

# **Outpatient Parenteral Antibiotic Therapy (OPAT): A Nursing and Patient Success Story**

Autoren: Mary-Louise Daly<sup>1</sup>, Maria Candela<sup>1</sup>, Marlis Meury<sup>1</sup>, Michael Osthoff<sup>2</sup>

<sup>1</sup>Diplomierte Pflegefachfrau, Medizinische Poliklinik, Universitätsspital Basel, Petersgraben 4, 4031 Basel

<sup>2</sup>Oberarzt, Department Infektiologie und Spitalhygiene, Universitätsspital Basel, Petersgraben 4, 4031 Basel

Korrespondenz:

Mary-Louise Daly, MSc Anal Chem, MA Medical Anthropology, dipl. PFF

Medizinische Poliklinik, Universitätsspital Basel, Petersgraben 4, 4031 Basel

Tel.: 061 5565423

Fax: 061 265 3198

Email: [Mary-Louise.Daly@usb.ch](mailto:Mary-Louise.Daly@usb.ch)

Diese Arbeit wurde eigenständig von den Autoren erstellt. Wir danken Herrn Alvar Bucher, (Klinikmanager, Klinik für Innere Medizin des Universitätsspital Basels) für die Unterstützung bei der Berechnung der eingesparten Betten.

## Inhaltsverzeichnis

Summary.....	1
1. Introduction.....	2
1.1 OPAT in the University Hospital Basel .....	2
1.2 Objectives .....	2
2. Results: .....	3
2.1 How is OPAT delivered at the University Hospital Basel .....	3
2.2 Peripherally Inserted Central Catheter (PICC) Project.....	5
2.3 Elastomeric pumps .....	6
2.4 Patient satisfaction with outpatient parenteral antibiotic treatment .....	6
2.5 Assessment of benefits for the hospital .....	7
3. Discussion .....	7
3.1 Future Developments.....	10
4. References .....	11
5. Appendix .....	12

## Summary

Outpatient Parenteral Antibiotic Therapy (OPAT) is an outpatient service for delivering intravenous antibiotics to avoid admission or facilitate early discharge. In 2014 an OPAT service was established at the University Hospital Basel with funding for a full-time nursing position. This project aims to describe how nurses were explicitly involved in developing an innovative OPAT clinic during a two-year period and to assess patients' satisfaction and cost benefits.

During the study period 212 patients were cared for at the OPAT clinic. The nurse's role was fundamental to the smooth running of the clinic and coordinating patients' care, but also for the safety of the program by introducing training sessions for peripherally inserted central lines and elastomeric pumps for nursing colleagues. Patients' satisfaction was excellent. The total number of "bed days saved" was 1251 which corresponds to 1.71 hospital beds that would have been available for elective admissions each day during the study period.

OPAT at the University Hospital Basel is a good example of an innovative service with a central role for the nurse being implemented creatively within a university hospital. Future projects should evaluate the feasibility of an OPAT service with an advanced practice nurse in the lead role.

## 1. Introduction

Outpatient Parenteral Antibiotic Therapy (OPAT) is an excellent example of multidisciplinary care of patients in an outpatient setting with a nurse at its centre, coordinating the care of the patients. OPAT, as the name suggests, is an outpatient service for delivering intravenous (iv) antibiotics for patients that meet the requirements of the programme.

OPAT as a concept is not new and has existed in the USA since the 1970's. Over the past 15 years it has been increasingly introduced in different European countries, Germany, Ireland, UK and Italy to name a few.<sup>1</sup> Seaton and Barr (2013) clearly explain the concept of OPAT and the drivers for implementing an OPAT service in a hospital.<sup>2</sup>

*'Outpatient parenteral antimicrobial therapy (OPAT) refers to the administration of a parenteral antimicrobial in a non inpatient or ambulatory setting with the explicit aim of facilitating admission avoidance or early discharge.....Main drivers for OPAT are patient welfare, reduction of risk of health care associated infection and cost-effective use of hospital resources. The safe practice of OPAT is dependent on a team approach with careful patient selection and antimicrobial management with programmed and adaptable clinical monitoring and assessment of outcome'.*

The types of infections that are most commonly treated in the OPAT clinic include urogenital infections, cellulitis, bone and joint infections and infective endocarditis. The most commonly used antibiotics are intravenous ceftriaxone, ertapenem and vancomycin or daptomycin.

### 1.1 OPAT in the University Hospital Basel

In January 2014 an OPAT service was established in the University Hospital Basel (USB), which was one of the first OPAT services in Switzerland. Previously in USB, patients seen in the emergency department (ED), medical outpatient clinic and some selected clinics were able to organise iv antibiotics on a daily basis in order to avoid admission but there was no formal OPAT service available within the hospital and no service able to enable early discharge of patients on once daily iv antibiotic treatment. The drivers to launching this service in USB included:

- Patient choice – patients had regularly expressed a preference for early discharge to the attending physicians and nurses.
- It was an established service that worked well in other countries, so why not here.
- Patients who fitted the requirements could be discharged earlier, thereby reducing unnecessary stays in hospital and the attending risks this incurred.
- OPAT offers a service by which beds are released and available for other patients, thereby relieving the pressure on beds.

From the outset nurses played a key role in setting up and facilitating the running of the OPAT service within the USB arena. Of note, the service has only ever been staffed by a full time nurse position.

### 1.2 Objectives

The purpose of this research project was to show how the introduction of an OPAT service in a Swiss hospital has enabled nurses to develop an innovative clinic that gives patients choice about their treatment delivery while offering a high quality service. The first part will describe the chosen OPAT

model and two subsequent interventions which were developed to expand the service and increase the safety of OPAT. In the second part, patients' satisfaction and cost benefits were evaluated during the first two years (1/2014 until 12/2015).

