Bladder management for the older adult: An interdisciplinary approach

Dr. Amanda Scott, OTD, OTR/L
Assistant Professor/Residency Coordinator
Huntington University
Learning Objectives

- Participant will identify proper evaluation of bladder management
- Participant will select interventions for various types of UI
- Participant will promoting carryover of interventions to improve outcomes through use of an interdisciplinary team approach
What is Bladder Management?

Includes completing intentional control of urinary bladder and, if necessary, using equipment or agents for bladder control

(Framework-II, 2008)

Urinary Incontinence (UI) is a component of bladder management
What is Urinary Incontinence (UI)?

Loss of voluntary control to hold urine

UI is a symptom. Not a disease

Possible causes of UI
- Physical injury
- Infection
- Neurological conditions
- Pregnancy
- Prostate problems
- Female reproductive issues

(NAFC, 2012)
Who is affected by UI?


UI is a common complaint amongst nursing home clients, with published prevalence rates ranging from 43% to 77% (Vinsnes, et al, 2012).

The estimated cost of UI in men in the United States is approximately $3.8 billion per year. (MacDonald, et al 2007).
How effective is UI treatment?

- Compliant clients experience a 76% improvement of SUI episodes
- Less compliant clients experience a 55% improvement of SUI episodes
- Positive effects of PMFT range from 3 months up to 10 years
- 66% chance that effects can last at least 10 years if initial treatment was effective

(NAFC, 2012)(Cammu et al., 2000)(Glazener et al., 2011)
Why is it important to treat UI?

Bladder management impacts...

- Physical well-being
- Emotional well-being
- Social Interactions/ Social Participation
- Overall quality of life

(Castro et al., 2000)(Borello-France et al., 2008)(Fitz et al., 2011)
Types of UI

- Urge
- Stress
- Mixed
- Overflow
- Functional
- Overactive bladder
Urge Incontinence

**Definition**
Leakage shortly after experiencing sensation to void
Strong, sudden urge to urinate
Often unable to reach bathroom facilities in time to avoid incontinence episodes
Often have sleep disturbances due to urgency to void
Urgency can be triggered by environmental triggers.

*(Mayo Clinic, 2013)*

**Treatment**
Bladder training
Pelvic muscle rehab including electrical stimulation
Fluid management
Pharmacological interventions
Compensatory strategies

**Causes**
Bladder instability
Overactive bladder
Local irritations
Stress Incontinence

**Definition**

Leakage with increased intra-abdominal pressure.

Typically will sleep without interruption

Most common in post-menopausal women and in older men post-prostate surgery.

**Treatment**

- Pelvic muscle rehab
- Pharmacological interventions
- Surgery
- Compensatory Strategies

**Causes**

- Underactive urethra
- Weakness of pelvic muscles or internal sphincter
- Damage to sphincter or bladder neck support

(Mayo Clinic, 2013)
Mixed Incontinence

**Definition**
Combination of urge and stress incontinence.
Most common in elderly women.

**Treatment**
Bladder retraining
Pelvic muscle rehab
Fluid management
Pharmacological interventions
Surgical interventions
Compensatory strategies

(Mayo Clinic, 2013)

**Causes**
Combination of stress & urge incontinence causes
Underactive urethra
Weakness of pelvic muscles or internal sphincter
Damage to sphincter or bladder neck support
Bladder instability
Overactive bladder
Local irritations
# Functional Incontinence

## Definition

- Urine loss (large amt) due to factors outside the urinary tract.
- A diagnosis of exclusion

## Causes

- Dementia/depression/other psychiatric disorders
- Neurological or orthopedic conditions impairing mobility, or hand dexterity.
- Environmental conditions

## Treatment

- Environmental modifications
- Mobility training
- Pharmacological interventions
- Strategies for the cognitively impaired.

Note - Environmental conditions such as restraints, walkers not accessible, etc.

