

Geriatric oncology

Moving the needle towards an evidence-based precision approach for older adults with cancer

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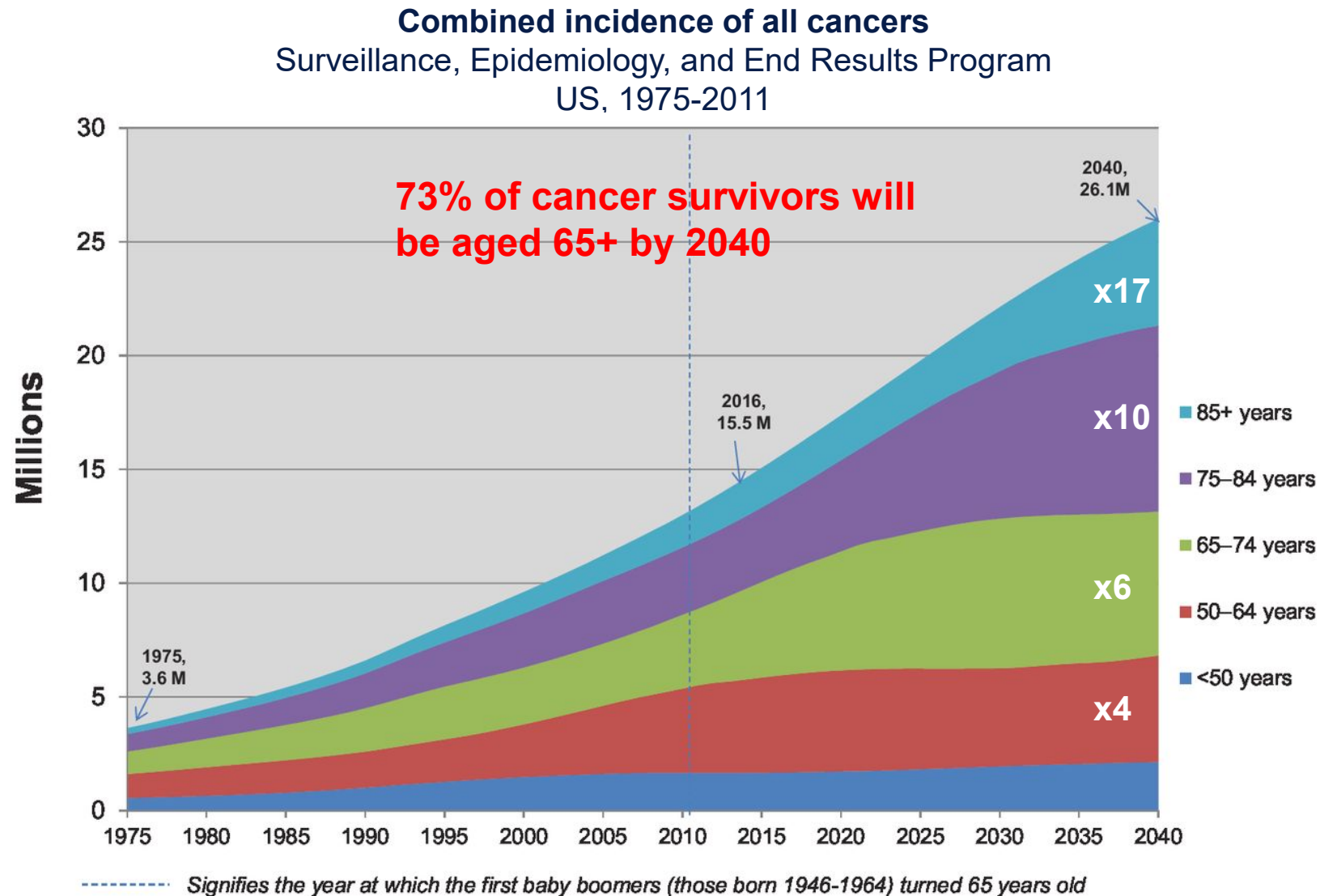
Outline

- Challenges of managing cancer in older adults
- Comprehensive geriatric assessment: applying geriatrics to oncology
- Benefits of integrated oncogeriatric care
- Making oncology clinical trials more relevant for older adults
- Implementing optimal care models for older adults with cancer
- Practical integration of geriatric assessments in cancer treatment decisions
- Conclusions

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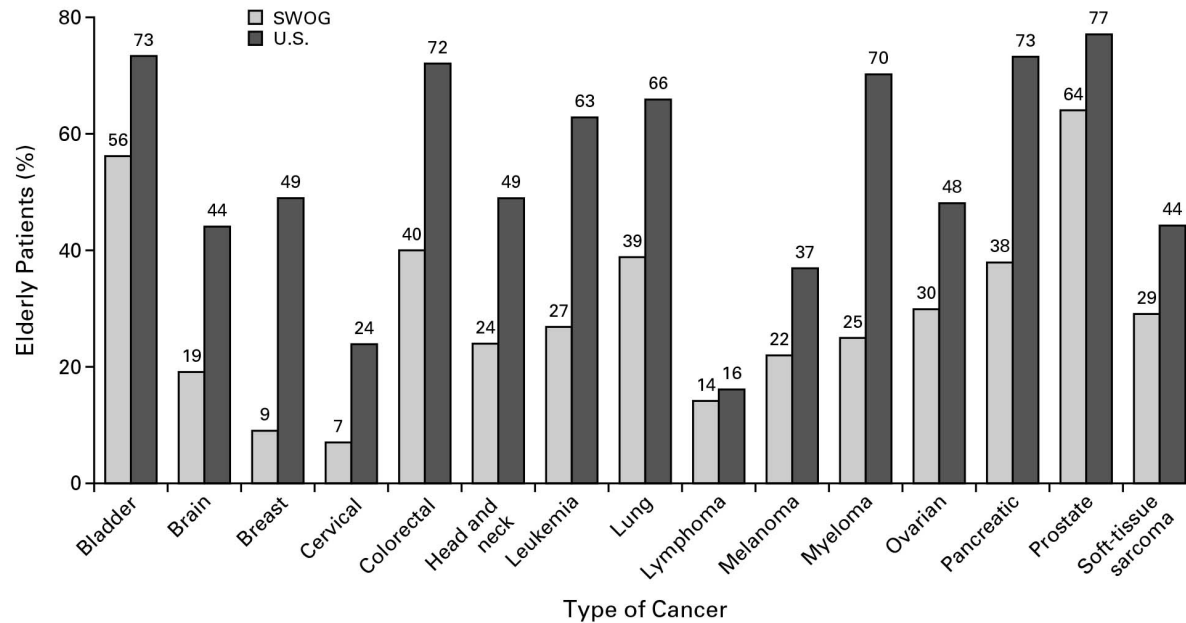
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Burden of cancer in older adults



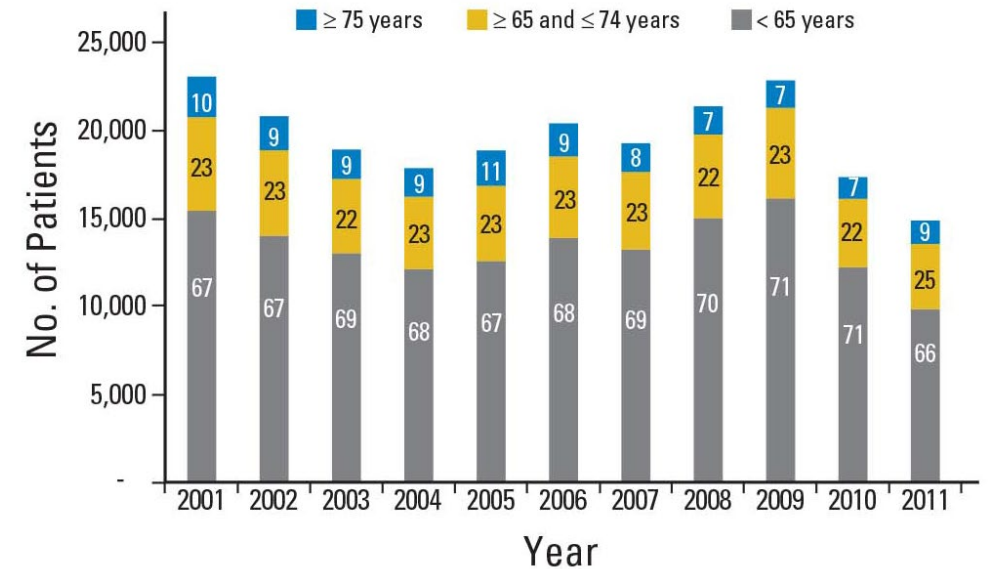
Gaps of knowledge in geriatric oncology

Proportion of patients ≥ 65 years enrolled in SWOG trials vs US cancer patient population according to the type of cancer¹
1993-1996



25% patients enrolled in 164 SWOG studies were ≥ 65 years vs 63% in the US cancer patient population

Age distribution for patients enrolled onto NCI adult cooperative group Phase II and III treatment trials (all diseases)²
2001–2011



<10% of patients enrolled in NCI Phase II–III trials were ≥ 75 years vs 28% of US cancer patients population

1. Hutchins LF, et al. *N Engl J Med.* 1999

2. Hurria A, et al. *J Clin Oncol.* 2014

Treatment variation

Bridging the Age Gap study¹
56 Breast Units in England and Wales
Patients ≥70 years with operable BC (N=3,416)
2013-2018

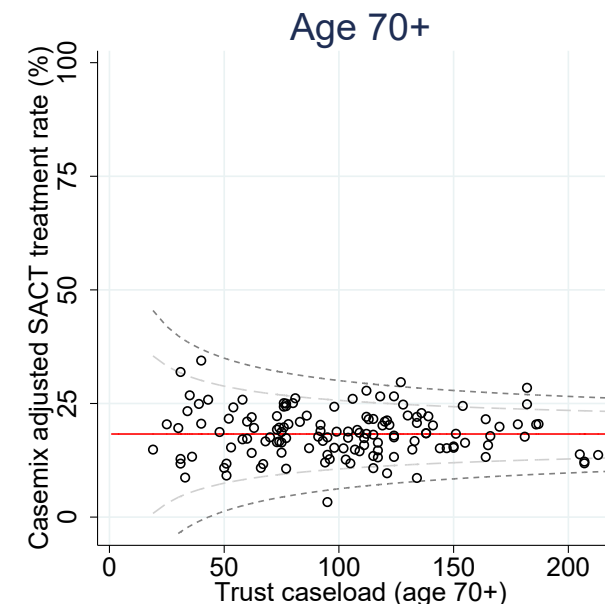
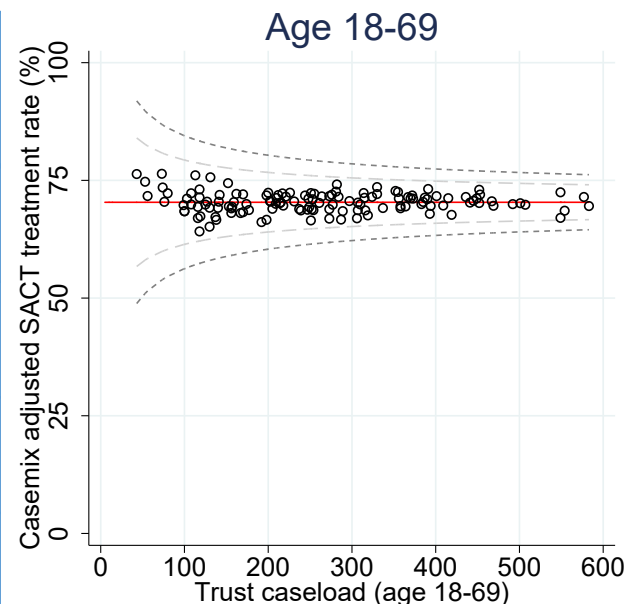
Age is No Barrier to Chemotherapy analysis²
SACT and HES registry databases
2013-2015

N = 49,378 stage II-III BC post surgery

n= 2,811 undergoing surgery

27.8%

Fitness	High risk		Non-high risk		Total
	Chemotherapy	No chemotherapy	Chemotherapy	No chemotherapy	
Fit	306 (14.9%)	794 (38.6%)	16 (0.8%)	943 (45.8%)	2059 (100.0%)
Vulnerable	70 (9.3%)	349 (46.5%)	5 (0.7%)	326 (43.5%)	750 (100.0%)
Frail	0 (0.0%)	1 (50%)	0 (0.0%)	1 (50%)	2 (100%)
Total	376 (13.4%)	1144 (40.7%)	21 (0.7%)	1270 (45.2%)	2811 (100.0%)



70% for patients aged 18–69 vs 18% aged ≥70 ($p<0.001$)
 ER- subgroup: 92% for the patients aged 18-69 vs 33% for those aged ≥70 ($p<0.001$)

1. Ring A, Battisti NML, et al. Br J Cancer. 2021
 2. Battisti NML et al, ESMO, 2018 & NCRI, 2019

Older adults are heterogeneous

Cancer
Comorbidities
Health behaviours
Access to healthcare
Geographical location
Social support



FIT

FRAIL

Life expectancy

Comorbidities

Functional status

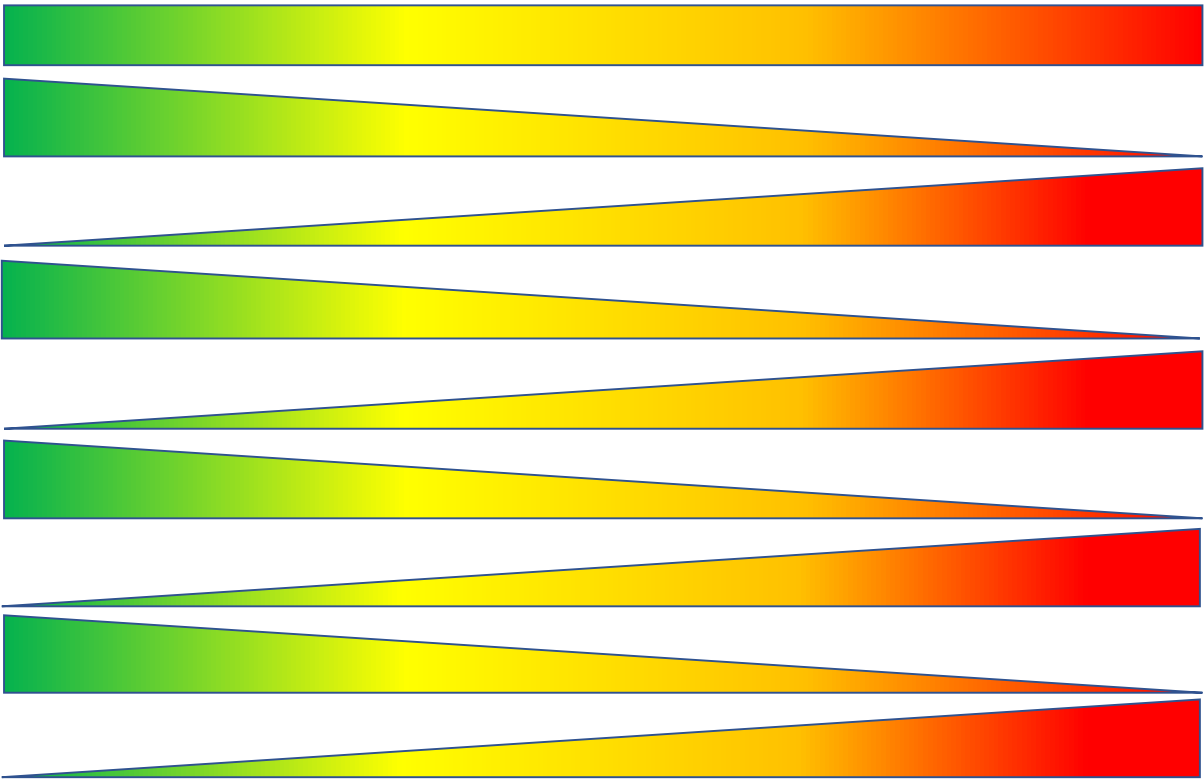
Polypharmacy

Organ reserve

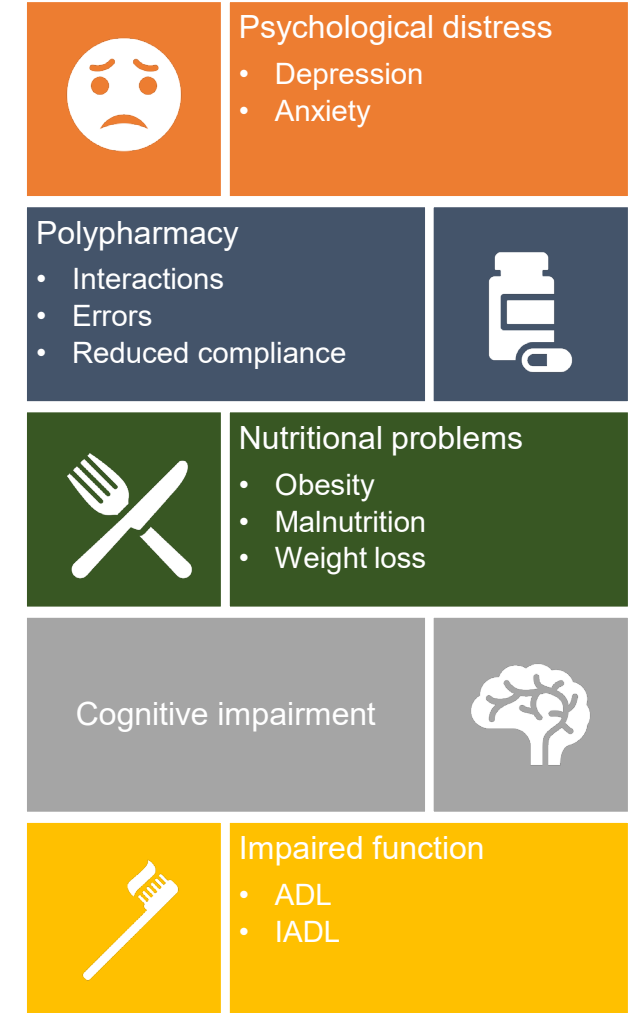
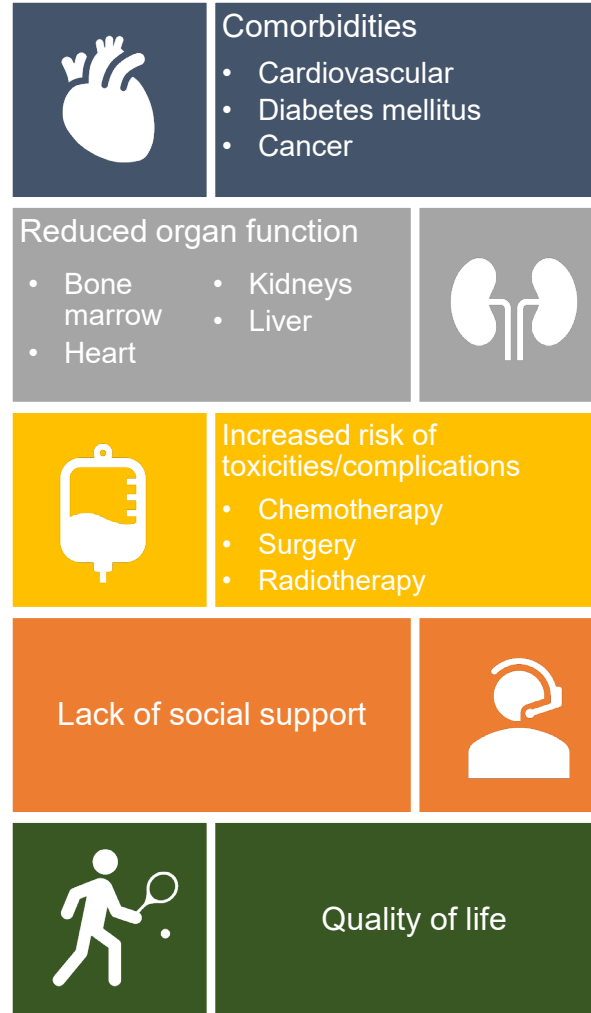
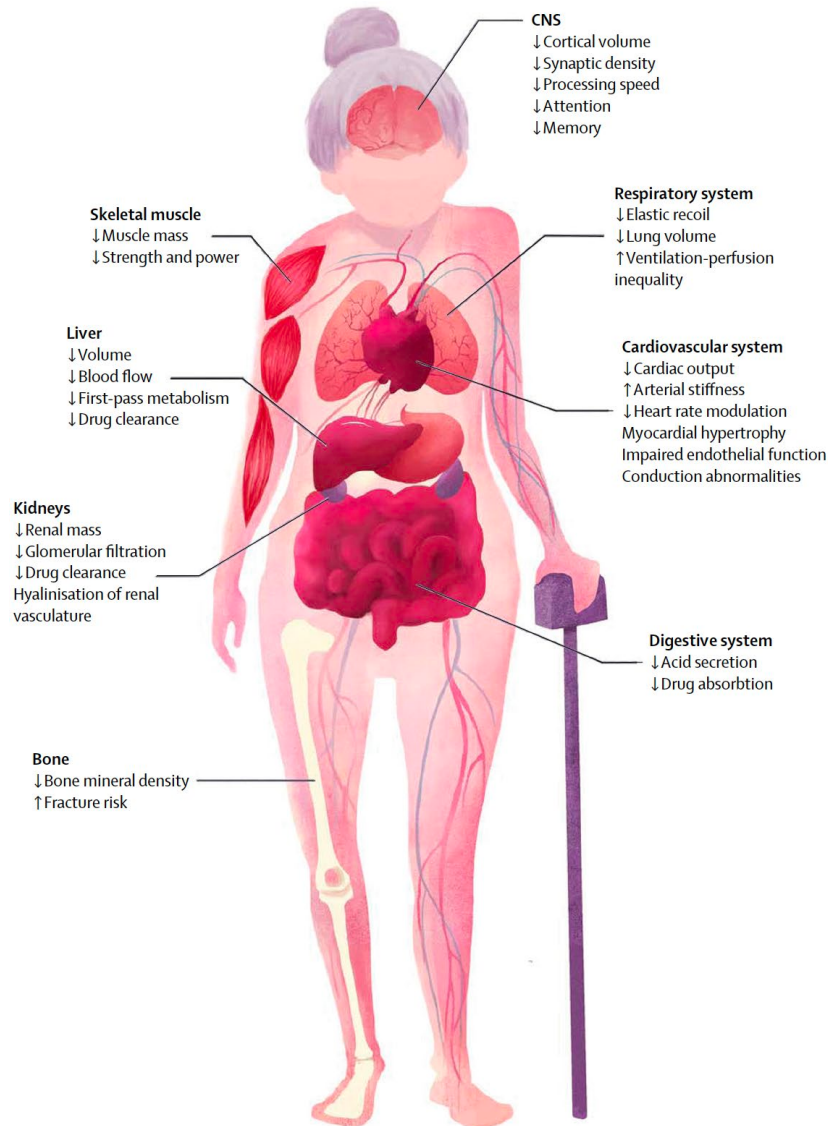
Toxicities risk

