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Physical activity communication between oncology providers and patients with early stage breast, colon or prostate cancer

Kirsten A Nyrop[1], **Allison M Deal**[2], **Grant R Williams**[1], **Emily J Guerard**[1], **Mackenzi Pergolotti**[3], and **Hyman B Muss**[1,2]

Allison M Deal: allison_deal@med.unc.edu; Grant R Williams: Grant.Williams@unchealth.unc.edu; Emily J Guerard: Emily.Guerard@unchealth.unc.edu; Mackenzi Pergolotti: mackenzi_pergolotti@med.unc.edu; Hyman B Muss: hyman_muss@med.unc.edu

[1]Division of Hematology and Oncology, School of Medicine, University of North Carolina at Chapel Hill

[2]UNC Lineberger Comprehensive Cancer Center, University of North Carolina at Chapel Hill

[3]Gillings School of Global Public Health, University of North Carolina at Chapel Hill

Abstract

Background—National guidelines recommend that patients with a cancer diagnosis engage in regular physical activity to reduce cancer-related fatigue, maintain quality of life and physical function, and improve overall prognosis and survival. This study investigates oncology provider communications about physical activity during routine clinic visits with early stage breast, colon or prostate cancer patients.

Methods—Retrospective chart review for documentation of inquiries or recommendations pertaining to physical activity in clinician notes and after visit patient summaries.

Results—In a 1-month period, 55 oncology providers had 361 encounters (clinic visits) with early stage cancer patients. Of these encounters, 35% included a provider communication about “physical activity”, “exercise” or “activity”. Encounters with a medical oncologist resulted in a physical activity communication 55% of the time as compared to 20% of encounters with other clinician specialties ($p<0.0001$). The likelihood of a physical activity communication increased with patient age ($p<0.001$). When the encounter was with a patient who was being seen for surveillance, chemotherapy or endocrine treatment, the rate of physical activity communications was significantly higher (46%, 37%, 58% respectively) as compared to when the visit was during radiation treatment or surgery (6%, 19% respectively) ($p<0.0001$).

Conclusions—This study shows it is feasible for oncology providers to have physical activity communications during routine clinic visits; however, the frequency of physical activity communications varies among providers. Interventions are needed to remind and encourage all oncology providers to encourage of their patients with early stage cancer to be physically active.

Corresponding Author: Kirsten A. Nyrop, PhD, Division of Hematology and Oncology, Campus Box 7305, Chapel Hill NC 27599-7305, Phone: 919/962-5139, knyrop@med.unc.edu.

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Keywords

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INTRODUCTION

National guidelines recommend that patients with a cancer diagnosis engage in regular physical activity[1–4]. With guidance from a clinician, patients should aim for at least 150 minutes of moderate intensity or 75 minutes of vigorous intensity physical activity each week[1–4]. These guidelines are based on interventional trials conducted over the past three decades that have built a strong evidence base for the benefits of regular physical activity in reducing cancer-related fatigue, maintaining quality of life, and improving overall prognosis and survival[5–16]. Further, epidemiological studies have found an association between low levels of physical activity and increased risk for cancer recurrence[17] and, in turn, improved survival benefits from engaging in regular physical activity[5–9,18,19]. Despite these important findings, only a minority of cancer survivors (37% breast, 43% prostate, and 35% colorectal) are meeting American Cancer Society recommended levels of physical activity[12]. There is a vital need to find effective ways to inform and motivate all patients with cancer to be physically active from diagnosis through survivorship.

Involving oncology providers in spreading awareness of the benefits and importance of physical activity among their patients is a promising option for addressing this need[20–22]. Research on oncology provider communication with their patients about physical activity is limited; however, findings suggest that a timely query from the oncologist about regular exercise or recommendation to be physically active can be reassuring, informative and motivational[23–25]. Patients often prefer oncology providers to initiate discussions about physical activity instead of raising the issue on their own, and they are receptive to counseling about physical activity at various time points throughout the continuum of cancer survivorship[23,24,26]. The cancer diagnosis itself can present a “teachable moment” because patients may be especially motivated to initiate lifestyle changes to improve their prognosis and survival[23–29].

