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25th June 2024

Ms Neasa Hourigan TD
Dáil Eireann
Leinster House
Dublin 2

Re: PQ ref 21161/24

“To ask the Minister for Health if he will outline the spending to date on the development, implementation and rollout of the national maternal and newborn clinical management system for the HSE, in tabular form, and classed by company; the timeline or timeframe; and the purpose and desired or completed output.”

Dear Deputy Hourigan,

MN-CMS ELECTRONIC HEALTH RECORD

Phase 1

MN-CMS provides a single Electronic Health Record for all women and babies in Maternity, Gynaecology and Neonatal services in Ireland. Phase 1 of the MN-CMS EHR project was delivered over a five-year period from 2013 to 2018.

The design phase commenced in 2013 with a sign off in 2016 before going live in the following phase 1 sites:

CUMH, Cork Dec 2016, Gynae Module July 2019
UHK, Kerry Mar 2017, Gynae Module Dec 2019
Rotunda, Dublin Nov 2017, Gynae Module Sept 2019
National Maternity Hospital, Jan 2018, Gynae Module Oct 2019

40% of births Nationally on MN-CMS. 45% of all the National NICU Cots. Approx. 3,000 users on MN-CMS. Implementation of MN-CMS in CWIUH & UMHL will complete the rollout to the standalone maternity hospitals bringing coverage close to 70% of births and 60.5% Neonatal Intensive care activity nationally

The MN-CMS programme has been and continues to be a pathfinder providing significant learning for the future of Electronic Health Record (EHR) management in the Irish health Service. It is an Operator of Essential Service (OES) and as such must have appropriate controls in place to ensure the confidentiality, integrity and availability of the service.



The MN-CMS system is supplied and supported by the vendor Cerner.

Capital Costs

Baseline Costs

Core MN-CMS costs	Business Case - Capital Lifetime Cost	Capital cost	Spend to Jan 2019	Difference
Main Contract	€5,669,869	€6,147,250	€6,147,250	€477,381

All differences to the baseline cost during this period were reviewed by the Department of Health and formally approved by OGCIO in accordance with their sanctioning process for ICT projects. The following table provides a breakdown of these differences:

Category	Capital Budget	Spend	Difference
Hardware	€522,475.02	€535,006.02	-€12,530.99
Cerner	€4,569,248.00	€4,868,760.84	-€299,512.84
Software Citrix	€189,149.00	€183,518.46	€5,630.54
Software Microsoft	€131,773.00	€171,823.87	-€40,050.87
Non Cerner I.Faces	€257,224.00	€388,140.94	-€130,916.94
	€5,669,869.02	€6,147,250.12	-€477,381.10

Hardware

This is the hardware used to support the application, including test, train, development and production environments. Minor refinements of the design and the fact that this infrastructure was deployed over a five-year period, led to a modest increase in actual cost versus planned.

Cerner system Vendor

- The largest part of the difference in costs versus baseline were attributable to extra costs incurred with the main vendor, Cerner. These additional costs arose as a result of extra functionality received by the HSE as follows:
- Interfaces from the hospital Patient Administration System (PAS) were omitted from the scope of the original contract.
- The National Maternity Hospital had clinical processes in place that required the development of specific functionality to support the replacement of their paper based Partogram. The Clinical Director insisted this be delivered before he would sign off on the system as fit for purpose on that major maternity services site.
- There were a number of minor technical change request that needed to be accommodated to address deficiencies in earlier specification that were not possible to predict prior to system configuration.

Software - Citrix

Prices for Citrix licences and the quantity required changed slightly over the 5-year period of implementation leading to a modest decrease in costs.



Software - Microsoft

Server licensing costs changed considerably over the 5-year period of implementation. The HSE migrated to a virtualised infrastructure model, needed to respond to more robust solutions to address cyber threats and there was a rationalisation of licensing across the entire HSE server estate – all of which negatively impacted the baseline assumptions used for MN-CMS project.

