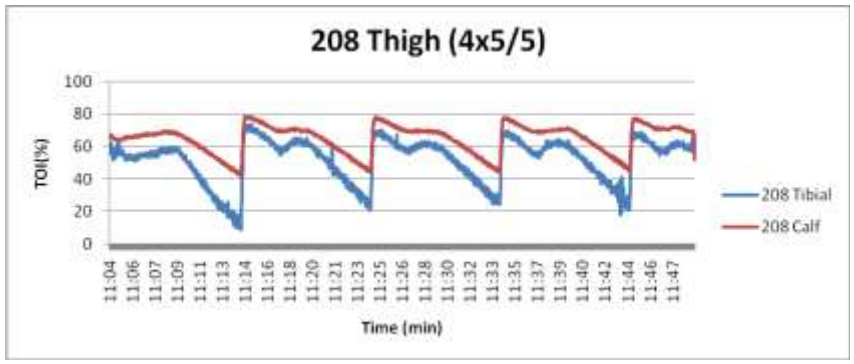
Artificial Pulse Oximetry

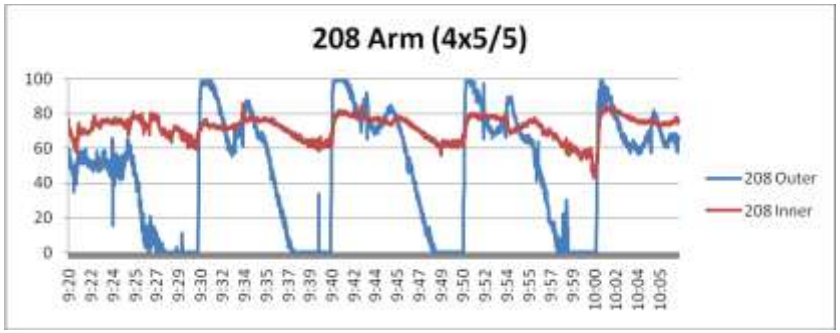
The rate of tissue deoxygenation differs between individuals.

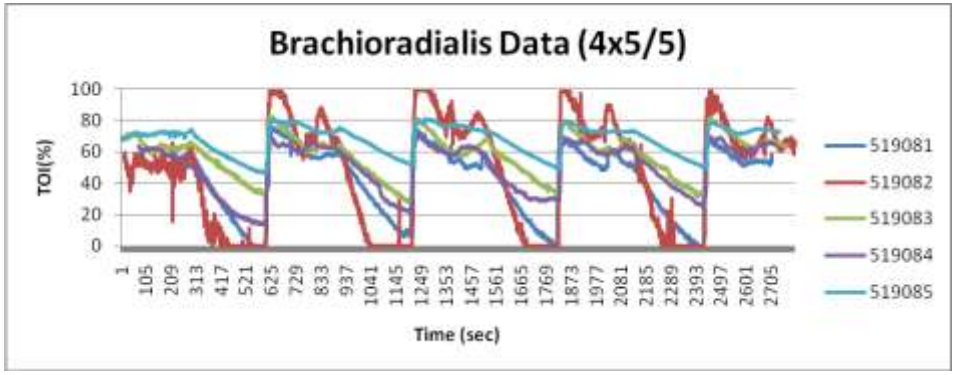


Near-infrared Spectroscopy (NIRS)