The objective of our study was to examine the prevalence of oncology provider communications about physical activity during routine clinic visits. Our study focuses on patients with early stage breast, colon or prostate cancer diagnoses, because the evidence base for physical activity benefits is the most developed for patients with these types of cancer. Further, patients with these three cancer diagnoses constitute close to half of all cancer survivors – an estimated 7 million in 2014[30,31]. We hypothesized the existence of an “opportunity gap” between oncology providers having versus not having physical activity communications within a segment of the patient population that is most likely to be able to achieve guideline-recommended levels of physical activity. Findings from this study may help inform intervention studies focused on encouraging and enabling oncology providers to inquire about, recommend and monitor physical activity in their patients throughout the cancer care continuum[20–22].

METHODS

This is a retrospective study using data abstracted from the electronic health records of patients with cancer seen at a large university-affiliated cancer hospital during a 1-month period (January 2015). Information was collected at the encounter level, with the primary endpoint of identifying evidence of communications or inquiries about physical activity. Evidence of this communication was based on data available in patient charts – specifically, clinician notes that mention, inquire about or recommend "activity", "physical activity" or "exercise."[32] We also searched patient charts for evidence of physical activity or exercise recommendation in the after visit summary that is provided to patients at the end of their clinic visit which includes comments or instructions for the patient from the provider. This study was approved by the Institutional Review Board (IRB) of the University of North Carolina at Chapel Hill.

Study participants

The provider sample consisted of physicians, nurse practitioners and physician assistants seeing patients with breast, colon or prostate cancer in an outpatient medical oncology, surgical oncology/reconstructive surgery, radiation oncology, or urology clinic. For the patient sample, chart reviews were limited to new or returning patients age 21 or older who were diagnosed with early stage cancer, defined as stage I–III breast cancer, stage I–III colon cancer, or clinically localized and prostate-specific antigen (PSA)-only relapse prostate cancer. Patients were excluded if they had any medical or other considerations that could potentially advise against having a physical activity communication on the date the chart was reviewed. For example, patients were excluded if the encounter was one week prior or within 4 weeks after having cancer surgery, if the patient experienced cancer surgery-related complications, or there was evidence of metastatic disease. Examples of medical comorbidities that would exclude a patient from the study sample were stroke, recent myocardial infarction (MI), severe rheumatology disorder, or severe chronic obstructive pulmonary disease (COPD). Patients with an ECOG PS (Eastern Cooperative Oncology Group Performance Status) score of ≥3 or other evidence of mobility impairments (such as using a wheelchair) were also excluded. The objective of these exclusions was the achievement of a final sample consisting of encounters with "appropriate" patients where there should be little controversy over the patient's ability to engage in moderate physical activity.

Data Collection

For encounters with "appropriate" patients who met the inclusion criteria, we recorded the patient's age, gender, race/ethnicity, tumor site (breast, colon, prostate), and current cancer treatment (chemotherapy, radiation, surgery, surveillance, or endocrine). For patients that had clinic visits with more than one oncology provider during the month of January – such as patients with cancer diagnoses that are typically treated by a multi-disciplinary team – each visit with a separate provider was analyzed as a separate encounter. We recorded the provider's gender, clinical training (MD/DO or non-MD/DO), and clinic site (medical oncology, surgical oncology, radiation oncology, or urology). We then recorded whether the

patient's chart contained any evidence of a physical activity communication. The specific wording of the communication was recorded for qualitative analysis.

