The Clatterbridge Cancer Centre NHS Foundation Trust Transforms Cancer Care

The Clatterbridge Cancer Centre (CCC), one of the UK's largest cancer centers, has transformed cancer care delivery in northwestern England. CCC transitioned from paper-based medical records and limited e-Prescribing capabilities to MEDITECH's 6.0 solution — a fully integrated electronic system.

The Perfect Time to Transform Care Delivery

Prescribing anti-cancer therapies can be time-consuming and risky without the assistance of a digital infrastructure and clinical decision support. In 2012, the Wirral-based cancer center lacked both; their inefficient, error-prone system was a hybrid of paper medical records and limited electronic capabilities for notes and prescribing.

SNAPSHOT

Opportunity

Leadership realized The Clatterbridge Cancer Centre (CCC) required a digital infrastructure and clinical decision support to meet the demands of delivering complex anti-cancer treatments.

Solution

MEDITECH's 6.0 solution with Oncology Management

Benefits

- CCC clinicians have immediate access to patients' medical records
- System response time issues have been eliminated
- CCC implemented a more efficient process for chemotherapy orders with multiple cycles, reducing e-Prescribing from 15 steps to eight.

Profile

Located on Wirral Peninsula in northwestern England, The Clatterbridge Cancer Centre (CCC) is one of the leading cancer centers in the UK. CCC provides nonsurgical oncology services, including pioneering chemotherapy, radiotherapy, and proton beam treatments, to approximately 27,000 patients per year.

Staff Faced **6 Main Issues** Related to the Hybrid System

1. Cumbersome e-Prescribing
- 15 - 90 steps to enter chemotherapy orders with multiple cycles
- Poor response times delayed screen refreshes up to two minutes

2. Lack of Clinical Decision Support
- Anti-cancer therapies often prescribed without clinical decision support
- Pharmacist or provider was responsible for catching potential problems

3. Limited Access to Patient Information
- Briefcases used to store, transport paper records to patient's care setting
- Unwieldy paper-based system filled corridor

4. Inconsistent Documentation
- Physician's handwriting often illegible to care team
- Physician's intentions at time of entering documentation unknown

5. Prescription Authorization Delays
- Pharmacy staff had limited access to patient's paper-based records
- Immunotherapy treatment delivery was affected

6. Regulatory Compliance
- UK pharmacists required to check patient's diagnosis and indication
- Complying with regulation was difficult due to paper-based system.

Changes on the Horizon

CCC leadership recognized that the flow of information between care settings is essential to the safe delivery of complex anti-cancer treatments. They also realized the need to create an increasingly mobile and agile workforce that could deliver quality care throughout the region. With these concepts in mind, the Trust developed the Transforming Cancer Care Programme and identified the following goals:

- Support growing volumes in cancer treatments
- Improve clinician workflow and efficiency
- Promote audits and research using an electronic system.

With licenses for the electronic noting and prescribing systems about to expire, the Trust decided to create a robust digital infrastructure that would enable them to redesign service delivery in time for two events: the construction of a new hospital in Liverpool and the likely influx of immunotherapy treatment protocols.

Immunotherapy — using the immune system to fight cancer — requires a protracted course of infusions, straining pharmacy and day case services. CCC's providers anticipated higher volumes of treatments and grew increasingly concerned about using a paper-based system while caring for these patients.

Establishing an Integrated System

The Trust chose MEDITECH's 6.0 solution with Oncology Management. To meet the specific demands of anti-cancer treatment, CCC's clinical and IT staff co-wrote the goals related to the new electronic health record:

- Switch from a primarily paper-based system to electronic processing.
- Manage patient appointments using MEDITECH's scheduling function.
- Replace CCC's incumbent electronic anti-cancer therapy prescribing system.
- Implement full order communications for labs, imaging, and radiotherapy as well as electronic clinic noting for all staff.
- Create action-oriented nursing care plans.
- Enhance care provider communication with task and messaging functions
- Use MEDITECH for all reports and correspondence, and for monitoring cancer referrals as well as the length of time until the first treatment is received.

