Integrated care for older people (ICOPE)
Guidelines on community-level interventions to manage declines in intrinsic capacity

Evidence profile: urinary incontinence

Scoping question: Do non-pharmacological interventions (prompted voiding, timed voiding, toilet training, habit retraining, pelvic floor muscle training) produce any benefit and/or harm for older people with urinary incontinence?

The full ICOPE guidelines and complete set of evidence profiles are available at who.int/ageing/publications/guidelines-icope

Painting: “Wet in Wet” by Gusta van der Meer. At 75 years of age, Gusta has an artistic style that is fresh, distinctive and vibrant. A long-time lover of art, she finds that dementia is no barrier to her artistic expression. Appreciated not just for her art but also for the support and encouragement she gives to other artists with dementia, Gusta participates in a weekly art class. Copyright by Gusta van der Meer. All rights reserved
Background

Urinary incontinence, the involuntary loss of urine, is a highly prevalent condition in older people aged 60 years and over (1). The common types of urinary incontinence in older people are stress incontinence and urge incontinence. Stress incontinence is the involuntary leaking of urine during efforts or exertion, or while sneezing or coughing. Urge incontinence, or overactive bladder syndrome, involves a constellation of symptoms including frequency, urgency and leakage immediately preceded by urgency. The prevalence of urinary incontinence reported in population-based studies ranges from 9.9% to 36.1% (2–4), and is twice as high in older women as in older men. Urinary incontinence has a profound impact on the quality of life of older people, their subjective health status (5, 6), levels of depression (7) and need for care (8). Several chronic conditions and environmental factors increase the risk of urinary incontinence in older people. Chronic diseases that are associated with urinary incontinence include diabetes mellitus, Parkinson’s disease, dementia, stroke, prostatic cancer, chronic obstructive pulmonary disease (COPD) and arthritis. Environmental factors such as inaccessible or unsafe toilet facilities, and the absence of caregivers for toileting assistance are also associated with urinary incontinence. Non-pharmacological interventions are mostly preferred and remain the mainstay of urinary incontinence management for patients with mild urinary incontinence. The primary goal of urinary incontinence interventions is to improve continence by reducing the frequency of urinary incontinence episodes. The non-pharmacological interventions addressed in this guideline include pelvic floor muscle training (PFMT), bladder training and habit retraining, and timed or prompted voiding.
Part 1: Evidence review

Scoping question in PICO format (population, intervention, comparison, outcome)

Population
- Older people with urgency or stress or mixed urinary incontinence

Interventions
- Prompted voiding
- Timed voiding
- Bladder training
- Habit retraining
- Pelvic floor muscle training (PFMT)

Comparison
- No intervention/usual care

Outcomes
- Critical: Proportion of mean change in frequency of urinary incontinence, change in mean proportion of hourly checks that are wet, number of patients with reductions in incidence of daytime incontinence, number of patients with reductions in incidence of night-time incontinence, incontinent episodes in 24 hours, mean urinary incontinence incidence per 24 hours, urinary incontinence symptoms
- Important: Perceived cure, self-initiated toileting, median percentage of checks wet, number of incontinent episodes, urinary incontinence urgency, urinary incontinence frequency, nocturia, quality of life
Search strategy

A systematic literature search for reviews was conducted in Ovid MEDLINE, Embase, PsycINFO and Cochrane databases. The details of the search terms used for retrieving studies are provided in Annex 1. The search retrieved 188 reviews and 798 randomized controlled trials (RCTs). After initial screening for eligibility, 111 reviews and 161 RCTs were considered for full-text review. Ultimately, five systematic reviews that included 25 RCTs and two additional studies investigating the benefits of non-pharmacological interventions were included in this review (see Annex 2).

List of systematic reviews identified by the search process

Included in GRADE\(^1\) tables


— Dumoulin C, Hay-Smith EJC, Mac Habée-Séguin G. Pelvic floor muscle training versus no treatment, or inactive control treatments, for urinary incontinence in women. Cochrane Database Syst Rev. 2014;(5):CD005654 (13)

\(^1\) GRADE: Grading of Recommendations Assessment, Development and Evaluation. More information: http://gradeworkinggroup.org
### PICO table

<table>
<thead>
<tr>
<th>Intervention/comparison</th>
<th>Outcomes</th>
<th>Studies used for GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of patients with reductions in incidence of daytime urinary incontinence</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of patients with reductions in incidence of night-time incontinence</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of patients whose pad test indicates reduction in the volume of incontinence</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of patients with no improvement in urinary incontinence episodes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Change in mean proportion of hourly checks that are wet</td>
<td></td>
</tr>
<tr>
<td></td>
<td>urinary incontinence episodes in 24 hours</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Self-initiated toileting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of incontinent episodes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Incontinent volume</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cure rate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of micturition episodes</td>
<td></td>
</tr>
</tbody>
</table>

(continued next page)
Narrative description of the systematic reviews included in the analysis

The Cochrane systematic review by Wallace et al. (updated in 2009) aimed to synthesize evidence for effectiveness of bladder training for urinary incontinence in adults (9). Relevant trials were identified from the Cochrane Incontinence Review Group’s specialized register of controlled trials, which contains trials identified from MEDLINE, the Cumulative Index to Nursing and Allied Health Literature (CINAHL) and the Cochrane Central Register of Controlled Trials (CENTRAL). The specialized register was searched using the Review Group’s own keywords and medical search terms. The review included 12 RCTs (total of 1473 participants). The participants were predominantly female (75%). Eight included trials had useable data but only four of them included older people aged over 60 years. Three of the trials were conducted in the United States of America and another study is a multicentre trial that included participants from Denmark, Norway and Sweden.