(Mayo Clinic, 2013)
Client Criteria For Treatment

- clients must be able to follow 1-step commands
- clients must be able to perform home exercise program daily
- clients must be able to maintain exercise diary
- clients must be able to maintain incontinent episode diary

Contraindications

Do not initiate:

- A bladder re-training or Kegel’s if urinary tract infection (UTI) is present
- Treatment in clients who are cognitively impaired and unable to follow a 1-step command.
- Poor exercise adherence is recognized as a serious threat to long-term success in the management of UI.
- Clients must be able to follow 1-step commands
- Clients must be able to perform home exercise program daily

# Evaluation For Bladder Management

## ADL Portions
- bowel/bladder management
- hygiene
- functional mobility
- Sleep
- sex
- toilet hygiene

(Framework-II, 2008)

## Client Factors
- Sleep
- temperament/ personality functions
- experience of self and time functions
- sensory functions
- muscle functions
- movement functions
- urinary/reproductive functions
- Religious beliefs/spirituality

## Performance Skills
- motor skills for posture
- coordination
- strength
- energy
Evaluation Measures

voiding diary
FIM
Barthel
Canadian Occupational Performance Measure (COPM)
International Consultation on Incontinence Questionnaire - Short Form
quality of life questionnaire (I-QOL)
# Voiding Diary

24-Hour Voiding Diary

Name ___________________________ Date ___________________________

Instructions: Check the appropriate yes or no box to having an incontinent episode next to each time period for 24 hours. Check under the “Voided as planned” box if voided and had no incidence of incontinence. An incontinent episode is any unplanned or uncontrolled voiding.

<table>
<thead>
<tr>
<th>Time</th>
<th>Incontinent</th>
<th>Voided as planned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midnight-1:00 am</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:00- 2:00 am</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2:00-3:00 am</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3:00- 4:00 am</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:00- 5:00 am</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5:00-6:00 am</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:00-7:00 am</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7:00- 8:00 am</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8:00- 9:00 am</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:00- 10:00 am</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:00- 11:00 am</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11:00- noon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noon- 1:00 pm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:00- 2:00 pm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2:00-3:00 pm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3:00- 4:00 pm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:00-5:00 pm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5:00-6:00 pm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:00-7:00 pm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7:00- 8:00 pm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8:00- 9:00 pm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:00- 10:00 pm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:00- 11:00 pm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11:00- midnight</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Goal Development

Number of incontinent episodes in a 24 hour period
Number of incontinence pads used in a 24 hour period
ADL performance
Mobility performance
Carryover of home exercise program
Goal Development

Within the next 4 weeks, client will perform (whichever ADL deficit your addressing) with (assistance level) in order to decrease the burden of care.

Within the next 4 weeks, client will perform Mobility performance (transfers, functional ambulation,

Within the next 4 weeks, client with be independent with PFME home program with 75% carryover as documented by the client’s exercise diary.
Goal Development

Within the next 4 weeks, client will reduce the number of incontinent episodes from 5/day to 2/day in order to facilitate (whichever specific ADL you are addressing)

Within the next 4 weeks, client will reduce the number of incontinence pads from 5/day to 2/day in order to decrease risk of (infection, social interaction deficits, ect.)

Within the next 4 weeks, client will perform (whichever ADL deficit your addressing) with (assistance level) in order to decrease the burden of care.
Interventions

**Restore**
- PFME (97110, 97112)
- Electrical Stimulation (G0283)
- Biofeedback (90911)

**Maintain**
- Home exercise program (97110)

**Modify**
- Behavioral Modifications (97535, 97530)
- Diet Modifications (97535, 97530)
- Environmental Modifications (97535, 97530)
- Health Promotion/Prevention
- Diet Modifications (97535, 97530)
Traditional Treatments

Vaginal cones
Indwelling electrodes for electrical stimulation
Kegel exercises
PFME

(Borello-France, et al, 2008)
Recent advances in treatment

External electrode placement for e-stim
Beyond kegels
Trunk/hip relationship to PFM
PFME
Bladder retraining
Behavior modifications
Fluid alterations
Scheduled toileting
Intra-abdominal pressure management
Kegel Exercises

Ask the client to contract as if trying to stop the flow of urine. Use this to help identify the muscles to exercise, do not use the start/stop of urine as a treatment technique.

