

Which patients need prehabilitation in HPB surgery?

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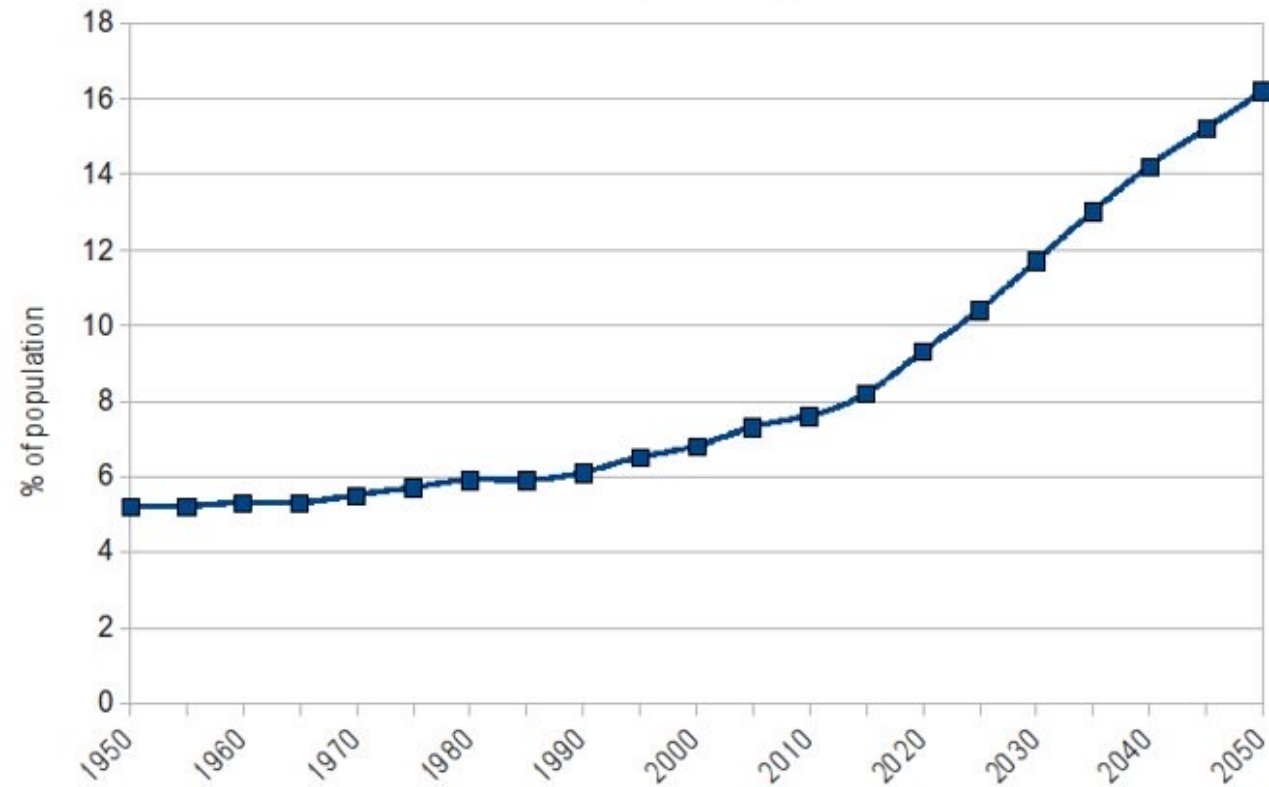
#Gastprofessor UHasselt



Problem

Percentage of the World Population Over 65, 1950-2050

Source: UN World Population Prospect, 2008



Pancreatic cancer

- Average age at presentation = 71 years
- <1% of patients is < 50 years
- Most guidelines and trials among young and fit patients
 - ACORD-11 trial (FOLFIRINOX) excluded patients >75¹
 - MPACT trial (gemcitabin + nab – paclitaxel): 92% of patients with Karnofsky performance score > 80²



