THE LANCET

Supplementary appendix

This appendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors.

Supplement to: Mohile SG, Mohamed MR, Xu H, et al. Evaluation of geriatric assessment and management on the toxic effects of cancer treatment (GAP70+): a cluster-randomised study. *Lancet* 2021; published online Nov 3. http://dx.doi.org/10.1016/S0140-6736(21)01789-X.

Supplementary Appendix

Table of Contents:

Supplemental Table 1: NCI Community Oncology Program (NCORP) Community Affiliate partners, practice clusters, locations, and numbers of patients enrolled

NCORP Community Affiliate (Main Location)	Clusters	Location(s)*	Number of Patients Enrolled
Cancer Research Consortium of West Michigan (Grand Rapids, Michigan)	1	Michigan	4
Columbus NCORP (Columbus, Ohio)	1	Ohio	2
Dayton Clinical Oncology Program (Dayton, Ohio)	1	Indiana	3
Delaware/Christiana Care (Newark, Delaware)	2	Delaware	77
Geisinger Cancer Institute Oncology Research Program (Danville, Pennsylvania)	1	Pennsylvania	14
Greenville Health System NCORP of the Carolinas (Greenville, South Carolina)	1	South Carolina	39
Gulf South MU NCORP (New Orleans, Louisiana)	2	Louisiana	7
Hawaii MU NCORP (Honolulu, Hawaii)	1	Hawaii	23
Heartland Cancer Research (Decatur, Illinois)	3	Illinois and Missouri	184
Kaiser Permanente (Oakland, California)	1	California	7
Kansas City Clinical Oncology Program (Prairie Village, Kansas)	2	Missouri and Kansas	3
Metro-Minnesota NCORP (Saint Louis Park, Minnesota)	7	Minnesota	25
Michigan Cancer Research Consortium NCORP (Ann Arbor, Michigan)	3	Michigan	12
Nevada Cancer Research Foundation NCORP (Las Vegas, Nevada)	1	Nevada	2
Northwell Health NCORP (Lake Success, New York)	1	New York	105
Pacific Cancer Research Consortium NCORP (Seattle, Washington)	4	Oregon, Washington and Idaho	9
Southeast Clinical Oncology Consortium NCORP (Winston-Salem, North Carolina)	6	North and South Carolina	59
Wisconsin NCORP (Marshfield, Wisconsin)	2	Wisconsin	143

^ https://ncorp.cancer.gov/; *States in the United States in which clusters enrolled eligible patients

Supplemental Table 2: Geriatric assessment domains, measures, and management recommendations*^

Domains	Tools	Descriptions	Definitions of impairment	Prevalence of the most common GA-guided management recommendations chosen by oncologists in the intervention arm
Physical performance (n=314/349 impaired in intervention arm)	Timed "Up and Go"	Assess mobility over 3 meters; longer time indicates worse performance	> 13·5 seconds	- Conduct frequent toxicity checks (86·0%) - Provide fall counselling hand-out/information (86·0%) - Provide information on exercise and exercise prescription (83·.4%) - Provide hand-out on energy conservation (82·5%) - Medication Review: minimize psychoactive meds including those used for supportive care (36·6%); minimize duplicative medications (47·8%) - Treatment modification: consider modification of treatment dose or choice. Examples: 1) consider single agent rather than doublet therapy if appropriate (33·4%): 2) modify dosage (e.g., 20% dose reduction with escalation as tolerated)(46·8%); 3) modify treatment regimen (e.g., use an option with demonstrated safety and efficacy in older and/or frail adults)(49·4%) - Referrals: refer to 1) physical therapist (outpatient or home-based depending on eligibility for home care) (23·6%); 2) occupational therapist (11·1%); 3) aide services (14·3%); 4) personal emergency response information (19·7%); 5) vision specialist if difficulties (12·1%) - Physical Examination: check orthostatic blood pressure (29·3%) and decrease or eliminate blood pressure meds if blood pressure is low or low normal (21·3%)
	Short Physical Performance Battery	Assess balance, gait speed, and strength; higher score indicates better performance (range 0-12 points)	≤ 9 points	
	Falls History	Assess the number of falls	Any history of falls in the prior 6 months	
	OARS Physical Health	Assess any limitation in activities (e.g. climbing several flights of stairs, walking more than a mile) as a result of his/her health (options: a lot, a little, not at all)	If the patient answered any question as "a lot"	
Functional status (n=200/349 impaired in intervention arm)	Activities of Daily Living (ADL)	Assess difficulty with the following 6 activities: bathing, dressing, eating, getting in and out of bed/chairs, walking, toileting (options: yes/no)	Any deficit (yes)	- Conduct frequent toxicity checks (86·5%) - Provide fall counselling hand-out/information (85·0%) - Provide information on exercise and exercise prescription (84·5%) - Provide hand-out on energy conservation (81·0%) - Medication Review: minimize psychoactive meds including those used for supportive care (37·0%); minimize duplicative medications (51·5%) - Treatment modification: consider modification of treatment dose or choice. Examples: 1) consider single

