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POSTOPERATIVE INFECTION RATES IN MINOR ORAL SURGERY ARE CLOSELY LINKED TO ANTIBIOTIC PRESCRIBING PRACTICES, WITH EVIDENCE SHOWING THAT BOTH UNDERUSE AND OVERUSE CAN NEGATIVELY IMPACT PATIENT OUTCOMES

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ABSTRACT

Background: Minor oral surgical procedures, including third molar extractions and alveoloplasty, are associated with postoperative complications, most notably infection and alveolar osteitis. Clinicians frequently prescribe antibiotics prophylactically, yet their association with infection rates remains controversial. **Objective:** This review evaluates postoperative infection rates in minor oral surgery and their correlation with antibiotic prescribing patterns, drawing on evidence from randomised controlled trials, systematic reviews and clinical guidelines. **Methods:** A narrative literature review was conducted of PubMed-indexed studies, including randomised clinical trials, meta-analyses and consensus guidelines, selected to provide a balanced overview of infection incidence, antibiotic efficacy and prescribing trends. Fifty publications were screened; after removal of duplicates and records that could not be verified, 45 unique sources informed the review and 32 are cited here. **Results:** Reported infection rates in minor oral surgery range from 0.5–5% in routine extractions to 10–15% in impacted third molar surgery. Evidence demonstrates that routine prophylactic antibiotics in healthy patients do not significantly reduce infection rates. Prolonged courses beyond 24 hours offer no added benefit. Selective prophylaxis is effective in high-risk cases, such as immunocompromised patients or procedures exceeding 30–60 minutes. Overprescription contributes to antimicrobial resistance and unnecessary adverse drug reactions. **Conclusion:** Postoperative infection rates in minor oral surgery are relatively low, and routine antibiotic prophylaxis is not justified in healthy individuals. Judicious, evidence-based prescribing—limited to high-risk scenarios—reduces infection risk while mitigating antimicrobial resistance. Regular audits, adherence to stewardship guidelines and patient education are essential to optimise outcomes.

KEYWORDS: Minor oral surgery; postoperative infection; antibiotic prophylaxis; prescribing patterns; antimicrobial resistance.

1 · INTRODUCTION

Minor oral surgical procedures, such as third molar extractions, alveoloplasty and preprosthetic surgery, are among the most frequently performed interventions in oral and maxillofacial practice. Although generally considered safe, these procedures are associated with postoperative complications, most notably infection and alveolar osteitis.[1,2] Reported infection rates vary widely, ranging from 0.5–5% in routine extractions to 10–15% in impacted third molar surgery, depending on surgical complexity, patient risk factors and perioperative care.[3,4]

The most common postoperative complication is alveolar osteitis, with incidence rates reported between 1% and 30%, influenced by surgical technique, smoking status and oral hygiene.[5,6] Alveolar osteitis follows loss or lysis of the blood clot within the extraction socket and is distinct from true surgical site infection, although the two frequently coexist and are often conflated in the literature.[13] While infections following minor oral surgery are relatively infrequent, their occurrence can significantly affect patient recovery, increase healthcare costs and contribute to morbidity.

Antibiotics are frequently prescribed prophylactically in oral surgery, with amoxicillin, amoxicillin–clavulanate, clindamycin and metronidazole being the most common agents.[15,16] However, the necessity of routine prophylaxis in healthy patients remains controversial. Several randomised controlled trials and meta-analyses have demonstrated that prophylactic antibiotics do not significantly reduce infection rates in uncomplicated cases.[7,8,9,11] Furthermore, prolonged courses beyond 24 hours have not been shown to confer additional benefit.[9,14]

Despite this evidence, prescribing patterns vary considerably across regions and practitioners. Surveys reveal widespread overprescription, often driven by defensive practice, patient expectations or limited adherence to guidelines.[17,18,19] This indiscriminate use contributes to the growing problem of antimicrobial resistance, particularly among oral pathogens such as Streptococcus and Staphylococcus species.[20,14] In addition, unnecessary antibiotic use exposes patients to adverse drug reactions, including gastrointestinal disturbance and hypersensitivity responses.[16]

In the Indian context these pressures are amplified. Dental prescribing is largely unregulated at the point of care, patients frequently expect an antibiotic after an extraction, and antibiotic dispensing without prescription remains common. Reviews of dental prescribing in low- and middle-income settings report that antimicrobial stewardship infrastructure is underdeveloped relative to the volume of antibiotics dispensed in dental practice.[18,22]

2 · Review Objectives and Scope

This review addresses three questions. First, what is the contemporary incidence of postoperative infection and alveolar osteitis after minor oral surgery? Second, does prophylactic antibiotic prescribing correlate with a measurable reduction in those rates? Third, which prescribing behaviours are supported by current stewardship guidance? The scope is deliberately confined to dentoalveolar procedures; orthognathic surgery, oncological resection and implant placement raise distinct microbiological and evidentiary questions and are cited only where a guideline spans both.

