

Management of Urinary Incontinence in Older Patients



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Geriatrician

Urinary incontinence

- The complaint of any involuntary leakage of urine (which is objectively demonstrable and is a social or hygiene problem)

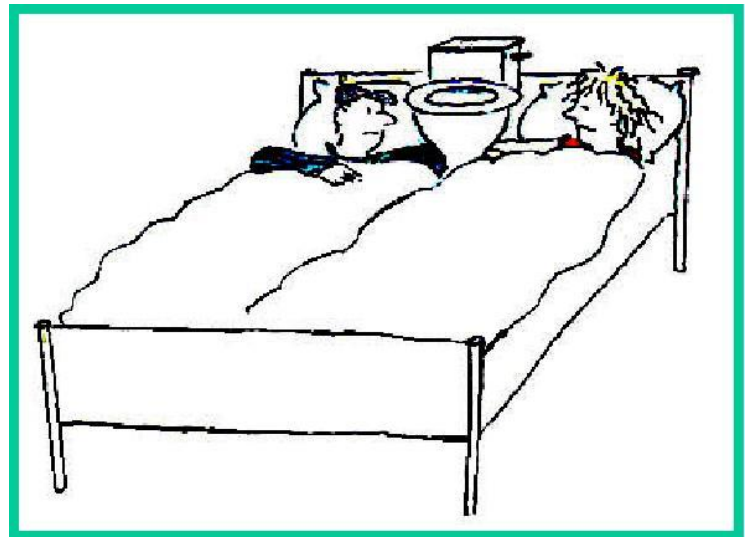
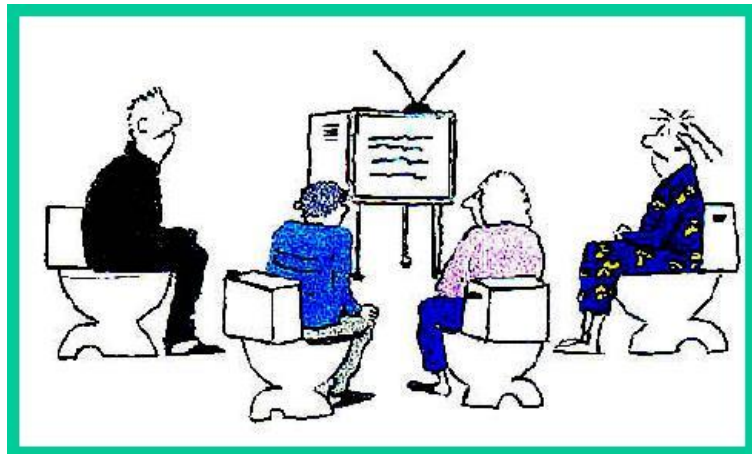


Fig. 3 Mean SF-36 scores for individuals with OAB with and without urge incontinence and age- and sex-matched controls

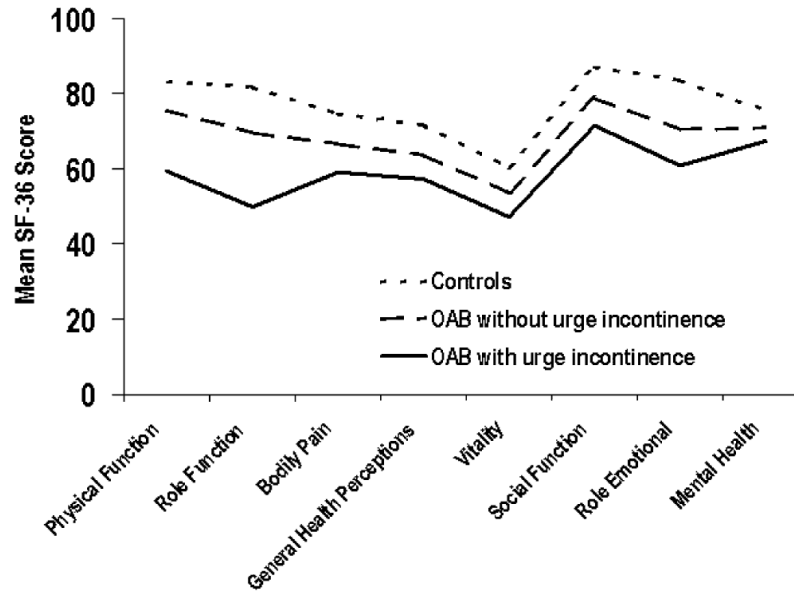


Table 3 Mean differences in measures of quality of life (SF-36), depression (CES-D), and quality of sleep (MOS sleep) between OAB cases and age-matched controls

Outcome	Controls		OAB without urge incontinence		OAB with urge incontinence	
	Women (n = 344)	Men (n = 178)	Women (n = 82)	Men (n = 146)	Women (n = 129)	Men (n = 40)
SF-36						
Physical	49.4 (0.6)	49.8 (0.7)	45.3 (1.4) ^a	46.3 (1.0) ^a	39.3 (1.2) ^b	41.3 (1.9) ^b
Mental	49.7 (0.6)	53.6 (0.6)	45.1 (1.4) ^a	49.3 (0.9) ^c	46.8 (1.0) ^d	47.7 (1.9) ^c
CES-D	11.7 (0.6)	7.4 (0.6)	17.3 (1.6) ^c	13.0 (0.9) ^b	17.1 (1.1) ^b	16.7 (1.8) ^b
MOS-Sleep	26.4 (0.9)	20.1 (1.1)	35.4 (2.4) ^c	27.5 (1.5) ^b	38.6 (1.8) ^b	32.9 (2.8) ^b

^aP < 0.01; ^bP < 0.001; ^cP < 0.005; ^dP < 0.05;

Mortality

	10 year mortality (1052 persons age 60-89)	
	Male	Female
No Urgency	57%	38%
Urgency	86%	54%
	RR	
Urgency dry	1.87 (1.28-2.74)	NS
Urgency wet	3.13 (2.05-4.77)	1.63 (1.03-2.57)

Nuotio M, Tammela TL, Luukkaala T, Jylhä M.

Urgency and urge incontinence in an older population: ten-year changes and their association with mortality.

Aging Clin Exp Res. 2002 Oct;14(5):412-9.

Association of Urinary Incontinence and Falls Among 6049 Women

Type of Weekly Incontinence *	Age-Adjusted			Multivariate-Adjusted		
	Odds Ratio (OR)	95% CI	P	OR	95% CI	P
Urge	1.46	1.32-1.61	<0.0001	1.26	1.14-1.40	<0.0001
Stress	1.1	0.99-1.23	0.08	1.06	0.95-1.19	0.3

Association of Urinary Incontinence and Non-spine, Nontraumatic Fractures

Type of Weekly Incontinence *	Age-Adjusted			Multivariate-adjusted		
	Relative Hazard (RH)	95% CI	P	RH	95% CI	P
Urge	1.46	1.19-1.80	0.0003	1.34	1.06-1.69	0.02
Stress	0.86	0.68-1.10	0.2	0.98	0.75-1.28	0.9

Brown JS, Vittinghoff E, et al. For the Study of Osteoporotic Fractures Research Group
Urinary Incontinence: Does it Increase Risk for Falls and Fractures?
 J Am Geriatr Soc (2000) 48:721-5

Table 5. Association between incontinence and risk of hospitalization and admission to a skilled nursing facility in women and men

	Hospitalizations			Admissions to skilled nursing facility		
	No./1000 P-Y	Adjusted RR (95% CI)		No. /1000 P-Y	Adjusted RR (95% CI)	
		Age/cohort	Disease		Age/cohort	Disease
Women						
Incontinent	282	1.4	1.3 ^a	73	2.5	2.0 ^c
Continent	198	(1.3-1.6)	(1.2-1.5)	31	(2.1-2.9)	(1.7-2.4)
Men						
Incontinent	437	1.6	1.5 ^b	98	3.7	3.2 ^d
Continent	272	(1.5-1.8)	(1.3-1.6)	24	(3.2-4.4)	(2.7-3.8)

P-Y, person-years.

^aAdjusted for age, cohort, dementia, cerebral vascular disease, depression, congestive heart failure, ischaemic heart disease, musculo-skeletal disease, cancer, renal disease and hypertension.

^bAdjusted for age, cohort, cerebral vascular disease, congestive heart failure, ischaemic heart disease, pulmonary disease and diabetes.

^cAdjusted for age, cohort, cerebral vascular disease, dementia, depression, ischaemic heart disease, renal disease and hypertension.

^dAdjusted for age, cohort, cerebral vascular disease, dementia, congestive heart failure, renal disease and diabetes.

THOM DH, HAAN MN, VAN DEN EEDEN SK

Medically recognized urinary incontinence and risks of hospitalization, nursing home admission and mortality

Age and Ageing 1997; 26: 367-374

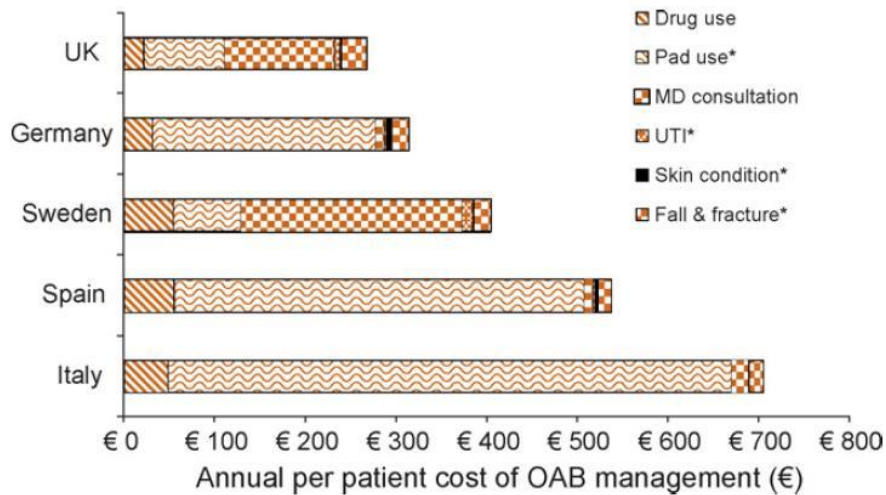


Fig. 2 – Annual per patient costs of management of overactive bladder.