Focus on survival

Focus on quality of life



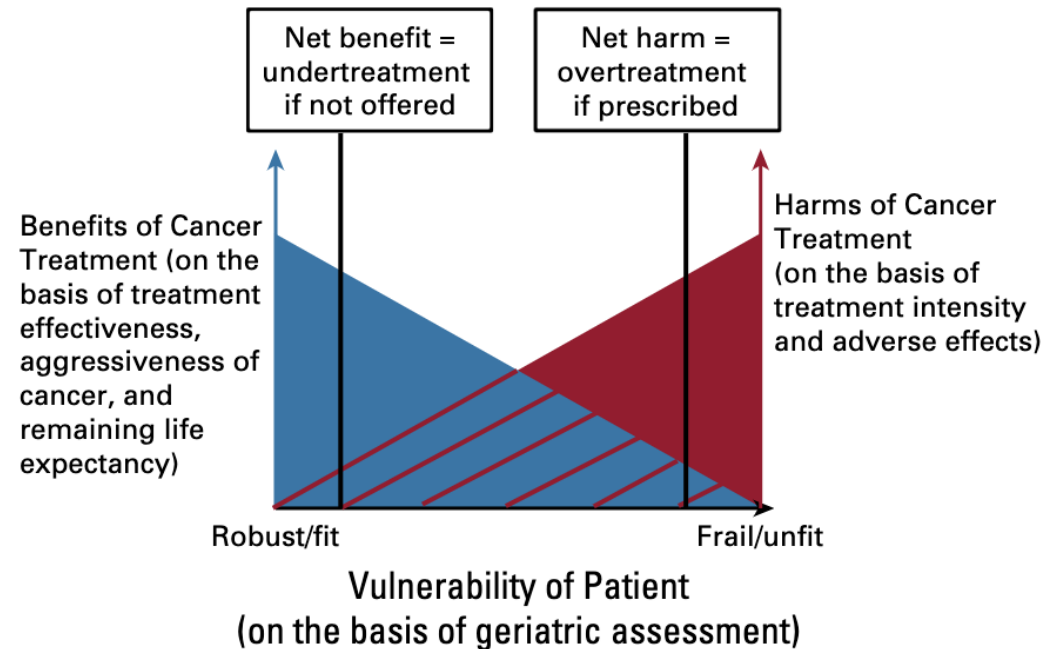
Complexity of managing cancer in older adults



Ageing-related concerns in geriatric oncology



Under- and over-treatment in geriatric oncology



Undertreatment

- Use of **less intensive treatment** in fit older adults who would otherwise derive a greater net benefit from more intensive treatment
- **Not providing nononcologic interventions to deficits in geriatric domains** regardless of what therapy is chosen

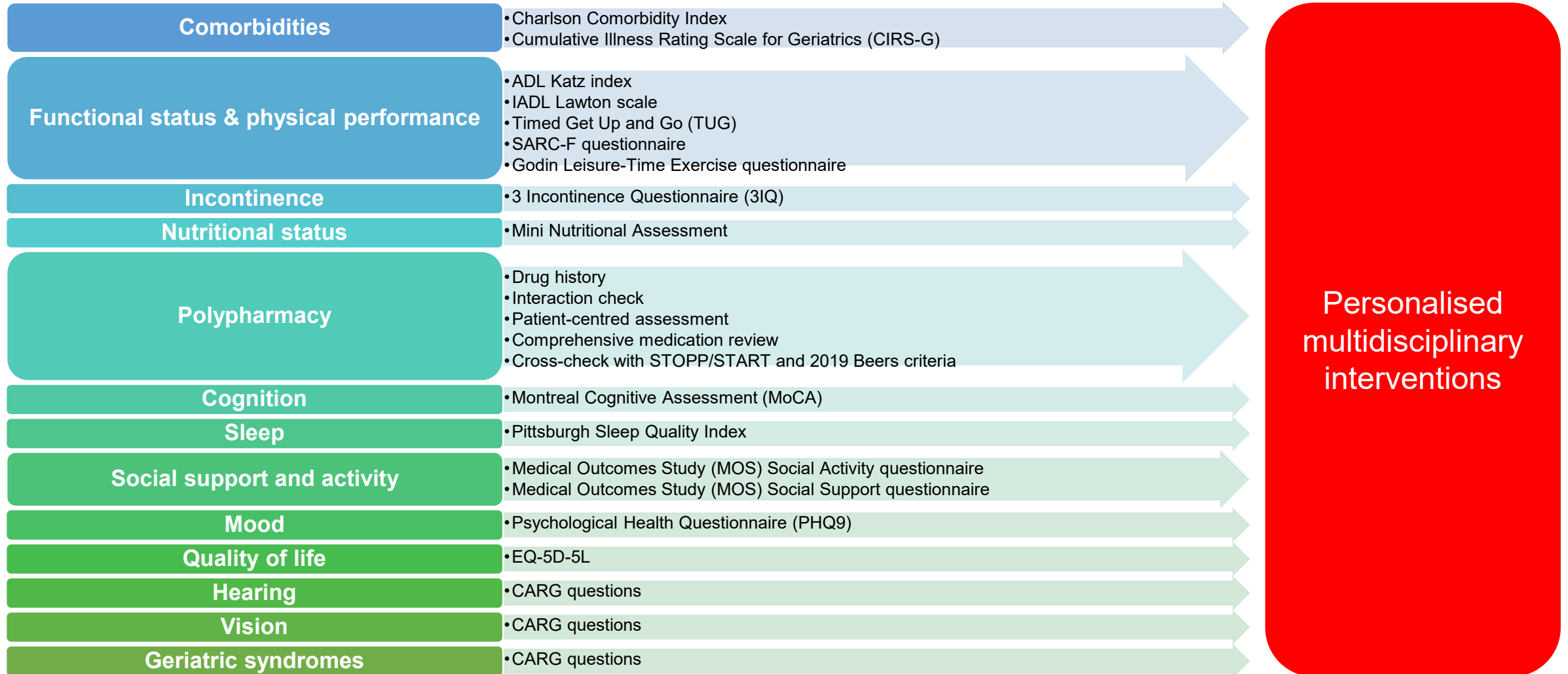
Overtreatment

- Treatment of cancer in an older patient that would **not likely lead to symptoms in the remaining lifetime**
- **Intensive treatment in a vulnerable older patient** in whom there would be a greater net benefit from less intensive therapy

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Comprehensive geriatric assessment: applying general geriatrics to oncology

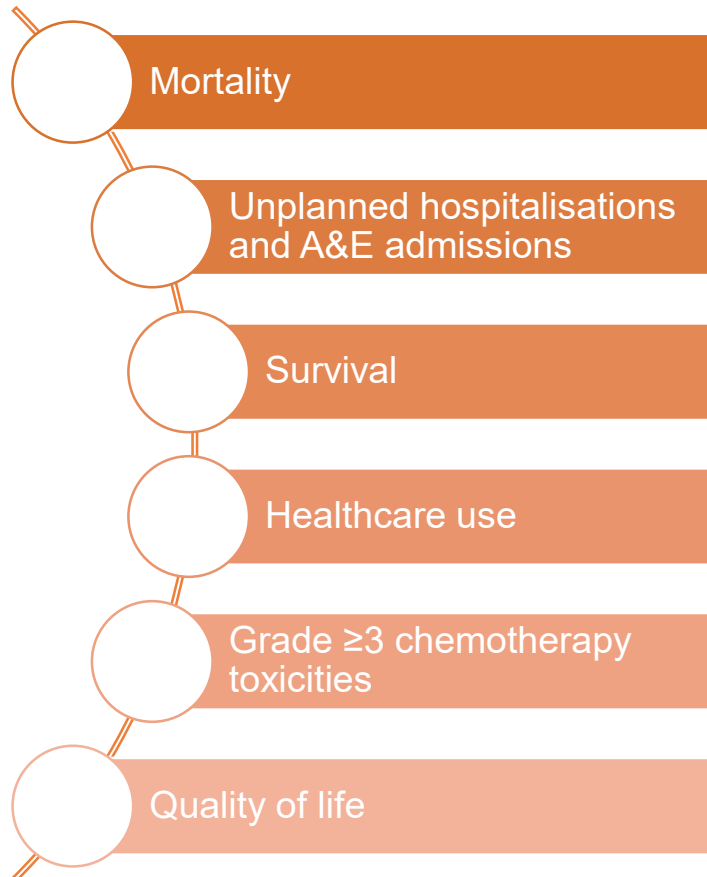


Wildiers H, et al. *J Clin Oncol*. 2014

Decoster L, et al. *Ann Oncol*. 2015

Mohile SG, et al. *J Clin Oncol*. 2018

Functional status and physical performance



- **Activities of daily living (Katz Index):** basic self-care skills

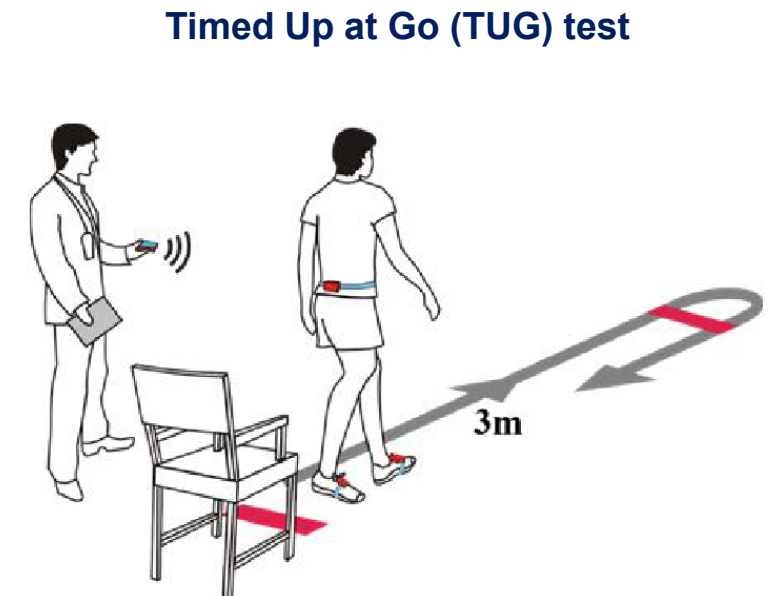
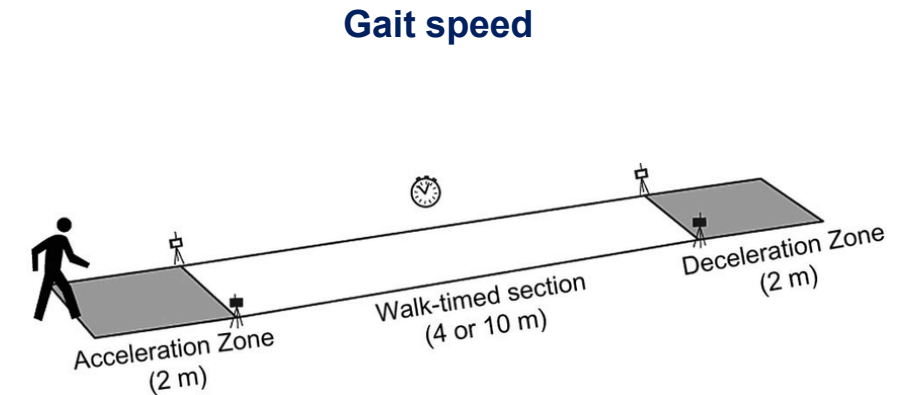
- Feeding
- Grooming
- Transferring
- Toileting

- **Instrumental activities of daily living (Lawton scale):** complex skills necessary for maintaining independence in the community

- Shopping
- Managing finances
- House-keeping
- Preparing meals
- Taking medications

- **Falls**

- **Grip strength**



Comorbidities

Charlson Comorbidity Index

Competing risks of mortality

Cancer treatment complications

Cancer treatment effectiveness & completion

Items	Responses	Points		
1) Age	☐ <50 years	0	9) Peptic ulcer disease	☐ No 0
	☐ 50-59 years	1	(any history of treatment for ulcer disease or history of ulcer bleeding)	☐ Yes 1
	☐ 60-69 years	2	10) Liver disease	☐ None 0
	☐ 70-79 years	3	(severe = cirrhosis and portal hypertension with variceal bleeding history, moderate = cirrhosis and portal hypertension but no variceal bleeding history, mild = chronic hepatitis (or cirrhosis without portal hypertension))	☐ Mild 1
	☐ ≥80 years	4		☐ Moderate to severe 3
2) Myocardial infarction	☐ No	0	11) Diabetes mellitus	☐ None or diet-controlled 0
(history of definite or probable MI [ECG changes and/or enzyme changes])	☐ Yes	1		☐ Uncomplicated 1
3) Congestive heart failure	☐ No	0		☐ End-organ damage 2
(exertional or paroxysmal nocturnal dyspnoea and has responded to digitalis, diuretics, or afterload reducing agents)	☐ Yes	1	12) Hemiplegia	☐ No 0
4) Peripheral vascular disease	☐ No	0		☐ Yes 2
(intermittent claudication or past bypass for chronic arterial insufficiency, history of gangrene or acute arterial insufficiency, or untreated thoracic or abdominal aneurysm [≥6 cm])	☐ Yes	1	13) Moderate to severe chronic kidney disease	☐ No 0
			(severe = on dialysis, status post kidney transplant, uraemia, moderate = creatinine >3 mg/dL [0.27 mmol/L])	☐ Yes 2
5) Cerebrovascular accident or transient ischaemic attack	☐ No	0	14) Solid tumour	☐ No 0
(history of a cerebrovascular accident with minor or no residua and transient ischemic attacks)	☐ Yes	1		☐ Localised 2
6) Dementia	☐ No	0		☐ Metastatic 6
(chronic cognitive deficit)	☐ Yes	1	15) Leukaemia	☐ No 0
7) Chronic obstructive pulmonary disease	☐ No	0		☐ Yes 2
	☐ Yes	1	16) Lymphoma	☐ No 0
8) Connective tissue disease	☐ No	0		☐ Yes 2
	☐ Yes	1	17) AIDS	☐ No 0
				☐ Yes 6
			TOTAL SCORE	___ / 37

Cognition

Screening: Mini-Cog

Step 1: Three-Word Registration

Look directly at person and say, "Please listen carefully. I am going to say three words that I want you to repeat back to me now and try to remember. The words are [select a list of words from the versions below]. Please say them for me now." If the person is unable to repeat the words after three attempts, move on to Step 2 (clock drawing).

The following and other word lists have been used in one or more clinical studies.^{1,3} For repeated administrations, use of an alternative word list is recommended.

Version 1	Version 2	Version 3	Version 4	Version 5	Version 6
Banana	Leader	Village	River	Captain	Daughter
Sunrise	Season	Kitchen	Nation	Garden	Heaven
Chair	Table	Baby	Finger	Picture	Mountain

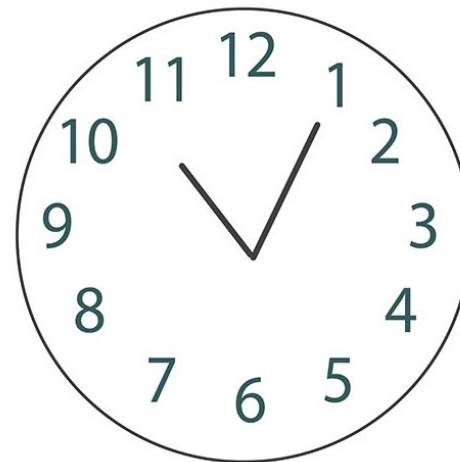
Step 2: Clock Drawing

Say: "Next, I want you to draw a clock for me. First, Put in all of the numbers where they go." When that is completed, say, "Now set the hands to 10 past 11."

Use preprinted circle (see next page) for this exercise. Repeat instructions as needed as this is not a memory test. Move to Step 3 if the clock is not complete within three minutes.

Step 3: Three Word Recall

Ask the person to recall the three words you stated in Step 1. Say, "What were the three words I asked you to remember?" Record the word list version number and the person's answers below.