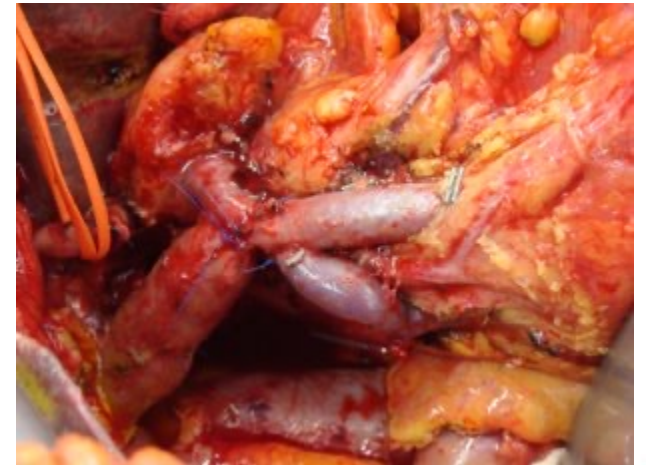
¹Conroy T et al. NEJM 2011

²Con Hoff D et al. NEJM 2013



Problem

- Age is a significant predictor preoperative evaluation and patients selection for surgery regardless of comorbidities¹
 - <70yr: 39% surgical resection vs >85yr: 5%
- Higher age impacts pancreatic surgery (increased 30 & 90 day mortality)²
 - Comorbidity
 - Cognitive disorders (dementia, delirium)
 - Physical limitations (walking speed, grip strength)
 - Social isolation



¹Riall TS et al. J.AM.Geriatr.Soc. 2011

²Van der Geest et al. Acta Oncol 2016

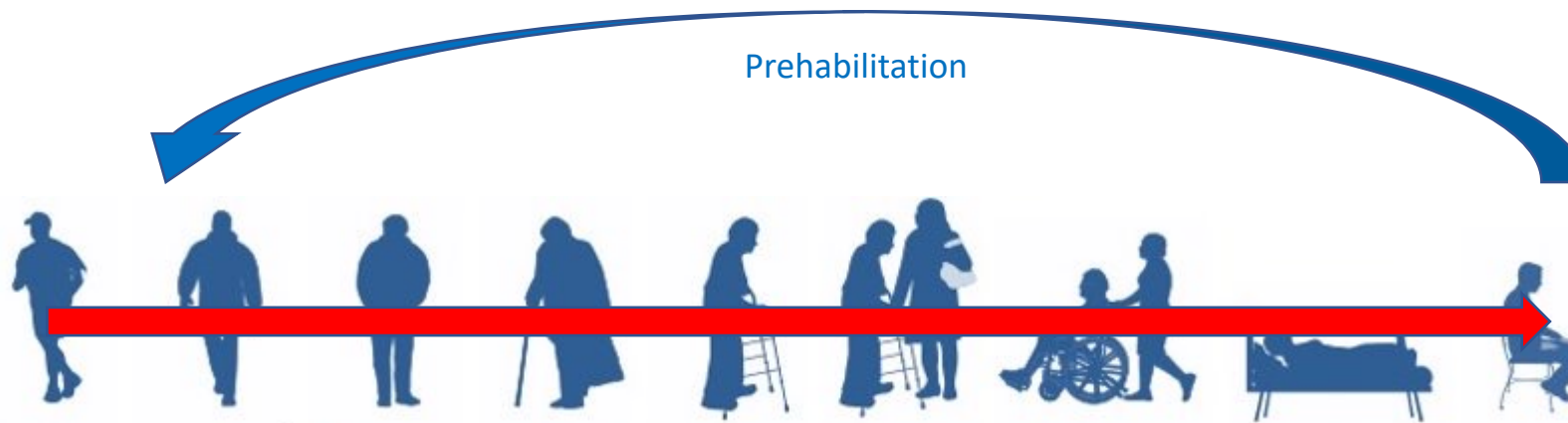
Frailty

- Increased vulnerability resulting from aging-associated decline in reserve and function across physiologic systems
- Comprised coping everyday/acute stressors
- 3 out of 5:
 - Low grip strength
 - Low energy
 - Slowed walking speed
 - Low physical activity
 - Unintentional weight loss