The Cochrane systematic review by Ostaszkwicz et al aimed to investigate the benefit of habit retraining in the management of urinary incontinence in adults (10). Trials were identified from the search conducted in the Cochrane Incontinence Review Group’s specialized register of controlled trials, MEDLINE, Embase, CINAHL, PsycINFO, Biological Abstracts, Current Contents and the reference lists of relevant articles. Experts in the field were also contacted for potential papers. The search included relevant websites and hand searches of journals and conference proceedings. Four trials with a total of 378 participants met the inclusion criteria. Participants in these trials (mean age 80 years) were mainly women and they were physically and/or cognitively impaired, dependent on caregivers and residing either in nursing homes or in their own homes. Three trials tested habit retraining combined with other treatment, compared with usual care (14–16) and another trial compared the combination treatment with habit retraining alone (17).

The Cochrane systematic review by Eustice et al. (updated in 2006) aimed mainly to examine the effectiveness of prompted voiding in the management of urinary incontinence in adults (11). The search for trials was conducted in the Cochrane Incontinence Review Group’s specialized register of controlled trials (31 January 2006) as well as the reference lists of relevant articles. Investigators in the field were also contacted for additional studies. As a result, nine trials with a total 674 participants (mean age 84 years) were included in the review. The majority of participants included in the trials were older women. Prompted voiding was compared with no
prompted voiding in nine trials. One trial was excluded as the ages of the trial participants were not reported (18).

Ostaszkiewicz et al. (updated in 2009) is a Cochrane systematic review on timed voiding for the management of urinary incontinence in adults (12). The search for trials was conducted in Cochrane Incontinence Review Group’s specialized register of controlled trials (searched 2 April 2009), MEDLINE (January 1966 to November 2003), Embase (January 1980 to Week 18 2002), CINAHL (January 1982 to February 2001), PsycINFO (January 1972 to August 2002), Biological Abstracts (January 1980 to December 2000), Current Contents (January 1993 to December 2001) and the reference lists of relevant articles. Experts in the field were contacted for potential studies. The search included relevant websites and conference proceedings. Hand searches were also conducted in relevant journals. Two trials with a total of 298 participants met the inclusion criteria (19, 20). Both compared timed voiding plus additional intervention with usual care. Most of the participants from the two selected trials were cognitively impaired elderly women (mean age 86.7 years) and all resided in facilities that provided nursing care. The majority of participants (82%) in one study were older women (19) while the other study did not report the sex of participants (20).

Dumoulin et al. is a Cochrane systematic review of pelvic floor muscle training (PFMT) versus no treatment, or inactive control treatments, for urinary incontinence in women (13). The search for relevant trials was conducted in the Cochrane Incontinence Review Group’s specialized register of controlled trials, which contains trials identified from CENTRAL (1999 onwards), MEDLINE (1966 onwards) and MEDLINE In-Process (2001 onwards). Conference proceedings were searched (15 April 2013), and hand searches were done in the journals and reference lists of relevant articles to identify potential studies. Twenty-one trials involving 1281 women (665 PFMT, 616 controls) met the inclusion criteria. Seven of them recruited older people aged over 60 years or had mean participant age of more than 60 years (21–27).

Two additional RCTs, not listed in the above-mentioned Cochrane systematic reviews, were identified in an independent literature search and were also included (28, 29).

Brief descriptions of the included non-pharmacological interventions

Prompted voiding is administered for older people with or without cognitive impairment to initiate their own toileting through requests for help, and includes the use of positive reinforcement from carers when they do this. This is distinct from some other therapies because of the participation of the individual in the process. In contrast, habit retraining attempts to determine the micturition pattern for an individual, which can be used to achieve continence but does not necessarily rely on the individual’s participation. Timed voiding is fixed by time or event, and is carer led and is not an individualized intervention. Bladder training actively includes the individual in attempting to increase the interval between the desire to void and the actual void, and hence would not be suitable for those who are cognitively impaired. It comprises three components: (a) patient education – information about the bladder and how continence is usually maintained; (b) scheduled voiding – a “timetable for voiding” which may be fixed or flexible to suit the participant’s rate of increase in the interval between voids (the aim is usually to achieve an interval of 3–4 hours between voids); and (c) positive reinforcement – psychological support and

(continued next page)
encouragement is generally considered important and is usually provided by a health care professional. Pelvic floor muscle training (PFMT) is an exercise programme of repeated pelvic floor muscle contractions taught and supervised by a health care professional, at times combined with bladder training for individuals with mixed urinary incontinence.

Other physical exercise interventions – such as functional incidental training, mobility and toileting training – focus on improving the ability of older people to reach the toilet or developing related skills (e.g. getting up from bed or a chair, walking 5 metres, undoing clothing hooks, zippers and buttons, letting down the garment, sitting down on the toilet, rising up from the toilet seat and adjusting the garment) to improve toilet timing. Functional incidental training combines prompted voiding with functionally oriented, low-intensity endurance exercises (e.g. timed sit-to-stands, walking or wheelchair mobility) and strengthening exercises (e.g. bicep curls, straight-arm raises, knee extensions and hip abductions and flexions).

Treatment adherence. There is limited evidence on adherence to non-pharmacological treatments. Adherence reported in four included RCTs ranges from 72% to 89% (30–33).