	Instrumental ADLs	Assess independence in the following 7 activities: using the telephone, transportation, shopping, preparing meals, doing housework, taking medicine, managing money (options: without help, with some help, completely unable to)	Any deficit (with some help or completely unable to)	agent rather than doublet therapy if appropriate (36·0%): 2) modify dosage (e.g., 20% dose reduction with escalation as tolerated)(49·0%); 3) modify treatment regimen (e.g., use an option with demonstrated safety and efficacy in older and/or frail adults)(53·0%) - Referrals: refer to 1) physical therapist (outpatient or home-based depending on eligibility for home care) (26·5%); 2) occupational therapist (13·0%); 3) aide services (16·0%); 4) personal emergency response information (22·5%); 5) vision specialist if difficulties (13·5%) - Physical Examination: check orthostatic blood pressure (28·0%) and decrease or eliminate blood pressure meds if blood pressure is low or low normal (20·0%)
Comorbidity (n=236/349 impaired in intervention arm)	OARS Comorbidity	Assess the presence of 13 illnesses (e.g. other cancer or leukemia, arthritis, glaucoma) as well as hearing and visual impairments, and how much each problem interferes with his/her activities (options: not at all, somewhat, a great deal)	Patient answered "yes" to 3 illnesses OR answered that 1 illness interferes "a great deal" (including eyesight and hearing)	- Initiate direct communication (written, electronic, or phone) with patient's primary care physician about the plan for the patient's cancer (85·2%) - Modify treatment choices if applicable to the individual patient. Examples: 1) History of diabetes - avoid neurotoxic agents if another option is equivalent (19·1%); 2) History of heart failure - minimize volume of agents and/or administer treatments at slower infusion rate (11·9%); 3) History of renal impairment-adjust as appropriate (19·1%) - Modify dosage or schedule if there is concern about how the patient will tolerate therapy or if there is a concern about worsening of comorbidities (47·9%) - Provide smoking cessation counseling if the patient currently smokes (0·04%)
Cognition (n=140/349 impaired in intervention arm)	Blessed Orientation-Memory-Concentration	Assess orientation, memory, and concentration using 6 items and scores are weighted; higher score indicates worse performance (range 0-28 points)	≥ 11 points	- Provide explicit and written instructions for appointments, medications, and treatment (74·3%) - Medication review - minimize psychoactive and high risk medications (63·6%) - Assess decision-making capacity and elicit health care proxy information and input if the patient lacks decision-making capacity (62·9%) - Cancer treatment decision - modify treatment choice (consider starting with single agent with escalation to doublet if standard at second cycle depending on tolerance) (48·6%) - Give patient/family member handout on delirium risk counseling (22·9%) - Referral: refer to clinician experienced in memory care (21·4%)
	Mini Cog	Assess word recall and clock drawing based on 3 items; lower score indicates worse performance (range 0-5 points)	0 words recalled OR 1-2 recalled words + abnormal clock drawing test	
Nutrition (n=211/349 impaired in intervention arm)	Body Mass Index	Divide weight in kilograms by height in meters squared	< 21 kg/m	- Conduct frequent toxicity checks (91·0%) - Give Nutrition hand-out (80·1%) - Give mucositis hand-out (63·0%) - Cancer Treatment: 1) use caution with highly emetogenic regimens and use another option if appropriate (64·0%); 2) utilize aggressive anti-emetic therapy (72·5%)
	Weight loss	Assess change in weight over 6 months	> 10% change in weight	