Expensive







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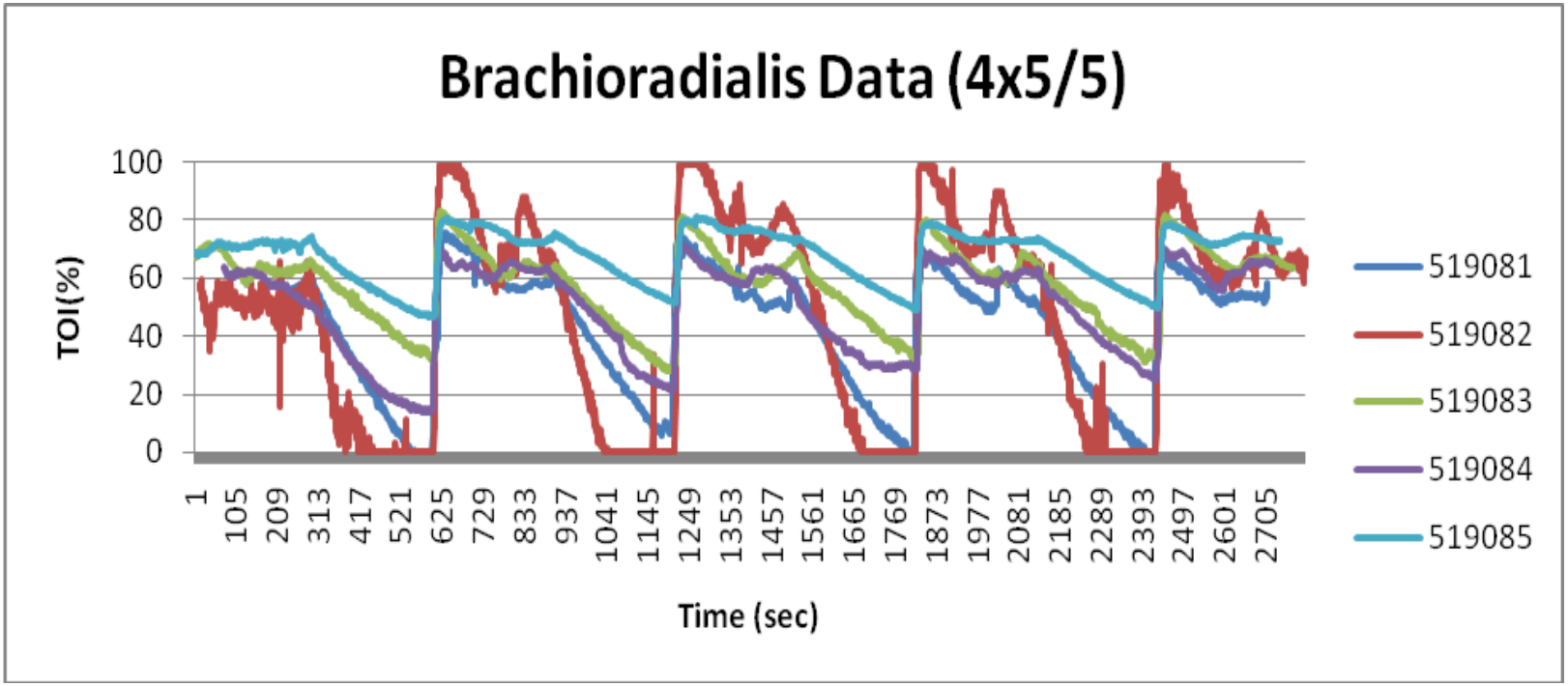

