BSSH

The British Society for Surgery of the Hand

Our OPAT experience in a clinic

Sarah Balmforth – Senior Sister

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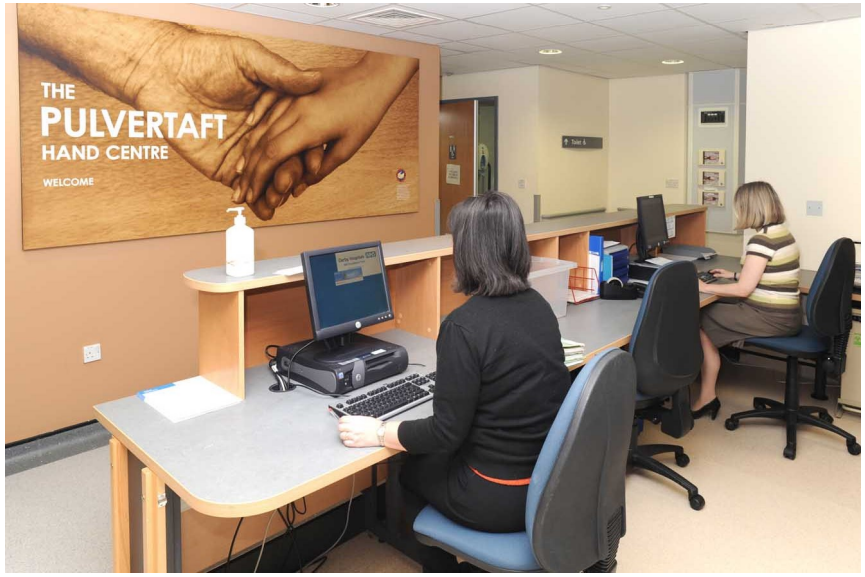

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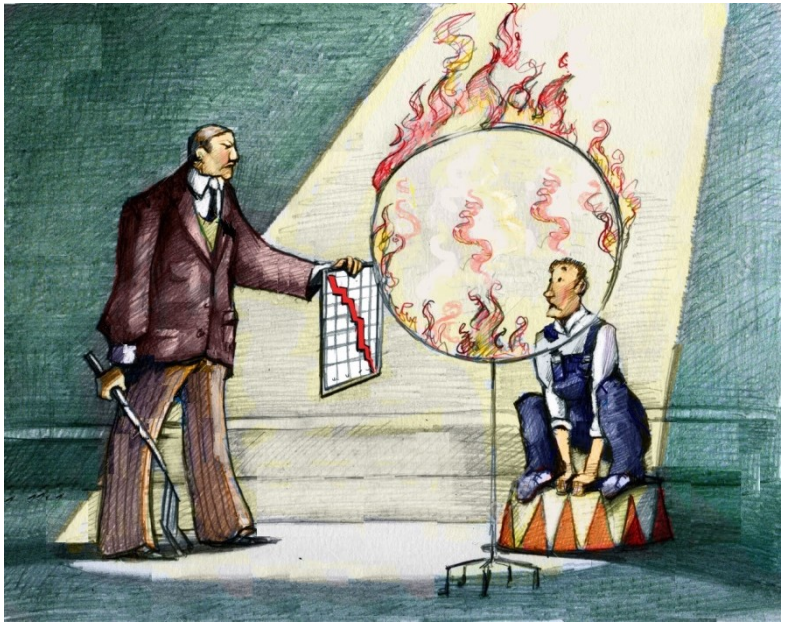
Background

- Pre 2014 standard practise for post op infections, fight bites
- Hospital admission into an acute bed for 48-72 hrs
- IV antibiotics administered 4 times a day
- Length of stay, patient satisfaction, financial cost of inpatient care

A light bulb Moment !



