Effectiveness of the Dolphin Bed® as a Tool to Improve Tissue Perfusion in Points of Compression

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Background

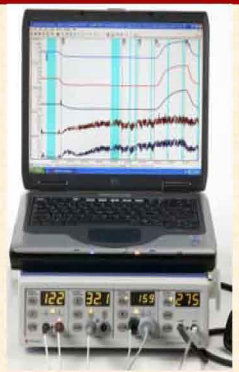
-Pressure ulcers plague bed-bound patients
-**High incidence** of pressure ulcers: 23% of long-term care facilities residents
-**Expensive:** $1.3 billion in costs annually
-Air-flow mattresses, Air-fluidized beds, and auto turning beds have improved care
-Is there a place for an even better "smart computerized, adaptable mattress?

Objective

-Evaluate improvement of tissue perfusion by "Dolphin Bed"® (v. standard O.R. bed/gurney)

Dolphin Bed®

•Dolphin Bed® developed for dolphin transport (more susceptible to ulcers), works through a series of air-filled cylindrical pads
•Portable – unlike standard fluidized beds
•Uses a micro-processor driven air delivery system
•Analyzes weight distribution upon the bed
•Gives feedback to the bed pads to self adjust accordingly



Materials/Methods

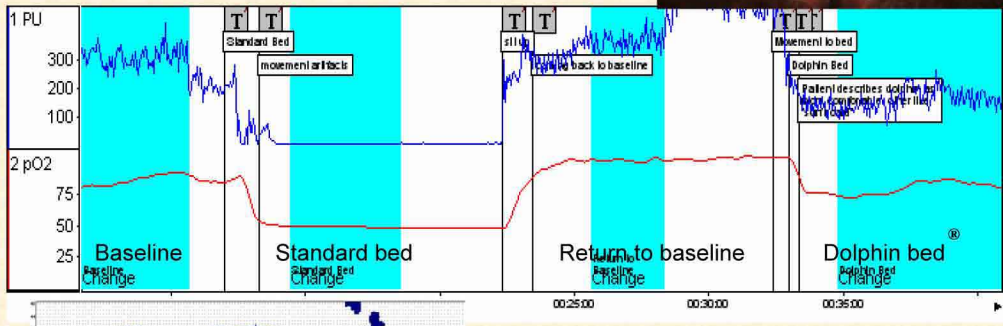
-"Dolphin bed"® (Manufactured by Biologics)
-10 volunteers
-Perimed electronics tissue sensor system (for pressure and perfusion assessment):
  •transcutaneous o2/co2 sensor
  •laser flow Doppler
-Sensors on bilateral scapula of volunteers
-measurements (in 10 minute increments)
  •Baseline upright
  •Supine on standard OR bed/gurney
  •Sitting up again (recovery to new baseline)
  •Supine on the dolphin bed

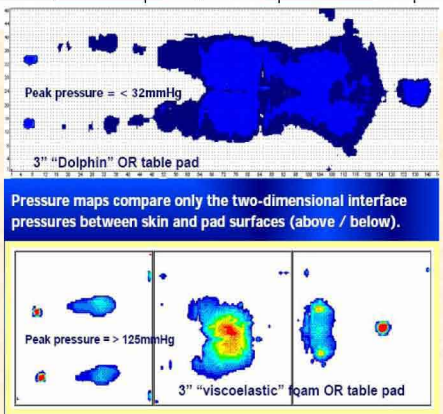
-Percent reduction from baseline calculated
-Mean values compared by Wilcoxon and paired t-test

Results

–Mean values: **87%** retention of perfusion on the dolphin bed® vs. **16%** of baseline perfusion for the standard bed

–All volunteers had significantly improved blood flow using the dolphin bed® vs. standard bed ($p<0.0001$)





Conclusions

-Statistically significant improvement of tissue blood flow while on the "Dolphin Bed"® relative to the standard bed and gurney

-Results warrant further study of the "Dolphin Bed's"® potential and clinical efficacy as a tool improving outcomes of pressure sore prophylaxis and treatment