Geriatric assessment for elderly patients undergoing urological surgery

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INTRODUCTION

- Older adults are an increasing proportion of surgical care, with greater than 35% of all inpatient operations being performed in adults 65 years or older in the United States.

- This number is higher in subspecialties, such as **urology**, where 65% of all operations are performed in adults aged 65 years and older.

- This proportion is anticipated to increase in the years and decades to come.

INTRODUCTION

- It is essential to understand the unique physiology, risks, and characteristics of older adults to provide optimal urologic care for these patients.

INTRODUCTION

- **Traditionally**, preoperative care for elective surgery is led by a urological department with **anesthetic support** and the decision **'to operate or not?'** is often limited to marking a patient with the label **'fit' or 'unfit' for anesthesia and surgery** without any fitness improvement plan.

- In the clinical setting, **age** remains the **main criterion** in qualification of elderly patients to **urological surgery**. The metrical age is often different to biological age – it sounds like a truism, but the **accuracy of the estimation of biological age** by doctors is poor.

- The routine preoperative assessment of urological patients [based on medical history, physical examination, American Society of Anesthesiology score (ASA), Eastern Cooperative Oncology Group scale (ECOG) and
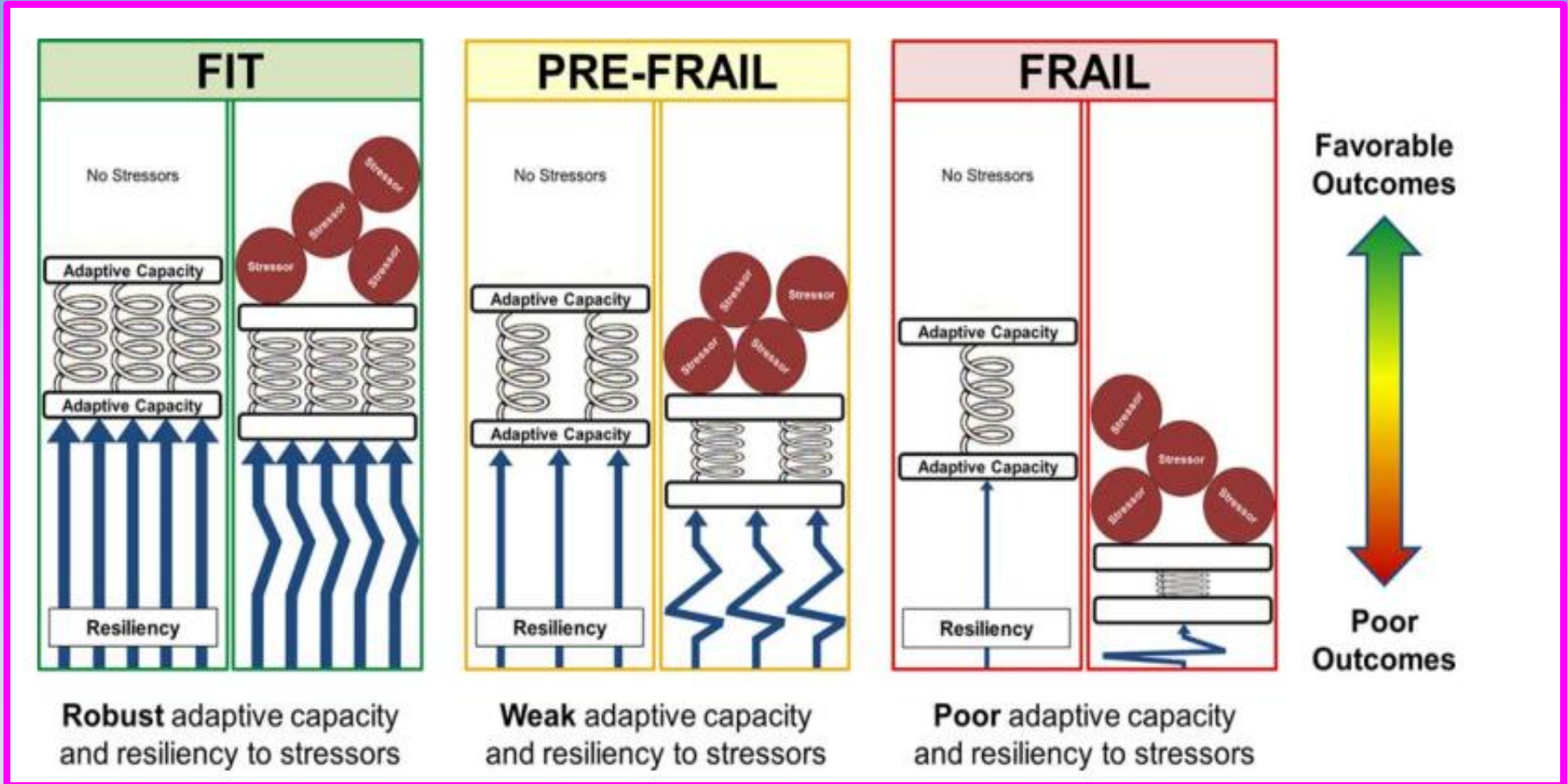
FRAILTY

