

# A Retrospective Analysis of the Impact of Intramuscular Antibiotics for the Treatment of 'Borderline' Foot Infections - an Admission Avoidance Strategy

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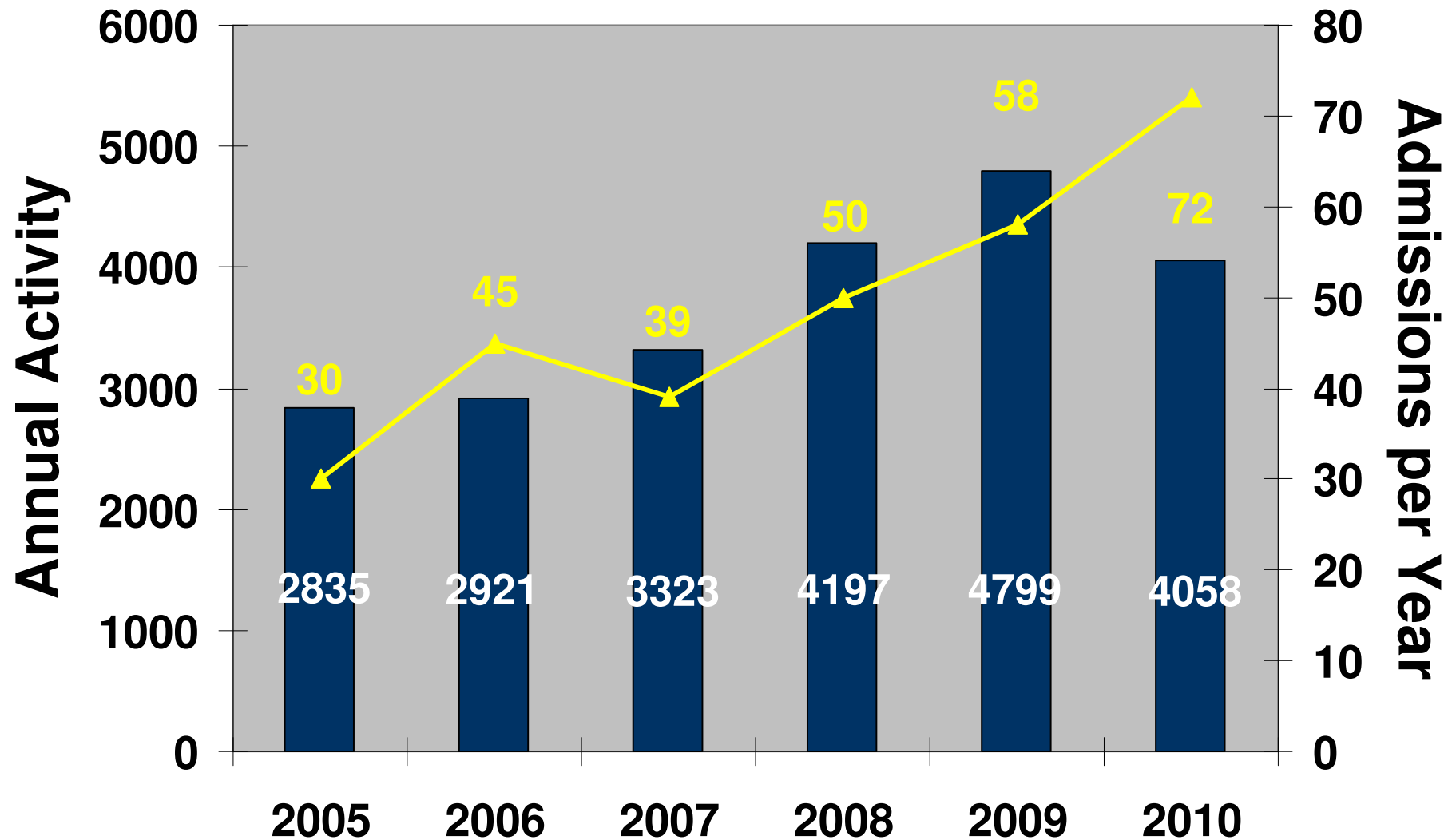


