

### Appendix 1. List of participating centers across The Netherlands

Albert Schweitzer Hospital, Dordrecht; Amsterdam University Hospital, Amsterdam; Bernhoven Hospital, Uden, Diakonessenhuis, Utrecht; Groene Hart Hospital, Gouda; Jeroen Bosch Hospital, 's Hertogenbosch; Spaarne Gasthuis, Hoofddorp, Haarlem; Maasstad Hospital, Rotterdam, St Antonius Hospital, Nieuwegein; St Elisabeth Hospital, Tilburg; Franciscus Gasthuis & Vlietland hospital, Rotterdam, Schiedam; Ter Gooi Hospital, Hilversum; University Medical Center Utrecht, Utrecht; Zaan Medical Center, Zaandam; Gelderse Vallei Hospital, Ede.

### Appendix 2. Frailty screening measurements as used in the study

<b>Fried Frailty Index</b>			
Components	Measurements	Description/cut-off	Score
Malnutrition	Unintentional weight loss	4,5 kg or $\geq$ 5%	Yes=1
Physical performance	Slowness	$\geq$ 6 seconds/4 meters	Yes=1
	Low level of physical activity	Last 3 months $\geq$ 4 hours sedative lifestyle, no activities like cycling or running	Yes=1
	Grip strength (kg)	Male: < 70 year: < 28.2; $\geq$ 70 year: < 21.3 Female: < 70 year: < 15.4; $\geq$ 70 year: < 14.7	Yes=1
General health	Exhaustion	Exhaustion (self-report)	Yes=1
Frailty: $\geq$ 3 points			

<b>Groningen Frailty Indicator</b>		
Components	Description/cut-off	Score
Physical performance	<i>Are you able to carry out these tasks single-handedly and without any help?</i> (The use of help resources, such as a walking stick, walking frame, or wheelchair, is considered to be independent.) 1. Shopping 2. Walking around outside (around the house or to the neighbours) 3. Dressing and undressing 4. Going to the toilet	Yes = 0, No = 1
General health	5. <i>What mark do you give yourself for physical fitness?</i> (scale 0 to 10)	0-6 = 1, 7-10 = 0
Neurosensory deficits	6. <i>Do you experience problems in daily life because of poor vision?</i> 7. <i>Do you experience problems in daily life because of being hard of hearing?</i>	Yes = 1, No = 0
Malnutrition	8. <i>During the past 6 months have you lost a lot of weight unwillingly?</i> (3 kg in 1 month or 6 kg in 2 months)	Yes = 1, No = 0
Polypharmacy	9. <i>Do you take 4 or more different types of medicine?</i>	Yes = 1, No = 0
Cognition	10. <i>Do you have any complaints about your memory?</i>	No = 0 Sometimes = 0 Yes = 1
Mood, psychosocial	11. <i>Do you sometimes experience emptiness around you?</i>	No = 0
	12. <i>Do you sometimes miss people around you?</i>	Sometimes = 1
	13. <i>Do you sometimes feel abandoned?</i>	Yes = 1
	14. <i>In the past 4 weeks did you feel downhearted or sad?</i> 15. <i>In the past 4 weeks did you feel nervous or anxious?</i>	
Frailty: $\geq$ 4 points		

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<b>VMS Vulnerable elderly</b>		
Components	Description/cut-off	Score
Delirium*	1. Do you have memory problems? 2. In the last 24 hours did you need help with daily self-care? 3. During previous hospitalization or illness were there periods that you were confused?	Yes = 1 Impairment domain: $\geq 1$
Falls	4. In the last 6 months did you fall?	Yes = 1 Impairment: $\geq 1$
Physical impairment	Do you need help with: 5. Bathing 6. Dressing 7. Toileting 8. Transferring from/to chair 9. Feeding 10. Do you use incontinence material?	Yes = 1 Impairment: $\geq 2$
Malnutrition	11. Have you lost weight unintentionally? More than 3 kg in the last month More than 6 kg in the last 6 months 12. Did you experience a decreased appetite over the last month? 13. Did you use supplemental drinks or tube feeding over the last month?	Yes = 2 Yes = 3 Yes = 1 Yes = 1 Impairment: $\geq 2$
Frailty: Impairment $\geq 1$ domain		

\* Caregivers were asked to fill in a form with additional questionnaires on cognition and behaviour of the patient (neuropsychiatric inventory NPI). Impairment in the NPI which was used to calculate the delirium score of the VMS score.