often **subclinical physiologic, nutritional or cognitive deficits**.

- Comorbidity indexes are based only on **already diagnosed conditions and cannot detect subclinical conditions.**

FRAILTY

FIT — **Robust** adaptive capacity and resiliency to stressors

PRE-FRAIL — **Weak** adaptive capacity and resiliency to stressors

FRAIL — **Poor** adaptive capacity and resiliency to stressors

Favorable Outcomes / Poor Outcomes

FRAILTY

- Frailty predisposes to poor health outcomes, including functional decline, falls, increased risk of hospitalization and death.

- Current recommendations state that all patients older than 70 years and those with significant weight loss (>5%) because of chronic illness should be screened for frailty.

- Which frailty measure is optimal for screening and assessment, however, is not clear.

Tool	Description
Mini-Cog[52]	1. Give patient 3 standardized words 2. Ask patient to draw standardized clock

- Usi[...]d easy way[...]

3. Positive if answer is "Often" (≥3 d) to either question

Weight loss or shrinking[4]	Unintended weight loss ≥10 lbs in previous year

The FRAIL Scale

- F   Fatigue (Do you feel tired most or all the time?)

  R   Resistance (Can you climb 1 flight of stairs without difficulty?)

  A   Ambulation (Can you walk 1 block without assistance?)

  I   Illness (Do you have greater than 5 illnesses?)

  L   Loss of weight (Have you lost > 5% of your usual weight in the last year?)

[a]Scoring: 0 indicates robust; 1-2, prefrail; $\geq$ 3, frail.

The FRAIL Scale

- Because it can be self-administered and does not require a face-to-face examination, this tool can be an efficient and cost-effective way to screen large groups of patients for frailty.

- However, the FRAIL scale is used most frequently in a primary care or community settings, and it has not been studied extensively as a screening tool in patients with cancer.

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CATEGORY	POINTS[a]
Age, y	
<75	0
75-84	1
≥85	3
Self-rated health	
Good, very good, or excellent	0
Fair or poor	1
Physical disability	
1) Stooping, crouching, or kneeling	
2) Lifting or carrying objects as heavy as 10 lbs	
3) Reaching or extending arms above shoulder level	
4) Writing or handling and grasping small objects	
5) Walking one-quarter of a mi	
6) Doing heavy housework	
No. of items done with difficulty:	
0 items	0
1 item	1
≥2 items	2
Functional disability	
1) Shopping for personal items	
2) Managing money	
3) Walking across the room	
4) Doing light housework	
5) Bathing or showering	
No. of items requiring assistance because of health/physical condition	
0 items	0
≥1 items	4

[a]Scoring: ≥ 3 points indicates frail.

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The Vulnerability Elders Survey-13

- The VES-13 is a **practical screening tool** that has been reported as a **reliable marker of frailty** in patients with **cancer**, although it may be inaccurate because of patient overestimation of their own competencies

Phenotypic Frailty

- Phenotypic frailty is one of the most widely used frailty measurement tools in oncology and has been recognized as one of the optimal strategies for assessing elderly patients preoperatively by the American College of Surgeons (ACS)and the American Geriatric Society.

- Phenotypic frailty, also known as physical frailty, is based on the idea that frailty is a result of age-related biological changes across multiple domains, such as nutrition and energy metabolism.