This exercise should be initiated in a seated position and progress to standing if able.

Instruct the client not to hold their breath or bear down.

Exercise should be done 3 sets of 8-12 repetitions and performed twice daily.

Contractions should be sustained for 1-12 seconds

Recovery time between repetitions should be 6-10 seconds

(Glazener et al., 2011) (Bø et al., 1999) (Bernardesl et al., 2012) (Rodrigo et al., 2000) (Borello-France et al., 2008)
Exercise Frequency

client should maintain a diary of PFMT exercises performed daily in order to promote compliance
during and after current course of treatment to improve and maintain decreased urinary
incontinence episodes.

At the beginning of each session, general warm-up exercises of the joints involved in PMFE are
performed

each session is ended with stretching exercises of the hips, adductors, hamstrings, and
paravertebral muscles.

(Glazener et al., 2011) (Bø et al., 1999) (Bernardesl et al., 2012) (Rodrigo et al., 2000) (Borello-France et al., 2008)
Beyond Kegels

Many reference guides/routines have been developed to improve the strength of the entire pelvic musculature. **Beyond Kegels** is one of the most popular. Below is a summary of this program (Hulme, 1999). The beyond Kegels program is intended to strengthen the pelvic floor **as well as the associated muscles**.
Beyond Kegel Exercises

(4) primary muscle groups are targeted in PFME sessions however additional muscles may be addressed as needed based on the therapist evaluation. In general PFME treatment will include exercises for:

- Pelvic floor muscles (Kegel exercises)
- Trunk flexors/extensors
- Hip adductors/abductors
- Hip rotators
Electrical Stimulation

Pelvic Floor Muscle re-education
  ◦ Patterned E-stim waveform
  ◦ Set intensity for muscle contraction
  ◦ Electrode placement
    ◦ Channel 1 Right hip adductors
    ◦ Channel 2 anterior and posterior iliac crests
Electrical Stimulation

For Medicare coverage of electrical stimulation clients must demonstrate a failed (4) week trial of PFME prior to the initial ES treatment. This (4) week trial does not need to be (4) weeks of skilled therapy, it can be a combination of skilled and/or restorative nursing /or independent exercise sessions.

Inspect the skin under the electrodes before and after each treatment session.

Provide all ES treatments in direct line of vision and supervised settings. The client is never to be left unattended or unsupervised while receiving ES.
Electrical Stimulation

Pelvic Floor Muscle Strength
- Use Medium Frequency Alternating Current (MFAC)
- Set parameters for muscle strengthening
- Use higher Pulses Per Second (PPS) setting to increase client comfort
- Set intensity for muscle contraction
- Electrode placement
  - Bilateral inguinals
  - Bilateral Tuberosities
Behavior Modification

Prompted voiding
Scheduled toileting
Bladder retraining
Behavior Modification

Prompted voiding

This technique can be used with residents with cognitive impairments. Those who can learn to recognize some degree of bladder fullness or those who can ask for assistance or respond when prompted are good candidates. **Prompted voiding is scheduled voiding with verbal prompting and reinforcement included.** This technique is often preferred as it reduces passivity and facilitates more independence. Once the initial training is complete, it takes no more time than scheduled toileting. It consists of monitoring the resident on a regular schedule (hourly or more frequently initially) depending upon the frequency of incontinence episodes on the bladder diary. Prompted voiding involves 5 steps. They are check, talk, prompt, praise and correct.
Behavior Modification

