

How does hSITE Impact Older Adults?

McGill University
2011 06 17

Dr. Frank Knoefel

Co-Lead, TAFETA project, Élisabeth Bruyère Research Institute
Vice-President, Medical Affairs and Health Informatics, Bruyère Continuing Care



OUTLINE

- Background
- Clinical Applications of Sensors
 - Bed Sensor: Nocturia
 - Bed Sensor: Mobility
 - Bed Sensor: Breathing
- Next steps

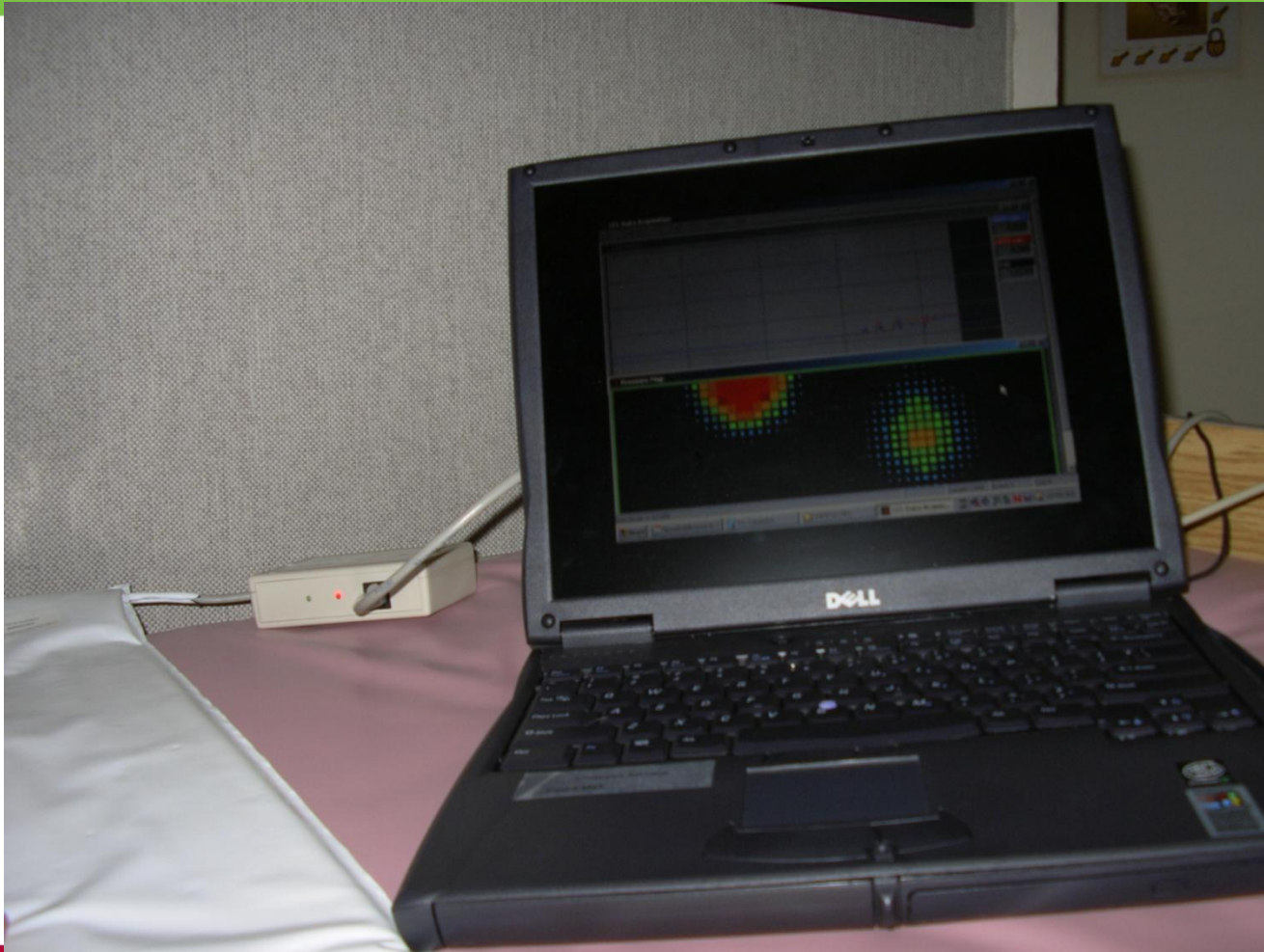
BACKGROUND

- Overall Goal
 - Establish close link between clinicians and their needs, and engineers and their solutions
- Context 2:
 - Homecare for Seniors and People with Disabilities
- Theme 2:
 - Context Aware Sensor Systems, Software and Applications