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Phenotypic Frailty

Shrinking (weight loss)	$\geq$10-lb weight loss in past y
Weakness	Grip strength in lowest 20% based on sex and body mass index
Exhaustion	Self-reported exhaustion, fatigue, and/or loss of motivation
Slow gait speed	Time it takes to walk 15 ft at normal speed
Low activity	Kilocalories of expenditure based on self-reported physical activities

[a]Scoring and cutoff points vary, based on the study: 0-1 indicates robust; 1-3, prefrail; 1 to $\geq$ 4, frail (see Kristjansson 2010,[6] Makary 2010,[10] Tan 2012,[11] Fried 2004,[16] Bylow 2011,[21] Courtney-Brooks 2012,[22] Li 2016,[45] and Degesys 2011.[46]

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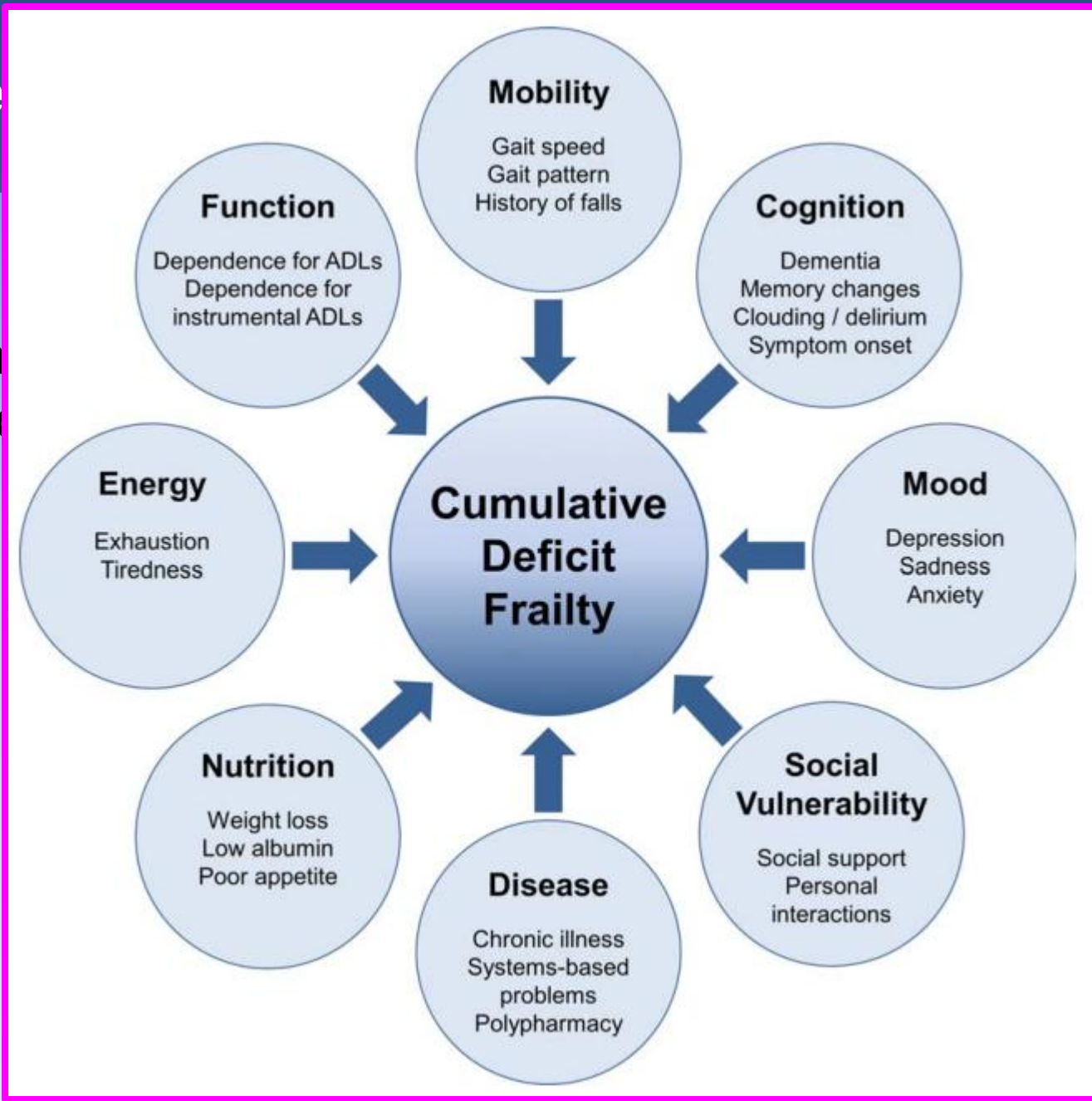
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Nonindependent functional status

History of diabetes mellitus

History of either chronic obstructive pulmonary disease or pneumonia

History of congestive heart failure

History of myocardial infarction

History of percutaneous coronary intervention, cardiac surgery, or angina

Hypertension requiring the use of medications

Peripheral vascular disease or rest pain

Impaired sensorium

Transient ischemic attack or cerebrovascular accident without residual deficit

Cerebrovascular accident with deficit

aModified Frailty Index indicates (total number of variables present)/(total number of variables assessed). Proposed cutoff score: > 0.36 indicates frail.