Montreal Cognitive Assessment (MoCA)

DOMAINS										POINTS											
Visuospatial/executive																					
								☐ ☐ ☐ ☐ ☐ ☐													
										/5											
Naming																					
										/3											
Memory										No points											
Read list of words, subject must repeat them. Do 2 trials, even if 1st trial is successful. Do a recall after 5 minutes. <table border="1"> <tr> <td>1st trial</td> <td>FACE</td> <td>VELVET</td> <td>CHURCH</td> <td>DAISY</td> <td>RED</td> </tr> <tr> <td>2nd trial</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>											1 st trial	FACE	VELVET	CHURCH	DAISY	RED	2 nd trial				
1 st trial	FACE	VELVET	CHURCH	DAISY	RED																
2 nd trial																					
Attention																					
Read list of digits (1 digit/sec) <table border="1"> <tr> <td>Subject has to repeat them in the forward order</td> <td>[] 2 1 8 5 4</td> </tr> <tr> <td>Subject has to repeat them in the backward order</td> <td>[] 7 4 2</td> </tr> </table>											Subject has to repeat them in the forward order	[] 2 1 8 5 4	Subject has to repeat them in the backward order	[] 7 4 2							
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Subject has to repeat them in the backward order	[] 7 4 2																				
										/2											
Language																					
Repeat: I only know that John is the one to help today. [] The cat always hid under the couch when dogs were in the room. []																					
										/2											
Fluency / Name maximum number of words in one minute that begin with the letter F																					
[] _____ (N ≥ 11 words)																					
										/1											
Abstraction																					
Similarity between e.g. banana – orange = fruit. [] train – bicycle [] watch – ruler																					
										/2											
Delayed recall																					
Has to recall words WITH NO CUE <table border="1"> <tr> <td>FACE</td> <td>VELVET</td> <td>CHURCH</td> <td>DAISY</td> <td>RED</td> </tr> <tr> <td>[]</td> <td>[]</td> <td>[]</td> <td>[]</td> <td>[]</td> </tr> </table>											FACE	VELVET	CHURCH	DAISY	RED	[]	[]	[]	[]	[]	
FACE	VELVET	CHURCH	DAISY	RED																	
[]	[]	[]	[]	[]																	
										/5											
Orientation																					
Date [] [] [] Month [] [] Year [] [] Day [] [] Place [] [] City [] []																					
										/6											
TOTAL																					
Add 1 point if S12 yr.gdy Normal: ≥ 26/30																					
										/30											

Functional dependence

Depression

Higher mortality

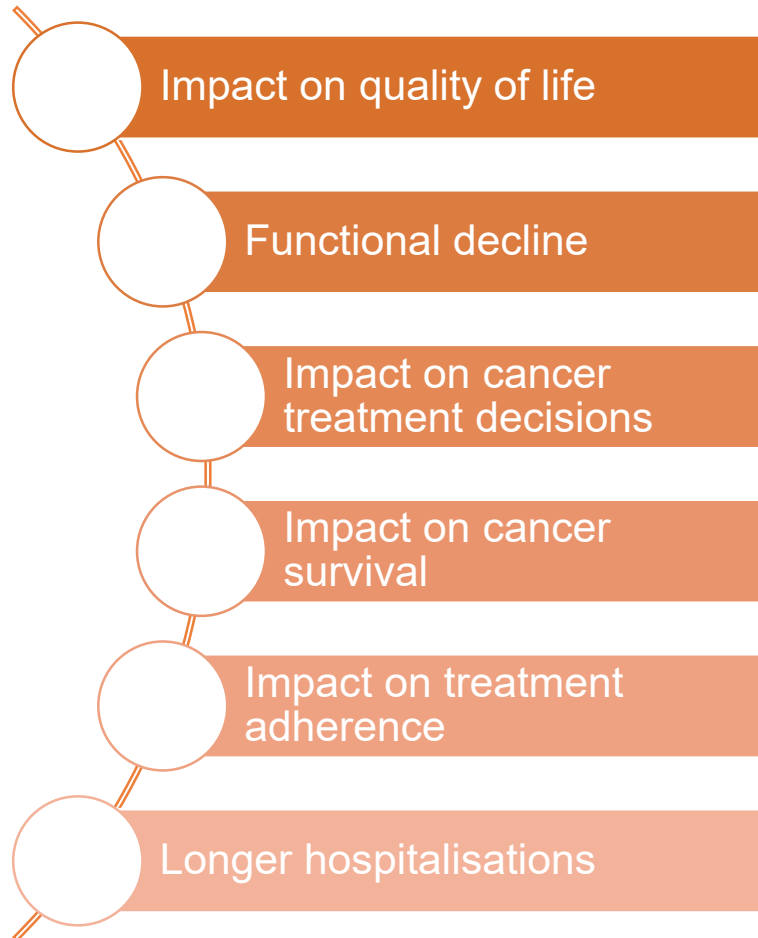
Treatment adherence

Treatment toxicity

Capacity for decision-making

Psychological status

Patient Health Questionnaire (PHQ-9)



Over the last two weeks, how often have you been bothered by the following problems?

Questions	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, <u>depressed</u> or hopeless	0	1	2	3
3. Trouble falling or staying asleep or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself – or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thought that you would be better off dead or of hurting yourself in some way	0	1	2	3

TOTAL points		___ / 27
Score	Severity	Proposed treatment action
0-5	None	None
6-10	Mild	Watchful waiting, repeating at follow-up
11-15	Moderate	Consider CBT and pharmacotherapy
Moderately severe		Immediate initiation of pharmacotherapy and CBT
16-21	Severe	Initiation of pharmacotherapy and CBT; consider specialist referral to psychiatrist

Nutritional status

Mini Nutritional Assessment (MNA)

The ROYAL MARSDEN
NHS Foundation Trust

Mini Nutritional Assessment (MNA)

NAME: _____
DATE OF BIRTH: _____
HOSPITAL NO: _____

Items	Responses	Points
A) Has food intake declined over the past 3 months due to loss of appetite, digestive problems, chewing or swallowing difficulties?	☐ Severe decrease in food intake	0
	☐ Moderate decrease in food intake	1
	☐ No decrease in food intake	2
B) Weight loss during the last 3 months	☐ Weight loss greater than 3kg (6.6lbs)	0
	☐ Does not know	1
	☐ Weight loss between 1 and 3kg (2.2 and 6.6 lbs)	2
	☐ No weight loss	3
C) Mobility	☐ Bed or chair bound	0
	☐ Able to get out of bed / chair but does not go out	1
	☐ Goes out	2
D) Has suffered psychological stress or acute disease in the past 3 months?	☐ Yes	0
	☐ No	2
E) Neuropsychological problems	☐ without help	3
	☐ with some help	2
	☐ or are you completely unable to do any housework?	1
F) Body Mass Index (BMI) ([weight in kg]/[height in m ²])	☐ <19	0
	☐ ≥19 but <21	1
	☐ ≥21 but <23	2
	☐ ≥23 work?	3
SCREENING SCORE	12-14 points: Normal nutritional status	___/14
	8-11 points: At risk of malnutrition	
	0-7 points: Malnourished	

G) Lives independently (not in a nursing home or hospital)	☐ Yes	1
	☐ No	0
H) Takes more than 3 prescription drugs per day	☐ Yes	0
	☐ No	1
I) Pressure sores or skin ulcers	☐ Yes	0
	☐ No	1
J) How many full meals does the patient eat daily?	☐ 1 meal	0
	☐ 2 meals	1
	☐ 3 meals	2
K) Selected consumption markers for protein intake	At least one serving of dairy products (milk, cheese, yoghurt) per day: ☐ yes ☐ no	
	Two or more servings of legumes or eggs per week: ☐ yes ☐ no	
	Meat, fish or poultry every day: ☐ yes ☐ no	
	☐ 0 or 1 yes	0.0
	☐ 2 yes	0.5
	☐ 3 yes	1.0
L) Consumes two or more servings of fruit or vegetables per day?	☐ No	0
	☐ Yes	1
M) How much fluid (water, juice, coffee, tea, milk...) is consumed per day?	☐ less than 3 cups	0.0
	☐ 3-5 cups	0.5
	☐ >5 cups	1.0
N) Mode of feeding	☐ Unable to eat without assistance	0
	☐ Self-fed with some difficulty	1
	☐ Self-fed without any problem	2
O) Self view of nutritional status	☐ Views self as being malnourished	0
	☐ Is uncertain of nutritional state	1
	☐ Views self as having no nutritional problem	2
P) In comparison with other people of the same age, how does the patient consider his / her health status?	☐ Not as good	0.0
	☐ Does not know	0.5
	☐ As good	1.0
	☐ Better	2.0
Q) Mid-arm circumference (MAC) in cm	☐ <21 cm	0.0
	☐ ≥21 cm but <22 cm	0.5
	☐ ≥22 cm	1.0
R) Calf circumference (CC) in cm	☐ <31 cm	0
	☐ ≥31 cm	1

Assessment score	___ / 16
Screening score	___ / 14
TOTAL SCORE	___ / 30
Malnutrition Indicator Score	
24-30 points:	Normal nutritional status
17-23.5 points:	At risk of malnutrition
<17 points:	Malnourished

Treatment complications

Increased mortality

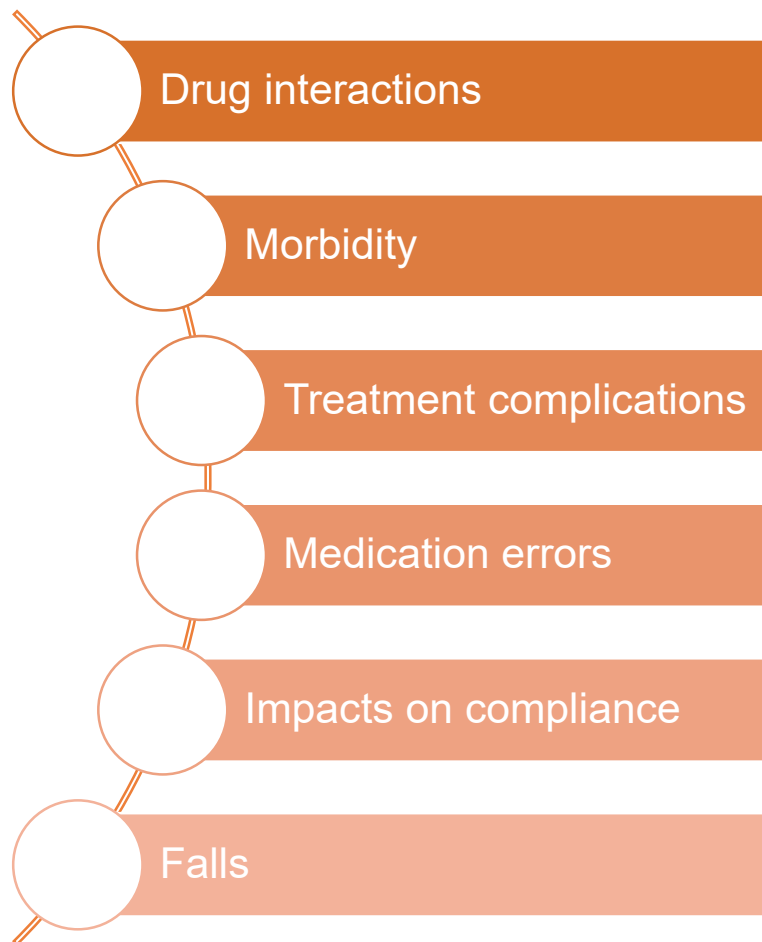
Vitamin D deficiency & risk of fractures

Prolonged inpatient admissions

Polypharmacy

STOPP/START criteria

American Geriatrics Society Beers criteria



START: Screening Tool to Alert doctors to Right Treatments

These medications should be considered for people ≥ 65 years of age with the following conditions, where no contraindication to prescription exists.

Cardiovascular System

1. Warfarin in the presence of chronic atrial fibrillation.
2. Aspirin in the presence of chronic atrial fibrillation, where warfarin is contraindicated, but not aspirin
3. Aspirin or clopidogrel with a documented history of atherosclerotic coronary, cerebral or peripheral vascular disease in patients with sinus rhythm.
4. Antihypertensive therapy where systolic blood pressure consistently >160 mmHg
5. Statin therapy with a documented history of coronary, cerebral or peripheral vascular disease, where the patient's functional status remains independent for activities of daily living and life expectancy is greater than 5 years
6. Angiotensin Converting Enzyme (ACE) inhibitor with chronic heart failure
7. ACE inhibitor following acute myocardial infarction
8. Beta-blocker with chronic stable angina

Respiratory System

1. Regular inhaled β_2 agonist or anticholinergic agent for mild to moderate asthma or COPD
2. Regular inhaled corticosteroid for moderate-severe asthma or COPD, where predicted FEV1 $<50\%$.
3. Home continuous oxygen with documented chronic type 1 respiratory failure or type 2 respiratory failure.

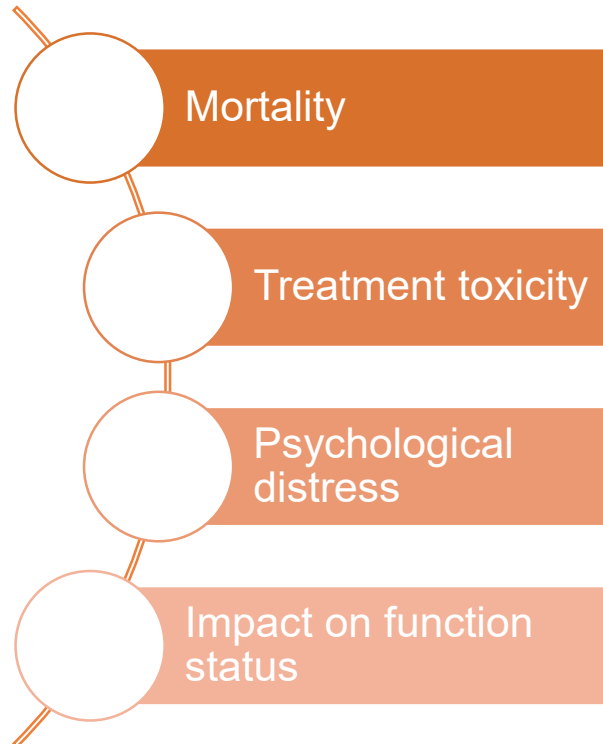
Central Nervous System

1. L-DOPA in idiopathic Parkinson's disease with definite functional impairment and resultant disability
2. Antidepressant drug in the presence of moderate-severe depressive symptoms lasting at least three months.

Severe Adverse Outcomes	Summary of Prescribing Concerns for the Elderly
amitriptyline (Elavil), chlorthalidone-amitriptyline (Limbital), and perphenazine-amitriptyline (Triavil)	Strong anticholinergic and sedating properties. Rarely the antidepressant of choice in the elderly. (May be used for neurogenic pain if evaluation of risk vs. benefit is documented)
barbiturates (all except phenobarbital)	Higher incidence of side effects than most other sedatives and hypnotics used in the elderly. Highly addictive. Use only to control seizure.
Long-acting benzodiazepines- chlorthalidone (Librium), chlorthalidone-amitriptyline (Limbital), clidinium-chlorthalidone (Librax), diazepam (Valium), and flurazepam (Dalmane)	chlorthalidone , diazepam , flurazepam and other long-acting benzodiazepines have a long half-life in the elderly. Produce prolonged sedation, increased risk of falls and fractures.
chlorpropamide (Diabinese)	Prolonged half-life in the elderly, which can cause prolonged hypoglycemia. Also causes SIADH. [†]
dicyclomine (Bentyl), hyoscyamine (Levsin, Levsinex), propantheline (Pro-Banthine), belladonna alkaloids (Donnatal and others), and clidinium-chlorthalidone (Librax)	GI antispasmodics are highly anticholinergic and generally produce substantial toxic effects in the elderly. Effectiveness at doses tolerated by the elderly is questionable. Best avoided in the elderly, especially for long term use. (Use for 7 days or less, and not more frequently than every 3 months, does not require review.)
digoxin (Lanoxin) >0.125 mg/day	Because of decreased renal clearance in the elderly, avoid doses >0.125 mg, except when treating atrial arrhythmias.
disopyramide (Norpace, Norpace CR)	Negative inotrope that may induce heart failure. Strongly anticholinergic.
doxepin (Sinequan)	Strong anticholinergic and sedating properties. Rarely the antidepressant of choice in the elderly.
meperidine (Demerol)	Not an effective oral analgesic.
meprobamate (Miltown, Equanil)	Highly addictive and sedating anxiolytic. Avoid in elderly patients.
ALDOMET® (methyldopa) , ALDORIL® (methyldopa/hydrochlorothiazide)	May cause bradycardia and exacerbate depression in the elderly. Alternate antihypertensives are preferred.
pentazocine (Talwin)	Narcotic analgesic causing more CNS [†] side effects than other narcotic drugs, including confusion and hallucinations. Mixed agonist and antagonist.
ticlopidine (Ticlid)	No better than aspirin in preventing clotting and considerably more toxic. Avoid in the elderly. (Review not necessary if used in patients who have had a stroke or have evidence of stroke precursors [transient ischemic attacks], and cannot tolerate aspirin.)

Social support and activity

Medical Outcomes Study (MOS) social support and activity questionnaires



People sometimes look to others for companionship, assistance or other types of support. How often is each of the following kinds of support available to you if you need it? Select an answer that best reflects your situation.

Questions	All the time	Most of the time	Some of the time	A little of the time	None of the time
1. Someone to help if you were confined to bed.	5	4	3	2	1
2. Someone you can count on to listen to you when you need to talk.	5	4	3	2	1
3. Someone to give you good advice about a crisis.	5	4	3	2	1
4. Someone to take you to the doctor if you needed it.	5	4	3	2	1
5. Someone to give you information to help you understand a situation.	5	4	3	2	1
6. Someone to confide in or talk to about yourself or your problem.	5	4	3	2	1
7. Someone to prepare your meals if you were unable to do it yourself.	5	4	3	2	1
8. Someone whose advice you really want.	5	4	3	2	1
9. Someone to help you with daily chores if you were sick.	5	4	3	2	1
10. Someone to share your most private worries and fears with.	5	4	3	2	1
11. Someone to turn to for suggestions about how to deal with a personal problem.	5	4	3	2	1
12. Someone who understands your problems.	5	4	3	2	1

TOTAL SCORE

__ / 100

$$100 \times \frac{(\text{mean subscale score} - 1)}{4}$$

Questions

1. During the <u>past 4 weeks</u> , how much of the time has your <u>physical health</u> or <u>emotional problems</u> interfered with your social activities (like visiting with friends, relatives, etc.)?	☐ All the time ☐ Most of the time ☐ Some of the time ☐ A little of the time ☐ None of the time	5 4 3 2 1
2. Compared to your usual level of social activity, has your social activity during the <u>past 6 months</u> decreased, stayed the same, or increased because of a change in your physical or emotional condition?	☐ Much less socially active than before ☐ Somewhat less socially active than before ☐ About as socially active as before ☐ Somewhat more socially than before ☐ Much more socially active than before	5 4 3 2 1
3. Compared to others your age, are your social activities more or less limited because of your <u>physical health</u> or <u>emotional problems</u> ?	☐ Much more limited than others ☐ Somewhat more limited than others ☐ About the same as others ☐ Somewhat less limited than others ☐ Much less limited than others	5 4 3 2 1

TOTAL SCORE

__ / 100

$$100 \times \frac{(\text{mean subscale score} - 1)}{4}$$

Additional domains

Hearing

- Quality
- Aids and their effectiveness

Vision

- Quality
- Eyeglasses and their effectiveness

Sleep

- Pittsburgh Sleep Quality Index

Incontinence

- 3 Incontinence Questionnaire (3IQ)

Pressure ulcers

Sarcopenia

- SARC-F screening questionnaire

Quality of life

- EQ-5D-5L

What matters to you?

