

Adults 75 or older have a higher rate of postoperative complications compared to younger patients, but retain benefits from an ERAS approach, with 75% of older patients achieving ≥3 core ERAS goals.

OBJECTIVES: Due to an aging population, the incidence of degenerative valve disease is increasing. Enhanced Recovery After Surgery (ERAS) programs often favor younger patients, even though older adults are at greater risk of prolonged hospitalization and decreased mobility postoperatively (see **Figure 1**). The principal tenets of ERAS might therefore be especially beneficial to older adults. Minimally Invasive Cardiac Surgery (MICS) is a useful adjunct for ERAS by minimizing surgical trauma and therefore improving pain control and mobilization. Core ERAS goals at our institution are on-table extubation, transfer to a recovery unit instead of the ICU, immediate physiotherapy and early discharge from the hospital

METHODS: 344 consecutive patients underwent MICS and perioperative ERAS at our institution between 01/2021 and 03/2023. Retrospective cohort analysis was conducted and patients were divided by age into younger adults (YA, < 75 years) and older adults (OA, ≥ 75 years). Outcomes of interest were MACE, bleeding requiring reexploration, postoperative complications (acute kidney injury, delirium, postoperative atrial fibrillation), hospital length of stay and rehospitalization within three months. Additionally, the degree of ERAS achievement out of five core ERAS goals was determined, these are listed in **Figure 2**. Statistical testing was performed using Mann-Whitney-U test and Fisher's Exact test.

RESULTS: Patients received MICS via partial sternotomy (n = 139) or anterolateral minithoracotomy (n = 205) for valve or aortic surgery. For operative details see **Table 2**. Demographics are presented in **Table 1**. See **Table 3 and 4** for outcomes. Significant postoperative differences occurred for the incidence of acute kidney injury, delirium and length of hospitalization. There was no significant difference in the frequency of MACE or bleeding requiring reexploration.

LIMITATIONS: Retrospective observational data of a single center. Due to the small cohort of OA, matching of the cohorts was not possible.

DISCUSSION: Older adults are at risk for increased morbidity and long-term disability following hospitalization, and especially following surgery (1, 2). However, due to demographic change, cardiac surgical populations are aging. Programs to reduce immobility and aid functional recovery following cardiac surgery in older patients have been shown to limit the negative impact major surgery can have on mobility and independence (3, 4). The aim of our analysis was to investigate the impact a Fast-Track ERAS program had on patients above the age of 75 years. The significant differences in baseline characteristics are likely the results of analysis by age, thereby resulting in a higher incidence of cardiovascular comorbidities. Especially notable is a markedly higher proportion of patients with poor renal function prior to surgery, which could explain the higher incidence of acute kidney injury postoperatively. To better appreciate the impact of the added ERAS interventions (including on-table extubation, de-escalation of ICU care and immediate physiotherapy), a control group would be beneficial. The longer hospitalization for OA appears proportional: For example, in registry data of patients with median age of 71 receiving aortic valve replacement median hospitalization was longer than in our subgroup (10 days, IQR 8 – 11) (5).