Data analysis

This is a mixed methods study. For the quantitative component, descriptive statistics were used to characterize the provider and patient samples. Fisher's exact tests were used to identify differences in physical activity communication rates by clinician gender, training and specialty as well as by patient gender, race and cancer site. A Jonkherre-Terpstra test was used to evaluate differences in communication based on increasing age groups. Modeling was performed using a generalized linear mixed model, which accounts for the correlation between encounters at either the patient or clinician level. For the multivariate analysis, several categories were condensed, and age was included as a continuous variable. All quantitative analyses were conducted using SAS Statistical Software, v9.3 (Cary, NC). For the qualitative component, physical activity comments in clinician notes or after visit summaries were reviewed using a grounded theory approach to inductively develop codes and identify overall themes from these codes. An independent researcher, who did not complete the chart review and was blind to the names of the providers, performed the qualitative analysis.

RESULTS

Sample characteristics

The oncology provider sample consists of N=55 clinicians – 62% specializing in breast cancer, 16% in colon cancer, and 22% in prostate cancer (Table 1). Most are MDs or DOs (69%) as compared to nurse practitioners or physician assistants (31%) and most are female (64%). Clinical specialties were: 40% medical oncology, 36% surgical oncology (including reconstructive surgery), 13% radiation oncology, and 11% urology (all surgeons). Twenty-four percent of the providers had only one encounter with an "appropriate" patient, 29% had 2–4 encounters, 40% had 5–19 encounters, and 1% had 20–29 encounters. The patient sample (Table 2) consists of 302 persons, most of which (83%) had one encounter during the 1-month chart review period, 14% had 2 encounters, and 3% had more than 2 encounters. The racial mix is 70% white, 24% African American, and 6% other race. Age groups are 23% under age 50, 30% age 50–59, 26% age 60–69, 16% age 70–79, and 6% age 80 or older. Cancer diagnoses are 75% breast, 11% colon and 14% prostate.

Quantitative Results

We identified 361 unique provider-patient visits that met our eligibility criteria. Table 3 presents results from both unadjusted and adjusted analyses. Overall, 35% of "appropriate" encounters included a physical activity communication; 82% from clinician notes, 7% from after visit summaries, or 11% from both. Differences in physical activity communication rates by clinician gender, clinician training, patient gender, patient race, or disease site were not statistically significant. However, significant differences were identified based on clinician specialty, patient age, and current treatment. Encounters with a medical oncologist resulted in a physical activity communication 55% of the time compared to only about 20% of encounters with other clinician specialties ($p<0.0001$). Further, as the age of the patient

increased, so did the likelihood of having a physical activity communication; the percentages rose from 23% for <50 to 50% for the >80 age group ($p<0.001$). Finally, when the encounter was with a patient who was being seen for surveillance, chemotherapy or endocrine treatment, the rate of physical activity communications was significantly higher (46%, 37%, 58% respectively) as compared to when the visit was during radiation treatment or surgery (6%, 19% respectively) ($p<0.0001$).

Modeling was then used to evaluate the effect correlation between encounters at the patient and clinician level, and only the clustering at the clinician level was statistically significant – $p=0.01$ at the clinician level versus $p=0.12$ at the patient level. Thus, a multivariable model was fit accounting for correlation at the clinician level only. All variables were included in the multivariable model except clinician specialty, due to its overlap with current treatment. Almost all encounters where the patient was receiving radiation therapy were with a radiation oncologist (50/53), 80% (80/100) of those receiving surgery were with a surgical oncologist, and 100% (35/35) of encounters where the patient was receiving chemotherapy and 93% (89/96) during endocrine treatment were with a medical oncologist. The adjusted model showed similar results to the unadjusted results, with only current treatment and patient age having a significant association with physical activity communication. Encounters where the patient was undergoing radiation or surgical treatment each had significantly lower odds of a physical activity communication (OR=0.06, OR=0.20 respectively) as compared to encounters where the patient was on endocrine treatment. Encounters where the patient was under surveillance or receiving chemotherapy were not significantly different from those encounters where patients were receiving endocrine treatment. Also, as the age of the patient increased, so did the odds of physical activity communication; the odds ratio for each 10 year increase was 1.41 (95% CI: [1.11, 1.81]).