Prospective analysis

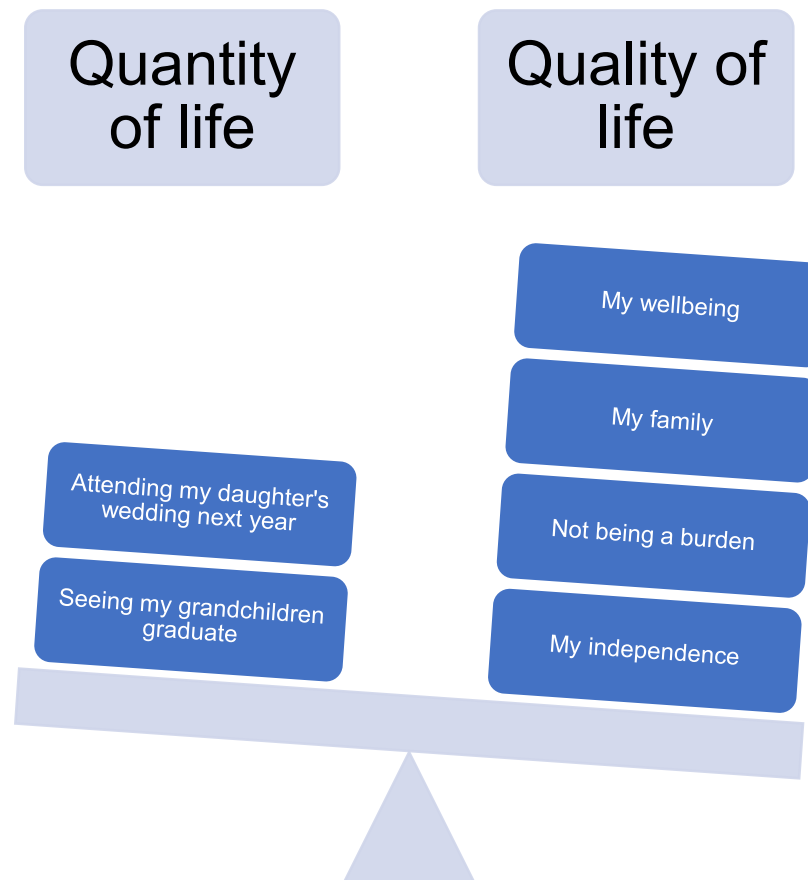
Patients ≥70 years being considered for systemic anticancer therapy

October 2021 – January 2023

The Royal Marsden NHS Foundation Trust, London, UK

N = 210

Priorities	N	%
Family / close social network	89	66.4
Health and health-related quality of life	56	41.8
Functional independence	40	29.9
Recreation / hobbies	28	20.9
Psychological well-being	19	14.2
Religious / spiritual beliefs	12	9.0
Travel	11	8.2
Caring for others	8	9.0



Personalised multidisciplinary interventions

Cancer

- Adapted anticancer treatment plans

Functional impairment

- Strength and balance training
- Device evaluation
- Home exercise programme
- Fall prevention discussion
- Home safety evaluation
- Pre- and rehabilitation
- Improve functional status prior to treatment
- Ensure presence of social support
- Recommend personal emergency response service

Comorbidities

- Caregiver involvement to assess risks of therapy and management of comorbidities
- GP involvement for treatment and management

Cognitive impairment

- Assess decision-making capacity and ability to consent
- Identify proxy and their involvement
- Delirium risk counseling and prevention
- Limit complexity of treatment
- Medication review to minimize the risk of delirium

Psychological issues

- Counselling
- Cognitive-behavioural therapy
- Pharmacologic therapy
- Support programmes
- Spiritual care

Nutritional deficits

- Nutrition counselling
- Specific dietary recommendations
- Oral care
- Assess need for extra support for meal preparation
- Supplements
- Involve caregivers

Polypharmacy

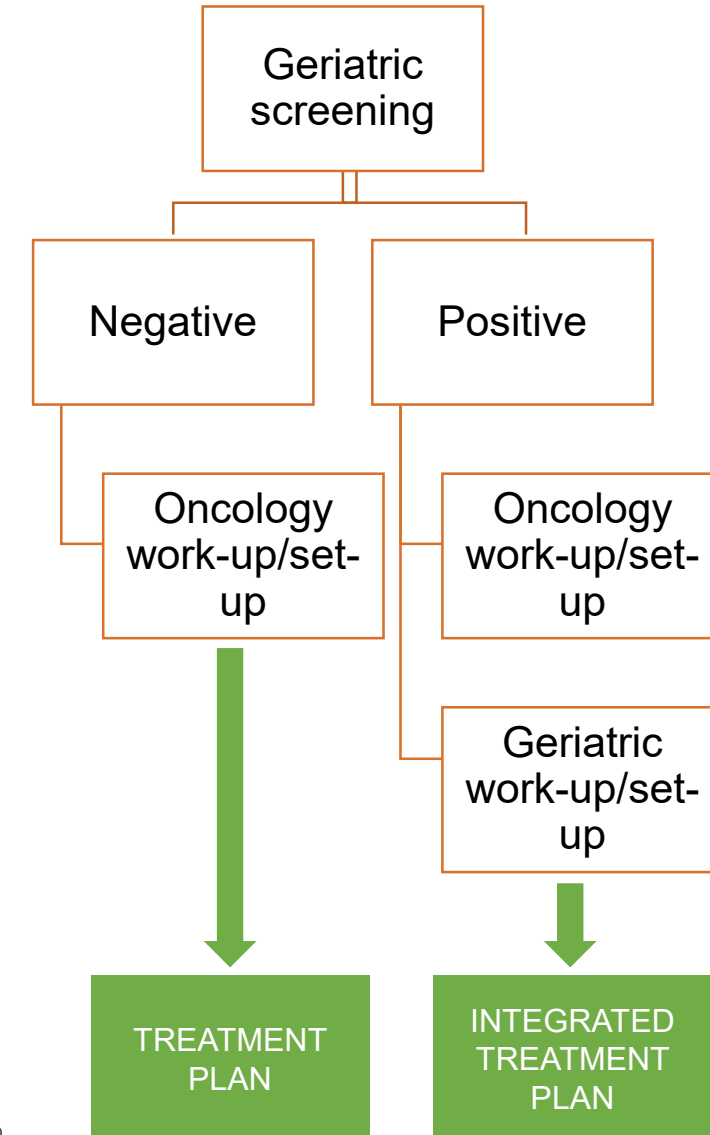
- Review medication list
- Minimize medications as much as possible
- Assess adherence to medications

Social support problems

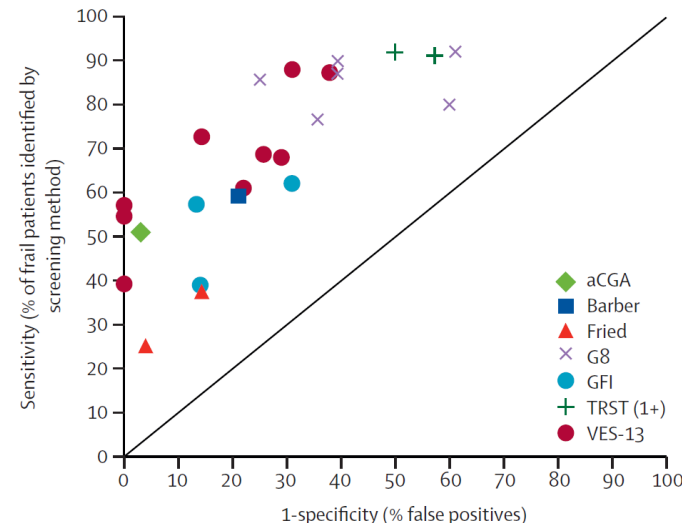
- Nursing/home health
- Transportation assistance
- Caregiver management
- Home safety evaluation
- Support groups
- Spiritual care
- Modify therapy delivery

Patient selection for CGA: geriatric screening

Tool	No. of items	Score range	Time to perform (min)	Abnormal score	Sensitivity for abnormal CGA (%)	Specificity for abnormal CGA (%)	PPV (%)	NPV (%)	Positive screen (%)
G8	8	0–17	4.4	≤14	65–92	3–75	44–86	8–78	64–94
VES-13	13	0–10	5.7	≥3	39–88	62–100	60–100	18–88	29–60
Triage Risk Screening Tool	5	0–6	2	≥1	91–92	42–50	81–87	63	74–82
Groningen Frailty Indicator	15	0–15	N/A	≥4	30–66	47–87	86–94	40–59	64–79
Abbreviated CGA	15	-	4	≥1	51	97	97	48	68
Fried Frailty Criteria	5	-	5	≥3	37–87	49–86	77–95	16–66	66–88
SAOP2	27	-	10-15	≥1	100	40	90	100	84



Sensitivity and 1-specificity of screening methods for predicting CGA outcome



Outline

- Challenges of managing cancer in older adults
- Comprehensive geriatric assessment: applying geriatrics to oncology
- **Benefits of integrated oncogeriatric care**
- Making oncology clinical trials more relevant for older adults
- Implementing optimal care models for older adults with cancer
- Practical integration of geriatric assessments in cancer treatment decisions
- Conclusions

Benefits of integrated oncogeriatric care



Wildiers H, et al. *J Clin Oncol*. 2014

Decoster L, et al. *Ann Oncol*. 2015

Mohile SG, et al. *J Clin Oncol*. 2018

NCCN Clinical Practice Guidelines in Oncology: Older Adult Oncology. Version 1.2023 (14/02/2023)

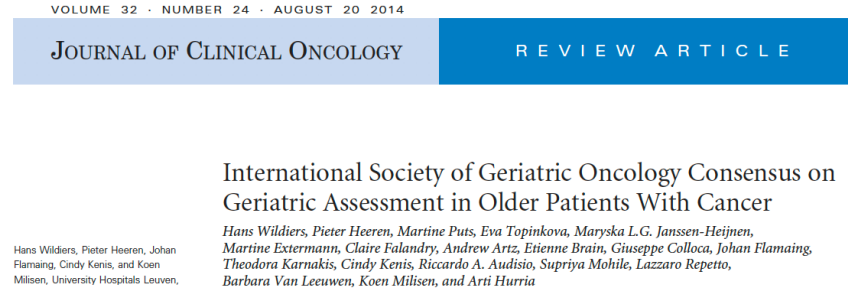
International consensus

ASCO guidelines¹



- **Physical function/performance:** falls, gait speed
- **Functional status:** OARS IADL
- **Nutrition:** weight loss during past 3 months (G8), MNA
- **Social support:** MOS questionnaire
- **Psychological:** PROMIS Anxiety 4-item, GDS 5
- **Comorbidity:** OARS comorbidity, hearing, vision
- **Cognition:** Mini-Cog
- **Chemotherapy toxicity prediction:** CARG tool
- **Prognosis:** ePrognosis
- **Geriatric screening:** G8

SIOG recommendations^{2,3}



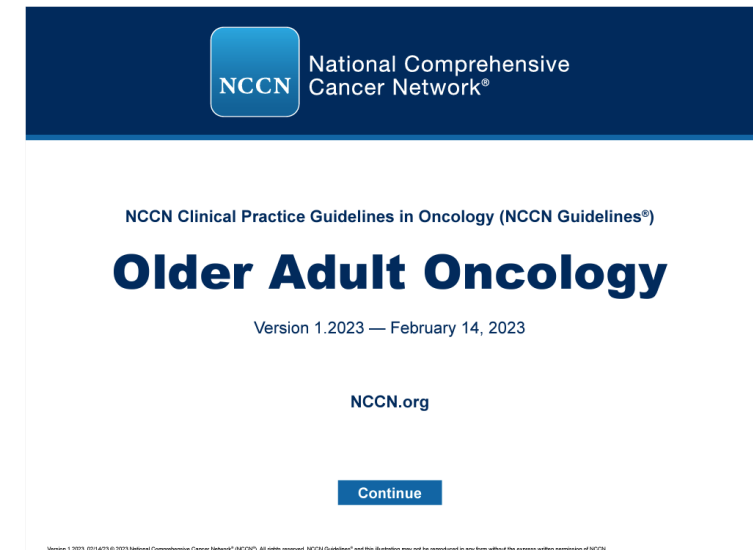
review

Screening tools for multidimensional health problems warranting a geriatric assessment in older cancer patients: an update on SIOG recommendations[†]

L. Decoster^{1*}, K. Van Puyvelde², S. Mohile³, U. Wedding⁴, U. Basso⁵, G. Colloca⁶, S. Rostoft⁷, J. Overcash⁸, H. Wildiers⁹, C. Steer¹⁰, G. Kimmick¹¹, R. Kanesvaran¹², A. Luciani¹³, C. Terret¹⁴, A. Hurria¹⁵, C. Kenis¹⁶, R. Audisio¹⁷ & M. Extermann¹⁸

¹Department of Medical Oncology, Oncologisch Centrum, UZ Brussel, Vrije Universiteit Brussel, Brussels, Belgium; ²Department of Geriatric Medicine, UZ Brussel, Vrije Universiteit Brussel, Brussels, Belgium; ³Department of Medicine, Hematology/Oncology, University of Rochester Medical Center, Rochester, USA; ⁴Department of Internal Medicine II, Jena University Hospital, Jena, Germany; ⁵Department of Medical Oncology 1 Unit, Istituto Oncologico Veneto IOV-IRCCS, Padova; ⁶Department of Geriatric Medicine, Università Cattolica Sacro Cuore, Rome, Italy; ⁷Department of Geriatric Medicine, Oslo University Hospital, Oslo, Norway; ⁸Ohio State University Comprehensive Cancer Center, College of Nursing, Columbus, USA; ⁹Department of General Medical Oncology, University Hospitals Leuven, KU Leuven, Leuven, Belgium; ¹⁰Border Medical Oncology, Wodonga, Australia; ¹¹Division of Medical Oncology, Department of Medicine, Duke University Medical Center, Durham, USA; ¹²Department of Medical Oncology, National Cancer Centre Singapore, Singapore; ¹³Division of Medical Oncology, S. Paolo Hospital, Milan, Italy; ¹⁴Department of Medical Oncology, Centre Léon-Bérard, Lyon, France; ¹⁵Department of Medical Oncology, City of Hope Comprehensive Cancer Center, Duarte, USA; ¹⁶Department of General Medical Oncology and Geriatric Medicine, University Hospitals Leuven, KU Leuven, Leuven, Belgium; ¹⁷Department of Surgery, University of Liverpool, St Helens Teaching Hospital, Liverpool, UK; ¹⁸Moffitt Cancer Center, University of South Florida, Tampa, USA

NCCN guidelines⁴



1. Dale W et al, J Clin Oncol, 2023
2. Wildiers H et al, J Clin Oncol, 2014
3. Decoster L et al, Ann Oncol, 2015

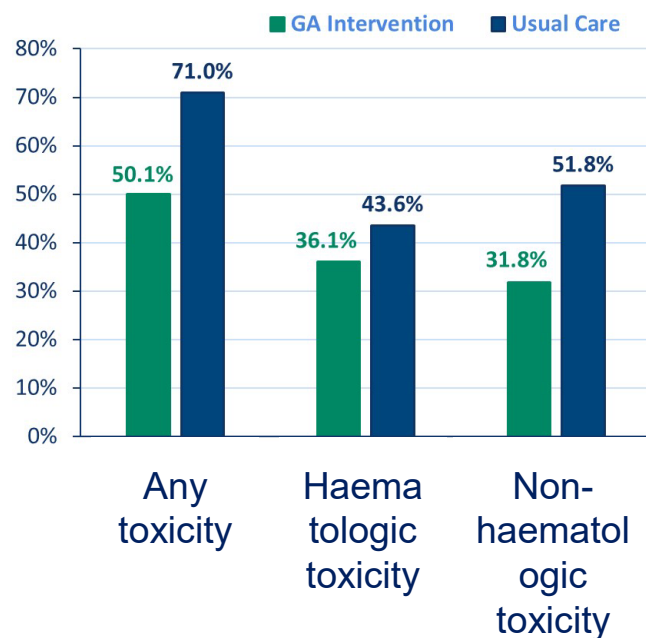
4. NCCN Clinical Practice Guidelines in Oncology: Older Adult Oncology. Version 1.2023 (14/02/2023)

Reducing severe systemic therapy toxicity

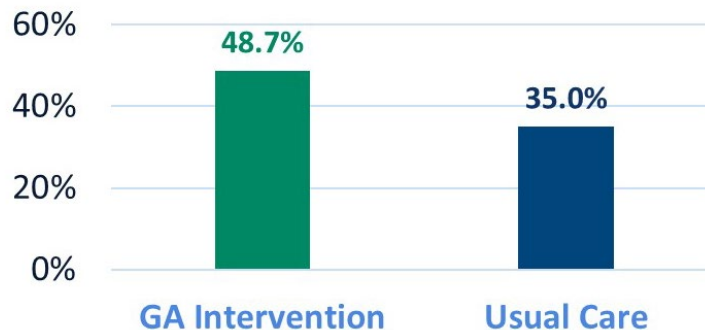
GAP70 study¹

Patients ≥70 years with incurable stage III-IV cancer starting a new systemic treatment

N = 718



Reduced Dose Intensity at Cycle 1

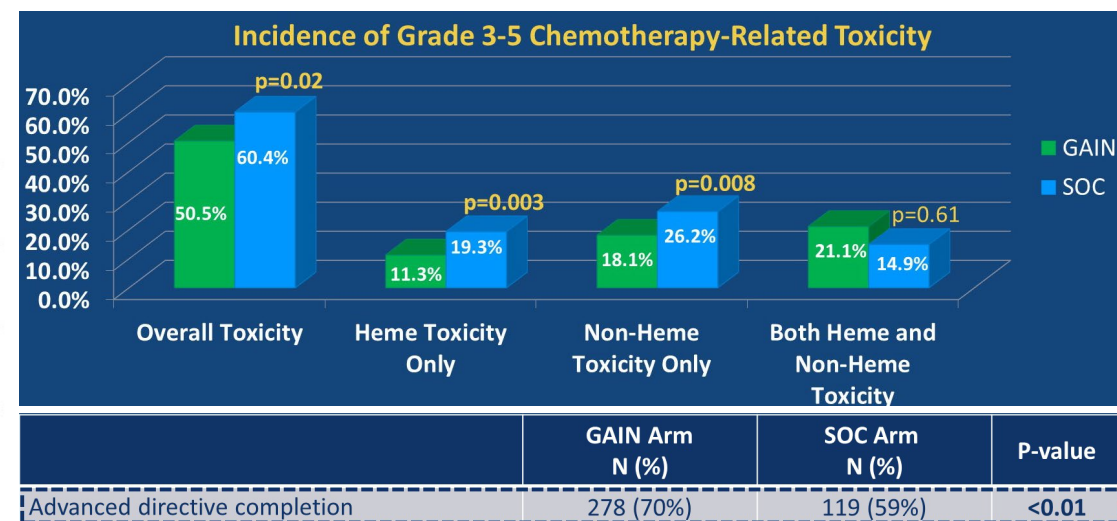


Any grade 3–5 toxicity
Adjusted risk ratio: 0.74
95% CI 0.63–0.97, $p < 0.01$

GAIN study²

Patients ≥65 years with solid tumours (any stage) starting a new chemotherapy regimen

N = 600

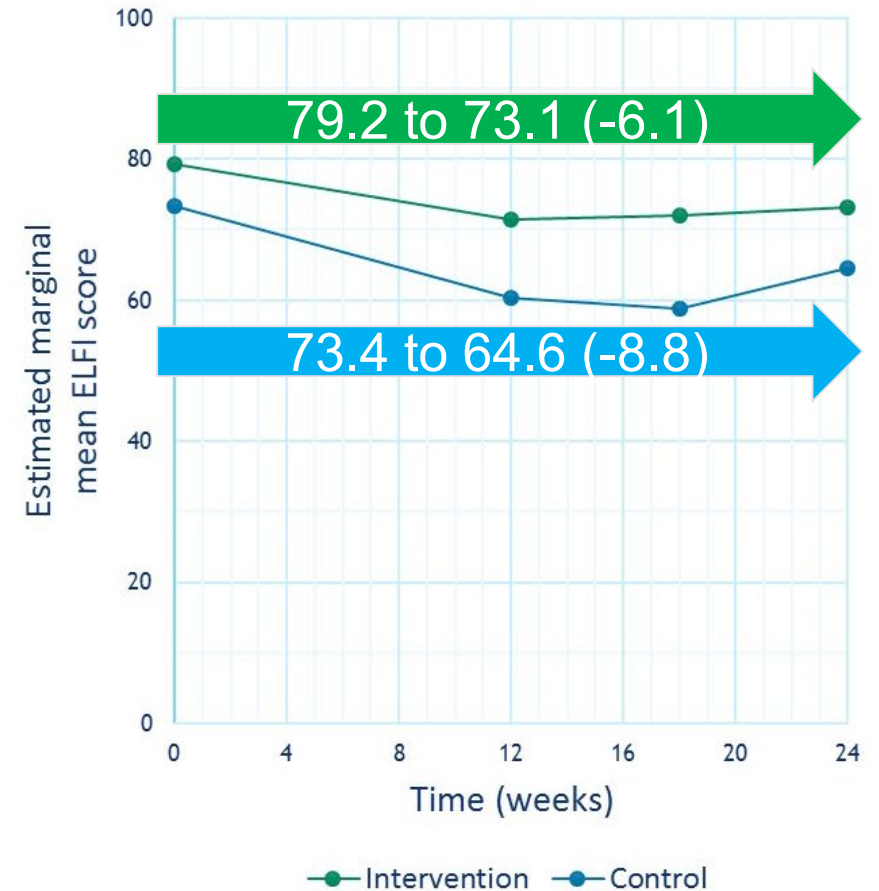


1. Mohile S et al. Lancet. 2021
2. Li D et al. JAMA Oncol. 2021

Improving quality of life on systemic therapy

INTEGERATE study
Patients ≥ 70 years with solid tumours/DLBCL starting a new systemic treatment
N = 154

