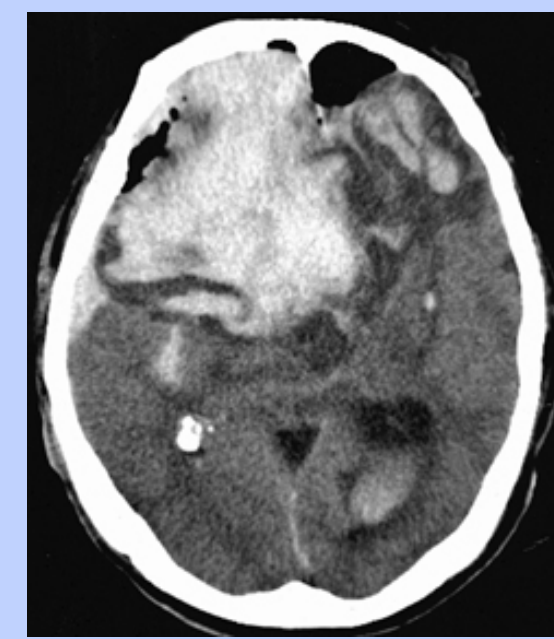


Non-Invasive Hand-Held Brain Edema Monitoring System

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Peter LeRoux, MD, University of Pennsylvania, Dept. of Neurosurgery, Baruch Ben Dor, PhD, InfraScan Inc.

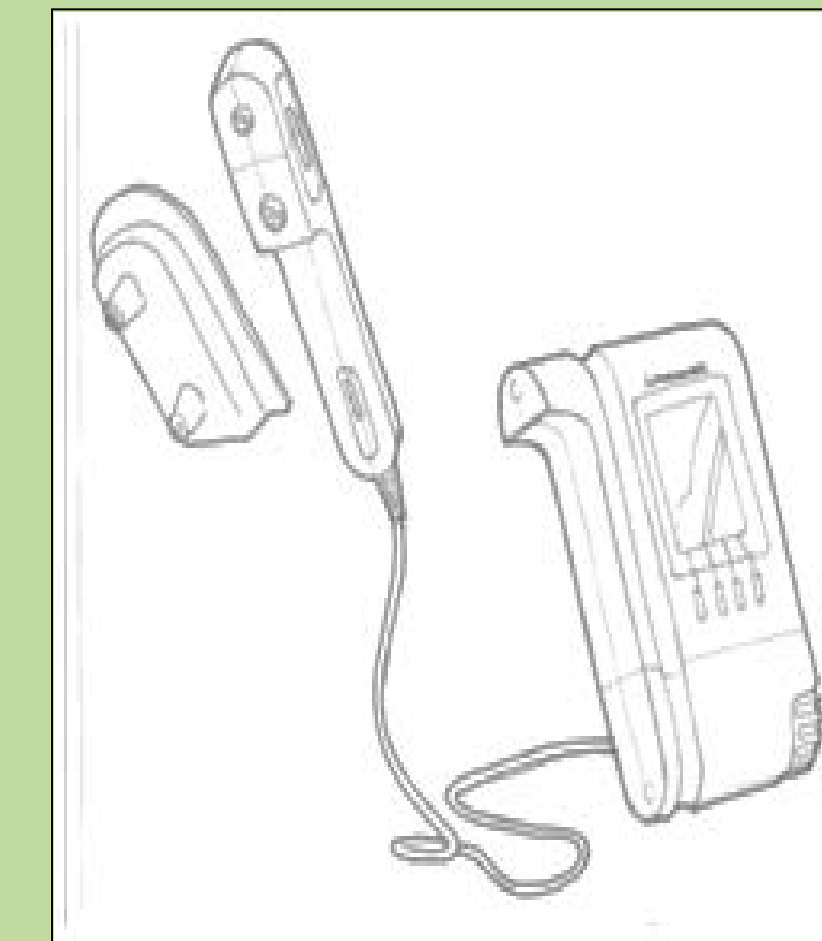
Patient Population and Clinical Need

- US: 1.7 million people incur traumatic brain injury (TBI) and 800,000 suffer a stroke
- Common effects of TBI and stroke:
 - **brain edema**
 - intracranial hematomas
- Raised intracranial pressure (ICP), main cause of death and disability
- Early detection and monitoring of brain edema may help in:
 - timely identification of patients in need of surgery
 - improve the outcomes of the surgery,
 - improve ability to monitor and care for patients
 - reduce cost of care

