Barriers and Facilitators to Implementing Electronic Patient-Reported Outcomes (PROs) in Cancer Clinical Trials: Interview Results from Clinical Research Staff and Patients

UNC LINEBERGER
Cancer Outcomes Research Program

Oluseyi A. Fayanju, MD, MA[1], Angela M. Stover, PhD[1], Randall Teal, MA[1], Lauren J. Rogak, MA[2], Antonia V. Bennett, PhD[1], Ethan M. Basch, MD, MSc[1,2]
1. University of North Carolina at Chapel Hill, Chapel Hill, NC 2. Memorial Sloan Kettering Cancer Center, New York, NY

Introduction

Collection of patient-reported outcomes (PROs) as a way to monitor symptomatic adverse events is common in cancer trials

PROs important for quality metrics and holistic care (whole patient vs aggregate of conditions), but implementation approaches and PRO survey completion rates vary

Little is known about research staff and patient impressions of barriers and facilitators to PRO data collection

Methods

Sixteen clinical research associates (CRAs) out of a pool of 34 randomly selected CRAs at sites administering two multicenter cancer trials in the U.S. National Cancer Trial (NCT) Network that included PROs (NCT01262560 in lung cancer; NCT01515787 in rectal cancer) participated in semi-structured interviews on barriers and facilitators to PRO data collection including technology, training, workflow, effort, and communication

Remaining CRAs pooled for inclusion in group discussions on factors that impeded or helped PRO collection

Patients in two trials (NCT01262560; NCT00578006 in multiple cancer types) completed semi-structured surveys (N=81) on similar topics

Interviews were recorded, transcribed, and de-identified

Coding and thematic analysis employed Microsoft Excel, Dedoose and ATLAS.ti software

Contact:
Oluseyi.Fayanju@unchealth.unc.edu

Results

Summary of Clinical Trials

Trial	NCT00578006	NCT01262560	NCT01515787
Cancer Type	Various (e.g.) bladder, breast, cervical, lung, etc.	Lung	Rectal
Trial Arms and Primary Outcome	Weekly PROs at home with automated alerts for concerning symptoms vs. usual care, checking quality of life after six months	Supportive care vs. 40 mL of liquid Manuka honey vs. 8 Manuka honey lozenges with stratification on esophagus percentage (< 30% or >= 30%) receiving 60 Gy radiation, comparing numerical rating pain scale after four weeks	(I) Phase II component: assessing if neoadjuvant FOLFOX followed by selective use of 5FUCMT group (Group 1) maintains high rate of pelvic R0 resection and is non-inferior for time to local recurrence (TLR) (II) Phase III component: determining how neoadjuvant FOLFOX followed by selective use of 5FUCMT (Group 1) compares to standard 5FUCMT (Group 2) with respect to the co-primary endpoints of TLR and Disease-Free Survival (DFS)
Number of Sites	1	226	1073
Total Number of Patients	N=766	N = 163	Initial Goal: N = 1060; Est. enrollment of N = 1194 as of 3/4/19
Study Duration per Patient	Mean of 7 months	Up to 12 weeks after initiation of chemotherapy	Up to 8 years after initial randomization
Recruitment Dates	2007-2011	February 2012-October 2013	2012 -
Frequency of PROs	Weekly (between visits)	Weekly (baseline, weekly during radiation therapy, end of radiation therapy and at 12 weeks post-initiation of radiation therapy)	Weekly during initial treatment, then every six months after initial treatment phase

Table 1: Summary of the three NCT trials, with CRA interviews sourced from NCT01262560 and NCT01515787 (light blue columns)