ELderly Functional Index (ELFI) Estimated Marginal Mean Score				
Week	Intervention	Usual Care	Difference (95% CI)	<i>p</i>
12	71.4	60.3	11.1 (3.5-18.7)	0.004
18	72.0	58.7	13.4 (5.5-21.2)	0.001
24	73.1	64.6	8.5 (0.5-16.5)	0.037



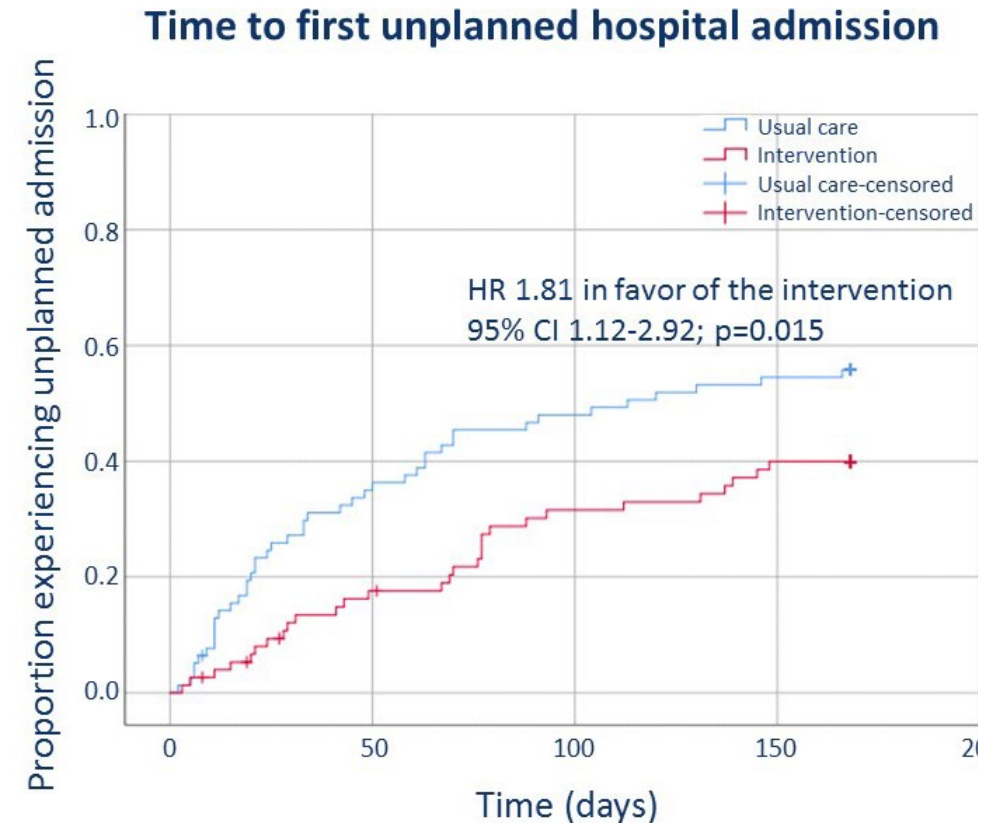
Reducing unplanned hospitalisations on systemic therapy

INTEGERATE study¹

Patients ≥ 70 years with solid tumours/DLBCL starting a new systemic treatment

N = 154

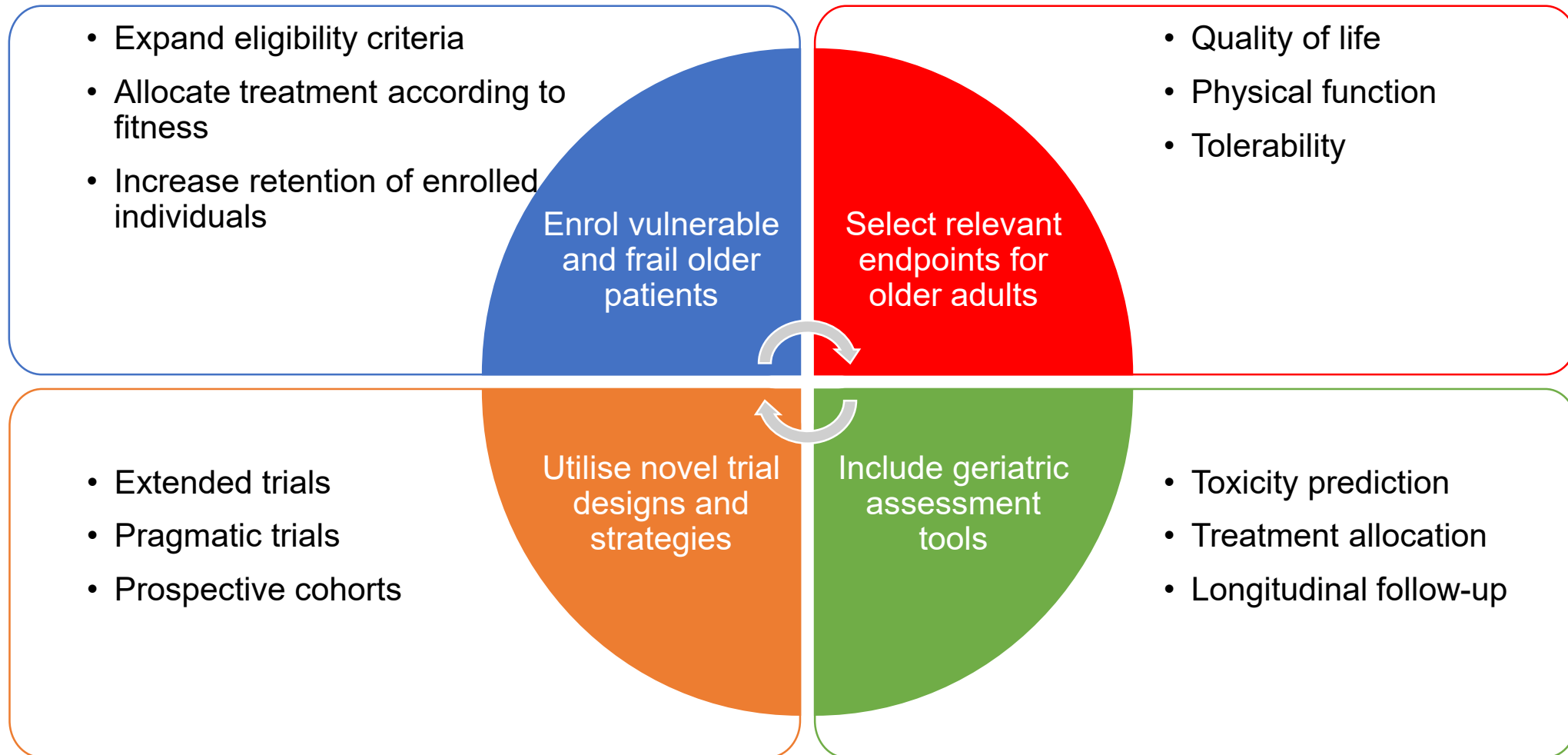
- **39% fewer emergency presentations**
- **41% fewer unplanned hospital admissions**
- **24% fewer unplanned hospital overnight bed-days**
- **Lower early treatment discontinuation due to adverse events: 32.9% vs 53.2%, $p=0.01$**
 - Driven by lower discontinuation due to toxicity
- **No difference in treatment reduction, escalation, delay**



Outline

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“Geriatricising” clinical trials

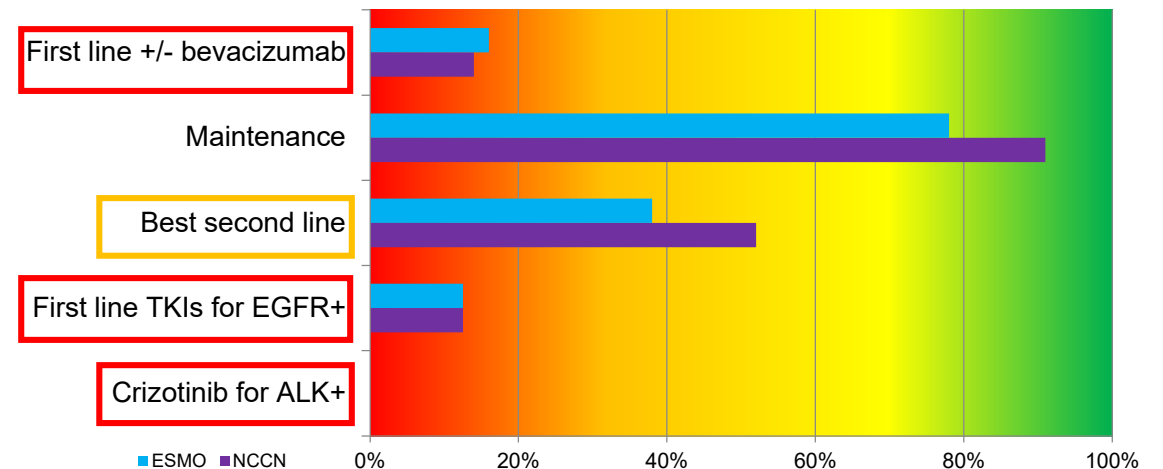
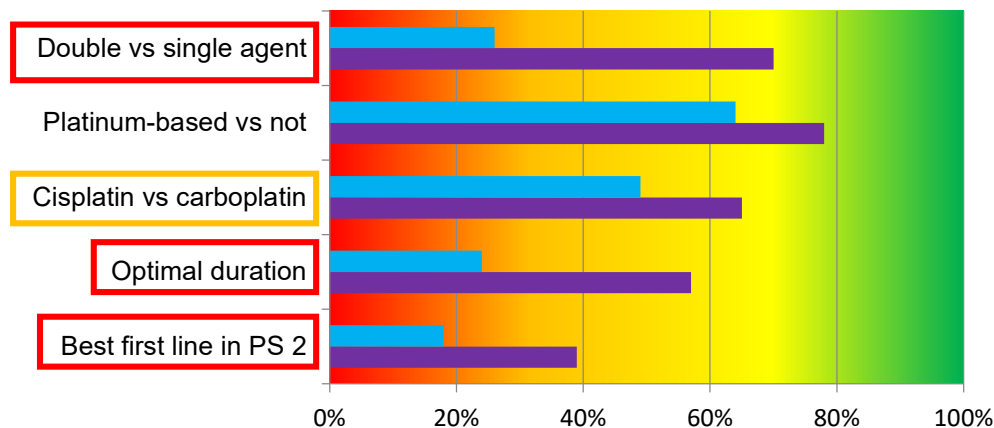
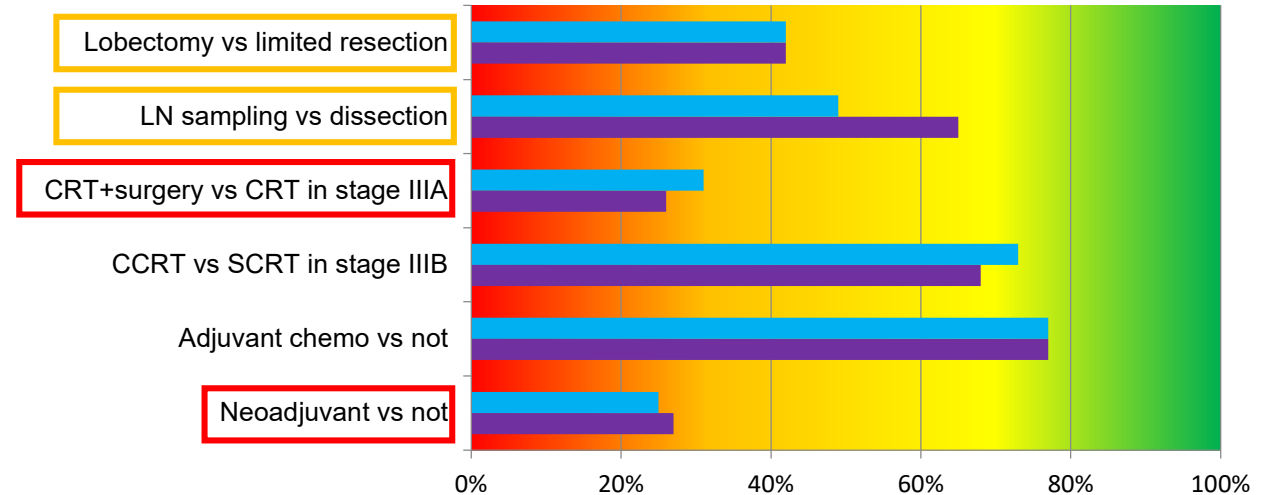


Trial eligibility criteria influence the applicability of evidence in oncology



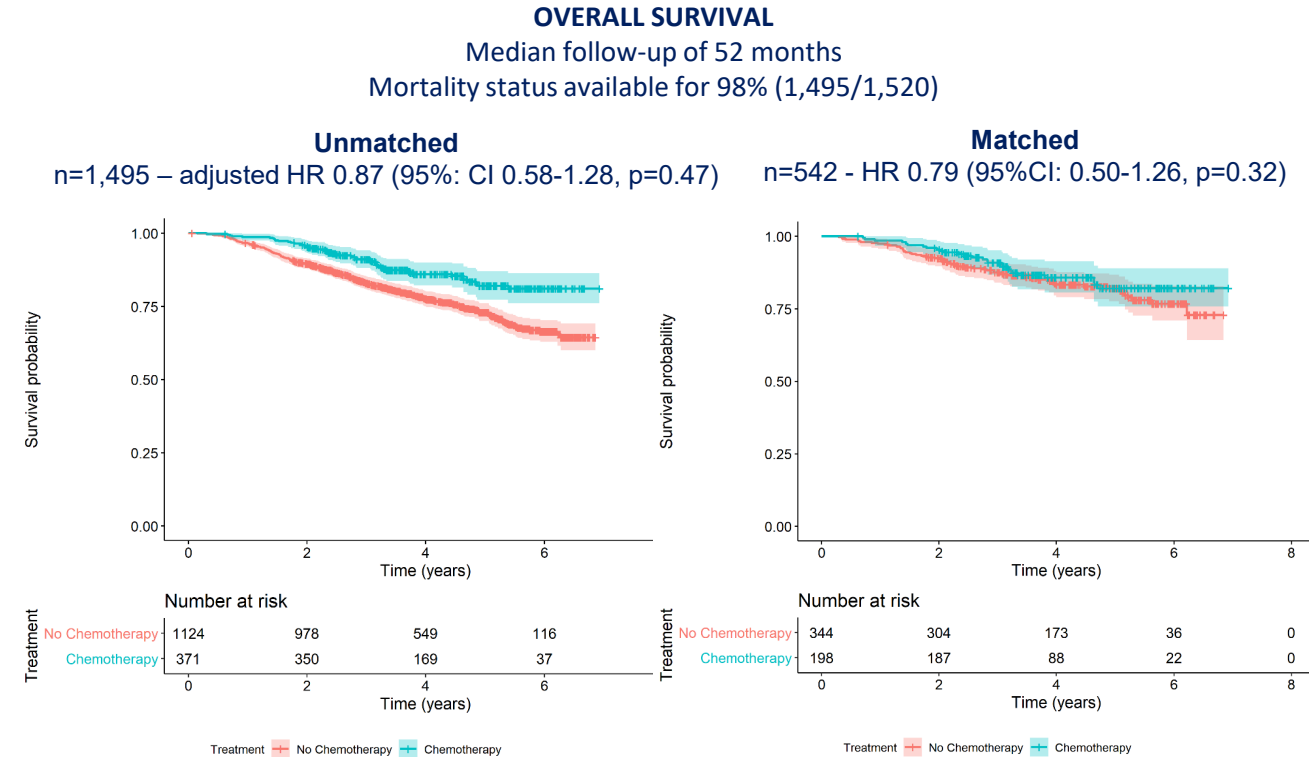
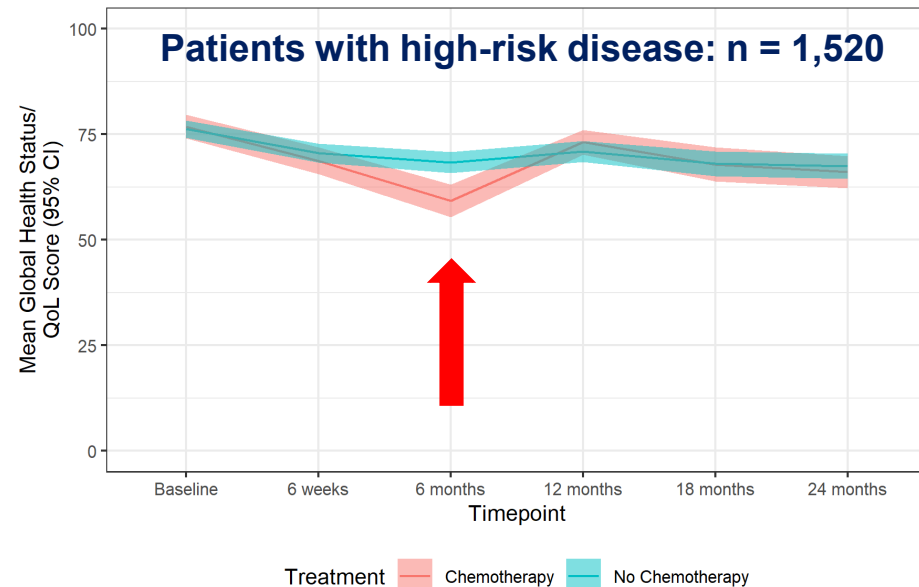
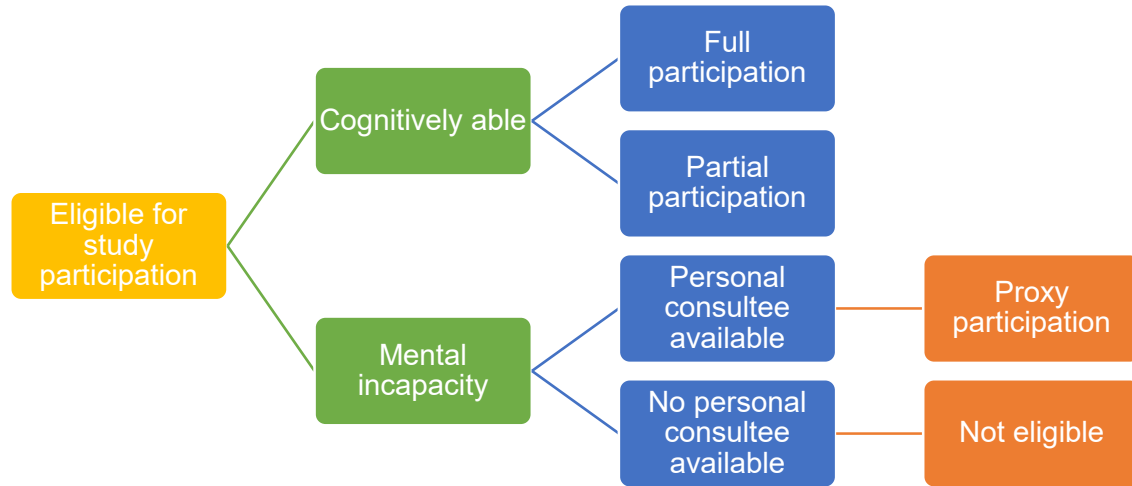
NCCN NSCLC guidelines version 4.2014; ESMO early & LA NSCLC guidelines July 2013; ESMO advanced NSCLC guidelines August 2014

Eligibility:
>60% full validity
30-60% partial validity
<30% limited validity



Value of prospective cohort studies: Bridging The Age Gap study

N = 3,416 women with BC ≥70 years in 56 Breast Units in England and Wales, 2013-2018



Patients with ER-negative EBC:

- OS (n=136): HR 0.20 (95% CI 0.08–0.49)
- BCSS (n=135): HR 0.12 (95% CI 0.03–0.44)