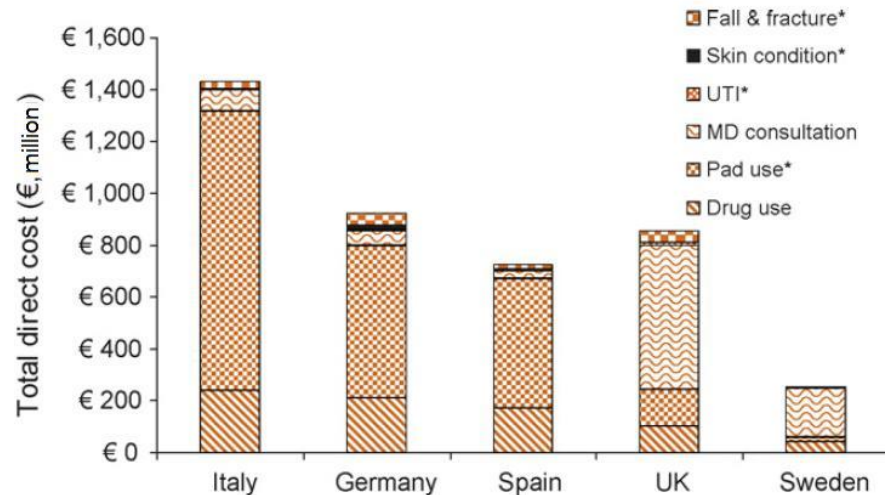
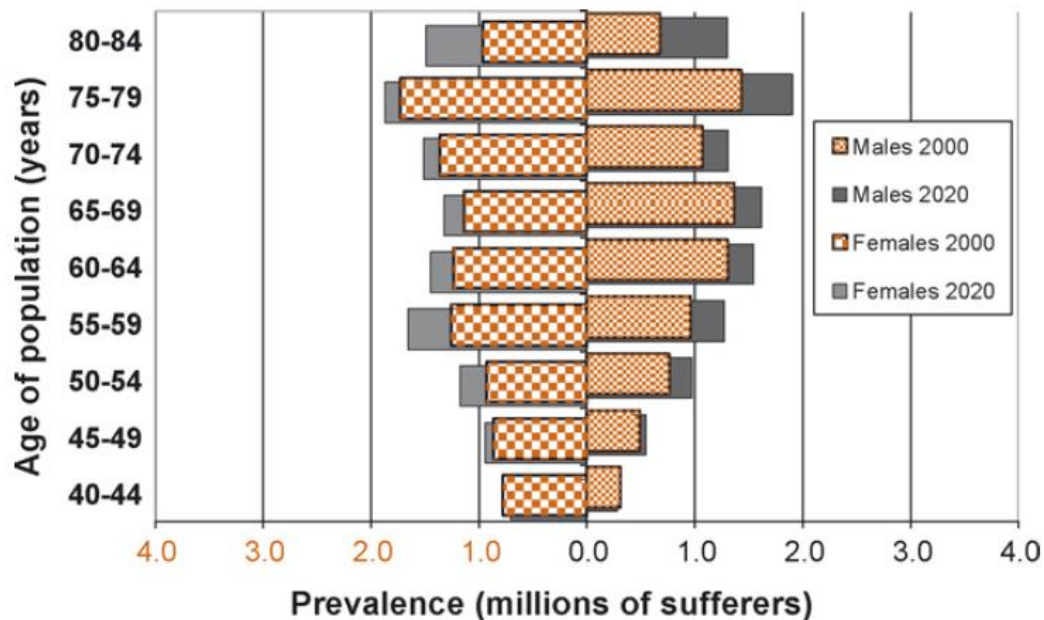


Fig. 3 – Total estimated costs of overactive bladder to each country's health care system in 2000 (Euros, millions).



Total cost to health care systems across all five countries was estimated at **EUR 4.2 billion in 2000**, and by **2020**, the expected total cost was estimated to be **EUR 5.2 billion**, an increase of EUR 1 billion (26%).

Reeves P, Irwin D, et al.
The Current and Future Burden and Cost of Overactive Bladder in Five European Countries
 Eur Urol (2006) 50:1050-1057

Economic cost of OAB in US

	2007	2015	2020
Average annual per capita (USD)	\$1925	\$1944	\$1969
Total national cost (billions USD)	\$65.9	\$76.2	\$82.6

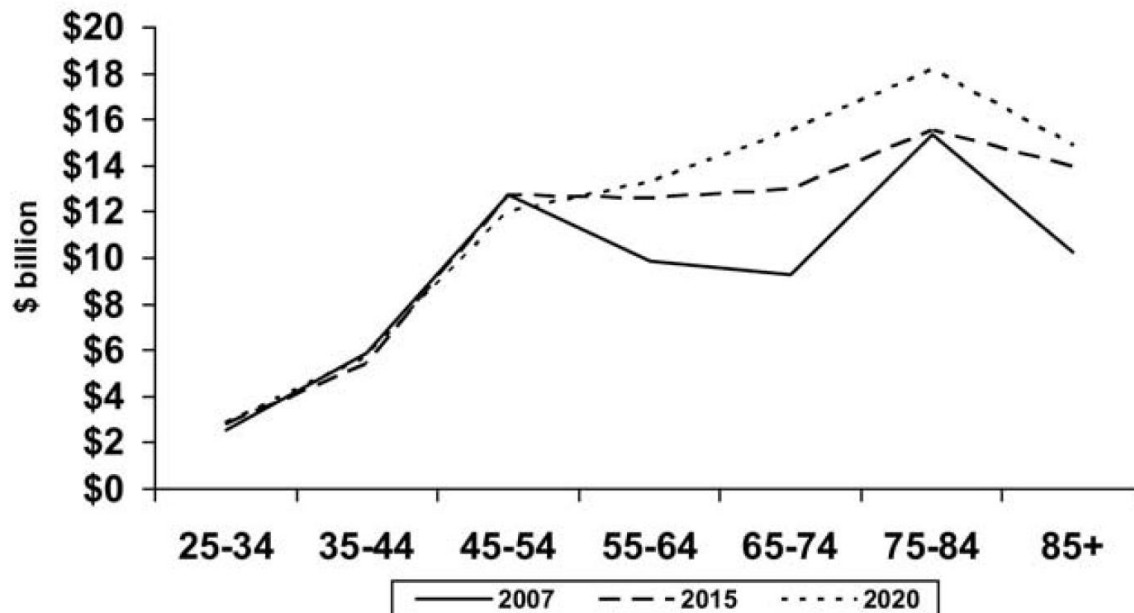


Figure 1. Total national costs of overactive bladder, United States.

Ganz ML, Smalarz AM, et al.

Economic Costs of Overactive Bladder in the United States

Urology (2010) 75:526-532

Incontinence

Prevalence

For people living at home:

- between 1 in 20 and 1 in 14 women aged 15-44;
- between 1 in 13 and 1 in 7 women aged 45-64;
- between 1 in 10 and 1 in 5 women aged 65 and over;
- over 1 in 33 men aged 15-64;
- between 1 in 14 and 1 in 10 men aged 65 and over.

For people (both sexes) living in institutions:

- 1 in 3 in residential homes
- nearly 2 in every 3 in nursing homes
- 1/2 to 2/3 in wards for elderly and elderly mentally infirm



Elders visiting general practitioners

Table 14.2 Urinary incontinence among different age groups and sex in Hong Kong

Symptom	Present			Absent			Total		
	M	F	M&F	M	F	M&F	M	F	M&F
18-39 years (%)	25 (2.5)	181 (13)	206 (8.6)	986 (97.5)	1213 (87)	2198 1(91.4)	1011	1394	2494
40-59 years (%)	27 (5.2)	182 (34.5)	209 (19.9)	496 (94.8)	345 (65.5)	841 (80.1)	523	527	1050
60-74 years (%)	45 (18.1)	74 (36.6)	119 (26.4)	204 (81.9)	128 (63.4)	332 (73.6)	249	202	451
≥75 years (%)	18 (29.5)	30 (39.5)	48 (35)	43 (70.5)	46 (60.5)	89 (65)	61	76	137
All age (%)	115 (6.2)	467 (21.2)	582 (14.4)	1729 (93.8)	1732 (78.8)	361 (85.6)	1844	2199	4042

the Hong Kong Continence Society and the Hong Kong College of Family Physicians in 1995

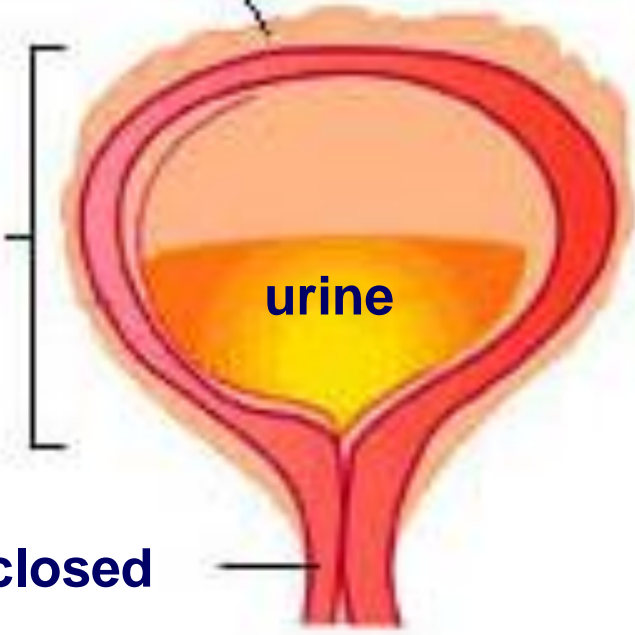
Study on institutionalized elderly 1990

Acute care hospital	10.9%
Convalescent hospital	37.6%
C&A Homes	23.2%

- 63.8% has concomitant fecal incontinence
- Medical diagnosis in incontinent subject:
Cerebrovascular disease, dementia, Diabetes mellitus, cataract, osteoarthritis etc

