Check for updates

Clinical and Public Health Guidelines

GIN Guidelines International Network

GUIDELINES OPEN ACCESS

Guidelines for Emergency Management of Traumatic Dental Injuries of the Chilean Ministry of Health

Carlos Zaror[1,2] | Naira F. Deana[1,2,3] | Gerardo Espinoza-Espinoza[2,4] | Pamela Burdiles[5] | Carolina Mendoza[6] | Paula Nahuelhual[5,7] | Eduardo Quiñelen[5] | Marie Therese Flores[8] | Jaime Abarca[9] | Raul Aguilera[10] | Maria Alejandra Aljaro[11] | Nilton Alves[12] | Paola Aguilera-Ibaceta[13] | Yanela Aravena[2] | Francisco Araya[5] | Monica Arce[14,15] | Nadia Brocal[16] | Diana Buitrago-Garcia[17] | Alonso Carrasco-Labra[18] | Claudia Carvajal[6] | Francisco Ceballos[12,19,20] | Camila Corral Nunez[21,22] | Jaime Diaz[1,23] | Paloma Herrera-Omegna[5] | Moises Lorenzo[24] | Elizabeth Lopez[25,26] | Loreto Muñoz-Fierro[27] | Patricia Muñoz-Millán[1,2] | Ignacio Neumann Burotto[5,28] | Paulina Nuñez[29] | Patricio Parada[30] | Patricia Pineda[1,2] | Andrea Seiffert[12] | Barbara Sanchez[31] | Verónica Vargas[32] | Bernardita Zuñiga[33]

[1]Department of Pediatric Dentistry and Orthodontics, Faculty of Dentistry, Universidad de La Frontera, Temuco, Chile | [2]Center for Research in Epidemiology, Economics and Oral Public Health (CIEESPO), Faculty of Dentistry, Universidad de La Frontera, Temuco, Chile | [3]Doctoral program in Sciences in Applied Cellular and Molecular Biology, Universidad de La Frontera, Temuco, Chile | [4]Department of Public Health, Faculty of Medicine, Universidad de La Frontera, Temuco, Chile | [5]Departamento de Evaluación de Tecnologías Sanitarias y Salud Basada en Evidencia (ETESA/SBE), Ministerio de Salud, Santiago, Chile | [6]Departamento Salud Bucal, División de Prevención y Control de Enfermedades, Ministerio de Salud, Santiago, Chile | [7]Facultad de Medicina Clínica Alemana de Santiago, Universidad del Desarrollo, Santiago, Chile | [8]Pediatric Dentistry, Faculty of Dentistry, Research Center in Dental and Medical Sciences (CICOM), Universidad de Valparaíso, Valparaíso, Chile | [9]Endodontics Graduate Program, Faculty of Dentistry, Universidad San Sebastian, Campus Bellavista, Santiago, Chile | [10]Departamento de Salud Pública, Facultad de Medicina, Universidad Católica de la Santísima Concepción, Concepción, Chile | [11]Sociedad Chilena de Odontopediatria (SCHOP), Santiago, Chile | [12]Applied Morphology Research Center (CIMA), Faculty of Dentistry, Universidad de La Frontera, Temuco, Chile | [13]División Gestión Comercial, Fondo Nacional de Salud (FONASA), Santiago, Chile | [14]Sociedad de Endodoncia de Chile, Santiago, Chile | [15]Escuela de Odontología, Pontificia Universidad Católica, Santiago, Chile | [16]Dental School, Faculty of Dentistry, Universidad de La Frontera, Temuco, Chile | [17]Hospital Universitario Mayor - Méderi, Universidad del Rosario, Bogotá, Colombia | [18]Department of Preventive & Restorative Sciences, Center for Integrative Oral Health, Cochrane Oral Health Collaborating Center, Penn Dental Medicine, University of Pennsylvania, Philadelphia, USA | [19]Master Program in Dentistry, Faculty of Dentistry, Universidad de La Frontera, Temuco, Chile | [20]Departamento de Medicina, Facultad de Medicina, Universidad de Atacama, Copiapó, Chile | [21]Department of Restorative Dentistry, Faculty of Dentistry, University of Chile, Santiago, Chile | [22]Center for Surveillance and Epidemiology of Oral Diseases, Faculty of Dentistry, University of Chile, Santiago, Chile | [23]Servicio de odontopediatria, Centro de Responsabilidad Odontológico, Hospital Hernàn Henrìquez Aravena, Temuco, Chile | [24]Hospital Barros Luco Trudeau, Santiago, Chile | [25]Sociedad Chilena de Salud Pública Oral (SOCHISPO), Santiago, Chile | [26]Federación de Sociedades Científicas de Especialidades Odontológicas de Chile (FESODECH), Santiago, Chile | [27]Hospital Lonquimay, Servicio de Salud Araucanía Norte, Lonquimay, Chile | [28]Universidad San Sebastián, Santiago, Chile | [29]Departamento de Cuidados Integrales en Salud, Ministerio de Salud, Santiago, Chile | [30]Hospital Comunitario Marcos Macuada, Servicio de Salud Antofagasta, Tocopilla, Chile | [31]CESFAM Padre Esteban Gumucio, La Granja, Santiago, Chile | [32]Departamento Odontológico DIGERA, Ministerio de Salud, Santiago, Chile | [33]Sociedad de Cirugía y Traumatología Bucal y Maxilofacial de Chile, Santiago, Chile

Correspondence: Carlos Zaror (carlos.zaror@ufrontera.cl)

Received: 29 November 2024 | **Revised:** 31 July 2025 | **Accepted:** 21 August 2025

Funding: This project received financial support from the Universidad de La Frontera. Naira F. Deana received a grant from ANID-Subdirección de Capital Humano/Doctorado Nacional/2021 [FOLIO21210983].

Keywords: evidence-based practice | GRADE approach | practice guidelines | traumatic dental injuries

ABSTRACT

Background: Traumatic dental injuries (TDIs) are the fifth most prevalent condition worldwide. Proper diagnosis and emergency management are essential for ensuring a favourable outcome and prognosis. Although other international guidelines provide recommendations for the emergency management of TDI, specific clinical situations are not always addressed.

This is an open access article under the terms of the Creative Commons Attribution License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2025 The Author(s). *Clinical and Public Health Guidelines* published by John Wiley & Sons Ltd on behalf of Guidelines International Network.