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The rationale

- Driving force – better experience for the patient
- Reduces patients exposure to inpatient risk factors
- Reduces the need for hospital admission for IV antibiotics
- Cost savings on overnight bed stays

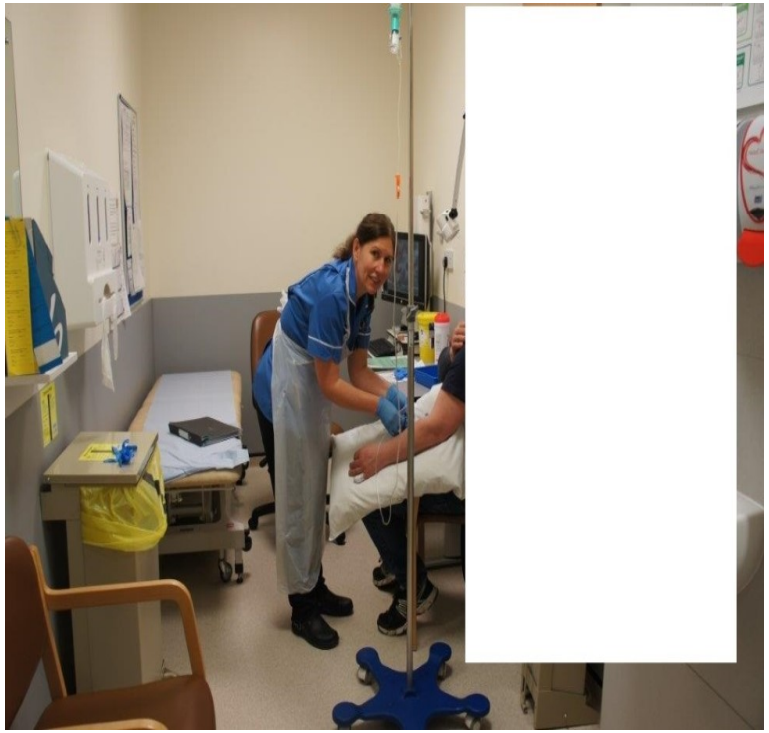
The Working Group

- A consultant who's committed to make it happen
- A senior nurse who will allow it to happen!
- A consultant Microbiologist
- A lead/divisional Pharmacist – with interest in OPAT
- Matron for the in patient wards for weekend cover of hand patients

From inception - commencement

- Around 18 months
- Gather a working group – key people to make it happen
- Audit existing Practise – what happened then in 2013?
- Full service from 2014
- Staff training – cannulation , IV administration & CVAD administration

What happens in an OPAT visit



- On recruitment the IV doses for 3 days are prescribed
- Patient cannulated by the nurse
- Nurse administers IV antibiotic
- Attends daily at 8.30 for VIP score, wound review/medical /therapy review – same service
- Patient goes home with cannula in situ with instructions on care of the cannula
- Decision is made day 3 to continue/further treatment options ….. Long term midline

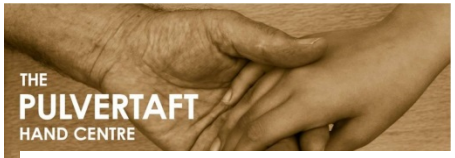
Example of Drug regime

Animal and Human Bites

- Ceftriaxone loading dose 2 G stat
- 1G daily until 3rd day review
- Plus oral metronidazole 400mgs TDS
- If penicillin allergic- Teicoplanin plus Ciprofloaxacin 500mg bd and metronidazole 400mg orally

Cellulitis, flexor sheath infections, post op infections

- 2G loading dose (if under 85kg)
- Followed by 1G daily until review
- If patient infection severe or over 86kg continue 2G daily
- If penicillin allergic- Teicoplanin plus Ciprofloaxacin 500mg bd and metronidazole 400mg orally



Empirical guidelines on the treatment of cellulitis and non-penetrating flexor sheath infection in hand clinic

Class I	No signs of systemic toxicity and no uncontrolled co-morbidities.
Class II	Febrile, malaise, but no nausea, vomiting or confusion **Or** systemically well but with co-morbidity which may complicate or delay resolution.
Class III	Significant systemic upset such as acute confusion, tachypnoea, hypotension or unstable co-morbidities or a hand threatening infection due to vascular compromise.
Class IV	Severe sepsis or severe life threatening infection such as necrotizing fasciitis.

EXCLUSIONS
- patients with prosthetic material in the hands
- major trauma to the hands including penetrating injuries
- fight and bite infections (see separate guidelines)
- post-op surgical infections

Assess severity of cellulitis using the table above. Mark edge of advancing erythema with a pen – **THE PEN MUST THEN BE DISCARDED.**

Send samples for C+S
- All classes, MRSA nasal swab
- All classes, wound swab & MRSA swab if there is an open wound
- Class II - blood cultures if febrile
- Classes III and IV blood culture
- Class IV- tissue sample or aspirate for urgent Gram stain and C+S

Class I → Oral antibiotics.