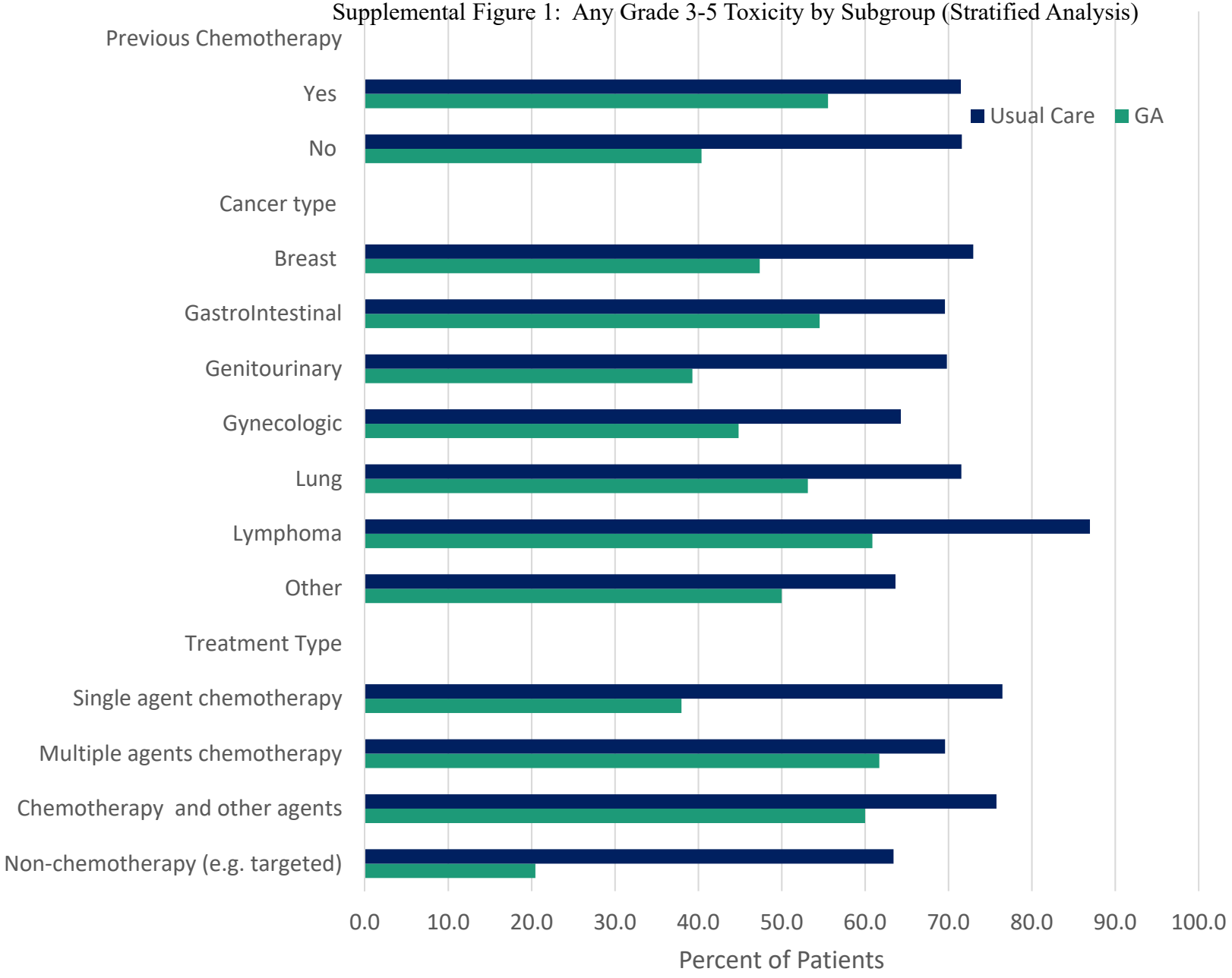
			from 6 months ago	- Referrals: refer to: 1) Nutritionist/Clinical Dietician (44·1%); 2) dentist if poor dentition or denture issues (1·0%); 3) speech and swallow if difficulty with swallowing (0·05%)
	Mini Nutrition Assessment	Assess nutritional status using 6 items; lower score is worse (range 0-14 points).	≤ 11 points	
Social Support (n=111/349 impaired in intervention arm)	Medical Social Support	Assess the presence of social support using 4 items ("someone to help if you were confined to bed, someone to take you to the doctor if needed, someone to prepare your meals if you were unable to do it yourself, someone to help you with daily chores if you were sick." Options: none of the time, a little of the time, some of the time, most of the time, all of the time)	Patient answers any one of questions as "some of the time, a little of time, none of the time"	- Confirm documented health care proxy is in medical record (70·3%) - Modify treatment choice and/or dosage (60·4%) - Provide referral or information on 1) Social worker via on-site or visiting nurse services (45·9%); 2) visiting nurse service or home health aide (if meets criteria) (15·3%); 3) transportation or ride services (19·8%); 4) medical insurance advising, advocacy, and negotiation (17·1%); 5) legal assistance for economic and social needs (0·05%); 6) community resource mobilization (25·2%)
