

# TAFETA Research Program: Reducing Falls-Related Injuries

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## PROBLEM:

- THE POPULATION IS AGING. BY 2036, THE NUMBER OF CANADIANS OVER THE AGE OF 65 ARE EXPECTED TO INCREASE FROM 4.2 MILLION TO 9.8 MILLION.<sup>1</sup>
- OLDER ADULTS FACE MANY HEALTH CHALLENGES INCLUDING INCREASED RISK OF FALL.
- APPROXIMATELY 15% OF PATIENTS HOSPITALIZED FOR A HIP FRACTURE DIE IN THE HOSPITAL, 33% DIE WITHIN ONE YEAR OF SUSTAINING A FRACTURE, AND OVER 30% ARE PLACED IN LONG-TERM CARE FACILITIES.<sup>2</sup>
- DESPITE INCREASING MOBILITY CHALLENGES, OLDER ADULTS PREFER STAYING IN THEIR HOMES OVER LONG-TERM CARE PLACEMENT.
- FOR EXAMPLE, IN A RECENT TIME TRADE OFF STUDY, 80% OF WOMEN OVER THE AGE OF 75 SAID THEY WOULD RATHER DIE THAN EXPERIENCE THE LOSS OF QUALITY-OF-LIFE RESULTING FROM A HIP FRACTURE, LEADING TO LONG-TERM CARE.<sup>3</sup>

## SOLUTION:

- TAFETA (TECHNOLOGY ASSISTED FRIENDLY ENVIRONMENT FOR THE THIRD AGE) IS A RESEARCH PROGRAM ESTABLISHED IN 2002 IN OTTAWA, CANADA.
- TAFETA DEVELOPS AND TESTS INNOVATIVE TECHNOLOGIES TO HELP OLDER ADULTS LIVE INDEPENDENTLY OR "AGE IN PLACE."
- IN 2005, OUR RESEARCH TEAM BEGAN EXPERIMENTING WITH A SPECIAL DUAL-STIFFNESS FLOORING MADE BY SATECH INC., CALLED SMARTCELLS®.
- SMARTCELLS® WAS ORIGINALLY USED TO REDUCE FATIGUE AMONGST FACTORY WORKERS, WHO ARE REQUIRED TO STAND IN THE SAME POSITION FOR AN EXTENDED PERIOD OF TIME.
- BASED ON ANECDOTAL EVIDENCE, OUR RESEARCH TEAM BELIEVES SMARTCELLS® CAN REDUCE FALL-RELATED INJURIES. A MULTI-PHASE STUDY IS CURRENTLY UNDERWAY TO CONFIRM OUR HYPOTHESIS.

## TECHNOLOGY:

- THE TAFETA RESEARCH TEAM HAS A LIVING LABORATORY CALLED THE TAFETA SMART APARTMENT AT THE ELISABETH BRUYÈRE HEALTH CENTRE IN OTTAWA.
- SMARTCELLS® WAS INSTALLED AT THE TAFETA SMART APARTMENT BATHROOM AS A PROOF-OF-CONCEPT PROJECT IN 2005.



## PROJECT EVOLUTION:

### PHASE 1: 2005 ÉLISABETH BRUYÈRE HEALTH CENTRE PILOT STUDY



#### LOCATION

- INDOOR GARDEN SOLARIUM
- ÉLISABETH BRUYÈRE HEALTH CENTRE, OTTAWA

#### PARTICIPANTS

- 9 GERIATRIC REHABILITATION PATIENTS (4 MALE)
- POST HIP-FRACTURE AND POST-STROKE
- 70 TO 84 YEARS OLD

#### EXPERIMENT DESIGN

- PILOT STUDY TO CONFIRM PRODUCT SAFETY
- SMARTCELLS® "TILE" VS. CONVENTIONAL FLOOR
- BALANCE AND WALKING TESTS
- PHYSIOTHERAPIST ASSESSMENT
- QUESTIONNAIRE COMPLETED BY PATIENTS

#### RESULTS AND DISCUSSION

- SUBJECTS PREFERRED SMARTCELLS®
- SLIGHTLY MORE SWAY REPORTED ON SMARTCELLS® HOWEVER, SWAY NOT CONSIDERED SIGNIFICANT
- SMARTCELLS® APPEARS SAFE ENOUGH FOR A LARGER TRIAL