# Elsie Bertram Diabetes Centre

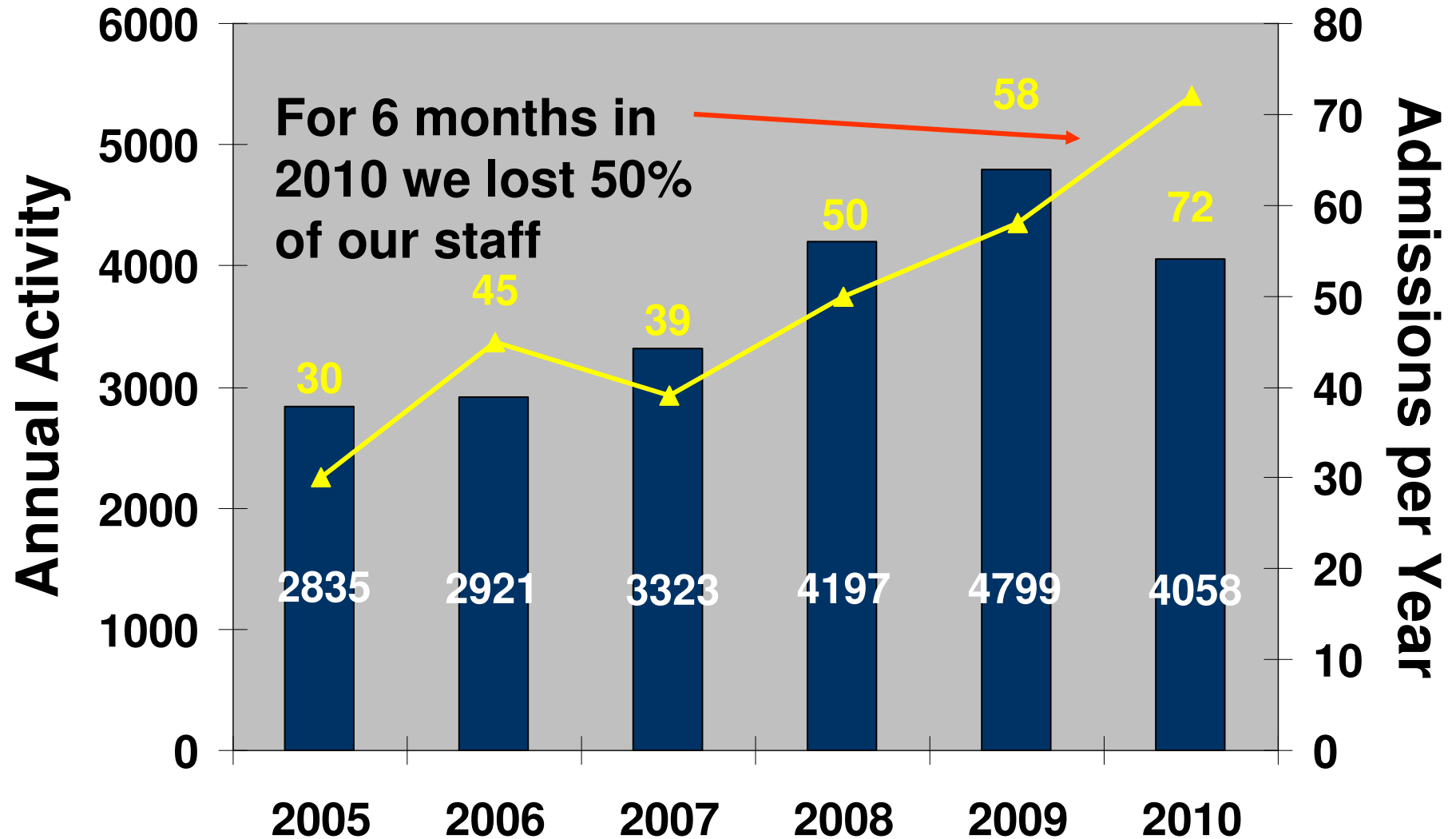


- The Norfolk and Norwich University Hospital has a catchment population of 600,000
- Population of 32,000 people with diabetes
- The diabetes clinic only sees people who are insulin treated, however the foot clinic treats all patients with acute diabetic foot problems