Polypharmacy (n=287/349 impaired in intervention arm)	Medications	Assess the number of regularly scheduled medications, presence of high risk medication, or kidney function	5 regularly scheduled prescription medications (OR Any high risk medication OR creatinine clearance<60)	- Ask patient to bring in prescribed, over-the counter medications, and supplements to review at the next visit (55·1%) - Contact primary care provider to help reduce regimen complexity (28·6%) - Reduce medicines solely used for hypertension or diabetes if appropriate (including dose and number of medications) (20·6%) - Consult the pharmacist who fills the patient's scripts to synchronize medication refills whenever possible (18·1%) - Have pharmacist meet with the patient to evaluate drug interactions and medication counseling (20·6%) - Recommend pillbox and/or medication calendar (42·9%) - Provide hand out on polypharmacy (77·7%)
Psychological status (n=107/349 impaired in intervention arm)	Geriatric Depression Scale	Assess depression using 15 items; higher score is worse (range 0-15 points)	≥ 5 points	- Provide written or verbal communication with primary care physician (41·1%) - Referral: refer to 1) counseling or psychotherapy (18·7%); 2) social work (39·3%); 3) spiritual counseling or Chaplaincy services (16·8%); 4) psychiatry if severe symptoms or if already on medications which are not adequate (10·3%); 5) palliative care if other physical and/or cancer symptoms are present (22·4%). - Initiate pharmacologic therapy if appropriate in conjunction with primary care provider (16·8%)
	Generalized Anxiety Disorder-7 item scale	Assess anxiety using 7 items; higher score is worse (range 0-21 points)	≥ 10 points	

