Conservative management for female stress urinary incontinence (SUI)

- Pelvic floor muscle (PFM) exercises: with or without biofeedback (Choi 2007, Hay-Smith 2004, Dumoulin 2008, Bo 2011)
- Electrical stimulation – inconsistent evidence (Berghmans 2007, Shamliyan 2008)
- Collection and containment – pads, diapers, and pessary
- Functional mobility - as needed in patients with physical disability
  - Gait and balance training
  - Removal of environmental barriers
- Lifestyle interventions for SUI
  - Generalized exercise program especially in sedentary patients and those with cold intolerance (Inoue 2012)
  - Weight loss – Randomized controlled trial showed 50-60% reduction in weekly urinary incontinence (UI) episodes with a surgical weight loss treatment (Subak 2005)
  - Clearing fecal impaction decrease UI especially in elders (Pearson 1992)
  - Reducing exacerbating activities – improve lifting habits and exercise technique

Is conservative management effective in SUI?

- Conservative management of UI in older women – pooled data from multiple trials (Wilson 2005)
  - Decreased frequency of UI
  - Decreased daytime urinary frequency
  - Improved quality of life
- “Women with stress, urge, or mixed UI should be offered a conservative management program as a first-line therapy for urinary incontinence.” (Wilson 2005)
- “Ambulatory continence Physical Therapy provided effective and low-cost treatment for women with SUI and should be routinely implemented as first-line treatment before consideration of surgery” (Neumann 2005)
- Systematic review of 96 randomized controlled trials and 3 systematic reviews from 1990 to 2007 (Shamliyan 2008) “PFM training combined with bladder training effectively resolved UI in women, as compared to drug therapy, electrostimulation, medical devices, injectable bulking agents, and local estrogen therapy.”
The role of the pelvic floor muscle (PFM) in continence
- Clinical experience in decreasing urinary incontinence (UI) with PFM training (Kegel 1948)
- Original framework of modern theories incorporates the role of the support ligaments and the support of the PFM (Wall and DeLancey 1991, DeLancey 1993)
- Multiple basic science studies have contributed to a more clear understanding of the role of the PFM in UI (mechanism summarized well in Ashton-Miller 2007)
- After many well done RCTs and systematic reviews – evidence of decreased symptoms after PFM exercises
  - Comparing PFM training to no treatment (Dumoulin 2011)
  - Women who were treated were 17 times more likely to report cure or improvement
  - Were 5 to 16 times more likely to be continent on pad test
- “It is no longer a question of whether PFM training programs work but what components and combinations thereof are most effective” (Dumoulin 2011)

Which patients will benefit most from PFM exercises for SUI?
Predictors of good success with PFM training in post-partum women with SUI (Dumoulin 2010)
- Pretreatment lower passive force of PFM
- Pretreatment higher PFM endurance – 90 second contraction

Prognostic indicators of poor success with physiotherapy for SUI (Hendricks 2010)
- Severe SUI
- POP Q stage greater then 2
- Poor outcome in previous physical therapy
- Second stage of labor longer than 90 minutes
- Body mass index greater than 30
- High psychological stress
- Self-report of poor physical health

Importance of evaluation and assessment of PFM function
- Proper assessment of ability to contract the PFM is mandatory and affects the quality of interventions and the outcomes (Bo 2007)
- Exercise prescriptions are based on results of the PFM examination (Clinical guidelines 2004)

Conservative examination of PFM function (Bo 2005) (more information www.bethshelly.com)
- Real-time Imaging Ultrasound
- Dynamometry
- Surface electromyography (EMG)
- Pressure biofeedback
• Vaginal palpation
  o Some disagreement as to the reliability and reproducibility of muscle grading (absent, weak, moderate, strong) (Bo 2007, Messelink 2005)
  o Most experienced clinicians agree that digital palpation of the PFM contraction inside the vaginal canal is of great value in assessing the ability to perform a correct PFM contraction. (Bo 2007)
  o Vaginal palpation of the PFM contraction continues to be the gold standard for identifying a correct PFM contraction (Clinical guidelines 2004)
  o ICS terminology on PFM testing gives structure to the vaginal examination (Messelink 2005)
  o Moderate to substantial reliability in 10 out of 16 components of the vaginal palpation assessment (Sliker-ten Hove 2009)