Qualitative results

Four physical activity themes emerged from our analysis of provider notes and after visit summaries: (1) level and types of engagement in physical activity, (2) restrictions on physical activity either by the provider or perceived by patients, (3) encouragement or recommendations to the patient, or (4) relationships between physical activity and weight, nutrition, pain, and fatigue.

For level and types of physical activity (often referred to as “exercise”), clinician notes range from general – “quite active and exercises”, “patient remains active”, and “does not exercise regularly” to specific descriptions – “some nights she walks 12–15000 steps a night” (this women works night shifts) or “she does water aerobics 3 times/week”. At times, specific forms of physical activity are noted, such as, “golfs in her free time”, “remains active gardening, mowing lawns and woodworking”, and “skiing”. With regard to restrictions on physical activity, this theme included both provider and patient perceived restrictions. Providers who had imposed certain post-surgery limitations at times lifted those limitations – “You can start more physical activity with restrictions” and “I discussed with the patient that she may return back to all activities without restrictions”. Examples of patient reported restrictions on physical activity included “reports significant shortness of breath when

walking", "tries to exercise daily but sometimes is not able to do more than walking outside to mailbox and back", and "decreased [activity] due to cold weather".

Some provider notes or after visit summaries included recommendations and encouragement for physical activity, ranging from very general such as "we discussed importance of physical activity" or "try something gentle like walking to see if this helps your legs" to specific instructions such as "I encouraged her to increase her walking level to 30 minutes 5 times a week…I provided her with some information" or "I encouraged exercise including aerobic and weight bearing". Lastly, clinicians reported the relationship between physical activity and other factors such as weight and obesity, nutrition, and levels of fatigue and pain, such as "weight gain related to caloric intake and low level of physical activity" and "fatigue has been manageable (still able to walk a mile)". Some clinicians reported how the patients perceived the relationship between physical activity and other factors, such as "she has noticed that exercise has an effect on her sleep or mood" or "Depression/anxiety: She is trying to deal with this without using medications; using exercise and getting outside each day." (See Appendix A for further examples of physical activity communications).

CONCLUSIONS

Our final sample includes 55 oncology providers – mostly female, trained as MD or DO, and most specializing in medical oncology or surgical oncology. Our final sample also includes 302 "appropriate" patients – mostly white, evenly split between under and over age 60, and primarily with a breast cancer diagnosis. Together, these providers and patients had 361 encounters (visits) that presented an opportunity for a physical activity communication. Of these encounters, only 35% had evidence of a physical activity communication, suggesting a significant "opportunity gap" in oncology provider-patient communications about the importance of physical activity. This finding is similar to results from a survey of patients with early stage cancer which found that only 34% with breast cancer and 36% with prostate cancer reported having received a physical activity recommendation from their oncologist at some point during their cancer care[25]. The "opportunity gap" comes into sharper focus when one considers the significant difference between medical oncology providers (55% of encounters with "appropriate" patients had a physical activity communication) as compared to all other only providers (ranging from 12% to 21% of their "appropriate" encounters). We also note that only 7% of the after visit summaries included a statement about physical activity which, again, represents a missed opportunity. In our sample, there were no significant differences by cancer site, patient gender or race. However, older patients were more likely to have a physical activity communication as compared to younger patients, which may reflect general clinician awareness of decreased physical function and activity with increasing age.[33,34] Still, it is important to note that ACS guidelines recommend physical activity for persons of all ages with a cancer diagnosis for reasons that go beyond physical function to include quality of life and potentially overall survival[1–4]. Finding time for physical activity may be especially challenging for patients under retirement age who continue to work or have substantial family obligations; nevertheless, these patients need to hear from their oncology provider that regular exercise is an essential part of cancer survivorship and something they can do for themselves. This message can be very empowering for patients.