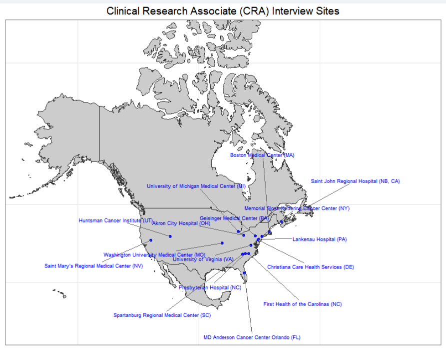
Clinical Research Associate (CRA) Interview Sites
Boston Medical Center (MA)
Saint John Regional Hospital (NB, CA)
University of Michigan Medical Center (MI)
Memorial Sloan-Kettering Cancer Center (NY)
Geisinger Medical Center (PA)
Huntsman Cancer Institute (UT)
Akron City Hospital (OH)
Lankenau Hospital (PA)
Washington University Medical Center (MO)
University of Virginia (VA)
Saint Mary's Regional Medical Center (NV)
Christiana Care Health Services (DE)
Presbyterian Hospital (NC)
First Health of the Carolinas (NC)
Spartanburg Regional Medical Center (SC)
MD Anderson Cancer Center Orlando (FL)

Figure 1: Interview sites for NCT01262560 and NCT01515787 CRAs

Codes for Qualitative Evaluation

Code Name	Usage	Example Quote	Count / Percentage of Total CRA Interview Codes
Computer Use	Use this code anytime a participant describes whether or not their patients used a computer to complete the surveys and/or what kind of workaround they devised if any	"…instead of a computer for those patients who actually did it, we actually used a tablet, an iPad specifically…there were more patients that we had to get a work around, in terms of assistance with the [Patient-Reported Outcomes version of the Common Terminology Criteria for Adverse Events] PRO-CTCAE, than there were patients that did that independently on their own." (*Interview 8*)	46 (9.16%)
Patient PRO Perceptions	Use this code any time participants discuss if their patients had an easy or hard time using the PRO-CTCAE software system to report symptoms. Also use this code when participants discuss initial patient attitudes when they were first approached about documenting their own symptoms on a computer.	"I don't think we had any patients who were averse to using the [PRO-CTCAE] software system at all. Luckily, we got a good group of patients who were computer savvy, and that were willing to get alerts to their email to complete their questionnaires." (*Interview 15*)	40 (7.97%)
Features	Use this code when participants discuss any features of the PRO-CTCAE system that made it easy or difficult for patients to use and the reasons behind its ease/difficulty.	"…there were some things that I didn't find as easy to use. In the beginning, setting up the passwords, it just seemed a little confusing to me…you had to have a password for yourself, which makes sense. Then you had to get the passwords for the subjects. That was to me, a little bit time consuming." (*Interview 6*)	42 (8.37%)
Workflow Impact	Use this code when participants discuss any aspects of the PRO-CTCAE system or program that posed challenges to their day-to-day clinical trial workflow. Also use this code when participants discuss their roles in general, any procedural tasks they performed as part of the PRO-CTCAE trial or describe any implementation steps they uses during the trial. Use this code with any instance of challenges: positive, negative, or neutral.	"Well, it was extra. It was a new dimension. It was a new tool. My perception was that I had to do everything that I did for other trials plus the PRO-CTCAE. Now it was not a big deal. I felt I had good introductory training into the system…What was more time consuming was trying to get all those pieces and keep on track of them, and make that consistent with the reporting that needs to be done and the communications with the physician and patient" (*Interview 13*)	91 (18.13%)
Computer Challenges	Use this code any time participants describe what it was like bringing computers to patients to complete the surveys (this code will likely be about challenges, but also use this code if participants describe benefits/facilitators). Also use this code when participants describe issues with connectivity or technical glitches. Use this code with any instance of challenges: positive, negative, or neutral.	"…we do get a very ethnically diverse and relatively low socio-economic status cohort of the population. They generally don't tend to be very tech savvy. They had some difficulty navigating through the iPad, just using touch screen technology. A patient who was, I believe, half-blind…the text on the iPad wasn't very helpful in that sense of him actually going through it by himself. I had to read aloud to him and then answer accordingly to what he says for that patient in particular." (*Interview 8*)	56 (11.16%)
System Compared to other Tasks	Use this code when participants discuss how the PRO-CTCAE system compares to other tasks they need to perform in a standard clinical trial protocol.	"*Interviewer:* In terms of time and effort in a standard clinical trial visit, how did the PRO-CTCAE system compare to other necessary tasks? *Interviewee:* I do believe it took more time. It would take me at least 30 more minutes of time. When I would ask on paper I basically could ask questions and bundle...It would just flow faster" (*Interview 7*)	17 (3.39%)