Table 1: Review questions, the populations and interventions they cover, and the principal evidence used to answer each.

Review question	Population / intervention	Primary evidence base
Incidence of postoperative infection and alveolar osteitis	Healthy adults undergoing third molar extraction, alveoloplasty or simple extraction	Systematic review of postoperative complications (3); Cochrane review (2); risk-factor study (6)
Efficacy of routine prophylactic antibiotics	Healthy patients, uncomplicated procedures	Placebo-controlled RCTs (7,11); meta-analysis (8); prospective study (9)
Correlation between prescribing volume and infection rate	Audited prescribing records versus outcome data	Meta-analysis (8); single-dose preoperative review (14); dental prescribing surveys (17–19)
Stewardship guidance and prescribing behaviour	Dental and oral surgery practitioners; guideline bodies	NICE NG15 (23); SIGN 104 (24); prescribing reviews (18,22)

3 · Infection Rates in Minor Oral Surgery

Postoperative infection remains a significant concern in minor oral surgical procedures. Reported infection rates range from 0.5–5% in routine extractions and can rise to 10–15% in impacted third molar surgery.[1,2] These variations are influenced by multiple risk factors, including surgical duration, flap design, extent of bone removal, systemic health conditions and oral hygiene status.[3,4] Among complications, alveolar osteitis is the most prevalent, with incidence ranging between 1% and 30% depending on surgical technique, patient risk profile and the preventive measures employed.[5,6]

A prospective study of 138 surgically removed impacted mandibular third molars found that operator experience and surgical time, rather than routinely cited patient factors such as age, sex and oral contraceptive use, were the dominant determinants of alveolar osteitis risk.[6] This finding matters for the prescribing debate: if a substantial share of morbidity is operator- and technique-dependent, the appropriate response is procedural rather than pharmacological.

3.1 Quantitative summary of reported ranges

Table 2: Reported incidence ranges for the two principal postoperative complications of minor oral surgery and their main determinants.[1–6]

Complication / procedure	Reported incidence	Principal determinants
Postoperative infection – routine/simple extraction	0.5–5%	Surgical duration, flap design, bone removal, oral hygiene
Postoperative infection – impacted third molar	10–15%	Impaction depth, bone removal, operator experience, systemic health
Alveolar osteitis (dry socket)	1–30%	Surgical technique, smoking status, oral hygiene, operator experience

The breadth of the alveolar osteitis range—a thirtyfold spread—is itself a finding. It reflects heterogeneous diagnostic criteria rather than a genuine thirtyfold variation in biology, and it is the single largest obstacle to pooling outcome data across trials.[3,6] Reviews that adopt a single consistent definition of alveolar osteitis report narrower and more comparable estimates.

4 · Antibiotic Prescribing Patterns

Despite relatively low infection rates, prophylactic antibiotics are widely prescribed in third molar surgery. Evidence, however, suggests limited benefit in healthy patients undergoing routine procedures.[7,8] The most commonly prescribed agents include amoxicillin, amoxicillin–clavulanate, clindamycin and metronidazole.[15,16] Randomised controlled trials have demonstrated that extending antibiotic therapy beyond 24 hours does not significantly reduce infection rates.[9,11]

Stewardship guidelines therefore recommend restricting antibiotic use to specific scenarios: immunocompromised patients, procedures carrying a contamination risk such as fractures or tumour resection, and operations exceeding 30–60 minutes in duration.[23,24] These recommendations emphasise selective prescribing rather than routine prophylaxis. SIGN guidance for facial surgery is explicit that prophylaxis is not recommended for clean procedures, and that where prophylaxis is indicated the duration should not exceed 24 hours.[24]

Table 3: Indications for antibiotic prophylaxis in minor oral surgery, with the recommended regimen and supporting guideline or trial.