Objective: To provide the dental health team and patients with recommendations based on the best scientific evidence available for the outpatient emergency management of people suffering from TDI.
Methods: The Chilean Ministry of Health formed a multidisciplinary guideline panel balanced to minimize potential bias from conflicts of interest. The Center for Research in Epidemiology, Economics and Oral Public Health (CIEESPO), Universidad de La Frontera, supported the guideline-development process, including evidence synthesis. The panel prioritized clinical questions and outcomes according to their importance for clinicians and patients. We used the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach, including GRADE Evidence-to-Decision frameworks.
Recommendation: The panel agreed on 15 recommendations for outpatient management of TDIs, such as fractures, luxations and avulsions in primary and permanent dentition. Conditional recommendations for permanent teeth included performing partial pulpotomy with calcium hydroxide or bioceramic in complicated crown fractures, stabilizing with a rigid splint in cervical root fracture, performing digital repositioning and splinting in lateral and extrusive luxation for more than 48 h, performing dental reimplantation in avulsed teeth with extended extra-oral time > 1 h, not treating the root surface and prescribe antibiotics in avulsed teeth. Conditional recommendations for primary teeth included performing just the extraction of the mobile fragment in complicated crown-root fractures and not splint in teeth with subluxation, lateral or extrusive luxation. Conditional recommendations for the use of mouthwash with 0.12% chlorhexidine twice a day for a period of 7–14 days in people with TDIs and against prescribing antibiotics in people with crown fracture, intra-alveolar root fracture or tooth luxation associated with trauma.

1 | Introduction and Scope

1.1 | Description of the Health Problem

Traumatic dental injuries (TDIs) are a diverse group of impact injuries that affect the tooth and surrounding hard and soft tissues [1]. These injuries are classified according to the affected tissue: tooth tissues (enamel, dentin and/or pulp), periodontal tissues, supporting bone, gingiva or oral mucosa [2].

TDIs are common in both children and adults, and they are a significant public health concern, ranking as the fifth most prevalent condition worldwide. Although there is variability in its reporting depending on the geographic area, culture and diagnosis methods, its estimated worldwide prevalence in permanent dentition is 15.2%, with an incidence rate of 2.75% [3]. In primary teeth, the prevalence is 24.2%, and the most common injury in both dentitions is the uncomplicated crown fractures [1, 4]. In Chile, limited research is available; however, ministerial reports indicate that the prevalence of TDI is 2.57% at 6 years of age and 4.97% at 12 years of age [5]. In some regions of the country, this prevalence can reach as high as 30% [6, 7].

Factors such as early age, male sex, special health needs (physical, mental or psychological conditions), increased overjet, lip incompetence, anterior open bite, caries in permanent dentition, previous history of TDI, overweight, use of tongue piercing, alcohol consumption and sports have been associated with a higher risk of suffering TDI [8].

The management of dentoalveolar trauma is complex. Several factors determine the preservation of the traumatized tooth: the type of injury, the tissues involved, the time since the trauma occurred, appropriate initial management and clinical treatment of the injury [9].

Untreated TDIs adversely affect the social, functional and emotional well-being of children and adolescents, diminishing their quality of life [10]. Furthermore, they result in significant costs to the healthcare system regarding resources and time required for treatment and management [11]. In Chile, TDIs are considered a dental emergency, so the Chilean health system guarantees their timely outpatient treatment [12].

The International Association of Dental Traumatology (IADT) protocols are considered the standard for managing TDI worldwide [9]. Although other international guidelines have recommendations and protocols for diagnosing and treating these injuries [13], most have suboptimal methodological quality, and particular clinical situations are probably not covered. Therefore, it is crucial to have additional tools for making quick, appropriate, evidence-based decisions that improve decision-making.

In response, we review the evidence regarding clinical situations that produce uncertainty for TDI emergency management professionals not addressed in other guidelines and provide recommendations based on the available scientific evidence to support clinical judgement and enhance the likelihood of successful emergency management from the perspective of the Chilean Health System.

1.2 | Aim of These Guidelines

The purpose of this guideline is to provide evidence-based recommendations for the emergency outpatient management of people experiencing TDI in primary and permanent dentition.

1.3 | Description of the Target Populations

Children, adolescents and adults who have experienced a TDI and seek emergency dental care at primary, secondary and tertiary levels throughout both public and private health services.

1.4 | Description of the Target Audience

Health teams responsible for outpatient dental care of people with TDI in public and private health centres at all levels of care and in

28363973, 2025, 4, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/cph2.70041 by Universidad Del Desarrollo, Wiley Online Library on [11/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Summary

- Traumatic dental injuries (TDIs) are the fifth most prevalent condition worldwide; therefore, a timely diagnosis and proper emergency management are necessary to ensure favourable outcomes.
- Although other international guidelines provide recommendations for the emergency management of TDI, this guideline focuses on specific clinical situations not covered previously.
- This guideline provides 15 evidence-based recommendations for the outpatient management of TDIs in both primary and permanent dentition, addressing fractures, luxations and avulsions.
- We found no evidence for one-third of the prioritized questions, which emphasizes the need for further research to address these areas of uncertainty regarding TDI.

higher education establishments, such as general and specialist dentists, dental assistants, dental hygienists, primary care and emergency services professionals and assistants and dental students.

2 | Methods

We based the guideline-development process on the Guideline International Network (GIN)–McMaster Guideline Development Checklist [14]. The guideline development group developed and graded the recommendations following the Grading Recommendations Assessment, Development and Evaluation (GRADE) approach [15]. We reported this guideline following the RIGHT guidelines [16] and GIN–McMaster template [17].

2.1 | Organization, Panel Composition, Planning and Coordination

To develop the guideline, we formed three working groups, each participating in different stages of development: the guideline coordinating group, the guideline development group and the synthesis evidence group.

The guideline coordinating group was made up of members of the Division of Disease Prevention and Control (DIPRECE), the Division of Health Planning (DIPLAS) of the Chilean Ministry of Health (MINSAL) and the Center for Epidemiology, Economics and Oral Public Health (CIEESPO), Faculty of Dentistry, Universidad de la Frontera. They were responsible for planning the guideline and its scope, selecting the members of the guideline development group and external reviewers, assessing conflicts of interest, organizing meetings, preparing the list of initial questions, participating in the recommendation formulation process, and coordinating the editing, dissemination and updating of the guideline.

The Ministry of Health convened the guideline development group. They invited representatives with clinical and research expertise on TDIs of the following scientific societies and organizations: College of Dental Surgeons of Chile, Chilean Society of Pediatric Dentistry, Chilean Society of Endodontics, Society of Oral and Maxillofacial Surgery and Traumatology, Chilean Society of Public Health, representatives of different healthcare levels in the macro-areas of the country. Supporting Information S1: Supplement 1 presents the affiliations and roles of working groups members.

CIEESPO led the synthesis evidence group and supported the guideline-development process, including determining methods, preparing agendas and meeting materials and facilitating panel discussions.

The panel conducted its work using the GRADEPro Guideline Development Tool (https://www.gradepro.org/) and held a total of 19 online meetings.

2.2 | Guideline Funding and Management of Conflicts of Interest

The Department of Health Technology Assessment and Evidence-Based Health (ETESA/SBE) of the MINSAL, in collaboration with CIEESPO, developed this guideline.

CIEESPO funded the development of evidence syntheses. Panel members received no financial compensation for their participation in this guideline.

No ETESA/SBE and CIEESPO members participated in selecting questions or determining the direction or strength of recommendations.