Our findings suggest that having a brief physical activity communication during a clinic visit with patients with early stage cancer is feasible, as demonstrated within the medical oncology provider sample. The reasons for minimal communications about physical activity during radiation, surgery and urology visits are a topic for further exploration with these providers. It should be possible for radiation oncologists to take the time to encourage regular physical activity, at a minimum during the initial consult and at the end of radiation therapy. With regard to oncology and urology surgeons, our inclusion criteria for surgery patients were very restrictive – patients could not be within 1 week prior or 4 weeks post-surgery and could not have surgery-related complications. This process limited our "appropriate" patients to those who would clearly benefit from the recommendation to engage in regular physical activity for general health, quality of life, and functional independence reasons. Cardiac surgery practice may serve as an example for surgical oncologists and urologists, where the "get out of bed and start walking" message begins as soon as patients leave the intensive care unit and continues throughout rehabilitation.

Our study has limitations. First, our data were based solely on clinician notes and after visit summaries. The observed low proportions of physical activity communications with patients may reflect the fact that oncology providers vary in the amount of detail they enter into clinician notes, as we describe in our qualitative analysis. It is possible that our analysis missed some clinicians who had a communication about physical activity but did not record this communication in the clinician note, causing us to underestimate the overall proportion of patients who had a physical activity communication. Second, in light of concurrent recruitment during the chart review period for physical activity intervention studies focused on postmenopausal women on aromatase inhibitor therapy and another on early stage breast cancer patient receiving chemotherapy, the higher proportion of medical oncologists having physical activity communications may, in part, reflect heightened awareness among the breast medical oncologists about the importance of physical activity. We sought to include only patients where a recommendation of physical activity would be appropriate; however, it is possible that our final sample included some patients where our determination of appropriateness might be disputed by the treating clinician. For example, it is possible that our sample of radiation patients could include some patients who were more medically complex than suggested in the chart review, which could partially explain the lower communication rates among radiation oncologists.

This study illuminates what "could be" with regard to communications during routine clinic visits between oncology providers and patients about the importance of physical activity. Our findings suggest that brief communications about physical activity can take place within busy oncology visits and quotes from physician notes illustrate various approaches to these communications. Clinicians are having communications about a wide range of what is considered "physical activity" above and beyond "exercise"[32]. This is important because communication about "activity" rather than just "exercise" may lead to meaningful encouragement and individualized recommendations that truly motivate patients. It is the gold standard to encourage 150 minutes a week of physical activity; however, initiating the conversation with a simple recommendation to be "more active" and encouraging all types of non-sedentary activity may be as effective or more than focusing on formal modes of "exercise".

Intervention strategies are needed that encourage all oncology providers to increase their communications with patients about physical activity, including interventions targeted at specific types of providers who may be less inclined to have communications about physical activity or other aspects of patient wellness. These interventions could include educating and informing oncology providers about the specific benefits of physical activity for prognosis and survival, as well as illustrating the ease of having the physical activity communication. Our own research agenda includes adding physical activity reminders and "smart phrases" that oncology providers can insert into the AVS form within the our cancer center's electronic medical record system, and then conducting brief after visit interviews with patients to ask about physical activity communications with their oncology provider. Oncology providers need to be convinced of the importance of physical activity as an essential component of cancer care during treatment and beyond. Given the preponderance of benefit for an ongoing active lifestyle consistent with guideline recommendations, it is imperative that oncology providers are encouraged to take the time to broach the topic with their patients during as many clinic visits as possible. The frequent communication between oncology providers and patients throughout the cancer care continuum provides a unique opportunity to have an on-going dialogue to reassure and encourage patients to be physically active, focusing on the immediate tangible benefits of maintaining physical function and quality of life.