PRO Integration	Use this code when participants discuss how they think PRO-CTCAE would best integrate into clinical trials.	"Yeah, for patients that are computer savvy, it would be nice to have them fill somethin' out at home. What would be nice is if they were able to fill out their symptoms before they came, and then it would either give us a printout at the site, maybe, of what their symptoms are that they're having right now" (*Interview 4*)	19 (3.78%)
Symptom Capture Process	Use this code when participants discuss how any symptoms from a patient on treatment trials are discussed, documented into the research record and/or assigned a CTCAE grade.	"…for my particular patient experience, I think there was a difference in how she reported her side effects to the system and then what she relayed to the physician…I don't think she always relayed everything to the physician. I think it just had to do with the relationship she had with the physician and the practice itself." (*Interview 5*)	60 (11.95%)
Physician Use of PROs	Use this code when participants discuss to what extent physicians use PRO information in a clinical way when the information arrived. Also use this code when they discuss their thoughts on how practical it is for physicians to see PRO emails and to what extent it helps/hinders their clinical decision making. Also use this code when participants infer the level of value physicians place on PROs.	"*Interviewer:* Can you comment on, in your experience, whether or not clinicians and investigators consider patient-reported information valuable? *Interviewee:* I think in our clinics, they definitely do. They're very interested in adding these patient-reported outcomes to other investigator-driven studies that we're opening here...[Our principal investigator] wants the patients to fill them out before they see the doctor, before they hear about how their skin results are and if their tumor's been responding...to have the patient be as objective as they can without any input from the doctor." (*Interview 1*)	25 (4.98%)
Sharing PRO information	Use this code when participants talk about how they share and reconcile the information provided by patients back to patients. Also use this code when participants talk about how the PRO information is shared among HCPs and the medical care team.	"*Interviewer*: What do your think about shared reporting [of PROs] for patients on clinical trials? Is there value in sharing the patient information with clinical staff? *Interviewee*: I think it's definitely got value. Like we've said, patients are sometimes not gonna report the severity of the symptoms, and our priority regardless of the clinical trial, is the patient's well-being and care...We don't want the patients to be stoic through something like nausea, which is something we can treat adequately" (*Interview 12*)	35 (6.97%)
Suggestions	Use this code any time participants offer suggestions or recommendations for improving the PRO-CTCAE protocol, the program itself, any future changes they would like to see made to the protocol, or mention any work-arounds or alternative ways they came up with when dealing with a challenging situation.	"I think that [PRO-CTCAE] is actually a good system. I think for myself too, knowing that you get that patient on, sometimes, it's pretty rushed in quickly. If there [were] some kind of better instructions, like an actual instruction booklet for the patients, whatever, consent packet to say...real step-by-step instructions, like for instance, "You will be getting an email reminder, and then you only have seven days to complete this." Yadda, yadda, yadda. I think that itself would be very helpful." (*Interview 14*)	71 (14.14%)

Table 2: Summary of the eleven codes used for the sixteen CRA interview transcripts from NCT01262560 and NCT01515787 (No. of excerpts: 502)

Discussion

Utility of PROs acknowledged by CRAs and patients, but difficulty with collection of information, communication within care teams (e.g. timing of surveys)

Discrepancies noted in symptom reporting to people vs. machines, meaning creatively tailored solutions may be needed for special populations (elderly, visually impaired, poor, etc.)

Connectivity seen as an early challenge for home- and office-based reporting, may diminish with increased smartphone use, computer literacy

Development of best practices, and extension to other demographics, medical conditions

Figure 2: Emerging themes on barriers and facilitators for PRO implementation from CRA interviews and patient surveys

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