Before and during the development of this guideline, all panellists declared their conflicts of interest according to MINSAL policies. During the process, none of the panel members, including the chairs, had any conflicts of interest as defined and judged by MINSAL.

2.3 | Selection of Questions and Outcomes of Interest

We used the methodology previously used by the research group to formulate the questions and determine the outcomes [18]. The coordinating team prepared an initial set of possible questions following the criteria proposed by Atkins et al. [19]. In an online meeting, after training on the GRADE methodology, the guideline coordinating team encouraged the panel of experts to formulate clinical decision questions. We incorporated the questions formulated by the panel of experts into the initial list of questions. This list consisted of 52 clinical questions, of which the panel prioritized 15 (Table 1). For the prioritization process, members of the guideline development group rated the questions' overall importance using a continuous 9-point scale (1 = *least important*; 9 = *most important*). The questions were categorized as 'high priority to address in the guideline' (rating of 7–9), 'important question but not of high priority' (rating of 4–6), or of 'low priority' (rating of 1–3). Based on the average score for each question, during an online meeting, the panel debated to reach a consensus on questions that were finally included in the CPG. The panel used the GRADEpro to brainstorm and prioritize the questions. Supporting Information S2: Supplement 2 shows

28363973, 2025, 4, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/gin2.70041 by Universidad Del Desarrollo, Wiley Online Library on [11/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

TABLE 1 | Prioritized clinical questions.

Question 1: Should endodontic access be performed during emergency care versus not performed in people with intra-alveolar root fracture of a permanent tooth?
Question 2: Should stabilize with a rigid splint versus a flexible splint in people with root fractures in the middle third of a permanent tooth?
Question 3: Should stabilize with a rigid splint versus perform the extraction of the crown fragment in people with cervical root fractures of permanent teeth?
Question 4: Should partial pulpotomy with bioceramics be performed versus partial pulpotomy with calcium hydroxide in people with a complicated crown fracture of a permanent tooth?
Question 5: Should immediate endodontic treatment be performed versus periodic check-ups in people with subluxation, lateral luxation, or extrusive luxation of a permanent tooth with a closed apex?
Question 6: Should immediate endodontic treatment be performed versus periodic check-ups in people with subluxation, lateral luxation, extrusive luxation or intrusive luxation of a permanent tooth with an open apex?
Question 7: Should digital repositioning and splinting be performed versus periodic check-ups in people with lateral luxation and extrusive luxation of permanent teeth who receive late emergency treatment of more than 48 h?
Question 8: Should repositioning and splinting treatment be performed versus tooth extraction in haemodynamically stable people with heart disease, haematological disorders or immunosuppression who have a permanent tooth luxation?
Question 9: Should antibiotics be prescribed versus not prescribed in people with trauma-associated permanent tooth avulsion?
Question 10: Should tooth replantation be performed versus not performed in people with permanent teeth with a closed apex that has been avulsed for more than one hour?
Question 11: Should the root surface be treated versus not treated in people with an avulsed permanent tooth before replantation?
Question 12: Should the complete tooth extraction be performed versus the extraction of the mobile fragment for children with complicated crown-root fracture of a primary tooth?
Question 13: Should splinting be performed versus not in children with subluxation, lateral luxation or extrusive luxation of primary teeth with no risk of aspiration?
Question 14: Should mouthwash with 0.12% chlorhexidine be used twice daily for 7–14 days compared to not in people with traumatic dental injury?
Question 15: Should antibiotics be prescribed versus not prescribed in people with crown fracture, intra-alveolar root fracture or tooth luxation associated with trauma?

detailed information on the PICO components of each prioritized question.

Similarly, we generated an initial list of important health outcomes for each question. To create standard definitions for the outcomes, we developed health outcome descriptors (HODs) for each potential outcome [20]. The initial list comprised ten health outcomes, and the panel finally selected six: tooth survival, tooth-supporting tissue disorders, pulp disease, absence of pain, aesthetics perceived by the patient and quality of life. Supporting Information S3: Supplement 3 displays the HODs for each prioritized outcome. Panel members also rated the importance of each outcome independently using a continuous 9-point scale, with a rating of 1–3 indicating the outcome as being of 'limited or no importance', 4–6 as 'important but not critical', and 7–9 as 'critical for decision-making' [18]. In addition, the panel members rated the utility of health outcomes on a 0–100 visual analogue scale, with a rating of 0 indicating the state of being dead and 100 indicating the state of complete health [21].

2.4 | Evidence Synthesis

For each guideline question, CIEESPO conducted systematic reviews of the interventions' effects, values and preferences, and resource and cost use, following the methodology proposed by the Cochrane Collaboration [22].

We included randomized, non-randomized clinical trials and observational studies addressing the questions and patient-important outcomes prioritized by panel members. Supporting Information S2: Supplement 2 outlines the specific eligibility criteria for each question, as per the PICO framework.

We conducted electronic searches in MEDLINE-Ovid, CENTRAL, EMBASE-Elsevier, CDSR, CINAHL, LILACS and Epistemonikos from inception to February 2023 and updated in November 2024. We also examined the reference list of included studies and other published systematic reviews.

Two reviewers independently reviewed the titles, abstracts and full text using the Rayyan software (https://www.rayyan.ai/) to identify relevant studies. A third reviewer resolved discrepancies.

For each eligible study, a pair of reviewers, following training and calibration exercises, independently extracted data and assessed the risk of bias at the health outcome level using the Cochrane Collaboration's risk of bias tool for randomized trials (RoB) and non-randomized studies (ROBINS) [23–24].

28363973, 2025, 4, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/cph2.70041 by Universidad Del Desarrollo, Wiley Online Library on [11/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

When the data were sufficiently homogenous between two or more studies, we performed a frequentist pairwise meta-analysis using RevMan software [25]. We calculated the odds ratio (OR) or relative risk (RR) for binary outcomes and constructed forest plots, showing the summary and their corresponding 95% confidence interval (CI). We employed a random-effects model using the restricted maximum likelihood method to pool the effect of included studies, anticipating variation in effects due to differences in study populations and methodologies.

We assessed the clinical heterogeneity of the included studies by examining the similarity between the types of participants, interventions and outcomes. We estimated the statistical heterogeneity for each comparison using the I^2 statistic, where values over 50% indicate considerable heterogeneity [22].

We assessed the certainty of evidence (CoE) for each effect estimate of the outcomes of interest using the GRADE approach, which is based on the following domains: risk of bias, inconsistency, indirectness, imprecision and publication bias [15]. We categorized the CoE for each outcome as high, moderate, low or very low. We presented the results of the CoE assessment to the panel through summary finding tables (SoF) [26].

To ensure we identified all evidence, we requested the panel to provide any evidence not noted in the systematic review process that met the inclusion criteria for the individual questions. When we did not identify evidence for the effects of interventions for a specific question, we conducted an anonymous survey among panel members. The survey asked about the number of cases they had managed during their careers and the frequency of outcomes relevant to the question. This evidence was presented to the panel in the SoF tables, which assessed whether this information should be considered in support to the recommendation. Although it would have been ideal, we did not require panel members to review patient charts.

