CLINICAL INVESTIGATORS AND ELECTRONIC PATIENT REPORTED OUTCOMES: HOW DO THE SITES REACT TO THE TRANSITION FROM PAPER TO ELECTRONIC METHODS?

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Abstract

Clinical Investigators and the Electronic Patient Reported Outcomes (ePRO). How do the sites react to the transition from paper to electronic methods?

Until now, the vast majority of all clinical trial data generated outside the control of the clinical investigator have been collected on paper. Although the sponsors usually recognize the added value with regards to the reliability of the data, the perception of the CI sites may well be different, because of a potentially drastic change in their usual clinical practice. The purpose of this presentation is to share the results of a survey performed this year, where investigators as well as site coordinators had to answer a series of 31 questions on the use of an electronic diary. The questions were addressing the site evaluation about (i) the need for an electronic device vs. paper, (ii) the needs for training (for the site and the patient), (iii) the difficulty of using an electronic device, and (iv) the need for adequate support. Results covered the entire range of possible answers, from very satisfied to very unsatisfied users. However, the most interesting finding was the very high correlation between the degree of satisfaction and the understanding of reasons for using an electronic diary. Therefore, whatever the difficulties encountered by the sites, their satisfaction is directly related to their understanding of the use of such a device. It is of outmost importance to educate the clinical sites about the rationale behind the use of electronic diaries in order to be successful at obtaining more reliable PRO clinical trial data.

Objective

In order to better understand reactions to the introduction of EPDs, thirty-one clinical investigation sites using PHT's LogPads were surveyed.

Methods

The survey, designed by PHT, was prepared so that it would fit on an A4 page, in order to increase the response rate. A total of 31 questions were asked, 4 YES/NO questions and 27 multiple choice questions where the answers were a scale of 0, 1, 2, 3 or 4, with 0 being the most negative response The survey was divided in 5 sections: General Benefit of paper vs. electronic diaries, Training, Use of the LogPad, Use of Internet to go and review the data, and Helpdesk support.

						Blank:	Sent
Electronic Diaries vs Paper Diaries	Total Responses				0	0%	4	77
Electronic Diaries compared to Paper Diaries: How do you rate the following features of Electronic Patient Diaries (EPD) versus your experience with paper diaries?	Paper is better	Not adequate	Not EPD's better	EPD's better	Very superior		Avg
1 Complete data records - captures all required data with no skipped entries	2	3	1	8	1		2.2
2 Timestamps every entry - disallows last minute "catch up" or forward filling of diaries	0	1	1	8	4		3.1