Ring A et al. Br J Cancer, 2021

Battisti NML et al. Eur J Cancer. 2021

Selecting meaningful endpoints: FOCUS2 and GO2 studies

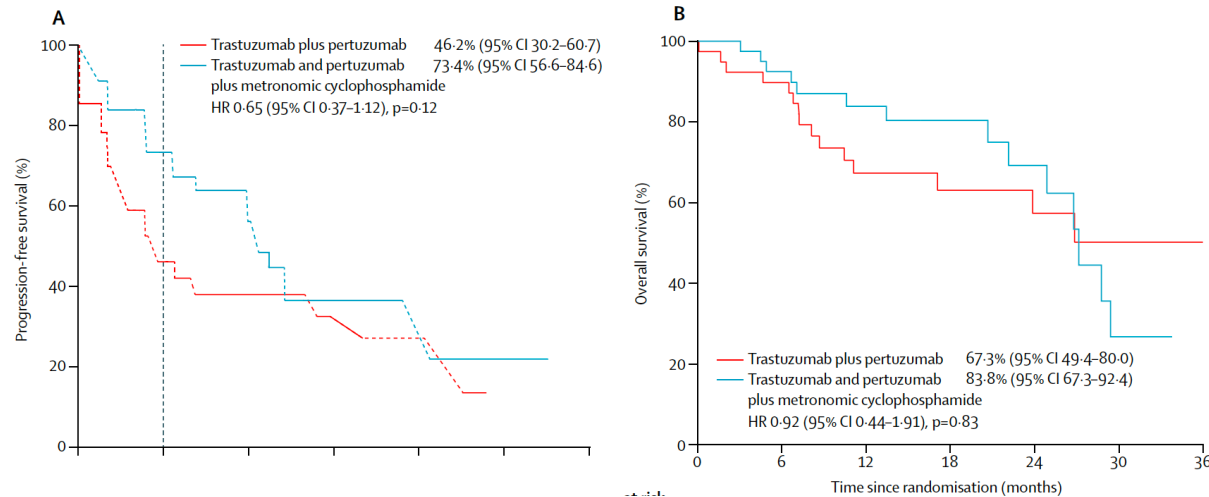
	Questions	Good	Intermediate	Poor
Clinician	Clinician considered effective: • Radiological PD • Clinical PD • QoL deterioration*	Clinician scores benefit	Clinician does not score benefit	Clinician does not score benefit
Patient	Patient found treatment tolerable: • Toxicity • Interference in daily life • Worth it	Patient scores benefit	Patient does not score benefit	Patient does not score benefit
		AND	OR	AND
				OR
				Death

**defined as 16% decline (2 on the 12-point EORTC global QoL scale)*

Including geriatric assessment tools in trial design: EORTC 75111-10114 study

EORTC 75111-10114 study

N=80 patients with HER2+ aBC ≥70 years or ≥60 years + functional impairment
ECOG PS 0-3 and ≤1 line of prior anti-HER2 therapy + endocrine therapy

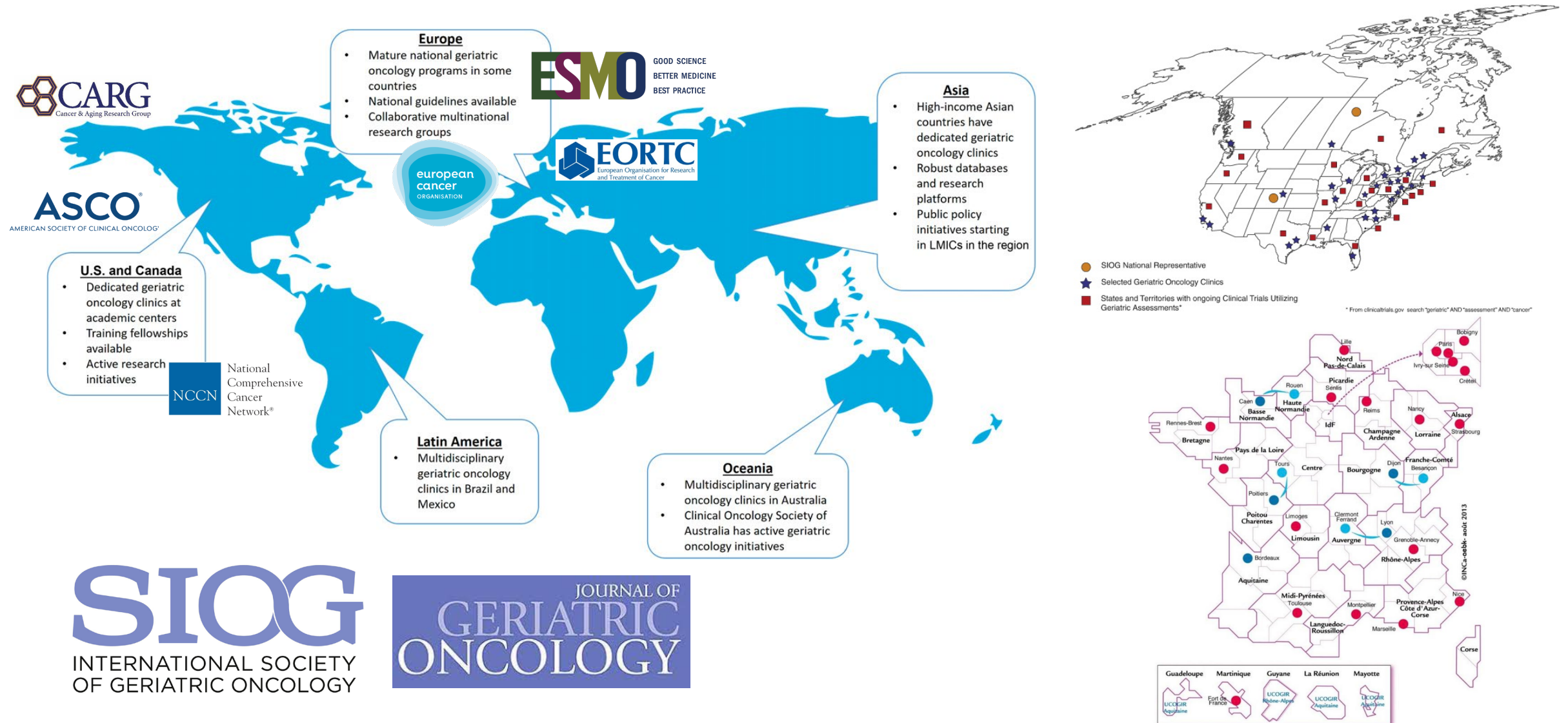


- **IV trastuzumab + IV pertuzumab +/- metronomic oral cyclophosphamide (50 mg daily without interruption)**
- In case of PD, all patients offered T-DM1
- **Median PFS: 12.7 months (6.7-24.8) vs 5.6 months (3.6-16.8)**
- No febrile neutropenia
- Diarrhea in ≥50%
- **G8 strong prognostic factor for OS**

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Global geriatric oncology



The consultative model

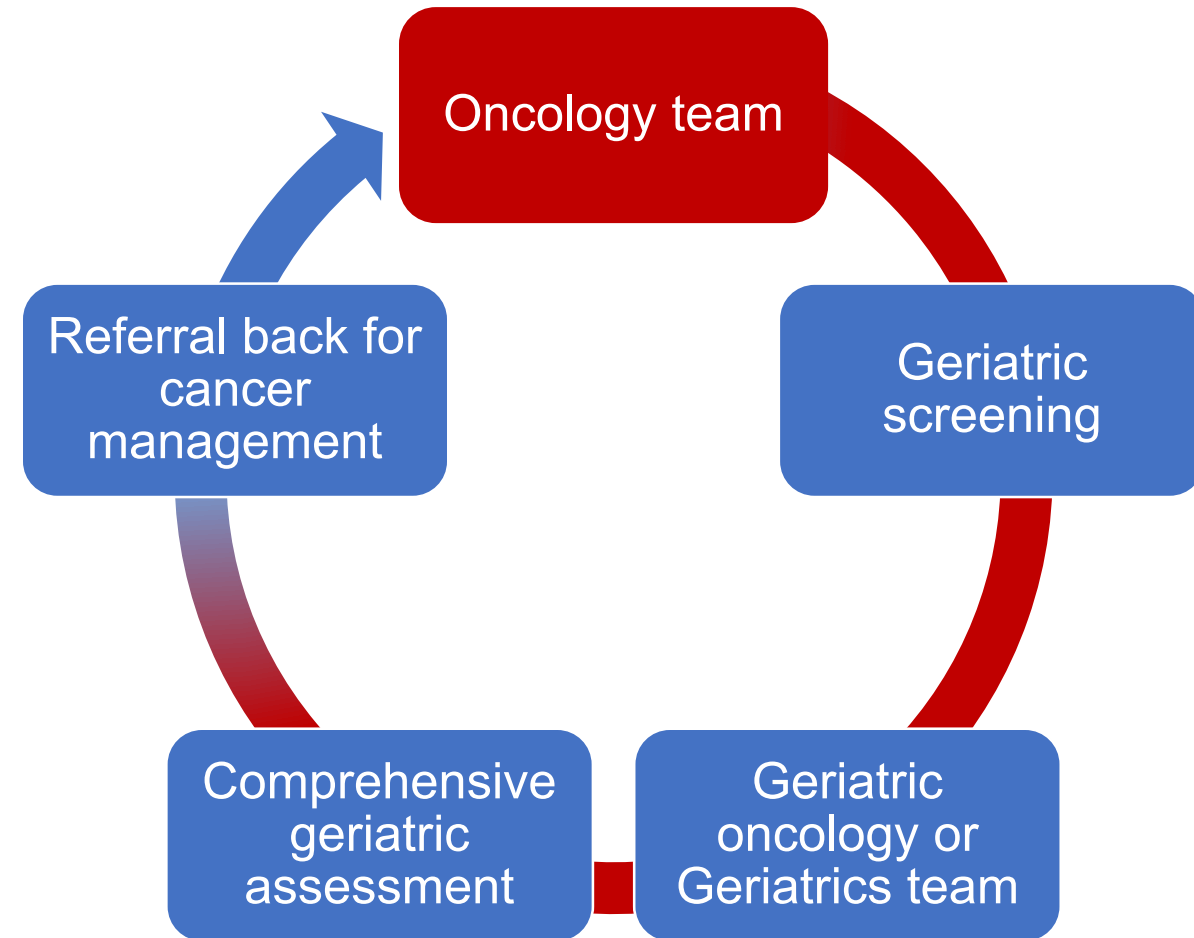
GAP 70 study

- **Advantages**

- Geriatric oncology **expertise**
- Recommendations from a **multidisciplinary team**

- **Challenges**

- Physician **buy-in** need to refer
- One-time visit
- **No longitudinal follow-up**
- **Interventions often left to treating team**
- **Long visits**: limited number of patients per clinic session
- **Multiple visits** for patients and physicians
- Need to maintain **good communication**



The shared-care model

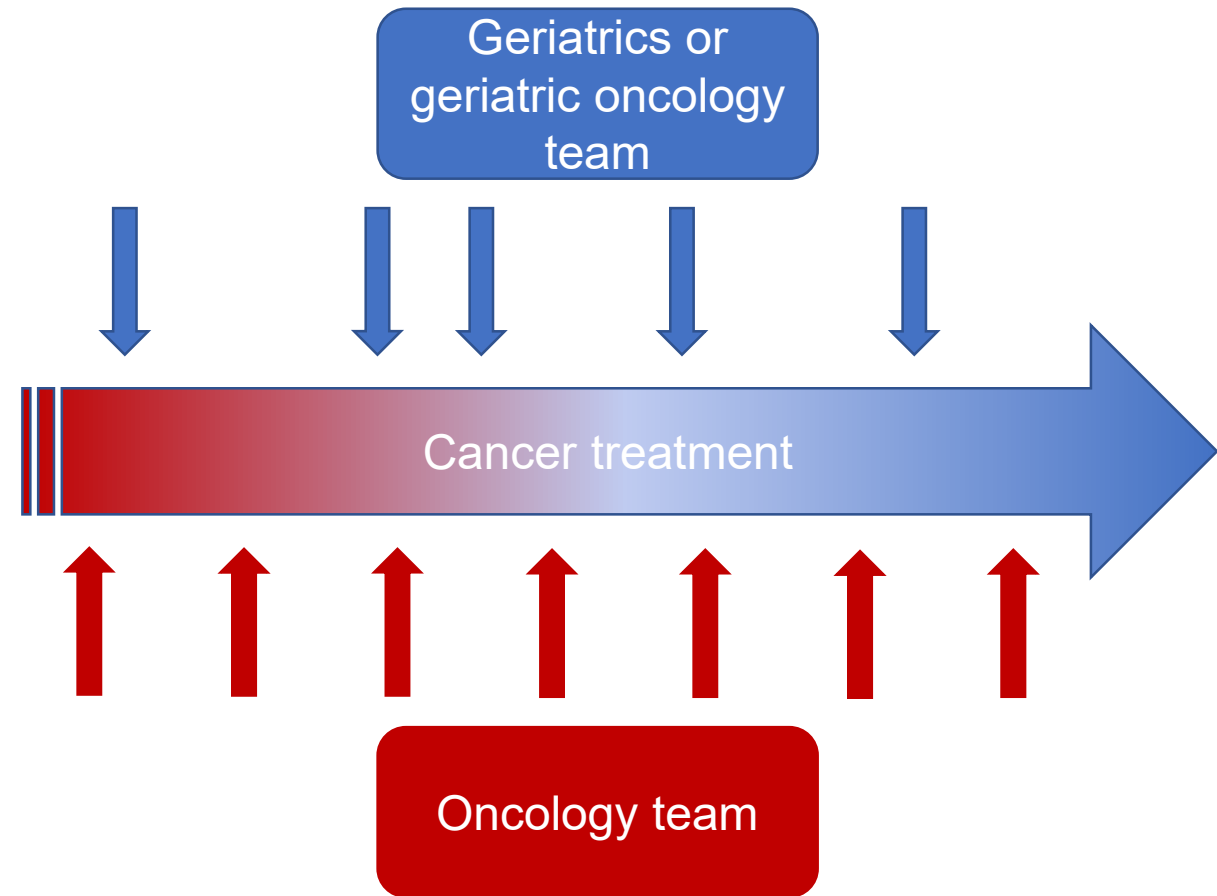
INTEGRATE
study

- **Advantages**

- **Collaborative care** through disease trajectory
- Geriatric oncology **expertise**
- Interventions and multidisciplinary recommendations can be **implemented over time**

- **Challenges**

- **Physician buy-in** need to refer
- Visits may not be centralised
- **Shortage of geriatricians**
- **Extra visits** for the patient



The comprehensive model

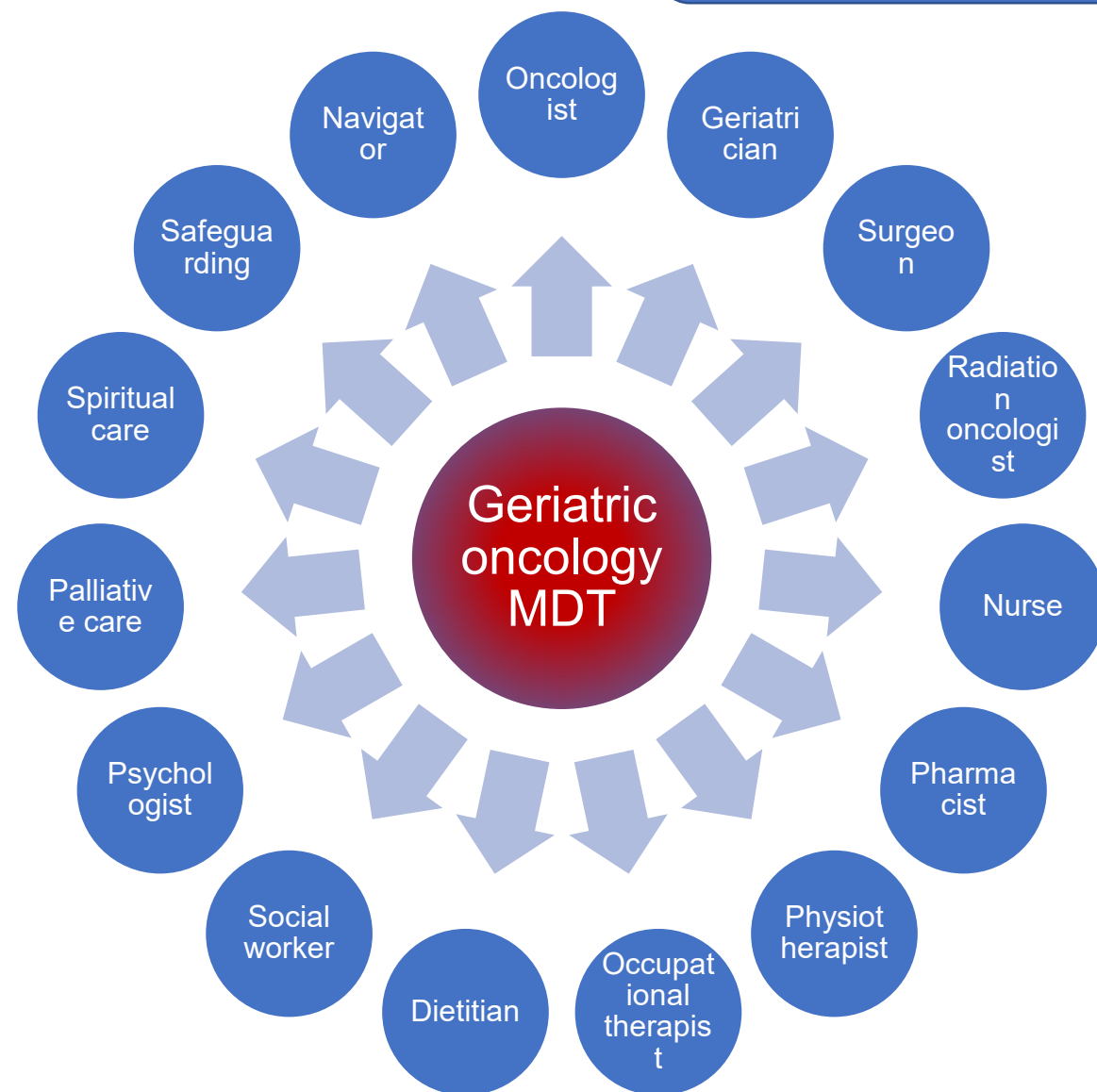
GAIN study

- **Advantages**

- **Collaborative care** through disease trajectory
- Geriatric oncology **expertise** throughout the treatment trajectory
- Convenience: **one-stop shopping** (geriatrics and oncology)

- **Challenges**

- Shortage of **geriatric oncologists**
- **Complex patient population** (limited no. of patients can be seen)



JCCO guidance on implementing frailty assessment and management in oncology services



Contents

Foreword	3
Executive summary	4
1 Introduction: what is frailty and why does it matter?	6
2 Frailty assessment in oncology: who, how and when?	9
3 Management of frailty in oncology	12
4 Education, research, audit and service improvement	15
5 Recommendations	17
Appendix 1 Frailty assessment tools	19
Appendix 2 Evidence for frailty-informed care in oncology	21
Appendix 3 Domains of frailty and MDT role	23
Appendix 4 Oncology frailty service development: fundamentals and models of care	25
Appendix 5 Training and resources	31
Acknowledgements	33
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Figure 1. Model for assessing and managing frailty throughout the cancer diagnosis and treatment pathway

