Update from SAPG Outpatient Parenteral Antimicrobial Therapy (OPAT) Group

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Lead NHS GGC AMT
Chair SAPG
17/05/22
OPAT – Outpatient Parenteral Antimicrobial Therapy

• Service to safely administer and monitor IV (+ complex oral) antimicrobial therapy without overnight stay
• NHS Scotland since c.1994
• Admission avoidance/ supported (early) discharge
  • Improves efficiency and deliver care closer to/at home
  • Creates IP capacity = “Virtual capacity”
  • Reduces HAI (including COVID) risk
  • Supports organisational COVID recovery/remobilisation
  • Cost efficient (SHTG)
• Governance structure – BSAC Good Practice Recommendations
• Local and national antimicrobial stewardship strategy
Scottish Health Technology Assessment Feb 2021:

Clinical Effectiveness and Health Economic Assessment modelled on BSAC NORs data

Jointly commissioned by BSAC and SAPG

Recommendations for Scottish HBs

Outpatient parenteral antimicrobial therapy (OPAT)

Recommendations for NHSScotland

Outpatient parenteral antimicrobial therapy (OPAT) services should be offered to clinically appropriate patients with serious infections who do not require hospitalisation beyond their need for antimicrobial therapy.

NHSScotland Boards should aim to offer a flexible OPAT service with multiple care pathways designed to meet individual patient needs within the context of local resources and geography. Alternative care pathways include outpatient clinics, nurse visits to patients’ homes, or patient or carer self-administration at home.

All OPAT services should ensure clear, ongoing communication with patients and their carers throughout their care. This will ensure that any concerns and risks associated with home-based OPAT are managed as part of the service.

NHSScotland is required to consider the Scottish Health Technologies Group (SHTG) recommendations.
“Delivery of high-quality care for defined groups of patients, that safely provides an alternative to avoid hospital admission or leads to early front door discharge and reduces length of stay. ‘Interface Care’ will provide care for the complete patient journey, from point of contact to conclusion of need, optimising staff and patient experience.”
### INTERFACE CARE

<table>
<thead>
<tr>
<th>Patient Groups</th>
<th>Opportunities for integration: existing pathways of care</th>
<th>Essential requirements</th>
<th>Interface Care Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Infection</strong></td>
<td>Specialty Services (HF, COPD, frailty, mental health)</td>
<td>1. Governance:</td>
<td></td>
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<tr>
<td></td>
<td>Hospital at Home (HAH)</td>
<td>• Establish governance structure link to 6EA</td>
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<tr>
<td></td>
<td>Ambulatory Care/Same Day Emergency Care</td>
<td>• Common principles</td>
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<td></td>
<td></td>
<td>• Common data definitions: inc. safety &amp; outcome monitoring</td>
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<td></td>
<td>• Specific education &amp; training needs</td>
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<td></td>
<td></td>
<td>• Patient, public involvement</td>
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<td></td>
<td></td>
<td>2. Infrastructure:</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Define IT system infrastructure: inc. inputs &amp; outputs, cross-board standardisation</td>
<td></td>
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<td></td>
<td></td>
<td>3. Resources:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Human Resource</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Multi-professional team inc. pharmacy / AHP / nursing</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Financial resource</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Policy alignment:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Align with improved system performance and cost-effectiveness of RUC/6EA</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Realistic Medicine</td>
<td></td>
</tr>
</tbody>
</table>

#### Out-patient Antibiotic therapy (OPAT)

- Improved patient experience & outcomes
- Minimise need for in-patient hospital stay or attendance
- Minimise recognised hospital related complications: e.g. hospital acquired infections (including COVID-19, C difficile and S.Aureus bacteraemia) and deconditioning
- Managed closer to home
- Reduced travel time and out-of-pocket costs

#### Financial
- Financial savings: Creation of skilled multi-professional workforce = cost savings medium/long-term but initial set up costs will be required
OPAT data

- Currently no reliable way to capture or display OPAT clinical activity/full patient episode and no way to benchmark vs other Scottish OPAT services
  - Referrals via Trak care (workbench other list)
  - Attendance to OPAT recorded as day case activity
  - Discharged to home/ID clinic FU/other
  - C.5-10% readmitted either via clinic or ED during OPAT Rx course

- Interface care initiative – data manually generated and submitted weekly since mid Jan Scotland wide
## OPAT DATA COLLECTION TEMPLATE

