

# Local Anaesthetic infusions for managing pain post operatively via disposable pumps for total elbow and shoulder replacements

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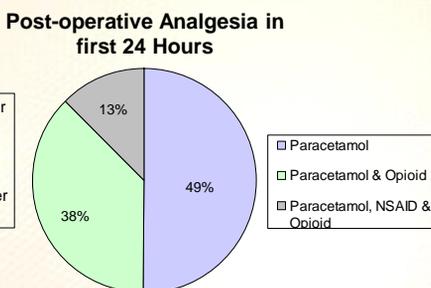
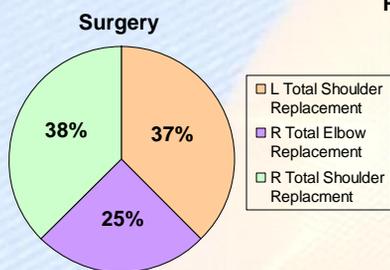
The last 10 years has seen the increased use of enhanced recovery pathways across several surgical specialities. A prerequisite of enhanced recovery is the ability to mobilise patients early (Starks et al, 2011) and this is dependent upon good postoperative pain control. In the past, a number of different techniques have been employed in joint replacement surgery to address this issue. The purpose of this small audit was to establish if a continuous infusion of local anaesthetic, via a disposable pump, could facilitate early discharge and still provide effective pain management for patients undergoing total elbow or shoulder replacements.

Pain management in the days following surgery is important as this may influence a quicker return to optimal function. Throughout the audit we used disposable Eclipse pumps to deliver the Local Anaesthetic (LA). We wanted to establish if it would be possible to send patients home the same day of surgery with the pump in situ to be removed at home. For the purposes of the audit, however, patients were audited whilst in hospital (2-3 days) and telephoned at home 2-3 days following discharge.

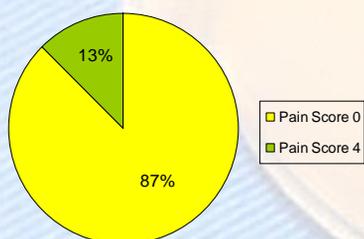
This audit looked at 8 patients using a disposable pump to deliver the LA levobupivacaine 0.1% at 10ml/hr started, on average, 8 hours following an interscalene or supraclavicular intra operative nerve block.

## Advantages of using LA infusions:

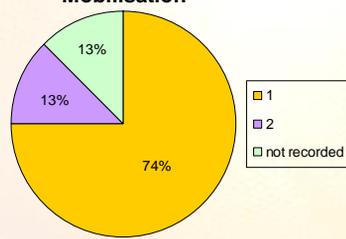
- Increase the range of pain management options available to the anaesthetist.
- Reduce the amount of opioids or other analgesics needed to achieve acceptable pain management.
- Reduce Post Operative Nausea and Vomiting (PONV) and use of anti-emetics.
- Patients are able to mobilise more quickly and easily after surgery.
- Earlier active participation in physiotherapy.
- Reduce length of stay and reduction in constraints caused by bed pressures.
- Increase range of procedures that can be carried out on a day case or 24 hour stay basis.
- Possible anti-septic effects of local anaesthetics.
- Patient empowerment and choice.
- If using the disposable pump -single patient use product – reduced risks from re-processing of contaminated items.



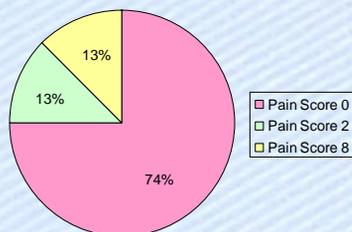
### Pain Scores 6 Hours Post-op



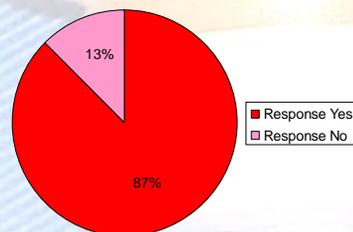
### Post-operative Day of Mobilisation



### Pain Scores 24 Hours Post-op



### Telephoned at Home



### Patient comments

- Absolutely brilliant
- No pain > 2 - 3 on movement, no pain otherwise very satisfied
- No pain whilst infusion ongoing
- First few hours after op pain free until pump removed - very pleased
- Patient unable to remember how it went, patient still in hospital
- Pump was very good, patient very impressed no pain while on pump
- Very satisfied with pain relief while eclipse pump in place. Needed strong pain killers after infusion came out

### Recommendation for the Future

#### Diagnosis

- ✓ Planned date for admission for surgery/pre clerking
- ✓ Appointment given

#### At pre clerking

- ✓ Ensure patient appropriate for day surgery
- ✓ Type of surgery explained
- ✓ Analgesia explained
- ✓ Infuser explained and demonstrated
- ✓ Written information given regarding analgesia
- ✓ Written information given regarding exercise regimes
- ✓ Opportunity to discuss concerns

#### Admission to day unit

- ✓ Check patient understands procedure
- ✓ Check patient has someone responsible at home
- ✓ Check patient knows what to do with infuser, including disposal
- ✓ Check patient has contact number
- ✓ Check patient has follow up appointment

#### Discharge home

- ✓ Infuser in situ
- ✓ Take home medications
- ✓ Written instructions for pump and exercises
- ✓ Help number

In summary, our audit has shown that local anaesthetic infusions can provide excellent post operative pain management. This needs to be viewed within the context of other multi-factorial considerations that effect post operative pain management and the patients' comments illustrate the need for good oral analgesia for when the infusion stops. It is hoped that the disposable pump can facilitate early discharge and that patients can be discharged the same day as surgery. The next step in this study and the recommendations for the future are to send patients home the same day as surgery with the infusion in situ for self removal at home.

