

Safety of IV Lidocaine Infusions for Treatment of Neuropathic Pain

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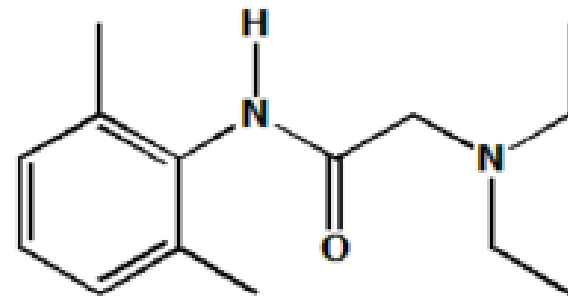
Disclosures

- Summer Research Training Program (SRTP)
- University of Western Ontario (UWO)

Lidocaine

- Developed in 1940s
- Blocks Na⁺ channels leading to a decrease in nerve firing
- $t_{1/2} = 90$ minutes

- Local Anesthetic
- Antiarrhythmic (Ib)
- Analgesic (IV)



2-(diethylamino)-N-(2,6-dimethylphenyl)
acetamide monohydrochloride
"Lidocaine"



Lidocaine

- Bartlett et al. 1961
 - First study suggesting there is a role for systemic lidocaine for relief of post-op pain
- Boas et al. 1982
 - Clinical role for lidocaine for treatment of peripheral and central pain
- 19 RCTs suggest there is analgesic efficacy with IV lidocaine infusions



Aim

- Determine the frequency of side effects in adult outpatients receiving an IV infusion of lidocaine for treatment of chronic pain
- First prospective study of hemodynamic and central nervous system (CNS) side effects of lidocaine infusions



Methodology: Safety of IV Lidocaine

- Prospective study at SJHC Pain Clinic during the summer/fall of 2009
- Inclusion criteria:
 - Age (18-85 yrs)
- Exclusion Criteria:
 - Inability to understand English



Methodology

- A standard lidocaine dose of 5mg/kg of Lean Body Weight (LBW) was used
- LBW determined by the James Formula¹
- Infusion administered by Abbott pump over 45 minutes
- 30 minute observation period post-infusion
- Hemodynamic data at baseline plus q5 minutes
- Side effects of nausea, dizziness and drowsiness by VAS plus q15 minutes

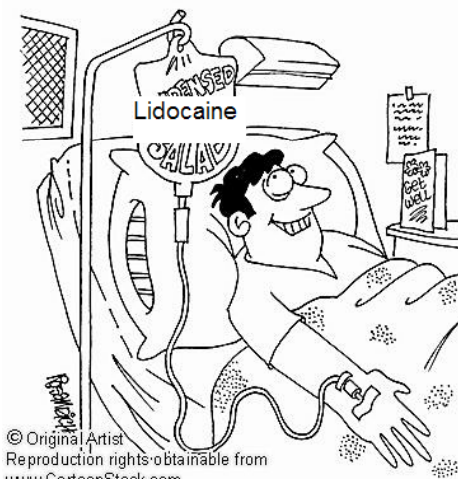


Methodology

- Hemodynamic Data (q5 mins):
 - Blood Pressure, Heart Rate, SaO₂
- Side Effects (q15 mins):
 - Sedation, Nausea, Dizziness (by VAS)
 - + Other
- Local Anesthetic Toxicity:
 - Metallic Taste, Tinnitus, Perioral Numbness

Methodology

- Side effects diary for 7 days post infusion
- Telephone call 1-2 weeks post-infusion to inquire about side effects
- Stats analysis
 - ANOVA and paired t-tests
 - $p < 0.05$