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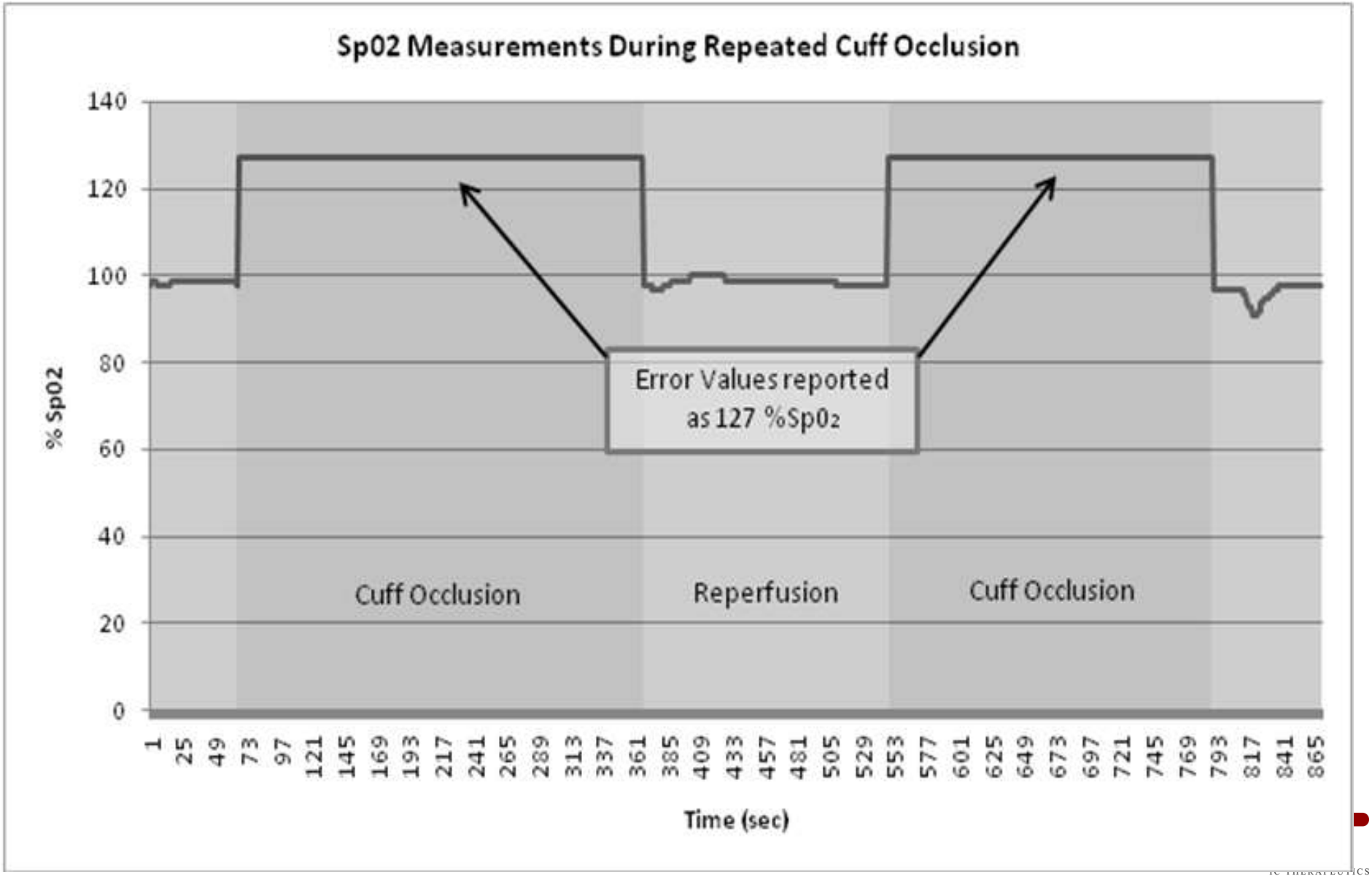
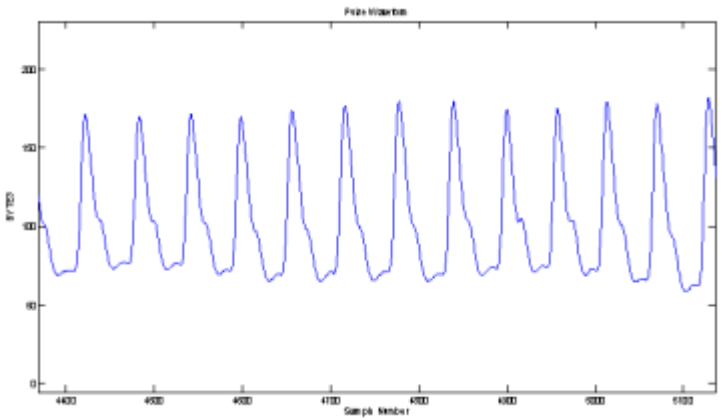
Artificial Pulse Oximetry (APO)

• Standard pulse oximetry requires a pulsatile signal to calculate blood oxygen saturation. Cuff occlusion -> no pulse -> can't determine O2 sat

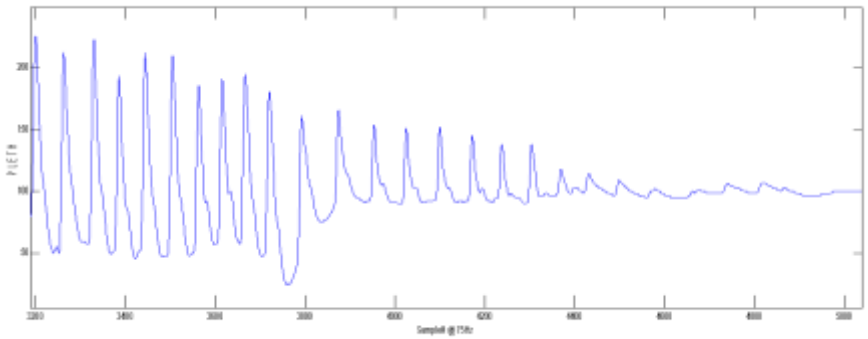
•Artificial pulse oximetry
  • Cuff placed at base of index finger
  • During cuff-occlusion periods, finger cuff is "pulsed" at 72/sec frequency
  • O2 sat readings still obtainable