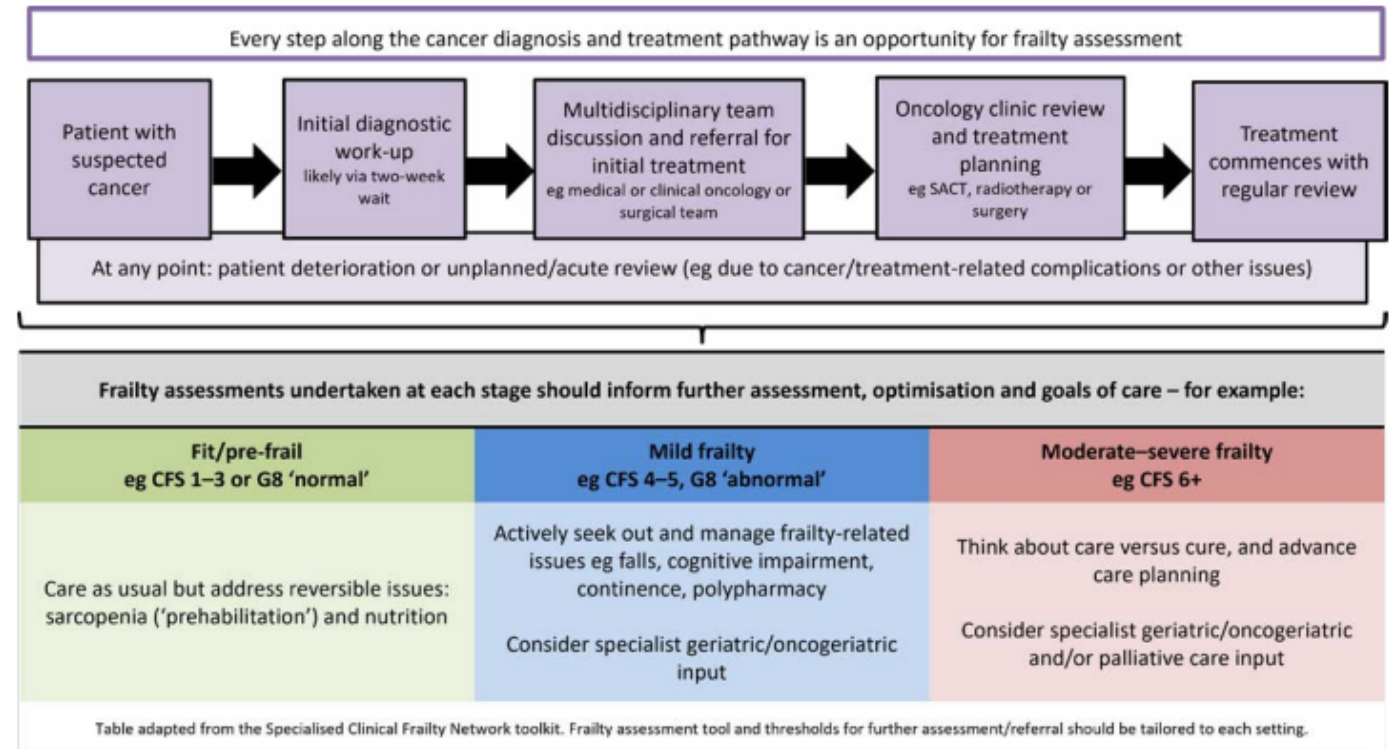


Table 2. Potential measures to assess frailty-informed care in cancer services

Process measures	Outcome measures	Patient feedback
Numbers of frailty assessments completed in a defined population	Urgent or unplanned care usage as well as emergency admissions and length of stay	Patient and care satisfaction surveys
Numbers of patients referred for CGA on the basis of frailty assessment	Severe adverse events during the course of cancer treatments	Quality of life and Patient Reported Outcome Measures

RM Senior Adult Oncology Programme

Consultative model for patients ≥ 70 years requiring a new line of **systemic anticancer therapy**



Geriatric screening: SAOP3

Page 1-4: patient-reported (10 mins)

The ROYAL MARSDEN
NHS Foundation Trust

NAME AND SURNAME:	
DATE OF BIRTH:	
HOSPITAL NUMBER:	

Senior Adult Oncology Programme Screening Questionnaire (SAOP3)

	Questions	Please check one for each line									
1	Activities of Daily Living/Instrumental Activities of Daily Living (ADL/IADL)										
A	Do you use a cane or a walker?	☐ Yes	☐ Occasionally	☐ No							
B	Do you need help to get out of bed/chair?	☐ Yes	☐ Occasionally	☐ No							
C	Have you tripped or fallen in the past year?	☐ Yes	☐ No								
D	Do you have problems holding your urines or stools (more than small leaks controlled with a pad)?	☐ Yes	☐ Occasionally	☐ No							
E	Can you dress yourself completely?	☐ Yes	☐ Yes, but with help	☐ No							
F	Can you feed yourself?	☐ Yes	☐ Yes, but with help	☐ No							
G	Are you able to drive?	☐ Yes	☐ Yes, but with help	☐ No							
H	Are you able to prepare your own meals?	☐ Yes	☐ Yes, but with help	☐ No							
I	Are you able to go shopping?	☐ Yes	☐ Yes, but with help	☐ No							
J	Can you take care of your finances?	☐ Yes	☐ Yes, but with help	☐ No							
K	Can you use a telephone?	☐ Yes	☐ Yes, but with help	☐ No							
L	Do you remember to take your medicines?	☐ Yes	☐ Yes, but with help	☐ No							
M	Can you shower or bathe yourself completely?	☐ Yes	☐ Yes, but with help	☐ No							
2	Have you lost 5 or more pounds in the past 6 months without dieting?	☐ Yes	☐ No								
3	Has your appetite decreased in the last 3 months?	☐ Yes	☐ No								
4	Has there been a change in the types of foods you are able to eat?	☐ Yes	☐ No								
5	Are you able to pay for your prescription medications?	☐ Yes	☐ No								
6	Do you feel you are sleeping well?	☐ Yes	☐ No								
7	If it was necessary, is there someone who could help take care of you?	☐ Yes	☐ No								
8	Do you feel sad more days than not?	☐ Yes	☐ No								
9	Have you lost interest in things you used to enjoy (hobbies, food, sex, being with friends/family)?	☐ Yes	☐ No								
10	On a scale of 1 to 10, rate your present quality of life (10 is the best life, 1 is the worst)	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	☐ 8	☐ 9	☐ 10
11	On a scale of 1 to 10, rate your present overall health (10 is the best health, 1 is the worst)	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	☐ 8	☐ 9	☐ 10

Page 5-6: Mini-Cog (1-3 mins)

The Mini-Cog Evaluation™

Mini-Cog™ © S. Borson. All rights reserved. Reprinted with permission of the author solely for clinical and educational purposes. May not be modified or used for commercial marketing or research purposes without permission of the author (scob@uw.edu). V. 19.01.16

Step 1: Three Word Registration

Look directly at the patient and say, "Please listen carefully. I am going to say three words that I want you to repeat back to me now and try to remember. Please say them for me now." If the person cannot repeat them after 3 times, move on to Step 2.

Version 1	Version 2	Version 3	Version 4	Version 5	Version 6
Banana Sunrise Chair	Leader Season Able	Village Kitchen Baby	River Nation Finger	Captain Garden Picture	Daughter Heaven Mountain

Step 2: Clock drawing

Say "Next I want you to draw a clock for me. First put the numbers where they go." When that is completed "Now set the hands to 10 past 11."

Step 3: Three Word Recall

Ask the person to recall the three words you stated in Step 1. Say "What were the three words I asked you to remember?"

Patient's answers:

MINI COG SCORING	
Number of correct items recalled:	3 correct: Normal 1-2 correct: see clock results 0 correct: Abnormal
If 1-2, is clock drawing abnormal?	☐ Yes (Cognitive impairment) ☐ No (Normal)

1A-1D	ADL/IADL mobility items: If at least two YES responses, then consult	☐ Physiotherapy ☐ Current treatment ☐ Patient declined
1E-1M	ADL/IADL items: If more than one is not YES responses, then consult	☐ Physiotherapy ☐ Occupational therapy ☐ Current treatment ☐ Patient declined
2-4	Nutrition items: If at least two YES responses, then consult	☐ Dietetics ☐ Current treatment ☐ Patient declined
5	If NO, refer to	☐ Social worker ☐ Welfare Rights Advisor ☐ Patient declined
6	If NO, administer Pittsburgh Sleep Quality Index (PSQI)	
7-9	Psychosocial items: If response is NO to 1 and/or YES to 2 or 3, then refer to	☐ Adult Psychological Support Service ☐ Occupational therapy ☐ Patient declined
10-11	Quality of life and self-rated health items: If score less than 8, then consult	☐ Adult Psychological Support Service ☐ Occupational therapy ☐ Patient declined
Mini-Cog:	If positive for cognitive impairment, then consult	☐ Occupational therapy ☐ Speech and language therapy ☐ Patient declined
	Number of medications greater than 5, then consult	☐ Pharmacy ☐ Patient declined

Patients ≥70
years considered
for SACT

SAOP3

Epic

Negative

Positive

Standard
approach

CGA

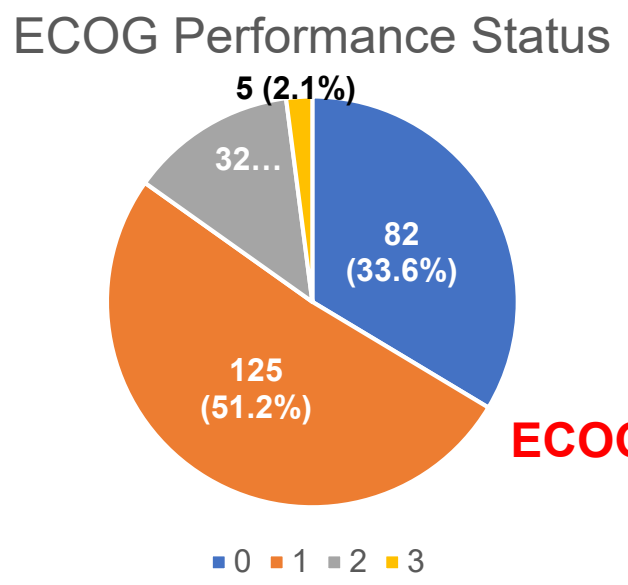
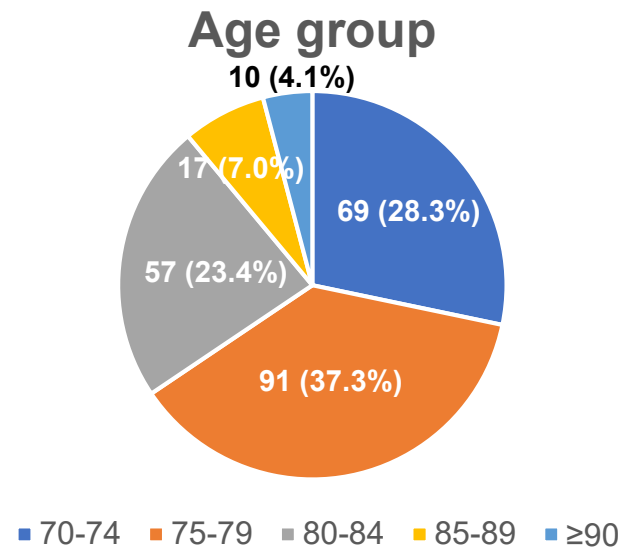
Treatment plan

Integrated
treatment plan

SAOP MDT

1. Extermann, M., Evaluation of the Senior Cancer Patient: Comprehensive Geriatric Assessment and Screening Tools for the Elderly, in Handbook of Cancer in the Senior Patient, D. Schrijvers, Aapro M, Zakotnik B, Audisio R, van Halteren H, Hurria A., Editor. 2010, Informa Healthcare: New York, London. p. 13-21.
2. <https://moffitt.org/for-healthcare-providers/clinical-programs-and-services/senior-adult-oncology-program/senior-adult-oncology-program-tools/>

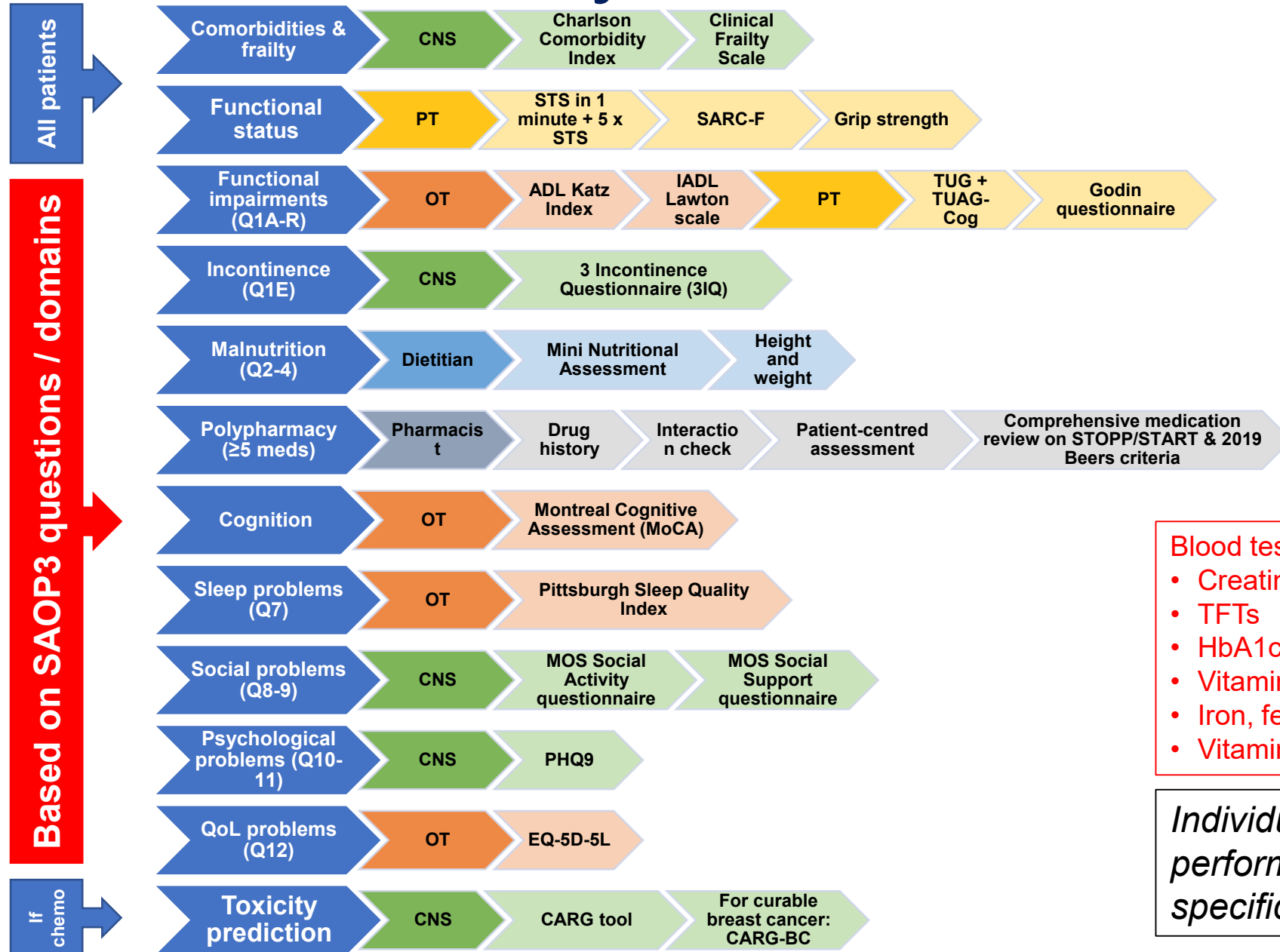
First 18 months of RM SAOP implementation experience



ECOG PS 0-1: 207 (84.8%)

Referrals	Referral indicated	Referral accepted by patient
Any profession	211 (86.5%)	194 (91.9%)
Physiotherapist	168 (68.9%)	140 (83.3%)
Occupational Therapist	149 (61.1%)	131 (87.9%)
Dietitian	98 (40.2%)	87 (88.8%)
Pharmacist	92 (37.7%)	90 (97.8%)
Welfare Rights Advisor	65 (37.7%)	57 (87.7%)
Speech and Language Therapist	56 (23.0%)	47 (83.9%)
Adult Psychology Support Service	19 (7.8%)	11 (57.9%)
Social worker	2 (0.8%)	0 (0.0%)

The Royal Marsden SAOP CGA



Blood tests:

- Creatinine clearance
- TFTs
- HbA1c
- Vitamin B12 & folate
- Iron, ferritin, transferrin
- Vitamin D

Individual geriatric assessments to be performed only for patients flagging for specific SAOP3 domains

Benefits observed with the RM SAOP development (2021-2023)

Benefits	Target KPI	Actual KPI delivered to date
Admission avoidance	25% reduction in unplanned hospitalisations	53% reduction compared with baseline
Reduced length of stay	Average reduction of 4.5 days	Average reduction of 6.1 days compared with baseline
Reduced SACT toxicity	Comparison against 2021 baseline	29% reduction compared with baseline
Improved quality of life	Median quality of life: 7/10 (range 1-10)	Median quality of life: 8/10 (range 1-10) +1 point at 9 months compared with baseline
Improved patient experience	Shared Decision-Making 75% (collaboRATE national standard) N/A	Shared Decision-Making 80% Positive patient feedback
Improved staff experience	N/A	Positive staff feedback
Improved research for older adults	N/A	2 research projects published² 14 abstracts presented
Improved education in geriatric oncology	N/A	2 annual RM Senior Adult Oncology Study days Contribution to local/national/international conferences RCR/RCP guidance on implementing frailty and management in oncology services³ National Forum of Oncogeriatrics

1. Mac Eochagain C, et al. J Geriatr Oncol. 2023 Oct 7:101641. doi: 10.1016/j.jgo.2023.101641. PMID: 37813781

2. Mac Eochagain C, et al. J Geriatr Oncol. Volume 15, Issue 2. 2024. ISSN 1879-4068. <https://doi.org/10.1016/j.jgo.2023.101698>

3. <https://www.rcr.ac.uk/our-services/all-our-publications/clinical-oncology-publications/implementing-frailty-assessment-and-management-in-oncology-services/>

Outline

- Challenges of managing cancer in older adults
- Comprehensive geriatric assessment: applying geriatrics to oncology
- Benefits of integrated oncogeriatric care
- Making oncology clinical trials more relevant for older adults
- Implementing optimal care models for older adults with cancer
- **Practical integration of geriatric assessments in cancer treatment decisions**
- Conclusions

GA refine cancer treatment decisions

Life expectancy

- **ePrognosis**
- Comorbidities, physical function, nutrition, mood, cognition

ePrognosis | Estimating Prognosis for Elders

<http://eprognosis.ucsf.edu>

Treatment benefits

- **Age Gap Decision tool**
- Comorbidities, ADLs

Age Gap Decision Tool

A tool designed to allow for the comparison of breast cancer treatments for older women. The treatments considered within this tool are surgery, primary endocrine therapy and chemotherapy. This tool is designed **for use by clinicians** with appropriate knowledge of breast cancer and the two types of treatment that are addressed here. Choose a comparison below to get started...