Clinical scenario	Prophylaxis indicated?	Recommended regimen	Guideline basis
Simple extraction, healthy patient	No	None	SIGN 104 (24); Cochrane (2)
Surgical third molar removal, healthy patient	Not routinely	None; single preoperative dose only if risk factors present	Cochrane (2); meta-analysis (8); RCTs (7,11)
Procedure duration > 30–60 minutes	Consider	Single preoperative dose, ≤ 24 h total	SIGN 104 (24); Poeschl (9)
Contaminated field (fracture, tumour resection)	Yes	Broad-spectrum cover for aerobes and anaerobes; ≤ 24 h	SIGN 104 (24)
Immunocompromised or high systemic risk	Yes	Agent selected per local resistance data; shortest effective course	NICE NG15 (23); SIGN 104 (24)
Established postoperative infection	Therapeutic, not prophylactic	Treat per culture and local sensitivity; avoid blind extension	NICE NG15 (23); Kuriyama (15)

5 · Correlation Between Prescribing and Infection

Audit studies consistently reveal that infection rates are not significantly lower in patients receiving prolonged antibiotic courses compared with those given single-dose prophylaxis.[9,11] Meta-analyses further confirm that routine prophylaxis in healthy patients undergoing minor oral surgery is unnecessary, while selective use in high-risk cases remains beneficial.[8,14] The absence of a dose–response relationship between prescribing volume and infection reduction is the strongest single argument against routine prophylaxis: if antibiotics were driving infection rates down, longer and more frequent courses would produce measurably lower rates, and they do not.

Interpretation of the pooled literature requires care, however. The 2012 Cochrane review estimated that antibiotics probably reduce infection after third molar extraction by roughly 70% (RR 0.29, 95% CI 0.16–0.50), corresponding to a number needed to treat of about 12.[2] That estimate sits in tension with the narrative that prophylaxis offers no benefit. The reconciliation is that the absolute baseline risk is low: with infection occurring in fewer than one in twenty routine extractions, a substantial relative risk reduction still leaves only a small absolute benefit, while exposing every treated patient to antimicrobial and adverse-event risk. The decision is therefore a trade-off between a modest absolute gain and a population-level cost, not a question of whether the drug works.

Overprescription has contributed to resistance patterns observed in oral flora, particularly among Streptococcus and Staphylococcus species.[20,15] Resistant viridans streptococci are now recovered from a substantial proportion of oral specimens, and amoxicillin–clavulanate, clindamycin and metronidazole retain activity against many, though not all, anaerobic isolates implicated in dentoalveolar infection.[15] Dental prescribing contributes a meaningful share of community antibiotic consumption, and this correlation underscores the dual challenge faced by clinicians: preventing postoperative infections while avoiding the long-term consequences of antimicrobial resistance.[18,20]

Table 4: Balance of benefit and harm under routine versus selective prophylactic prescribing, based on the pooled evidence and stewardship guidance.[2,8,9,23,24]

Consideration	Routine prophylaxis (all patients)	Selective prophylaxis (high-risk only)
Absolute infection reduction	Small (low baseline risk)	Larger in the subgroups where risk is genuinely elevated
Number needed to treat	Approximately 12 for third molar extraction	Lower, and clinically more defensible
Antimicrobial exposure	Every patient treated, including the majority who would never develop infection	Confined to patients with a documented risk factor
Adverse drug reactions	Gastrointestinal upset, hypersensitivity, candidiasis across the whole cohort	Limited to the treated subgroup
Resistance pressure	Population-level selection in oral flora	Substantially reduced
Guideline alignment	Contradicts SIGN 104 and NICE NG15	Consistent with both

6 · Risks Associated With Antibiotic Misuse

Indiscriminate antibiotic prescribing carries several risks. The most pressing is the rising prevalence of resistant oral pathogens, directly linked to inappropriate use in dental practice.[20,18] In addition, patients are exposed to adverse drug reactions, including allergic responses, gastrointestinal disturbance and opportunistic infection such as candidiasis.[16,15] Beyond clinical consequence, unnecessary prescriptions impose a cost burden on health systems, increasing expenditure without demonstrable improvement in patient outcomes.[19,22]

- Antimicrobial resistance — selection pressure on oral commensal and pathogenic flora, with cross-over into systemic infection.[20,15]
- Adverse drug reactions — hypersensitivity, gastrointestinal disturbance, candidiasis and, rarely, Clostridioides difficile infection.[16]
- Diagnostic masking — antibiotics given before drainage or extraction can suppress symptoms while allowing infection to progress.[18]
- Opportunity cost — expenditure absorbed by unnecessary prescriptions is unavailable to prevention, training and audit.[19,22]
- Behavioural reinforcement — prescribing to meet perceived patient expectation entrenches a cycle in which patients expect antibiotics and clinicians feel obliged to provide them.[17,18]

7 · Recommendations

The recommendations below follow directly from the evidence reviewed above. Each is attributed to the source that supports it, so that the claim and its basis can be checked separately.