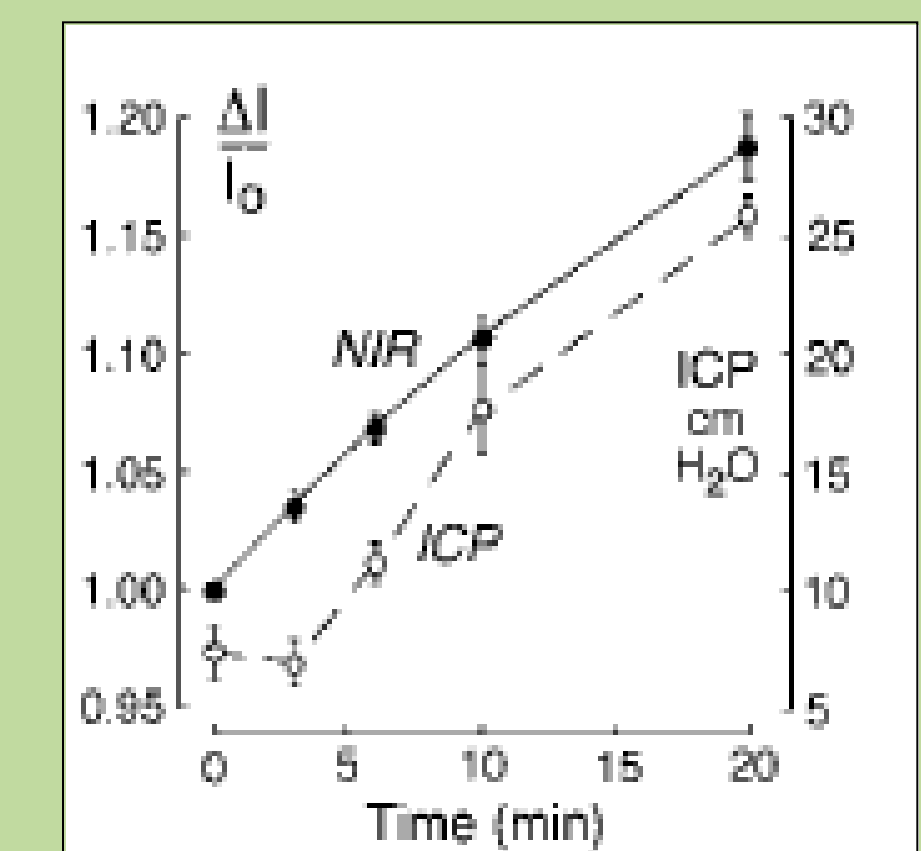


Envisioned Health Care Product

- A near infrared (NIR) based mobile imaging device to detect and continuously monitor brain edema at the site of injury and in the hospital



- Light within the near infrared range can penetrate the tissue and water and blood content can be extracted
- NIR can provide changes in water content earlier than ICP



- Measure changes in water and blood content within the brain
 - Edema detection: an adjunct to CT scan
 - Edema monitoring: noninvasive, safe, reliable, portable, easy to use and affordable solution as compared to ICP monitoring

