

CASE STUDY

CADD®-Solis VIP ambulatory infusion pump establishes itself as a valuable device for implementation of ambulatory chemotherapy care and treatment in two large teaching hospitals in the UK

Summary

St. James University Hospital in Leeds has saved 1000 bed days through its ambulatory care unit in just eight months – between April and December 2013. University College London Hospitals NHS Foundation Trust (UCLH) has successfully delivered ambulatory chemotherapy in an outpatient facility to teenagers and young adults.

Introduction

In the UK cancer numbers are growing each year placing an increasing demand on NHS budgets, particularly hospital bed days, as traditionally patients receive chemotherapy as an inpatient.

Ambulatory care (AC) is a healthcare term that describes a care service, which allows patients who are mobile to attend an outpatient department for their treatment. Both UCLH and St James's have extended the AC service to include a "patient hotel", where patients can spend time with friends and family while undergoing their treatment.

The mobile infusion device, CADD®-Solis VIP ambulatory infusion pump from Smiths Medical, has enabled chemotherapy and supportive therapy administration to be delivered in the AC and outpatient setting.

This infusion pump is a small, light and portable pump that can be programmed to deliver therapies in multiple ways, including:

- PCA (patient controlled analgesia)
- Continuous delivery
- Intermittent delivery
- Step delivery
- Taper delivery

Step or incremental delivery is a new feature for the CADD®-Solis VIP ambulatory infusion pump, which has not been available in previous CADD® pump models. Step enables delivery of therapies with incremental infusion times up to a maximum infusion rate, often used for IVIG. PCA delivery allows a continuous rate of therapy infusion, patient-controlled dosing or both.

Case Studies

In both the UCLH and St James's case studies, patients attended the AC unit daily for assessment and treatment set-up, having therapy delivered in continuous and intermittent modes. Overnight, they resided in nearby accommodation. Patients were educated to self-manage, promoting independence and empowerment, however, they also had 24-hour access to nursing and medical advice. Clear communication and patient education, adopting a multidisciplinary team approach and clear assessment guidance for patients and staff, were key factors to make this model of care so successful.

Leeds Teaching Hospitals NHS Trust has saved 1000 bed days through its ambulatory care unit in just eight months



All eligible patients at UCLH are offered the choice to receive their treatment within the AC unit rather than on the inpatient ward.

CLH Eligibility Criteria

All eligible patients at UCLH are offered the choice to receive their treatment within the ambulatory care (AC) unit rather than on the inpatient ward. The eligibility criteria means the patient must have:

- A carer/companion (over 18 years old) to accompany them
- A good level of written, spoken, and understanding of English
- Access to a mobile phone
- The ability to use and interpret a thermometer
- A reasonable level of awareness and understanding to undertake extra responsibilities, e.g. performing urinalysis, self-medicating, monitoring, and troubleshooting the infusion device, and maintaining a fluid input/output chart
- The ability to stay in hospital “home from home” or patient hotel overnight while receiving AC treatment

In addition, the AC and clinical teams must be confident that the patient is suitable for ambulatory care due to the increased responsibility it places on them.

UCLH

UCLH presented three individual case studies¹, which all highlight the benefits of ambulatory care and the advantages the CADD[®]-Solis VIP pump provides. The names of the three young people have been changed to protect patient confidentiality.

Mike – high-dose Methotrexate

Using a backpack system, Mike was given continuous alkalised hydration post methotrexate using the continuous delivery mode of the CADD[®]-Solis VIP pump. This system allowed three litres of fluid to be delivered in a 24-hour period and allowed Mike to be at home and free to spend time with family or friends. Mike was taught how to perform urinalysis to monitor his urine pH. Methotrexate levels were reported daily and folinic acid rescue dose calculated and adjusted accordingly, ensuring Mike was clinically safe. The outcome was that Mike responded well within ambulatory care, having struggled as an inpatient. He responded well to the extra responsibilities and proved compliant and competent.