Lower Urinary Tract function in controlling urination

bladder muscle



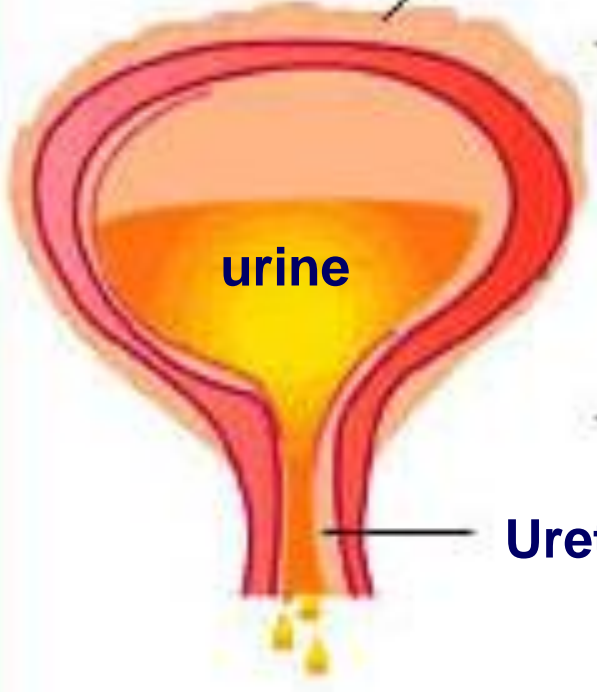
bladder

urine

Urethra closed

**Sphincter Muscles
Squeezed Shut**

bladder muscle



bladder

urine

Urethra open

**Sphincter Muscles
Relaxed**

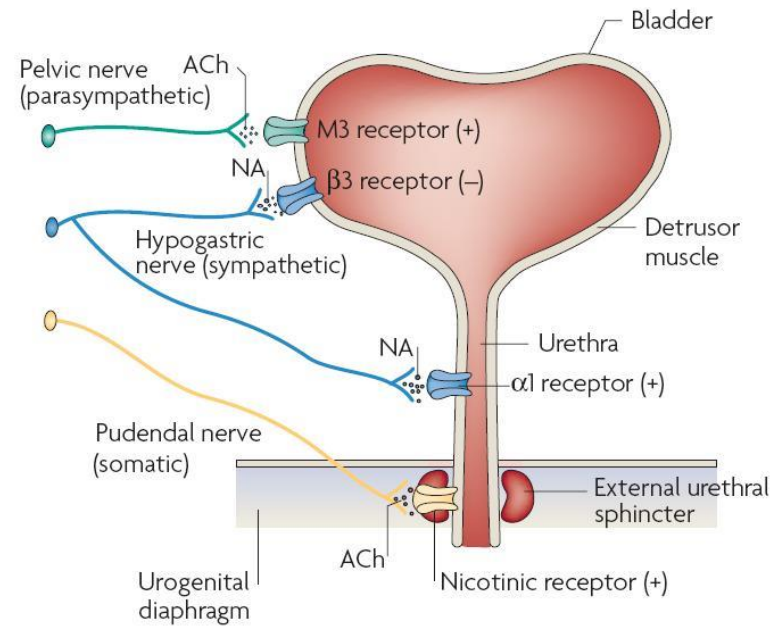
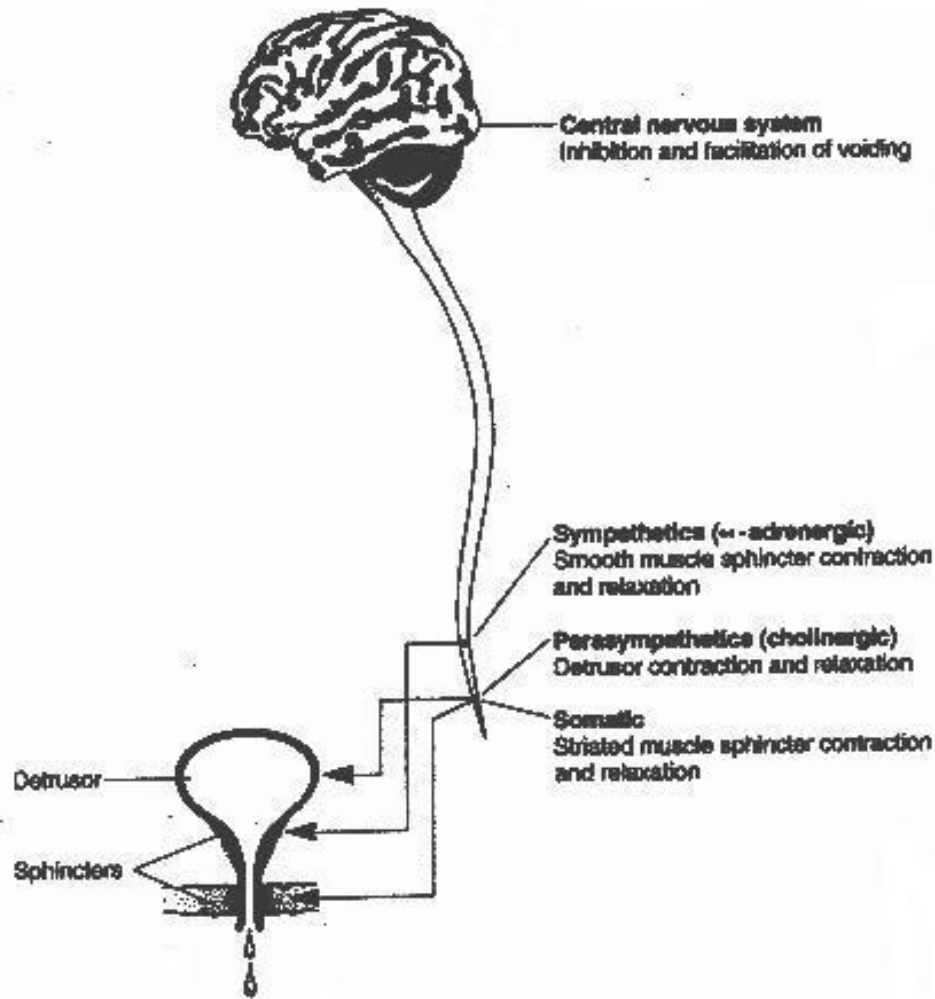


Fig. 15-1. Normal micturition occurs when bladder contraction is coordinate urethral sphincter relaxation. Four nervous system components are involved: (1) The central nervous system inhibits voiding until the appropriate time; it also coordinates and facilitates input from the bladder to start and complete voiding. (2) The sympathetic system contracts the smooth muscle sphincter through α -adrenergic fibers from the hypogastric nerve. (3) The parasympathetic system contracts the bladder detrusor muscle through cholinergic fibers from the pelvic nerve. (4) The somatic nervous system contracts the striated muscle sphincter through cholinergic fibers from the pudendal nerve. (Adapted from DuBeau CE, Resnick NM, with the Massachusetts Department of Health EDUCATE project collaborators. Urinary Incontinence in the Older Adult: An Annotated Speaker/Teacher Kit, 1993; used with permission of the authors.)