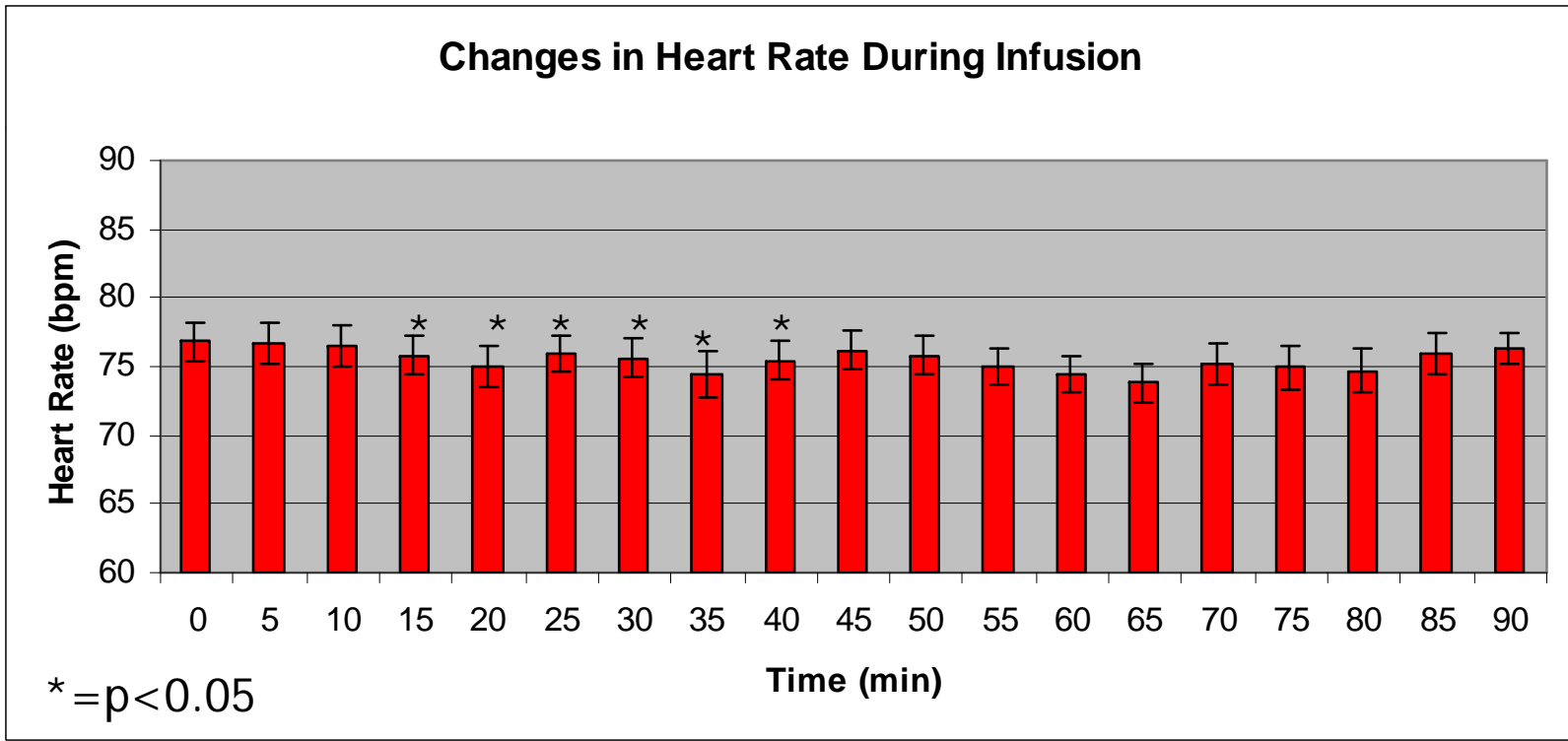




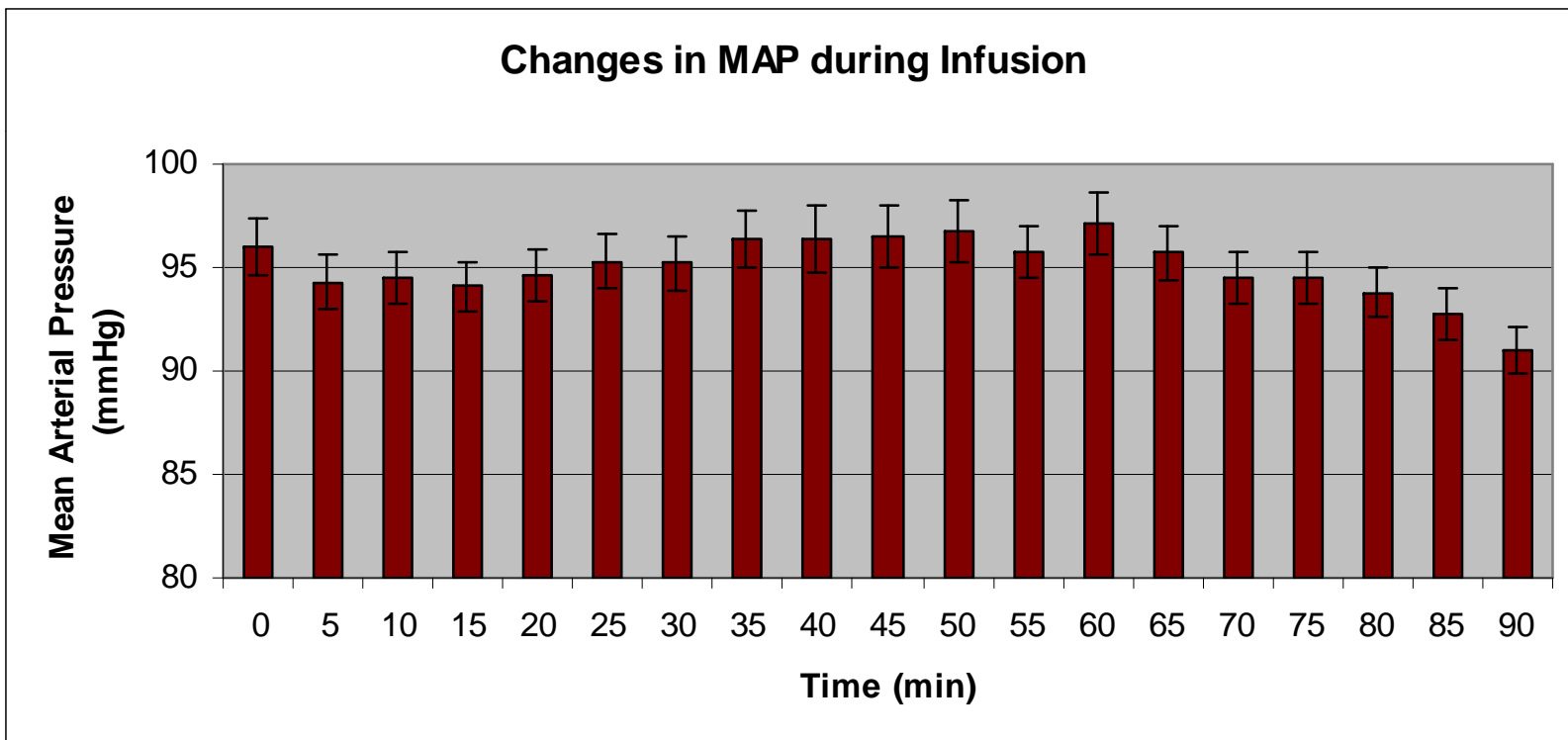
Results N = 70

Demographic Information	Mean ± SD (N=70)
Gender	52F, 18M
Age (years)	51±13
Weight (kg)	80±23
Height (m)	1.65±0.08
BMI (kg/m²)	29.0±7.9
Lean Body Weight (kg)	50±9
Dose (Lidocaine) (mg)	256±52
Infusion Time (min)	46±7
Observation Time (min)	29±3

