

Received:  
November 29, 2024  
Revision accepted:  
March 19, 2025  
Published online:  
March 31, 2025

# THE CLINICAL PHARMACIST'S ROLE IN THE ENT PERIOPERATIVE PERIOD: PRELIMINARY RESULTS FROM 30 PATIENTS

Contributions:  
A Study design/planning  
B Data collection/entry  
C Data analysis/statistics  
D Data interpretation  
E Preparation of manuscript  
F Literature analysis/search  
G Funds collection

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## Abstract

**Introduction:** Prehabilitation usually consists of several key elements: (1) elimination of addictions, e.g. smoking; (2) appropriate nutritional preparation for malnourished patients; (3) tailored physical exercise can help improve body efficiency; (4) consultation with a psychologist is important for oncological patients but also before any surgical procedure. The aim of the study is to set out the pre- and postoperative roles of the pharmacist in otolaryngological (non-oncological) procedures such as: (1) ventilation drainage; (2) sinus surgery; and (3) adenotonsillotomy, adenoidectomy, tonsillotomy. The study is based on medical histories and postoperative recommendations.

**Material and methods:** A non-invasive, retrospective study was conducted based on 30 anonymized patient records, which included initial diagnosis, subjective examination, interview, physical examination, final qualification, procedure description, applied treatment, test results and consultations, epicrisis, and recommendations. The study specifically analyzed patients who were on regular medication prior to surgery. The study was based on the analysis of medical histories and postoperative recommendations of 30 patients, 24 adults and 6 children. The study specifically analyzed patients who were on regular medication prior to surgery and excluded oncological diseases. The study was approved by the ethics committee.

**Results:** The data analysis documented key areas of the pharmacist's role. The most important interactions were detected after clarithromycin administration. The analysis also looked at diet after surgery, pain management, and choice of the safest treatment option following surgery: paracetamol.

**Conclusions:** Our conclusions emphasize the comprehensive role of the pharmacist within the interdisciplinary team, contributing to the recovery of patients after surgery. The collaboration of pharmacists with patients, doctors, and other health specialists is crucial for achieving the best therapeutic outcomes and ensuring optimal care.

**Keywords:** pharmacist • otolaryngology • pharmaceutical care • prehabilitation

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## ROLA FARMACEUTY KLINICZNEGO W OKRESIE OKOŁOOPERACYJNYM W OTORYNOLARYNGOLOGII: WSTĘPNE WYNIKI BADAŃ 30 PACJENTÓW

### Streszczenie

**Wprowadzenie:** Prehabilitacja składa się zazwyczaj z kilku kluczowych działań: 1) eliminowanie nałogów, np. palenia tytoniu; 2) u pacjentów niedożywionych konieczne jest odpowiednie przygotowanie żywieniowe; 3) odpowiednio dostosowany wysiłek fizyczny może przyczynić się do poprawy ogólnej sprawności organizmu; 4) ważna jest konsultacja psychologiczna, zwłaszcza dla pacjentów onkologicznych, ale może być również istotna przed zabiegami chirurgicznymi. Celem badania było określenie przed- i pooperacyjnej roli farmaceuty w zabiegach z obszaru otorynolaryngologii (z wyłączeniem zabiegów z obszaru onkologii), takich jak: drenaż wentylacyjny i operacje zatok, a także adenotomia, adenoidektomia i tonsillotomia. Badanie oparto na wywiadach medycznych i zaleceniach okołoperacyjnych.

**Materiał i metody:** Nieinwazyjne, retrospektywne badanie przeprowadzono z wykorzystaniem zanonimizowanych kart historii choroby pacjentów, które zawierały następujące informacje: wstępna diagnoza, badanie podmiotowe, wywiad, badanie fizykalne, ostateczna kwalifikacja, opis procedury, zastosowane leczenie, wyniki badań i konsultacji, epikryza i zalecenia. Badanie opierało się na analizie historii choroby i zaleceń pooperacyjnych 30 pacjentów – osób dorosłych i dzieci. W badaniu przeanalizowano m.in. karty pacjentów, którzy przyjmowali regularne leki przed operacją. Pacjenci z chorobami onkologicznymi w zakresie otorynolaryngologii nie zostali uwzględnieni w analizie. Badanie uzyskało pozytywną zgodę komisji bioetycznej.