- One of the **most extensively studied** and used tools in **oncology**, the CGA, is a **multidimensional and multidisciplinary assessment process** to identify and manage elderly patients.

- By using principles similar to those used in the cumulative deficit model, the CGA **focuses on several domains of a patient's medical, psychosocial, and functional capabilities** and, when used as a screening tool (based on the number of abnormal domains), can be **a reliable measure of frailty in patients with cancer**.

The Comprehensive Geriatric Assessment

Table 1. *Components of comprehensive geriatric assessment. Modified from Partridge et al. [24]*

Domain	Items to assess
Somatic assessment	Co-morbidities, polypharmacy, nutritional problems
Functional assessment	Activities of daily living, instrumental activities of daily living, gait, balance
Mental assessment	Cognitive impairments, depression, fears
Social assessment	Family support, friends, visitors, home comfort, facilities, accessibility to care resources, accessibility to transportation, safety

Study	Study time	Number of patients, gender	Inclusion criteria	Surgical procedures	Complications
Dal Moro et al.[19]	ND	78 (14% female)	Age ≥70, major urological procedure (endoscopic or open)	Radical cystectomy, prostatectomy, nephrectomy, TURP, TURBT (>4 cm of tumor size)	According to Clavien–Dindo scale within 3 months
Ellis et al.[15]	2009–2010	141 (62% female) in control group and 172 (55% female) in intervention group	Age ≥65, elective surgery	In urological group: TURBT, TURP, "other renal", general, surgery, orthopedic procedures	Wound problems, infections, alcohol withdrawal, other not specified
Revening et al.[16]	ND	80 (42.5% female)	Age ≥18, elective surgery	61.25% renal/ureteral surgeries, 15% robot-assisted prostatectomies, 8.75% hepatobiliary and pancreas surgeries, 6.25% gastric surgeries, 2.5% robot-assisted cystectomies	According to Clavien–Dindo scale within 30 days, mortality, discharge to a skilled nursing facility
Revening et al.[17]	ND	189 (40.2% female)	Age ≥18, elective surgery	Elective urological (62%) or general surgery, endoscopic procedures excluded	According to Clavien–Dindo scale within 30 days, mortality, discharge to a skilled nursing facility
Revening et al.[7]	ND	351 (39 % female)	Age ≥18, elective surgery	Elective urological (58.4%) or general surgery, endoscopic procedures excluded	According to Clavien–Dindo scale within 30 days, mortality, discharge to a skilled nursing facility
Braude et al.[18]	2007–2014	112 (13% female) in control group, 130 (18% female) in intervention group	Age ≥65, elective or emergency urological surgery	Elective or emergency urological surgery	Length of stay, surgery cancellation rate, unplanned readmission within 30 days, surgical/medical complications, death
Lascano et al.[20]	2005–2013	41,681 (16% females)	Elective urological surgery for malignancy	Elective major urological oncology procedures (cystectomy, prostatectomy, nephrectomy, nephroureterectomy)	Mortality, Clavien–Dindo grade IV
Suskind et al.[21]	2007–2013	95,108, no data for gender	Age ≥40, urological procedure that appears more than 1,000 times in the NSQIP database from 2007 to 2013	21 most common urological procedures	30-day complication rate
Isharwal et al.[22]	2005–2011	42,715, no data for gender	Patients undergoing urological in- or outpatient procedure	Common urological procedures both in- and outpatients	Mortality, Clavien–Dindo grade III, IV and V complications, length of stay, reoperation, readmission within 30 days

