

encapsia™ eSource Pilot Study



White Paper

abstract

This white paper examines the positive impact and performance of **encapsia™**, a cloud-based Clinical Data Suite developed by Cmed in a pilot clinical trial.

The trial was sponsored by a leading global pharmaceutical company and was a first-in-human, randomized, double-blind, placebo controlled, interwoven, two-part study, consisting of both single- and multiple-ascending doses.

Both the eSource and Monitoring Console modules from the **encapsia™** suite were used to both capture source data directly into the trial database and monitor it remotely.

Hypotheses:

- That faster and cleaner Data would be available enabling better decisions on trial conduct.
- That the site user's experience would be enhanced using the tablet based technologies of **encapsia™**.
- That the timelines and costs could be reduced as a function of direct source capture and remote monitoring.

Scope and Metrics

The trial involved a single investigator site in the US with over 500 subjects screened, 96 subjects randomized and 20,964 pages captured over a 7 month period.

The following performance parameters were determined to compare the **encapsia™** trial with a selected typical trial using standard web based eDC.

- Average time in days between visit date and data entry
- Number of Data Management queries per 1000 pages
- Number of CRA queries per 1000 pages
- Time in days from LPLV to last CRF DM query per 1000 pages
- Time in days from LPLV to last CRF FM query per 1000 pages
- Number of hours of cleaning per 1000 Pages

Outcome

One of the most significant findings was the reduction in delay for data entry after visit from 14 days to same day entry. All other performance metrics also improved over standard web eDC in terms of reduction of queries generated, time to resolution and time spent in cleaning.

Cmed expects to be able to support the reduction of site monitoring budgets by around 50% through the increase in remote monitoring, a reduction of SDV and the capture of eSource wherever possible.



introductions and background

The clinical trial landscape is worryingly one of increased trial complexity and ever increasing volumes of data. This presents complex challenges for Sponsors and their partners as they struggle to control costs and shorten timelines whilst of course continuing to meet their obligations to Patients safety, data integrity and compliance. The traditional approach of sending monitors to travel to site to check data is expensive, time consuming and still does not guarantee quality. Add to this the significant duplication of effort by monitors, data managers, site staff and all those at the various touch points for the data through the trial, and it is little wonder that the industry needs to change.

To meet the demands of 21st century, the Industry has to find ways to reduce the costs and speed the time to market for new medication. Finding more effective monitoring strategies such as Risk-Based and Remote Monitoring and the increase in the capture of eSource will be key as will be the new user friendly technologies to support it.

- eSource is the entry of trial source data directly into the system (thereby the electronic record is the source). This methodology reduces both the volume of data transcription at site and the need for its review by source data verification (SDV).
- Remote monitoring is the remote review of source data normally performed at site. Reducing visit frequency and time on site compared to conventional monitoring.
- RBM is where both real time capture and visibility of data enables monitoring to be focused on areas of risk and where additional support is needed.

This is being encouraged in guidelines from the FDA and EMEA, who together with other Pharma industry organizations such as Transclerate see the importance and value in these changes.

company introduction

Cmed is an innovative, full service technology-led CRO providing the latest in advanced clinical data capture technology, Clinical Operations and Trial Management. Cmed brings together highly experienced people and this focus on technology to provide friendly and proactive service. Our mission is to work with our customers to conduct Clinical Trials better and faster than anyone else, thus helping patients and ultimately saving lives.

inspiring progress

encapsia™ overview

Building on over 10 years' experience working with our first generation cloud-based, mobile eDC platform **Timaeus[®]**, which we have used in over 500 trials, Cmed has now developed **encapsia™** which is a new generation of technology designed to enable risk-based monitoring (RBM), remote monitoring and importantly the direct capture of eSource all within one clinical data suite.

It is structured as a suite of apps which communicate with a cloud-based server and clinical data can be captured flexibly by mobile eSource, multi-media and web eDC, while being displayed in live visual insights and providing live analytics. Observations and issues can also be highlighted, actioned, discussed, tracked and audit trailed from within **encapsia™**.

The server maintains a single representation of the data which all of the modules access, therefore there are no integrations and movements of data from one system to another.

It is fully compliant with regulatory guidelines, and can be seamlessly integrated into existing eDC systems, enabling certain components of **encapsia™** to be added and thereby enhance these systems.

Each trial has a bespoke configuration defining the data structures, visit schedule, forms, validation checks and workflow for all the required modules.

encapsia™ eSource overview

Running on Apple iPads this downloadable iOS app is part of the **encapsia™** suite.

Site staff use the app to enroll patients, collect clinical data, respond to queries and approve collected data. It also adds a new multimedia data dimension allowing pictures, audio and video to be captured to supplement and validate source data.