Current Methods

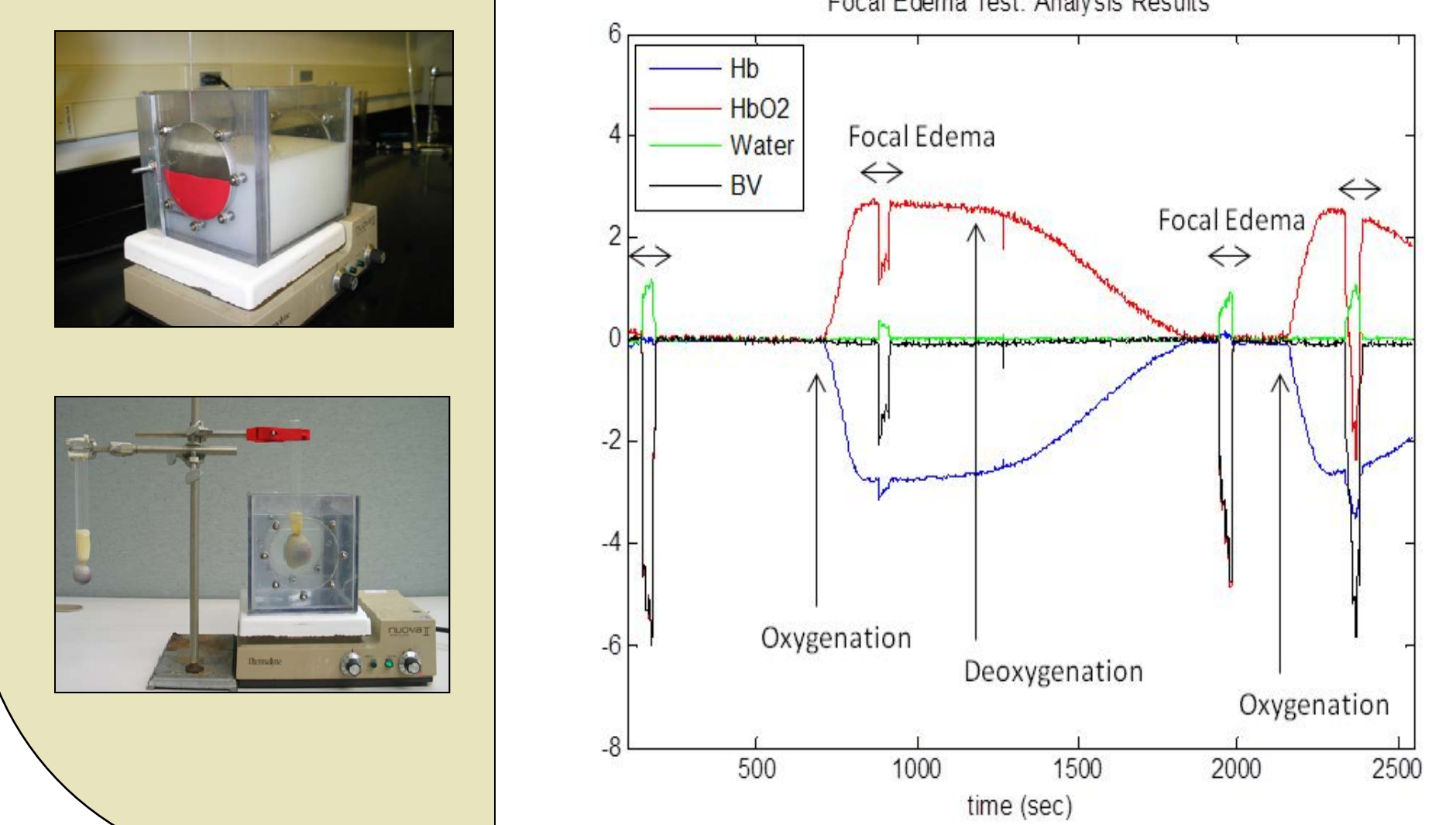
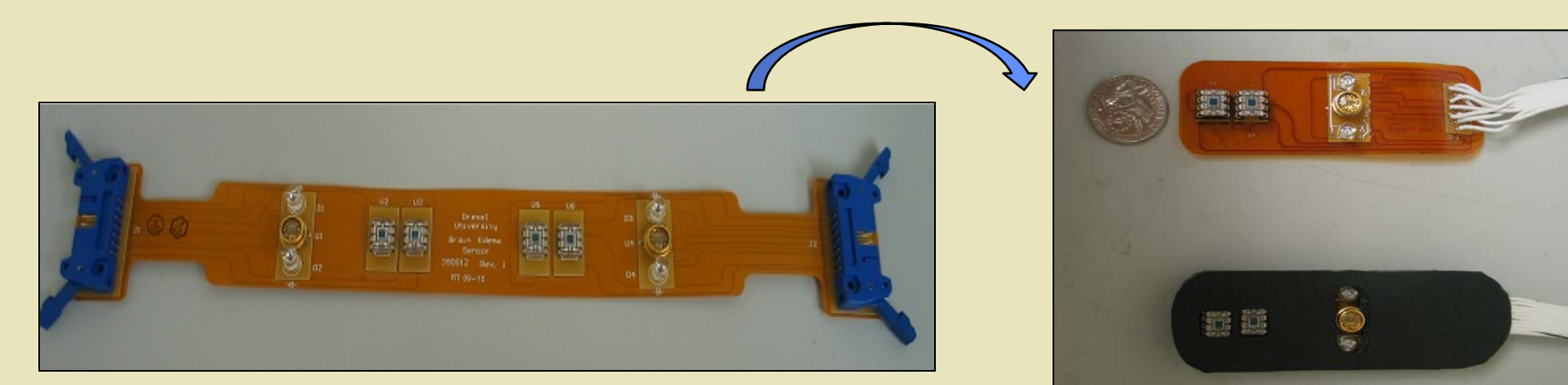
- Edema Detection: CT scan
 - Expensive, radiation exposure, availability
- Edema Monitoring: ICP Monitoring
 - Invasive



There is a need for a reliable, portable and affordable device for the early detection and continuous, follow-up monitoring of brain edema noninvasively

Objective and Milestones

To achieve a clinical proof of concept in humans of a NIR based mobile imaging device to detect and continuously monitor brain edema



Milestone #	Description of milestone	Timeline in Quarters (Q)			
		Q1	Q2	Q3	Q4
1	IRB submission & approval	90%			
2	Develop and evaluate split probe brain edema monitor on laboratory phantoms.	90%			
3	Perform human testing with simultaneous recordings from other measures, i.e. ICP, CPP, brain oxygen and GCS. Compare to CT assessment of edema				
4	Data analysis and performance evaluation of the proposed device through human tests				