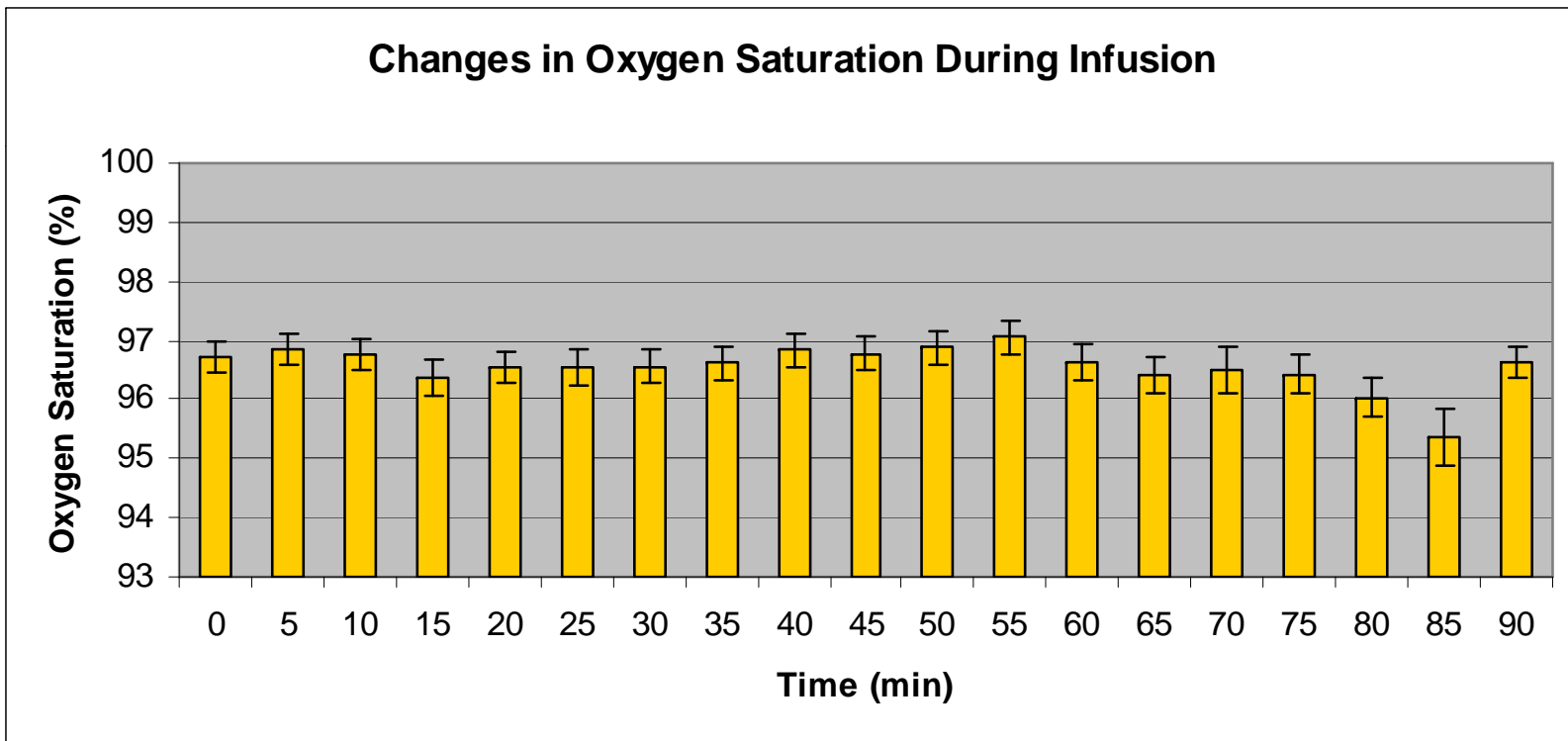
Heart Rate



Mean Arterial Pressure



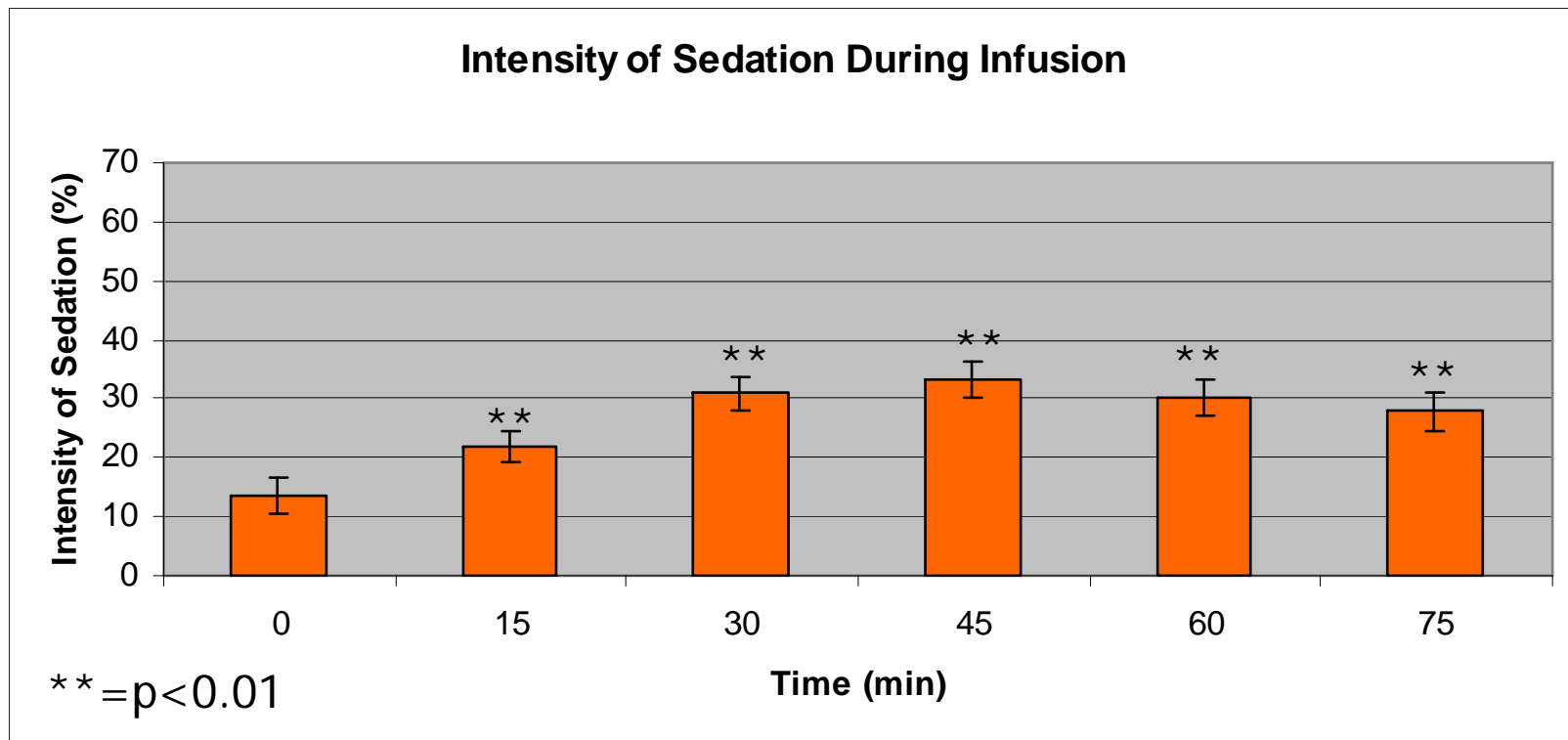
Oxygen Saturation



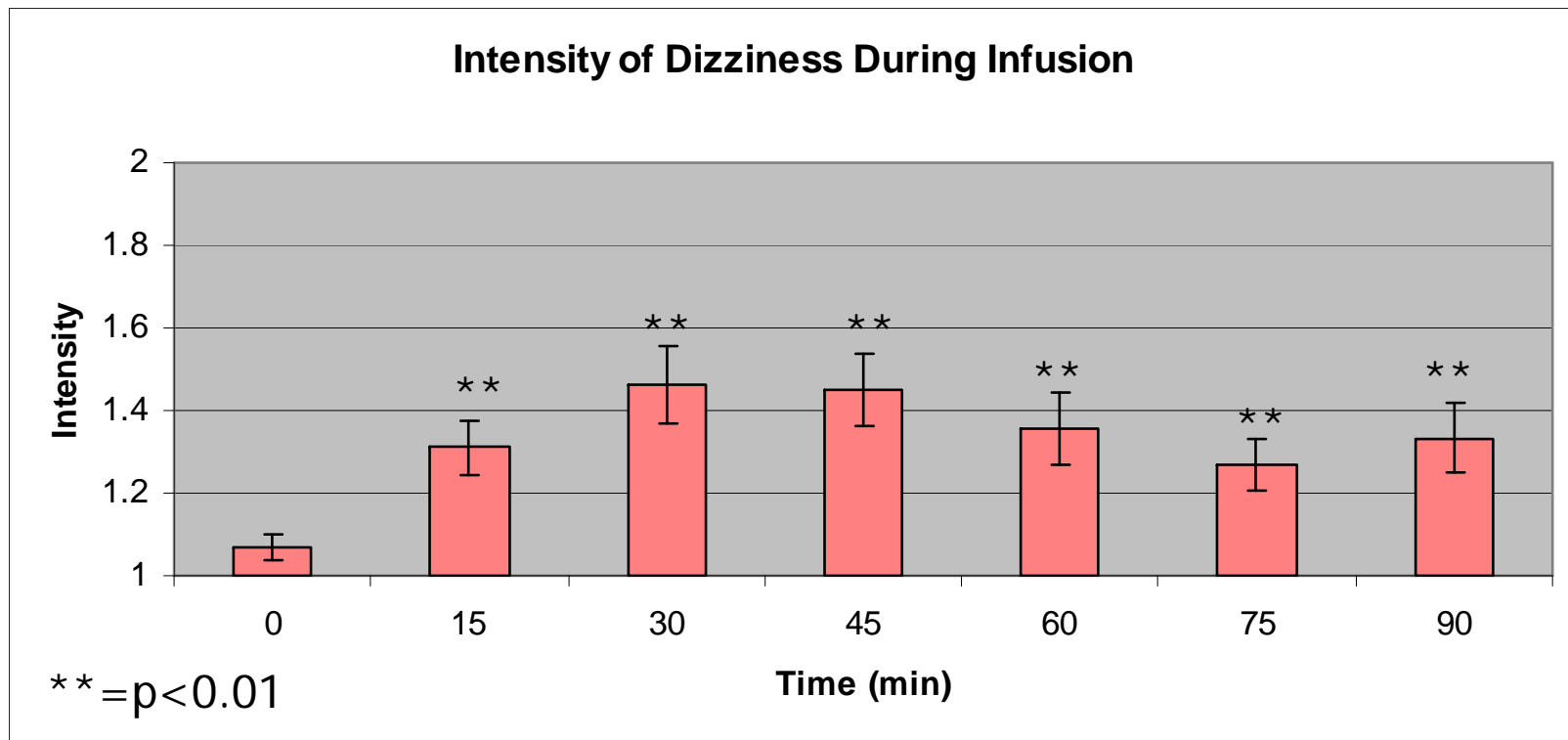
Results: Side Effects During Infusion

Side Effect	Number of Patients Affected (N=70)	% of Patients Affected
Sedation	54	77
Dizziness	26	37
Nausea	13	19
Dry Mouth	15	21
Metallic Taste	8	11
Perioral Numbness	5	7
Blurry Vision	3	4
Headache	2	3
Tinnitus	1	1
Other (itchiness, numb)	5	7
Significant Adverse Effect	0	0
No Side Effects	10	14