2.5 | Development of Recommendations

Following the GRADE approach, CIEESPO prepared Evidence to Decision tables (EtD) for each guideline question using the GRADEpro. Through online meetings (15 meetings), the panel developed clinical recommendations based on the information contained in the SoF and EtD tables. For each of the selected clinical questions, the panel judged the magnitude of benefits and potential harms, the CoE, people's values and preferences, resource utilization (cost-effectiveness), equity, acceptability and feasibility [27–28]. When the panel did not reach a consensus in any domain, we resolved discrepancies through simple majority voting. Although panel agreed on an 80% majority to formulate a strong recommendation, all recommendations were agreed by consensus.

2.6 | Interpretation of Strong and Conditional Recommendations

The recommendations in this guideline are classified as 'strong' and 'conditional' following the GRADE approach. Strong recommendations use the wording 'the Ministry of Health RECOMMENDS', while conditional recommendations use the wording 'the Ministry of Health SUGGESTS'. Table 2 shows the interpretation of strong and conditional recommendations by patients, clinicians and healthcare policymakers.

2.7 | Document Review

National and international clinical and methodological experts reviewed the guideline to assess the external validity of its recommendations. We asked the experts to comment mainly on the content of the CPG and its applicability through an online survey. The methodological team addressed all comments made by the external reviewers and justified any disagreement with the reviewers' comments. All panel members approved the final draft.

TABLE 2 | Interpretation of strong and conditional recommendations.

Interpretation	Strong recommendation	Conditional recommendation
Patients	It is the most appropriate alternative for most people like you.	While following the recommendation is the most appropriate option for most people like you, some considerations are important to discuss with your treatment team.
Clinicians	It is the most appropriate alternative for the vast majority of patients. A shared decision-making approach is unlikely to be beneficial in this scenario, and efforts should focus on promoting the implementation of the recommendation.	Different alternatives may be appropriate for different patients. In this case, clinicians might use a shared decision-making approach to help patients make decisions consistent with their values and preferences.
Policymakers	The recommendation can be adopted in an institutional protocol. Likewise, its compliance can be used as a performance measure or criterion for the quality of care.	The recommendation cannot be adopted into an institutional protocol without careful internal discussion. Compliance with the recommendation is not a good measure of performance or quality of care.

28363973, 2025, 4, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/gin2.70041 by Universidad Del Desarrollo, Wiley Online Library on [11/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

3 | Recommendations and Summary of Findings

Box 1 presents a summary of the recommendations. Synthesis of evidence reports and EtD frameworks are available in Supporting Information S2 and S4: Supplements 2 and 4.

3.1 | Recommendations on Root Fractures, Crown Fractures and Crown-Root Fractures in Permanent Dentition

Recommendation 1: In people with intra-alveolar root fracture of a permanent tooth, the panel suggests not performing endodontic access (trepanation) during emergency care (conditional recommendation, very low CoE).

Summary of the evidence: For this question, we did not identify evidence about the effect of interventions or their cost-effectiveness. The evidence provided by panel members through the survey reported that of the 227 permanent teeth with root fractures in which endodontic access was not performed during emergency care, 131 (57.7%) survived for at least 1 year, 87 (38.2%) survived for more than 1 year, 37 (16.3%) survived for at least 5 years and 216 (95.2%) reported no pain. Regarding the undesirable effects, out of 277 teeth, 33 (14.5%) showed signs of pulp disease, 8 teeth (3.5%) showed tooth-supporting tissue disorder and 17 (7.5%) showed aesthetic alterations.

Recommendation 2: In people with a root fracture in the middle third of a permanent tooth, the panel suggests using a rigid splint or a flexible splint (conditional recommendation, very low CoE).

Summary of the evidence: We identified one systematic review [29], which included one retrospective study evaluating outcomes relevant to this question. Andreasen et al. [30] included 400 incisors with root fractures who were treated with different types of rigid splints (orthodontic bands, acrylic or gold splints, resin splints and orthodontic wires) versus semi-rigid splints (Kevlar or fibreglass). Patients who suffer a root fracture are 3 times more likely to have pulp disease (inferred from pulp necrosis) if they are stabilized with a rigid splint than a flexible splint (OR 3.39; 95% CI 1.18–9.80); that is, there are 282 more cases of pulp disease per 1000 (95% CI 33–515 more per 1000).

Recommendation 3: In people with cervical root fracture of a permanent incisor tooth, the panel suggests stabilizing with a rigid splint rather than performing extraction of the coronal fragment (conditional recommendation, very low CoE).

Summary of the evidence: For this question, we did not identify evidence about the effect of interventions or their cost-effectiveness. The panel members, through the survey, reported evidence from 20 permanent teeth with cervical root fractures of incisor teeth treated with rigid splints and 3 with extraction of the coronal fragment. After a 5-year follow-up, the survival rate for teeth treated with rigid splints was 75%, and none reported tooth-supporting tissue disorder, pain or aesthetic alterations. Conversely, the patients with three extracted teeth reported aesthetic problems.

Recommendation 4: In people with complicated crown fractures of a permanent tooth, the panel suggests performing partial pulpotomy with calcium hydroxide or bioceramic (conditional recommendation, low CoE).

Summary of the evidence: We identified one systematic review [31], which included one randomized clinical trial (RCT) evaluating the comparison and outcomes relevant to this question [32]. Yang et al. [32] included 55 immature permanent teeth with complicated crown or crown-root fractures from children aged 7–12 years treated with iRoot BP Plus (bioceramic), and 49 immature permanent teeth were treated with calcium hydroxide. The follow-up time of the patients varied from 24 to 37 months. This study reported 84 fewer cases of pulp disease (inferred from pulp necrosis) per 1000 individuals (95% CI 147 fewer to 95 more per 1000) in those in whom partial pulpotomy was performed with bioceramic compared to the control with calcium hydroxide (OR 0.54; 95% CI 0.20–1.51).

3.2 | Recommendations for Dental Luxations in Permanent Dentition

Recommendation 5: In people with subluxation, lateral luxation or extrusive luxation of a permanent tooth with a closed apex, the panel suggests maintaining periodic check-ups and not performing immediate endodontic treatment (conditional recommendation, very low CoE).

Summary of the evidence: We identified one prospective cohort that assessed the prognosis of teeth with lateral luxation who did not receive prophylactic endodontic treatment at 4 years of follow-up [33]. The study did not report any critical outcomes; it only reported evidence of pulp survival in teeth not subjected to prophylactic endodontics. Of 32 permanent teeth with a closed apex with lateral luxation that did not undergo prophylactic endodontic treatment, 16 showed pulp survival in a 4-year follow-up period.

Recommendation 6: In children with subluxation, lateral luxation, extrusive luxation or intrusive luxation of permanent teeth with an open apex, the panel suggests maintaining periodic check-ups and not performing immediate endodontic treatment (conditional recommendation, very low CoE).