Adverse events. The included trials neither performed explicit assessment for adverse events nor reported any major risks.
### GRADE table 1: Prompted voiding versus no prompted voiding for adults with urinary incontinence

**Author:** WHO systematic review team  
**Date:** 11 November 2015  
**Question:** Is prompted voiding more effective than no prompted voiding when used for adults with urinary incontinence (urge, stress, mixed)?  
**Settings:** Community  

<table>
<thead>
<tr>
<th>Quality assessment</th>
<th>Number of patients</th>
<th>Effect</th>
<th>Quality</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of studies</td>
<td>Design</td>
<td>Risk of bias</td>
<td>Inconsistency</td>
<td>Indirectness</td>
</tr>
<tr>
<td>1</td>
<td>randomized trials</td>
<td>serious *</td>
<td>not serious</td>
<td>serious b</td>
</tr>
</tbody>
</table>

**Mean proportion of hourly checks that are wet** (follow-up 32 weeks; measured with diary and report; lower score = better performance)

(continued next page)
<table>
<thead>
<tr>
<th>Change in mean proportion of hourly checks that are wet</th>
<th>follow-up 8 weeks; measured with diary and self-report; lower score = better performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 randomized trials</td>
<td>serious ^d * no serious imprecision * no serious indirectness * very serious ^e * none * 9 * 10 * –</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of incontinent episodes in 24 hours</th>
<th>follow-up 3–13 weeks; measured with diary and self-report; lower score = better performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 randomized trials</td>
<td>serious ^f * serious ^g * serious ^h * no serious imprecision * none * 127 * 130 * –</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Self-initiated toileting</th>
<th>follow-up 3 weeks; measured with self-report; lower score = better performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 randomized trials</td>
<td>serious ^i * no serious imprecision * serious ^j * serious ^k * none * 63 * 63 * –</td>
</tr>
</tbody>
</table>

CI: confidence interval; MD: mean difference

a. Risk of bias: Downgraded once as allocation concealment was unclear in one trial.
b. Indirectness: Downgraded once as trial was conducted in nursing home setting, and generalizing the evidence to other settings is doubtful.
c. Imprecision: Downgraded once as sample size was small (smaller than 200).
d. Risk of bias: Downgraded once as method applied for allocation concealment was unclear.
e. Imprecision: Downgraded twice as sample size was very small (smaller than 50).
f. Risk of bias: Downgraded once as allocation concealment method was unclear in two trials.
g. Inconsistency: Downgraded once as considerable heterogeneity was observed: Chi^2 = 18.07, df = 1 (P = 0.00002); I^2 = 94%.
h. Indirectness: Downgraded once as included trials were conducted in nursing home settings and generalizing the interventions to other settings is doubtful.
i. Risk of bias: Downgraded once as allocation concealment was unclear.
j. Indirectness: Downgraded once as trial was conducted in nursing home setting and generalizing the interventions to other settings is doubtful.
k. Imprecision: Downgraded once as sample size was small (smaller than 200).
GRADE table 2: Pelvic floor muscle training (PFMT) with or without biofeedback plus other interventions versus no active control for older people with urinary incontinence

Author: WHO systematic review team
Date: 11 November 2015
Question: Is multicomponent behavioural interventions (PFMT with or without biofeedback, bladder control strategy, education and self-monitoring) more effective than no active control when used for older people (women and men) with urinary incontinence?
Setting: Community
Bibliography:

(continued next page)
### Evidence profile: urinary incontinence

<table>
<thead>
<tr>
<th>Quality assessment</th>
<th>Number of patients</th>
<th>Effect</th>
<th>Quality</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of studies</td>
<td>Design</td>
<td>Risk of bias</td>
<td>Inconsistency</td>
<td>Indirectness</td>
</tr>
<tr>
<td>5</td>
<td>randomized trials</td>
<td>serious contamination</td>
<td>no serious inconsistency</td>
<td>no serious indirectness</td>
</tr>
<tr>
<td>3</td>
<td>randomized trials</td>
<td>serious contamination</td>
<td>no serious inconsistency</td>
<td>no serious indirectness</td>
</tr>
</tbody>
</table>

**Total number of incontinent episodes per week (post treatment)** (follow-up 6–24 weeks; assessed with bladder diary; lower score = better performance)

<table>
<thead>
<tr>
<th>Number of studies</th>
<th>Design</th>
<th>Risk of bias</th>
<th>Inconsistency</th>
<th>Indirectness</th>
<th>Imprecision</th>
<th>Other considerations</th>
<th>Multicomponent behavioural interventions (PFMT with or without biofeedback plus bladder control strategy and self-monitoring)</th>
<th>No active control</th>
<th>Relative (95% CI)</th>
<th>Absolute</th>
<th>Quality</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>randomized trials</td>
<td>serious contamination</td>
<td>no serious inconsistency</td>
<td>no serious indirectness</td>
<td>no serious imprecision</td>
<td>none</td>
<td>Weighted mean difference (WMD)</td>
<td>3.63 lower</td>
<td>382</td>
<td>327</td>
<td>–</td>
<td>MODERATE</td>
</tr>
<tr>
<td>3</td>
<td>randomized trials</td>
<td>serious contamination</td>
<td>no serious inconsistency</td>
<td>no serious indirectness</td>
<td>no serious imprecision</td>
<td>none</td>
<td>Relative risk (RR)</td>
<td>4.15 (2.70 to 6.37)</td>
<td>165/234 (70.5%)</td>
<td>65/174 (37.4%)</td>
<td>339 more per 1000 (from 243 more to 418 more)</td>
<td>MODERATE</td>
</tr>
</tbody>
</table>

**Patients’ perception of improvement in urinary incontinence** (follow-up 6–8 weeks; assessed with self-report and bladder diary; improvement was defined as self-reported improvement or no restriction in daily activities)