Frailty

- Dynamic process associated with aging
- Influenced by prehabilitation



Failure to rescue

- **Failure to rescue (FTR)** = inability to avoid patient death after a major complication within 90 days after surgery
- **Frailty** → FTR
- **Increased FTR** correlated to surgical volume
 - Teaching status OR 0.66 (0.53-0.82)
 - Hospital capacity >200 beds OR 0.65 (0.48-0.87)
 - Occupied beds > 50% OR 0.56 (0.32-0.98)
 - ↑ nurse to patient ratio OR 0.94 (0.52-0.81)
 - State of the art hospital technology OR 6.65 (0.52-0.81)

Silber et al. Med Care 1992

Arlow et al. Ann Surg Inn and Research 2014

Ghaferi et al. JACS 2010

El Amrani et al. Ann Surg 2018

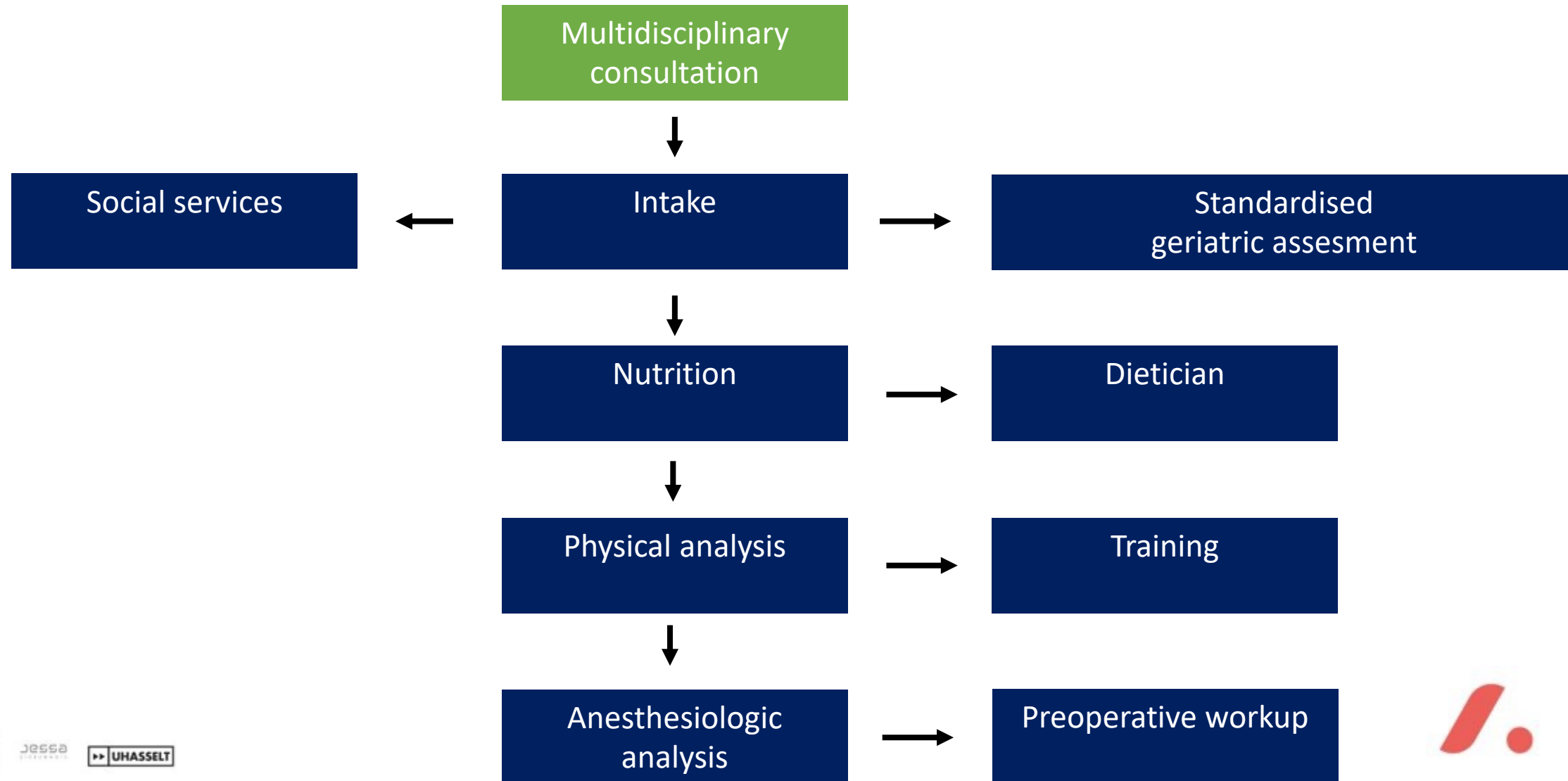


Preoperative interventions

- **2017: systematic review**
 - 11 studies on interventions in frail surgical patients
 - Nutritional support
 - Iron supplementation
 - Sustainability at home
 - Supervised prehabilitation program
 - Geriatric interventions (polypharmacy)
- Strong association between frailty and adverse outcomes
- Few interventions have been tested



Selection for prehabilitation in pancreatic surgery



Nutrition

- Bodyweight
- Length
- BMI
- Abdominal circumference
- Bio-electrical impedance measurement
- Nutritional Risk screening (NRS)

- **Counseling**

- NRS >3 = diet
- 2-4 weeks
- Oral/enteral/parenteral
- Weekly evaluation
- Protein 1.5-1.8g/kg

	Nutritional status	Disease/surgery severity	Age
0	Normal	Normal	<70
1	Weight loss >5%/3 months or Food intake <75%	Includes chronic disease, hip fracture, cancer, minor surgery	≥70