# Activity and Admission Levels



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# Development of the Antibiotic Guideline

- Multi-professional task force
  - Diabetologists
  - Podiatrists
  - Microbiologists
  - Vascular surgeon
  - Antimicrobial pharmacist
- Based on IDSA guidelines and local patterns of resistance

# Development of the Antibiotic Guideline

- Used in primary and secondary care for the management of outpatient and inpatient diabetic foot infections
- Introduced in the Norfolk and Norwich Hospital in January 2009 and later into primary care
- Rolled out through study days and formal teaching sessions

# Our Classification for Diabetes Related Foot Infections

Clinical description	Degree of infection
No purulence or evidence of inflammation	Uninfected
Evidence of inflammation 2cm or less around the ulcer	Mild
Cellulitis >2cm around the ulcer	Moderate
Cellulitis >2cm around the ulcer associated with; <ul style="list-style-type: none"> <li>•Lymphangitis</li> <li>•Foot failing to respond to oral antibiotics alone</li> </ul>	Severe – Borderline admission
Cellulitis as well as evidence of systemic toxicity; <ul style="list-style-type: none"> <li>•Fever</li> <li>•Hypotension,</li> <li>•Leukocytosis</li> </ul> or <ul style="list-style-type: none"> <li>•Abscess formation</li> <li>•Infection tracking beneath fascia</li> <li>•Foot not responding to antibiotics</li> <li>•Wet gangrene</li> </ul>	Severe – Admission

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# 'Borderline' Admission

FIRST CHOICE		PENICILLIN ALLERGY		DURATION
PARTIAL OR FULL THICKNESS	EXTENDING TO UNDERLYING SOFT TISSUE/ BONE	PARTIAL OR FULL THICKNESS	EXTENDING TO UNDERLYING SOFT TISSUE/ BONE	
Ceftriaxone 1-2g od IM in 3.5mls of 1% lidocaine Ciprofloxacin 500mgs bd PO Metronidazole 400mg tds PO  If MRSA positive use Teicoplanin in place of Ceftriaxone		Ceftriaxone 1-2g od IM in 3.5mls of 1% lidocaine Ciprofloxacin 500mgs bd PO Metronidazole 400mg tds PO  In true penicillin allergy or if MRSA positive use Teicoplanin IM 400mg od Ciprofloxacin 500mg bd PO Metronidazole 400mg tds PO		2-4 weeks