<b>ISAR-HP</b>		
Components	Description/cut-off	Score
IADL	Before hospital admission, did you need assistance for IADL (e.g., assistance in housekeeping, preparing meals, shopping, etc.) on a regular basis? Do you need assistance for traveling?	Yes=1 Yes=1
Mobility	Do you use a walking device (e.g., a cane, walking frame, crutches, etc.)?	Yes=2
Other	Did you pursue education after age 14?	Yes=1
Frailty: $\geq 2$ points		

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<b>G8</b>		
Components	Description/cut-off	Score
Malnutrition	Has food intake declined over the past 3 months due to loss of appetite, digestive problems, chewing, or swallowing difficulties?	0 = Severe decrease in food intake 1 = Moderate decrease in food intake 2 = No decrease in food intake
	Weight loss during the last 3 months?	0 = Weight loss >3 kg 1 = Does not know 2 = Weight loss between 1 and 3 kg 3 = No weight loss
	Body mass index (BMI)? (weight in kilograms) / (height in square metres)	0 = BMI <19 1 = BMI 19 to <21 2 = BMI 21 to <23 3 = BMI ≥23
Mobility	Mobility?	0 = Bed or chair bound 1 = Able to get out of bed/chair but does not go out 2 = Goes out
Cognition/mood	Neuropsychological problems?	0 = Severe dementia or depression 1 = Mild dementia 2 = No psychological problems
Polypharmacy	Takes more than three prescription drugs per day?	0 = Yes 1 = No
General health	In comparison with other people of the same age, how does the patient consider his/her health status?	0.0 = Not as good 0.5 = Does not know 1.0 = As good 2.0 = Better
Age	Age	0 = >85 1 = 80–85 2 = <80
Total score 17, Frailty: ≤ 14		

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**Appendix 3. 2x2 table frailty screening modality and GA**

Frailty screening modality		GA score (n)			Total
Test	Score	-	+	<i>total</i>	
Fried Frailty Index	-	23	33	56	108
	+	6	46	52	
	<i>total</i>	29	79		
Groningen Frailty Indicator	-	18	22	40	123
	+	16	67	83	
	<i>total</i>	34	89		
G8	-	8	7	15	123
	+	26	82	108	
	<i>total</i>	34	89		
ISAR-HP	-	24	22	46	114
	+	6	62	68	
	<i>total</i>	30	84		
VMS-vulnerable elderly	-	9	6	15	83
	+	16	52	68	
	<i>total</i>	25	58		
Frailty Question	-	17	21	38	103
	+	10	55	65	
	<i>total</i>	27	76		

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#### Appendix 4. Discriminating abilities

Table 1. Prevalence and discriminating test characteristics frailty measurements– GA minimum of 3 impairments								
Screening modality	Cut-off value	Prevalence of frailty	Sensitivity	Specificity	PPV	NPV	LHR+	LHR-
Fried Frailty Index	≥3	48%	59% (48-70%)	85% (66-96%)	92% (83-97%)	41% (34-49%)	4.00 (1.59-10.06)	0.48 (0.35-0.65)
Groningen Frailty Indicator	≥4	67%	74% (64-83%)	52% (33-70%)	82% (76-87%)	40% (29-52%)	1.53 (1.04-2.24)	0.51 (0.31-0.82)
G8	≤ 14	88%	92% (85-97%)	26% (12-45%)	79% (75-82%)	53% (31-74%)	1.25 (1.00-1.55)	0.29 (0.12-0.75)
ISAR-HP	≥2	60%	72% (61-81%)	79% (59-92%)	91% (83-96%)	48% (38-58%)	3.36 (1.64-6.92)	0.36 (0.24-0.58)
VMS-vulnerable elderly	≥2	82%	90% (79-69%)	38% (19-59%)	78% (72-83%)	60% (37-79%)	1.44 (1.05-1.98)	0.27 (0.11-0.68)
Frailty Question (Q)	≥5	63%	72% (61-82%)	67% (45-84%)	88% (80-93%)	42% (32-53%)	2.16 (1.21-3.87)	0.42 (0.27-0.66)
Frailty Question: clinical judgment of the nephrologist								
Sens sensitivity, spec specificity, PPV positive predictive value, NPV negative predictive value, LHR+ positive likelihood ratio, LHR- negative likelihood ratio								

