



RFI Subgroup Recommendations

Electronic Data Management Forum

Cost:Benefit of EDC

EDM Forum EDC Tools Subgroup

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ABOUT THIS DOCUMENT

Disclaimer

The contents of this document are based upon the experience and understanding of members of the EDM Forum. As such they represent historical experiences and current understandings within the unique environment of member companies. The document content is unconfirmed and may be updated as new information becomes available. The information presented in this document is therefore presented as an aid to understanding the uptake of EDC and for maximizing the success of EDC and needs to be interpreted in the light of your own internal environment, needs and experience. This working document is made available 'as is' in accordance with the group's information sharing policy.

Access to Further Information

EDM Forum members are available to provide further guidance and information. Please contact us via Email describing your need and we will put you in touch with a member company that has handled a similar experience.

Providing Feedback

Feedback via:

- o edmforum@edmforum.com



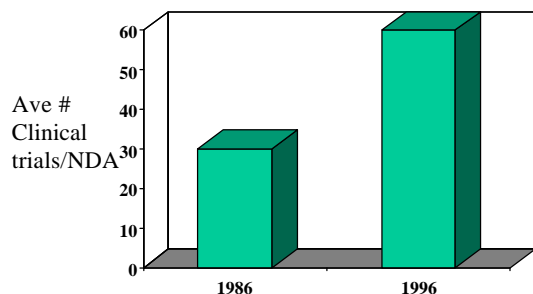
ADOPTION OF EDC TECHNOLOGIES BY PHARMACEUTICAL COMPANIES

Introduction

The average cost to discover and develop a new drug is now estimated to be more than \$500 million and the average length of time from discovery to patient is about 15 years. In response to shareholder demands most large Pharma are setting aggressive new goals, both in terms of reducing the cost and time to market and also in terms of bringing more new products to market each year. Although recent performance data show an increase of more than 30 percent in drug development and approval cycles, coupled with annual growth rates of 10-15 percent, the leading pharmaceutical companies are striving to more than triple the number of new chemical entities (NCEs) brought to market each year. Helping towards this goal, the time scale and productivity level of early stage discovery has been dramatically improved through the introduction of combinatorial chemistry and high throughput screening. At the same time most big Pharma have significantly overhauled their manufacturing capability through the disposal of surplus capability and the streamlining of production with techniques such as just in time manufacturing and redesign supply chains. On top of this, the sales and marketing groups have been relatively quick to take advantage of e-commerce enabled marketing techniques, with product focused Web sites and e-detailing now in common use. This clearly leaves the medical component as the bottleneck to the desired dramatic reduction in cycle time reduction and the key reason for this bottleneck, is the time taken to carry out the required Clinical Trials.

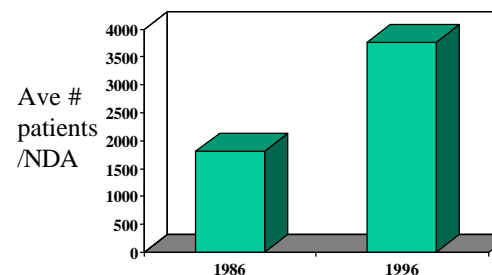
Reducing this 'Clinical Trial' bottleneck cannot be achieved by doing fewer clinical trials, nor by reducing the number of patients in each clinical trial. As the data below indicate, the trend, driven by increasingly stringent regulatory requirements, is in the opposite direction.

Average number of clinical trials per new drug application (NDA)



Source: PhRMA Facts, 1996

Average number of patients per NDA



Source: Medical & Healthcare Marketplace Guide, 12th Ed, 1996



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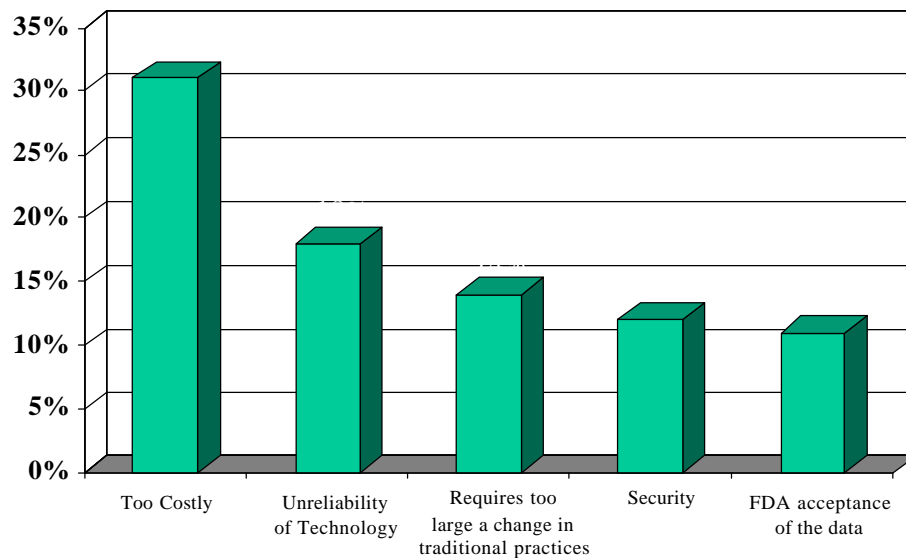
It is therefore clear that the bottle presently holding back big pharma from achieving its shareholder driven cycle time reduction, can only be effected by bringing much greater efficiency to the execution of the clinical trial process.