Scheduled toileting

The goal is to anticipate wetness and “void to avoid” an accident. The resident is placed on a toilet or bedpan at regular intervals. A schedule is developed to match the resident’s voiding habits. Timed or scheduled voiding schedules should be individualized and based on information obtained from the bladder diary. Habit training is timed voiding based on the client’s typical voiding pattern. There are no attempts to delay voiding or to resist urges. A typical schedule based on a client’s voiding pattern is usually every 3 to 4 hours. It is the simplest program for nursing staff, and can be done with residents regardless of cognitive status. The goal is for regular voiding to become a routine, reducing incontinent episodes.
Behavior Modification

Bladder retraining

The resident is encouraged to void on a schedule. The voiding schedule starts at a short interval, as per the frequency from the voiding diary. The resident is taught to resist the urge to void in-between scheduled voids; utilizing distraction, relaxation – inhibition techniques and/or strengthening, and the intervals are progressively increased. The resident receives positive reinforcement for remaining dry between scheduled voids. This approach is most appropriate for urge incontinence, and may improve stress incontinence. This resident must be able to follow simple directions to be successful with this type of program. Bladder training helps to lengthen the amount of time between bathroom visits. It also helps to increase the amount of urine the bladder can comfortably hold. This will reduce the number of incontinent episodes and improve self-control.
Diet Modifications

- Caffeine
- Citrus
- Tomato based foods
- Alcohol
- Artificial sweeteners
- Spicy foods

(NAFC, 2012)
Environmental Modifications

Black toilet seat to accommodate low vision
Clear path to bathroom to avoid obstacles
Bedside commode
Grab bars
Clothing modifications
° Elastic waist pants instead of zippers
° Loose clothing
Biofeedback

Done in conjunction with pelvic muscle exercises, manometric or EMG biofeedback can be used to increase the resident’s awareness of the pelvic muscles and their appropriate contraction. Therapists who have the appropriate skills and knowledge in this area can do it. Surface EMG electrodes can be used to monitor and visually display the pelvic muscle contractions. Biofeedback may help the resident learn to use the appropriate muscles more quickly, and has been shown to increase the effectiveness of the exercises, probably by encouraging more forceful contractions. Sensors may also be placed on abdominal muscles or elsewhere if the resident has difficulty relaxing these muscles during contraction of the pelvic floor muscles.
### Medications

<table>
<thead>
<tr>
<th>Type of Incontinence</th>
<th>Class of Medication</th>
<th>Name of Medication</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Urge Incontinence</strong></td>
<td>Anticholinergic Agents</td>
<td>Bentyl</td>
</tr>
<tr>
<td></td>
<td>actions, relaxes smooth muscle</td>
<td>Cystospaz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Detrol</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ditropan</td>
</tr>
<tr>
<td></td>
<td>Tricyclic Antidepressants</td>
<td>Elavil</td>
</tr>
<tr>
<td></td>
<td>transmitter levels during daytime and nighttime</td>
<td>Pamelor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tofranil</td>
</tr>
<tr>
<td></td>
<td>Estrogen Supplementation</td>
<td>Estrace</td>
</tr>
<tr>
<td></td>
<td>Restores urethral mucosa, tone and</td>
<td>Premarin</td>
</tr>
<tr>
<td></td>
<td>responsiveness of muscle</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Stress Incontinence</strong></td>
<td>Alpha Adrenergic Agonists</td>
<td>Dexatrim</td>
</tr>
<tr>
<td></td>
<td>relaxation neck and internal sphincter</td>
<td>Sudafed</td>
</tr>
<tr>
<td></td>
<td>causing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Estrogen Supplementation</td>
<td>Estrace</td>
</tr>
<tr>
<td></td>
<td>Restores urethral mucosa, tone and</td>
<td>Premarin</td>
</tr>
<tr>
<td></td>
<td>responsiveness of muscle</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Combination Therapy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tricyclic antidepressant and antidiuretic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>hormone</td>
<td></td>
</tr>
<tr>
<td><strong>Overflow Incontinence</strong></td>
<td>Alpha Adrenergic Antagonists</td>
<td>Cardura</td>
</tr>
<tr>
<td></td>
<td>relaxes internal sphincter muscle</td>
<td>Minipress</td>
</tr>
<tr>
<td></td>
<td>Cholinergic Agents</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increase bladder muscle contraction</td>
<td></td>
</tr>
</tbody>
</table>
Life after therapy