### PHASE 2: 2006 GUEST HOUSE RESPITE FACILITY PROSPECTIVE STUDY



#### LOCATION

- GUEST HOUSE: A HOME AWAY FROM HOME
- PERLEY RIDEAU VETERANS' HEALTH CENTRE, OTTAWA

#### PARTICIPANTS

- EARLY TO MODERATE ALZHEIMER'S DISEASE
- 60 TO 90 YEARS OLD

#### EXPERIMENT DESIGN

- PROSPECTIVE STUDY TO EVALUATE PRODUCT IMPACT
- TARGET: 700 FALLS, 50 MAJOR INJURIES
- ARCHITECTURAL DESIGN TO INCLUDE SMARTCELLS® IN HALF OF ROOMS
- RANDOM PATIENT ASSIGNMENT TO EITHER ROOM TYPE
- FALL INCIDENT REPORTS, HEALTH INFORMATION AND ROOM TYPE ANALYZED

#### RESULTS AND DISCUSSION

- STATISTICS SINCE GUEST HOUSE OPENING ON APRIL 1, 2007:
  - 317 ADMISSIONS, 139 UNIQUE CLIENTS, 87 AGREE TO BE CONTACTED
  - 65 CONSENTS, 7 DECLINES, AND 15 CLIENTS TO BE CONTACTED
  - 7 FALLS: CONSENTING CLIENTS
  - 3 SMARTCELLS® (NO INJURIES), 4 CONVENTIONAL (2 INJURIES)
  - 3 FALLS: NON-CONSENTING
  - 1 SMARTCELLS® (NO INJURIES), 2 CONVENTIONAL (2 INJURIES)
- LOWER THAN PREDICTED FALL RATE, PHASE 3 TO SUPPLEMENT FINDINGS

### PHASE 3: 2009 THE OTTAWA HOSPITAL FUTURE STUDY



#### LOCATION

- TRANSITIONAL CARE UNIT
- THE OTTAWA HOSPITAL

#### PARTICIPANTS

- ALZHEIMER'S DISEASE, CHRONIC DISEASE OR AWAITING LONG-TERM CARE
- 60 TO 95 YEARS OLD

#### EXPERIMENT DESIGN

- TWO YEAR STUDY TO SUPPLEMENT PHASE 2
- TARGET: 95 FALLS, 40 MAJOR INJURIES
- SMARTCELLS® "RETROFIT" IN TWO EXPERIMENTAL WARD ROOMS AND TWO CONTROL ROOMS
- RANDOM ASSIGNMENT TO SMARTCELLS® OR CONVENTIONAL ROOM
- FALL INCIDENT REPORTS, HEALTH INFORMATION AND ROOM TYPE ANALYZED

#### EXPECTED RESULTS AND DISCUSSION

- ESTIMATE FALL RATE OF 15 FALLS PER MONTH IN UNIT
- ESTIMATE 4 FALLS PER MONTH IN EXPERIMENTAL AND CONTROL ROOMS
- PROJECT IN PLANNING PHASE; RESULTS ANTICIPATED IN 2011
- WE BELIEVE THIS IS THE FIRST PROSPECTIVE STUDY TO LOOK AT FLOORING TO MODIFY THE OUTCOME OF FALLS

## REFERENCES:

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## ACKNOWLEDGEMENTS:

- THE TAFETA RESEARCH TEAM WOULD LIKE TO THANK SATECH INC., MAKERS OF THE SMARTCELLS® FLOOR, FOR THEIR GENEROUS CONTRIBUTION TO THE PROJECT.
- ADDITIONALLY, THE RESEARCH TEAM ACKNOWLEDGES THE CONTRIBUTIONS OF THE GUEST HOUSE PARTNERS: THE PERLEY RIDEAU VETERANS' HEALTH CENTRE, THE ALZHEIMER SOCIETY OF OTTAWA, AND CAREFOR HEALTH AND COMMUNITY SERVICES.
- AS WELL, THE RESEARCH TEAM LOOKS FORWARD TO CONTINUING TO BUILD OUR COLLABORATION WITH THE OTTAWA HOSPITAL.