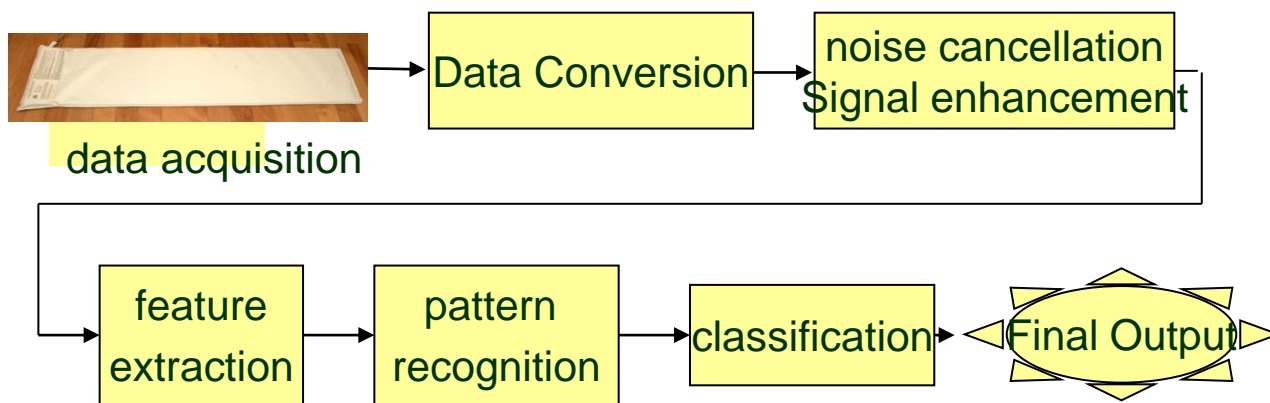
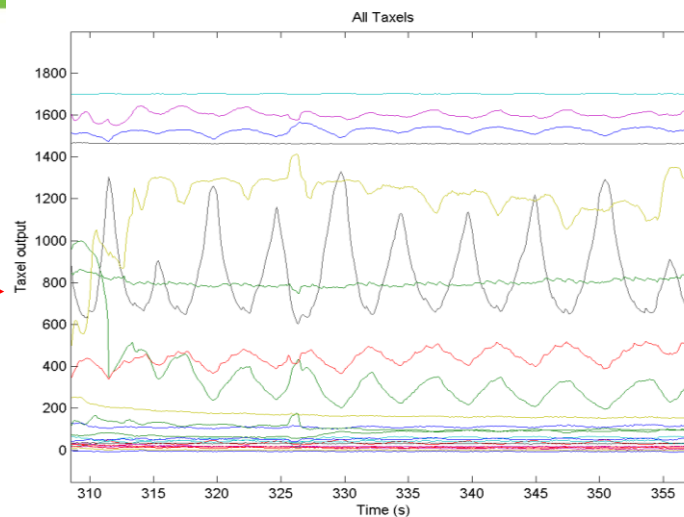
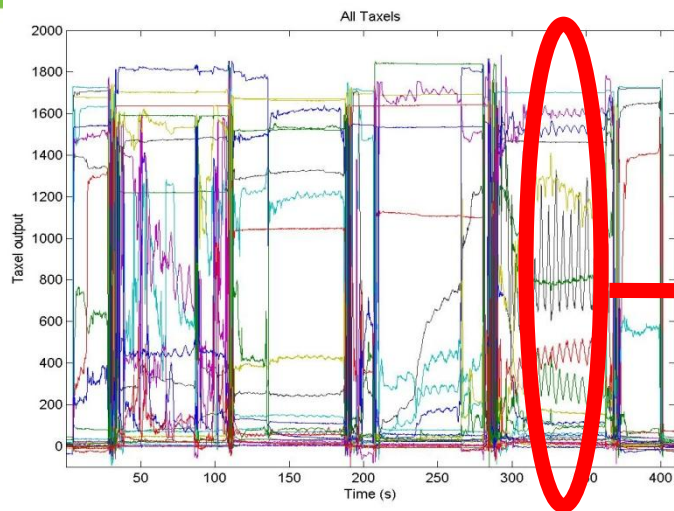
THE TEAM

- Dr. Rafik Goubran, Theme Lead
- Dr. Amaya Arcelus, now PhD graduate
- Robert Levesque, undergrad
- Megan Holtzman, PhD Candidate

BACKGROUND: HARDWARE



BACKGROUND: SOFTWARE



WHAT IS IMPACT FOR HER?