3 Diary data is kept confidential	0	1	2	9	3		2.9
4 Calculations are automatic, alerting subject and sites of worsening symptoms	1	1	4	6	3		2.6
5 Ability for site and sponsors to review subject's data real time, every day	3	1	0	6	3		2.4
	8%	10%	11%	51%	19%		
TRAINING	YES		NO				
6 **Did you attend the PHT's training session at the Investigator Meeting(s)?**	10		6		63%		
7 **Did you review the Site User Manual and make it available to your colleagues?**	16		0		100%		
8 **Did you review the Subject's User Manual and give it to the Subject?**	16		0		100%		
Did you receive enough information/instructions to perform the following tasks the first time?	Not at all	Should have been more	Yes but difficult at first	Yes, with little difficulty	Yes, no training		
9 Assign a LogPad to a subject	0	4	5	6	1		2.3
10 Transmit data from the LogPad to the database	0	3	3	9	1		2.5
11 Train a subject on how to enter their Diary information	0	4	3	9	0		2.3
12 Train a subject on how to transmit their Diary information from their home.	0	4	2	10	0		2.4
	0%	23%	20%	53%	3%		1.0
LogPads (Electronic Patient Diary):							
How would you rate the difficulty of each task related to the LogPad at your site?	Very difficult	Difficult	Not too difficult	Easy	Very Easy		
13 Prepare the LogPad (charge the battery, check the time, calibration, contrast)	1	2	9	4	0		2.0
14 Configure the LogPad (select country, time zone, language, phone set up)	2	2	8	3	1		1.9
15 Identify an available telephone connection for data transmission from your site	1	3	7	3	2		2.1
16 Connect the Telecradle (modem) to the telephone plug and electric socket	0	0	4	8	4		3.0
17 Train a subject on how to enter their Diary information	1	4	7	3	1		1.9
18 Train a subject on how to transmit their Diary information from their home.	1	3	6	5	1		2.1
	6%	18%	43%	27%	9%		
StudyWorks:							
Did you know that you could do any of the following with the StudyWorks software?	No I had no idea	Yes but never tried	Is not important	Yes, I used it sometimes	Yes, I used it frequently		
19 Review a Diary Page or Questionnaire Form to check a response on a selected day(s)	2	10	0	4	0		1.4
20 Review a summary of the subjects enrolled at my site to check their status in the study	1	8	2	5	0		1.7
21 Monitor the compliance of the subjects enrolled at my site	3	8	0	4	1		1.5
22 Monitor the clinical symptoms (i.e. Pain VAS, rescue meds, symptom severity) of subjects	2	8	1	4	1		1.6
23 View data required to determine the subject's inclusion/exclusion criteria or randomized	4	6	0	5	1		1.6
24 Review the technical tips, and News Letters if posted on the DOCUMENTS tab	12	3	0	1	0		0.4
25 Send a message to PHT Support Center for technical assistance with the CONTACT US tab	14	2	0	0	0		0.1
26 Send a message to a subject's LogPad	14	2	0	0	0		0.1
	41%	37%	2%	18%	2%		
HELP DESK SUPPORT:	Yes		No				
27 **Did you call the PHT Help Desk for assistance?**	14		2		88%		