Summary of the evidence: We identified one prospective cohort that assessed the prognosis of teeth with lateral luxation who did not receive prophylactic endodontic treatment at 4 years of follow-up [33]. The study did not report any critical outcomes; it only reported evidence of pulp survival in teeth not subjected to prophylactic endodontics. The study reported the absence of pulp necrosis in the five permanent teeth with open apex (apical foramen > 1 mm) that did not receive prophylactic endodontic treatment in a 4-year follow-up period.

Recommendation 7: In people with lateral luxation and extrusive luxation of permanent teeth who receive late emergency treatment of more than 48 h, the panel suggests performing digital repositioning and splinting rather than not intervening (conditional recommendation, very low CoE).

28363973, 2025, 4, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/gin2.70041 by Universidad Del Desarrollo, Wiley Online Library on [11/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

BOX 1 | Recommendations summary for the emergency management of traumatic dental injuries.

Recommendations on root fractures, crown fractures and crown-root fractures in permanent dentition

Recommendation 1: In people with intra-alveolar root fracture of a permanent tooth, the panel suggests not performing endodontic access (trepanation) during emergency care (conditional recommendation, very low certainty in the evidence of effects ⊕○○○).
Recommendation 2: In people with a root fracture in the middle third of a permanent tooth, the panel suggests using a rigid splint or a flexible splint (conditional recommendation, very low certainty in the evidence of effects ⊕○○○).
Recommendation 3: In people with cervical root fracture of a permanent incisor tooth, the panel suggests stabilizing with a rigid splint rather than performing extraction of the coronal fragment (conditional recommendation, very low certainty in the evidence of effects ⊕○○○).
Recommendation 4: In people with complicated crown fractures of a permanent tooth, the panel suggests performing partial pulpotomy with calcium hydroxide or bioceramic (conditional recommendation, low certainty in the evidence of effects ⊕⊕○○).

Recommendations for dental luxations in permanent dentition
Recommendation 5: In people with subluxation, lateral luxation or extrusive luxation of a permanent tooth with a closed apex, the panel suggests maintaining periodic check-ups and not performing immediate endodontic treatment (conditional recommendation, very low certainty in the evidence of effects ⊕○○○).
Recommendation 6: In children with subluxation, lateral luxation, extrusive luxation or intrusive luxation of permanent teeth with an open apex, the panel suggests maintaining periodic check-ups and not performing immediate endodontic treatment (conditional recommendation, very low certainty in the evidence of effects ⊕○○○).
Recommendation 7: In people with lateral luxation and extrusive luxation of permanent teeth who receive late emergency treatment of more than 48 h, the panel suggests performing digital repositioning and splinting rather than not intervening (conditional recommendation, very low certainty in the evidence of effects ⊕○○○).
Recommendation 8: In hemodynamically stable people with heart disease, haematological disorders, or immunosuppression who have a permanent tooth luxation, the panel suggests repositioning and splinting treatment instead of tooth extraction (conditional recommendation, very low certainty in the evidence of effects ⊕○○○).

Recommendations for dental avulsions in permanent dentition
Recommendation 9: In people with avulsion of permanent teeth, the Ministry of Health suggests the use of antibiotics (conditional recommendation, very low certainty in the evidence of effects ⊕○○○).
Recommendation 10: In people with permanent teeth with a closed apex, avulsed for more than one hour, the panel suggests performing tooth replantation (conditional recommendation, very low certainty in the evidence of effects ⊕○○○).
Recommendation 11: In people with avulsion of a permanent tooth, before replanting, the panel suggests not treating the root surface (conditional recommendation, very low certainty in the evidence of effects ⊕○○○).

Recommendations for the emergency management of TDI in primary dentition
Recommendation 12: In children with complicated crown-root fractures with or without pulp involvement of primary teeth, the panel suggests performing extraction of the mobile fragment rather than complete extraction (conditional recommendation, very low certainty in the evidence of effects ⊕○○○).
Recommendation 13: In children with subluxation, lateral luxation or extrusive luxation of primary teeth, with no risk of aspiration, the panel suggests not performing splinting (conditional recommendation, very low certainty in the evidence of effects ⊕○○○).

General recommendations for primary and permanent teeth in the context of TDI emergency
Recommendation 14: In people with dentoalveolar trauma, the panel suggests using mouthwash with 0.12% chlorhexidine twice daily for 7–14 days (conditional recommendation, very low certainty in the evidence of effects ⊕○○○).
Recommendation 15: In people with crown fracture, intra-alveolar root fracture or tooth luxation associated with trauma, the panel suggests not prescribing antibiotics (conditional recommendation, very low certainty in the evidence of effects ⊕○○○).

Good Practices Statements

- In people who have suffered dentoalveolar trauma, it is beneficial to maintain daily oral hygiene, with thorough tooth brushing at least twice a day, with fluoride toothpaste and a soft or very soft brush, emphasizing the affected teeth.
- In people who have suffered dentoalveolar trauma, the panel suggests periodic follow-up to prevent possible complications.
- In children with extrusive luxation of primary teeth with excessive mobility that presents a risk of ingestion or aspiration, the panel recommends extracting the affected tooth.

Table 2 offers guidance on how patients, clinicians and healthcare policymakers can interpret this guideline's recommendations.

28363973, 2025, 4, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/gin2.70041 by Universidad Del Desarrollo, Wiley Online Library on [11/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Summary of the evidence: For this question, we did not identify evidence about the effect of interventions or their cost-effectiveness. The panel members, through the survey, provided evidence from 24 teeth that experienced luxation (both extrusive and lateral) and received late emergency treatment more than 48 h after the injury. The treatment involved digital repositioning and splinting. The results indicated that 25% of the teeth ($n = 6$) survived for at least 5 years, and 50% ($n = 12$) showed no pain.

Recommendation 8: In haemodynamically stable people with heart disease, haematological disorders or immunosuppression who have a permanent tooth luxation, the panel suggests repositioning and splinting treatment instead of tooth extraction (conditional recommendation, very low CoE).

Summary of the evidence: For this question, we did not identify evidence about the effect of interventions or their cost-effectiveness. The evidence provided by the panel members through the survey reported that of the six teeth of patients with heart disease or haematological disorders who underwent repositioning and splinting treatment, 66.7% (four teeth) had a tooth survival of < 1 year, 33.3% (two teeth) the survival was > 5 years and 14.3% (two teeth) showed signs of pulp disease. Additionally, of the two teeth from immunosuppressed patients who received repositioning and splinting treatment, none showed any signs of pulp disease.

3.3 | Recommendations for Dental Avulsions in Permanent Dentition

Recommendation 9: In people with avulsion of permanent teeth, the panel suggests using antibiotics (conditional recommendation, very low CoE).