<table>
<thead>
<tr>
<th>Number of studies</th>
<th>Design</th>
<th>Risk of bias</th>
<th>Inconsistency</th>
<th>Indirectness</th>
<th>Imprecision</th>
<th>Other considerations</th>
<th>Multicomponent behavioural interventions (PFMT with or without biofeedback plus bladder control strategy and self-monitoring)</th>
<th>No active control</th>
<th>Relative (95% CI)</th>
<th>Absolute</th>
<th>Quality</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>randomized trials</td>
<td>serious contamination</td>
<td>no serious inconsistency</td>
<td>no serious indirectness</td>
<td>no serious imprecision</td>
<td>none</td>
<td>Weighted mean difference (WMD)</td>
<td>3.63 lower</td>
<td>382</td>
<td>327</td>
<td>–</td>
<td>MODERATE</td>
</tr>
<tr>
<td>3</td>
<td>randomized trials</td>
<td>serious contamination</td>
<td>no serious inconsistency</td>
<td>no serious indirectness</td>
<td>no serious imprecision</td>
<td>none</td>
<td>Relative risk (RR)</td>
<td>4.15 (2.70 to 6.37)</td>
<td>165/234 (70.5%)</td>
<td>65/174 (37.4%)</td>
<td>339 more per 1000 (from 243 more to 418 more)</td>
<td>MODERATE</td>
</tr>
</tbody>
</table>

CI: confidence interval; RR: relative risk; WMD: weighted mean difference

- Risk of bias: Downgraded once as method applied for allocation concealment was unclear in all five included trials
- Risk of bias: Downgraded once as method applied for allocation concealment was not clear in all three included trials.

---

**ICOPE guidelines – World Health Organization**
GRADE table 3: Habit retraining plus others compared with usual care for older people (men and women) with urinary incontinence

Author: WHO systematic review team
Date: 11 November 2015
Question: Is habit retraining plus others more effective than usual care when used for older people (men and women) with urinary incontinence?
Setting: Community

<table>
<thead>
<tr>
<th>Quality assessment</th>
<th>Number of patients</th>
<th>Effect</th>
<th>Quality</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of studies</td>
<td>Design</td>
<td>Risk of bias</td>
<td>Inconsistency</td>
<td>Indirectness</td>
</tr>
<tr>
<td>2 randomized trials</td>
<td>serious a</td>
<td>no serious inconsistency</td>
<td>no serious indirectness</td>
<td>serious b</td>
</tr>
</tbody>
</table>

CI: confidence interval; MD: mean difference
a. Risk of bias: Downgraded once as allocation concealment was unclear in one of the included trial.
b. Imprecision: Downgraded once as sample size was small (smaller than 200).
### GRADE table 4: Pelvic floor muscle training (PFMT) compared with no treatment for older women with urinary incontinence

**Author:** WHO systematic review team  
**Date:** 11 November 2015  
**Question:** Is PFMT more effective than no treatment or placebo when used for older women with urinary incontinence?  
**Settings:** Primary care or community  

<table>
<thead>
<tr>
<th>Number of studies</th>
<th>Design</th>
<th>Risk of bias</th>
<th>Inconsistency</th>
<th>Indirectness</th>
<th>Imprecision</th>
<th>Other considerations</th>
<th>Pelvic floor muscle training</th>
<th>No treatment or education</th>
<th>Relative (95% CI)</th>
<th>Absolute</th>
<th>Quality</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Participant perceived cure (all types of urinary incontinence)</strong> (follow-up 12 weeks; assessed with self-reported information)</td>
<td>3 randomized trials</td>
<td>serious a</td>
<td>serious b</td>
<td>no serious indirectness</td>
<td>no serious imprecision</td>
<td>none</td>
<td>50/144 (34.7%)</td>
<td>9/146 (6.2%)</td>
<td>RR 5.34 (2.78 to 10.26)</td>
<td>268 more per 1000 (from 110 more to 571 more)</td>
<td>⬤⬤⬤⬤ LOW</td>
<td>IMPORTANT</td>
</tr>
<tr>
<td><strong>Quality of life</strong> (follow-up 6 weeks; measured with King’s Health Questionnaire (KHQ)/severity measure after treatment; lower score = better performance)</td>
<td>1 randomized trials</td>
<td>serious c</td>
<td>not serious applicable</td>
<td>no serious indirectness</td>
<td>very serious d</td>
<td>none</td>
<td>30</td>
<td>15</td>
<td>–</td>
<td>MD -24.92 lower (-39.06 lower to -10.78 lower)</td>
<td>⬤⬤⬤⬤ VERY LOW</td>
<td>IMPORTANT</td>
</tr>
</tbody>
</table>

(continued next page)
Evidence profile: urinary incontinence

| Urinary incontinence symptoms (follow-up 6 weeks; measured with: King’s health questionnaire; Better indicated by lower values) |
|---|---|---|---|---|---|---|---|---|
| 2 | randomized trials | serious \(^a\) | not serious | no serious indirectness | very serious \(^a\) | none | 30 | 30 | – | MD -34.16 lower \((-47.45 \text{ lower to } -20.88 \text{ lower})\) | \(\bullet\bullet\bullet\) \(\text{VERY LOW}\) | CRITICAL |

CI: confidence interval; MD: mean difference; RR: relative risk.