Kate – High-dose Cytarabine

Kate was able to receive twice-daily administration of cytarabine through the use of the intermittent delivery setting on the CADD[®]-Solis VIP pump. Doses were programmed on a 12-hourly cycle to run over a set time. Multiple doses were administered in a single cassette, which provided timely delivery of treatment and efficient delivery for both nursing staff and Kate. The pump was easily carried in a small shoulder or bum-bag. At the time of treatment, Kate was a young teenager with two siblings below the age of five. The use of the CADD[®]-Solis VIP pump, and the “patient hotel” facility that she stayed in, enabled Kate to spend time with her family in privacy. The facility was created to be child friendly and included designated teenage specific areas in which to prepare food. During routine hospital admissions, Kate had often not slept well and felt she got much better quality of sleep staying in the special accommodation.

Sam – Etoposide, Cytarabine, Methylprednisolone, and Cisplatin (ESHAP)

Sam was able to ambulate for his ESHAP treatment. The etoposide, cytarabine and methylprednisolone were infused on the unit owing to drug stability when

prepared in alternative delivery systems and unit practicalities. The cisplatin was administered continuously using the CADD®-Solis VIP ambulatory infusion pump. Sam was taught about the importance of drinking sufficient volumes of fluid when receiving his cisplatin, as well as how to measure his urine and maintain a fluid input/output chart. On the last day of his treatment, Sam uncharacteristically did not turn up to the unit as expected. When the AC team managed to contact him, he had been visiting friends some distance away but was traveling back to the hospital. This could have been a concern for the nursing staff, however, the trend report facility on the CADD®-Solis VIP pump allowed staff to review his chemotherapy delivery and check that the dose had been administered as intended. Since Sam had gone against AC advice, it was decided, with his input and approval, that he would receive further treatment in the inpatient ward. It was agreed that if Sam could have a parent stay with him at the patient hotel, then he could try AC again in the future. Sam's story demonstrates the importance of compliance with the established protocol. It also highlights the flexibility the CADD®-Solis VIP ambulatory infusion pump provides to patients if they comply with the AC unit requirements.

St. James

St James's Teaching Hospital's AC unit was set up in April 2013, with the main aim of reducing hospital inpatient stays for haematology and oncology patients receiving high dose chemotherapy. Part of the treatment of patients in the AC unit is delivered through the CADD®-Solis VIP ambulatory infusion pump, which means patients do not have to stay in hospital overnight. This has resulted in over 1000 saved bed days, between April and December 2013; with an average cost of £240 per bed day, this has resulted in a significant saving of £240,000.

Sarah - Hypokalaemia Patient – Potassium Chloride infusions: The CADD®-Solis VIP ambulatory infusion pump is versatile, easy to use and provides freedom for patients with a range of conditions or undergoing a wide range of treatments. One young lady, suffering from hypokalaemia, and other health problems, is a huge fan of the CADD®-Solis VIP pump, as it has changed her life for the better. The patient, who we shall call Sarah, was spending several days a week in hospital as a day patient to have infusions of potassium chloride. Sarah wrote to Smiths Medical to thank the company for the pump and to inform employees that the pump "had transformed her day to day living." Sarah says, "The pump is discreet and lightweight and looks like a normal backpack, so it's not obvious that you are infusing. It's simple to use and very user friendly. Due to my condition, I have days when I am very ill and cannot go out, so now when I feel better I have no reason to stay in. I now have a social life again!"

Conclusion

The CADD®-Solis VIP ambulatory infusion pump has enabled these patients, and many others, to spend less time in hospital and more time at home with their friends and families. As we have seen in this feature, the pump's compact lightweight design promotes patient mobility, which is associated with improved clinical outcomes, reduced length of stay, reduced treatment costs, and a huge saving in bed days.

The reliability and functions of the CADD®-Solis VIP ambulatory infusion pump have supported the AC service at both hospitals through comprehensive portable technology. This has maximised the time patients have spent outside the hospital setting, thus improving overall patient experience and wellbeing and reducing NHS costs^{1,2}.

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Sarah, patient

For more information on the CADD®-Solis system, contact Glen Johnson, UK Marketing Manager at Smiths Medical, at 01303 260 551 or log on to www.cadd-solis.com

References

1. Newton and Ingram, *British Journal of Nursing*, 2014 (Oncology Supplement), Vol 23, No 4
2. St James's University Hospital Leeds, Ambulatory Care Unit, May 2014

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