## 2. Results:

### 2.1 How is OPAT delivered at the University Hospital Basel

There is some variation in OPAT services in the literature.<sup>3</sup> This variation comes down to the delivery of OPAT. The delivery of OPAT can be carried out by:

- (1) a nurse in an outpatient setting,
- (2) a home service team
- (3) the patients themselves at home.

The model that was introduced in USB involves the first two delivery models i.e. in the outpatient department and the use of the community nurse service. The personnel required for the hospital setting include the nurse, the doctor and the pharmacist. The model that was implemented in USB, involves two sources of admission (Figure 1).

- Patients are referred from a ward.
- Patients are referred from an outpatient clinic, the emergency department (ED) or rarely from a general practitioner or another hospital.

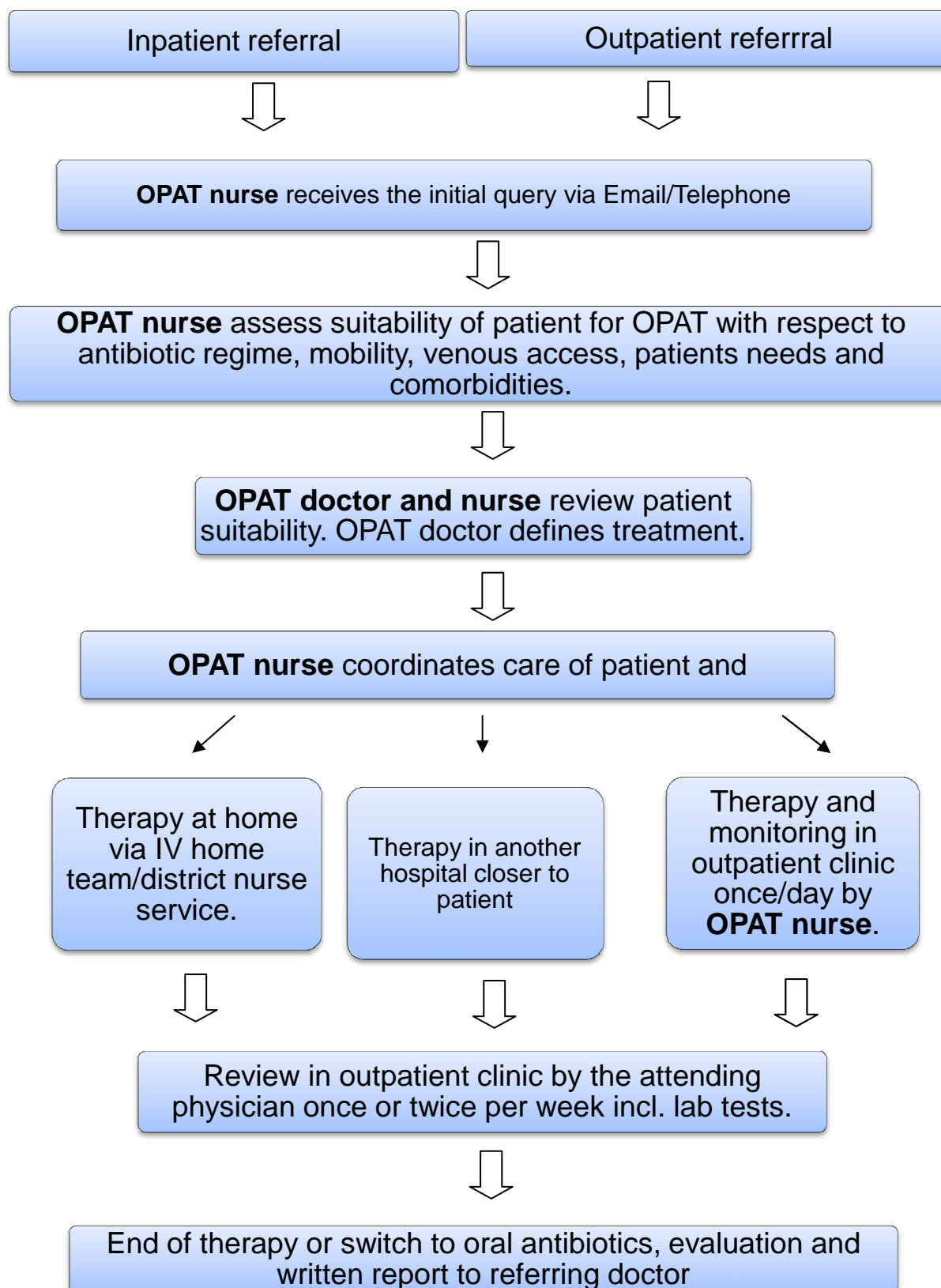
The OPAT nurse receives the initial referral via Email and carries out an initial screening of the patient.<sup>4</sup> This involves an initial discussion with the referring physician and a discussion with the patient. Choosing the correct patients is very important to the running of an OPAT service. The nurse has to consider the suitability of the patient with respect to a variety of criteria:

- The preferred choice of the patient,
- Mobility of the patient - is it feasible for the patient to come to the hospital on a daily basis? If this is not possible what other options are available, e.g. community nursing team, satellite hospital
- Antibiotic regime - only regimen that are once daily are practicable
- Venous access – recommendations as to what venous access device (VAD) is most suitable, depending on the length of the therapy.
- Co-morbidities – what other medication is the patient on, what other appointments does he have, how will these impact on the delivery of OPAT.