Home exercise program must be performed in order to have lasting results

Maintain diet modifications

Seek treatment for functional declines as they occur
Documentation- ICD 10

Urge (ICD-10 N39.41)

Stress (ICD-10 N39.3)
  ◦ Male
  ◦ Female

Mixed (ICD-10 N39.46)

Unspecified (ICD-10 N39.498)

Overflow (ICD-10 N39.490)

Functional (ICD-10 R39.81)

Without Sensory Awareness (ICD-10 N39.42)
Documentation- CPT codes

PFME (97110, 97112)
Electrical Stimulation (G0283)
Behavioral Modifications (97535, 97530)
Diet Modifications (97535, 97530)
Environmental Modifications (97535, 97530)
Biofeedback (90911)
Documentation- Typical Note

Each CPT code intervention needs to be documented with the following

What did you do?

Where did you do it?

Why did you do it?

What was the functional outcome?
Reimbursement

Medicare

- Must complete 4 weeks of exercise first
- After 4 weeks of PFME, if no significant improvement, begin electrical stimulation
  - Muscle strengthening electrical stimulation
  - Patterned electrical stimulation
  - Biofeedback cannot be added into the treatment regimen until the standard PFME have been trialed first

CMS treatment guidelines

“Treating the physiological causes of incontinence, without attending to functional components that may have an impact on the resident’s continence, may fail to solve the incontinence problem.”

Typical Treatment Session- Weeks 1-4

PFME (97110, 97112)
Behavioral Modifications (97535, 97530)
Diet Modifications (97535, 97530)
Environmental Modifications (97535, 97530)
Biofeedback (90911)
ADL triggers/context (97535)
Typical Treatment Session - Weeks 4+

PFME (97110, 97112)
Electrical Stimulation (G0283)
Behavioral Modifications (97535, 97530)
Diet Modifications (97535, 97530)
Environmental Modifications (97535, 97530)
Biofeedback (90911)
ADL triggers/context (97535)
Typical Treatment Session

Have client demonstrate PMFE HEP
  ◦ 97110 usually takes 10-20 minutes

Have client perform ADL tasks that might trigger UI episode such as laundry or washing dishes
  ◦ 97535 usually takes 10-20 minutes

Demonstrate and review adaptive strategies to compensate for UI episodes
  ◦ 97530 usually takes 10-15 minutes
Beyond Kegels

Perineal Lock

- This lock is a contraction of the muscles around the perineal body in men and the cervix in women. On the physical level this is simply the contraction of muscles.
- Give a quick squeeze of the bulbocavernosus muscle (perineal lock) just before any sudden increase in intraabdominal pressure from a sneeze or a cough, that can be the most effective mechanism for maintaining long term success.
Home Exercise Program

- **Perineal Lock**
  - This lock is a contraction of the muscles around the perineal body in men and the cervix in women. On the physical level this is simply the contraction of muscles.
  - If she learns to give a quick squeeze of the bulbocavernosus muscle (perineal lock) just before any sudden increase in intraabdominal pressure from a sneeze or a cough, that can be the most effective mechanism for maintaining long term success.