Non-Cerner Interfaces

This was an omission from the original business case. This is a specialist technical area that the HSE have some capacity in but frequently relies on 3rd parties to address – as was the case for MN-CMS.

2016 Spend	Project code	PO		Total PO costs
CSC - Cork iLab Orders/Results		4503842570	€36,433.00	€44,812.59
CSC - Rotunda iLab Orders/Results	ICT13-198	4500840803	€59,383.00	€72,533.00
MDI - Kerry Viewpoint	ICT13-198	4503840740	€12,276.00	€14,648.00
MDI - Rotunda Viewpoint	ICT13-198	4508400696	€2,865.00	€3,431.00
MDI - NMH Viewpoint	ICT13-198	4503840715	€2,865.00	€3,431.00

2017 Spend				
CSC - Kerry iPM iie and Viaduct changes, Future Orders	ICT13-198	4504091959	€10,582.00	€13,015.00
CSC - Rotunda iPM iie and Viaduct changes, PMI, Future Orders	ICT13-198	4504098165	€24,420.00	€30,386.00
CSC - NMH iPM iie and Viaduct changes, PMI, Future Orders	ICT13-198	4504098183	€17,094.00	€21,025.00
Total spend in 2017				€64,426.00

Over the course of the five-year implementation period, additional functionality, related to specific additional benefits was considered. The following changes resulted in a change to the scope of the project. The majority of these changes were driven by the clinical community and related to clinical safety, a topic that was particularly relevant in the context of the Savita Halappanavar case at the time.

All changes were agreed under the change control and formally reviewed and sanctioned by the Department of Health and through DPER OGCIIO sanction process.

Additional Items	Sanctioned Amount	Spend to Jan 2019
Ability to access patients during downtime events rather than revert to paper (724 downtime viewer)	€399,145	€399,145
Inclusion of Anaesthesia module in the solution to reduce clinical risk to patients (eliminates mixed EHR/ paper environment for patients going to and from	€1,061,839	€715,189



theatre)		
Inclusion of Gynae module in the solution to reduce clinical risk to patients (eliminates mixed EHR/ paper environment for gynae patients)	€792,428	€159,900
Adoption of the option for an Application Managed Service to provide guaranteed SLA's for the system. This was not an option when the business case was developed.	€257,229	€257,229
Total	€2,510,610	€1,531,463



724 Downtime Viewer

As the understanding of the scope and implications of implementing an EHR grew it became apparent that a gap existed in the Business Continuity capability.

The '724Access Downtime Viewer' provides read only access to data during a planned or unplanned downtime event. It can store up to 30 days of clinical event data.

It had been expected that contingency processes based on regular hardcopy reports would provide adequate backup facilities. However, the paperless operational processes planned rendered this impractical and an automated backup solution was deemed necessary prior to go live. The neo-natal area is particularly important in this regard as interventions are so time critical. Any delay in access to up to-date clinical information could result in serious adverse outcomes.

Following a funding submission capital funding of €427,518 was sanctioned, €399,145 of this was Cerner costs with the balance being local high spec PC's. This funding is managed through ICT16-168.

Capital costs per budget	
Licensed SW	€50,050.00
Equipment	€88,200.18
Sub Licensed SW	€87,523.22
Prof Services	€19,746.93
CUMH go live	€19,746.93
UHK go live	€19,746.93
Rotunda go live	€19,746.93
NMH go live	€19,746.93
Sub- Total	€324,508.05
VAT	€74,636.85
Total	€399,144.90

Capital paid	
2016	€301,990.01
2017	€72,866.17
2018	€24,288.72
	€399,144.90



Anaesthesia

The MN-CMS deployment plan was developed on the assumption that the core obstetric and neonatal records would be fully electronic but that the anaesthetic record would remain paper-based. This assumption was based on an understanding that the anaesthetic record, arising in operating theatres, did not need to be fully integrated in electronic form.