The system supports complex validation checks, which fire at the point of entry, promoting error-free data. Manual queries raised by Data Managers and Monitors also appear in the app, meaning that site users can perform all tasks relating to data collection at one time in one place.

The app synchronizes with the **encapsia™** server in real time, meaning that data is immediately and securely stored in a central location. Offline use is also fully supported if there is no connection to the server as the app also stores a complete copy of the site data locally on each iPad. Records can also be edited concurrently, so there is also no need to download a patient eCRF or check subject folders in or out.

Finally, unlike so many other tablet based clinical applications the iPad is not "locked down", so it can also be used conventionally, communicating with colleagues, storing and viewing trial documents, browsing the internet and running other apps.

project summary

Cmed were asked to conduct a pilot trial sponsored by a leading global pharmaceutical company using **encapsia™** to collect electronic source data. The pilot used both the eSource and Monitoring Console modules of **encapsia™**. The trial was supported by site, Sponsor and Cmed staff.

This white paper discusses the use of **encapsia™** eSource in that clinical trial and the results in terms of clinical data quality, timeliness and availability.

The hypothesis was that:

- Faster and cleaner Data would be available enabling better decisions on trial conduct.
- The site user's experience would be enhanced using Tablet based technologies.
- There would be opportunity to reduce timelines and cost as a function of Source data being captured directly into the trial database and monitored remotely.

trial description

The trial chosen for the pilot was a phase one study of a complexity to test the ability of **encapsia™** to model and manage the trial data. The trial was a first-in-human, randomized, double-blind, placebo controlled, interwoven, two-part study, consisting of both single- and multiple-ascending doses, with an additional food effect cohort. Each part involved multiple cohorts, with data being reviewed during the trial to support dose escalation decisions and establish safety prior to the opening of subsequent cohorts / parts.

Trial outline:

- Single investigator site in the US
- 500+ subjects screened
- 96 subjects randomized
- 34 unique source pages
- 20,964 pages captured

Study duration 7 months (first patient in to last out)

The pharmaceutical company was responsible for operational functions such as Project Management and Clinical Monitoring and Site Management. Cmed were responsible for the database / source form configuration / validation check design in **encapsia™**, integration with **Timaeus[®]** and validation of the entire system. Cmed also provided the data management services throughout the trial.

eSource data entered into **encapsia™** was validated in real time and synchronized immediately into the central **encapsia™** database. Site staff used **encapsia™** eSource to capture images of Informed Consent forms and ECG traces, in order that these could be monitored remotely. Remote review of all source data and multimedia was performed using the **encapsia™** Conduct module. This was also where monitors raised and managed their queries.

Integration to other backend systems was demonstrated by the real time transfer of data to **Timaeus**[®], where additional data management activities were performed, consisting of:

- Data management validation, review and cleaning, coding, third party data loading.
- Creation and management of Data Manager queries.
- Database lock.

At the end of the project, the trial archive was created using **encapsia™** Archiver.

N.B **encapsia™** now contains its own modules for data management and does not need to be linked to a separate data management system.

project metrics

These metrics compare two trials:

- A standard web eDC trial selected as a good comparator for the **encapsia™** pilot trial
- The **encapsia™** pilot trial

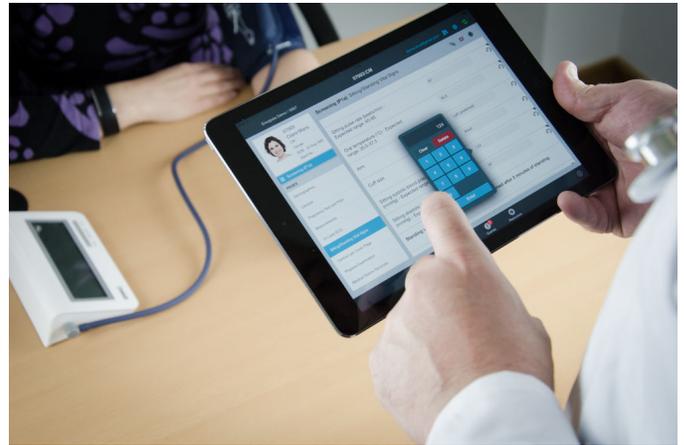
Where appropriate, metrics have been calculated “per 1000 pages” to take into account the relative size of the trials and make the figures more comparable.

	eDC Benchmark	Variation between eDC and encapsia™ eSource
Average Time in Days Between Visit Date and Data Entry	14	0 (-100%)
No. of Data Management Queries per 1000 Captured Pages	79	34 (-57%)
No. of CRA queries per 1000 captured pages	83	61 (-26%)
Time from LPLV to Last CRF DM Query per 1000 Pages (Days)	10.9	1.9 (-83%)
Time from LPLV to Last CRF FM Query per 1000 Pages (Days)	11.4	1.9 (-84%)
Hours of Cleaning per 1000 Pages	88	16 (-82%)

The largest change is the 100% reduction in the time for data entry after the visit. Indicating data entry through **encapsia™** eSource removes the delay due to transcription and provides immediate access to the data allowing validation, review and analysis of clinical trial results as they are captured.