Study	Assessment tool	Usefulness of geriatric assessment	Comment
Dal Moro et al.[19]	CCI, ACCI, EFS, PACE	EFS – simple, easy and quick-to-administer PACE – complex and lengthy to administer	Prospective study, usefulness of PACE not clear. No significant relationship between frailty and complications
Ellis et al.[15]	MMSE, ADL, basic investigation	Preoperative assessment led by an intervention (if needed): significantly fewer cancellations, shorter stay, lower complications rate	Prospective study, nurse-led preoperative assessment, 2 groups: control group and intervention group, no data for urological patients separately
Revening et al.[16]	Frailty evaluation using Fried criteria, ASA, ECOG, CCI, standard preoperative assessment	Presence of frailty significantly increases risk of complications	Prospective study, mean age 60 years (range: 19–87 years) – age was not a predictor of complications. Low frailty rate – study population divided into 3 groups: not frail (83.75%), intermediately frail (13.75%) and frail (2.5%); no data for urological patients separately, but most procedures were urological
Revening et al.[17]	Frailty evaluation using Fried criteria, ASA, ECOG, CCI, CES-D (Center for Epidemiologic Studies Depression Scale), MNA (Mini Nutritional Assessment), ADL, standard preoperative assessment	Assessment of frailty is feasible in multidisciplinary patient population. Frailty is a predictor of postoperative complications	Prospective study, mean age 62 years (range: 19–82 years), no data for urological patients separately, but most were urological patients. Age was not a predictor of complications. Higher level of hemoglobin was protective for complications
Revening et al.[7]	Frailty evaluation using Fried criteria, ASA, ECOG, CCI, CES-D, MNA, ADL, standard preoperative assessment	Frailty is a predictor of postoperative complications. Shrinking and grip strength together performed equivalently to the full 5-component frailty criteria. Addition of ASA and serum hemoglobin level to the model of shrinking and grip strength demonstrated the most sensitive and specific predictor of complications	Prospective study, mean age 63 years (range: 19–87 years), no data for urological patients separately, but most were urological patients. Age was a predictor of complications
Braude et al.[18]	POPS CCI	After intervention followed the geriatric assessment: lower cancellation rate, shorter stay, lower complications rate, lower readmission rate	Prospective study. Two phases – the 2nd phase was the improvement phase
Lascano et al.[20]	MFI, CCI, ASA	High frailty index: 4-times higher risk of Clavien–Dindo IV grade complication and 6-times higher risk of 30-day mortality. MFI superior to CCI, but inferior to ASA. MFI associated with ASA was the best complications prediction tool	Retrospective study based on NSQIP database search. Mean age 61 years. Lack of detailed geriatric assessment
Suskind et al.[21]	NSQIP Frailty Index	Complications rate increased with the increase of frailty index regardless of patient's age	Retrospective study based on NSQIP database search. Lack of detailed geriatric assessment. Readmission and blood transfusion treated as complications; 67.8% procedures performed in patients ≥61
Isharwal et al.[22]	RAI using preoperative history, comorbidities, ADL	Complications rate increased with increasing RAI score, but prospective validation of RAI is needed	Retrospective study, no data for age. Lack of detailed geriatric assessment

Geriatric Assessment

- Geriatric assessment (GA) is not only a risk-stratification tool, but is also **beneficial in reducing poor postoperative outcomes** in elderly patients if followed

Prehabiliation

length of stay, institutionalization after discharge and mortality, but **both preoperative assessment and patient-specific intervention** are required to be GA successful.

- The term **'prehabilitation'** describes a process of improving **the functional capacity and the patient's tolerance** to upcoming physiologic stress before elective surgery and was primarily developed for cardiovascular surgery, but currently it is increasingly discussed as being useful in many surgical disciplines, also as a form of **preoperative intervention decreasing frailty in elderly patients.**

- A variety of interventions to reduce frailty may be undertaken, including **strengthening exercises, physical therapy programs, improving of nutrition, and psychological consultations.**

- The optimal protocol of prehabilitation is unknown.

- The literature on prehabilitation in a urological setting is sparse.
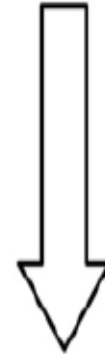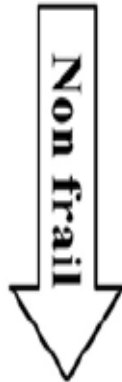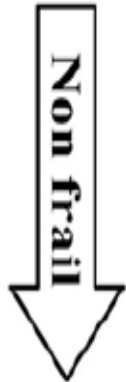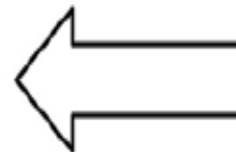
Conclusions

- Although full GA is **time-consuming**, **proper stratification of preoperative frailty** seems to be an **important tool** for urologists in clinical practice.

- Even though there is no optimal protocol as of yet, some form of **prehabilitation** tailored for individual patients may provide enhanced recovery after urological surgery.

- The future goals are to implement the need for proper **preoperative evaluation** of elderly urological patients not only into the **guidelines**, but most importantly, to **daily clinical practice** in a busy urological ward, as well as to adapt the **prehabilitation protocols to specific needs of urological elderly patients**.

- Thus, further research in urological settings is needed, especially in multicenter randomized controlled trials.

Thank you for your attentions