However, further analysis has revealed risks associated with this approach and it is now proposed to extend the scope of MN-CMS to include the full anaesthetic record from the operating theatres.

Following a funding submission capital funding of €1,061,839 was sanctioned. This funding is managed through ICT16-110.

Capital costs per budget	
Hardware	€150,550
Software procurement	€15,534
- External Service Providers	€895,755
Total Lifetime Cost	€ 1,061,839

Actual capital paid to date	
2016	€189,718.12
2017	€525,098.16
2018	€372.54
	€715,188.82



Gynaecology

MN-CMS was originally conceived as an obstetric and neonatology system. The exclusion of gynaecology services within scope of the MN-CMS system was identified as an operational and clinical risk across the Phase 1 MN-CMS sites and future MN-CMS sites, where applicable.

MN-CMS without Gynaecology functionality results in a Gynaecology patient having a paper record. When the Gynaecology patient presents for a surgical procedure in theatre all activity is documented electronically. Once the Gynae patient is transferred from recovery room the record reverts back to paper. This raises a serious risk around loss of clinical info e.g. medications, laboratory orders that happened intraoperatively.

The Gynaecology project was delivered in 2019 and the sanction managed through ICT17-264.

CCN034 - Gynaecology Functionality- ICT 17- 264	Capital Budget	Balance remaining in budget
End of Align Stage	€159,900	€159,900
Future State Validation	€159,900	€159,900
Exit Integration testing	€159,900	€159,900
Site 1 go-live	€159,900	€159,900
Site 2 go-live	€34,276	€34,276
Site 3 go-live	€34,276	€34,276
Site 4 go-live	€34,276	€34,276
Hardware	€50,000	€50,000
Total	€792,428	€792,428



Application Managed Service and Cerner Connect

The MN-CMS Contract negotiated with Cerner in 2014 was based on OMS (Operational Managed Service) for the 19 hospitals in which the MN-CMS system will be implemented.

The OMS model obliges Cerner to manage the Infrastructure elements of the MN-CMS suite and obliges the National Back Office and each Local Hospital Back Office to be responsible for Application support.

Subsequent to the MN-CMS contract negotiation the MedLis Programme contract negotiation concluded in 2015 resulting in an AMS (Application Managed Service) along with Cerner Connect (First line support). These service offerings were not available during the MN-CMS contract negotiation.

Both MN-CMS and MedLis are based on Millennium architecture and share the same domain. The situation at present is that the same domain on shared architecture is the subject of separate support arrangements.

A Business case was created for an uplift in the MN-CMS support contract to AMS and Cerner Connect in order to align the support model between the two programmes on the Millennium architecture.

The realised benefits are –

- Eliminates the requirement for significant additional resources that otherwise would need to be recruited to the Hospitals and National Back Office
- Reduces intensive training requirements that would otherwise have to be delivered & maintained
- Provides 24/7 Support
- Reduces risk
- Allows one process for all Millennium issues and changes – MN-CMS and MedLis

Capital costs are –

CCN10 - AMS & Cerner Connect Help Desk Charge	Cork University Maternity Hospital	University Hospital Kerry	The Rotunda Hospital	National Maternity Hospital	Grand Total
Once off set up	€27,588	€27,588	€27,588	€27,588	
AMS Pre-Service Commencement Cost	€38,625	€29,737	€38,556	€39,958	
Total	€66,214	€57,325	€66,144	€67,546	€257,229



Local Infrastructure

As part of rollout of MN-CMS a separate requirement for upgrades, replacement and additional local infrastructure was identified on all sites. This infrastructure enables clinical staff to access multiple systems but is invariably triggered by new programmes and systems being deployed.

This includes computers on wheels, PC's, electronic whiteboards, printers, scanners, barcode readers etc.

This Infrastructure is a shared investment available across a number of programmes.

Following a funding submission capital funding of €2,901,512 was sanctioned. This funding is managed through ICT15-212.

