TIG Next Steps
From 10/8/03 Meeting

A. Heat Dissipation / wetness / temperature (Micro-climate):

Previous actions, assignments and discussion:

- Steven Reger and Eric Flam will work on test methods related to moisture removal at defined temperature. (Eric F)
- Identify test methods related to heat dissipation that are relevant to tissue integrity (Evan C)
- "Low Air Loss" what is the scope of the term and test methods? Discussion was held with T & D during 10/8 meeting on eliminating the term and replacing with "Air Modulated Micro-Climate". T & D to develop revisions to term and definition.
- During 10/8 meeting Evan C presented information regarding heat measurement (TIG024)

Next Steps:

- Evan C. will prepare and submit a draft test method to the group on heat and humidity for consideration by the next meeting.

B. Standardized Indenters & Mannequins (Evan, Charlie, Laura, Dave B & Eric)

Previous actions, assignments and discussion:

- Each work group will focus on which indenters / mannequins are appropriate for the tests they will be developing and the unique characteristics that provide value to the tests. (Charlie L)
- Charlie developed a presentation on indentors (TIG023) which was presented at the 10/8/03 meeting.
- Work group leaders of areas working on tests utilizing indenters / mannequins will communicate to start identifying consistencies and variations.
- Develop an annotated list of specific indenters and mannequins available via literature search and what is currently used. In addition the task will have the goal of identifying pros and cons of existing products. Eric Flam will serve as facilitator but must have participation. Additional questions / requests will be posted via the listserve. (Eric F)
- Literature search performed regarding material properties on the indenter. Action item will be to extending literature search into the area of impact dampening. (Laura E) Literature search results relative to "creep" to be published as TIG025.
- Define the use of indenter / mannequin for tests of alternating pressure, temperature, sliding resistance, shear, pressure and envelopment

- At 10/8/03 meeting Charlie L prepared and submitted some testing illustrated in TIG023 regarding modifying the indenter for use in alternating pressure testing to reduce "rolling".
- Evan will develop proposal to produce an indenter – pursue grant application / funding. As of 10/8/03 Evan has begun drafting SBIR, still in process.
- Need to identify what specific indenter(s) / mannequin(s) we need and develop / submit a grant application to produce.
- Should we actually make something?
- At 10/8/03 meeting Diane M. posed the question regarding which indenters we utilize to model the population (bariatrics?).
    - What range of indenters / mannequins should be utilized to reflect the population?
    - Should the indenter / mannequin be correlated to the surface design / application (i.e. a bariatric surface should utilized a bariatric mannequin)?.
    - Could we utilize ICD-9 codes for tracking this population?
    - What standardized bed frame should be utilized (rigid surface or spring)?
    - For overlays does the mattress it is applied to need to be standardized?

Next Steps: The group proposed that Charlie L take lead in conjunction with Eric F. and Evan C. – Dave M. will follow-up with Charlie to insure he is willing.

- Finalize the list of indenters / mannequins inclusive of those designed for use with full support surfaces.
- Identify the range of indenters necessary to address relevant applications (male, female, pediatric, bariatric)
- Make recommendations to TIG as a whole regarding what indenters / mannequins should be utilized for ongoing standardized tests developed by the group relative to:
    - Alternating pressure
    - Friction
    - Shear
    - Envelopment
    - Bottoming out
    - Interface pressure
    - Spatial pressure gradient
    - Contact area

C. Alternating Pressure (Charlie L)

Previous actions, assignments and discussion:

- Analysis of existing literature / studies - ongoing
- Identify tissue-like indentor(s) to be used initially – work with indenter group

- Identify reference surface for pressure
- Develop "draft" test methodologies and protocols for potential pressure variables (Mean P(t), % Cycle < 10, 20, 30 mmhg, Pressure Cycle Amplitude, Mean Duration)
- Identify additional test methods beyond interface pressure (IFP) characterization
- Additional items that Charlie identifies later
- 10/8/03 discussion regarding "Interface Pressure", "max and min" and utilization in TIG and T & D
- The term "alternating pressure" and the intended scope of the term and test methods was discussed during 10/8/03 meeting between TIG and T & D. TIG submitted suggestions and the desire that the term not restrict testing options. T & D to develop revisions to term and definition.

Next Steps:

- Task list and activities remain the same.

D. Friction (Rick F)

Previous actions, assignments and discussion:

- Develop recommendations for test method(s) relative to friction that addresses multiple layers, wet vs. dry, etc.

Next Steps:

- Task list and activities remain the same.

E. Shear (Charlie L)

Previous actions, assignments and discussion:

- Analysis of existing literature / studies - ongoing
- Identify tissue-like indentor(s) to be used initially (data set)
- Identify mid-range reference surface
- Standard indices, Trial # for comparison of test
- Standard horizontal stiffness tests
- Shear sensor work at prolonged intervals vs. prolonged horizontal stiffness
- Posture / position and the bed frame relative to shear as part of the protocol

Next Steps:

- Task list and activities remain the same.

F. Envelopment / Resistance to bottoming (Evan C – lead, with Dave B, Laura E and Stephen S)

Previous actions, assignments and discussion:

- Explore bottoming resistance with increasing load
- Investigate other types of indenters
- Consider the difference between rigid and compliant indenters relative to deformation.
- Develop a specific definition for envelopment (conform and contain – more surface area for the same amount of immersion, even distribution, deform the surface not the tissues) and a correlated test
- Develop a specific definition for resistance to bottoming and a correlated test.

Next Steps:

- Task list and activities remain the same.

G. Interface Pressure, Spatial Pressure Gradient & Contact Area (Laura E

Previous actions, assignments and discussion:

- Consider the impact of each measurement relative to time and identify where testing over time should be incorporated
- Develop indicators based on current pressure mapping technologies that are reliable and repeatable
- Research creep inherent in body under sustained load, pressure mapping systems and support surfaces and ways to separate them (Laura Edsberg).
- Ways if analyzing pressure mapping data to extract performance indices (e.g. Pressure gradient).
- 10/8/03 Laura and Joel reported on research they had done on creep and will submit a literature review (TIG025).

Next Steps:

- Evan Call will be the liason with ISO 16840-5 "Wheelchair Seating - Pressure Measurement Devices"
- JIS standard for the ball drop test. Evan C will try to obtain the validation data.
- Need to obtain instrumentation creep data from Charlie L