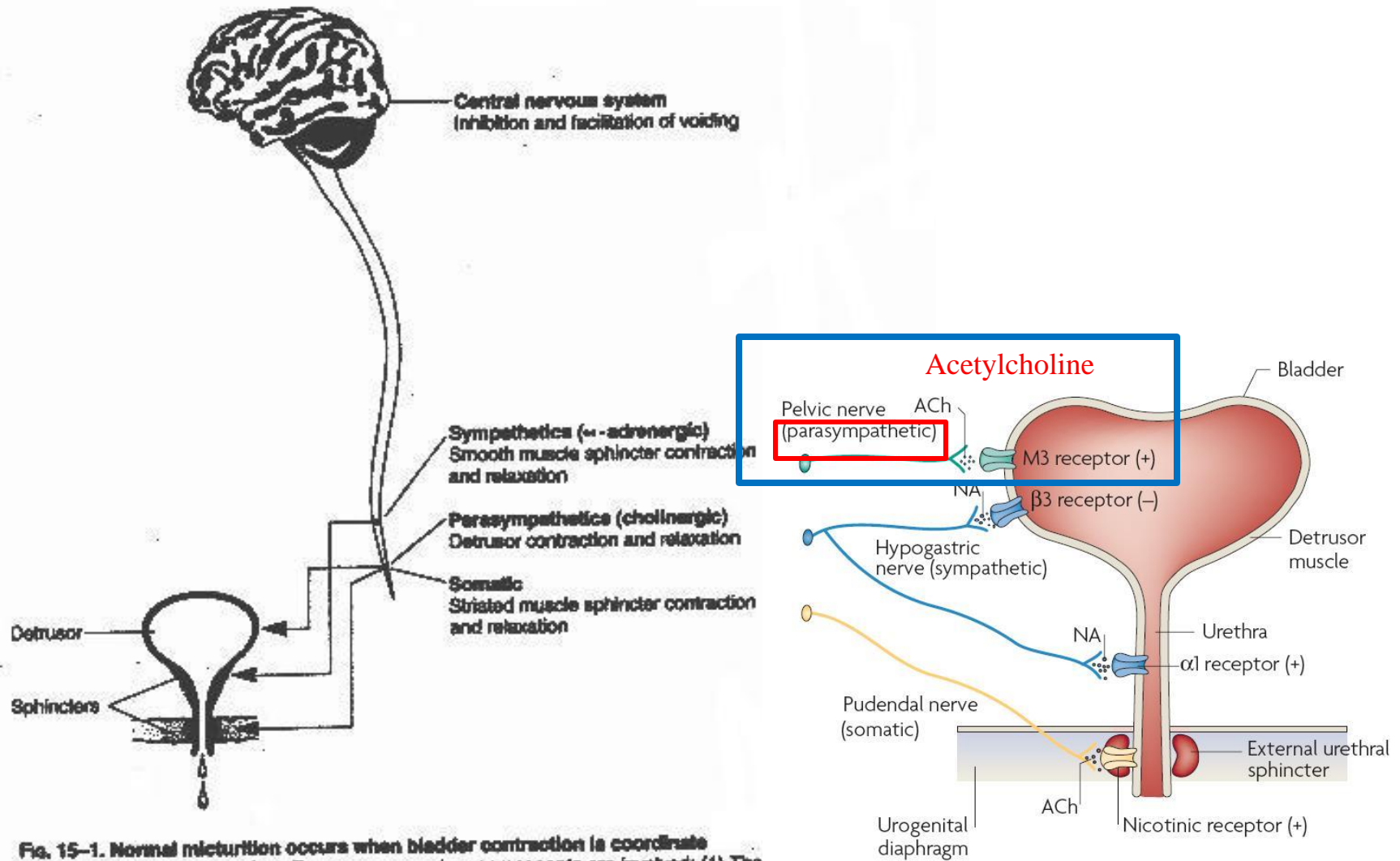


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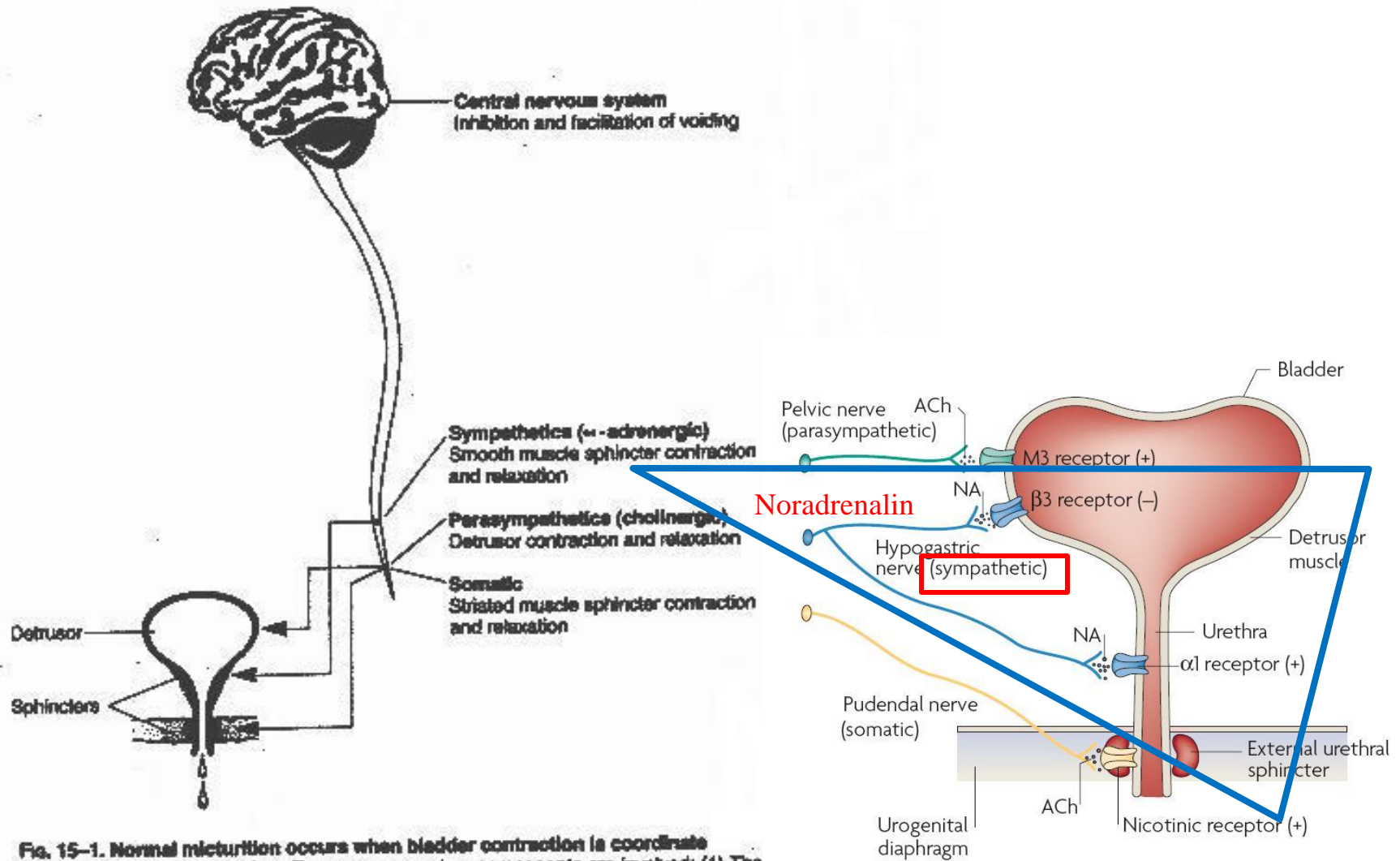


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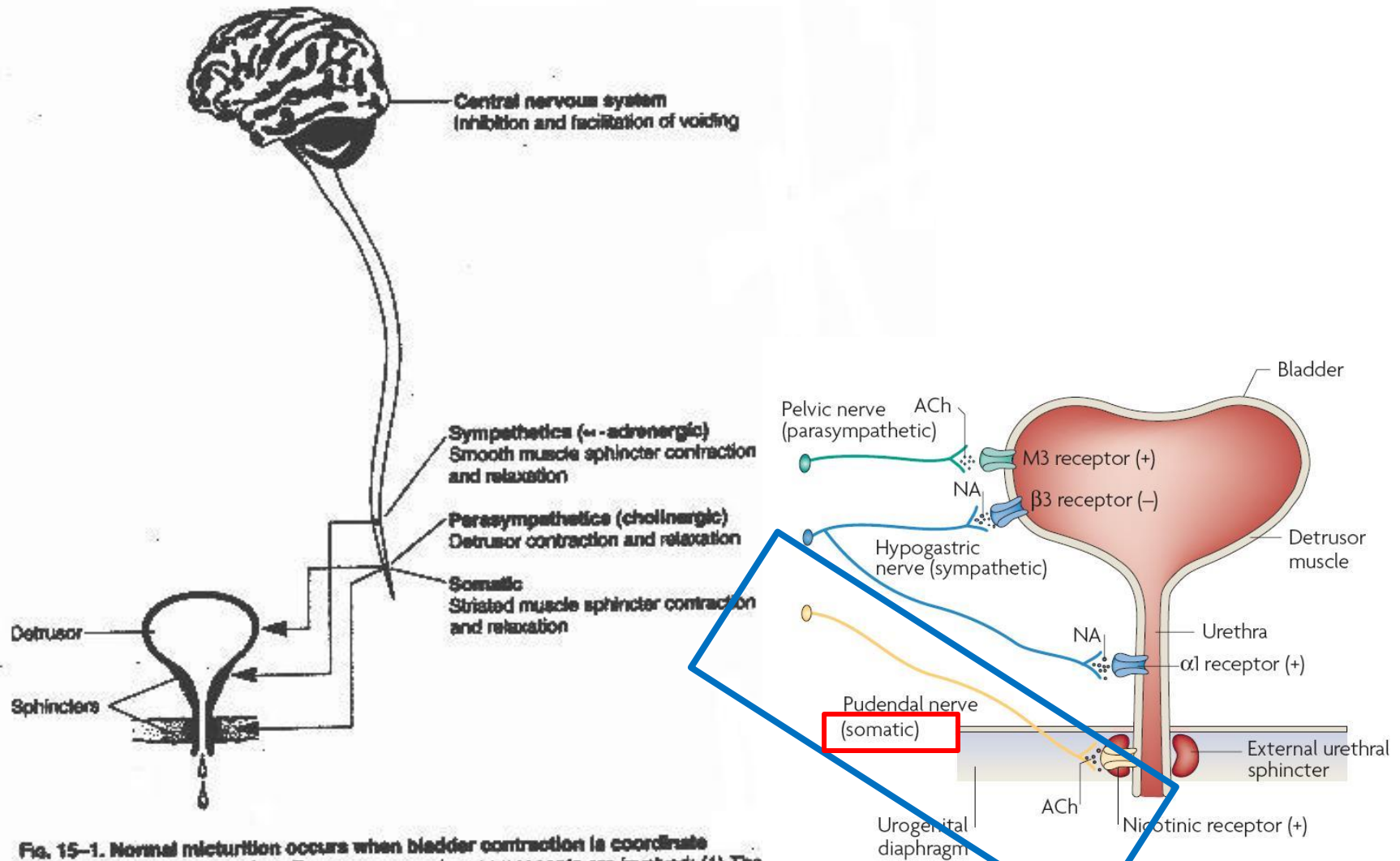


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Age related changes in lower urinary tract

Decrease bladder capacity

Decrease bladder contractility

Decrease ability to postpone voiding

Slight rise in post voiding residual < 50 ml

**URINARY INCONTINENCE IS NOT A PART OF
AGING**

CAUSE OF URINARY INCONTINENCE

Transient
Established

Cause of transient incontinence DIAPPERS

Resnick NM 1984

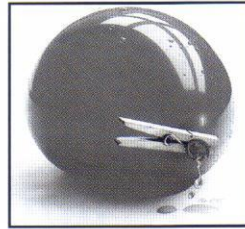
- **D**elirium
- **I**nfection, urinary
- **A**trophic urethritis/ vaginitis
- **P**harmaceutical
- **P**sychological
- **E**xcessive urine output
 - Large fluid intake
 - Diuretic agents: caffeinated beverages, alcohol
 - Metabolic caused: sugar, calcium
- **R**estricted mobility
- **S**tool impaction

Iatrogenic Incontinence

Effects	Drug classes
Delirium, sedation	Anticholinergics, antipsychotics, TCA, Anti-parkinsonic drugs, Sedative/hypnotics, narcotic analgesics, alcohol
Cough	ACEI
Polyuria	Diuretics, alcohol
Bladder stimulation	Caffeinated beverages
Bladder relaxation	Anticholinergics, calcium channel blocker
Sphincter contraction	Alpha-adrenergic agonist
Sphincter relaxation	Alpha-adrenergic blockers
Constipation	Anticholinergics, narcotic analgesics, calcium channel blockers etc
Edema	Calcium channel blocker, vasodilators



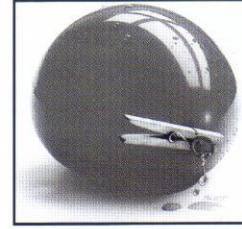
Hesitancy



Weak stream



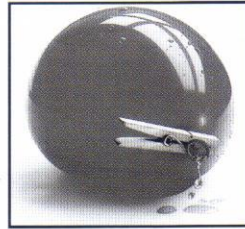
Straining



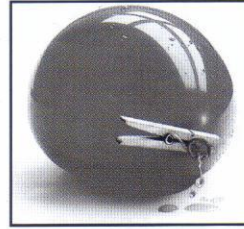
Prolonged micturition



Urinary retention



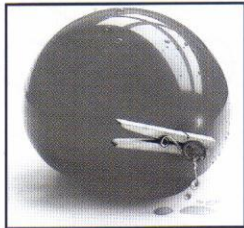
Urgency



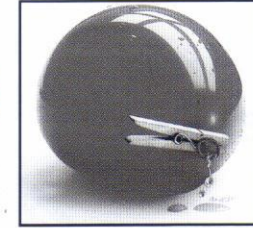
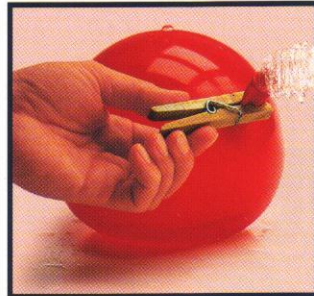
Frequency



