

Advent Pilots World's First Track & Trace Blood Products Solution

Ireland's National Centre for Hereditary Coagulation Disorders at St James's Hospital (Dublin) appointed Advent to develop a track and trace system to ensure the safe delivery of haemophilia blood products.



In this case study, we examine the significant benefits that have been derived from the Advent Pharma-Track system, a world first for the accurate tracking and tracing of critical products for the healthcare industry.

Background

Health professionals throughout the world have witnessed a growing concern regarding the ability of existing supply chain management systems to ensure the accurate and safe delivery of critical pharmaceutical products. This concern was highlighted in Ireland with the 2002 publication of the Lindsay Report, which was responding to the need for the development of higher standards for the treatment of haemophiliacs.

This comprehensive document called for the establishment of new systems that would ensure the prompt, safe, and reliable delivery of relevant blood factor products (CFC's) to this at-risk group, as well as the ability to accurately maintain historical track and trace records of the supply chain process.

Subsequently, Ireland's Department of Health, through the auspices of the National Centre for Hereditary Coagulation Disorders (NCHCD) and St James's Hospital, issued a request for tender for the development of a comprehensive delivery and recall system to Hospitals and Patient homes.

Following a successful tender, Advent was appointed to develop such a system.

Working closely with the NCHCD, St. James's, and other project partners, Advent applied state-of-the-art track and trace database and management technologies to accomplish the stated objectives. The result - Advent's Pharma-Track track and trace supply chain management system - is now successfully operating in St James's Hospital, and its deployment is helping to achieve the significant recommendations outlined in the Lindsay Report.

Developing Excellence in Healthcare Supply Chains

Dr Barry White, Director of the NCHCD, recently amplified on the need for higher standards of supply chain management for the healthcare industry when stating: 'Clinical excellence

does not exist in isolation. It needs to be provided in tandem with logistical excellence. And ultimately, it's about operational excellence.'

This theme of excellence within the supply chain was taken onboard by Advent as they developed the Pharma-Track track and trace solution.

'We recognised the critical nature of this new system, and the importance of systems excellence, from the very beginning of the development process,' Advent Director Bill Moran states. 'Advent ensured that this central dispensing, tracking, tracing and control of distribution and delivery system would conform to international standards, including GS1 (EAN) 128.UCC (European Article Numbering), while systems development would meet GAMP (Good Automated Manufacturing Practice) Standards.

'By embracing international standards from the beginning of this project, as well as recognising the critical importance that the Advent system would play in the lives of Patients and Healthcare workers, Advent worked to achieve a system of excellence.'

The Distribution System Process

The Advent Pharma-Track software solution accurately tracks relevant CFC products down to vial box level, through distribution to the various Wards and Locations throughout a Hospital (or delivery to Patients' unique home delivery addresses), to final administration to Patients. Stocks of product are monitored at each location providing comprehensive management information of overall stock holdings, as well as the in-Hospital location status of individual vial boxes at any stage throughout the logistics process.

Authorised Record Files, including the Patient Master Global Service Relationship Numbers (PMGSRN) are sent from the issuing authority by secure electronic messaging to the Advent Pharma-Track system using HL7 and AS/2 standards. Approved Product Information is also sent via Electronic Messaging.

Unique barcodes are produced for each CFC vial box. Barcode production is initiated when a delivery of CFC's is received from the Manufacturer.

Details of the product receipt (including product type, expiry date, and batch number) are input to the Advent Pharma-Track system. Unique serial numbers are subsequently allocated to each item and a unique barcode label to GS1 International standard is produced and applied to the vial box.



Patient Prescriptions are electronically forwarded and are the basis for a Delivery Order, which is sent electronically to the product warehouse. Picking Orders are printed based on specific Delivery Orders. Relevant products are selected, verified by barcode scan, and confirmed. That scan also captures the product's unique serial number. The Pharma-Track system then produces a delivery advice and a separate barcode label bearing the Serial Shipping Container Code (SSCC). This label is attached

to the outer container containing the relevant CFC vial boxes. Through this system, comprehensive details pertaining to any Delivery Container can be determined.

The Delivery Containers' SSCCs are scanned, and they are then placed into the relevant delivery vehicles. The scanned data is automatically input into the Pharma-Track's Van Stock File. In that each Delivery Vehicle has been assigned a unique Global Location Number (GLN), and because each SSCC is recorded against its relevant GLN and time-



stamped, the location and status of delivery vehicles - and the unique products that they carry - can be checked anywhere along the journey.