Class II → Assess suitability of pt for outpatient parenteral treatment (OPAT) See page 2 for more details. If unsuitable for OPAT admit for IV antibiotics.

Class III → Admit for IV antibiotics.

Class IV → Admit for IV antibiotics. Discuss with cons microbiologist

In IVDUs consider the possibility of infection with Clostridium or Anthrax species. The patient can deteriorate very quickly. Contact the consultant microbiologist for advice.

Severity	First Line No penicillin allergy and no MRSA.	If allergic to penicillin or If known MRSA+ve or high risk of MRSA
Class I	Flucloxacillin 500mg – 1G PO qds. Give the higher dose if tolerated.	Doxycycline 200mg stat then 100mg bd (check past results if known MRSA)
Class II INPATIENT	Flucloxacillin 2G IV qds	IV Vancomycin dosed according to guidelines.
Class II OUTPATIENT	Ceftriaxone IV (see over next page)	Teicoplanin IV (see next page)
Class III	Flucloxacillin 2G IV qds	Vancomycin IV dosed according to guidelines.
Class IV Type I (polymicrobial. Risk factors include recent surgery, diabetes, immunocompromised)	Flucloxacillin 2G IV qds plus Gentamicin IV dosed according to guideline plus metronidazole 500mg IV tds	Vancomycin IV dosed according to guidelines plus Gentamicin IV dosed according to guideline plus metronidazole 500mg IV tds
Class IV Type II (due to beta-haemolyic strep +/- Staph aureus)	Flucloxacillin 2G IV qds Plus IV clindamycin 1.2G qds (review after 5/7)	Vancomycin IV dosed according to guidelines. Plus IV clindamycin 1.2G IV qds (review after 5/7)

DURATION AND ORAL SWITCHING
- Review blood cultures after 48 hours
- Usually 3-4 days of IV treatment in uncomplicated cases
- Total duration 1-2 weeks, may be longer in complicated cases
- Switch to oral when pyrexia is settling, erythema less intense, inflammatory makers falling, co-morbidities stable
- Redness may be slow to resolve, or there may be a slight worsening initially, but if inflammatory markers and fever are improving it is not usually necessary to change treatment.

Oral switches
Flucloxacillin 500mg – 1G qds

If penicillin allergy
Doxycycline 100mg bd (plus Clindamycin 300mg -450mg qds if class III or above)

If MRSA +ve
According to C+S results

Further information on outpatient parenteral antibiotic therapy (OPAT)

EXCLUSION criteria for OPAT
- Inability to self–care
- IVDA patients
- Cellulitis secondary to osteomyelitis
- Immunosuppressed patients
- Pulse > 100
- SBP < 110
- Other by clinical judgement

Class II patients who are not excluded can be treated as an outpatient as per guidelines below. Review daily and switch to oral when appropriate

Severity	First Line No penicillin allergy and no MRSA	If allergic to penicillin or If known MRSA+ve or high risk of MRSA
Class II Outpatient	< 85 kg Ceftriaxone 2G IV stat, followed by 1G IV daily. If severe, or pt over 85kg continue 2G daily.	Teicoplanin IV < 70kg 400mg 12 hrly for 3 doses then 400mg daily 70–110kg 600mg 12 hrly for 3 doses then 600mg daily >110kg 800mg 12 hrly for 3 doses then 800mg daily
Administration	2G IV dose - reconstitute and administer using 50ml NaCl 0.9% in Ecoflac Plus. Give over 30 minutes 1G IV dose can be given as an infusion as for the 2G dose, or as a slow bolus over 2-4 minutes (If IM Dissolve each 1G in 3.5ml of 1% lidocaine injection. Doses over 1G should be divided between more than one site)	Can either be supplied as a ready-made infusion from pharmacy or the vials can be reconstituted with water for injection and the dose given over 3-5 minutes. If there is an infusion related reaction, further doses should be given over 30 minutes.

Note: doses are for normal renal function. In patients with impaired renal function, discuss with a pharmacist.