The nurse consults with the OPAT doctor to discuss the suitability of OPAT to meet the needs of the patient and any other issues that need to be discussed. This can involve the need to insert a peripherally inserted central catheter (PICC), organizing the treatment via the community nursing team or a satellite hospital closer to the patient's home. The OPAT doctor then defines the treatment plan. This clearly outlines the antibiotic of choice, length of therapy and when necessary bloods tests need to be carried out and how often the patient should be reviewed by the OPAT doctor. The nurse liaises with the patient to plan the care in detail. This may involve liaising with the other relevant services e.g. community nursing team or satellite hospitals. This aspect of the care planning can happen within a short time frame

from a few hours to 1 to 2 days, depending on when the referral to the OPAT service is made and when the patient is to be discharged.

**Figure 1:** Patient flow-chart and OPAT nurse's responsibilities in the OPAT service



The patients attend the OPAT clinic on a daily basis or according to their individualised therapy plan. As the medical outpatient department is not staffed over the weekend, OPAT patients have to attend the medical short-stay unit on Saturday and the ED on Sunday for administration of iv antibiotics. With regular instructions and a detailed hand-over this arrangement proved to be successful and not cumbersome for the patients. Upon successful completion of the therapy, the patient is discharged from OPAT and referred onto their GP or back to the referring doctor as the case requires.

The OPAT nursing team is made up of 2 to 3 nurses who are experienced in infusion therapy and venous catheterization. The nurses all work in other areas within the medical outpatient department as well, thereby offering them a familiarity of the workings of the larger outpatient clinic.

During the study period 212 patients were cared for at the OPAT clinic, 96 in the first year and 116 in the second year (Table 1). In particular, there was a larger increase in inpatients referred to the service in the second year (+30%), which may be related to hospital physicians being more familiar with the OPAT service and more confident suggesting the service to their patients.

**Table 1:** OPAT characteristics during a two-year period (2014-2015)

	2014	2015	Total
<b>Number of patients referred to OPAT</b>			
Inpatients	47	61	108
Outpatients <sup>1</sup>	49	55	104
<b>Number of days in OPAT<sup>2</sup></b>	1158	1034	2192
<b>Number of bed days saved<sup>3</sup></b>	554.4	696.6	1251

<sup>1</sup> including patients referred from emergency department

<sup>2</sup> including in- and outpatients

<sup>3</sup> including only inpatients with available ICD discharge codes (n=93/108)

## 2.2 Peripherally Inserted Central Catheter (PICC) Project

The use of PICC lines as a venous access option for patients was introduced early 2014 to enable longer durations of intravenous treatments without having to frequently exchange venous access and to being able to deliver antibiotics which may be toxic to peripheral veins. During the two-year study period 49 patients with PICC lines were cared for in the OPAT service. Complications were recorded and included two probable line-associated bloodstream infection, one line dislocation (with requirement to insert another PICC line) and one deep vein thrombosis of the arm. Initially the management of PICC lines proved challenging, in particular for nursing staff, who were not familiar with them and only had the opportunity to use them on a very infrequent basis (e.g. in the ED on Sundays). The OPAT nurses quickly had the opportunity to develop their expertise in this area and are a source of support to other departments who use PICC lines infrequently. The management of PICC lines was particularly challenging for ED staff, for this very reason – they have a large number of nursing staff, who infrequently had to use PICC Lines on Sundays. Hence, regular instruction sessions were organized and training resources developed by OPAT nurses for ED staff (Appendix 1).

## 2.3 Elastomeric pumps

In 2015 the OPAT team introduced elastomeric antibiotic pumps to patients requiring 24 hour constant antibiotic delivery, enabling the patient to be discharged home with the pump and only needing to come once per day to exchange the pump. These pumps offer a safe, simple and cheap alternative to electronic devices, but had not been used in the hospital before with the exception of related electronic pumps used primarily for oncology outpatients. Hence, nurses in the hospital were usually not familiar with the handling of these pumps. Again, the OPAT nurses organized several teaching sessions for the ED and short-stay nurses on the handling of PICC lines and elastomeric devices. This was very positively received. The OPAT nurses developed an instruction sheet for the ED nurses who only see the OPAT patients on Sunday (Appendix 1 and 2).

## 2.4 Patient satisfaction with outpatient parenteral antibiotic treatment

Although several Swiss hospitals offer outpatient parenteral antibiotic treatment on a case by case basis (outside the setting of a formal OPAT service), attitudes of Swiss patients towards outpatient parenteral antibiotic therapy is unknown. In addition, there is a lack of Swiss data regarding patient satisfaction after having been treated in a formal OPAT program. Hence, a short survey (Appendix 3) was developed to capture patients' satisfaction, wishes and problems associated with our OPAT service. We used an existing questionnaire from The British Society of Antimicrobial Chemotherapy OPAT Registry ([www.opatregistry.com](http://www.opatregistry.com)), which was translated and adapted to our setting. Patients who received parenteral treatment in our OPAT facility were provided with this survey on the last day of treatment and ask to either fill in the survey immediately or to return it to a later time point. The survey was anonymous and contained nine questions regarding satisfaction with the service including waiting time, support before, during and after outpatient treatment, side effects and willingness to undergo outpatient treatment again.

During a period of 18 months (1/2014-6/2015) questionnaires were distributed to 153 patients, of which 85 were returned (55.5%). Overall, patient satisfaction with the OPAT service was very high with 50.6% and 44.7% stating that their expectations were met or even outperformed, respectively. Information about the OPAT service and outpatient treatment provided before discharge was helpful and satisfactory in 87% of all cases. Waiting times were considered short by the majority of patients (77.6%) with only one individual stating that waiting time was not acceptable. Support by the OPAT team was rated as outstanding in the majority of cases (84.7%). Of note, more than half of all patients (52.9%) were able to return to their workplace or respective duties (university, school etc.). This is mirrored by the fact that less than a third (29.4%) experienced adverse events during the treatment (mostly mild gastrointestinal side effects or fatigue), which may have influenced the patients' willingness to resume their daily activities. Full results of the survey can be found in Appendix 4.