On a weekly basis please add in required data in the green boxes

<table>
<thead>
<tr>
<th></th>
<th>Number of patients</th>
<th>SD/AA</th>
<th>New referrals</th>
<th>Stopped/Discharged</th>
<th>OPAT DAYS/IP DAYS Avoided</th>
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</thead>
<tbody>
<tr>
<td>Monday</td>
<td>52</td>
<td>4</td>
<td>6</td>
<td>1</td>
<td>56</td>
</tr>
<tr>
<td>Tuesday</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>57</td>
</tr>
<tr>
<td>Wednesday</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>57</td>
</tr>
<tr>
<td>Thursday</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>59</td>
</tr>
<tr>
<td>Friday</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>63</td>
</tr>
<tr>
<td>Saturday</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>62</td>
</tr>
<tr>
<td>Sunday</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>63</td>
</tr>
</tbody>
</table>

|        | 16                 | 23    | 7             | 417                |

## OPAT DATA SUBMISSION TEMPLATE

Please provide your Board Name and the week number of the data being submitted (e.g. 7,8 etc)

The Metrics below will autofill from information gathered in the data collection template above

<table>
<thead>
<tr>
<th></th>
<th>Number of patients</th>
<th>SD/AA</th>
<th>Stopped/Discharged</th>
<th>New Referrals</th>
<th>Opat days/IP Days avoided</th>
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<tbody>
<tr>
<td>Board Name</td>
<td>GG&amp;C</td>
<td>52</td>
<td>16</td>
<td>7</td>
<td>23</td>
</tr>
</tbody>
</table>

| Week Number | 14                  | 52    | 16                 | 7             | 23                         | 417                         |
16 weeks
22,293 OPAT days
902 pts (757 new)
OPAT – estimated bed days per year without service expansion

One year c.66,456 OPAT days c.2706 pts
Adjusting OPAT activity for population size

<table>
<thead>
<tr>
<th>Board</th>
<th>Est. population</th>
</tr>
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<tbody>
<tr>
<td>GGC</td>
<td>1,200,000</td>
</tr>
<tr>
<td>Lothian</td>
<td>900,000</td>
</tr>
<tr>
<td>Lanark</td>
<td>662,000</td>
</tr>
<tr>
<td>Grampian</td>
<td>590,000</td>
</tr>
<tr>
<td>Tayside</td>
<td>420,000</td>
</tr>
<tr>
<td>Fife</td>
<td>374,000</td>
</tr>
<tr>
<td>A&amp;A</td>
<td>368,000</td>
</tr>
<tr>
<td>Highland</td>
<td>321,000</td>
</tr>
<tr>
<td>FV</td>
<td>306,000</td>
</tr>
<tr>
<td>D&amp;G</td>
<td>148,000</td>
</tr>
<tr>
<td>Borders</td>
<td>115,000</td>
</tr>
</tbody>
</table>
OPAT – estimated bed days per year assuming 2595/100,000

Estimated OPAT impact
c.140,232 bed days/year
c.5,710 patients/ year

Caveats:
Estimated
Assumes same patient populations and Mx
Geography, Models of care
Shorter duration Rx likely over time
Transition out of OPAT earlier
Scaling up OPAT

• Importance of embedding in local and national strategy; unscheduled care/ interface care and virtual capacity

• Most OPAT teams/ boards now reporting service expansion
  • Nursing (including ANP), Pharmacy, HCSWs, Admin and Consultant/GP sessions
  • Exploring working with H@H, Ambulatory care, Community hospitals, Primary care
  • Antibiotic compounder for cIVI (+pharmacy technician)

• Development of OPAT Interface Care Virtual ward -> Virtual Hospital
  • Pilot in OPAT GGC
  • Allow visualisation and benchmarking of OPAT activity including
    • Numbers, length of stay, Condition treated and BSAC OPAT outcomes per treatment aim
Governance – key role for AMTs and SAPG

• BSAC Good Practice Recommendations
  • SAPG adapted KPIs

• Local AMS and OPAT – ensuring oversight of AMT

• Importance of COPAT vs OPAT and data recording
  • Avoid “gaming” and double counting

• SAPG OPAT IV and oral drug monographs

• SAPG National (adaptable) OPAT SSTI pathway
## Key Performance Indicators (KPIs) for OPAT – individual patient management

Initial indicators based on the Assessment Tool for the BSAC OPAT Good Practice Recommendations 2019