While there are many areas associated with the clinical trial process where we might seek to introduce greater efficiency, the most obvious is around the manner in which we collect patient data. As a consequence, there has rightly been a particular emphasis on applying Electronic Data Capture (EDC) and Remote Data Entry (RDE) to data collection and cleaning in an effort to address this inefficient process. There has not only been focus but also great expectation on EDC/RDE and quite frankly, as yet it is not at all clear that it has delivered.

As Pricewaterhouse Coopers point out, the majority of trials conducted today are still primarily paper-based even though electronic data capture (EDC) has been around, at least in concept, for the past 15 years. In fact, only 5 to 10 percent of all trials conducted employ any measure of EDC.

In 1998, Centrewatch provided some data as to the primary reasons why big pharma were not adopting EDC

Why Large Companies Fail to Adopt EDC Technologies



Source:ACRP and Catalysis Survey of 203 Clinical Research Professionals, April 1998 (CenterWatch)



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This data clearly indicate that the key reasons for the non-adoption of EDC technologies by big pharma revolve around five key concerns:

1. Too costly
2. Unreliability of technology
3. Requires too large a change in traditional practices
4. Security
5. FDA acceptance of data

These concerns have historically led to the view that EDC is ineffective and expensive. This in turn leads to General Management seeking to see cost benefit analysis before committing funds and, given the real difficulty in providing accurate cost benefit data, the consequent lack of significant uptake.

We, in the EDM Forum, (like many before us) have engaged in considering the cost benefit analysis of introducing EDC/RDE technology. However our deliberations have lead us to query if this is the right question to be asking and we now believe that attempting to provide detailed cost/benefit analysis/justification is actually inappropriate. There are several reasons why we reached this view.

Before completely moving away from actual cost benefit analysis, let's not forget that there is considerable evidence suggesting that EDC adoption can indeed reduce cost. Some big Pharma who have already committed to EDC, can clearly identify significant cost saving, particularly as it relates to cost of queries on the data collected.

According to Bayer, who has significant experience in this area, using EDC greatly improves data quality, which in turn leads to considerable cost savings. Clarifying a query costs roughly between \$60–100, and Bayer believe it is possible to reduce the number of queries from about 6–10 per patient to less than one per patient using EDC. Thus, in a 500-patient trial with about eight queries per patient at \$80 per query, the data clarification process would cost about \$320,000 in a paper-based trial, compared with about \$32,000 with EDC – a potential saving of \$290,000.

Experience at Bayer also indicates that using EDC can significantly increase the speed of data capture.

The average time for paper-based trials at Bayer from the last patient's final visit to a clean database is about 16 weeks. With their first studies using EDC this process took over 30 weeks, but this time decreased rapidly to around 5 weeks as they gained experience. In the near future, they aim to reduce this to less than 4 weeks. This 12 week saving, if viewed in terms of additional days on peak sales prior to patient expiration, can add up to multi-millions on the bottom line.

While these saving needs to be offset against the not inconsiderable cost of implementing EDC systems, it should be realised that adopting a strategic approach to software acquisition, enabling software-licensing costs to be reduced dramatically, can significantly reduce costs. Also, as was experienced by Bayer (and others) 'scale up' also dramatically reduces the costs associated with initial start up.

However, let's move away from direct cost/benefit analysis and look at others reasons why pharma should be actively considering the adoption of EDC technology.

According to Pricewaterhouse Coopers (PWC), the shift from paper-based to Internet-enabled clinical trials will bring a 30 to 50 percent reduction in development time and cost!

PWC claim that the present scepticism around adoption of EDC stems in part from pre-internet technology problems the industry faced. They also point out that physicians tend to be very conservative and slow to embrace new technology. As a consequence, during initial pilots of this technology, source records tended to still be



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paper based, requiring someone other than the physician to enter the data. This ensured that regulators would require sponsors to verify all data, minimising the benefit of the technology.

Andersen Consulting also indicate that growth will be fuelled by Web-enabled technologies that will transform the way in which clinical trials are conducted. They believe that new business models will see every aspect of a drug development organisation utilising the internet to gain efficiencies. This, we believe, is the heart of the matter. It's no longer about cost/benefit analysis around using EDC. It's about radically redesigning the drug development process to ensure pharma companies can stay competitive, can bring significantly more new products to market and can therefore match share holder expectations. Radically redesigning the drug development process will not be achieved by simply and singularly introducing EDC and/or internet based technologies. On the other hand, we also believe that radical redesign of the drug development process cannot be brought about in the absence of EDC technology. Hence, the adoption of this technology is a foregone conclusion for any pharma company that intends to stay in business.

