Inclusion of patient-reported outcome measures in registered clinical trials: Evidence from ClinicalTrials.gov (2007–2013)

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OBJECTIVES

- Estimate proportion of clinical trials re using at least one PRO measure in ClinicalTrials.gov.
- Examine associations between trial characteristics and the use of PRO measures.

BACKGROUND

- Patient reported outcomes (PROs) have become more prominent in clinical research.
- Policy initiatives (i.e. FDA PRO Guidelines, PCORI, PROMIS) have promoted PRO use.
- Previous research reported that 14% of clinical trials used a PRO in 2007.
- Online registries, such as ClinicalTrials.gov, may facilitate better estimates of PRO use.

METHODS

- A local copy of ClinicalTrials.gov was made with data from all registered trials from November 1, 2007 to December 31, 2013.
- Registered trials were searched for use of PRO measures using an informatics algorithm.
- Multivariable logistic regression was used to investigate possible associations between use of PRO measures and trial-level characteristics.

RESULTS

Use of PRO Measures in Clinical Trials (2007-2013)

	Oncology Trials	Non-Oncology Trials
Total number of trials (n=96,736)	**13,584 (14%)**	**83,152 (86%)**
Number (%) of trials using at least one PRO measure	3,947 / 13,584 (29%)	22,390 / 83,152 (27%)
Number (%) of unique PRO measures used	**336**	**634**
Non-disease-specific	99 / 336 (29%)	161 / 634 (25%)
Disease-specific	237 / 336 (71%)	473 / 634 (75%)
Type of PROM in trials in which at least one PROM was used, number (%)		
Non-disease-specific[a]	856 / 3,947 (22%)	7,627 / 22,390 (34%)
Disease-specific[a]	2,075 / 3,947 (53%)	12,062 / 22,390 (54%)
Non-measure search term[a]	2,550 / 3,947 (65%)	10,229 / 22,390 (46%)

[a] Number (%) of trials identified by non-disease-specific, disease-specific, and non-measure search terms may total > 100% because numerous trials used more than one PRO measure

Use of PRO Measures by Type of Sponsor (2007-2013)

Sponsor	Oncology Trials Number (%)	Non-Oncology Trials Number (%)
Pharmaceutical Industry	2,651 / 30,012 (9%)	27,361 / 30,012 (91%)
Trials using at least one PROM	678 / 2,651 (26%)	6,072 / 27,361 (22%)
Trials using PRO as primary endpoint	79 / 678 (12%)	1,808/6,072 (30%)
Trials using PRO as secondary endpoint	462 / 678 (68%)	3,014 / 6,072 (50%)
Trials using PRO identified in other field	137 / 678 (20%)	1,250 / 6,072 (21%)
Non-Industry	10,933 / 66,724 (16%)	55,791 / 66724 (84%)
Trials using at least one PROM	3,269 / 10,933 (30%)	16,318 / 55,791 (29%)
Trials using PRO as primary endpoint	550 / 3,269 (17%)	3,479 / 16,318 (21%)
Trials using PRO as secondary endpoint	1,362 / 3,269 (42%)	5,700 / 16,318 (35%)
Trials using PRO identified in other field	1,357 / 3,269 (42%)	7,139 / 16,318 (44%)
Total Trials	**13,584 (14%)**	**83,152 (86%)**

PRO=Patient reported outcome; PROM=Patient reported outcome measure; Non-Industry is comprised of University/Research Organizations, NIH/U.S. Federal Government, and Other.

Use of PRO Measures in Clinical Trials by Study Characteristics (2007-2013)

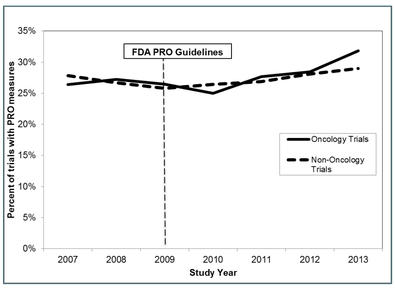
	All Trials Total N = 96,736	Trials that Used a PRO Measure N (%)	Trials that Used a PRO Measure Odds Ratio (95% CI)
Condition			
Non-Oncology	83,152	22,390 (27%)	1.00
Oncology	13,584	3,947 (29%)	1.31* (1.26,1.37)
Sponsor			
Industry	30,012	6,750 (22%)	1.00
University/Research Organization	30,339	8,806 (29%)	1.06* (1.02,1.1)
NIH/US Federal Government	3,348	1,099 (33%)	1.48* (1.36,1.61)
Other	33,037	9,682 (29%)	1.14* (1.09,1.18)
Intervention Type			
Drug	41,964	10,008 (24%)	1.00
Device	8,958	2,686 (30%)	1.41* (1.34,1.49)
Procedure/Surgery	6,925	2,178 (31%)	1.37* (1.29,1.46)
Behavior	6,885	3,469 (50%)	2.88* (2.71,3.06)
Other	18,879	5,050 (27%)	1.15* (1.1,1.2)
Unknown	13,125	2,946 (22%)	1.16* (1.09,1.23)
Phase of Clinical Trial			
Phase III	12,539	4,400 (35%)	1.00
Phase I	12,125	1,508 (12%)	0.30* (0.7,0.77)
Phase II	18,560	5,059 (27%)	0.74* (0.28,0.32)
Phase IV	9,792	2,981 (30%)	0.86* (0.81,0.91)
Unknown	43,734	12,389 (28%)	0.68* (0.64,0.71)

PRO Measures as Primary and Secondary Clinical Trial Endpoints (2007-2013)

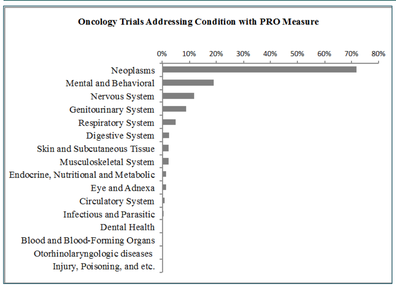
	Oncology Trials with PRO Measure (N=3,947)	Non-Oncology Trials with PRO Measure (N=22,390)
Endpoint positioning of PRO in trials in which at least one PRO measure was used, number (%)		
Either primary or secondary outcome	2,453 / 3,947 (62%)	14,001 / 22,390 (63%)
Primary outcome	629 / 3,947 (16%)	5,287 / 22,390 (24%)
Secondary outcome	1,824 / 3,947 (46%)	8,714 / 22,390 (39%)
Other outcome	1,494 / 3,947 (38%)	8,389 / 22,390 (37%)

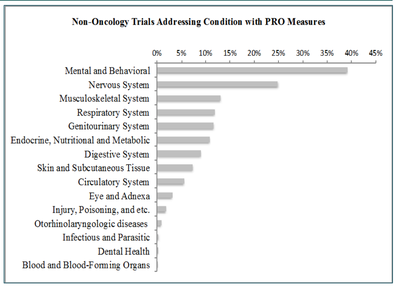
PRO=Patient reported outcome

Trends in the Use of PRO Measures in Clinical Trials (2007-2013)



Oncology and Non-Oncology Trials with Disease-Specific PRO Measures by ICD-10 Classification





CONCLUSIONS

- Between 2007 and 2013, there was an increase in the number of trials using a PRO measure, particularly in oncology trials.
- The increased use may be attributed, in part, to the changing landscape of patient-centered care and stakeholder engagement in general.
- With recent initiatives such as the Patient-Focused Drug Development and the NIH-sponsored Patient-Reported Outcomes Measurement Information System, the use of PRO measures in clinical research will likely increase further.

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