Implementing the new system would also enable CCC to redesign many outdated processes.

Developing an Implementation Plan

To secure buy-in at the managerial and clinical levels, CCC appointed the Trust's medical director as project sponsor. It also established a clinical reference group to provide a discussion forum, ensure quality, and sign

off on all clinical details related to the system build. The clinical reference group:

- Assigned subject matter experts from all clinical departments
- Allotted time from their usual responsibilities to focus on developing the electronic patient record (EPR)
- Met monthly (every two weeks during the three months preceding Go-LIVE)
- Resolved non-granular issues
- Summarized and signed off on as-needed decisions during regularly scheduled meetings
- Developed clinical note templates
- Highlighted and evaluated clinical risks, and reported them to the program board.

The Trust followed MEDITECH's implementation guidelines by creating a comprehensive program of staff engagement, education, and training, outlined in prototyped clinical stages — each of which required clinical sign-off:

1. Create structure of the EPR solution by loading Drug Dictionaries.
2. Build oncology treatment plans and establish order communication guidelines.
3. Further refine dictionaries, treatment plans, and guidelines with clinical oversight.

4. Conduct multiple phases of fit-for-purpose testing in Go-LIVE environment to uncover any errors or oversights.

Going LIVE with a Big Bang

CCC migrated from its legacy systems to MEDITECH's 6.0 EPR over a single weekend.

Their successful Go-LIVE is attributed to enabling the medical staff to experience the LIVE system in advance — outside of the pressure of their busy clinics — with ample floor-walking staff and additional IT support available. They were brought in over the cutover weekend to assist with prescription migration for their own patients.

In addition, IT structural improvements created the appropriate technological environment for the Go-LIVE:

- A network infrastructure to connect sites
- An upgraded Citrix® platform to improve resilience within network
- Backup procedures for power outages and other emergencies.

Reaping the Benefits of a Digital Infrastructure

Once LIVE on a fully electronic system, oncology staff across 11 sites could access clinical information, place orders, and administer treatments. The integrated EPR significantly reduced the clinical risks associated with the hybrid system — inaccessible data, process inefficiencies, and lack of clinical decision support. In addition, electronic treatment sets and immunotherapy assessment forms have resulted in faster and safer treatment delivery.

Resolving the 6 Main Issues

⏳ 1. Cumbersome e-Prescribing

🔍 2. Lack of Clinical Decision Support

🧰 3. Limited Access to Patient Information

▭ 4. Inconsistent Documentation

🗄 5. Prescription Authorization Delays

✓ 6. Regulatory Compliance Difficulty

Streamlined Prescribing for Chemotherapy Orders

E-prescribing capabilities in MEDITECH's Oncology Management solution enable providers to move quickly and intuitively from one screen to the next. Instead of entering and editing multiple cycles, providers can order chemotherapies with as many as six treatment cycles in only one set of steps, without repeating the same steps for every cycle.

"The old prescribing system usually required anywhere from 15 to 90 steps to prescribe a cycle. The new system does it in eight steps and has the potential to prescribe multiple cycles and investigations at the same time. Editing and moving prescriptions is easy with the clear interface," explains Chief Medical Information Officer Richard Griffiths, PhD, FRCP.

"Additionally, date changes for one cycle will automatically change the dates appropriately for subsequent cycles. Every system has inaccuracies, but so far, MEDITECH is the closest system to getting it completely accurate."

Clinical Decision Support

CCC pharmacists and providers no longer have to rely solely on their expertise and intuition to catch potential problems. The Oncology Management solution's prescribing capabilities streamline ordering even the most complicated anti-cancer regimens; a robust rules engine minimizes clinical risks, such as adverse reactions or interactions, contraindications, IV incompatibilities, duplicate orders, and dosage size.