Patient to return to the hand clinic for daily clinical review and administration of antibiotics. At weekends will attend ward 204 to receive doses. Patient should receive information regarding the care of their peripheral cannula whilst at home.

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Inclusion criteria

- Not septic
- Competent to cope with a peripheral cannula
- Able to attend hospital daily at 8.30
- Decision agreed between medical staff and senior nurse in the clinic
- Check numbers of patients in the OPAT service daily to assess demand and capacity.

Exclusion criteria

- Inability to self care
- Distance from hospital for daily travel
- IVDU patient
- Cellulitis secondary to Osteomyelitis (unless agreed by consultant Microbiologist and OPAT pharmacist)
- Immunosuppressed patients
- Pulse > 100
- SBP < 110
- Other by clinical judgement

Challenges

- Staff training, cannulation, IV administration and CVAD
- Staff availability – slow start on recruitment – one nurse funded, but also covered other clinical duties, thus recruitment into OPAT was slow for first 18 months
- Over last year – team expansion with core skills to deliver service
- Bringing change through various trust groups– Risk, Clinical governance & change in Clinical practise steering group
- Making a business case that worked for all parties, Trust and CCG's
- Turnover of fellows – aware of OPAT guidelines

Pulvertaft Figures

- Jan 2014 –Dec 2015 (almost 2years)
- 23 patients recruited in full OPAT treatments
- 53 loading doses – treatment can begin clinic when waiting for a bed, no delay to treatment
- Jan- Dec 2016
- 50 patients recruited into full OPAT treatments
- 76 loading doses – immediate treatment commenced
- High patient satisfaction

OPAT 2014 Audit

- Patients were retrospectively identified from January 2014 to December 2015 -23 patients
- Case notes requested and drug charts analysed and cost analysis performed

Inpatient Cost	Outpatient Cost
£290 a night	Band 5 Nurse cost – £17.54/hr
Antibiotic cost (eg. Co-amox £11.54, Fluclox £16.49	Antibiotic cost (eg. Ceftriaxone 2g £0.54)
3 nights inpatient stay crude cost £882 Saving 69 beds	f/u tariff £ 93.14 per visit
23 pts=£20,286	3 day plan=£279.42=£6,427

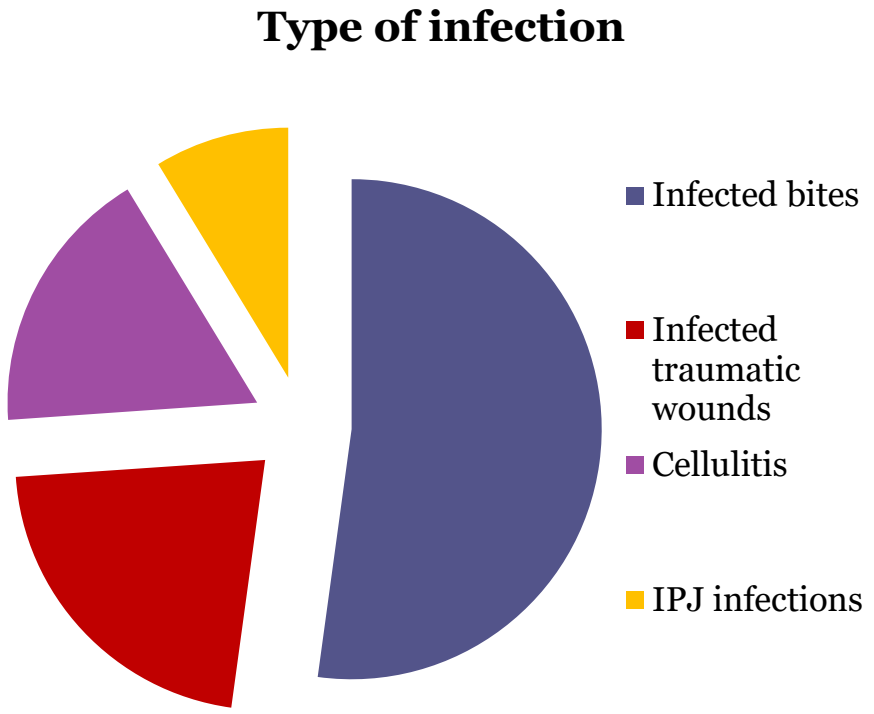
OPAT 2016 Audit

- Patients from January to December 2016 -50 patients
- Cost analysis performed

Inpatient Cost	Outpatient Cost
£290 a night	Band 5 Nurse cost – £17.54/hr
Antibiotic cost (eg. Co-amox £11.54, Fluclox £16.49	Antibiotic cost (eg. Ceftriaxone 2g £0.54)
3 nights inpatient stay crude cost £882 Saving 150 bed days	f/u tariff £93.14 per visit
50 pts= £44,100	3 day plan=£279.42=£13,971