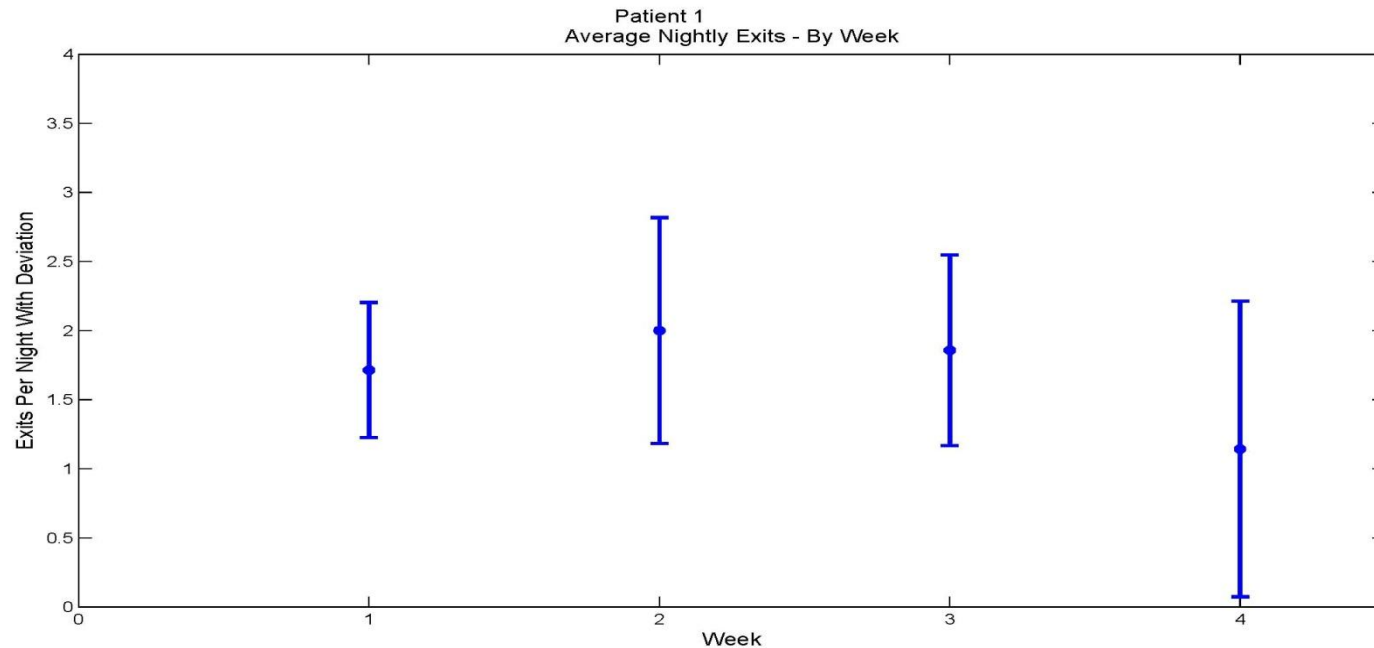
NOCTURIA

- Question: Can a mat sensor under a mattress help monitor nocturia treatment in the community?
- Methods: 10 frail older day hospital patients with nocturia monitored over 8 weeks in their homes

NOCTURIA: CHALLENGES

- Definitions:
 - When is night – when is sleep?
 - How long in bed = “gone to bed”
 - How long out of bed = “bathroom”

NOCTURIA: RESULTS



NOCTURIA: ISSUES

- What percentage of “get out of bed” represent bathroom break?
- What percentage of bathroom breaks are bladder related?