Supporting this view, the EDM Forums' own data indicate that of the top 12 European Pharmaceutical companies,

- 5 have already declared a strategic intent and have made significant commitment to the technology
- 6 are know to be aggressively piloting the technology and have expressed an intention to commit
- 1 is carrying out pilots

We therefore believe that it is important to identify the critical areas that will make EDC successful within any company contemplating it's adoption. To assist in this, the EDM Forum have identified the following as the key success factors:

Criteria for making EDC a success

1. Define roles and processes up front
2. Technology alone cannot confer the benefits of RDE:
 - Users must be trained in redefined processes and software functionality
3. Technology, software and processes must support users working practices especially in the clinical environment
4. Scalable, multi-lingual support and deployment model (internal or external)
5. Should allow all users to track and monitor progress of their responsibilities in the study. (Potential to replace current monitoring systems if monitors are allowed to update.)
6. RDE should be applied appropriately - criteria must be developed for strategic study selection. Ask the question "Why should we **not** do this study with RDE"
7. Be bold – commitment is key. Too many pilots are expensive and can be ineffective. Senior management commitment is a key to success.
8. Involve users in early stage of study development – site buy-in is key to success. Needs to be done with care, since this could impact timelines.
9. Conduct regular process review and enhance processes where appropriate.

Additionally we believe it is critically important for any organisation contemplating adopting EDC technology, to be clearly focused on areas where they can expect benefit and cost saving, but also on areas where they can, at least initially, anticipate some cost/efficiency impact. Again, to assist with this process, the EDM Forum



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have identified the key steps and the tasks within these steps that are likely to be effected by the introduction of EDC technology. For each task, we have also identified the roles that are likely to be effected and nature of that effect. Additionally we indicate whether EDC is more likely to increase or reduce the cost/efficiency of this task and how this is likely to change over time. (See the table at the end of the document.)

Cost:Benefit Table

We recommend that this table is used as a guide by any company to help them understand on which steps of the process, and within this, which specific tasks, they should concentrate, in order to maximise the value of adopting EDC tolls, within their specific environment.

Comparison of paper-based Process with EDC/RDE Process					
Steps	Tasks	Roles:	Short Term Resource/Cost + = increas, - =decrease, +/- = neutral, ++ or -- => high incr/decr	Long Term (repeat)	
DM process					
	Setup / Programming of database / screens	DM = datamanager, Progr. = database progr.	+ (increase compared to paper)	+/- (neutral)	
	CRF tracking	DM / Admin	-	- - (high decrease compared to paper)	
	Dataentry	DE = Dataentry, INV = investigator	-	--	
	Querygeneration	DM	+	-	
	Queryresolution / Database-update	DM	+ , decreases for DM, but increases for Monitors!	-	Reads: EDC will take more resources in the first run, but decrease in follow-up scenarios



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	Coding	DM	+/-	-	
	CRF archiving	Admin	-	-	But: Database archiving and hidden costs for maintenance and backup
	Database QC	QA / DM	+/-	+/-	would probably decrease. No 1:1 check CRF vs. database
	Statusreporting	PM = Projectmgr, DM	- , new status reports have to be defined and to be programmed?	--	
	Database lock time (??)	DM	+/-	--	
	Interface to DBMS, programmin interfaces for SAS access	Progr.	+		
	Integration of external data sources (LAB-data, diaries etc. into database)	DM	??	?	
Clinical / Monitoring					
	Source doc. Verification	CRA / INV	+	- , only if data is directly entered (source data)	
	CRF review onsite	CRA	-	--	Data has to be reviewed already before site visits
	CRF separation (NCR paper), CRF tracking, shipping	CRA / Admin	--	--	
	Study tracking			--	
	Monitor reporting	PM / CRA	+/-	-	
	inhouse CRF review	CRA/CDM	+/-	-	
	Query management at site	CRA / INV	+	-	
	CRF design	CDM	+/-	-	but increased for CRF programming + testing
	CRF printing	Admin/ external Serv.	--	--	
	CRF signatures		---		



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	CRF archiving	Admin	-	-	see above!
	Drug supply logistics	CRA	+/-	-	
	SAE reporting/reconciliation				
Submission					
	CRF integration	Regulatory Dptmnt	+/-	-	
Hard/Software					
	Licences	ASP	+	+/-	
	Hardware (Server ...)	IT	++	+/-	
Misc					
	Process review and changes of responsibilities. SOP changes etc.				
	Site selection, technical requirements				
	Installation + Training		++	+/-	
	system maintenance and administration		++	+	
	Support / Hotline		+	+/-	
	Communication with team		+/-	-	
					Comment: decreased advantages if some centers continue with paper based solution!