#### Frailty Question compared to the other tests

Table 2. Prevalence and discriminating test characteristics frailty measurements								
Screening modality	Cut-off value	Prevalence of frailty	Sensitivity	Specificity	PPV	NPV	LHR+	LHR-
Fried Frailty Index	≥3	51%	64% (50-76%)	71% (53-85%)	78% (67-86%)	55% (44-64%)	2.16 (1.24-3.78)	0.52 (0.34-0.78)
GFI	≥4	69%	69% (57-80%)	32% (18-49%)	63% (57-69%)	38% (25-52%)	1.01 (0.77-1.35)	0.97 (0.54-1.76)
G8	≤ 14	87%	91% (81-97%)	18% (8-34%)	66% (62-69%)	54% (30-76%)	1.11 (0.94-1.32)	0.50 (0.18-1.38)
ISAR-HP	≥2	63%	68% (55-80%)	46% (29-63%)	68% (60-75%)	46% (33-59%)	1.26 (0.89-1.79)	0.69 (0.41-1.16)
VMS	≥2	84%	83% (68-93%)	15% (4-35%)	61% (55-66%)	36% (16-64%)	0.98 (0.79-1.21)	1.11 (0.36-3.42)
Frailty Question: clinical judgment of the nephrologist								
Sens sensitivity, spec specificity, PPV positive predictive value, NPV negative predictive value								

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**Appendix 4. Discriminating abilities (cont.)**

**Frailty Question and one of the other tests compared to the GA**

Table 3. Prevalence and discriminating test characteristics frailty measurements								
Screening modality	Cut-off value	Prevalence of frailty	Sensitivity	Specificity	PPV	NPV	LHR+	LHR-
Q & Fried Frailty Index	≥5 or ≥3	67%	78% (68-86%)	64% (45-81%)	87% (80-91%)	50% (39-61%)	2.20 (1.35-3.84)	0.34 (0.21-0.54)
Q & GFI	≥5 or ≥4	84%	91% (84-96%)	39% (20-58%)	82% (77-85%)	60% (40-77%)	1.49 (1.12-1.89)	0.22 (0.10-0.50)
Q & G8	≥5 or ≤ 14	93%	97% (91-99%)	19% (7-37%)	75% (66-82%)	78% (75-81%)	1.20 (1.01-1.43)	0.17 (0.04-0.63)
Q & ISAR-HP	≥5 or ≥2	75%	87% (78-93%)	58% (39-75%)	86% (80-90%)	60% (45-73%)	2.07 (1.36-3.16)	0.23 (0.12-0.42)
Q & VMS	≥5 or ≥2	83%	87% (78-93%)	28% (13-47%)	79% (76-83%)	40% (23-60%)	1.20 (0.94-1.52)	0.48 (0.22-1.07)

*Frailty Question: clinical judgment of the nephrologist*  
*Sens sensitivity, spec specificity, PPV positive predictive value, NPV negative predictive value, LHR+ positive likelihood ratio, LHR- negative likelihood ratio*

Table 4. Prevalence and discriminating test characteristics frailty measurements– GA minimum of 3 impairments								
Screening modality	Cut-off value	Prevalence of frailty	Sensitivity	Specificity	PPV	NPV	LHR+	LHR-
Fried Frailty Index	≥3	48%	71% (56-83%)	70% (57-81%)	65% (55-74%)	75% (65-83%)	2.36 (1.54-3.62)	0.42 (0.26-0.67)
Groningen Frailty Indicator	≥4	67%	87% (75-95%)	47% (36-60%)	57% (50-63%)	83% (69-91%)	1.67 (1.30-2.14)	0.27 (0.13-0.56)
G8	≤ 14	88%	94% (85-99%)	17% (9-28%)	47% (44-50%)	80% (54-93%)	1.14 (1.01-1.30)	0.32 (0.09-1.08)
ISAR-HP	≥2	60%	86% (74-94%)	62% (49-74%)	65% (56-72%)	85% (73-92%)	2.26 (1.62-3.16)	0.22 (0.11-0.45)
VMS-vulnerable elderly	≥2	82%	100% (90-100%)	32% (19-47%)	53% (48-58%)	100% (-)	1.47 (1.21-1.79)	-
Frailty Question (Q)	≥5	63%	76% (61-87%)	47% (34-61%)	54% (46-60%)	71% (58-81%)	1.45 (1.08-1.94)	0.50 (0.28-0.90)

*Frailty Question: clinical judgment of the nephrologist*  
*Sens sensitivity, spec specificity, PPV positive predictive value, NPV negative predictive value, , LHR+ positive likelihood ratio, LHR- negative likelihood ratio*