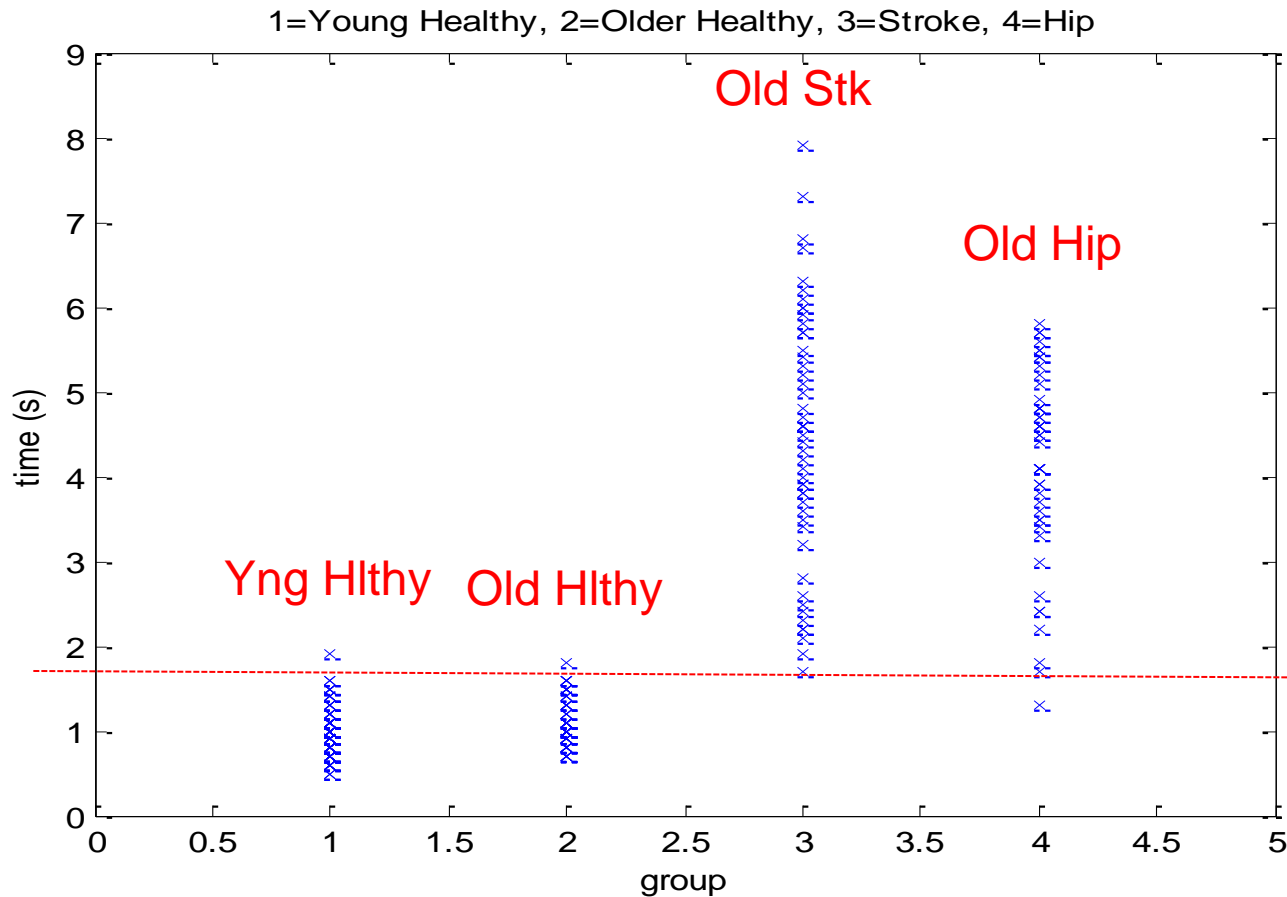
MOBILITY

- Question: Can mat data be used to identify changes in mobility – and if addressed, could this prevent falls?
- Step 1: compare transfers of clinical groups
- Step 2: compare transfers of single client over time