Intensity of Sedation



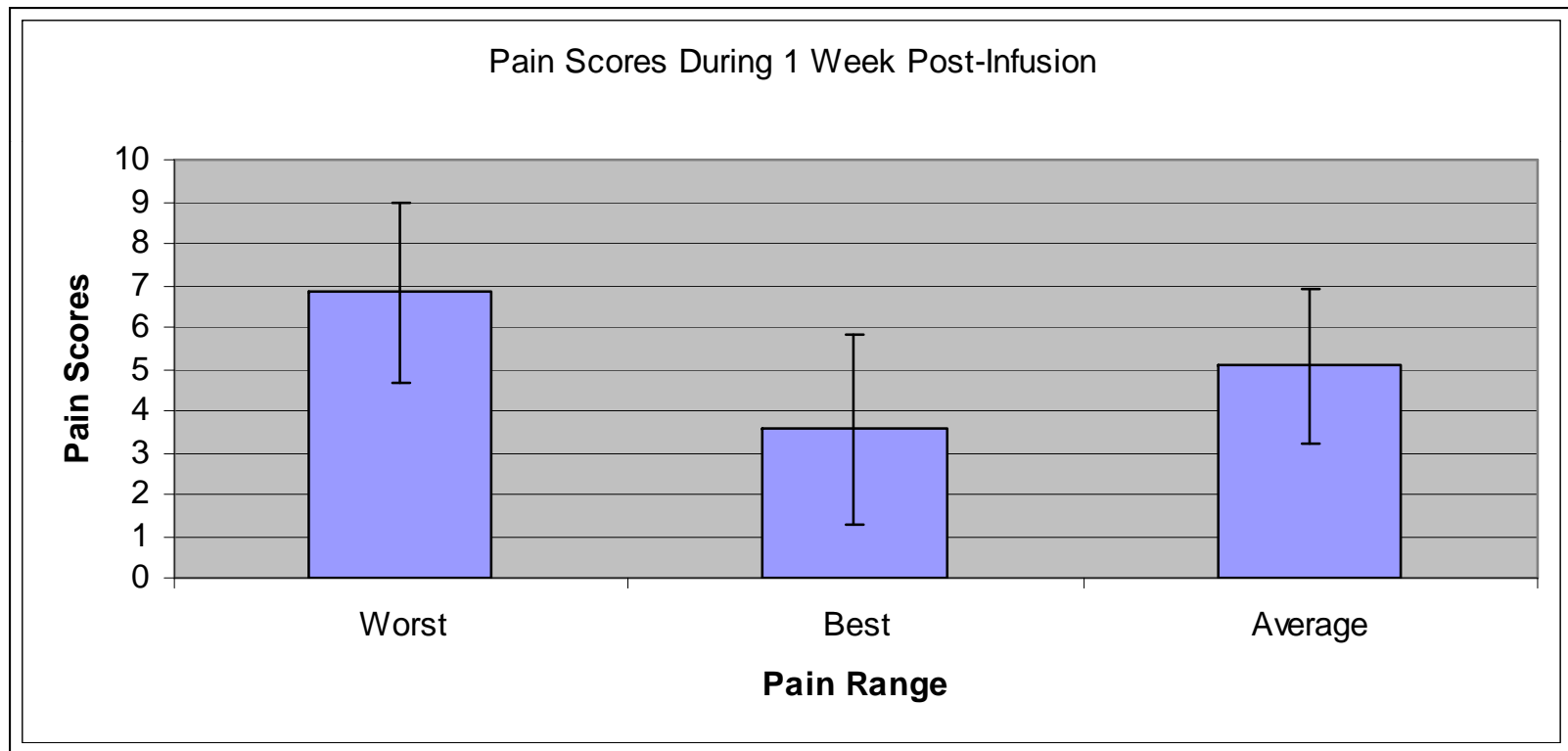
Intensity of Dizziness



Results: Side Effects During 1 Week Post-Infusion (Diary)

Side Effects (1 week post infusion)	Number of Patients (N=63)	% of Patients Affected
Fatigue	25	40
Dizziness	9	14
Nausea	5	8
Headache	6	10
Nervousness	4	6
Other (dry mouth...)	8	13
No Side Effects	30	48

Results: Pain Relief at One Week from Self-Report





Conclusions

- Lidocaine infusions of 5mg/kg LBW are safe and well-tolerated in this outpatient population
- Future study: long-term efficacy of IV lidocaine infusions



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