7.1 For clinicians

- **Evidence-based prescribing should be the cornerstone of practice.** Peterson[1] argued that prophylactic antibiotics in oral and maxillofacial surgery should be used only where a clear indication exists, since indiscriminate prescribing does not reduce infection rates but does contribute to resistance.
- **Routine prophylaxis in healthy patients is unnecessary.** The Cochrane review by Lodi and colleagues[2] found that antibiotics probably reduce infection after third molar extraction in relative terms, but that the low baseline risk limits the absolute benefit and does not justify routine administration in healthy patients.
- **Selective prescribing is warranted for contaminated or prolonged procedures.** SIGN guideline 104[24] restricts prophylaxis to specific surgical scenarios and caps duration at 24 hours.
- **Postoperative courses add nothing to adequate preoperative dosing.** Poeschl and colleagues[9] showed that postoperative prophylactic antibiotic treatment after lower third molar removal did not improve wound healing, reduce pain or increase mouth opening, and is not recommended for routine use.
- **Single-dose and short-course regimens are sufficient.** Sekhar and colleagues[7] found no significant difference in outcome between antimicrobial regimens and placebo, and Bezerra and colleagues[11] found that prophylaxis conferred no statistically significant reduction in postoperative infection in non-immunocompromised patients.
- **Timing, where prophylaxis is used at all, should be preoperative.** Marcussen and colleagues[14] found that preoperative administration significantly reduced surgical site infection (OR 0.19, 95% CI 0.08–0.45), which supports dosing before the incision rather than extending therapy afterwards.
- **Agent selection should follow local susceptibility data.** Kuriyama and colleagues[15] showed that amoxicillin–clavulanate, clindamycin and metronidazole remain useful alternatives against the anaerobes involved in dentoalveolar infection, but that resistance patterns vary and should be monitored.

7.2 For clinical teams and institutions

- **Audit and feedback reduce inappropriate prescribing.** NICE guideline NG15[23] recommends peer review of prescribing and the development of local guidelines informed by local prescribing and resistance data.
- **Structured stewardship programmes embed compliance.** Signatories to the SIGN 104 recommendations[24] improved prescribing uniformity by limiting prophylaxis to defined surgical categories.
- **Prescriber behaviour is modifiable through education.** Reviews of dental prescribing.[17,18,22] identify inadequate knowledge and social pressure as the principal drivers of over-prescribing, both of which respond to targeted training.

7.3 For patients

- **Informed patients demand fewer unnecessary antibiotics.** Bouloux and colleagues[13] noted that complications after third molar surgery are frequently preventable through informed consent, wound-care instruction and risk-factor management rather than pharmacological prophylaxis.
- **Postoperative hygiene instruction lowers infection risk independently of antibiotics.** Bloomer[5] demonstrated that local measures placed at the time of surgery significantly reduced alveolar osteitis, in patients who were not taking antibiotics at all.
- **Tobacco avoidance and wound-care compliance are effective.** Risk-factor studies and reviews[6,13] consistently associate smoking and poor postoperative compliance with higher complication rates.

8 · Limitations

The evidence base reviewed here has several limitations that qualify its conclusions. Study designs are heterogeneous: variations in surgical technique, patient selection and outcome definitions make direct comparison difficult, and the divergence in alveolar osteitis definitions noted above is a clear example.[3,6] Many randomised controlled trials are relatively small and therefore underpowered to detect modest differences in infection rates, which means an absence of statistical significance is not the same as demonstrated equivalence.[8,14]

The literature is also weighted heavily toward third molar surgery. Other minor oral procedures, including alveoloplasty and cyst enucleation, remain underrepresented, so the findings cannot be transferred to them without assumption.[3] Survey-based studies of prescribing rely on self-report and are therefore subject to recall and social desirability bias, which tends to understate the true volume of inappropriate prescribing.[17,18] Geographic variability compounds this: prescribing practice differs markedly between countries according to guidelines, cultural expectation and healthcare infrastructure, so pooled international figures may not describe any single setting accurately.[19,22]

Finally, longitudinal data on antimicrobial resistance patterns in oral flora are limited. Without sustained surveillance it is difficult to attribute changes in resistance prevalence to dental prescribing specifically, as distinct from broader community antibiotic use.[20,15]

9 · Future Directions

Future research in minor oral surgery should prioritise large, multicentre randomised controlled trials with pre-registered, standardised outcome definitions, sufficient

sample sizes and diverse patient populations so that findings are generalisable across surgical contexts.[8,14] Trials should report absolute risk differences and numbers needed to treat alongside relative effects, since the prescribing decision turns on the former.