Simultaneously, and when the Delivery Vehicle is provided with its product, the SSCC information is also downloaded into individual handheld devices assigned to each Vehicle driver. Upon arrival at the delivery location, the driver scans the relevant delivery container's SSCC, as well as a unique GLN barcode that has been assigned to every delivery location. The delivery date and time are also recorded. This data can be transmitted directly back to the Advent Pharma-Track system using GRPS communication technologies. The Pharma-Track system electronically advises the appropriate authority of the accurate delivery of the product to the required location.

In that GLN's are assigned not only to Hospitals, but also to Patients' unique home delivery addresses, the Pharma-Track system not only monitors the delivery of requested products to Hospitals, but also direct to Patients.

For those CFC products delivered to Hospitals, the Advent Pharma-Track system continues to track and trace each individual product as it moves through the Hospital.

GLN's are assigned to specific locations throughout any Hospital building. Locations can include unique cold-storage areas such as Fridges and Wards as well as individual Treatment Centres. Care Nurses or other Hospital staff needing to administer product can request the required product based on prescription or allowable product for the relevant Patient. The vial box's unique Barcode is scanned, as well as the cold-store GLN barcode, as it is being withdrawn from that store. The process also date and time stamps the action. This data is communicated to the Pharma-Track system, automatically subtracting the unique vial box out of fridge stock and assigning it to the given Patient.

Significant Benefits

The Advent Pharma-Track software system is providing critical benefits to St James's Hospital, and to the Clinicians and Healthcare practitioners who use it. Bill Moran describes those benefits:

'Advent Pharma-Track provides exceptional logistics accuracy and monitoring capabilities by providing a reliable, accurate, and secure dispense, tracking, delivery and control system for critical medicines including blood products, vaccines, and similar valuable healthcare products.

'Date and time stamping, together with remote data communication and inputting to Pharma-Track's central database, means that Healthcare officials can monitor and accurately track each and every product anywhere along its delivery journey to the Patient,' Bill continues. 'The system also provides Health officials with high-level oversight of stock on hand. At any time they will know exactly how much of any product that they have on hand.

'This ability leads to exceptional cost-savings. This is due not only to the system's ability to monitor stock levels, but also because it tracks individual batch and vial box expiry dates. Already, the system that has been provided to the NCHCD and St James's Hospital is estimated to have saved the Irish Health system over €1 million, providing an exceptional return on investment.

'Advent's Pharma-Track system better ensures on-time delivery of critical healthcare products to the Patients who need them. Significantly, now in the event of a Product Recall,



and because of the comprehensive historical track and trace data held within the system, healthcare professionals can quickly trace each and every product to its unique location in order to accurately complete any required recall action.'

Future Focus

Advent's Pharma-Track system is successfully operating in St James's Hospital, but Advent is already working on significant upgrades.

'Pharma-Track is written using robust .NET and SQL architecture,' Bill explains. 'This will ensure better integration with existing clinical data systems used by Hospitals.

'We are also developing the system whereby Care Nurses administering critical healthcare products such as CFC's and vaccines can validate those products against Patient prescriptions in the relevant Clinical Database in the Hospital quickly and accurately. This will compare the product selected to be administered with the Patient's identity and prescription. Products are therefore validated against the Clinical System prior to being administered. This will help to create an even safer environment for Patients and Health Practitioners.'

A future planned development in conjunction with the Clinical System developers, Clintech, is to allow the Care Nurse to scan the unique bedside GLN and the Patients PMGSRN barcodes against the CFC vial box barcode as she administers the product to the Patient. The data is automatically communicated to the Pharma-Track system. This final scan also completes the delivery cycle: the Pharma-Track system flags the unique vial as being administered.

'Additionally, we are working on an in-home scanning process,' Bill states. 'A significant number of critical healthcare products are self-administered by Patients in their own home. Using a Mobile Phone application, Patients will use the camera on their mobile phone to take a picture of the product barcode just prior to administration. The barcode picture will be transmitted to the Pharma-Track system where it will be read electronically and compared with unique product barcode data that has been sent to that specific Patient.

'The Pharma-Track system will automatically acknowledge that the unique product has been administered.'

Currently, plans are being discussed to roll the system out to other Hospitals in Ireland. 'We have worked closely with Dr Barry White of the NCHCD, Fergal McGroarty, SJH Project Manager and the rest of the project team associated with this programme and are extraordinarily pleased with the results of the Pharma-Track system,' Bill concludes. 'We believe that by pursuing a strategy of product excellence, and by implementing a system that meets the significant recommendations as outlined in the Lindsay Report, we have contributed a technology that is unique to worldwide healthcare.'

For more information

If you would like more information on Advent's track and trace system, or other Advent I.T. Solutions, contact us at sales@advent.ie or telephone Ray Ryan on +353 (1) 8223 200