<table>
<thead>
<tr>
<th>No.</th>
<th>(BSAC GPR ref)</th>
<th>KPI</th>
<th>Purpose</th>
<th>Documented by when</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.5</td>
<td>A 24 hour accessible management plan is documented</td>
<td>Patient management</td>
<td>Within 24 hours of commencing OPAT</td>
</tr>
<tr>
<td>2</td>
<td>-</td>
<td>Decision to offer OPAT or not is documented</td>
<td>Communication</td>
<td>Within 96 hours of referral</td>
</tr>
<tr>
<td>3</td>
<td>1.9</td>
<td>Documentation that (i) GP informed of acceptance onto OPAT within 24 hours of commencing OPAT and that (ii) both referrer and GP informed on completion with follow-up management plan documented</td>
<td>Communication</td>
<td>Within 24 hours of commencing OPAT</td>
</tr>
<tr>
<td>4</td>
<td>2.5</td>
<td>Documentation that patient received an OPAT Patient Information Leaflet incorporating treatment received and access to 24 hr emergency care</td>
<td>Patient management</td>
<td>Any point during OPAT</td>
</tr>
<tr>
<td>5</td>
<td>3.3</td>
<td>OPAT treatment plan includes BSAC Treatment goals and proposed duration of therapy within one week of commencing OPAT</td>
<td>Patient management</td>
<td>Within 7 days of commencing OPAT</td>
</tr>
<tr>
<td>6</td>
<td>3.7</td>
<td>Documentation of assessment of antimicrobial prescriptions by an antimicrobial pharmacist</td>
<td>Governance</td>
<td>Within 96 hours of commencing OPAT</td>
</tr>
<tr>
<td>7</td>
<td>3.1</td>
<td>A care plan is documented for the indwelling intravascular device</td>
<td>Patient management</td>
<td>At time of vascular device insertion and until removal</td>
</tr>
<tr>
<td>8</td>
<td>3.13</td>
<td>Patients/carers self-administering IV medicines have competencies signed off by an OPAT nurse specialist</td>
<td>Training</td>
<td>Pre-commencement of self-administration</td>
</tr>
<tr>
<td>9</td>
<td>3.14</td>
<td>Documentation that the first dose of all new IV antimicrobial therapy is administered by a healthcare worker trained in and with facilities for anaphylaxis resuscitation</td>
<td>Governance</td>
<td>Within 24 hours of commencing OPAT</td>
</tr>
<tr>
<td>10</td>
<td>4.1</td>
<td>Patients with skin and soft tissue infection undergo documented daily clinical assessment by the OPAT team 7 days per week unless treated with long acting IV agent</td>
<td>Patient management</td>
<td>Daily whilst receiving supervised IV therapy</td>
</tr>
<tr>
<td>11</td>
<td>4.2</td>
<td>The clinical response and treatment plan is documented at a weekly MDT/virtual ward round</td>
<td>Communication</td>
<td>Weekly</td>
</tr>
<tr>
<td>12</td>
<td>4.3</td>
<td>If receiving &gt;1 week antimicrobial therapy a clinical review (face to face or virtual) is documented by a member of the OPAT team weekly (or less frequently if agreed and documented)</td>
<td>Patient management</td>
<td>Weekly</td>
</tr>
<tr>
<td>13</td>
<td>4.4</td>
<td>Blood monitoring with Full blood count, Renal/Liver function, CRP taken weekly as minimum whilst on IV antibiotic or oral linezolid or as per drug monographs for other oral antibiotic regimens</td>
<td>Patient management</td>
<td>Weekly</td>
</tr>
<tr>
<td>14</td>
<td>5.2</td>
<td>Clinical outcome is recorded as per the BSAC Good Practice Recommendations</td>
<td>Patient management</td>
<td>On completion of OPAT episode</td>
</tr>
</tbody>
</table>
Discovery: Cellulitis in Scotland (2019) with admission <8 days (n= 6837): *unmet need*

Scotland:
- 19.4% zero day admission
- 70.5% <4 day admission

*adjusted zero days for QEUH*
OPAT pathway for adults with complicated skin or soft tissue infection (SSSI) affecting upper or lower limb or face (eyelid). For OPAT (Ambulatory care) or Home clients including advanced nurse practitioners (non-medical prescribers) with competence framework. and non-prescribing OPAT Specialist Nurses (in accordance with local OPAT Clinical Patient Group Guidelines).  
- Consider non-particulate agents (see page 2, point 3).  
- Assess severity/appropriateness.

Severity Assessment
- Category 1 (NEWS 1-3)
  - No uncontrolled co morbidities requiring inpatient assessment.
  - Not systemically unwell.
  - Not yet treated oral antibiotics.

- Category 2 (NEWS 4-9)
  - No uncontrolled co morbidities requiring inpatient assessment.
  - Mild systemic illness.
  - Well with condition complicating or delaying infection resolution e.g. peripheral vascular disease, chronic respiratory illness or marked obesity.
  - Well but with progression despite appropriate oral antibiotics.

- Category 3 (NEWS 2)
  - Significant systemic upset with acute confusion, tachycardia, tachypnoea, hypotension or pyrexia.
  - Unstable co-morbidities e.g. acute respiratory illness. (80% decompensation or uncontrolled blood sugar)

Give oral antibiotics
- Fluoroquinolones 1g 6 hourly.
  - Alternatives paritaprevir: Disoproxil fumarate 600mg 12 hourly.

Total duration 5 days
- Check 8AM for side effects including common interactions (see notes, point 3).

Additional Assessment Required
- Discuss with specialist surgical or orthopaedic team in case further interventions required.