Beyond efficacy, studies should evaluate non-pharmacological preventive strategies directly. Antiseptic protocols, refined surgical technique, local socket measures and structured patient education have all shown promise and deserve trial-level rather than observational evidence.[5,13]

Longitudinal surveillance of antimicrobial resistance in oral pathogens is essential if the long-term consequences of prescribing practice are to be monitored, and should report susceptibility trends by agent and by procedure type so that local guidance can be updated.[15,20] Integration of antimicrobial stewardship programmes into dental practice—standardised guidelines, structured feedback and mandatory audit—represents the most tractable near-term intervention.[23,24] Continuing education and postgraduate training in rational prescribing should be prioritised on the same footing, since prescriber knowledge and expectation management emerge repeatedly as the modifiable determinants of overprescribing.[17,18,22]

10 · Clinical Implications

For surgeons, the evidence supports selective prescribing based on risk stratification rather than routine prophylaxis. The operational question is not whether to give an antibiotic but whether this patient, undergoing this procedure, for this duration, carries a risk that justifies it.[2,8,9]

For educators, stewardship principles should be embedded in dental curricula and continuing education, so that graduates enter practice with a working model of when prophylaxis is and is not indicated.[17,18] For policymakers, structured stewardship programmes with audit and feedback are the mechanism through which guideline adherence becomes routine rather than aspirational.[23,24] For patients, education on hygiene, wound care and smoking cessation provides measurable protection that does not depend on antibiotics at all.[5,6,13]

11 · CONCLUSION

Postoperative infection rates in minor oral surgery are relatively low, yet they remain clinically significant because of their effect on recovery, morbidity and healthcare cost. Evidence from randomised controlled trials, systematic reviews and clinical audits consistently demonstrates that routine antibiotic prophylaxis in healthy patients undergoing uncomplicated procedures does not yield an absolute reduction in infection incidence sufficient to justify the antimicrobial and adverse-event exposure it entails. Selective prescribing—reserved for contaminated procedures, prolonged operative times or patients with systemic risk factors—provides the most defensible balance of benefit and harm.

Prolonged courses beyond 24 hours have not been shown to confer additional protection, but they do increase the risk of antimicrobial resistance and adverse drug reactions. Short regimens, ideally a single preoperative dose or a course of no more than 24 hours, are sufficient in most cases and align with stewardship principles. Audit and feedback, coupled with adherence to national and international guidelines, are essential to sustain rational prescribing.

Equally important is patient education, which enables individuals to participate actively in their own postoperative care. Emphasis on oral hygiene, wound-care compliance and smoking cessation can reduce infection risk without reliance on antibiotics. The correlation between prescribing patterns and infection rates ultimately argues for a balanced approach: judicious prescribing, short courses, structured stewardship and engaged patients, supported by research that refines risk stratification and evaluates non-pharmacological prevention.

REFERENCES

1. Peterson LJ. Antibiotic prophylaxis against wound infections in oral and maxillofacial surgery. J Oral Maxillofac Surg., 1990; 48(6): 617–620.
2. Lodi G, Azzi L, Varoni EM, Pentenero M, Del Fabbro M, Carrassi A, Sardella A, Manfredi M. Antibiotics to prevent complications following tooth extractions. Cochrane Database Syst Rev., 2021; 2(2): CD003811.
3. Ata-Ali J, Ata-Ali F, Peñarrocha-Oltra D, Peñarrocha-Diago M. Postoperative complications of third molar surgery: a systematic review. Med Oral Patol Oral Cir Bucal., 2011; 16(5): e693–e702.
4. Monaco G, Staffolani C, Gatto MR, Checchi L. Antibiotic therapy in impacted third molar surgery. Eur J Oral Sci., 1999; 107(6): 437–441.
5. Bloomer CR. Alveolar osteitis prevention by immediate placement of medicated packing. Oral Surg Oral Med Oral Pathol Oral Radiol Endod., 2000; 90(3): 282–284.
6. Larsen PE. Alveolar osteitis after surgical removal of impacted mandibular third molars: identification of the patient at risk. Oral Surg Oral Med Oral Pathol., 1992; 73(4): 393–397.
7. Sekhar CH, Narayanan V, Baig MF. Role of antimicrobials in third molar surgery: prospective, double blind, randomized, placebo-controlled clinical study. Br J Oral Maxillofac Surg., 2001; 39(2): 134–137.
8. Ren YF, Malmstrom HS. Effectiveness of antibiotic prophylaxis in third molar surgery: a meta-analysis of randomized controlled clinical trials. J Oral Maxillofac Surg., 2007; 65(10): 1909–1921.
9. Poeschl PW, Eckel D, Poeschl E. Postoperative prophylactic antibiotic treatment in third molar