**Wyniki:** Analiza danych umożliwiła obserwację najważniejszych obszarów roli farmaceutów w opiece farmaceutycznej. Najważniejsze interakcje wykryto po podaniu klarytromycyny. Wyniki analizy obejmują również: analizę diety po operacji, plan leczenia bólu po operacji i wybór bezpieczniejszej opcji leczenia po operacji: paracetamolu.

**Wnioski:** Wnioski z analizy podkreślają wszechstronną rolę farmaceuty w interdyscyplinarnym zespole w opiece farmaceutycznej, która przyczynia się do prawidłowego powrotu do zdrowia pacjentów po operacji. Współpraca farmaceutów z pacjentami, lekarzami i innymi specjalistami jest kluczowa dla osiągnięcia najlepszych efektów terapeutycznych i zapewnienia optymalnej opieki farmaceutycznej w otorynolaryngologii.

**Słowa kluczowe:** farmaceuta • otorynolaryngologia • opieka farmaceutyczna • prehabilitacja

## Introduction

Proper patient preparation for surgery is crucial in surgical procedures. The personalization of patient therapy and surgical care delivery is a key aspect of modern healthcare, significantly evolving alongside the multidisciplinary healthcare (MDH) approach. Clinical pharmacists have been successfully integrated into various healthcare systems worldwide. However, the role of clinical pharmacists in surgical care remains underexplored in the literature [1].

The role of a clinical pharmacist typically consists of several key components: (1) elimination of addictions, such as smoking, which is a risk factor for serious diseases and postoperative complications (e.g., wound infections, pneumonia, increased mortality); (2) nutritional optimization for malnourished or cachectic patients, as surgery in such individuals poses a higher risk of complications, although dietary interventions extend to a broader patient group; (3) tailored physical exercises to enhance overall fitness, including breathing exercises and functional training (e.g., getting out of bed post-surgery – even minor physical activity can support anabolic processes, aiding in weight recovery and wound healing); (4) psychological support, especially for oncological patients but also for all those undergoing surgery (to help them understand the treatment and alleviate preoperative and postoperative anxiety, ultimately improving well-being and treatment outcomes); (5) medication reconciliation: reviewing patients' medication history to prevent drug interactions and ensure the proper continuation or discontinuation of certain medications before surgery; (6) risk assessment: identifying medications that may increase surgical risks, such as anticoagulants, antiplatelets, or immunosuppressants, and recommending adjustments; (7) patient education: advising patients on which medications to take or avoid before surgery and explaining perioperative medication management; (8) optimizing therapy: ensuring patients are in optimal condition for surgery, such as managing blood glucose levels in diabetic patients or optimizing pain management strategies; (9) pain management: recommending appropriate analgesics while minimizing opioid use and reducing the risk of adverse effects; (10) infection prevention: ensuring the proper use of antibiotics for surgical site infection prophylaxis and treatment; (11) medication safety: monitoring for potential drug interactions and side effects due to new or adjusted postoperative medications; (12) patient discharge planning: providing counselling on medication adherence, tapering pain medications, and preventing complications at home.

The perioperative period encompasses both preoperative and postoperative phases, which may last from a few days

to several weeks, depending on the complexity of the surgery. Pharmacists, as part of an interdisciplinary team, can play a significant role in preparing patients for surgery.

This study aims to set out the role of pharmacists in preparing patients for non-oncological otolaryngological procedures, including ventilation drainage, sinus surgeries, adenotonsillotomy, adenoidectomy, and tonsillotomy, as well as in the postoperative period based on medical history and postoperative recommendations.

## Material and methods

This work is based on 30 patients (24 adult patients and 6 children). A retrospective study was conducted based on anonymized medical records from the International Center of Hearing and Speech. The study received approval from the Bioethics Committee (approval number: IFPS: KB/Statement No. 1/2023).