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Reviewer suggestions

- Karen Basen-Engquist PhD MPH – MD Anderson Cancer Center, University of Texas Houston – kbasenen@mdanderson.org
- Lee W Jones PhD – Memorial Sloan-Kettering Cancer Center – jones13@MSKCC.org
- Patricia Ganz MD – Jonsson Comprehensive Cancer Center, UCLA – pganz@mednet.ucla.edu

Table 1

Provider Sample Characteristics (N=55)

	No. (%)
Gender	
Female	35 (64%)
Male	20 (36%)
Clinician Training	
MD/DO	38 (69%)
NP/PA	17 (31%)
Clinician Specialty	
Medical Oncology	22 (40%)
Radiation Oncology	7 (13%)
Surgical Oncology	20 (36%)
Urology	6 (11%)
Clinician Disease Site	
Breast	34 (62%)
Colon	9 (16%)
Prostate	12 (22%)
Number of Encounters per Provider with “appropriate” patients – January 2015	
1	13 (24%)
2–4	16 (29%)
5–19	22 (40%)
20–29	4 (7%)

Table 2

Patient Sample Characteristics (N=302)

	No. (%)
Gender	
Female	245 (81%)
Male	57 (19%)
Race	
White	213 (70%)
AA	71 (24%)
Other/unknown	18 (6%)
Age mean, range	59 (25–91)
Age Group	
<50	70 (23%)
50–59	89 (30%)
60–69	79 (26%)
70–79	47 (16%)
>80	17 (6%)
Disease Site	
Breast	227 (75%)
Colon	32 (11%)
Prostate	43 (14%)
Number of Encounters per Patient	
Total	
1	252 (83%)
2	42 (14%)
3	7 (2%)
4	1 (0%)

Table 3

Encounters (N=361)

	Percentage of n=361 encounters	Percentage where there was provider activity communication – unadjusted	p-value[1]	Odds Ratio for PA communication (95 CI) – adjusted analysis	p-value[2]
Clinician Gender					
Female	243 (67%)	34%	p=0.64	Reference	
Male	120 (33%)	37%		1.14 (0.36, 3.6)	p=0.82
Clinician Training					
MD/DO	234 (65%)	34%	p=0.57	Reference	
NP/PA	129 (35%)	37%		0.60 (0.21, 1.74)	p=0.35
Clinician Specialty					
Medical Oncology	172 (47%)	**55%**	**p<0.0001**		
Radiation Oncology	71 (20%)	**13%**			
Surgical Oncology	94 (26%)	**19%**			
Urology	24 (7%)	**21%**			
Disease Site					
Breast	271 (75%)	37%	p=0.20	Reference	
Colon	32 (9%)	38%		0.38 (0.09, 1.67)	p=0.20
Prostate	60 (17%)	25%		0.17 (0.02, 1.32)	p=0.09
Patient Gender					
Female	289 (80%)	37%	p=0.22	Reference	
Male	74 (20%)	28%		1.46 (0.28, 7.54)	p=0.65
Patient Race					
White	254 (70%)	35%	p=0.21	Reference	
AA	81 (22%)	40%		1.31 (0.72, 2.39)	p=0.37
Other/unknown	28 (8%)	21%			
Patient Age Group					
<50	89 (25%)	**23%**	**p<0.001**	**1.41 (1.11, 1.81)**	**p=0.006**
50–59	104 (29%)	**34%**			
60–69	95 (26%)	**40%**			

	Percentage of n=361 encounters	Percentage where there was provider activity communication – unadjusted	p-value[1]	Odds Ratio for PA communication (95 CI) – adjusted analysis	p-value[2]
70–79	53 (15%)	**45%**			
>80	20 (6%)	**50%**			
Current Treatment					
Surveillance	79 (22%)	**46%**		0.96 (0.43, 2.13)	p=0.92
Surgery	101 (28%)	**19%**		**0.2 (0.08, 0.5)**	**p<0.001**
Chemotherapy	35 (10%)	**37%**	**p<0.0001**	0.52 (0.2, 1.33)	p=0.17
Radiation	53 (15%)	**6%**		**0.06 (0.01, 0.29)**	**p<0.001**
Endocrine	93 (26%)	**58%**		**Reference**	

[1]: p-value from Fisher's exact test

[2]: p-value from multivariable model accounting for correlation within clinician