Accessible Patient Information

Now that patient information is accessible electronically, CCC has seen a reduction in errors and duplications.

Outpatient clinics can easily accommodate patients who show up at locations other than the one intended; information from each encounter is immediately available — enabling patients to receive the right treatment at the right time.

> "Some things are definitely better – prescribing is much quicker, having access to one source for information is good, and being able to see nursing documentation is a positive. Also, we definitely appreciate that referral documents are scanned in quite quickly now; we have confirmation of diagnosis before the letters are typed for a high proportion of patients, which, given the complexity of inclusion criteria for meds, helps us to ensure we're complying."
>
> Helen Flint, Senior Pharmacist
> The Clatterbridge Cancer Centre

The briefcases used to transport paper medical records between clinics are no longer needed. They have been replaced by an iPad® briefcase, which is used to download clinical records the night before an appointment as a backup procedure, in the event of a power outage or other emergency.

Documentation

Nursing staff quickly warmed to the new system, as they had used the legacy software for electronic noting, and pharmacy staff were pleased with the easy access to nursing documentation. Also, MEDITECH's Oncology Management solution has helped to clarify providers' notes. Clinical note templates require consultants to enter clear, consistent, and complete notes, which help to prevent litigation.

Although many providers have stated that MEDITECH's Oncology Management solution is easier to use than existing systems, they have had some challenges adjusting to electronic documentation in general.

Initially, only 20% of the consultants stopped handwriting clinical notes. Handwritten documents had to be scanned — a significant risk because scanned information was not readily available for review and clinical decision support could not be applied to it. In response, CCC reinforced the many advantages of sharing information electronically, held additional workshops, and eventually stopped allowing handwritten notes. CCC is evaluating speech recognition software and the possibility of using clinical scribes to enter data in real time.

Prescription Authorizations

MEDITECH's Oncology Management solution resolved prescription authorization delays resulting from Pharmacy's limited access to paper-based clinical information. In addition, audit trails enable care providers to review everything that happens with each order. Without electronic patient records, CCC would have experienced more significant delays, including excessive wait times for patients receiving immunotherapy treatments.

Regulatory Compliance

In the UK, pharmacists are required to check the patient's diagnosis and indication — a regulation that was difficult for the Trust to comply with before implementing MEDITECH's Oncology Management solution. Pharmacists are now able to comply by reviewing the clinical notes, cross-checking information, and flagging the prescriber when the order doesn't appear in line with his or her notes.

Attaining 100% Digital Usage

A majority of CCC staff adjusted well to using the electronic system. For instance, nursing and junior medical staff on the inpatient units were 100% compliant with digital noting immediately after Go-LIVE. Within a year after Go-LIVE, the remaining staff saw the advantages of electronic patient records updated in real time. Now, senior medical staff are 75% compliant with digital noting. CCC plans to reach 100% through the use of speech recognition software.

Recognition and Return-on-Investment

Two weeks after CCC went LIVE with MEDITECH's Oncology Management solution, the Care Quality Commission (CQC) inspected the organization. The auditors were impressed with how well the inpatient wards had transitioned to electronic processes and awarded the cancer center an "outstanding" rating for being caring and well-led.

In the CQC's inspection report, Professor Sir Mike Richards, chief inspector of hospitals, commented, "The Clatterbridge Cancer Centre NHS Foundation Trust is

Dose Banding

Dose banding — an alternative method of injectable chemotherapy dosing — has developed as a means to prevent drug waste and alleviate cost burdens.[1] Instead of using the standard methods of precise dosing based on body surface area, weight, age, or contraindications, dose banding standardizes injectable chemotherapy doses into a defined set of dose ranges, or bands.