Overall, less than 10% of included patients did not prefer outpatient treatment over hospital-based antibiotic treatment. Similarly, almost all patients (92.9%) would choose outpatient parenteral treatment again if necessary.



## 2.5 Assessment of benefits for the hospital

Apart from suiting patients outpatient parenteral antibiotic treatment may be regarded as advantageous by hospital administration as earlier discharges may facilitate admission of patients scheduled for elective surgeries or other procedures and may improve benefit-to-cost ratios after the introduction of diagnoses related groups (DRGs) in Switzerland. The first may be of importance for large and busy tertiary care hospitals (such as the University Hospital Basel), which may lack available beds for elective surgical admission due to an increasing number of emergency admission, e.g. during the influenza season. The latter is related to the DRG system which “rewards” efficient hospitals that discharge patients earlier.

We analysed the impact of utilizing an OPAT service on the number of additionally available beds per day that may be used for elective surgical patients. Only inpatients that were referred to the OPAT service during a two-year period were included in the analysis. Duration of admission was added to the number of days the patients was treated in the OPAT service, which constitutes the days of treatment that the patient would have had to stay in hospital to complete his antibiotic treatment (i.e. hypothetical admission duration). The mean length of stay according to the patient’s final DRG was then subtracted from the hypothetical admission duration, which yields the number of additional days that the patient would have stayed in hospital after reaching the mean length of stay for his/her particular diagnosis if he was not treated in our OPAT facility (i.e. “bed days saved”). The total number of “bed days saved” was divided by 730 to calculate the number of hospital beds that are available for admitting patients for elective procedures throughout the two-year period.

During the two-year period (2014-2015) 108 inpatients were referred to our service, of which data were available from 93 patients. The total number of “bed days saved” was 1251 which corresponds to 1.71 hospital beds that would have been available for elective admissions on each day during this two-year period (Table 1).

## 3. Discussion

*‘People are creative when they can solve problems, develop products that solve problems, or raise issues in a way that is initially novel but eventually accepted in one or more environments. Similarly, a work is creative if it stands out at first in terms of its novelty but ultimately comes to be accepted within a field.’<sup>5</sup>*

In context of the University Hospital Basel, the problems included patients wanting to be discharged earlier or avoid being admitted in the first place and the increasing demand on available beds from the hospital perspective for elective admissions. University Hospitals often due to the nature of their size are not the most flexible of institutions. It can be difficult to marry up excellent clinical care with individualised patient choice. OPAT is an exceptional example of an innovative service being implemented creatively within a large university hospital which offers patients choices in the delivery of their care. In this project we have reported our early experience and major obstacles faced after introduction of the OPAT service

in 2014. As can be seen from the data provided by the feedback questionnaire and the patient statistics, it is clear that the development of an OPAT service has been very successful within the hospital.

Our survey shows that OPAT is regarded as a valuable and preferred option over treatment in hospital. In particular, patient satisfaction with our service was very high, and outpatient treatment enabled a majority of patients to resume their daily activities. Our results are in agreement with a large survey of OPAT patients in Sheffield (n=449, response rate 61%), which demonstrated a similar satisfaction rate (98.6%) and future OPAT choice rate (99.6%) compared to our survey (95.3% and 92.9%, respectively).<sup>6</sup> This emphasizes the goal of establishing formal OPAT services in more Swiss hospitals in the futures. Limitations of this survey include the rather low response rate and the fact that surveys could be filled in on the last day of treatment in presence of the OPAT nurse (which might have biased the results towards a more positive rating of the service).