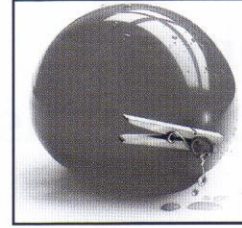
Feeling of incomplete emptying



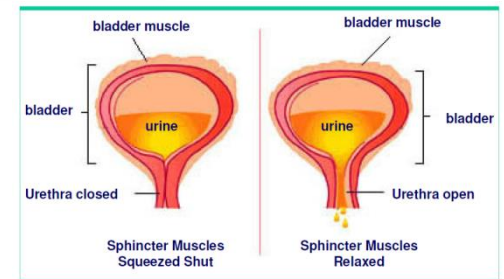
Nocturia



Urge incontinence





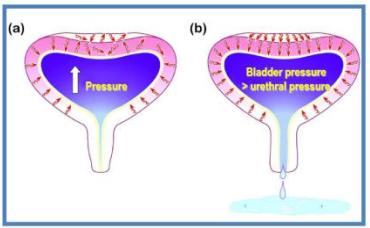
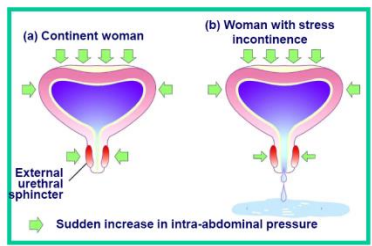
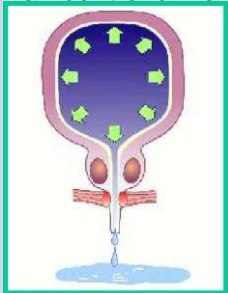
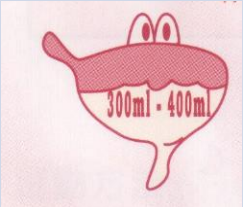


Overflow incontinence



Established cause of incontinence

- Detrusor overactivity
- Detrusor underactivity
- Reduced outlet resistance
- Increased outlet resistance

<u>Type</u>	Urge Incontinence 	Stress Incontinence 	Overflow Incontinence 	Functional Incontinence 
<u>Cause</u>	Detrusor overactivity Uninhibited bladder contraction causing leakage of moderate to large amounts of urine 	Reduced outlet resistance Increase in intraabdominal pressure, eg. coughing, sneezing, laughing or other physical activity, causing leakage of small to moderate amount of urine 	Increased outlet resistance Detrusor underactivity Distension of bladder causing overflow leakage of small amount of urine 	Unrelated to lower urine tract cause Inability or unwillingness of a normal continent elderly to go to the toilet 
<u>Etiology</u>	Cystitis Bladder stone/ neoplasm CNS disorder Spinal cord disease Idiopathic	Obesity Estrogen deficiency Childbirth Weakness and laxity of pelvic floor muscles Post-prostatectomy	Prostatic enlargement Urethral stricture Spinal cord disease Faecal impaction Diabetic neuropathy Sacral nerve damage Medication	Musulosketetal disorders Impaired mental status Unfamiliar environment Depression Hostility Sedating medication Use of physical restraints
Mixed incontinence				

CLINICAL TYPE OF URINARY INCONTINENCE

Urge incontinence- the complaint of involuntary leakage accompanied by or immediately preceded by urgency (sudden compelling desire to pass urine which is difficult to defer (ICS 2002)

Stress incontinence- the complaint of involuntary leakage on effort or exertion, or on sneezing or coughing (ICS 2002)

Mixed incontinence- the complaint of involuntary leakage associated with urgency and also with exertion, effort, sneezing or coughing (ICS 2002)

Overflow incontinence- involuntary loss of urine when the intravesical pressure exceeds the maximum urethral pressure due to an elevation of intravesical pressure associated with bladder distension but in the absence of detrusor activity (ICS 1976)

Functional incontinence- unrelated to lower urine tract cause

- cognitive defect
- mobility problem

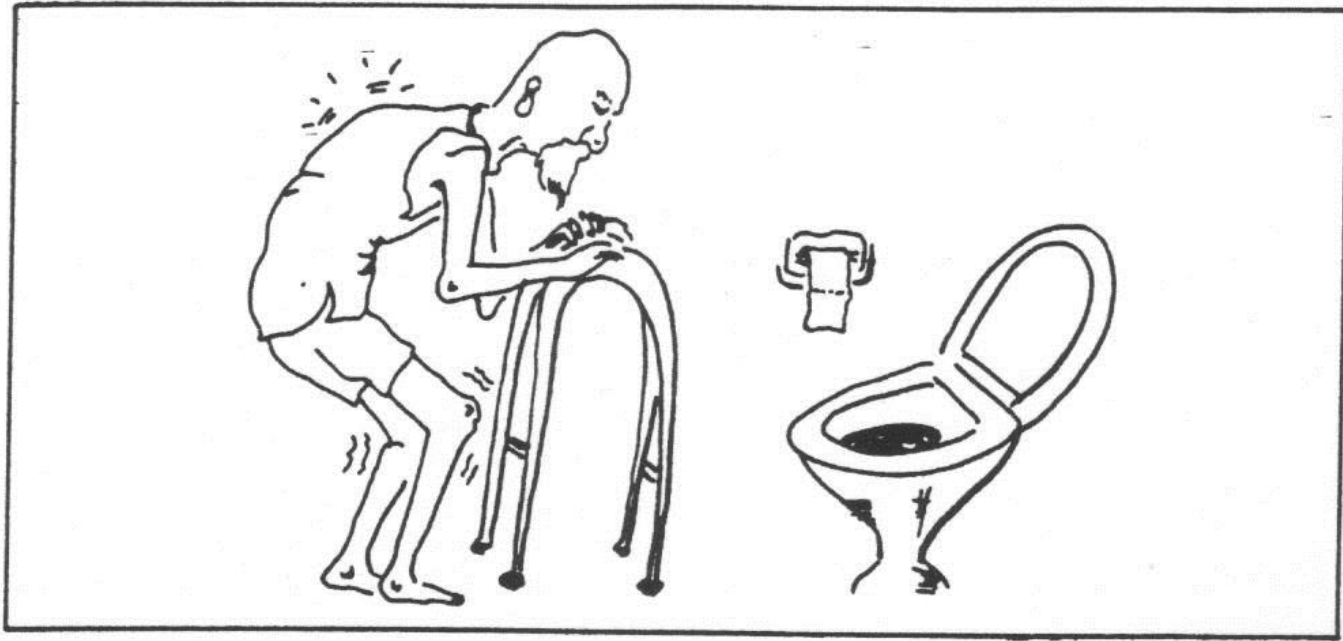


Fig. 5.3 Distant toilet + slow painful mobility + urgency = incontinence.

Requirements in achieving continence

- Lower urinary tract function
- Mental function
- Mobility and dexterity
- Environment
- Motivation- both patients and cares

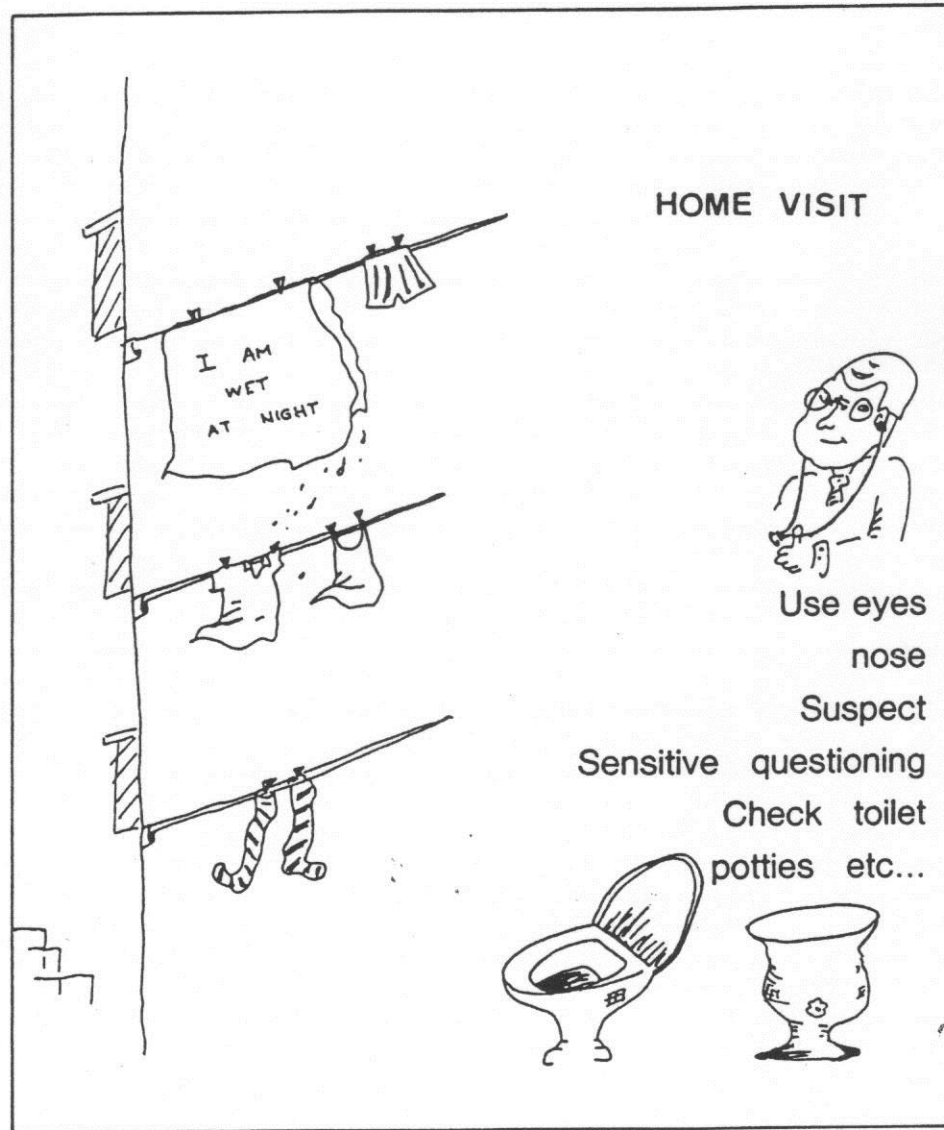
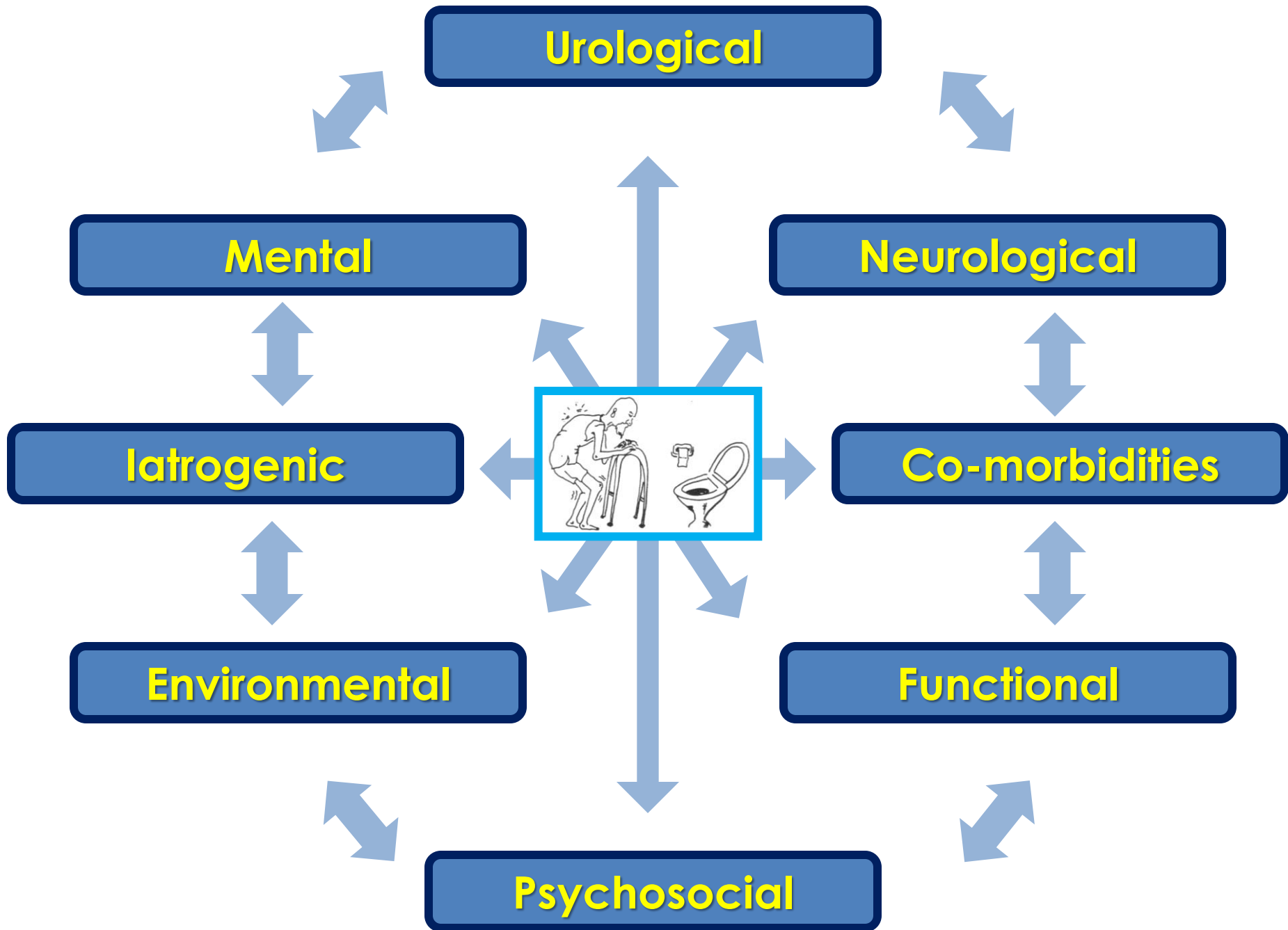