Figure 1: Survey Results: Summary

Results

The survey was sent by fax to a total of 31 sites in 4 separate trials. Sixteen surveys (21%) were returned from 11 (35%) sites. No reminders were sent. Complete results are shown in Figure 2 and summarized in Figure 1. If results are looked at by section, the following trends were observed. For the General Benefit of electronic vs. paper diaries, the sites rate time stamped data as the greatest advantage of EPDs. . There is no possibility for the subject to "catch up" or to forward fill. At the same time however, the least valued feature of electronic diaries was the completeness of data records. The site staff seem to value features that prevent the subject from entering false information, but in the same time do not believe that the subjects often "create" data. Most of the answers regarding Training were rated 2 or 3, or average, showing that the training was perceived as adequate but often too far away from the first patient in. In terms of Use of the LogPad, the greater perceived difficulty consisted of the LogPad configuration, i.e. selecting the right country, language, time zone, and setting up the phone. The easiest task as perceived by the site was to connect the modem/charger to an electrical/telephone plug. The Use of Internet to review the data in real time was not a feature the sites used a lot. Only 4 individuals of 16 used it some of the time. Finally, the level of service from the Helpdesk was on average rated as good, although the typical ability of the Help Desk staff to solve problems was only rated as adequate.

Site #	001	001	002	002	002	003	003	004	005	006	006	007	001	002	001	001
Study #	1	1	1	1	1	1	1	1	1	1	1	1	2	2	3	4
Electronic Diaries vs Paper Diaries																
1 Complete data records - captures all required data with no skipped entries	3	3	2	3	3	1	1	1	0	4	3	0	3		3	3
2 Timestamps every entry - disallows last minute "catch up" or forward filling of diaries	4	3	2	3		4	3	3	3	4	3	1	3		3	4
3 Diary data is kept confidential	3	4	3	3	3	3	3	3	1	4	4	2	3		3	2
4 Calculations are automatic, alerting subject and sites of worsening symptoms	4	3	2	3	2	2	2	3	0	4	4	3	1		3	3
5 Ability for site and sponsors to review subject's data real time, every day	3	4		3	0		3	3	0	4	4	0	1		3	3
TRAINING																
6 **Did you attend the PHT's training session at the Investigator Meeting(s)?**	Y	Y	Y	Y	N	N	Y	Y	Y	Y	N	N	Y	N	Y	N
7 **Did you review the Site User Manual and make it available to your colleagues?**	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
8 **Did you review the Subject's User Manual and give it to the Subject?**	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
9 Assign a LogPad to a subject	3	2	1	2	1	2	4	2	3	3	3	3	1	1	2	3
10 Transmit data from the LogPad to the database	2	4	1	2	3	3	3	2	3	3	3	3	1	3	1	3
11 Train a subject on how to enter their Diary information	2	3	1	2	1	3	3	2	3	3	3	3	1	1	3	3
12 Train a subject on how to transmit their Diary information from their home.	3	3	1	2	1	3	3	2	3	3	3	3	1	1	3	3
LogPads (Electronic Patient Diary):																
13 Prepare the LogPad (charge the battery, check the time, calibration, contrast)	2	2	2	3	2	1	2	1	0	3	3	2	2	2	2	3
14 Configure the LogPad (select country, time zone, language, phone set up)	2	2	2	3	2	1	2	1	0	4	3	2	2	2	0	3
15 Identify an available telephone connection for data transmission from your site	3	2	2	3	2	0	2	1	1	4	4	3	2	2	1	2
16 Connect the Telecradle (modem) to the telephone plug and electric socket	2	2	3	3	3	3	2	3	4	4	4	3	3	2	3	4
17 Train a subject on how to enter their Diary information	2	2	1	2	2	0	2	1	3	4	3	2	1	1	3	2
18 Train a subject on how to transmit their Diary information from their home.	2	2	3	2	2	0	2	1	3	4	3	2	1	1	3	3
StudyWorks:																
19 Review a Diary Page or Questionnaire Form to check a response on a selected day(s)	1	3	3	1	0	0	1	1	1	1	1	1	3	3	1	1
20 Review a summary of the subjects enrolled at my site to check their status in the study	3	1	3	2	1	0	2	1	1	1	1	1	3	3	3	1
21 Monitor the compliance of the subjects enrolled at my site	3	1	3	1	0	0	1	0	1	1	1	1	4	3	3	1
22 Monitor the clinical symptoms (i.e. Pain VAS, rescue meds, symptom severity) of subjects	3	1	3	1	3	0	2	0	1	1	1	1	4	3	1	1
23 View data required to determine the subject's inclusion/exclusion criteria or randomized	3	4	1	0	1	0	1	1	1	3	3	1	0	3	3	0
24 Review the technical tips, and News Letters if posted on the DOCUMENTS tab	0	1	0	0	0	0	1	0	0	0	0	1	0	0	3	0
25 Send a message to PHT Support Center for technical assistance with the CONTACT US tab	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0
26 Send a message to a subject's LogPad	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0
HELP DESK SUPPORT:																
27 **Did you call the PHT Help Desk for assistance?**	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y
28 Friendliness and Politeness	4	4	2	2	3	4	3	2	4			3	2	3	4	4
29 Phone pick up (time it took for someone to answer)	4	4	2	2	2	4	2	2	4			3	3	2	3	3
30 Ability to resolve the problem	3	4	2	3	3	3	1	2	1			3	0	0	3	0
31 Language skills: Did they speak your language	4	4	3	2	3	4	2	2	2			3	2	2	3	3