- **Assisted Pelvic Muscle Tightening** – using inner thigh muscle
  - Place ball between legs slightly above knee. Lifting pelvic muscle up while rolling knee against ball. Squeeze the anal and urethral and vaginal opening.
  - This exercise should be initiated in a seated position and progress to standing if able.
  - Instruct the patient not to hold their breath or bear down.
  - Exercise should be done 3 sets of 8-12 repetitions and performed twice daily.
  - Constrictions should be sustained for 1-12 seconds
  - Recovery time between repetitions should be 6-10
Kegel Exercises:
Contract your pelvic floor muscles for three seconds, then relax the muscles for three seconds. Do this 10-15 times several times a day. Although shown here while lying down, these exercises can be done during a variety of daily activities, such as sitting in a meeting, while stopped in your car at a traffic light or when talking on the phone.
Beyond Kegels

Assisted Pelvic Muscle Tightening – using inner thigh muscle

Place ball between legs slightly above knee. Lifting pelvic muscle up while rolling knee against ball. Squeeze the anal and urethral and vaginal opening.

This exercise should be initiated in a seated position and progress to standing if able

Instruct the client not to hold their breath or bear down.

Exercise should be done 3 sets of 8-12 repetitions and performed twice daily.

Contractions should be sustained for 1-12 seconds

Recovery time between repetitions should be 6-10 seconds

Beyond Kegels

Assisted Pelvic Muscle Tightening – using hip rotators

Put theraband above knees. Roll knees against theraband while lifting muscles of the pelvic floor. Tighten the anal, urethral and vaginal area.

This exercise should be initiated in a seated position and progress to standing if able

Instruct the client not to hold their breath or bear down.

Exercise should be done 3 sets of 8-12 repetitions and performed twice daily.

Contractions should be sustained for 1-12 seconds

Recovery time between repetitions should be 6-10 seconds

Beyond Kegels

Quick Contract and Release of the Pelvic floor muscles/ Pelvic Floor Quick Contractions (Also used for urge control)

Have client tighten urethral or vaginal and rectal opening and then release, quick contraction then release. Tell client to think tighten and then relax. The contraction should be quick and forceful. Gluteal abdominal, adductors and obturator interus muscles are relaxed during this activity.

This exercise should be initiated in a seated position and progress to standing if able.

Instruct the client not to hold their breath or bear down.

Exercise should be done 3 sets of 8-12 repetitions and performed twice daily.

Contractions should be sustained for 1-12 seconds

Recovery time between repetitions should be 6-10 seconds

Glazener et al., 2011) (Bø et al., 1999) (Bernardesl et al., 2012) (Rodrigo et al., 2000) (Borello-France et al., 2008)
Beyond Kegels

Independent Pelvic Muscle Tightening/ Isolated Pelvic Floor Contraction

Contract pelvic muscles without using or contracting other muscles. Instruct client to pull up and in with pelvic muscle.

This exercise should be initiated in a seated position and progress to standing if able

Instruct the client not to hold their breath or bear down.

Exercise should be done 3 sets of 8-12 repetitions and performed twice daily.

Contractions should be sustained for 1-12 seconds

Recovery time between repetitions should be 6-10 seconds

Beyond Kegels

Standing Plie’ Exercise

Stand with toes pointing outward and hips apart. Bend knees one to two inches and tighten pelvic muscles.

This exercise should be initiated in a seated position and progress to standing if able.

Instruct the client not to hold their breath or bear down.

Exercise should be done 3 sets of 8-12 repetitions and performed twice daily.

Contractions should be sustained for 1-12 seconds

Recovery time between repetitions should be 6-10 seconds

Beyond Kegels

Isolated Pelvic Muscle Contraction in Standing

Contact pelvic floor muscles without moving other abdominal muscles. Pull pelvic muscle up and in.

This exercise should be initiated in a seated position and progress to standing if able.

Instruct the client not to hold their breath or bear down.

Exercise should be done 3 sets of 8-12 repetitions and performed twice daily.

Contractions should be sustained for 1-12 seconds

Recovery time between repetitions should be 6-10 seconds

Glazener et al., 2011) (Bø et al., 1999) (Bernadesl et al., 2012) (Rodrigo et al., 2000) (Borello-France et al., 2008)
References


References