<https://agegap.shef.ac.uk/>

Treatment toxicity

- **CARG, CRASH, CARG BC**
- Falls, IADLs, social support & activity, hearing, vision, MMSE, MNA



CARG

https://www.mycarg.org/?page_id=2405

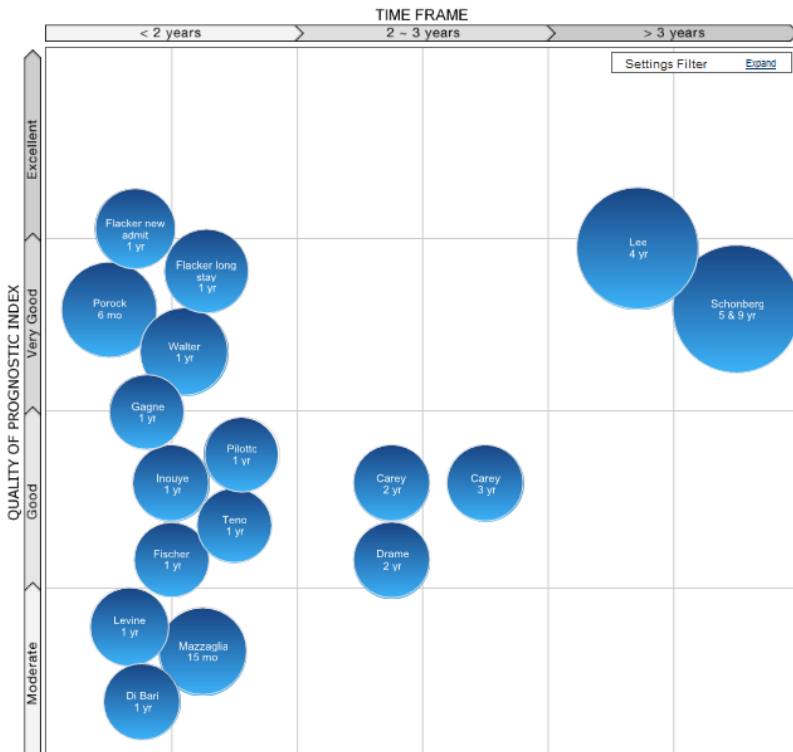
CRASH

<https://www.moffitt.org/for-healthcare-professionals/clinical-programs-and-services/senior-adult-oncology-program/>

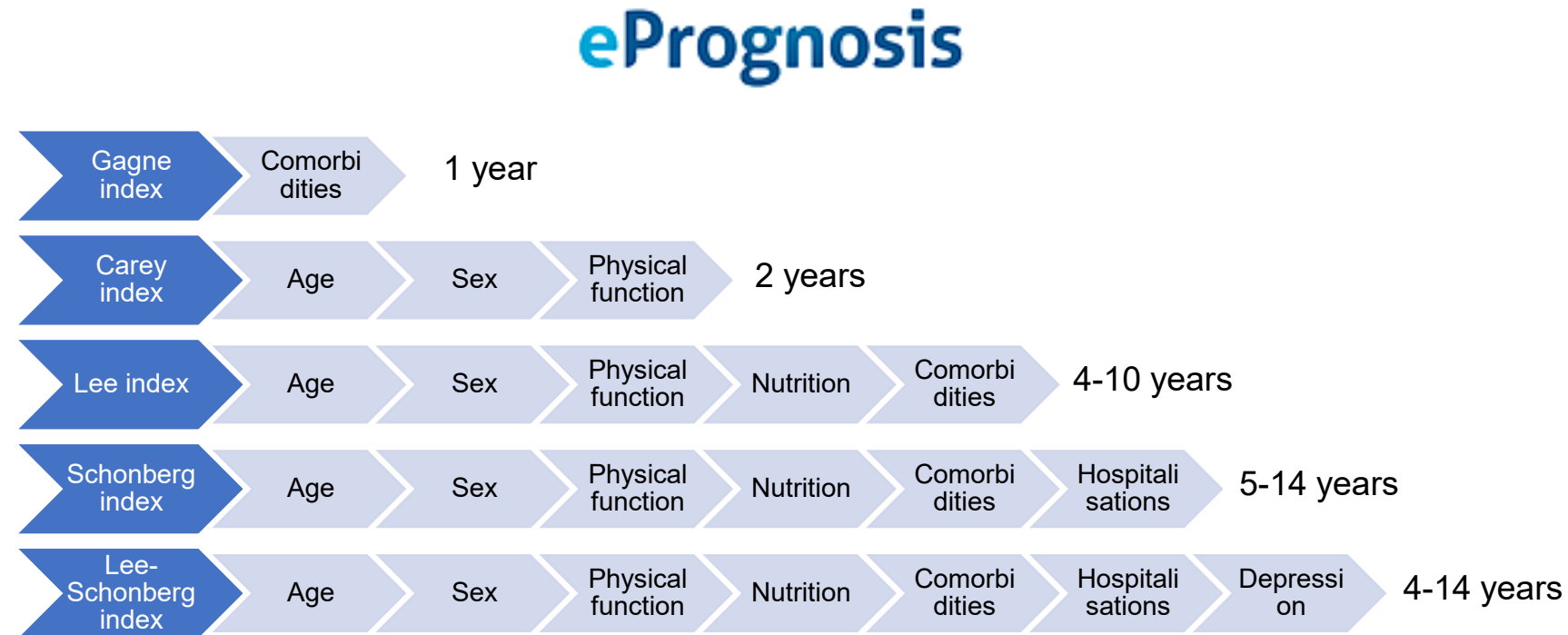
CARG BC

https://www.cancercalc.com/carg_bc.php

Estimating life expectancy

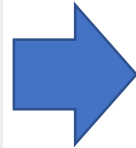


<http://eprognosis.ucsf.edu>



ePrognosis: Suemoto Index

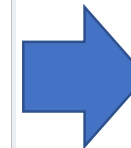
WHERE IS YOUR PATIENT?



Risk Calculator

1. How old is your patient?	70-74
2. What is the sex of your patient?	Female
3. Does your patient have diabetes??	Yes
4. Does your patient have heart disease?	No
5. Does your patient have lung disease?	No
6. Does your patient have cancer?	Yes
7. What is your patient's smoking status?	Former Smoker
8. Does your patient use alcohol?	No
9. What is your patient's body mass index (BMI)?	>=25 to <30
10. Is your patient engaging in physical activity once or more per week?	No
11. Because of health problems, does your patient have any difficulty with bathing or showering?	No
12. Because of health problems, does your patient have any difficulty walking several blocks?	Yes
13. Did your patient report correctly today's date (day/month/year)?	Yes
14. What is your patient's self-reported health?	Fair or Poor

Calculate risk



Suemoto Index

- Population: Community dwelling adults aged 60 and older
- Outcome: All cause 10 year mortality
- Scroll to the bottom for more detailed information

Suemoto all-cause 10 year mortality risk: 70%

5 longitudinal studies of community-dwelling adults

Development cohort: N = 23,615 (16 countries)

Validation cohort: N = 11,752

Discrimination: good (76%)

Calibration: ≤7% difference in estimated vs observed mortality rates

<http://eprognosis.ucsf.edu>

Predicting treatment benefit

predict
breast cancer

<https://breast.predict.nhs.uk/tool>

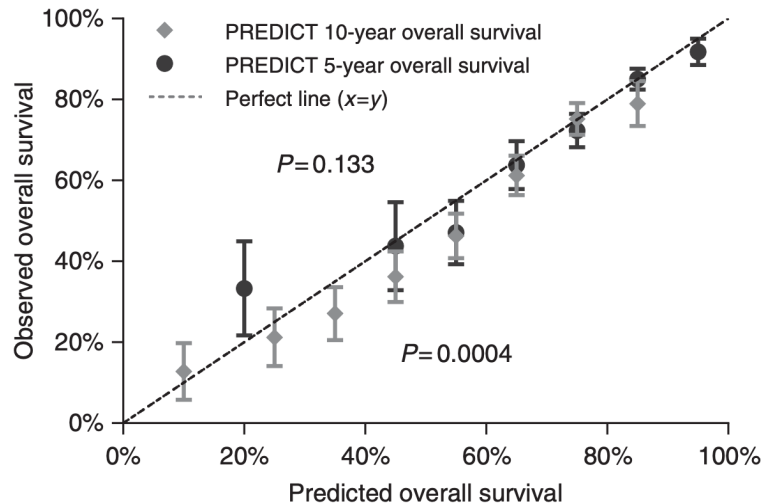


Figure 1. Calibration plot: observed vs predicted overall survival.
P-values were calculated using Poisson regression.

N = 2,012 patients aged ≥65 years

Observed versus predicted OS

At 5 years Δ 1.7% (95% CI 0.3-3.7)

At 10 years Δ 4.5% (95% CI 2.3-6.6)

Age Gap Decision Tool

A tool designed to allow for the comparison of breast cancer treatments for older women. The treatments considered within this tool are surgery, primary endocrine therapy and chemotherapy. This tool is designed **for use by clinicians** with appropriate knowledge of breast cancer and the two types of treatment that are addressed here. Choose a comparison below to get started...

→ Compare Surgery and Primary Endocrine Therapy (PET)

→ Compare Surgery With & Without Chemotherapy

<https://agegap.shef.ac.uk/>

Cancer registry data:

New breast cancer diagnoses

≥70 years

2002-2012

Two UK regions: West Midlands and

Northern & Yorkshire

Surgery versus PET: N = 10,087

Chemo versus not: N = 11,735

Age Gap tool

Age (70 - 99)

Note: For patients over 80 the results are less reliable.

Tumour grade ☐ 1 ☐ 2 ☒ 3

Tumour size

Disease nodes positive ☐ None ☒ 1 to 3 ☐ 4+

ER status ☒ Negative ☐ Positive

HER2 status ☒ Negative ☐ Positive

Comorbidities - Tick all that apply

☐ AIDS
☒ COPD
☐ Cerebrovascular Disease
☐ Congestive Heart Failure
☐ Connective Tissue Disease
☐ Dementia
☐ Diabetes Mellitus (no complications)
☐ Diabetes Mellitus (with organ damage)
☐ Hemiplegia

☐ Liver Disease (mild)
☐ Liver Disease (moderate/severe)
☐ Moderate/Severe Renal Disease
☐ Myocardial Infarction
☐ Other cancer (metastatic)
☐ Peptic Ulcer Disease
☐ Peripheral Vascular Disease
☐ Previous/concurrent cancer (non-metastatic)

Frailty - Activity of Daily Living (ADL)
Please enter a score for each dimension below (0 = No difficulty, 1 = Some difficulty, 2 = A lot of difficulty, 3 = Unable) and the ADL Stage will be calculated automatically.

Difficulty eating ☒ 0 ☐ 1 ☐ 2 ☐ 3

Difficulty getting to and using the toilet ☐ 0 ☒ 1 ☐ 2 ☐ 3

Difficulty dressing ☐ 0 ☒ 1 ☐ 2 ☐ 3

Difficulty transferring (to and from chair/bed) ☐ 0 ☒ 1 ☐ 2 ☐ 3

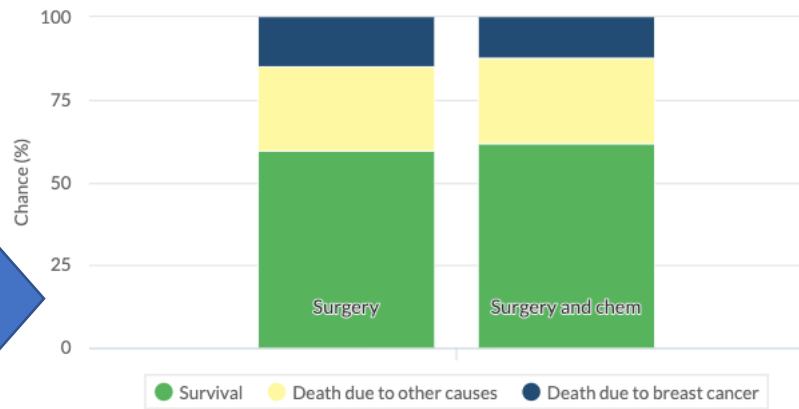
Difficulty bathing ☐ 0 ☒ 1 ☐ 2 ☐ 3

Difficulty walking ☐ 0 ☐ 1 ☒ 2 ☐ 3

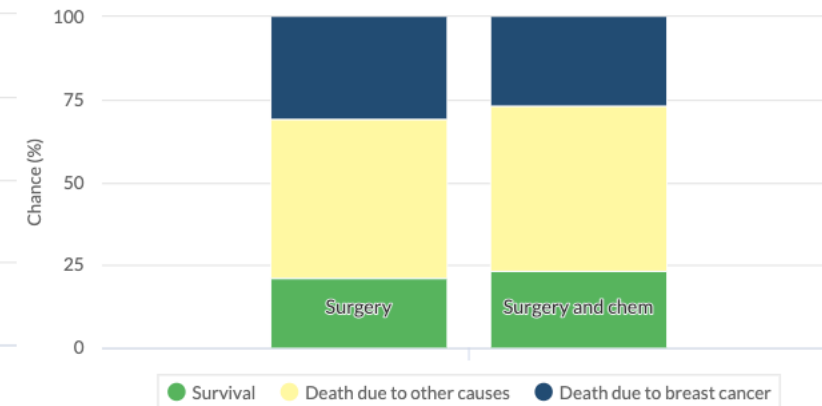
Enter the patient's details above and click the button:



Overall Survival At Two Years



Overall Survival At Five Years



Statistics At Two Years

	Chance of survival	Chance of death due to breast cancer	Chance of death from other causes
Surgery	59.8%	14.8%	25.4%
Surgery and chemotherapy	61.8%	12.5%	25.8%

Statistics At Five Years

	Chance of survival	Chance of death due to breast cancer	Chance of death from other causes
Surgery	21.1%	31.0%	47.9%
Surgery and chemotherapy	23.4%	26.8%	49.8%

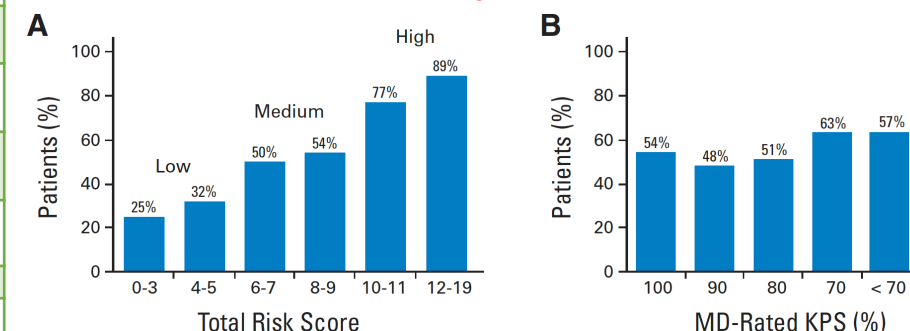
Predicting treatment toxicity

Cancer and Aging Research Group (CARG) score

Risk factors	Points			
	0	1	2	3
Age	<72 years		≥72 years	
Cancer type	Other		GI or GU	
Chemotherapy dose	Dose reduced		Standard dose	
No. of chemotherapy drugs	Mono-chemotherapy		Polychemotherapy	
Haemoglobin	≥11 g/dL (male) ≥10 g/dL (female)			<11 g/dL (male) <10 g/dL (female)
Creatinine clearance (Jelliffe, ideal weight)	≥34 mL/min			<34 mL/min
Hearing (with hearing aid, if needed)	Excellent or good		Fair, poor or totally deaf	
No. of falls in last 6 months	None			≥1
IADL: taking medications	Without help	With some help or completely unable		
MOS: Walking 1 block	Not limited at all		Limited a little or limited a lot	
MOS: Decreased social activity because of physical/emotional health	A little of the time or none of the time	Some of the time, most of the time, or all the time		
TOTAL SCORE				
Jelliffe formula	$CrCl \left(\frac{mL}{min} \times 1.73m^2 \right) = \frac{98 - 16 \times \left(\frac{age - 20}{20} \right)}{serum\ creatinine \left(\frac{mg}{dL} \right)}$ CrCl is multiplied by 0.9 for female patients			

Ability of (A) risk score vs (B) physician-rated KPS to predict chemotherapy toxicity
Graphs show Grade 3–5 toxicity

Development study cohort: n=500
Validation study cohort: n=250



Total risk score ²		% risk of Grade 3–5 adverse events
Low	0–3	25%
	4–5	32%
Medium	6–7	50%
	8–9	54%
High	10–11	77%
	12–19	89%

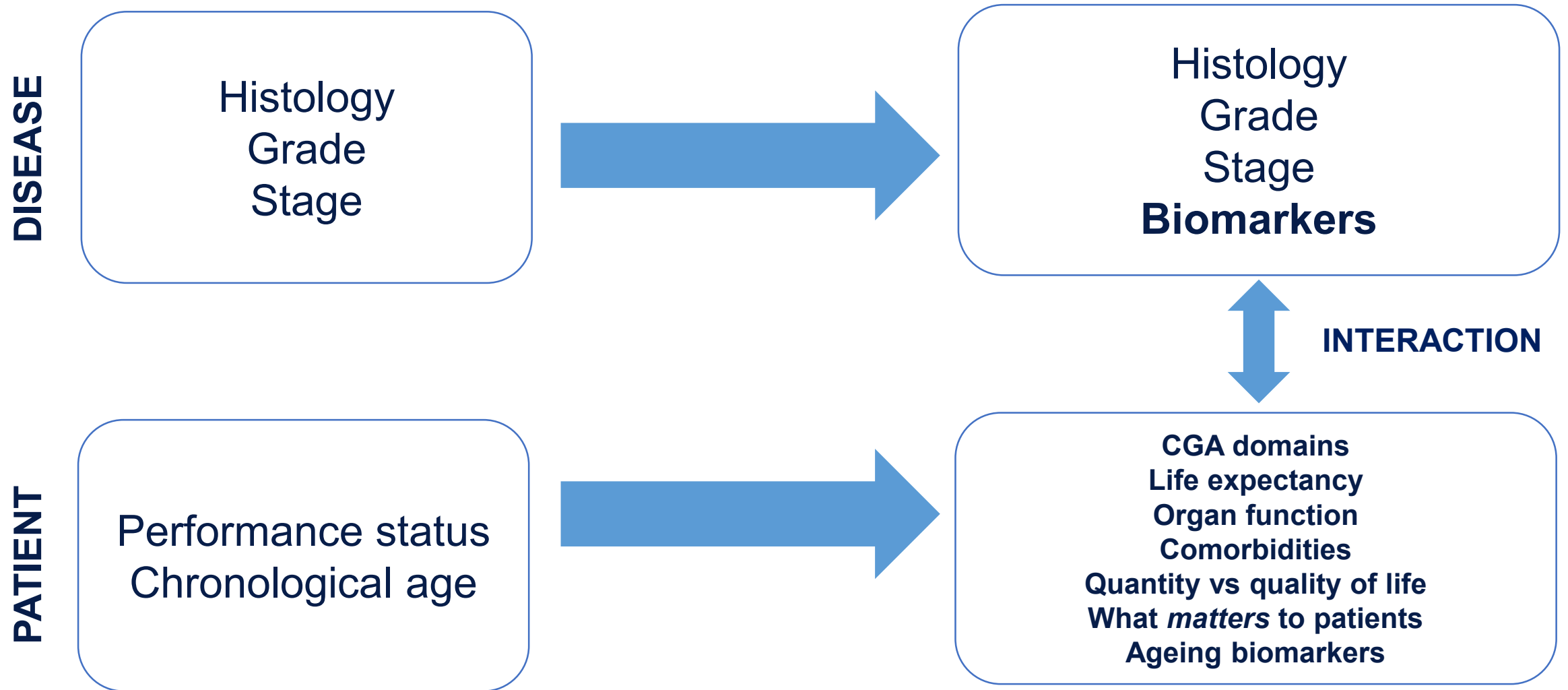
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SIOG Top Priorities for the global advancement of care for older adults with cancer

Education	Clinical practice	Research	Collaborations and partnerships
• Integrate geriatric oncology into medical, nursing and allied health professionals schools and residency training programmes and promote involvement of trainees in research • Provide educational material and organise formal educational activities focused on geriatric oncology for practising health care professionals • Educate the general public about the relevance of providing age-appropriate care for older adults with cancer	• Develop and implement models to provide optimal care for older adults with cancer • Develop guidelines for the optimal treatment of older adults with cancer • Establish centres of excellence in geriatric oncology for delivering clinical care, conducting clinical and translational research, and providing educational opportunities	• Improve the relevance of clinical trials to older adults with cancer • Evaluate the benefits of geriatric assessment-allocated treatments and geriatric comanagement in improving treatment outcomes for older adults with cancer • Use personalised medicine technologies to enhance cancer understanding and management of older adults	• Develop and strengthen links between SIOG and the geriatric oncology workforce, international specialised agencies, global and regional professional organisations, policy makers, and patient advocacy groups • Promote the inclusion of specific provisions for delivering high-quality, evidence-based care for older adults in national cancer control plans • Create global funding mechanisms aimed at fostering professional development of the geriatric oncology workforce and promoting research on the interface of cancer and ageing

Towards a new *precision oncology* paradigm



Resources

- **International Society of Geriatric Oncology**

<http://www.siog.org/>

@SIOGorg @YoungSIOG @siognah



- **Cancer and Aging Research Group**

<http://www.mycarg.org/>

@myCARG



- **Moffitt Cancer Center Senior Adult Oncology Program Tools**

<https://moffitt.org/for-healthcare-providers/clinical-programs-and-services/senior-adult-oncology-program/senior-adult-oncology-program-tools/>



- **Association of Community Cancer Centers**

<https://www.accc-cancer.org/home/learn/supportive-care/geriatric>

@ACCCBuzz



- **Journal of Geriatric Oncology**

<https://www.geriatriconcology.net/>

@JGerOnc



- **#gerionc**

#geriheme

#gerisurgonc

#geriradonc



See you in Montreal at SIOG 2024!



SIOG
INTERNATIONAL SOCIETY
OF GERIATRIC ONCOLOGY

<http://www.siog.org/>

Save the date: 17th-19th October 2024

Thank you!



The Royal Marsden, Sutton, UK



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