# Methods

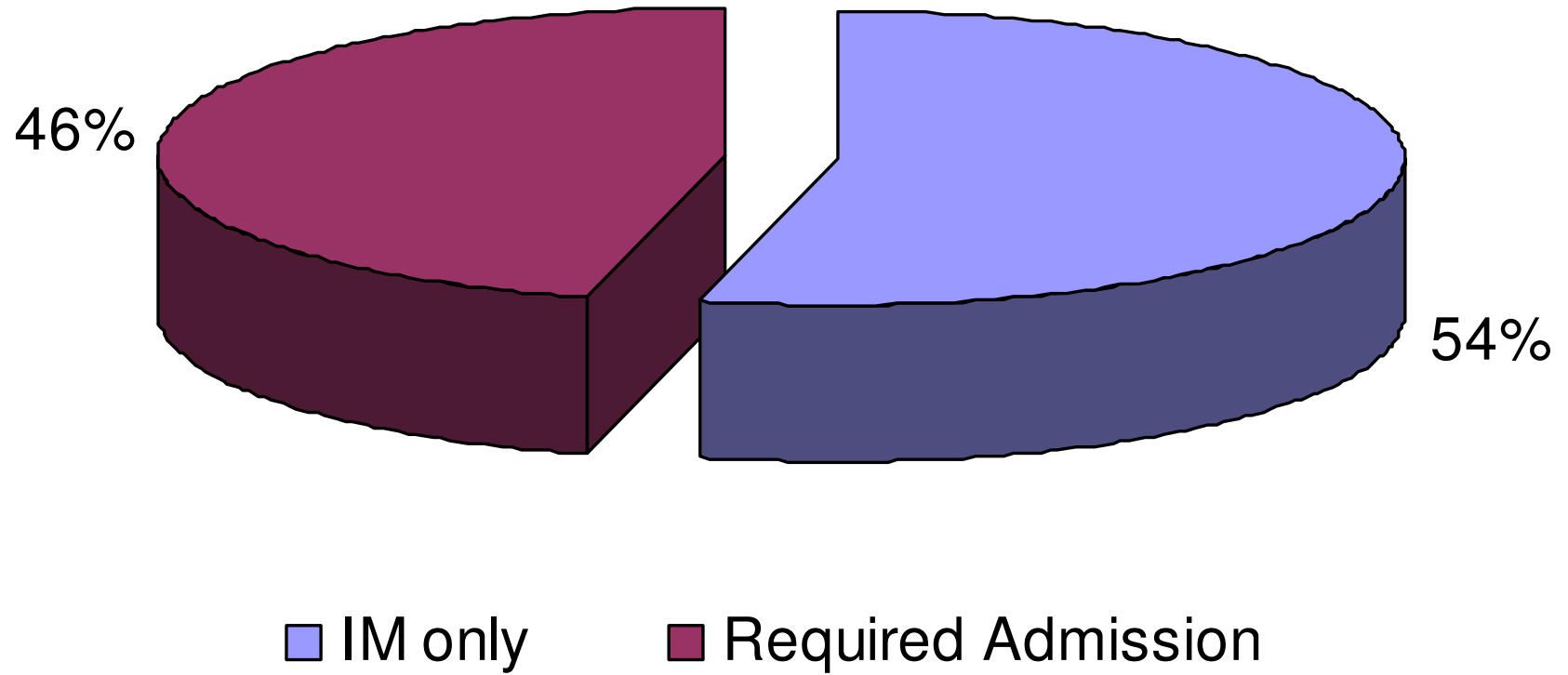
- 22 months of data collection (Jan 09 – October 10)
- During that time:
  - 26 episodes IM antibiotics prescribed in 23 patients
  - 121 admissions direct from the diabetic foot clinic
  - No cases of MRSA or penicillin sensitivity in the 23
  - All patients treated according to our guideline