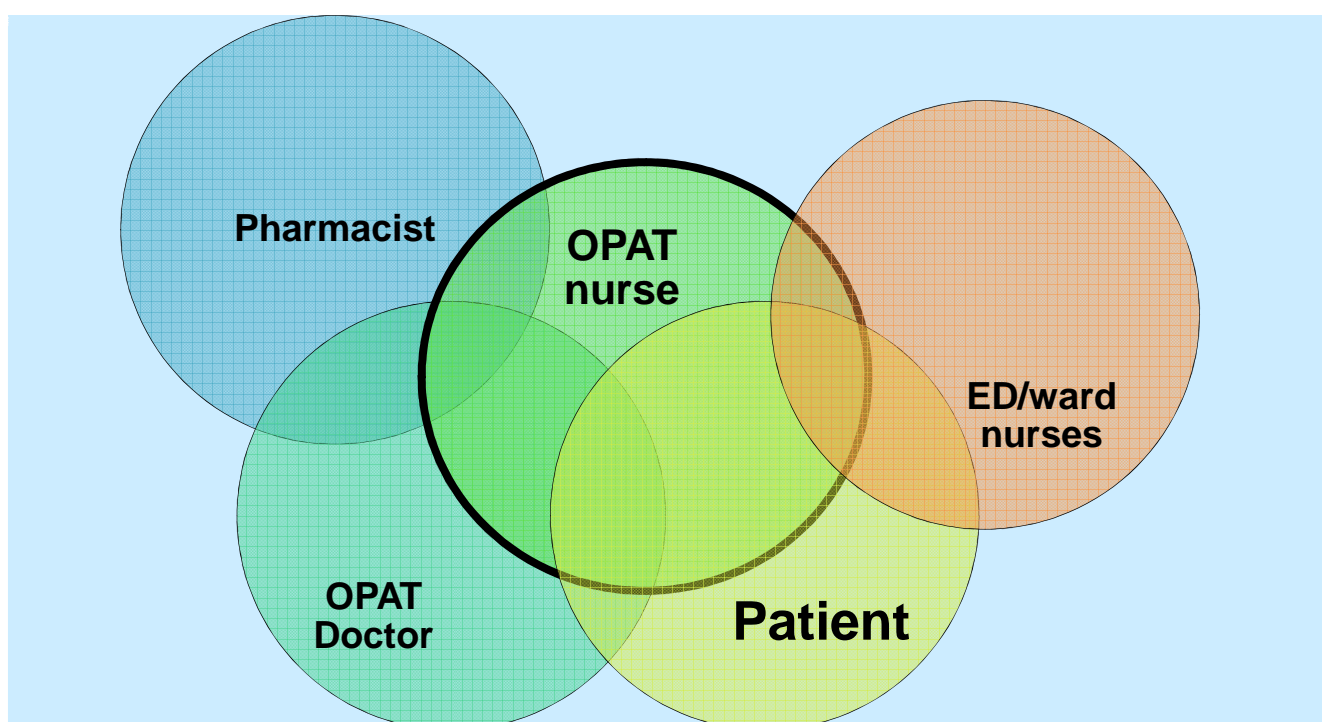
OPAT does not only offer benefits for the patients but also for the hospital as our results of 1.71 hospital beds that would have been available for elective admissions on each day during this two-year demonstrate. This calculation is a rather conservative estimation of the bed days saved and the number may probably be even higher (>2) in reality, as ambulatory patients referred to our OPAT service by general practitioners or the ED were not included in the analysis (n=104, 1003 additional OPAT treatment days). These patients would have required admission solely for the purpose of parenteral antibiotic treatment. Their admission would have been longer than the mean length of stay for their particular diagnosis as a switch to oral treatment (and hence discharge) is not possible in these individuals, mostly because of resistant microorganisms causing the infection. In addition, these patients may be at risk for acquiring additional hospital-related infections or complications which may extend their hospital stay further. Our data compares favourably with data from a much larger OPAT service in Sheffield<sup>6</sup> who reported 4034 “bed days saved” in 334 patients over a two-year period (12.1 days per patient vs. 13.4 days per patient in our setting). However, they included ambulatory patients referred e.g. from the emergency department and assumed that the number of days of OPAT equals the number of inpatient bed days saved, whereas our calculation took into account the median length of stay according to the respective DRG. In summary, utilization of an OPAT service may be associated with financial incentives for hospital administrations owing to the earlier discharge of patients, which may enable admission of a greater number of elective patients and may reduce costs associated with admission durations exceeding the DRG mean length of stay.

Another key aspect of a new service is patient safety. OPAT nurses not only quickly recognized potential safety issues associated with nursing colleagues being unfamiliar with PICC lines and elastomeric devices but in addition developed training sessions and nursing resources that may be used as a reference of care. This is of importance as education/training of nurses in PICC maintenance may reduce incidence of PICC line complications, in particular associated infections.<sup>7</sup>

As a consequence of the knowledge gained throughout the project, OPAT nurses now regularly offer support to community nurses and other colleagues in satellite hospitals in the use of novel devices such as elastomeric devices and PICC lines.

As highlighted in the previous paragraphs the nurse's role is key to the success of OPAT (Figure 2). It is the nurse who liaises and coordinates with the referring doctor, patient, and OPAT doctor to facilitate the best care for the patient. The nurse is responsible for educating the patient with respect to how OPAT works and how it can best meet their needs and the different possible delivery options available. The nurse is involved in training the patient in the management of their PICC line and elastomeric pumps and when and who to contact outside of clinic hours. During clinic hours all patients have the direct number to the OPAT nurse, in case of any questions or problems. It was advantageous having a small team of nurses when running such a service. All the nurses quickly gained expertise in the handling and management of special aspects of the OPAT service e.g. PICC lines and elastomeric pumps. This increases patient safety in the use of these applications as well as a resource for other colleagues who infrequently use these applications.

**Figure 2:** Relationship of OPAT nurse with other OPAT stakeholders



An added benefit for the service of a small team of nurses is the continuity of care that is offered to the patient. Continuity of care is not implicitly embedded within a hospital setting. Due to the size and the bureaucracy inherent in such institutions, continuity of care can be problematic, despite patients' preference and the improved safety and quality being seen by the same team offers. This is illustrated by the fact that OPAT patients have to attend different clinics with different nursing staff over the weekend. Hence, a crucial aspect of the OPAT service at USB was the establishment of continuity of care during weekdays and in depth hand-over to the staff responsible for the patient on weekends. Depending on the length of the treatment a patient is in contact with one but at most three nurses during weekdays. The

nurses see the patient on a regular basis and are consequently able to offer a top quality monitoring service of the patient's condition e.g. skin conditions, wound care and observe any progression, improvement or deterioration. For the OPAT doctor working with a nurse who knows the patient and knows the therapy regime is essential, as the OPAT doctor is often seeing the patient quickly between his/her official clinic.

### **3.1 Future Developments**

Nursing is undergoing exciting developments within Switzerland. The advanced practice nurse (APN) role is gradually becoming established within Swiss hospitals. This is very relevant for OPAT and its future development. OPAT lends itself well to becoming a truly nurse led service with an APN in the lead role. There are successful examples of such nurse led OPAT services described in the literature with examples from the UK, USA and Canada.<sup>8,9</sup>

Future projects will assess under what conditions a nurse-led OPAT service at the USB is feasible and which next steps have to be taken in this direction.