Summary of the evidence: We identified two prospective cohorts and seven retrospective studies. All studies compared the use of systemic antibiotics versus no use as part of the treatment of avulsed teeth. Only five articles specified the antibiotic used: Müller et al. [34] evaluated penicillin, tetracycline or other types of antibiotics; Sae-Lim and Yuen [35] reported the use of penicillin or erythromycin; Andreasen et al. [30, 36] indicated penicillin and Bastos et al. [37] used amoxicillin. None of the studies specified the dose used. Patients who were prescribed antibiotics after tooth avulsion had a 16% lower chance of tooth survival (OR 0.84; 95% CI 0.38–1.83). Expressly, 38 fewer (95% CI 230 lower to 111 more per 1000) teeth survived in those receiving antibiotics compared to those who did not. On the other hand, patients who experienced tooth avulsion are more likely to have tooth-supporting tissue disorders (extrapolated from external root resorption and replacement resorption) when antibiotics are used compared to not using them. Specifically, there were an additional 248 cases for every 1000 individuals who received antibiotic prescriptions.

Recommendation 10: In people with permanent teeth with closed apex, avulsed for more than one hour, the panel suggests performing tooth replantation (conditional recommendation, very low CoE).

Summary of the evidence: We identified one retrospective study that provided evidence for desirable effects. Muller et al. [34] studied 15 teeth with closed apex replanted after 1 h; 8 survived with an average follow-up of 3.5 years. Two additional retrospective studies reported evidence of harmful effects [34, 38]. They reported that of the 18 teeth with closed apices reimplanted after 1 h, 9 showed replacement resorption.

Recommendation 11: In people with avulsion of a permanent tooth, before replanting, the panel suggests not treating the root surface (conditional recommendation, very low CoE).

Summary of the evidence: We included one RCT that provided evidence of both beneficial and harmful effects. Liu et al. [39] included 44 avulsed teeth from 38 patients aged 7–14. Root surface treatment was performed with doxycycline for 5 min before replantation in 21 teeth, and the other 23 teeth were treated with saline and followed for 12 months. In the analysis of the absolute effects, it was found that there were 18 fewer surviving teeth per 1000 individuals (95% CI 189 fewer to 411 more per 1000) in the group that received treatment on the root surface before replantation compared to the control group (RR 0.94; 95% CI 0.38–2.35). Additionally, the intervention group experienced 99 more cases (95% CI 151 fewer to 517 more per 1000) of disease related to tooth-supporting tissues per 1000 (RR 1.19; 95% CI 0.71–1.99).

3.4 | Recommendations for the Emergency Management of TDI in Primary Dentition

Recommendation 12: In children with complicated crown-root fractures with or without pulp involvement of primary teeth, the panel suggests performing the extraction of the mobile fragment rather than complete extraction (conditional recommendation, very low CoE).

Summary of the evidence: For this question, we did not identify evidence about the effect of interventions or their cost-effectiveness. The evidence provided by the panel members through the survey indicated that of 33 children in whom the mobile fragment was extracted, tooth survival was at least 1 year. In addition, none of them exhibited signs or symptoms of pulp disease, tooth-supporting tissue disorder, pain or aesthetic problems.

Recommendation 13: In children with subluxation, lateral luxation or extrusive luxation of primary teeth, with no risk of aspiration, the panel suggests not performing splinting (conditional recommendation, very low CoE).

Summary of the evidence: We identified one retrospective study that provided evidence for desirable effects. The study by Cho et al. [40] included 129 teeth with lateral or extrusive luxation. In total, 57 teeth were treated with a semi-rigid splint, round stainless-steel wire and flowable composite resin. The absolute results showed a tooth survival (inferred from clinical success outcome) of 186 fewer cases per 1000 (95% CI 364 fewer to 255 more per 1000).

3.5 | General Recommendations for Primary and Permanent Teeth in the Context of TDI Emergency

Recommendation 14: In people with dentoalveolar trauma, the panel suggests using mouthwash with 0.12% chlorhexidine twice daily for 7–14 days (conditional recommendation, very low CoE).

28363973, 2025, 4, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/cph2.70041 by Universidad Del Desarrollo, Wiley Online Library on [11/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Summary of the evidence: For this question, we did not identify evidence about the effect of interventions or their cost-effectiveness. The evidence provided by the panel members through the survey reported that between 17% and 20% of patients experienced a worsening of dental aesthetics after using mouthwash with 0.12% chlorhexidine.

Recommendation 15: In people with crown fracture, intra-alveolar root fracture or tooth luxation associated with trauma, the panel suggests not prescribing antibiotics (conditional recommendation, very low CoE).

Summary of the evidence: We included six observational studies reported in 12 articles [30–36, 41–49]. Three were prospective cohort studies [41, 42, 44], and three were retrospective design studies [35, 43, 45]. Andreasen et al. and Sem-Lim and Yuen included permanent teeth with different types of trauma-related tooth luxation [30, 35]. Andreasen et al. included permanent teeth with root fracture [42, 43], and Andreasen et al. and Wigen et al. included only permanent teeth with intrusion [44, 45]. Four studies did not report the prescribed antibiotic therapy [35, 41–43]. Andreasen et al. administered penicillin at a dose of 1 g immediately after trauma and 500 mg four times a day for 4 days [44]. Wigen et al. only mention that penicillin was administered [45]. Patients who have experienced any dental trauma are nearly three times more likely to develop pulp disease when antibiotics are prescribed compared to those who do not receive antibiotics (OR 2.91; 95% CI 0.97–8.76). Specifically, there are 221 additional cases of pulp disease per 1000 individuals (95% CI: 5 fewer to 487 more per 1000) among those who were prescribed antibiotics, regardless of the type of antibiotic therapy. Furthermore, the absolute risk increase was seven more cases of disorders affecting the tooth-supporting tissues for every 1000 individuals receiving antibiotics (44 fewer to 221 more per 1000).

3.6 | Additional Consideration

Due to the absence of formal research evidence exploring values and preferences in the field of TDI, the GDG placed a high value on the health outcomes prioritized as critical for decision-making with the interventions that were evaluated. The panel members judged that the costs required would be negligible for the health system for all interventions, and all recommended interventions were acceptable to stakeholders and feasible to implement.

3.7 | Revision and Updating

This clinical practice guideline should be reviewed every 2 years or whenever a favourable evaluation of the available scientific evidence warrants it.

3.8 | Implementation Considerations

Users of this guideline may encounter barriers that hinder their implementation of the recommendations. First, professionals who care for individuals with TDIs must be adequately trained and receive periodic updates on their skills. Additionally, in some remote areas, there may be limited access to specialized and timely care. Most recommended interventions are accessible, do not involve excessive costs, and are covered by the explicit health guarantee programmes (GES).

3.9 | Dissemination and Implementation Strategies

The plan to implement the guideline includes the following strategies:

- Presentation of this guideline to public health services and different dental professionals and scientific societies.
- Distribution to the different healthcare facilities of the public health network and academic institutions.
- Publication in national and international scientific journals.