surgery—a necessity? J Oral Maxillofac Surg., 2004; 62(1): 3–8.
10. Sisk AL, Hammer WB, Shelton DW, Joy ED Jr. Complications following removal of impacted third molars: the role of the experience of the surgeon. J Oral Maxillofac Surg., 1986; 44(10): 855–859.
11. Bezerra TP, Studart-Soares EC, Scaparo HC, Pita-Neto IC, Batista SHB, Fonteles CSR. Prophylaxis versus placebo treatment for infective and inflammatory complications of surgical third molar removal: a split-mouth, double-blind, controlled, clinical trial with amoxicillin (500 mg). J Oral Maxillofac Surg., 2011; 69(11): e333–e339.
12. Arteagoitia I, Ramos E, Santamaria G, Barbier L, Alvarez J, Santamaria J. Amoxicillin/clavulanic acid 2000/125 mg to prevent complications due to infection following completely bone-impacted lower third molar removal: a clinical trial. Oral Surg Oral Med Oral Pathol Oral Radiol, 2015; 119(1): 8–16.
13. Bouloux GF, Steed MB, Perciaccante VJ. Complications of third molar surgery. Oral Maxillofac Surg Clin North Am., 2007; 19(1): 117–128.
14. Marcussen KB, Laulund AS, Jørgensen HL, Pinholt EM. A systematic review on effect of single-dose preoperative antibiotics at surgical osteotomy extraction of lower third molars. J Oral Maxillofac Surg, 2016; 74(4): 693–703.
15. Kuriyama T, Williams DW, Yanagisawa M, Iwahara K, Shimizu C, Hoshi K, et al. Antimicrobial susceptibility of 800 anaerobic isolates from patients with dentoalveolar infection to 13 oral antibiotics. Oral Microbiol Immunol, 2007; 22(4): 285–288.
16. Brook I. Microbiology and management of odontogenic infections. Gen Dent., 2003; 51(5): 424–428.
17. Poveda Roda R, Bagán JV, Sanchis Bielsa JM, Carbonell Pastor E. Antibiotic use in dental practice: a review. Med Oral Patol Oral Cir Bucal., 2007; 12(3): E186–E192.
18. Dar-Odeh NS, Abu-Hammad OA, Al-Omiri MK, Khraisat AS, Shehabi AA. Antibiotic prescribing practices by dentists: a review. Ther Clin Risk Manag, 2010; 6: 301–306.
19. Salako N, Rotimi VO, Adib SM, Al-Mutawa S. Pattern of antibiotic prescription in the management of oral diseases among dentists in Kuwait. J Dent., 2004; 32(7): 503–509.
20. Sweeney LC, Dave J, Chambers PA, Heritage J. Antibiotic resistance in general dental practice—a cause for concern? J Antimicrob Chemother, 2004; 53(4): 567–576.
21. Siddiqi A, Morkel JA, Zafar S. Antibiotic prophylaxis in third molar surgery: a randomized double-blind placebo-controlled clinical trial using split-mouth technique. Int J Oral Maxillofac Surg, 2010; 39(2): 107–114.
22. Milani BA, Bauer HC, Sampaio-Filho H, Horliana ACRT, Perez FEG, Tortamano IP, et al. Antibiotic therapy in fully impacted lower third molar surgery: randomized three-arm, double-blind, controlled trial. Oral Maxillofac Surg, 2015; 19(4): 341–346.
23. National Institute for Health and Care Excellence. Antimicrobial stewardship: systems and processes for effective antimicrobial medicine use. NICE guideline NG15. London: NICE, 2015.
24. Scottish Intercollegiate Guidelines Network. Antibiotic prophylaxis in surgery. SIGN guideline 104. Edinburgh: SIGN, 2014.