a. Risk of bias: Downgraded once as allocation concealment method and procedure for masking outcome assessor was unclear in one trial.
b. Inconsistency: Downgraded once as moderate heterogeneity was observed: \(\text{Chi}^2 = 7.56, \text{df} = 2 (P = 0.02); I^2 = 74\%\).
c. Risk of bias: Downgraded once as outcome assessor was not masked and method applied for allocation concealment was unclear.
d. Imprecision: Downgraded twice as sample size was very small (smaller than 100).
e. Risk of bias: Downgraded once as allocation concealment method was unclear in one trial.
GRADE table 5: Bladder training versus no treatment for older people with urinary incontinence

**Author:** WHO systematic review team  
**Date:** 11 November 2015  
**Question:** Is bladder training more effective than no treatment, placebo or control when used for older people (male and female) with urinary incontinence?  
**Settings:** Community  

<table>
<thead>
<tr>
<th>Number of studies</th>
<th>Design</th>
<th>Risk of bias</th>
<th>Inconsistency</th>
<th>Indirectness</th>
<th>Imprecision</th>
<th>Other considerations</th>
<th>Bladder training</th>
<th>No treatment control</th>
<th>Relative (95% CI)</th>
<th>Absolute</th>
<th>Quality</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cure of incontinent episodes</strong> (follow-up 6 weeks; assessed with diary, number of participants cured, immediately after treatment)</td>
<td>1</td>
<td>randomized trials</td>
<td>serious (^a)</td>
<td>not serious</td>
<td>no serious indirectness</td>
<td>serious (^b)</td>
<td>none</td>
<td>7/60 (11.7%)</td>
<td>2/63 (3.2%)</td>
<td>RR 3.68 (0.79 to 16.99)</td>
<td>85 more per 1000 (from 7 fewer to 508 more)</td>
<td>LOW</td>
</tr>
<tr>
<td><strong>Number of micturition episodes per week (daytime)</strong> (follow-up 6 weeks; assessed with diary immediately after the treatment phase; lower score = better performance)</td>
<td>1</td>
<td>randomized trials</td>
<td>serious (^c)</td>
<td>not serious</td>
<td>no serious indirectness</td>
<td>very serious (^d)</td>
<td>none</td>
<td>45</td>
<td>43</td>
<td>–</td>
<td>MD -0.31 lower (-0.73 lower to 0.11 higher)</td>
<td>VERY LOW</td>
</tr>
</tbody>
</table>

CI: confidence interval; MD: mean difference; RR: relative risk.  
\(^{a}\) Risk of bias: Downgraded once as method applied for allocation concealment was unclear.  
\(^{b}\) Imprecision: Downgraded once as sample size was small (smaller than 200).  
\(^{c}\) Risk of bias: Downgraded once as information on incomplete data not described adequately.  
\(^{d}\) Imprecision: Downgraded twice as sample size was very small (smaller than 100).
## GRADE table 5.1: Bladder training versus other behavioural interventions for older people with other incontinence

| Author: | WHO systematic review team |
| Date: | 11 November 2015 |
| Question: | Is bladder training more effective than other behavioural, physical, psychological treatments when used for older people with other incontinence? |
| Settings: | Primary care or community |

### Quality assessment

<table>
<thead>
<tr>
<th>Number of studies</th>
<th>Design</th>
<th>Risk of bias</th>
<th>Inconsistency</th>
<th>Indirectness</th>
<th>Imprecision</th>
<th>Other considerations</th>
<th>Bladder training</th>
<th>Other behavioural, physical, psychological treatment</th>
<th>Relative (95% CI)</th>
<th>Absolute</th>
<th>Quality</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>randomized trials</td>
<td>serious a</td>
<td>not serious</td>
<td>no serious indirectness</td>
<td>serious b</td>
<td>none</td>
<td>37/60 (61.7%)</td>
<td>45/60 (75%)</td>
<td>RR 0.88 (0.68 to 1.13)</td>
<td>90 fewer per 1000 (from 240 fewer to 97 more)</td>
<td>LOW</td>
<td>IMPORTANT</td>
</tr>
</tbody>
</table>

CI: confidence interval; RR: relative risk.

a. Risk of bias: Downgraded once as outcome assessor was not masking in the trial and incomplete data was not managed adequately.
b. Imprecision: Downgraded once as sample size was smaller than 200.
**GRADE table 6: Timed voiding plus other versus usual care for older people with urinary incontinence**

**Author:** WHO systematic review team  
**Date:** 11 November 2015  
**Question:** Is timed voiding plus other more effective than usual care when used for older people (men and women) with urinary incontinence?  
**Settings:** Primary care or community  

<table>
<thead>
<tr>
<th>Number of patients with reductions in incidence of daytime incontinence (follow-up 8 weeks)</th>
<th>Quality assessment</th>
<th>Number of patients</th>
<th>Effect</th>
<th>Quality</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of studies</td>
<td>Design</td>
<td>Risk of bias</td>
<td>Inconsistency</td>
<td>Indirectness</td>
</tr>
<tr>
<td>1</td>
<td>randomized trials</td>
<td>serious a</td>
<td>not serious</td>
<td>serious b</td>
<td>serious 4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of patients with reductions in incidence of night-time incontinence (follow-up 8 weeks)</th>
<th>Quality assessment</th>
<th>Number of patients</th>
<th>Effect</th>
<th>Quality</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of studies</td>
<td>Design</td>
<td>Risk of bias</td>
<td>Inconsistency</td>
<td>Indirectness</td>
</tr>
<tr>
<td>1</td>
<td>randomized trials a</td>
<td>serious c</td>
<td>not serious</td>
<td>serious b</td>
<td>serious d</td>
</tr>
</tbody>
</table>