4 | Discussion and Further Research Recommendations

The recommendations in these guidelines may help support informed decision-making by clinicians and patients affected by TDI. While various international guidelines focus on the emergency treatment of TDI, these guidelines may differ in their recommendations and the quality of their methodology, most of which are suboptimal [13]. This particular guideline aims to complement the recommendations provided by the IADT, addressing specific clinical situations that the IADT guideline does not cover.

The main strength of this guideline is that we followed the systematic GRADE approach to develop recommendations and utilized rigorous methods to identify the best available evidence. Despite the high prevalence of TDI, the primary limitation of this guideline is the low CoE for most of the questions due to the limited research available. We found no evidence for one-third of the prioritized questions, which emphasizes the need for further research to address these areas of uncertainty regarding TDI. Furthermore, future research should focus on patient-important outcomes such as quality of life and tooth survival.

Author Contributions

Conceptualization: Carolina Mendoza, Carlos Zaror, Naira F. Deana, Pamela Burdiles. Methodology: Alonso Carrasco-Labra, Carolina Mendoza, Carlos Zaror, Eduardo Quiñelen, Ignacio Neumann Burotto, Pamela Burdiles, Paloma Herrera-Omegna, Paula Nahuelhual. Formal analysis: Alonso Carrasco-Labra, Carlos Zaror, Gerardo Espinoza-Espinoza, Naira F. Deana. Investigation: Andrea Seiffert, Diana Buitrago-Garcia, Francisco Araya, Francisco Ceballos, Jaime Abarca, Loreto Muñoz-Fierro, Nilton Alves, Nadia Brocal, Paola Aguilera-Ibaceta, Patricia Muñoz-Millán, Patricio Parada, Raul Aguilera, Yanela Aravena. Recommendations: Barbara Sanchez, Bernardita Zuñiga, Claudia Carvajal, Camila Corral Nunez, Jaime Diaz, Elizabeth Lopez, Loreto Muñoz-Fierro, Maria Alejandra Aljaro, Monica Arce, Moises Lorenzo, Marie Therese Flores, Paulina Nuñez, Patricio Parada, Verónica Vargas. Writing – original draft preparation: Carlos Zaror.

28363973, 2025, 4, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/gin2.70041 by Universidad Del Desarrollo, Wiley Online Library on [11/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Writing – review and editing: Carlos Zaror, Naira F. Deana. Supervision: Carlos Zaror, Pamela Burdiles, Ignacio Neumann Burotto.

Acknowledgements

This project received financial support from the Universidad de La Frontera. Naira F. Deana received a grant from ANID-Subdirección de Capital Humano/Doctorado Nacional/2021 [FOLIO21210983].

Ethics Statement

This article contains no studies with human participants or animals performed by any of the authors.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data supporting this guideline's findings are available in the tables, figures and Supporting Material. Upon a reasonable request, the corresponding author can provide additional data sets generated and/or analyzed during the guideline's development.

References

1. R. Lam, "Epidemiology and Outcomes of Traumatic Dental Injuries: A Review of the Literature," supplement, *Australian Dental Journal* 61, no. Suppl 1 (2016): 4–20, https://doi.org/10.1111/adj.12395.

2. J. O. Andreasen, *Traumatic Injuries of the Teeth* (Munksgaard, 1981), 2nd edn., 19–24.

3. S. Petti, U. Glendor, and L. Andersson, "World Traumatic Dental Injury Prevalence and Incidence, a Meta-Analysis—One Billion Living People Have Had Traumatic Dental Injuries," *Dental Traumatology* 34 (2018): 71–86.

4. A. K. Patnana, A. Chugh, V. K. Chugh, P. Kumar, N. R. V. Vanga, and S. Singh, "The Prevalence of Traumatic Dental Injuries in Primary Teeth: A Systematic Review and Meta-Analysis," *Dental Traumatology* 37, no. 3 (2021): 383–399.

5. C. Corral-Núñez, P. van Treek, A. Morales, et al., "Sinopsis de la Situación de Salud Oral en Chile - Parte IV: Traumatismo Dentoalveolar [Synopsis of the Oral Health Situation in Chile – Part IV: Traumatic Dental Injuries]," *International Journal of Interdisciplinary Dentistry* 15, no. 1 (2022): 20–24.

6. J. E. Onetto, M. T. Flores, and M. L. Garbarino, "Dental Trauma in Children and Adolescents in Valparaiso, Chile," *Dental Traumatology* 10, no. 5 (1994): 223–227.

7. J. A. Díaz, L. Bustos, A. C. Brandt, and B. E. Fernández, "Dental Injuries Among Children and Adolescents Aged 1–15 Years Attending to Public Hospital in Temuco, Chile," *Dental Traumatology* 26, no. 3 (2010): 254–261.

8. M. B. Magno, P. Nadelman, K. L. F. Leite, D. M. Ferreira, M. M. Pithon, and L. C. Maia, "Associations and Risk Factors for Dental Trauma: A Systematic Review of Systematic Reviews," *Community Dentistry and Oral Epidemiology* 48, no. 6 (2020): 447–463.

9. L. Levin, P. F. Day, L. Hicks, et al., "International Association of Dental Traumatology Guidelines for the Management of Traumatic Dental Injuries: General Introduction," *Dental Traumatology* 36, no. 4 (2020): 309–313.

10. C. Zaror, M. J. Martínez-Zapata, J. Abarca, et al., "Impact of Traumatic Dental Injuries on Quality of Life in Preschoolers and Schoolchildren: A Systematic Review and Meta-Analysis," *Community Dentistry and Oral Epidemiology* 46, no. 1 (2018): 88–101.

11. M. K. Borum and J. O. Andreasen, "Therapeutic and Economic Implications of Traumatic Dental Injuries in Denmark: An Estimate Based on 7549 Patients Treated at a Major Trauma Centre," *International Journal of Paediatric Dentistry* 11, no. 4 (2001): 249–258.

12. Ministerio de Salud, *Guía Clínica Urgencias Odontológicas Ambulatorias [Clinical Guideline for Outpatient Dental Emergencies]* (MINSAL, 2011), https://diprece.minsal.cl/wrdprss_minsal/wp-content/uploads/2014/12/Urgencias-Odontol%C3%B3gicas-Ambulatorias.pdf.

13. C. Zaror, A. Seiffert, N. F. Deana, et al., "Emergency and Sequalae Management of Traumatic Dental Injuries: A Systematic Survey of Clinical Practice Guidelines," *BMC Oral Health* 23, no. 1 (2023): 704.

14. H. J. Schünemann, W. Wiercioch, I. Etxeandia, et al., "Guidelines 2.0: Systematic Development of a Comprehensive Checklist for a Successful Guideline Enterprise," *Canadian Medical Association Journal* 186, no. 3 (2014): E123–E142.

15. G. Guyatt, A. D. Oxman, E. A. Akl, et al., "GRADE Guidelines: 1. Introduction-GRADE Evidence Profiles and Summary of Findings Tables," *Journal of Clinical Epidemiology* 64, no. 4 (2011): 383–394.