Vaginal assessment of PFM function (Laycock 2008)
• No speculum is used - gloved index finger palpates the edge PFM on one side
• Ask the patient to contract the PFM up and inward - urethral elevation is better when patient is instructed to contract posterior PFM – “squeeze as if you are trying to hold back gas” (Crotty 2011)
• Assess for:
  o Movement of muscle toward head, toward pubic bone, and around the finger
  o How long the patient can hold a good contraction up to 10 seconds
  o Isolation of muscle - no contraction of other muscle (such as the abdominals or adductors), no movement of the pelvis or legs, and no bearing down
• Repeat on the other side – it is common to have a difference in ability of each side

Components of PFM Training Program (more information at www.bethshelly.com)
• Feedback
  o Verbal instruction of PFM contraction has been shown to be ineffective in generating urethral closure force in 51% percent of patients (Bump 1991) and results in adverse bearing down in approximately 15% of patients (Bo 1988)
  o Need to provide some sort of feedback: vaginal palpation, EMG, or pressure biofeedback
• Number of seconds contraction is held – 5 to 10 seconds (Schabrun 2011, Bo 1999)
• Amount of rest between contractions – 5 to 10 seconds, adequate rest is necessary for successful training (Schabrun 2011)
• Number of repetitions – gradually increase, at least 24 contractions per day (Choi 2007)
• Number of times repeated during the day – 2 to 3 sets per day especially if the muscle is very weak
• Patient position - supine, sitting, standing (Borello-France 2006)
• Overflow /facilitation – adductors, abductors, external rotators of the hip (Dumoulin 2011, Culligan 2010)
• Intensity (Johnson 2001, Bo 1999)
• Resistive exercises - Vaginal weights – no significant benefit over PFM exercise alone (Herbison 2008, Bo 1999, Castro 2008)
• Functional training – the Knack (Miller 1998), Tranversus Abdominus contraction (Junginger 2010)
• Breathing – contract on exhale and avoid bearing down (Miller 1998, Hodges 2007, Junginger 2010)
• Frequency of visits - supervised PFM training more than 2 times per month is more effective (Dumoulin 2011)
• Group versus intensive / individual training - (Hay-Smith 2004, Janssen 2005, Bo 1990)
• Adherence – significant predictor of success (Alewijnse 2007, Dumoulin 2011)
• Length of training period – at least 6 to 8 weeks (Dinubile 1991, Choi 2007)
• Maintenance - one set of 8-12 intense contractions 2 to 7 times per week (Pollock 1998, Hayn 2000)

Clinical success of PFM training
• PFM training should be first line treatment for SUI and pelvic organ prolapse, but the training needs proper instruction and close follow-up to be effective. Short-term cure rates assessed as <2 g of leakage on pad testing vary between 35 and 80%. (Bo 2011)
• Small controlled study on PFM training in gynecological cancer survivors found significant improvement in quality of life scores after PFM training as compared to no treatment (Yang 2012)

PFM training combined with other treatments
• PFM training combined with bladder training is better than either treatment alone (Elser 1999, Dougherty 2002, Shamliyan 2008)
• EMG biofeedback
  o Herderschee (2011) – Cochrane review on biofeedback with PFM exercises for UI
    ▪ “Women who received biofeedback were significantly more likely to report that their UI was cured or improved compared to those who received PFM training alone” (risk ratio 0.75).
    ▪ Further research is needed to determine if the benefit is related to the use of the device or simply the increase in professional exposure.
  o Multiple RCTs have failed to show a statistically significant difference between outcomes with and without EMG training as long as the exposure to individual PFM training is the same (Morkved 2002; Berghmans 1996; Glavind 1996)
• Surgery
  o PFM training versus surgery for SUI – 42% of patients in PFM training group were satisfied with the results and declined cross over to surgery. (Klarskov 1986)
  o Clinical audit in the UK showed 79% of patients receiving PFM training improved sufficiently to avoid surgery (Bond 2004)
  o Routine pre and post-operative PFM exercises improve physical outcomes and quality of life in women undergoing corrective surgery for UI and POP. (Jarvis 2005)

Resources for further learning in conservative management
International Continence Society – support and education for professionals in the field of continence http://www.icsoffice.org

National Association for Continence – Patient and professional information in Spanish with good links to other sites with information in Spanish.
http://www.nafc.org/espanol

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