The remaining categories also show the benefits of using **encapsia™** over standard web eDC in terms of reduction of queries generated, time to resolution and time spent in cleaning. This improvement in data quality and improved efficiency when extrapolated to larger trials would translate into significant cost reductions.

Figure 1: Investigator entering data through **encapsia™** eSource



site satisfaction

When new technologies are used by staff at sites the user experience is key to its adoption and correct use. The way they see and feel the benefits or frustrations of technology is well documented and a normal benchmark for comparison is their experience with paper, although now of course their view is also colored by their exposure to a whole host of eDC/RDC technologies.

In this Pilot all site users were surveyed following the completion to assess their experience of using **encapsia™**.

The results of the survey were:

- **90%** of respondents rated their overall satisfaction with **encapsia™** eSource as “Satisfied” or “Very Satisfied”.
- **78%** said “**encapsia™** eSource had all the features expected of an eSource system”.
- **70%** of respondents rated **encapsia™** eSource as good as or better than paper to work with.

comparative benefits

Although it has not been possible to gather robust comparator metrics there were some key benefits highlighted by the Sponsor team. They felt there had been a significant reduction in the time taken to make

escalation decisions and that they had saved 1 to 2 days per decision versus standard web eDC studies, and that this amounted to approximately 3 weeks for the study as a whole.

When taken in the context of the duration of this study (26 weeks from FPI to LPO) the reduction in time was seen as a significant improvement against traditional delivery models and has produced a cost saving for the study.

It is also worth considering the positive effect of capturing pictures of data not entered as electronic source such as ECG traces and informed consent forms. The multi-media features of **encapsia™** eSource were used to demonstrate the capture supportive images to help validate data centrally.

encapsia™ eSource has shown that by increasing the volume of source data available remotely, time spent monitoring at site can be further reduced and costly travel time and pass through costs removed from Study budgets.

quotes from the sponsor study team

"The system definitely enhanced the ability of our scientific and medical experts to access data quickly and efficiently, to assess trends and outliers with a high degree of certainty in the integrity of the data"

"One of the key aspects that allowed for efficient dose escalation was the limited amount of time spent querying the site and verifying the accuracy of the data entry during preparation of the data outputs prior to dose escalation."

*"...the investigational site was able to deliver good data in conjunction with ongoing reviews from the clinical data managers and field monitors continuously by use of the **encapsia™** system"*

"The system gave a new level of access for the field monitors to troubleshoot and issue queries without needing to be on-site."

conclusions

The modern architecture and modular design of **encapsia™** means that the advantages of eSource can now be leveraged beyond simply the collection of electronic source data:

- As a single unified system, **encapsia™** supports immediate availability of trial data, allowing safety and trial management decisions to be made instantly. Faster access to data means quicker decisions and quicker clinical trials which in turn reduce costs.
- Many sites are already using tablets and most site staff are familiar with their use. Implementing eSource into their working environment can therefore improve their experience of working on clinical trials. The link between site motivation data quality enrolment is well established.

- Using a standard iPad and having **encapsia™** available as a downloadable app enables straightforward scale up. The days of large teams providing, controlling, supporting, tracking and collecting laptops are gone.
- Cleaner data at the point of entry means reduced queries and, therefore reduced data management and monitoring workload thus saving further time, effort and cost.
- **encapsia™** through its modular design is fully flexible. Sites that are suited to eSource can run on iPad while different sites within the same trial may use more traditional **encapsia™** web eDC.
- Our aim is to support maximum participation by sites providing a solution that fits each trial sites needs and normal workflows.
- The use of supporting multimedia increases the volume of data that can be remotely monitored. This reduces both visit frequency and time on site and therefore the cost of monitoring in clinical trial budgets. Cmed aims to reduce the site monitoring budget of trials by around 50% through increased remote monitoring and reducing the need for SDV using eSource where appropriate.

Figure 2: Investigator using multimedia to capture source Blood Pressure readings in **encapsia™** eSource



If you would like to discuss any aspect of this Pilot or would like any more information on the services Cmed can offer, we would be delighted to hear from you.

For further information or to arrange a demonstration of **encapsia™** please contact.

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