CI: confidence interval; RR: relative risk  
(a) Risk of bias: Downgraded once as trial method was quasi-experimental design.  
(b) Indirectness: Downgraded once as trial was conducted in nursing home settings in high income country and generalizing the evidence to other settings is doubtful.  
(c) Risk of bias: Downgraded once as allocation concealment method and procedure for masking of outcome assessor was unclear in the trial.  
(d) Imprecision: Downgraded once as sample size was small.
### Part 2: From evidence to recommendations

#### Summary of evidence

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Effect size</th>
<th>Outcome</th>
<th>Effect size</th>
<th>Outcome</th>
<th>Effect size</th>
<th>Outcome</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prompted voiding vs no promoted voiding</td>
<td>MD -12 lower (-18.79 lower to -5.21 lower) Favour treatment VERY LOW</td>
<td>Habit retraining plus other vs usual care</td>
<td>Pelvic-floor muscle training (PFMT) with or without biofeedback, bladder retraining and self-monitoring vs control</td>
<td>PFMT vs no treatment, placebo, controls</td>
<td>Bladder training vs control</td>
<td>Timed voiding vs usual care</td>
<td>(continued next page)</td>
</tr>
<tr>
<td>GRADE table 1 Eustace et al. (11)</td>
<td>Mean proportion of hourly checks that are wet</td>
<td>Change in mean proportion of hourly checks that are wet</td>
<td>Total number of urinary incontinence episodes</td>
<td>MD -0.92 lower (-1.32 lower to -0.53 lower) Favour treatment VERY LOW</td>
<td>SMD -0.12 lower (-0.47 lower to 0.23 higher) LOW</td>
<td>WMD -3.63 lower (-5.19 lower to -0.99 lower) Favour treatment MODERATE</td>
<td></td>
</tr>
</tbody>
</table>

---

(continued next page)
<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>OR/MD</th>
<th>Confidence Interval</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-initiated toileting</td>
<td>MD -1.9 lower (-2.29 lower to -1.51 lower)</td>
<td></td>
<td></td>
<td>LOW</td>
</tr>
<tr>
<td></td>
<td>Patients’ perception of improvement in urinary incontinence</td>
<td>RR 4.15 (2.70 to 6.37)</td>
<td>Favour</td>
<td>MODERATE</td>
</tr>
<tr>
<td></td>
<td>Cure of incontinent episodes</td>
<td>RR 0.88 (0.68 to 1.13)</td>
<td></td>
<td>LOW</td>
</tr>
<tr>
<td></td>
<td>Number of micturition per week (daytime)</td>
<td>MD -0.31 lower (-0.73 lower to 0.11 higher)</td>
<td></td>
<td>VERY LOW</td>
</tr>
<tr>
<td></td>
<td>Number of patients with reductions in incidence of daytime incontinence</td>
<td>RR 1.34 (0.90 to 2.01)</td>
<td></td>
<td>VERY LOW</td>
</tr>
<tr>
<td></td>
<td>Number of patients with reductions in incidence of nighttime incontinence</td>
<td>RR 1.80 (1.12 to 2.89)</td>
<td>Favour</td>
<td>VERY LOW</td>
</tr>
<tr>
<td></td>
<td>Participant perceived cure</td>
<td>RR 5.34 (2.78 to 10.26)</td>
<td>Favour</td>
<td>LOW</td>
</tr>
</tbody>
</table>

*(continued next page)*
Evidence profile: urinary incontinence

<table>
<thead>
<tr>
<th>Urinary incontinence symptoms</th>
<th>Quality of life</th>
</tr>
</thead>
<tbody>
<tr>
<td>MD -34.16 lower (-47.45 to -20.88 lower) Favours treatment VERY LOW</td>
<td>MD -24.92 lower (-39.06 lower to -10.78 lower) Favours treatment VERY LOW</td>
</tr>
</tbody>
</table>

### Evidence-to-recommendations table

<table>
<thead>
<tr>
<th>Problem</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the problem a priority?</td>
<td>The prevalence of urinary incontinence reported in population-based studies ranges from 9.9% to 36.1%, and is twice as high in older women as in older men. Urinary incontinence has a profound impact on the quality of life of older people, their subjective health status, levels of depression and need for care.</td>
</tr>
<tr>
<td>Yes Yes Uncertain</td>
<td>No studies reported harm associated with non-pharmacological management of urinary incontinence.</td>
</tr>
</tbody>
</table>
| Benefits and harms                     | There is limited low-quality evidence which suggests that prompted voiding may benefit older people in managing urinary incontinence. Eight trials included in this analysis investigated the benefit of prompted voiding compared with no prompted voiding for older people with urinary incontinence. All of the analysed trials were conducted in the United States. Seven of the eight studies were carried out in nursing home settings. The duration of the interventions ranged from (continued next page)
| Do the desirable effects outweigh the undesirable effects? |
|---|---|---|
| Yes | No | Uncertain |

✓

20 days to 32 weeks. Two trials reported the effectiveness of prompted voiding in terms of reducing the number of urinary incontinence episodes in 24 hours. Both Hu et al. (39) and Schnelle et al. (40) found a reduction in the number of incontinent episodes per day in the prompted voiding group. The pooled result was statistically significant (weighted mean difference [WMD]: -0.92, CI: 95% -1.32 to -0.53). Two other trials reported a similar outcome, but could not be included in the meta-analysis. One of them reported a substantial reduction in the number of incontinent episodes (60% lower) in the treatment group compared with the control group (37%). Another trial found a significant decrease in incontinence, falling from 80% to 20%, in the treatment group, whereas the control group remained almost the same.