Fig. 5.4 Suspect incontinence at the home visit.



Urodynamic investigation

Frequency volume chart

Pad test

Post void residual

Flow rate study

Cystometry - filling cystometry

voiding cystometry

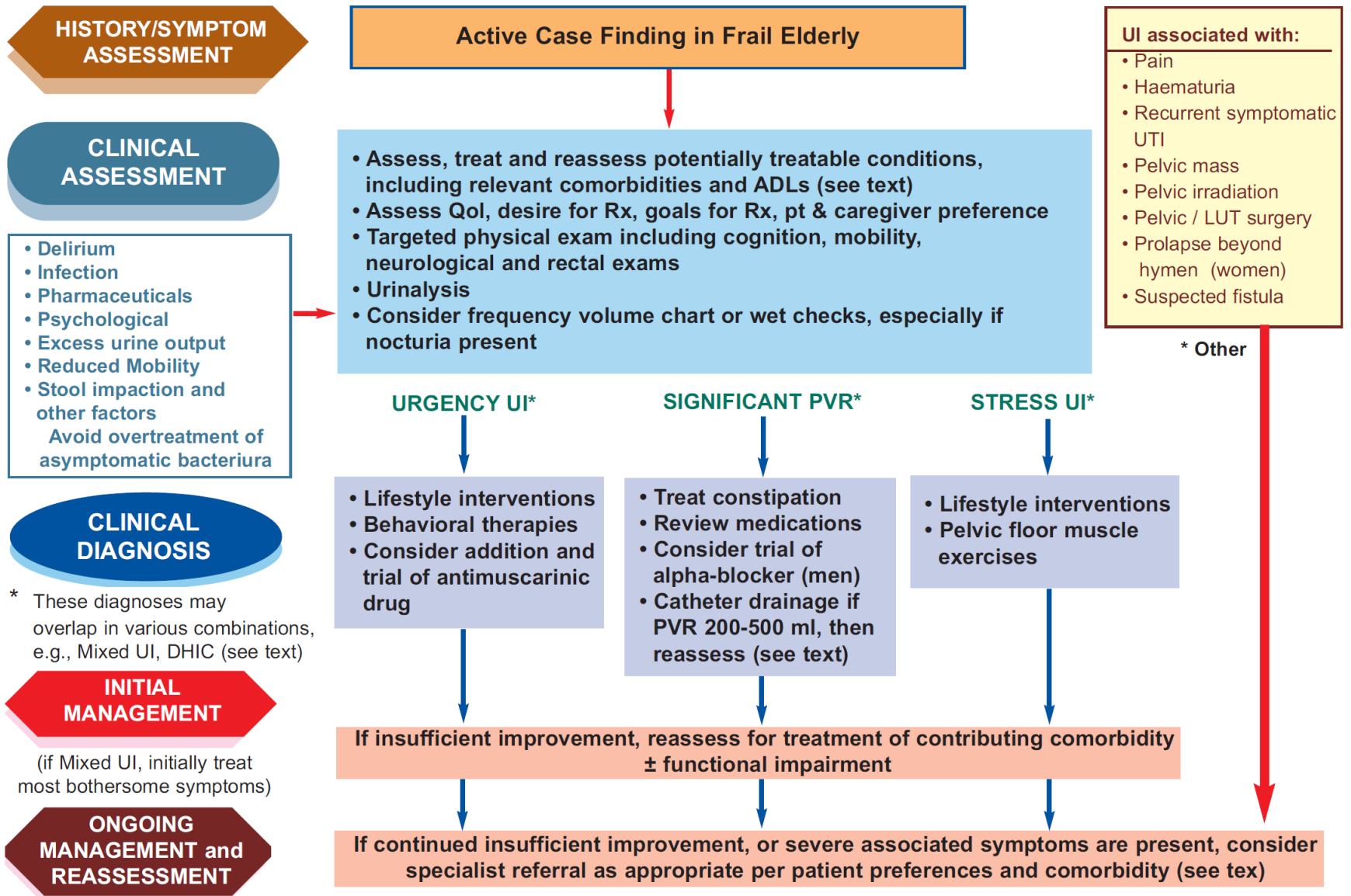
Urethral pressure profile

Videocystourethrography

Management of urinary incontinence

depends on causes

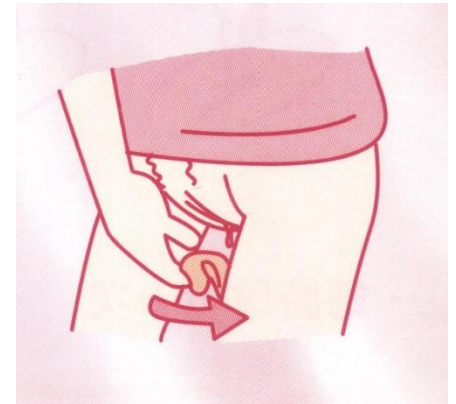
Management of Urinary Incontinence in Frail Older Persons



Life style modification



- Adequacy of fluid: 6-8 glass per day
- Avoid caffeinated beverage and alcohol
- Skin care/ cleansing
- Toilet habit:
 - Allow time to empty bladder
 - Ensure complete emptying
 - Avoid going to toilet ‘just in case’
- Avoid constipation
- Weight reduction



Voiding regime and bladder training

TABLE 1. SCHEDULING REGIMENS USED AS BEHAVIORAL INTERVENTIONS FOR URINARY INCONTINENCE

Regimen	Interval Between Micturitions	Characteristics	Clinical Base
Bladder training	Increased	Intervals progressively increased; increments may be mandatory or self-adjusted	Mostly used in functionally and mentally intact subjects
Habit retraining	Increased or decreased	The schedule is adjusted to the patient's natural pattern, but patient then tries to increase the interval	Same
Timed voiding	Unchanged or fixed	Typically every two hours	Mostly used in nursing home residents or patients with neurogenic dysfunctions
Prompted voiding	Voidings are prompted and schedules are variable	—	Used in institutionalized subjects with cognitive and mobility impairment

Modified from Hadley et al.⁴

J. A. Fantl, J. F. Wyman, S. W. Harkins and E. C. Hadley.
Bladder Training in the Management of Lower Urinary Tract
Dysfunction in Women : A Review. JAGS 1990 38:329-332

Prompt voiding (PV) principles

Monitoring: This involves asking the incontinent individual, at regular intervals, if he or she needs to use the toilet. The care provider may look for behaviours that the client needs to be toileted (e.g., restlessness, agitation, disrobing), and take the client to the toilet at regular intervals specific to their schedule, rather than routinely every two hours.

Prompting: This process includes prompting the person to use the toilet at regular intervals, and encourages the maintenance of bladder control between prompted voiding sessions.

Praising: This important step is the positive reinforcement of dryness and appropriate toileting, and is the response from the care provider to the individual's success with maintaining bladder control.

Registered Nurses' Association of Ontario (2005).
Promoting Continence Using Prompted Voiding. (Revised).
Toronto, Canada: Registered Nurses' Association of Ontario.