## 4. References

1. Chapman AL, Seaton RA, Cooper MA, et al. Good practice recommendations for outpatient parenteral antimicrobial therapy (OPAT) in adults in the UK: a consensus statement. *The Journal of antimicrobial chemotherapy*. 2012;67(5):1053-1062.
2. Seaton RA, Barr DA. Outpatient parenteral antibiotic therapy: principles and practice. *Eur J Intern Med*. 2013;24(7):617-623.
3. Paladino JA, Poretz D. Outpatient parenteral antimicrobial therapy today. *Clin Infect Dis*. 2010;51 Suppl 2:S198-208.
4. Tice AD, Rehm SJ, Dalovisio JR, et al. Practice guidelines for outpatient parenteral antimicrobial therapy. IDSA guidelines. *Clin Infect Dis*. 2004;38(12):1651-1672.
5. Blakeney B, Carleton, P., McCarthy, C., Coakley, E. Unlocking the Power of Innovation. *OJIN: The Online Journal of Issues in Nursing*. 2009;14(2).
6. Chapman AL, Dixon S, Andrews D, Lillie PJ, Bazaz R, Patchett JD. Clinical efficacy and cost-effectiveness of outpatient parenteral antibiotic therapy (OPAT): a UK perspective. *The Journal of antimicrobial chemotherapy*. 2009;64(6):1316-1324.
7. Funk D, Gray J, Plourde PJ. Two-year trends of peripherally inserted central catheter-line complications at a tertiary-care hospital: role of nursing expertise. *Infect Control Hosp Epidemiol*. 2001;22(6):377-379.
8. Seaton RA, Bell E, Gourlay Y, Semple L. Nurse-led management of uncomplicated cellulitis in the community: evaluation of a protocol incorporating intravenous ceftriaxone. *The Journal of antimicrobial chemotherapy*. 2005;55(5):764-767.
9. Gouliouris T. BG, Karas J.A. Outpatient parenteral antimicrobial therapy (OPAT) as a nurse-led service: A district general hospital perspective. *Poster presented at: Program and abstracts of the joint conference of the Imperial College London and British Society for Antimicrobial Chemotherapy*. 2011;December 5.

## 5. Appendix

Appendix 1: Standard operating procedure for the use of peripherally inserted central catheters (PICC) developed by the OPAT nurses

Appendix 2: Standard operating procedure for the use of elastomeric devices in combination with peripherally inserted centrals catheters (PICC) developed by the OPAT nurses

Appendix 3: Questionnaire for evaluation of patients' experience and satisfaction with OPAT

Appendix 4: Results of patients' questionnaire regarding experience and satisfaction with the OPAT service at the University Hospital Basel (n=85).

### PICC Line Handhabung beim Anschliessen und Abhängen von Infusionen basierend auf Pflegerichtlinie 7.3.3

#### Zentralvenöser Katheter: Peripherally inserted central catheter (PICC)

**PICC Line:** PICC ist die Abkürzung für Peripherally Inserted Centrals Catheter und bezeichnet einen peripher eingelegten Zentralvenenkatheter, also einen Katheter, der Ultraschall-gesteuert in eine Oberarmvene eingelegt und dessen Spitze unter Durchleuchtung nahe dem Herz in der Vena cava superior platziert wird.

Das Legen sowie der Umgang mit zentralvenösen Kathetern erfordert zwingend ein aseptisches Vorgehen. Vor **jeder Manipulation am PICC ist eine hygienische Händedesinfektion erforderlich.**



PICC Line mit Microclave



Microclave

#### **Beschreibung der Interventionen**

##### **Infusion anschliessen**

Ablauf	Tätigkeit
1. Patient vorbereiten	<ul style="list-style-type: none"><li>• Patient informieren</li><li>• Rückenlage</li><li>• Arm etwas abgespreizt lagern</li></ul>
2. Material vorbereiten	<ul style="list-style-type: none"><li>• 1 Fertigspritze 10 ml NaCl® 0,9 %</li><li>• Infusion mit Besteck, Dreiwegehahn mit Verlängerung;</li><li>• Dreiwegehahn mit Verlängerung mit Infusionsflüssigkeit füllen</li></ul>
3. Durchführung	<ul style="list-style-type: none"><li>• Microclave <b>gründlich</b> desinfizieren: 10x rotierende Wischdesinfektion mit Einweg – Alkoholtupfer (<i>Softesept Pads von BRAUN</i>)</li><li>• Fertigspritze mit 10 ml NaCl® 0.9% ansetzen und stossweise spülen</li><li>• Infusionssystem anschliessen</li><li>• Infusion wie üblich starten</li></ul>

## Appendix 1

### Infusion abhängen

Ablauf	Tätigkeit
1. Patient vorbereiten	<ul style="list-style-type: none"><li>• Patient informieren</li><li>• Rückenlage</li><li>• Arm etwas abgespreizt lagern</li></ul>
2. Material vorbereiten	<ul style="list-style-type: none"><li>• Fertigspritze 10 ml NaCl® 0,9%</li><li>• Sterile Tupfer</li><li>• 2,5 ml Heparin (100 E/ml)</li><li>• 5 ml Spritze mit Kanüle für 2,5 ml Heparin® (100 E/ml)</li></ul>
3. Durchführung	<ul style="list-style-type: none"><li>• Infusion stoppen</li><li>• Fertigspritze mit 10 ml NaCl® 0.9% am Dreiwegehahn ansetzen</li><li>• Dreiwegehahn öffnen</li><li>• Mit 10 ml NaCl® 0.9% stossweise spülen</li><li>• Dreiwegehahn schliessen</li></ul> <p>Ggf. neue Infusion anhängen, ansonsten:</p> <ul style="list-style-type: none"><li>• 5 ml Spritze mit 2,5 ml Heparin® (100 E/ml) ansetzen</li><li>• Dreiwegehahn öffnen</li><li>• Mit 2,5 ml Heparin® (100 E/ml) spülen</li><li>• Dreiwegehahn mit Verlängerung und Dreiwegehahn entfernen</li></ul>

### Achtung

- **Verbandwechsel wird durch das OPAT Team 1 mal pro Woche durchgeführt.**
- **Microclavewechsel wird durch das OPAT Team 1 mal pro Woche durchgeführt.**