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The last 10 years has seen the increased use of enhanced recovery pathways across several surgical specialities. A prerequisite of enhanced recovery is the ability to mobilise patients early (Starks et al, 2011). This is dependent upon good postoperative pain control. A number of different techniques have been employed in joint replacement surgery to address this issue. Thus, the main purpose of this small audit was to establish which method is most effective in the management of pain for patients undergoing total elbow or shoulder replacements – single dose or continuous infusion?

However, pain management in the weeks following surgery is also important as this may influence a quicker return to optimal function and it is suggested that peri-operative and immediate post operative pain management can have a profound impact. Recommendations suggest a standardised regime based upon our findings. Throughout the audit we used disposable Eclipse pumps to deliver the Local Anaesthetic (LA). The main reasons for this were that we wanted to establish if patients could be sent home the day after surgery with the pump in situ to be removed at home. Hence, patients were audited whilst in hospital (2-3 days) and telephoned at home 2-3 days following discharge.

Previous audits and research have provided the evidence to support the use of LA for joint surgery (refs). This audit looked at 8 patients using a disposable pump to deliver the LA levobupivacaine 0.1% at 10ml/hr.

## Advantages of using LA infusions:

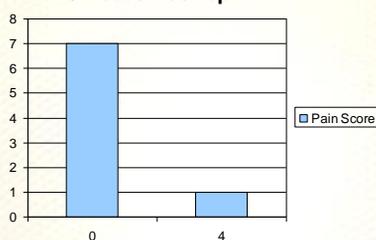
- Increase the range of pain management options available to the anaesthetist.
- Reduce the amount of opioids or other analgesics needed to achieve acceptable pain management.
- Reduce Post Operative Nausea and Vomiting (PONV) and use of anti-emetics.
- Reduce number of epidural infusion pumps needed for pain management.
- Patients are able to mobilise more quickly and easily after surgery.
- Earlier active participation in physiotherapy.
- Reduce length of stay and reduction in constraints caused by bed pressures.
- Increase range of procedures that can be carried out on a day case or 24 hour stay basis.
- Possible anti-septic effects of local anaesthetics.
- Patient empowerment and choice.
- If using the disposable pump -single patient use product – reduced risks from re-processing of contaminated items.



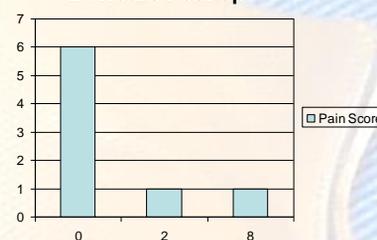
**Surgery**



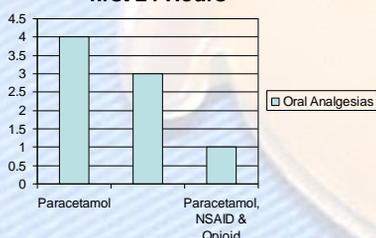
**6 Hours Post-op**



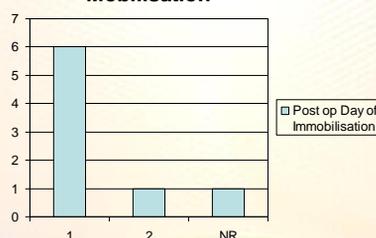
**24 Hours Post-op**



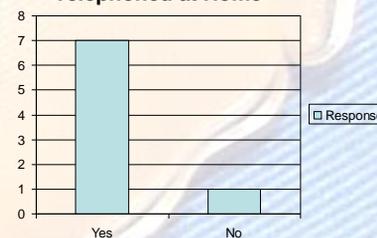
**Post-operative Analgesia in first 24 Hours**



**Post-operative Day of Mobilisation**



**Telephoned at Home**



## Recommendations for the future

### Diagnosis

- ✓ Planned date for admission for surgery/pre clerking
- ✓ appointment given

### At pre clerking

- ✓ Ensure patient appropriate for day surgery
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### Admission to day unit

- ✓ Check patient understands procedure
- ✓ Check patient has someone responsible at home
- ✓ Check patient knows what to do with infuser, including disposal
- ✓ Check patient has help line number
- ✓ Check patient has follow up appointment

### Discharge home

- ✓ Infuser in situ
- ✓ Take home medications
- ✓ Written instructions for pump and exercises
- ✓ Help number

Problems were documented only in 1 case where patient was suffering from dizziness

## Patient comments

- Absolutely brilliant
- No pain > 2 - 3 on movement, no pain otherwise very satisfied
- No pain whilst infusion ongoing
- Pain score 6-7/10 days 3 - 6. Analgesia reduced 1-2/10. First few hours after op pain free until pump removed - patient very pleased
- Patient unable to remember how it went, patient still in hospital
- Pump was very good, patient very impressed no pain while on pump
- Very satisfied with pain relief while eclipse pump in place. Needed strong pain killers after IV came out
- Cant remember