2	Weight loss >5%/2 months or Food intake <50% or BMI 18.5-20.5	Includes major surgery, myocardial infarction, pneumonia, lymphoma, leukemia	
3	Weight loss >5%/1 month (or >15%/3 months) or Food intake <25% or BMI <18.5	Includes head trauma, transplantation, intensive care patients	

BMI: body mass index. The Nutritional Risk Score (NRS) is calculated by adding 3 different components: nutritional status + disease/surgery severity + age. Only the more severe contribution to the overall score of each of these 3 elements is considered in the overall score.



Physical analysis

Grip strength

	Male	Female
30-50yrs	51.6kg	31.4kg
50-70yrs	46.2kg	28.7kg
70-80yrs	39.1kg	23.5kg

5 times sit-to-stand: <14sec

6 min walking test: >400m



Anesthesiologic analysis

- **Blood examination:** FE + transferrin
- **Iron deficiency anemia (IDA):**
 - IV iron suppletion Injectafer 500-1500mg 1 wk preop
- **Goals:**
 - Increase hemoglobin
 - Decrease intraoperative transfusion
 - Decrease hospital length of stay



Current results

- Pancreatic convention since 2020
 - N=60-70/yr
- 176 patients preoperative assessed for prehabilitation

	2020	2021	2022
2wk	N=12	N=35	N=9
4wk	N=13	N=20	N=3
Unfit	N=0	N=1	N=0

- Gradual decrease in 90 day mortality



Results

Patient VJ, 27/12/1969

	Intake	2wk	Conclusion
Grip strength	30 / 30kg	40 / 42kg	+
5 times sit-to-stand	32sec	12sec	+
6 min walking test	25m	30m	=



Conclusion

- \uparrow age = \uparrow frail patients = \uparrow FTR
- Prehabilitation: \uparrow preoperative condition, \downarrow complications
- Analysis current results: Association prehabilitation & postoperative complications/mortality?
- Further studies needed