### Bitte dran denken

- **Bitte den Microclave niemals wegnehmen**
- **Die Klammer bleibt immer offen wenn der Microclave dran ist.**

**Bei Unklarheiten bitte Pflegerichtlinie 7.3.3 anschauen bzw. Kontaktaufnahme mit OPAT Team, Tel. 65424**



## **PICC Line Handhabung beim Anschliessen und Abhängen von Easypumps basierend auf Pflegerichtlinie 7.3.3**

### **Zentralvenöser Katheter: Peripherally inserted central catheter (PICC)**

**PICC Line:** PICC ist die Abkürzung für Peripherally Inserted Central Catheter und bezeichnet einen peripher eingelegten Zentralvenenkatheter, also einen Katheter, der Ultraschall-gesteuert in eine Oberarmvene eingelegt und dessen Spitze unter Durchleuchtung nahe dem Herz in der Vena cava superior platziert wird.

Das Legen sowie der Umgang mit zentralvenösen Kathetern erfordert zwingend ein aseptisches Vorgehen. Vor **jeder Manipulation am PICC ist eine hygienische Händedesinfektion erforderlich.**



PICC Line mit Microclave



Microclave



Easypump

### **Beschreibung der Interventionen**

#### **Easypump anschliessen**

<b>Ablauf</b>	<b>Tätigkeit</b>
1. Material vorbereiten	<ul style="list-style-type: none"> <li>• 1 Fertigspritze 10 ml NaCl® 0,9 %</li> <li>• Gefüllte Easypump® 30-60 Min. vor dem Wechsel beim Patienten aus dem Kühlschrank nehmen.</li> <li>• Ein Vorziehen des Pumpenwechsels ist problemlos möglich, eine Verzögerung um mehr als 1 h sollte aber vermieden werden.</li> </ul>
2. Patient vorbereiten	<ul style="list-style-type: none"> <li>• Patient informieren</li> <li>• Rückenlage</li> <li>• Arm etwas abgespreizt lagern</li> </ul>
3. Durchführung	<ul style="list-style-type: none"> <li>• Microclave <b>gründlich</b> desinfizieren: 10x rotierende Wischdesinfektion mit Einweg – Alkoholtupfer (<u>Softesept Pads von BRAUN</u>)</li> <li>• Beim Patienten die Klemme der laufenden Pumpe schliessen und diese abhängen und entsorgen.</li> <li>• Die PICC Leitung mit 10ml NaCl 0.9% (Posiflush-Fertigspritze) durchspülen.</li> <li>• Neue Pumpe anschliessen: Patientennahe Verschlusskappe öffnen und mit der Microclave clear® konnektieren. Verschlussklemme am Pumpensystem zum Start der Infusion öffnen.</li> <li>• Das kurze Stück Schlauch zwischen Patientenanschluss und Partikelfilter muss direkt auf der Haut anliegen. Von der Wärme dieses Schlauchstückes hängt die Fliessgeschwindigkeit ab.</li> </ul>

### **Achtung**

- **Verbandwechsel wird durch das OPAT Team 1 mal pro Woche durchgeführt.**
- **Microclavewechsel wird durch das OPAT Team 1 mal pro Woche durchgeführt.**

### **Bitte dran denken**

- **Bitte den Microclave niemals wegnehmen**
- **Die Klammer bleibt immer offen wenn der Microclave dran ist.**

**Bei Unklarheiten bitte Pflegerichtlinie 7.3.3 anschauen bzw. Kontaktaufnahme mit OPAT Team, Tel. 65424**

Der Patient ist durch die OPAT Pflege angewiesen worden, dass er sich bei Blutrückfluss oder weiteren Problemen mit dem Pumpensystem über die Telefonzentrale mit dem Dienstarzt der Infektiologie verbinden lässt, der dann entscheidet, ob eine Vorstellung auf der Notfallstation sofort zu erfolgen hat.

Er darf in diesem Fall die Verschlussklemme des Pumpensystems schliessen.

Bei Fragen oder Problemen zur Easypump über das Wochenende DA Infektiologie Tel. 86114 bzw. über die Telefonzentrale.

**OPAT-Patientenfeedback**  
Outpatient Parenteral Antimicrobial Therapy

Liebe Patientin, Lieber Patient

Herzlichen Dank, dass Sie sich für OPAT entschieden haben. Um uns zu helfen die Qualität von OPAT kontinuierlich zu verbessern, sind wir auf Ihre Erfahrungen, Ihre Meinung angewiesen.

1) Wie beurteilen Sie die Informationen welche Sie vor dem Spitalaustritt über OPAT erhalten haben?

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> <input type="checkbox"/> Sehr gut   | <input type="checkbox"/> <input type="checkbox"/> Gut           | <input type="checkbox"/> <input type="checkbox"/> Befriedigend |
| <input type="checkbox"/> <input type="checkbox"/> Ungenügend | <input type="checkbox"/> <input type="checkbox"/> Keine Antwort |  |

2) Welche Aussage widerspiegelt Ihre Meinung über den OPAT Service im USB

- |  |  |
|--|--|
| <input type="checkbox"/> <input type="checkbox"/> Übertraf meine Erwartungen | <input type="checkbox"/> <input type="checkbox"/> Erfüllte meine Erwartungen       |
| <input type="checkbox"/> <input type="checkbox"/> Keine Meinung              | <input type="checkbox"/> <input type="checkbox"/> Erfüllte meine Erwartungen nicht |
| <input type="checkbox"/> <input type="checkbox"/> War völlig unbefriedigend  | <input type="checkbox"/> <input type="checkbox"/> Keine Antwort                    |

3) Wie waren die Wartezeiten?

