The epidemiology of antibiotic loaded bone cement and systemic antibiotic prophylactic usage in primary cemented or hybrid total knee arthroplasty among countries in Africa, Europe, North America, and Oceania: A register based descriptive international study 2010-2020

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Background and purpose: Over several decades antibiotic-loaded bone cement (ALBC) and systemic antibiotic prophylaxis (SAP) have been used to reduce periprosthetic joint infection (PJI) rates. As practice varies, we sought to investigate the epidemiology of ALBC and SAP use in primary total knee arthroplasty (TKA) internationally.

Materials and methods: This is an observational study based on 2,970,160 primary TKAs reported to national/regional joint arthroplasty registries in Australia, Denmark, Finland, Germany, Italy, the Netherlands, New Zealand, Norway, Romania, South Africa, Sweden, Switzerland, UK, and USA (2010-2020). Aggregate-level data on trends and types of bone cement, antibiotic agents, and doses and duration of SAP used were extracted from participating registries.

Results: ALBC was used in 76% of the TKAs with variation ranging from 100% in Norway to 31% in the USA. Palacos R+G was the most common (63%) ALBC type reported. The primary antibiotic used in ALBC was gentamicin (94%). Use of ALBC in combination with SAP was a common practice (71%). Cefazolin was the most common (32%) SAP agent. The doses and duration of SAP used varied from one-day 1 dose as standard practice in Bolzano-Italy (98%) to one-day 4 doses in Norway (83%).

Interpretation: The proportion of ALBC usage in primary TKA varies internationally, with gentamicin as the most common antibiotic. ALBC in combination with SAP was common practice; with Cefazolin the most common SAP. The type of ALBC and type, dose, and duration of SAP varied among participating countries and needs national/regional consensus in practice guidelines.