**Quantifying MRONJ Risk Before and After Invasive Dental Procedures for Antiresorptive Medication-Treated Patients: A Meta-analysis-Informed Web Platform**

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Introduction

Medication-related osteonecrosis of the jaw (MRONJ) is uncommon, yet prolonged pain and repeat interventions can erode patient–clinician trust. Many anti-resorptive users are unaware that invasive dental treatment markedly increases risk, and dentists face time constraints verifying medications and providing tailored counselling. A concise, evidence-based platform that records anti-resorptive history and communicates individualized, procedure-specific risk is needed.

Objective

To synthesize pooled MRONJ incidences by indication, medication, route, and invasiveness of dental treatment. These data would support a web-based, interactive and personalized risk-evaluation service for patient education.

Method

We meta-analyzed MRONJ incidence stratified by indication (osteoporosis, cancer), drug class (bisphosphonate, Denosumab, Romosozumab), administration route (oral, IV/SC), and presence of invasive dental treatment. Homogeneous strata were pooled with fixed-effects models; heterogeneous or sparse strata were summarized as event-weighted proportions. These tables drive the service’s risk display and bilingual patient handouts.

Results

Across both indications, incidence rose in an ordered step from no medication, to medication only, to medication with invasive dental treatment (osteoporosis: 0.04% → 0.20% → 1.48%; cancer: 0.09% → 1.09% → 9.92%). Rates were broadly homogeneous across medication-type subgroups, with the exception of three single-study subgroups, interpreted cautiously. These gradients are embedded in the service’s risk-evaluation system to foreground the step-change associated with invasive procedures.

Conclusion

MRONJ risk increases by roughly an order of magnitude when invasive dental treatment is performed in patients exposed to anti-resorptive medication, across indications and drug classes. Integrating these pooled figures in a chair-side web tool enables rapid medication identification and personalized counselling, supporting informed consent and safer care.

Keywords: MRONJ, antiresorptive therapy, tooth extraction, web-based patient education, personalized dental counseling.