- |  |   |
|--|---|
| <input type="checkbox"/> <input type="checkbox"/> Kurz | <input type="checkbox"/> <input type="checkbox"/> Akzeptabel    |
| <input type="checkbox"/> <input type="checkbox"/> Lang | <input type="checkbox"/> <input type="checkbox"/> Keine Antwort |

4) Wie beurteilen Sie die Unterstützung welche Sie von USB OPAT Team erhalten haben?

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> <input type="checkbox"/> Überraschend | <input type="checkbox"/> <input type="checkbox"/> Gut           | <input type="checkbox"/> <input type="checkbox"/> Befriedigend |
| <input type="checkbox"/> <input type="checkbox"/> Schlecht     | <input type="checkbox"/> <input type="checkbox"/> Keine Antwort |  |

5) Wie beurteilen Sie die Unterstützung welche Sie von der SPITEX / dem Hausarzt nach dem Spitalaustritt erhalten haben?

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> <input type="checkbox"/> Überraschend | <input type="checkbox"/> <input type="checkbox"/> Gut           | <input type="checkbox"/> <input type="checkbox"/> Befriedigend |
| <input type="checkbox"/> <input type="checkbox"/> Schlecht     | <input type="checkbox"/> <input type="checkbox"/> Keine Antwort |  |

6) Haben Sie unerwünschte Wirkungen wahrgenommen?

- |  |  |
|--|--|
| <input type="checkbox"/> <input type="checkbox"/> Nein | <input type="checkbox"/> <input type="checkbox"/> Ja |
|--|--|

Falls Ja, Welche?

☐ Hautausschlag

☐ Durchfall

☐ Fieber, Kälte- oder Wärmegefühle, stark erhöhte Temperatur

☐ Schmerzen, Rötung und/oder Schwellung um die Einstichstelle.

☐ Andere (Bitte detaillieren)

7) Ist Ihrer Meinung nach OPAT der stationären Therapie vorzuziehen?

☐ Ja

☐ Nein

☐ Nicht sicher

☐ Keine Antwort

Was sind für Sie die Vor- / Nachteile der ambulanten gegenüber der stationären Therapie?

8) Konnten Sie während der OPAT Therapie wieder arbeiten, zur Schule, an die Universität gehen?

☐ Ja

☐ Nein

☐ Arbeite / Studiere nicht

☐ Keine Antwort

9) Würden Sie diese ambulante Behandlung, falls nötig, wieder akzeptieren?

☐ Ja

☐ Nein

☐ Nicht sicher

☐ Keine Antwort

Kommentare / Verbesserungsvorschläge

Herzlichen Dank für Ihr Feedback. Retournieren Sie den Fragebogen an das OPAT-Team, oder an die Koordination der Medizinischen Poliklinik oder der Tagesklinik

Das Ausfüllen des Fragebogens ist freiwillig. Die Angaben werden vertraulich behandelt.

Universitätsspital Basel  
Medizinische Poliklinik  
OPAT  
Petersgraben 4  
4031 Basel  
OPAT-Nurse 061 556 54 24 (Mo – Fr 10 – 16 Uhr)  
opat.infektiologie@usb.ch

## Appendix 4

---

**Frage 1: Wie beurteilten Sie die Informationen, welche Sie vor dem Spitalaustritt über OPAT erhalten haben?**

Sehr gut: 57.6%	Gut: 29.4%	Befriedigend: 2.4%	Ungenügend: 3.5%	Keine Antwort: 7.1%
-----------------	------------	--------------------	------------------	---------------------

**Frage 2: Welche Aussage widerspiegelt Ihre Meinung über den OPAT Service am USB? Meine Erwartungen wurden....**

Uebertroffen: 44.7%	Erfüllt : 50.6%	Nicht erfüllt: 0%	Keine Antwort: 4.7%
---------------------	-----------------	-------------------	---------------------

**Frage 3: Wie beurteilen Sie die Wartezeiten?**

Kurz: 77.6%	Akzeptable: 21.2%	Lang: 1.2%	Keine Antwort: 0%
-------------	-------------------	------------	-------------------

**Frage 4: Wie beurteilen Sie die Unterstützung, welche Sie vom OPAT Team im USB erhalten haben?**

Ueberragend: 84.7%	Gut: 15.3%	Befriedigend: 0%	Schlecht: 0%	Keine Antwort: 0%
--------------------	------------	------------------	--------------	-------------------

**Frage 5: Wie beurteilen Sie die Unterstützung, die Sie von Spitex / Hausarzt nach dem Spitalaustritt erhalten haben?**

Ueberragend: 10.6%	Gut: 10.6%	Befriedigend: 3.5%	Schlecht: 4.7%	Keine Antwort: 70.6%
--------------------	------------	--------------------	----------------	----------------------

**Frage 6: Haben Sie unerwünschte Wirkungen wahrgenommen?**

Ja: 29.4%	Nein: 70.6%	Keine Antwort: 0%
-----------	-------------	-------------------

**Frage 7: Ist Ihrer Meinung nach OPAT der stationären Therapie vorzuziehen?**

Ja: 80%	Nein: 5.9%	Nicht sicher: 3.5%	Keine Antwort: 10.6%
---------	------------	--------------------	----------------------

**Frage 8: Konnten Sie während der OPAT Therapie Ihrer normalen Tätigkeit nachgehen (Arbeit, Schule)?**

Ja: 52.9%	Nein: 21.2%	Arbeite/Studiere nicht: 17.6%	Keine Antwort: 8.3
-----------	-------------	-------------------------------	--------------------

**Frage 9: Würden Sie diese ambulante Behandlung, falls nötig, wieder akzeptieren?**

Ja: 92.9%	Nein: 0%	Nicht sicher: 3.5%	Keine Antwort: 3.6%
-----------	----------	--------------------	---------------------

---