The initial analysis used 30 anonymized patient charts containing details on initial diagnosis, physical examination, patient interviews, final surgical qualification, procedure descriptions, treatments administered, diagnostic results, consultations, epicrisis, and recommendations. This observational cross-sectional study employed a mixed-methods approach based on retrospective patient data analysis, incorporating quantitative data on medication usage and dietary adherence, as well as qualitative observations on patient compliance and pharmacist recommendations. The inclusion criteria included: (1) patients undergoing various otorhinolaryngological procedures (both adults and children, regardless of gender); (2) procedures: adenotomy, tympanotomy, septoplasty, and various sinus surgeries; (3) availability of detailed medical documentation, including blood test results, medication use, and postoperative recommendations; (4) no contraindications to surgery due to severe chronic diseases or acute conditions at the time of qualification. The exclusion criteria included: (1) significant allergies to administered drugs (e.g., penicillins, clindamycin); (2) uncontrolled chronic diseases (e.g., severe diabetes, hypertension); (3) factors affecting surgical safety, such as thrombosis risk or use of medications interacting with perioperative pharmacotherapy; (4) active infections, severe blood clotting disorders, or other conditions increasing the risk of complications.

## Results

The retrospective analysis of anonymized patient records focused on medication usage before and after surgery. Postoperative prescriptions, dosages, potential drug

**Table 1.** Potential areas of activity of the pharmacist in ENT surgery

Possible pharmacist interventions	Examples of pharmacist's activities
Optimisation of pharmacological and non-pharmacological treatment of chronic patient conditions	Evaluation and optimization of nutrition, in cooperation with a dietician, including the assessment of the legitimacy of dietary supplements taken (e.g. in the case of otorhinolaryngological procedures in the preoperative period, e.g. fish oil or shark liver oil). Recommendation of weight loss programs, if indicated – weight reduction and introduction of effective methods of weight reduction. Optimization of pharmacological and non-pharmacological treatment in pharmacotherapy of chronic diseases such as diabetes, hypertension.
Developing a medication plan before surgery	Drug conciliation, including a review of herbal preparations, dietary supplements, and over-the-counter (OTC) and prescription medicines. As part of an interdisciplinary team, preparation of a plan for drugs used chronically in the days preceding surgery, including determining which drugs to take and which to withhold, adjusting doses, e.g. insulin. Stratification of the risk of postoperative thrombosis and associated recommendations for anticoagulant therapy, bridging, and/or prophylaxis. Assessment and plan for chronic pain, including optimization of the use of analgesics according to the WHO “analgesic ladder”; gradual reduction of doses; or identification of the need for alternative forms of medicine or routes of administration.
Planning of procedures aimed at reducing postoperative risks and complications	Developing a smoking cessation plan (e.g. in the area of otorhinolaryngology, especially before or after sinus surgeries, as external factors such as exposure to tobacco smoke, overuse of air conditioning, are factors that are unfavorable for the sinuses).
Patient education and counseling	Presentation of the possibility of postoperative pain and education on the appropriate and safe use of analgesics. Explanation of the prescribed medication regimen and education on the need to take medications, adherence to dosage (e.g., in the case of antibiotics, maintaining appropriate intervals in antibiotic intake); selection of the appropriate probiotic and/or prebiotic during antibiotic therapy.
Monitoring for adverse reactions in connection with the introduction of treatment	Monitoring of adverse reactions in such groups of drugs as: antibiotics, analgesics, drugs used in the prevention and treatment of hemorrhage. Reporting of the above-mentioned adverse reactions.
Monitoring the treatment of postoperative wounds	Proper care of the postoperative wound and patient education in this area. Recommendations on the use of appropriate dressings, wound disinfection products. Special attention should be paid to sinus surgeries (postoperative dressing is placed in the nasal cavity; education in breathing techniques when the dressing is in the nasal cavity).

interactions, and pharmacist recommendations were analyzed. **Supplementary Table 1** lists data on the 30 patients, including blood test results, surgery type and date, postoperative recommendations, sex, age at surgery, chronic medications, and drug allergies. It is divided into **Supplementary Table 1A** (24 adults) and **Supplementary Table 1B** (6 children). Detailed analysis was conducted on patients who were regularly taking medications preoperatively: 6 cases were selected for further review, as postoperative recommendations were often similar, making analysis of all 30 cases unnecessary. **Supplementary Table 2** details patient medication data, postoperative recommendations, preoperative medications, potential pharmaceutical interventions, and identified drug interactions or side effects. The supplementary tables are available for download from the “Journal of Hearing Science” website ([www.journalofhearing-science.com](http://www.journalofhearing-science.com)).