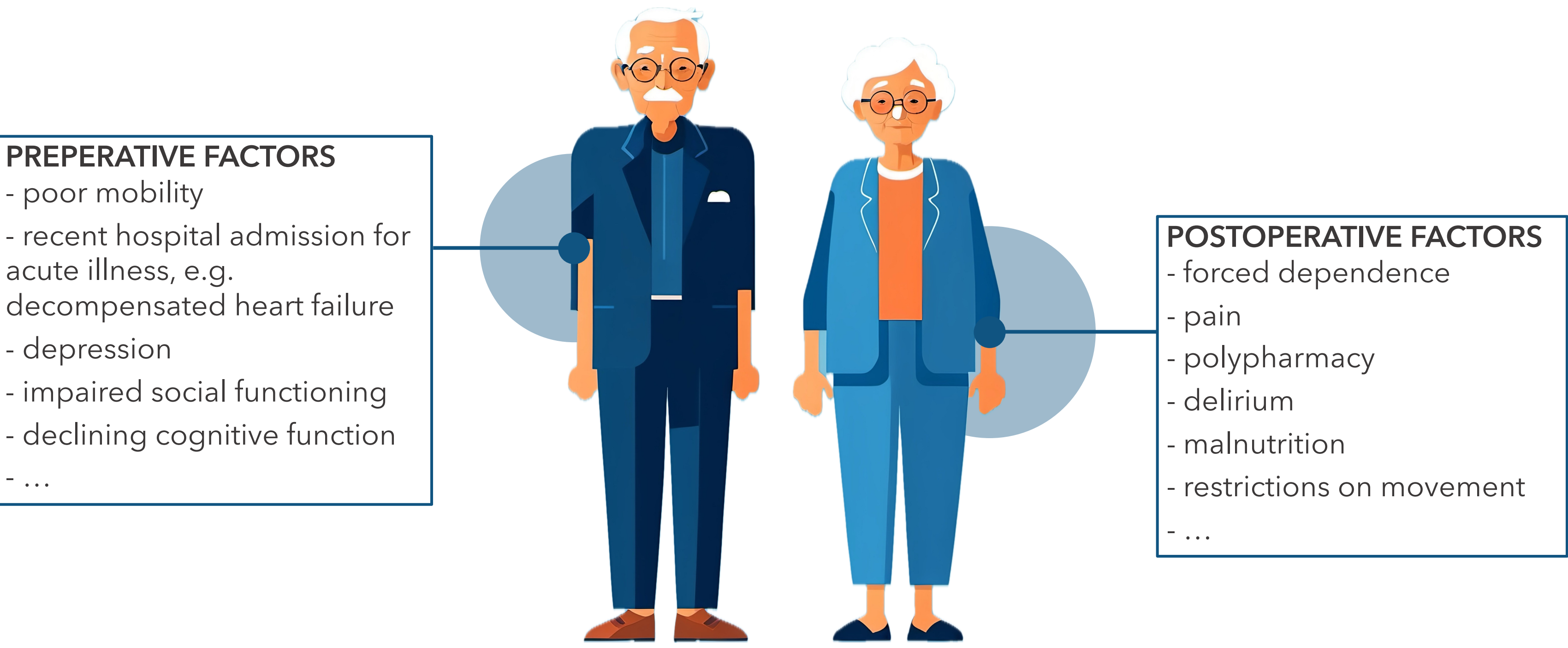


Fig. 1: factors in ACQUIRED DISABILITY AFTER SURGERY in ELDERLY PATIENTS

	OLDER n = 47	YOUNGER n = 297	p-value
Age (years)	78 (76 – 81)	61 (53 – 68)	/
Sex, female	25 (54%)	95 (32%)	< 0.01
BMI (kg/m²)	25 (22 – 28)	26 (23 – 29)	0.25
Atrial fibrillation/flutter	28 (60%)	64 (22%)	< 0.01
Coronary artery disease	18 (38%)	55 (19%)	< 0.01
LVEF (%)	60 (53 – 60)	60 (55 – 60)	0.77
Diabetes mellitus	7 (15%)	26 (9%)	0.19
Lung disease	5 (11%)	32 (11%)	0.99
Severe renal impairment*	23 (49%)	22 (7%)	< 0.01
Stroke	6 (13%)	23 (8%)	0.26
EuroSCORE II (%)	1.9 (1.5 – 3.4)	1.0 (0.7 – 1.4)	< 0.01
STS PROM Score (%)	1.4 (1.0 – 2.0)	0.7 (0.4 – 1.1)	< 0.01

Table 1: Demographic data of the observed patients.
Data presented as median (IQR) or absolute and relative frequencies. *Creatinine Clearance < 55 ml/min, no dialysis patients in this cohort.

ACCESS	OPERATION	OLDER n = 47	YOUNGER n = 297
RIGHT LATERAL MINI-THORACOTOMY	Mitral valve repair/replacement	33 (70%)	149 (50%)
	ASD repair and Myxoma resection	-	10 (3%)
	Tricuspid repair/replacement	1 (2%)	1 (0.3%)
	Combined MV/TV and MV/ASD	-	9 (3%)
PARTIAL UPPER STERNOTOMY	Aortic valve replacement/repair	8 (17%)	91 (31%)
	David/Bentall procedure	-	18 (6%)
	Ascending aortic aneurysm repair	3 (6%)	4 (1%)
	Combined aortic valve and AAA repair	2 (4%)	15 (5%)

Table 2: Operative data of the observed patients.
Data presented as absolute and relative frequencies.