OPAT Suitability Assessment
- In patients ambulatory and self caring or has appropriate carer support.

- In patient IV antibiotics required for local in patient infection management guidelines.

- [Yes: OPAT Suitability Assessment]

First line: Ceftiraxone 2g IV and review daily.

Treatment
- Alternatives if severe nephrotoxicity or other life threatening reactions: piperacillin/tazobactam use, severe anaphylaxis, renal impairment: significant mental health history/ history of deliberate self harm.
- IV Flaviviram is 1g once every 24 hours: No data with IV antibiotics.

If daily IV administration is not possible for logistical reasons:
- E.g. Longer than an hour, severe home residents, PwDs, alcohol dependence, significant mental health speciality/ history of deliberate self harm.
- IV Flaviviram is 1g once every 24 hours (this is based on daily review with pharmacy, if external of weight).

Guidance to support SAPG OPAT pathway for complicated SSTIs in adults

1. Consider SSTIs mimics/other dermatology note:
   - Bilateral skin changes usually not cutaneous.
   - Common: Varicella zoster, herpes zoster, fungal infection, vasculitis, granulomatous, panniculitis.

2. Initial clinical review
   - Take baseline bloods including U&Es, CRP, LFTs, FBC and blood cultures if possible.
   - In lower limb cellulitis examine both feet and extend toes/palpate for pulses.

3. IV Ceftiraxone administration
   - Administer IV Ceftiraxone 2g IV daily for 30 minute infusion and observe for 30 minutes.

- IV Daptomycin administration
  - (If previous anaphylaxis or other life threatening peripheral allergy or allergic concern)

- Check baseline creatinine kinase (CK) and highlights pulmonary economics risks.

- Administer IV Daptomycin 4-6mg/kg per day.

- If WSA <100mL/min (3.73L/min), give IV Daptomycin at the above dose.

4. Daptomycin dosing regimen adapted from Greater Glasgow and Clyde OPAT.

5. Daily assessment with IV therapy
   - Assess, hear temperature, pulse, BP and respiratory rate.
   - Change IV therapy until there is significant reduction in heart, respiration, pain and normal temperature (i.e. SSTIs, heart rate <140 bpm) and respiratory rate (<20 breaths/ min).

- If clinical deterioration observed at any time or no improvement at 72 hours arrange for medical review.

- Average IV therapy length 48-72 hours (including any IV dose given prior to OPAT).

6. If unable to review patient daily due to logistical reasons:

- Consider Dapelifloxacin administration (avoid if known hypersensitivity to other quinolones).

- Administer IV Dapelifloxacin 8mg/kg over 30-60 minutes and observe for 30 minutes.

- Review at 1 week to assess whether further antibiotic therapy is required (see point 5 above).

- Majority require a single dapelifloxacin infusion only.

- Discuss with pharmacy if extremes of weight or, if required, for repeat dosing during.

7. IV or oral switch—where significant clinical improvement is seen in signs of infection:

- Oral Flaviviram is 1g 6 hourly or IV Daptomycin 4mg/kg over 30 minutes and review after 30 minutes.

- Daptomycin 1mg/kg daily for 5 days duration.

- Note: Renal failure (calcium including calcium containing non-steroidal anti-inflammatory medications or other life threatening peripheral allergy concern.

- Use daptomycin 4mg/kg (12 hours for 5 days duration).

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Other key conditions/populations to target

• **Avoid admission** – *Consider consultant connect, FNC, ambulatory care, community hospitals, H@H*
  • MDR UTI
  • Febrile UTI/ PN
  • Bronchiectasis
  • DFI (clinic, podiatry)

• **Support discharge** – *Consider community hospitals, District nursing, H@H support with OPAT oversight*
  • Specialist medical/ surgical complex infection
  • Including BJI, device related, endovascular, neurosurgical, SAB etc.
OPAT in Scotland next 2 years

• Establish recurrent funding – Look out for SG “Virtual Capacity” initiative
• Virtual ward, data visualisation and national bench marking
• BSAC OPAT service accreditation – adherence to GPRs
• Business as usual for OP parenteral COVID Rx – role of OPAT
• Scottish BSAC OPAT workshop: Tuesday 13th September
Acknowledgements

**SAPG OPAT group membership and OPAT teams:**
Fran Kerr, Project Lead, SAPG
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Heather Kennedy, Lead Antimicrobial Pharmacist, NHS Tayside
Emer Friel, Antimicrobial Pharmacist, NHS Western Isles
Jayne Walden, Antimicrobial/OPAT Nurse, NHS DG
Wendy Beadles, Consultant Infectious Diseases, NHS Highland
Sharon Watson, Charge Nurse, OPAT service, NHS Lothian
Stephanie Dundas, Consultant ID, NHS Lanarkshire
Amy Baggott, Consultant Infectious Disease, NHS Forth Valley
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