				- Provide linkage to community resources (such as support groups and local/national buddy or volunteer programs) (25·2%)

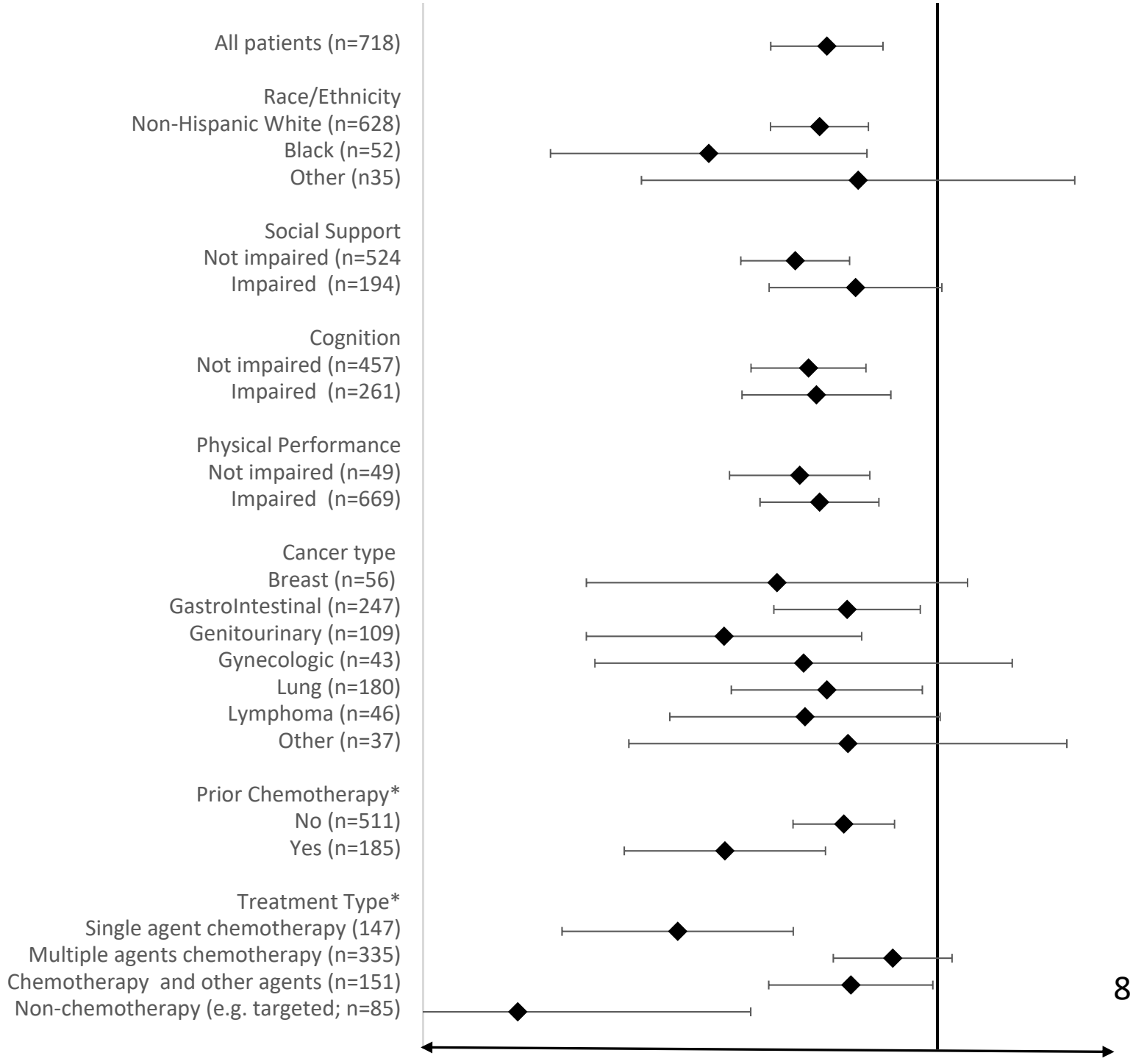
* Abbreviations: ADL, Activity of Daily Living; OARS, Older American Resources and Services; TSH, thyroid stimulating hormone.

^References for measures can be found in Mohile et al. Practical assessment and management of vulnerabilities in older patients receivng chemotherapy: ASCO guideline for geriatric oncology. Journal of Clinical Oncology. 2018 Aug 1;36(22):2326-2347. Oncologists were provided a list of the management recommendations to choose from.

Supplemental Figure 1: Any Grade 3-5 Toxicity by Subgroup (Stratified Analysis)



Supplemental Figure 2: Subgroup Analysis of Relative Risk of Toxicity (GA Intervention vs. Usual Care)



*Statistically significant interaction with the study arm ($p<0.05$).