In **Table 1** we set out categories of potential areas where the pharmacist could be involved in ENT surgery.

## Discussion

There is limited research on prehabilitation in otorhinolaryngology, with most studies focusing on head and neck oncological diseases [2,3]. Prehabilitation is less emphasized in nasal, sinus, and ear surgeries. The reviewed cases highlight dietary factors influencing bleeding risk, such as fish oils, particularly in tonsil surgery. Certain studies dispute the importance of dietary modifications for postoperative recovery [5–7]. Smoking cessation is crucial for improved postoperative outcomes in sinus surgery [9,10]. Pharmacists can assist by educating patients on smoking cessation benefits and offering pharmacological support (e.g., cytosine or nicotine replacement therapy). Reducing antibiotic use is another area of pharmacist involvement. The National Antibiotic Protection Program highlights pharmacists' roles in hospital antibiotic stewardship teams, aiming to reduce antibiotic resistance [10,11]. Each patient's antibiotic therapy should be individualized.

The Polish Society of Clinical Pharmacy emphasizes the importance of drug reconciliation in improving patient

safety. Pharmacists help prevent pharmacotherapy errors, enhance patient communication, and identify potential drug interactions. In the preoperative period, the most important aspect is proper preparation of the patient. In the case of children and surgeries in the throat area, the most important thing is to limit dietary supplements (e.g. cod liver oil), which could affect the risk of postoperative bleeding. In the case of adults, who statistically take more medications chronically than children, consultation on discontinuing medications that could affect postoperative results is useful. Examples of such medications include painkillers, antiplatelet drugs (at the doctor's discretion), anticoagulants, and vitamins, especially A and E.

Probiotic and prebiotic use during antibiotic therapy is another area of pharmacist involvement, helping mitigate antibiotic-associated diarrhoea and restore gut microbiota [11–13]. Pharmacists can guide patients in selecting effective probiotic strains.

Pharmacists also play a key role in educating patients on correct medication use, storage, and administration. For instance, tranexamic acid may require guidance on proper handling (e.g., using a needle and syringe for administration). Postoperative pain management is another pharmacist area of interest. Paracetamol is the preferred analgesic, with a maximum daily dose of 4 g for adults and 10–15 mg/kg for children. NSAIDs are generally avoided due to their impact on platelet function, prolonged bleeding risk, and interactions with glucocorticoids, oral anti-diabetic drugs, and  $\beta$ -blockers. The WHO analgesic ladder should guide escalation to stronger pain management when needed. Additionally, postoperative throat pain may require local anesthetics or voice-supportive treatments. Dietary recommendations include soft foods for 14 days post-surgery and avoiding spicy, hot, and hard foods.

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## Study limitations

The relatively small sample size (24 adult patients and 6 children) limits the generalizability of findings. The study focused on non-oncological ENT procedures, restricting its applicability to other areas, particularly head and neck oncology. Larger studies could provide broader insights into pharmacist involvement in ENT surgery. Additionally, the observational study design limits direct measurement of pharmacist interventions on recovery time, complication rates, and patient satisfaction. Future randomized controlled trials (RCTs) could offer a more rigorous assessment by incorporating control groups. Future research should also explore pharmacist-led interventions such as NSAID counselling, analgesic treatment plans, and drug reconciliation to reduce postoperative complications.

## Conclusions

This study highlights various aspects of the pharmacist's role in perioperative pharmaceutical care, emphasizing their significance in ensuring safe and effective treatment (e.g. selection of antibiotic dose, justification for using antibiotics after surgery, supportive treatment with steroids). Pharmacists play an important role in drug interaction monitoring, reducing postoperative antibiotic use, and optimizing pain management. More prospective studies are needed to further define the pharmacist's role in non-oncological ENT procedures.

## Funding

This research and article did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

## Supplementary material

The supplementary tables (1A, 1B and 2) are available at <https://www.journalofhearingscience.com/>

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