Figure 2: Survey Results: Raw Data

Discussion

The use of Personal Digital assistants (PDAs) to collect electronic Patient Reported Outcomes (ePROs) has consistently been proven to improve the quality of the collected data (1). Several studies in the late eighties already showed the amount of data that were "created" by the patient in their paper diaries, for example when comparing the data recorded in an electronic PEF meter or an electronic MDI to the corresponding data written by the patient (2,3). The percentage of so-called "created" data is not to be neglected, as several studies show that 30 to 50 % of the data can be invented by the patient. In a recent study published last year (4), the difference between real and recorded compliance was as high as 79%. Although this study was not a clinical trial per se, and therefore the findings do not necessarily apply to clinical trials, it also showed that 45% of subjects were forward filling their paper diaries at least on one occasion during the trial. It is also noteworthy to mention that the EMEA has now issued 2 guidelines (5,6) where the use of electronic diaries should be considered in certain instances. For all these reasons, clinical trial or clinical program leaders, data managers, statisticians or regulators from the pharmaceutical industry think about the pros and cons of EPDs for their coming clinical trials. However, the good relationship of the Pharma industry with the clinical investigators is crucial and there is a risk that investigator sites may dislike using new technology. In our experience, we were asked on 2 occasions to talk to the medical directors of all the countries where the clinical trials were going to take place, and it was made clear to us that unless all individuals agreed, the studies would use paper. Therefore we decided to implement this survey to get more detailed feedback from the sites. The main findings of this study can be summarized in Figures 3 and 4. It appears from our survey population that the degree of satisfaction is clearly linked to the degree of understanding the reason for using an EPD. This emphasizes the need for training that does not concentrate only on the technical aspects but probably as important, if not more, focuses on the scientific reasons behind the use of new technology as well as the pitfalls of paper.

Site #	1-006	1-006	1-001	1-001	1-002	3-001	4-001	1-004	1-003	1-003	1-002	2-001	1-002	1-007	1-005	2-002
Study #	2306	2306	2306	2306	2306	2201	2301	2306	2306	2306	2306	2304	2306	2306	2306	2304
Responder	1-006	1-006	1-001	1-001	1-002	3-001	4-001	1-004	1-003	1-003	1-002	2-001	1-002	1-007	1-005	2-002
Avg scores																
Paper vs EPD	4.0	3.6	3.4	3.4	3.0	3.0	3.0	2.6	2.5	2.4	2.3	2.2	2.0	1.2	0.8	
Training	3.0	3.0	2.5	3.0	2.0	2.3	3.0	2.0	2.8	3.3	1.0	1.0	1.5	3.0	3.0	1.5
LogPads	3.8	3.3	2.2	2.0	2.7	2.0	2.8	1.3	0.8	2.0	2.2	1.8	2.2	2.3	1.8	1.7
StudWorks	0.9	0.9	1.6	1.5	0.6	1.8	0.5	0.4	0.0	1.0	1.8	1.8	0.6	1.0	0.6	1.9
HelpDesk			3.8	4.0	2.3	3.3	2.5	2.0	3.8	2.0	2.3	1.8	2.8	3.0	2.8	1.8
Training, LogPad Use and HelpDesk	3.4	3.2	2.8	3.0	2.3	2.5	2.8	1.8	2.4	2.4	1.8	1.5	2.1	2.8	2.5	1.6

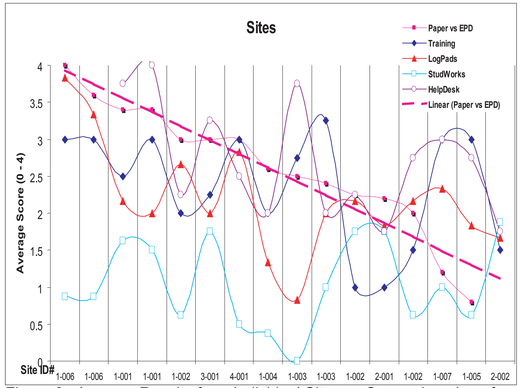

Figure 3: Average Results from Individual Sites vs.Comprehension of LogPad Use

Conclusion

The degree of satisfaction from the sites varies in our survey and were evenly distributed from very enthusiastic to frustrated. However the most important findings were that the individuals who understand why they are using EPDs were much more satisfied than the sites that thought paper was better. Training at PHT now concentrates even further on the scientific reasons behind the use of EPDs.

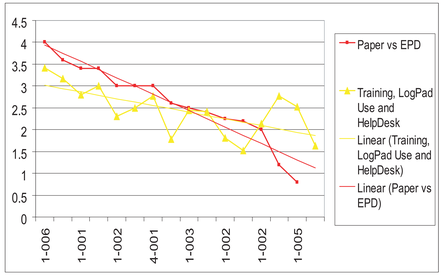

Figure 4: Aggregate Results from Individual Sites vs.Comprehension of LogPad Use

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