Pelvic floor exercise

+ biofeedback

+ use of vaginal cone

+ use of electrical stimulation

To reinforce the awareness of pelvic muscle group

To retrain pelvic floor muscles

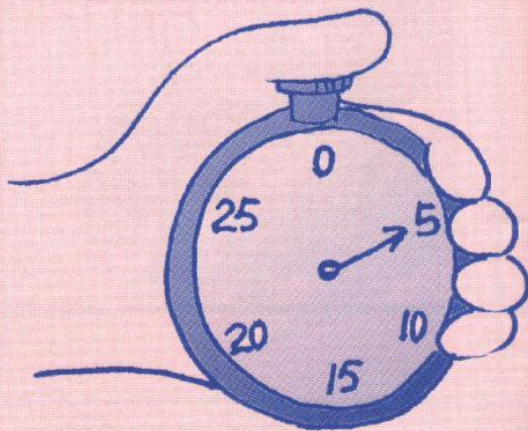
方法：



1. 雙膝分開
坐在椅子上，雙腳
觸地，身體向前



2. 緊縮尿道
及肛門附近
的肌肉，
像阻止
尿液排出
般



3. 維持五秒，然後放鬆



4. 休息五秒
後再重複

此練習可隨時隨地進行！！

運動時姿勢

運動骨盤底肌時可使用以下任何一種姿勢：

坐立

- 坐在椅子前端
- 雙腳分開平放在地上
- 身體靠前，使骨盤底肌肉貼近座位



躺臥

- 舒適地躺在床上
- 雙腿微微分開



站立

- 站立時雙腳微微分開



運動計劃

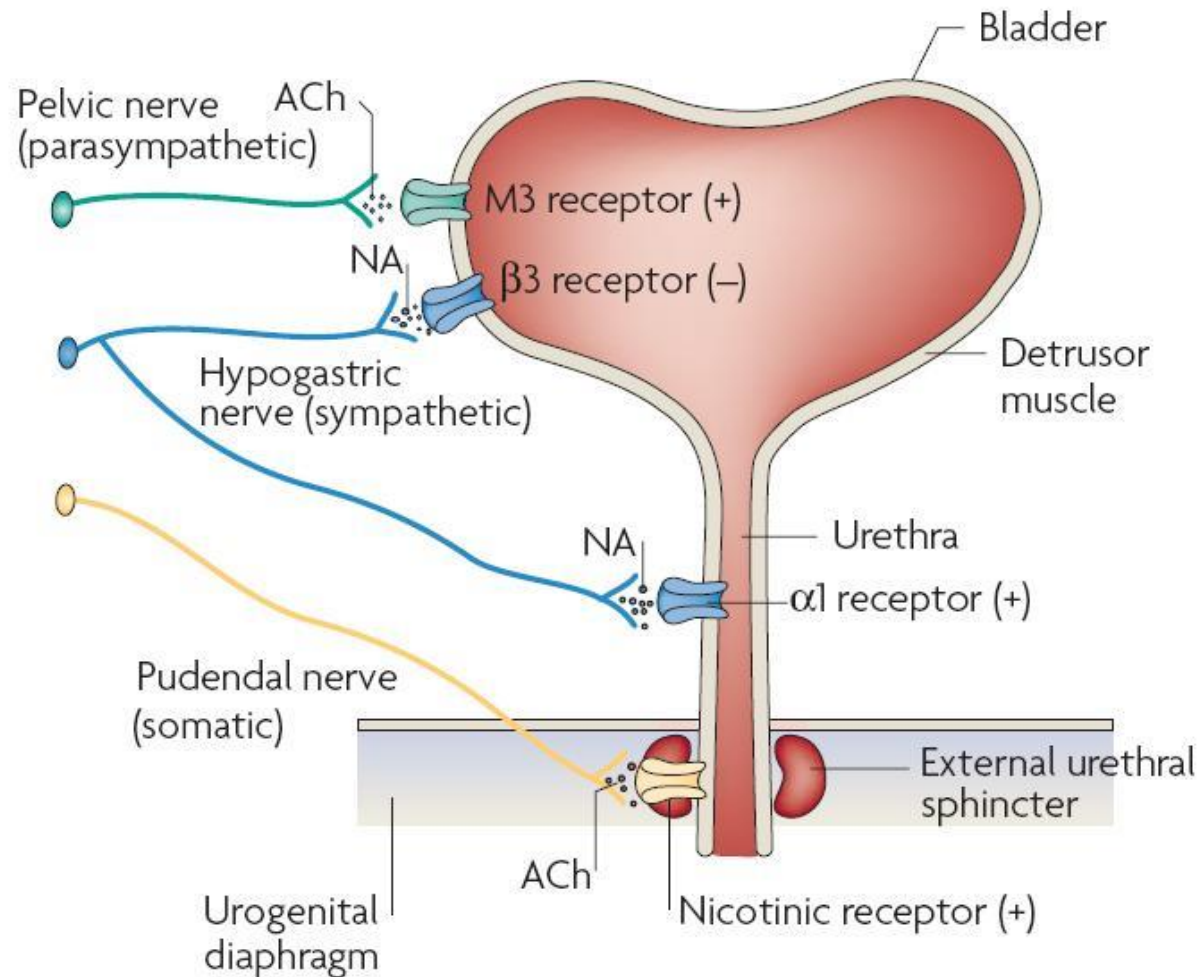
- 每日分三個時段做運動



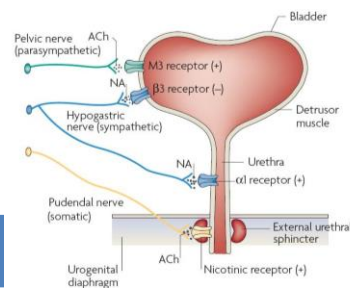
- 每時段做十次


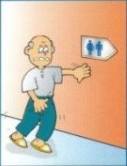
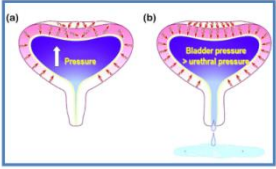



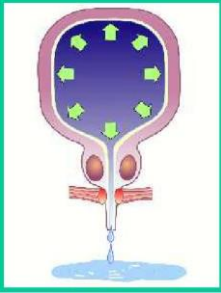


Drugs Use in Urinary Incontinence



Drug treatment of UI



Type	Pathogenesis	Drugs	Side Effect/ Problems
Urge UI  	Detrusor overactivity 	Anti-cholinergic agent Oxybutynin (Ditropan), Propantheline, Tolterodine (Detrositol), Tropsium (Spasmolyt), Solifenacin (Vesicare), Darifenacin (Enablex)	GI- dry mouth, constipation Urological- urine retention Neurological- Delirium, fatigue Ocular- blurred vision Cardiac- arrhythmia
		Botulinum toxin- intradetrusor injections	High rate of urinary retention
Stress UI 	Outlet laxity 	Alpha-adrenergic agonist Phenylpropanolamine, Ephedrine, Pseudoephedrin	Hypertension Increase incident of stroke
		Duloxetine	Nausea
Overflow UI 	Outlet obstruction 	Alpha-adrenergic blocker Prazocin (Minipress), Terazosin (Hytrin), Doxazosin (Cardura), Alfuzosin (Xatral RS/XL), Tamsulosin (Harnal)	Postural hypotension Intraoperative floppy iris syndrome
		5-Alpha reductase inhibitor Finasteride (Proscar), Dutasteride (Avodart)	Slow onset of action Only act on big prostate
	Detrusor underactivity	Cholinergic agonist Distigmine (Ubetid), Bethanechol (Urecholine)	GI- diarrhoea, abdominal pain Urological- Increase intravesicular pressure

Surgery

Surgery for stress incontinence

Urethral bulking agent

Tension free vaginal tap

Colposuspension

Open

Laparoscopic

Sling operation

Artificial sphincter

Surgery

Relieve of outflow obstruction

Surgery for overactive bladder

Bladder reconstruction

Sacral nerve neuromodulation

Catheterization

Intermittent catheterization

Indwelling catheter

Suprapubic catheter

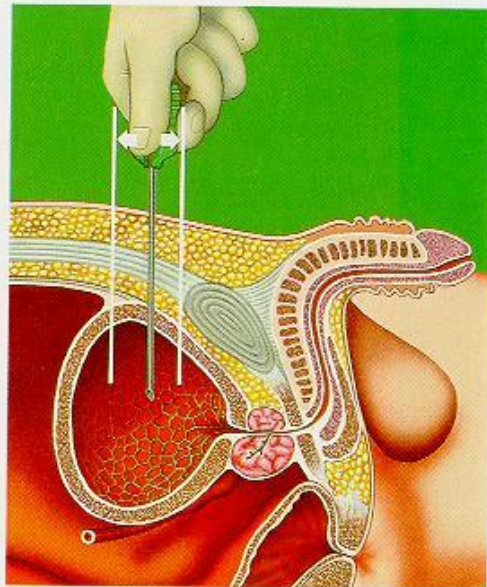


Fig. 12 Suprapubic drainage of the bladder: region of puncture.