There is adequate moderate-quality evidence suggesting that pelvic floor muscle training (PFMT) combined with bladder training benefits older women to manage urinary incontinence. Six randomized controlled trials (RCTs), with a total of 1132 participants, investigated the benefit of PFMT combined with bladder training with or without biofeedback. All six RCTs recruited older people living in the community; five of them recruited older people aged over 55 years, while in the other trial, participants were aged 65 years and over. The intervention was delivered at home or in clinical settings. The mean age of the study participants ranged from 65.4 to 74.7 years. In one trial, nearly 34% of study participants were older men; all other studies only recruited older women.

Three of the six trials tested PFMT with biofeedback and a bladder control strategy with or without self-monitoring. One RCT examined PFMT without biofeedback, bladder training or self-monitoring. Two other RCTs combined PFMT with other behavioural interventions: one used a group education approach consisting of bladder training, a strategy to manage the urge to urinate, and group support for PFMT, while the other trial administered PFMT and bladder training with individualized voiding schedules. Apart from one trial that offered a self-help booklet to the control group, the control groups in all the other trials received no active intervention.

Five of the analysed trials reported outcome data on the number of incontinence episodes per week. The overall pooled effect of PFMT plus bladder training, with or without biofeedback, was
<table>
<thead>
<tr>
<th>Evidence profile: urinary incontinence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Do the desirable effects outweigh the undesirable effects?</strong></td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>✓</td>
</tr>
</tbody>
</table>

WMD: -3.63 (-5.19 to -0.99 lower), favouring the treatment ($P < 0.001$). Three trials reported data on participants’ perception of improvement in urinary incontinence. The pooled estimate for this outcome was relative risk [RR]: 4.14 (95% CI: 2.70 to 6.37) in favour of the treatment group.

No trial has reported adverse effects, and the guideline development group guideline development group believed that the potential for harm is likely to be minimal.

<table>
<thead>
<tr>
<th>Values and preferences/ acceptability</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there important uncertainty or variability about how much people value the options?</td>
<td>Urinary incontinence in older people is associated with significant societal cost, and it impacts older people and family caregivers profoundly. The magnitude of the problem is larger in low- and middle-income countries (LMICs): 9% to 36% of older people suffer from urinary incontinence. The majority of them receive care from a close family member, who may be at risk of caregiver strain and burden.</td>
</tr>
<tr>
<td>Major variability</td>
<td>Minor variability</td>
</tr>
<tr>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Is the option acceptable to key stakeholders?</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Although there is an absence of evidence from low- and middle-income countries, the evidence reported in high-income countries indicates that non-pharmacological interventions may be acceptable to older people in low-resource settings.</td>
<td></td>
</tr>
<tr>
<td>Major variability</td>
<td>Minor variability</td>
</tr>
<tr>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>
### Feasibility/resource use

<table>
<thead>
<tr>
<th>How large are the resource requirements?</th>
<th>Major</th>
<th>Minor</th>
<th>Uncertain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Explanation**

Non-pharmacological interventions recommended for urinary incontinence are not resource intensive.

<table>
<thead>
<tr>
<th>Is the option feasible to implement?</th>
<th>Yes</th>
<th>No</th>
<th>Uncertain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Explanation**

The feasibility of these interventions is not an important limitation; these interventions can be safely administered by family caregivers. Delivery of care through non-specialist health workers seems to be a successful model for low- and middle-income countries. Delivering an educational intervention has been shown to be feasible and to have promising results. Drawing on these experiences, the guideline development group believed the recommendation was feasible to implement in high- and low-resource settings.

### Equity

<table>
<thead>
<tr>
<th>Would the option improve equity in health?</th>
<th>Yes</th>
<th>No</th>
<th>Uncertain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Explanation**

The guideline development group strongly believed that this recommendation would increase equity in health.
Guideline development group recommendation and remarks

Recommendation

**Prompted voiding for the management of urinary incontinence can be offered for older people with cognitive impairment.**

*Strength of the recommendation: Conditional*  
*Quality of evidence: Very low*

**Pelvic floor muscle training (PFMT), alone or combined with bladder control strategies and self-monitoring, should be recommended for older women with urinary incontinence (urge, stress or mixed).**

*Strength of the recommendation: Strong*  
*Quality of evidence: Moderate*

Remarks

- Apart from one study, all of the trials were conducted in high-income countries.
- Although the majority of PFMT trials involved older women, the recommendation for PFMT may be applicable to older men.
- The duration of the PFMT intervention trials ranged from 6 to 12 weeks and most of the trials administered the interventions on a daily regimen.
- Using continence products should be considered for older people who are bedridden or experiencing severe declines in mental and/or physical capacities.
- Health care providers should take a detailed history and ask specific questions about urinary incontinence, such as the time of onset, symptoms and frequency.

*(continued next page)*
• At least half of women with urinary incontinence do not report this issue to their general practitioner; therefore, health care professionals should routinely check for urinary incontinence in older women and men.

• Identifying and managing conditions that may cause urinary incontinence, including urinary tract infections, metabolic disorders, excess fluid intake and impaired mental conditions (e.g. delirium), are important and should not be neglected.

• Clinicians should review current medications that may cause or worsen urinary incontinence.

• Although pharmacological therapy can reduce urinary incontinence and even provide complete continence, many older people discontinue medication because of adverse effects. Specialist care providers should be consulted when initiating pharmacological treatment.