2014 OPAT Service Results

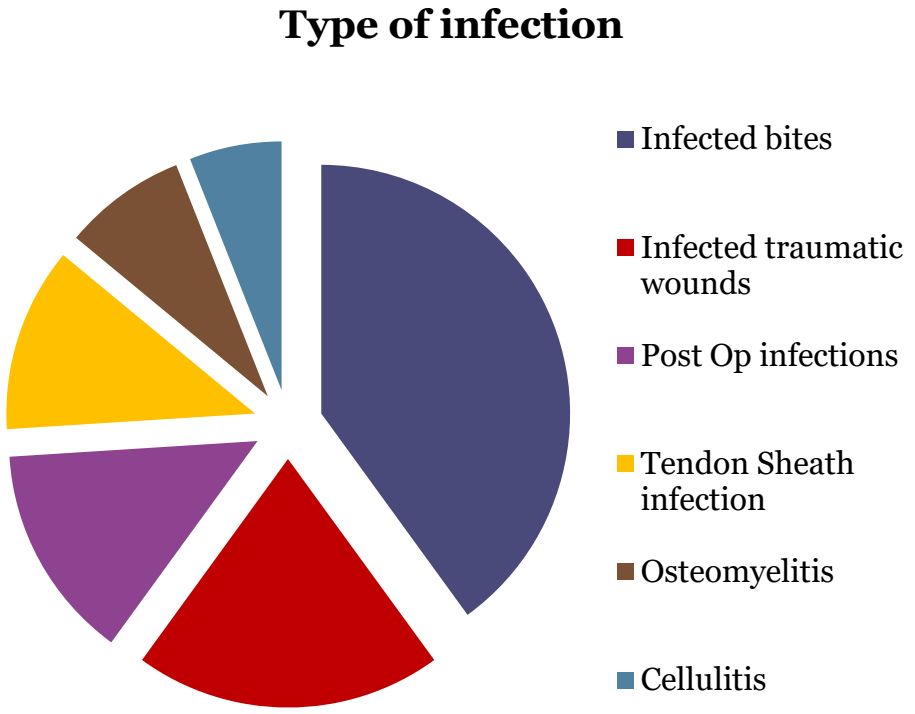
- 23 patients treated
  - 18 in 2014, 5 in 2015
- Over **£13200** saved
  - Average £575 per patient



- Additionally 58 patients received loading doses of IV antibiotics in hand clinic prior to admission

2016 OPAT Service Results

- 50 OPAT patients treated
- Over **£30,129** saved
  - Average saving £602 per patient



- Additionally 76 patients received loading doses of IV antibiotics in hand clinic prior to admission – no delay to treatment

Business case

- Represents a cost saving to the CCG – reducing in patient stays
- Patients attending daily are invoiced to the CCG as a follow up cost
- A detailed breakdown of cost of nurse time, consumables was considered when pulling the package together.
- The Hand Unit model is being rolled out across the trust – medical assessment unit

The future

- Expand the service into other conditions
- Revisit existing protocols & Continue Audit
- For long distance patients – use the Premier Inn across from the hospital for patients to stay – wider catchment of patients – reducing in patient stays
- Formalise a fortnightly MDT and morbidity meeting group

References

- Standards for infusion therapy 4th Edition Royal College of Nursing
- Outpatient parenteral antimicrobial therapy, Ann Chapman BMJ 2013 346
- Clinical efficacy, cost analysis and patient acceptability of outpatient parenteral antibiotic therapy (OPAT): a decade of Sheffield (UK) OPAT service, Durojaiye OC et al Int J Antimicrob Agents Jun 30

Any Questions

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