

## ORIGINAL ARTICLE

# PREVALENCE OF POSTPARTUM ENDOMETRITIS AND ANTIMICROBIAL RESISTANCE OF RESPONSIBLE PATHOGENS IN UKRAINE: RESULTS A MULTICENTER STUDY (2015-2017)

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## ABSTRACT

**The aim:** To obtain the prevalence of postpartum endometritis women and antimicrobial resistance of responsible pathogens in Ukraine.

**Materials and methods:** We performed a retrospective multicenter cohort study. The study population consisted of all women who had a vaginal delivery or cesarean section in 14 Regional Women's Hospitals of Ukraine.

**Results:** Total 2460 of 25,344 patients were found to have postpartum endometritis, for an overall infection rate of 9.7%. The postpartum endometritis rates were 7.6% after vaginal delivery and 16.4% after cesarean section. Incidence of postpartum endometritis after cesarean section is affected mainly by the mode of delivery (scheduled caesarean deliveries (done before labor starts) – 13.8% and unscheduled caesarean deliveries (done after labor starts) – 22.5%). The predominant pathogens were: *Escherichia coli* (32.7%), *Enterococcus faecalis* (13.0%), *Streptococcus* spp. (12.1%), *Klebsiella* spp. (10.4%) and *Enterobacter* spp. (10%). Among the antimicrobial agents tested, the ertapenem, piperacillin/tazobactam, and cefotaxim were the most consistently active in vitro against Enterobacteriaceae in both vaginal deliveries and after cesarean section infections. The overall proportion of extended spectrum beta-lactamase (ESBL) production among Enterobacteriaceae was 22.8% and of methicillin-resistance in *Staphylococcus aureus* (MRSA) 15.4%.

**Conclusions:** Postpartum endometritis and antimicrobial resistance of responsible pathogens presents a significant burden to the hospital system. Postpartum infections surveillance is required in all women's hospitals. This knowledge is essential to develop targeted strategies to reduce the incidence of postpartum infections.

**KEY WORDS:** Postpartum endometritis; vaginal delivery; cesarean section; antimicrobial resistance; pathogens

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## INTRODUCTION

Bacterial infections during labour and the puerperium are among the leading causes of maternal morbidity and mortality worldwide [1, 2]. Postpartum endometritis is the most common infectious complications following childbirth and occurs in women from 1% to 30% [3-9]. This infection is more common after cesarean section than with vaginal delivery [10]. This is of particular concern as the number of Cesarean deliveries annually continues to rise and accounted for approximately 30% of all deliveries [11, 12]. Postpartum endometritis is also the major cause of prolonged hospital stay and comprise a large burden to health care system [9].

The epidemiology of postpartum endometritis is not well understood and remains underestimated because surveillance systems are often limited to the acute care setting.

Bacterial postpartum endometritis is a polymicrobial infection usually involving two or three different organisms. It is often a mixed aerobic and anaerobic flora [3].

The resistance of bacteria to antibiotics increases and creates a therapeutic problem for doctors in the treatment of patients with postpartum endometritis. Guidelines encourage consideration of local bacterial resistance when prescribing antibiotics for postpartum infection treatment and prophylaxis [2, 3, 13, 14]. However, studies of postpartum infections and antimicrobial resistance of responsible pathogens are scant.

To identify postpartum endometritis prevention targets and reduce thus disparities between countries, ongoing surveillance is necessary. However, the epidemiology of postpartum endometritis in Ukraine and associated treatment outcomes are not well studied. National network