Category	Capital Budget	Spend	Balance remaining in budget
Hardware	€2,901,512	€2,772,791	€128,721



Capital & Revenue MN-CMS Phase 1 costs associated with Closure Report v7.pdf

Main Contract Revenue Costs

Contract ref	Item	Total Annual Contract Cost	Payment made 2014-2019	Comment
Table 5	Annual Supplier Software Licence Support Charge - Phase 1	€133,462	€280,719	
Table 7	Annual Supplier Software Licence Support Charge - Phase 1	€41,861	€92,726	
Table 9	Third Party Software Support Charges	€94,640	€431,400	
Table 10	Annual Subscription Charges	€74,100	€370,500	
Table 15	Hardware Maintenance Charge	€7,749	€32,537	



Sect 2.29	Technical Service Charge payable until commencement of phase 1 end user training	€165,342	€294,237.00	Payments made from 21-11-14 to 31-8-16
Sect 2.30	Technical Service Charge payable from commencement of phase 1 end user training	€287,894	€414,836.00	Payment commenced 1-9-16
Sect 2.31	Technical Service Charge payable from commencement of phase 1 end user training	€137,268	€45,756.00	Payment commenced 1-9-16
			€1,962,711	

Phase 2

Phase 2 MN-CMS EHR implementation was undertaken with 3 main objectives

To migrate the MN-CMS Service onto the CERNER TMS (Total Managed Service solution).

The Cerner TMS provides a provides a new and secure remotely hosted (RHO) environment using purpose built servers and infrastructure located in tier 3 equivalent datacentres in the Cerner Technology Center (CTC) in Sweden.

To upgrade MN-CMS to the latest supported code set.

MN-CMS is currently running on an end of life code set - 2015.01.20. This proposal seeks to upgrade the environment to the 2018 or latest supported code set. In order to secure the MN-CMS environment an underlying principle must be to stay current with latest versions of software.

The 2018 code set also provides additional functionality which would address key operational and clinical risks

Implementation of MN-CMS in The Coombe Woman & Infant University Hospital (CWIUH) and University Maternity Hospital Limerick (UMHL).

This would complete the rollout to the remaining standalone maternity hospitals and encompass the 4 tertiary hospitals bringing coverage close to 70% of the population.



The deployment will cover the installation and configuration of standard national MN-CMS functionality for use by maternity, gynaecology and neo-natal services in CWIUH.

- To migrate the MN-CMS Service onto the CERNER TMS (Total Managed Service solution).
- To upgrade MN-CMS to the latest supported code set.
- Implementation of MN-CMS in The Coombe Woman & Infant University Hospital (CWIUH) and University Hospital Limerick Group (ULHG).

Phase 2 Project costs

All costs were agreed and formally reviewed and sanctioned Digital Government Oversight Unit

	Capital		Total Cost of Ownership *Note – Revenue costs are for 7 years	
	2024	2025	Capital Lifetime	Total -- Revenue --
Hardware	€1,224,825	€ 1,299,650	€ 2,524,475 2,524,475	€
Software, Licensing, proprietary Support & Maintenance	€1,033,634	€ 1,663,090	€ 2,696,724 2,696,724	€
Telecommunications	€	-	€	
Licensing	€	-	€	
Third Party (non-proprietary) Support/Maintenance	€	-	€ 13,918,058 13,918,058	€
Hosting			€ 9,387,360 9,387,360	€
IT-Related Training	€	-	€ -	
Resources Acquired Externally[1]	€	-	€ -	
IT-Related Consultancy	€	-	€ -	
Contractors	€	-	€	



External Service Providers	€ 1,662,667	€ 2,08,1732	€ 3,744,399	€
	€	-	3,744,399	
Total	€ 3,921,126	€ 5,044,472	€ 8,965,598	€ 23,305,418
			32,271,016	



RHO MNCMS
billing projection 20



2. MN-CMS All
Projects Benefit Real

Yours sincerely,

Fran Thompson,
Chief Information Officer, eHealth, HSE.