	OLDER n = 47	YOUNGER n = 297	p-value
MACE*	2 (4%)	3 (0.7%)	0.14
Bleeding requiring reexploration	3 (6%)	6 (2%)	0.11
Acute kidney injury	7 (15%)	13 (4%)	< 0.01
Postoperative atrial fibrillation	17 (36%)	79 (27%)	0.16
Delirium	7 (15%)	8 (3%)	< 0.01
Hospital length of stay (days)	8 (5 – 11)	6 (5 – 8)	< 0.01
Rehospitalization within 3 months	6 (13%)	20 (7%)	0.13
ERAS achievement			
Success	35 (75%)	250 (84%)	0.20
Partial	7 (15%)	24 (8%)	0.16
Failure	5 (11%)	23 (8%)	0.77

Table 3: Outcomes.
Data presented as absolute and relative frequencies. *death, myocardial infarction requiring revascularization, stroke

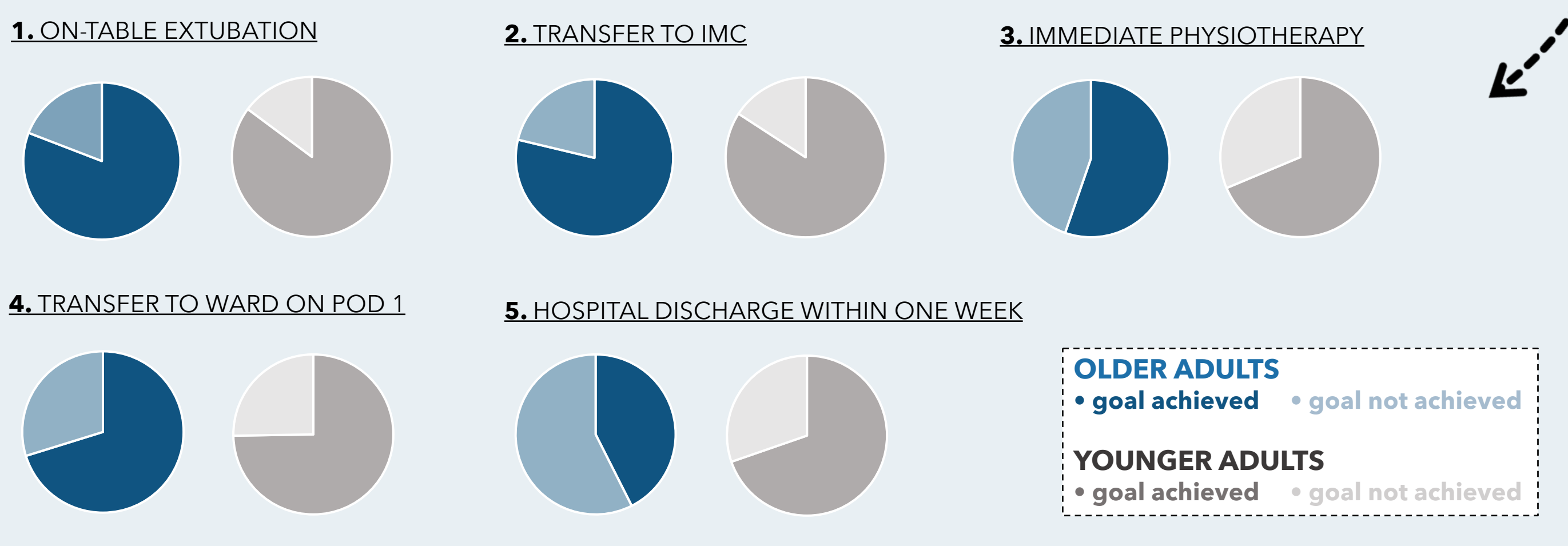


Figure 2: Elements of ERAS achievement. One point is awarded for every achieved goal for a maximum of five points. ≥ 3 points: success, 1-2 points: partial, 0 points: failure.
Data presented as relative frequencies of the achieved goal.