Standard Pulse Oximetry

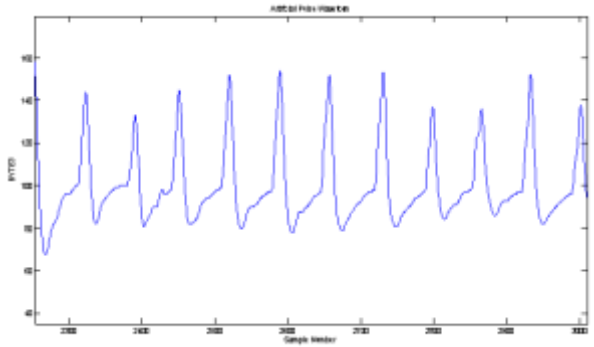




Normal pulse waveforms measured by fingertip PPG sensor

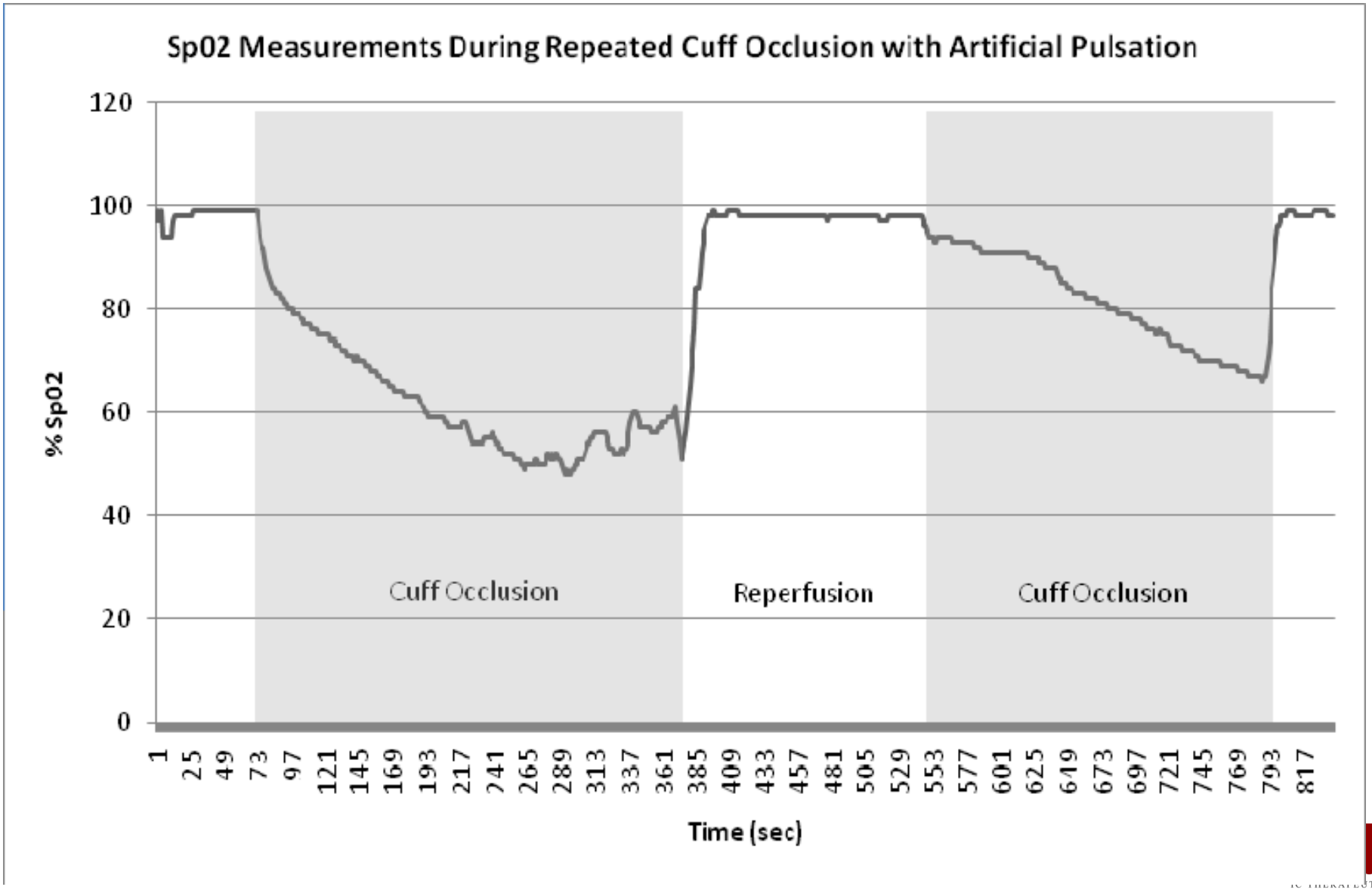


Loss of pulsatile signal during onset of cuff occlusion precludes calculation of O2 saturation



Artificial pulse waveforms generated by APO method

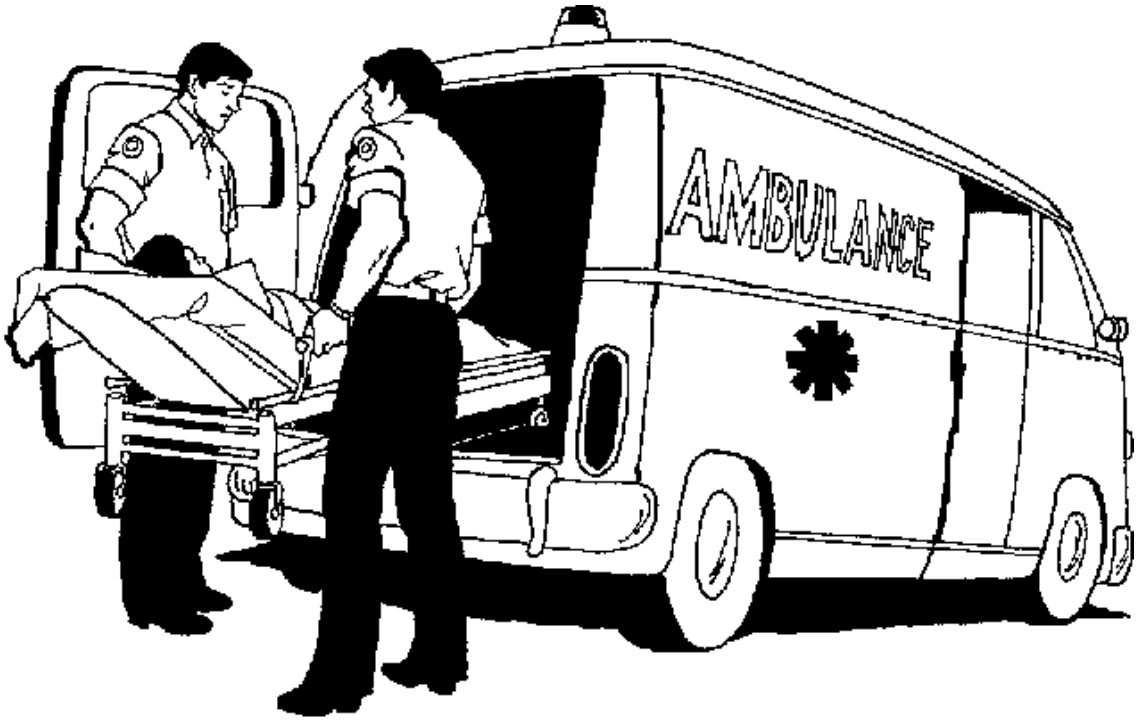
Artificial Pulse Oximetry (APO)



Preconditioning, Perconditioning, Postconditioning

CABG Other cardiac surgery PCI Major surgery	Myocardial injury
CABG Aortic aneurysm repair Contrast dye injection	Renal injury
Major surgery	Ischemia/reperfusion injury to multiple tissues
Neurotoxic chemotherapy	Peripheral nerve injury

“Per-Conditioning” with PRECON™



Acute Coronary Syndromes
Stroke

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Novel Clinical Applications for Repeated RIC Treatments

- Hypertension
- Cardiovascular fitness and reactivity
- Diabetic neuropathy