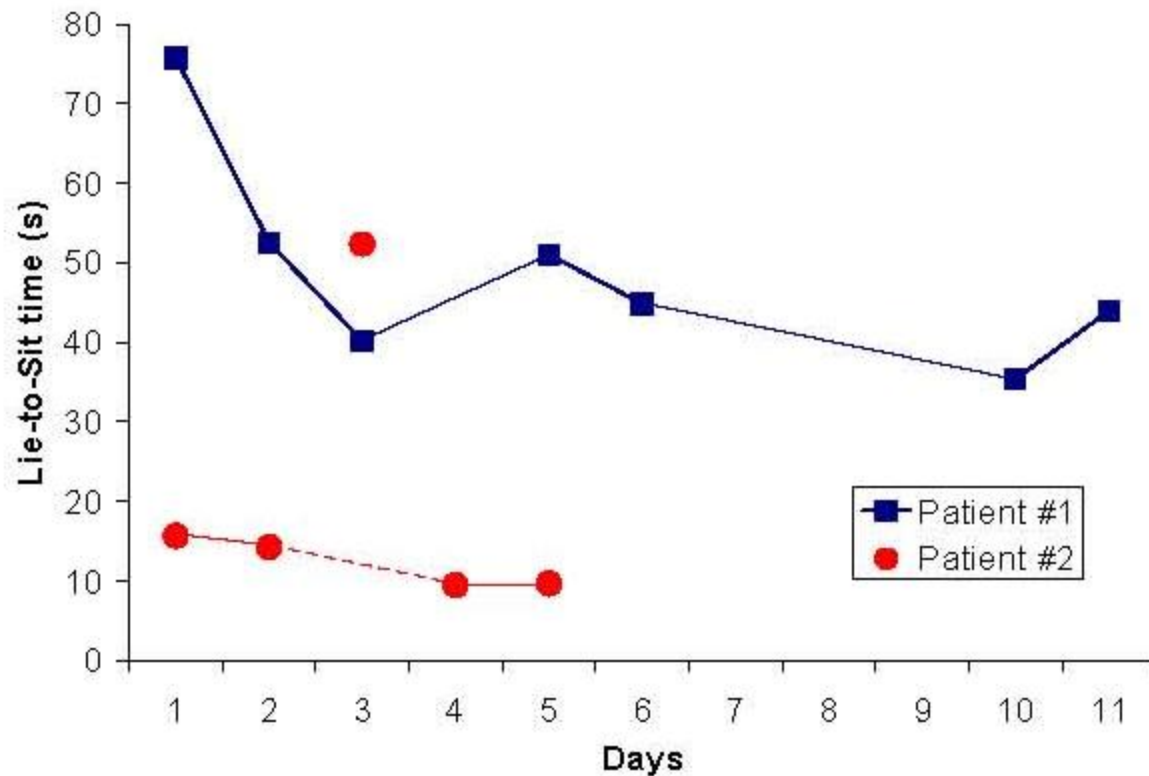
MOBILITY: CHALLENGES

- When does transfer start?
- Mat misses “stabilisation” phase

MOBILITY: RESULTS I



MOBILITY: RESULTS II



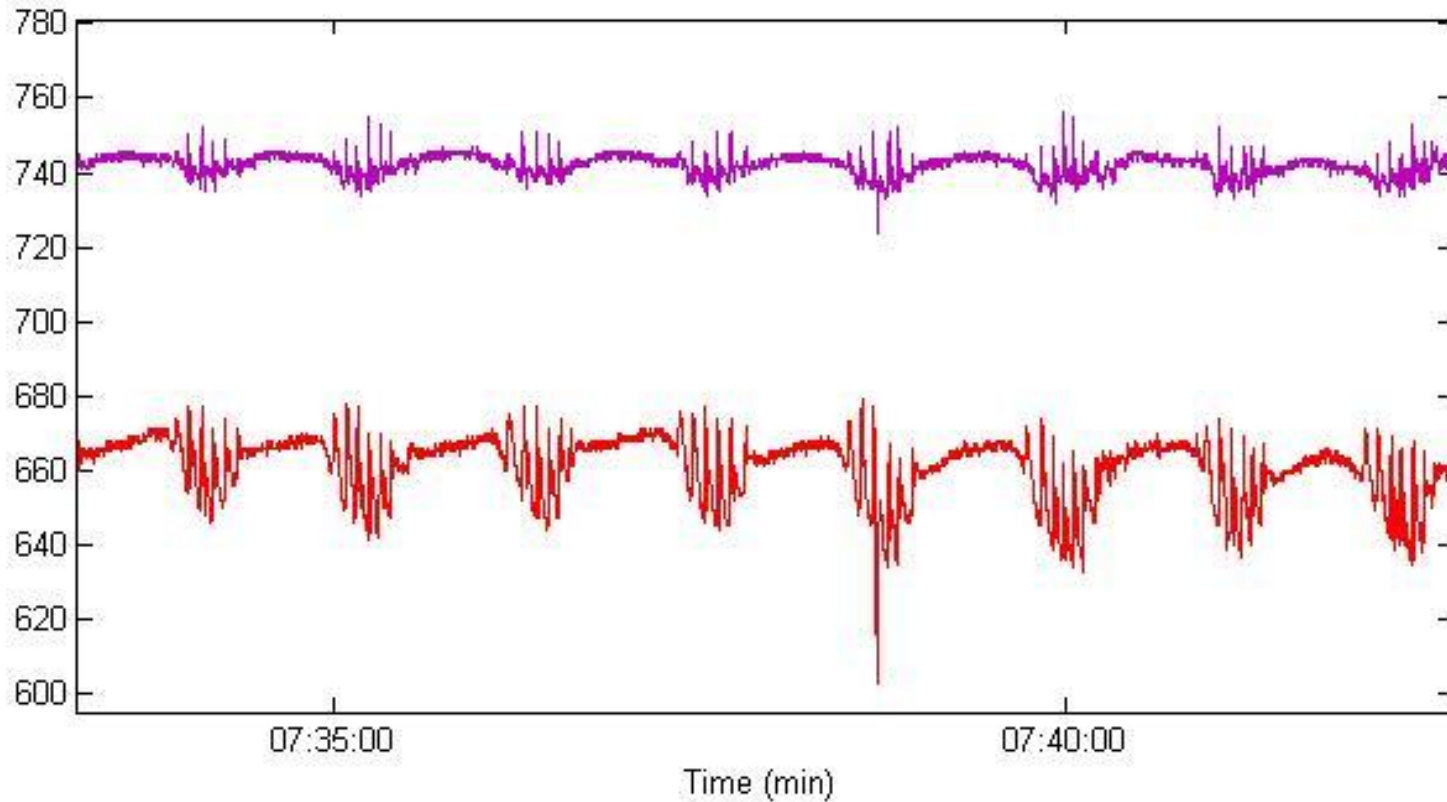
MOBILITY: ISSUES

- Transfer times in hospital: what is the role of nurse or therapist?
- Transfer times at home: what factors impact transfers from bed day to day, and when are the variations significant?

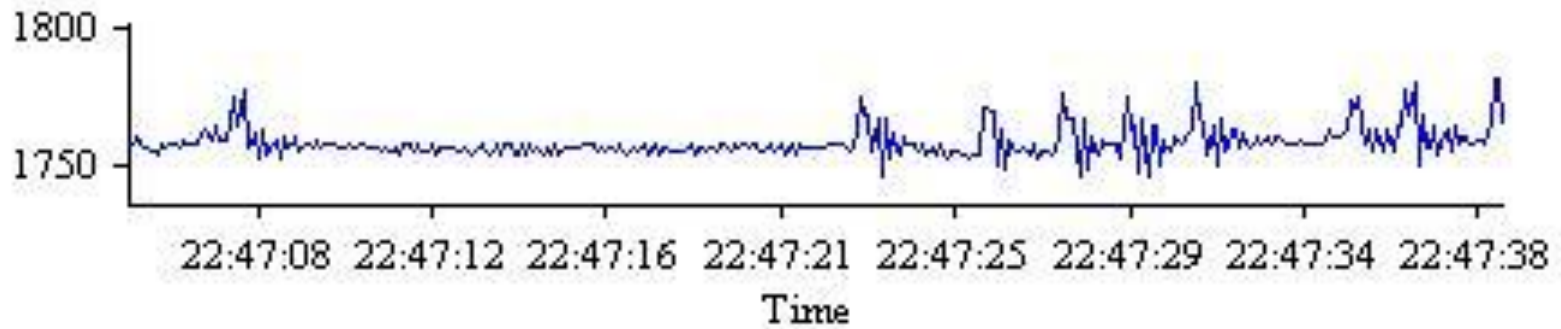
BREATHING PATTERNS

- Question: Can the mat algorithms create clinically identifiable breathing patterns - are there breathing or movement patterns that can predict the end of life?
- Methods: Monitor 15 patients on an in-patient palliative care unit for the duration of their stay

BREATHING: RESULTS I



BREATHING: RESULTS II



BREATHING: ISSUES

- Apnea vs. change in position
- Impact of coughing vs. breathing
- End of life: sleeping vs. resting

NEXT STEPS

- Nocturia: additional sensors: Bathroom? Fridge? TV?
- Mobility: additional sensors to determine if getting help?
- Breathing: additional sensors to determine cough? Presence of care provider?

Questions?