More data is now available indicating it is safe to enable some medications to be used for different patients, because the dosing is not as exact as once believed. Banding can also reduce the need for partial vials, thereby making medication use more efficient. This practice is not considered commonplace in the US, but is used abroad.[2]

CCC spends approximately £24M on SACT IVs and recoups about £700K a year on reusing SACT. Lately, these values have increased substantially as a result of the rise in immunotherapy services. Banding — in conjunction with the extended stability of chemotherapy medications — makes reusing these medications more likely.

"Our previous system used dose banding, but MEDITECH does it better in some cases. Individual bags are now available for patients," said Richard Griffiths, PhD, FRCP, CMIO of The Clatterbridge Cancer Centre NHS Foundation Trust.

a centre of excellence delivering state-of-the-art care." Soon after the report's release, the UK government recognized The Clatterbridge Cancer Centre NHS Foundation Trust with the prestigious status of Global Digital Exemplar, enabling the Trust to become a Fast Follower to Alder Hey Children's Hospital — another MEDITECH customer. This acknowledgment allows for substantial government investment to support the ongoing program of developing a technologically enabled healthcare system.

The Clatterbridge Cancer Centre NHS Foundation Trust received a portion of the £100M in government funding reserved for only the most digitally mature organizations in England — three of which are using MEDITECH. Capital funding from the UK government enabled the Trust to expand electronic documentation, clinical decision support, and the patient portal. In addition, going paperless resulted in cost savings related to transportation, resources, and printing.

Greater Efficiency, Same Staffing Levels

Staff on the inpatient wards have become more efficient in placing orders. For example, on the old paper system, ordering a scan took approximately two minutes. With MEDITECH, it can be done in half the time.

In addition, messaging, and tasking have improved the flow of patients through treatment wards. CCC nurses use MEDITECH's messaging and tasking features for scheduling purposes. Messaging enables the nurses to communicate internally with the care team, while tasking is used to ensure patients are scheduled for their next appointment.

Approximately two to three months after Go-LIVE, CCC experienced a rapid 20% rise in workload related to processing, prescribing, and administering cancer treatments; immunotherapy exploded from 3,500 to 4,200 treatments per month.

Rolling Average of Anti-Cancer Therapies Administered per Month
(Go-LIVE Marked in Red)
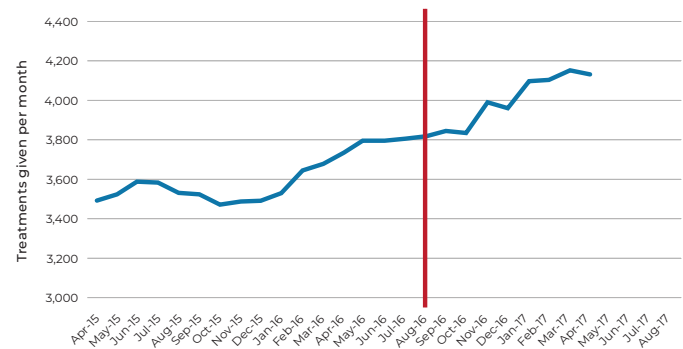
CCC always functions at capacity, which means that staff often carry the full workload, even when colleagues take time off.

"We improved our efficiency to accommodate an increase of 700 treatments per month with the same staff capacity," said Dr. Griffiths. "We wouldn't have been able to cope with the numbers if we hadn't had MEDITECH."

Outpatient clinics experienced a similar rise in activity, which they have been able to accommodate with the same staffing levels. In May 2015, before the EPR was installed, CCC saw approximately 8,600 outpatients. By August 2017, the number of patients climbed to more than 10,000.

Next Steps...

CCC continues to extract MEDITECH's rich functionality to help clinicians make better and more timely decisions using clinical decision support. Ongoing technology projects — such as the implementation of IMO to assist with coding, searching, and auditing — will further streamline workflows and reduce clinical administrative time.

References

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2. Jake B. Guinto, PhD, and Audrea H. Szabatura, PharmD, BCOP. A Perspective on Dose Banding. Journal of the National Comprehensive Cancer Network March 2013; Volume 11 Number 3: 357.

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