# Daily Cost of IM Antibiotics

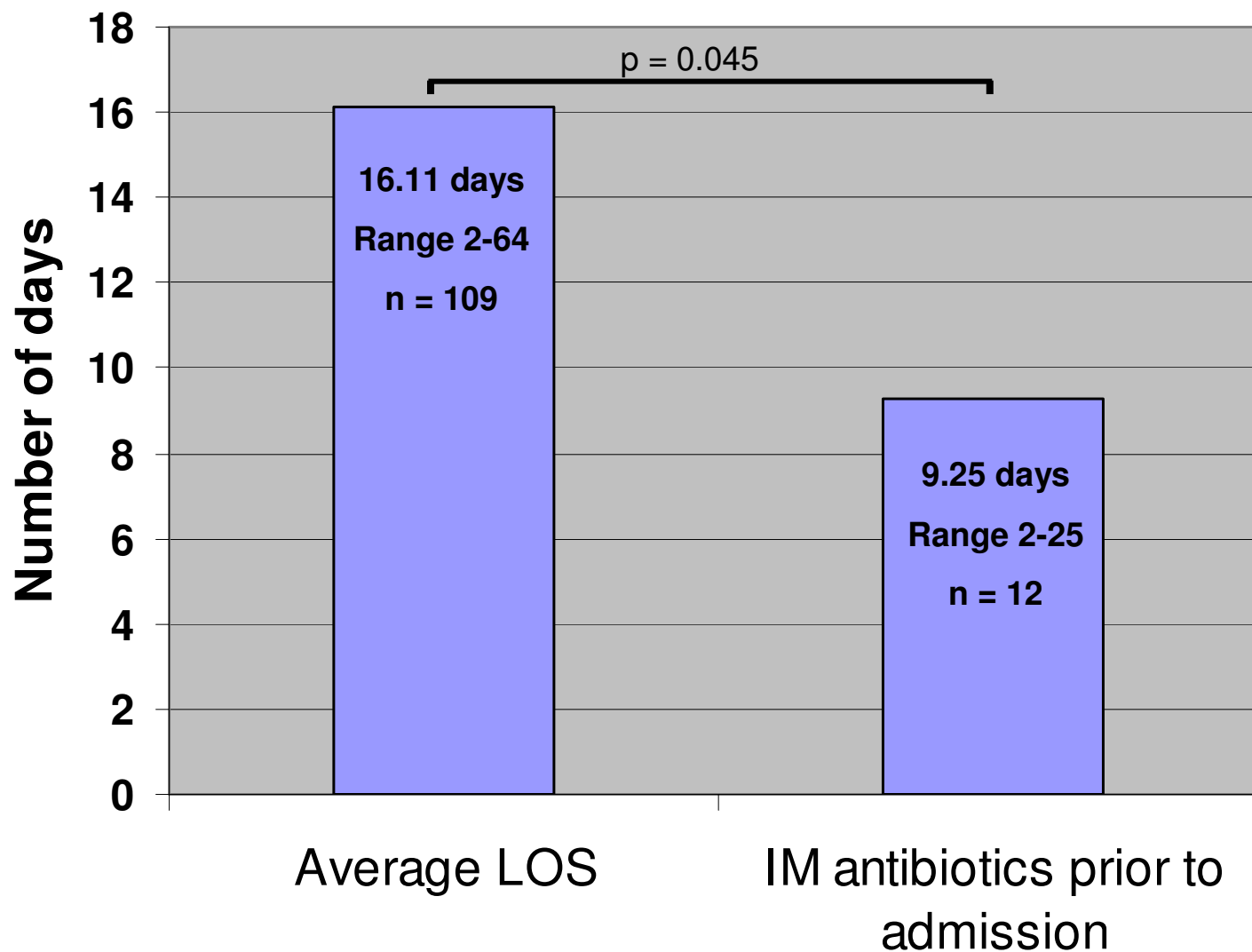
(based on BNF prices)

	£	€
Ceftriaxone 1g x 1/day	10.17	11.61
Lidocaine 5mls ampoule	0.26	0.30
Ciprofloxacin 500mgs x 2/day	0.19	0.22
Metronidazole 400mgs x 3/day	0.12	0.14
<b>Total</b>	<b>10.74</b>	<b>12.19</b>

# Outcomes



# Average Hospital Length of Stay 2009/10



# Admission Avoidance Savings

- 14 admissions prevented with the use of IM antibiotics
  - Cost IM antibiotics £6,633.48 (€7,529.00)
  - Average LOS 16.11 days
  - Saved 225.54 bed days
  - Hotel bed day £274 (€310.99)
  - Saved in hotel bed days £61,797.96 (€70,140.68)

**Saving £55,164.48 (€62,611.68)**

# Savings From Reduction in LOS

- 12 patients failed to respond to IMs and were admitted
  - LOS for patients treated with IM antibiotics vs no prior IMs 9.25 vs 16.11 days
  - Reduction in LOS 6.86 days
  - Saved 82 bed days @ £274 per day (€310.99)
  - Saving of £1879.64 (€2,133.39) per patient in hotel bed days

**Saving of £22,555.68 (€22,555.68)**

# Long Term Outcome

	IM antibiotics	IM & IV antibiotics
Healed	9	3
Surgical debridement - healed	1	3
Orthopaedic surgery - healed	1	0
Minor amputation - healed	0	1
Major amputation	1	3
Not Healed	1	1
Died/Lost to follow up	1	1



# Conclusion

	Cost	Saving
Cost of all antibiotics (oral and IM)	£8,924.94 €10,129.81	
1 hour band 5 nursing time £16 to administer all IM antibiotics	£13,296.00 €15,090.96	
Admission avoidance and reduced LOS saved 307.86 bed days		£ 84,353.64 € 95,741.38
Saving		<b>£62,132.70</b> <b>€70,520.61</b>