• As a first-line treatment, provide advice on bladder training for a minimum of six weeks. Bladder training involves advising the older people to follow a strict schedule for bathroom visits. The schedule starts with bathroom visits every 2 hours, but the time between visits should be gradually increased to improve bladder control.
References


(continued next page)
Evidence profile: urinary incontinence


Annex 1: Search strategy

MEDLINE database

1. exp behavior therapy/
2. (behav$ adj25 therapy).mp. [mp=protocol supplementary concept, rare disease supplementary concept, title, original title, abstract, name of substance word, subject heading word, unique identifier]
3. exp cognitive therapy/
4. (cognit$ adj25 therapy).mp. [mp=protocol supplementary concept, rare disease supplementary concept, title, original title, abstract, name of substance word, subject heading word, unique identifier]
5. (conservat$ adj25 intervention$).mp. [mp=protocol supplementary concept, rare disease supplementary concept, title, original title, abstract, name of substance word, subject heading word, unique identifier]
6. toilet training.mp. [mp=protocol supplementary concept, rare disease supplementary concept, title, original title, abstract, name of substance word, subject heading word, unique identifier]
7. (habit training or habit retraining).mp. [mp=protocol supplementary concept, rare disease supplementary concept, title, original title, abstract, name of substance word, subject heading word, unique identifier]
8. timed void$.mp. [mp=protocol supplementary concept, rare disease supplementary concept, title, original title, abstract, name of substance word, subject heading word, unique identifier]
9. prompted void$.mp. [mp=protocol supplementary concept, rare disease supplementary concept, title, original title, abstract, name of substance word, subject heading word, unique identifier]
10. (nursing homes and urinary incontinence).mp. [mp=protocol supplementary concept, rare disease supplementary concept, title, original title, abstract, name of substance word, subject heading word, unique identifier]
11. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 9 or 10
12. exp Urinary Incontinence/ or urinary incontinence.mp. [mp=protocol supplementary concept, rare disease supplementary concept, title, original title, abstract, name of substance word, subject heading word, unique identifier]
13. 11 and 12
14. 13 not child.mp. [mp=protocol supplementary concept, rare disease supplementary concept, title, original title, abstract, name of substance word, subject heading word, unique identifier]
15. exp randomized controlled trials/
16. randomized controlled trial.pt.
17. exp random allocation/
18. exp double blind method/
19. exp single blind method/
20. exp Clinical Trial/
22. (clin$ adj25 trial$).ti,ab.
23. ((singl$ or doubl$ or treb$ or tripl$) adj25 (blind$ or mask$)).ti,ab.
24. placebo$.ti,ab.
25. random$.ti,ab.
26. research design/
27. placebos.mp. [mp=protocol supplementary concept, rare disease supplementary concept, title, original title, abstract, name of substance word, subject heading word, unique identifier]
28. or/15-27
29. 14 and 28

(continued next page)
30. exp Aged/ or exp Aging/
31. exp Frail Elderly/
32. 30 or 31
33. 29 and 32

**Embase database**

1. Randomized Controlled Trial/
2. controlled study/
3. clinical study/
4. major clinical study/
5. prospective study/
6. meta-analysis/
7. exp clinical trial/
8. randomization/
9. crossover procedure/ or double blind procedure/ or parallel design/ or single blind procedure/
10. Placebo/
11. latin square design/
12. exp comparative study/
13. follow up/
14. pilot study/
15. family study/ or feasibility study/ or pilot study/ or study/
16. placebo$.tw.
17. random$.tw.
19. ((singl$ or doubl$ or trebl$ or tripl$) adj25 (blind$ or mask$)).tw.
20. factorial.tw.
21. crossover.tw.
22. latin square.tw.

24. or/1-23
26. 24 not 25
27. behavior modification/ or behavior therapy/
28. (conservat$ adj25 (intervention$ or therap$)).tw.
29. conservative treatment/
30. (behav$ adj25 (therap$ or train$ or treatment$ or intervention$)).tw.
31. (habit adj2 (train$ or retrain$)).tw.
32. (void$ adj2 (time$ or prompt$ or schedul$)).tw.
33. toilet$.tw.
34. or/27-33
35. bladder disease/ or bladder dysfunction/ or detrusor dyssynergia/ or neurogenic bladder/
36. (continen$ or incontinen$).tw.
37. exp Incontinence/
38. 37 or 35 or 36
39. 26 and 34 and 38
40. limit 39 to (embryo or infant or child or preschool child <1 to 6 years> or school child <7 to 12 years> or adolescent <13 to 17 years>)
41. limit 39 to (adult <18 to 64 years> or aged <65+ years>)
42. 40 not 41
43. 39 not 42
44. aging/ or aging.mp.
45. frail elderly.mp. or frail elderly/
46. 44 or 45
47. 43 and 46
Annex 2: PRISMA² 2009 flow diagram for non-pharmacological intervention for managing urinary incontinence

Records identified through database searching (n = 1893) → Additional records identified through other sources (n = 19) → Records after duplicates removed (n = 986) → Records screened (n = 986) → Full-text articles assessed for eligibility (n = 272)
- Systematic reviews (SR) = 111
- Randomized controlled trials (RCTs) = 161 → Studies included in qualitative synthesis
  - SR = 111
  - RCTs = 161 → Studies included in quantitative synthesis (meta-analysis) (n = 27)
    - SR = 25 RCTs
    - Additional studies = 2 RCTs → Records excluded (n = 714)
    - Conference abstract (n = 146)
    - Pharmacological intervention (n = 568)
    - Inappropriate age group (n = 123)
    - Insufficient information on outcomes (n = 36)
    - Quality assessment not performed (n = 29)
    - More recent reviews available (n = 23) → Full-text articles excluded, with reasons (n = 265)

² Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). For more information: http://www.prisma-statement.org