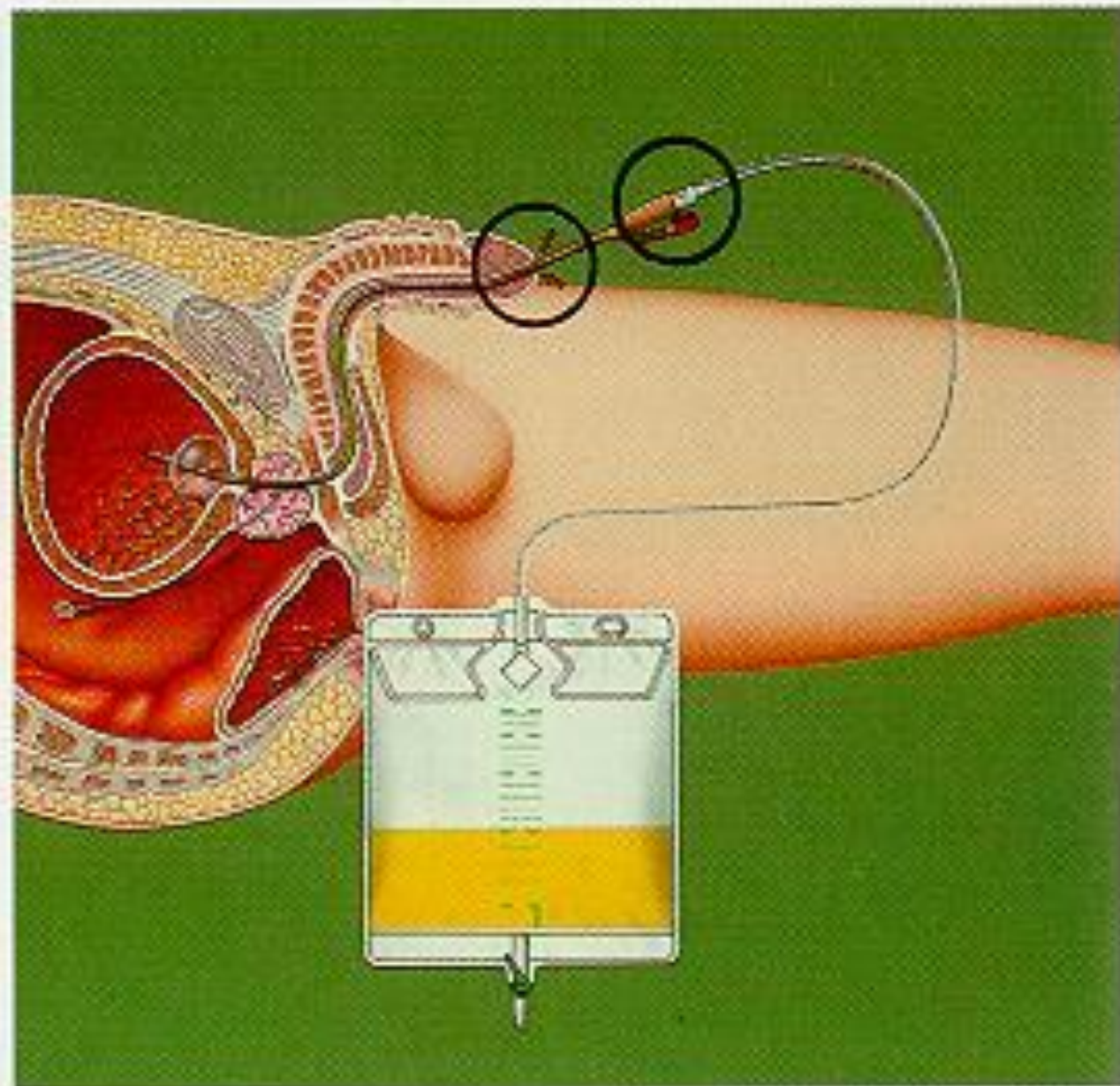


Fig. 37 Potential places of entry for germs in the urinary system.

Indwelling urinary catheter

- Urinary infection
- Local ulceration at urethra and bladder
- Stricture
- Encrustation
- Urine leak
- Discomfort/ pain
- Hinder walking
- ?Bladder cancer

Intermittent catheterization

- Doesn't requires aseptic technique
- Studies mainly on children, adult with spinal cord problems
- When used in the hip surgery post-operative period, satisfactory voiding resumes (on average 4 days) earlier when compared with indwelling catheter Skelly 1992; CMAJ 146:1185-1189

Aids and environment modification

- Toilet nearby
- Urinal
- Commode chair
- Pads
- Special undergarment
- Mattress cover
- Draw sheet
- Condom catheter

Achieving Continence

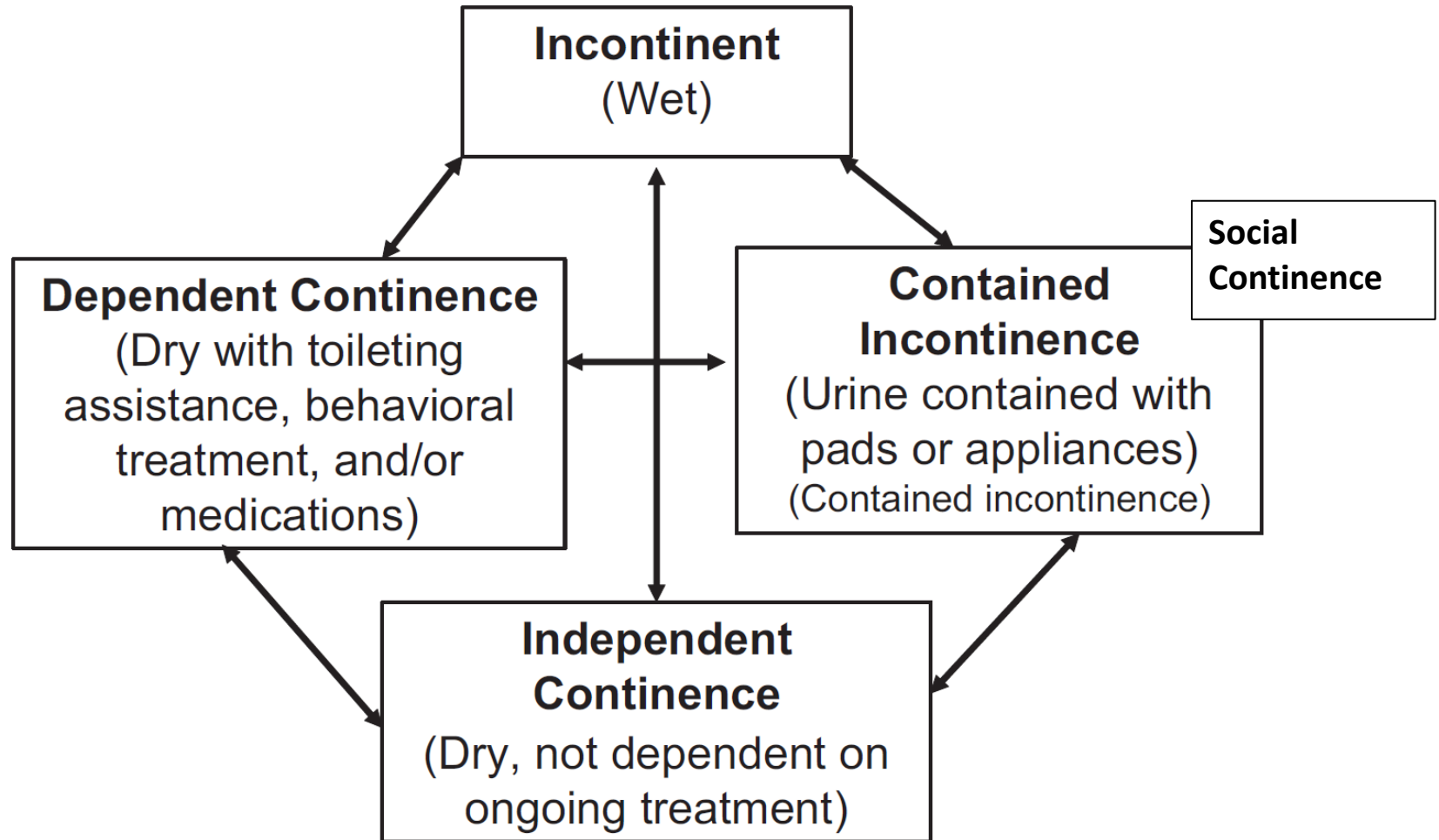
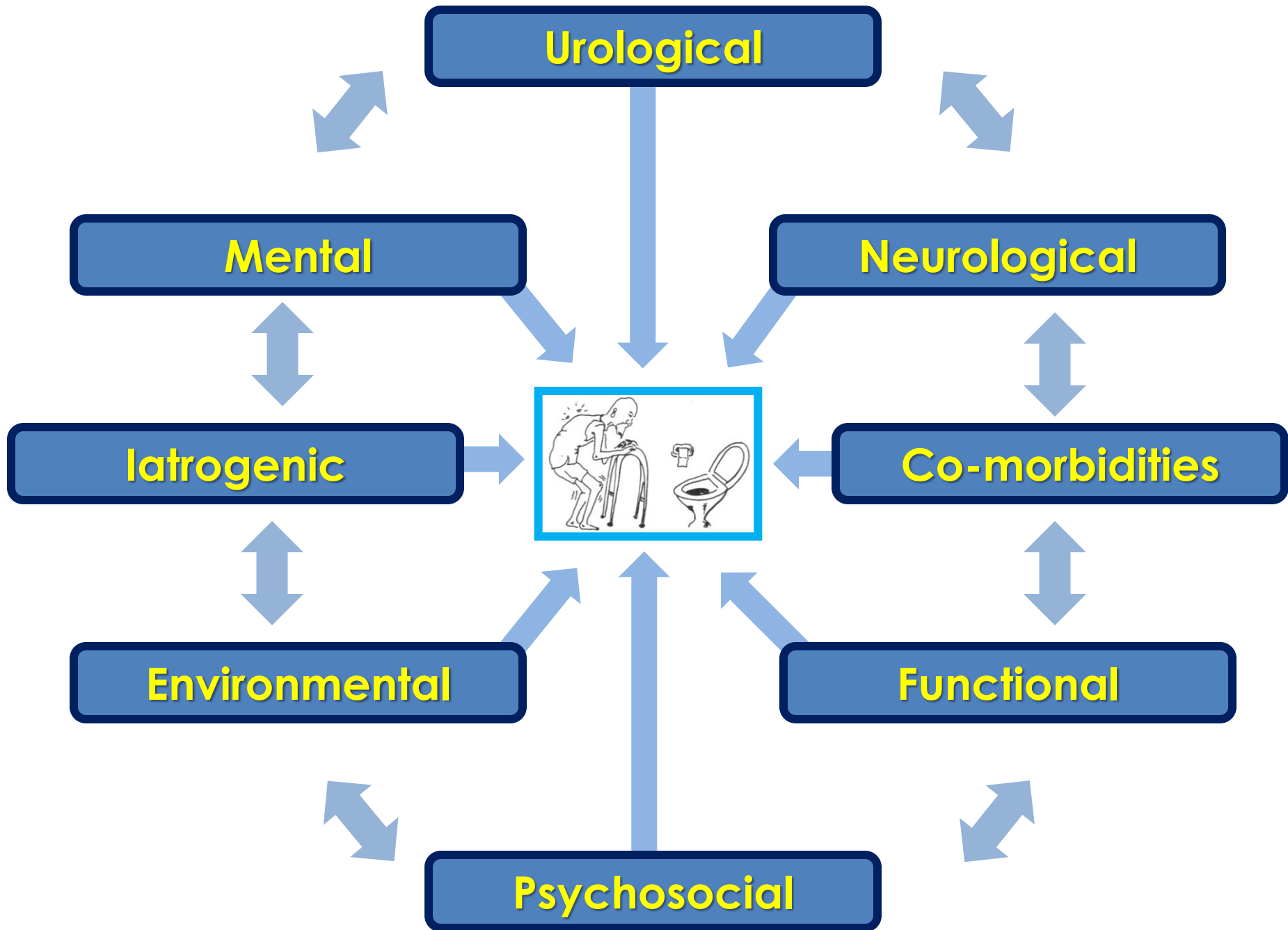


Fig. 1. A paradigm for continence (see text for explanation).



Diapering

- Development of skin irritation and breakdown when diapers are not changed at appropriate intervals
- Cost
- Associating with infancy
- Encourage incontinence by giving the signal to both patient and caregiver that wetting is medically acceptable
- Difficult for an elderly patient who wish to void in removing a diaper

Starer P, Libow LS

Obscuring Urinary Incontinence. Diapering of the elderly

JAGS 1985 33:842-6