16. Y. Chen, K. Yang, A. Marušić, et al., "A Reporting Tool for Practice Guidelines in Health Care: The RIGHT Statement," *Annals of Internal Medicine* 166, no. 2 (2017): 128–132.

17. R. Nieuwlaat, W. Wiercioch, J. L. Brozek, et al., "How to Write a Guideline: A Proposal for a Manuscript Template That Supports the Creation of Trustworthy Guidelines," *Blood Advances* 5, no. 22 (2021): 4721–4726.

18. C. Zaror, N. F. Deana, G. Espinoza-Espinoza, et al., "Questions and Health Outcomes Prioritization for the Development of a COVID-19 Dental Clinical Practice Guideline: A Case Study," *Journal of Evaluation in Clinical Practice* 28, no. 3 (2022): 404–410.

19. D. Atkins, R. Perez-Padilla, W. MacNee, A. S. Buist, and A. A. Cruz, "Priority Setting in Guideline Development: Article 2 in Integrating and Coordinating Efforts in COPD Guideline Development. An Official ATS/ERS Workshop Report," *Proceedings of the American Thoracic Society* 9, no. 5 (2012): 225–228.

20. W. Wiercioch, R. Nieuwlaat, P. Dahm, et al., "Development and Application of Health Outcome Descriptors Facilitated Decision-Making in the Production of Practice Guidelines," *Journal of Clinical Epidemiology* 138 (2021): 115–127.

21. W. Wiercioch, *Priority Topics for Panel Engagement in Health Guideline Development* (Health Research Methodology, McMaster, 2020), https://macsphere.mcmaster.ca/handle/11375/25950.

22. J. P. Higgins, J. Thomas, J. Chandler, et al., eds., *Cochrane Handbook for Systematic Reviews of Interventions* (John Wiley & Sons, 2019), 2nd ed.

23. J. A. C. Sterne, J. Savović, M. J. Page, et al., "RoB 2: A Revised Tool for Assessing Risk of Bias in Randomised Trials," *BMJ* 366 (2019): l4898.

24. J. A. Sterne, M. A. Hernán, B. C. Reeves, et al., "ROBINS-I: A Tool for Assessing Risk of Bias in Nonrandomised Studies of Interventions," *BMJ* 355 (2016): i4919, https://doi.org/10.1136/bmj.i4919.

25. *Review Manager (RevMan). Version 9.6.0* (Cochrane Collaboration, 2025), revman.cochrane.org.

26. M. W. Langendam, E. A. Akl, P. Dahm, P. Glasziou, G. Guyatt, and H. J. Schünemann, "Assessing and Presenting Summaries of Evidence in Cochrane Reviews," *Systematic Reviews* 2 (2013): 81.

27. P. Alonso-Coello, A. D. Oxman, J. Moberg, et al., "GRADE Evidence to Decision (EtD) Frameworks: A Systematic and Transparent Approach to Making Well Informed Healthcare Choices. 2: Clinical Practice Guidelines," *BMJ* 353 (2016): i2089.

28. P. Alonso-Coello, H. J. Schünemann, J. Moberg, et al., "GRADE Evidence to Decision (EtD) Frameworks: A Systematic and Transparent Approach to Making Well-Informed Healthcare Choices. 1: Introduction," *BMJ* 353 (2016): i2016.

28363973, 2025, 4, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/cph2.70041 by Universidad Del Desarrollo, Wiley Online Library on [11/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

29. B. Kahler and G. S. Heithersay, "An Evidence-Based Appraisal of Splinting Luxated, Avulsed and Root-Fractured Teeth," *Dental Traumatology* 24, no. 1 (2008): 2–10.

30. J. O. Andreasen, F. M. Andreasen, I. Mejàre, and M. Cvek, "Healing of 400 Intra-Alveolar Root Fractures. 2. Effect of Treatment Factors Such as Treatment Delay, Repositioning, Splinting Type and Period and Antibiotics," *Dental Traumatology* 20, no. 4 (2004): 203–211.

31. G. N. Tzanetakis, O. Tsiouma, E. Mougiou, and D. Koletsi, "Factors Related to Pulp Survival After Complicated Crown Fracture Following Vital Pulp Therapy: A Systematic Review and Meta-Analysis," *Journal of Endodontics* 48, no. 4 (2022): 457–478.e4.

32. Y. Yang, B. Xia, Z. Xu, G. Dou, Y. Lei, and W. Yong, "The Effect of Partial Pulpotomy With iRoot BP Plus in Traumatized Immature Permanent Teeth: A Randomized Prospective Controlled Trial," *Dental Traumatology* 36, no. 5 (2020): 518–525.

33. E. C. Ferrazzini Pozzi and T. von Arx, "Pulp and Periodontal Healing of Laterally Luxated Permanent Teeth: Results After 4 Years," *Dental Traumatology* 24 (2008): 658–662.

34. D. D. Müller, R. Bissinger, M. Reymus, K. Bücher, R. Hickel, and J. Kühnisch, "Survival and Complication Analyses of Avulsed and Replanted Permanent Teeth," *Scientific Reports* 10, no. 1 (2020): 2841.

35. V. Sae-Lim and K. W. Yuen, "An Evaluation of After-Office-Hour Dental Trauma in Singapore," *Dental Traumatology* 13, no. 4 (1997): 164–170.

36. J. O. Andreasen, L. K. Bakland, R. C. Matras, and F. M. Andreasen, "Traumatic Intrusion of Permanent Teeth. Part 1. An Epidemiological Study of 216 Intruded Permanent Teeth," *Dental Traumatology* 22, no. 2 (2006): 83–89.

37. J. V. Bastos, M. Ilma de Souza Côrtes, E. M. Andrade Goulart, E. A. Colosimo, R. S. Gomez, and W. O. Dutra, "Age and Timing of Pulp Extirpation as Major Factors Associated With Inflammatory Root Resorption in Replanted Permanent Teeth," *Journal of Endodontics* 40, no. 3 (2014): 366–371.

38. E. Lauridsen, J. O. Andreasen, O. Bouaziz, and L. Andersson, "Risk of Ankylosis of 400 Avulsed and Replanted Human Teeth in Relation to Length of Dry Storage: A Re-Evaluation of a Long-Term Clinical Study," *Dental Traumatology* 36, no. 2 (2020): 108–116.

39. Y. Liu, Z. Zhu, C. W. Sun, J. J. Sun, and M. Y. Zhu, "Effects of Topical Application of Doxycycline on Avulsed Permanent Teeth," *Shanghai Kou Qiang Yi Xue = Shanghai Journal of Stomatology* 28, no. 6 (2019): 640–643.

40. W. C. Cho, O. H. Nam, M. S. Kim, H.-S. Lee, and S. C. Choi, "A Retrospective Study of Traumatic Dental Injuries in Primary Dentition: Treatment Outcomes of Splinting," *Acta Odontologica Scandinavica* 76, no. 4 (2018): 253–256.

41. F. M. Andreasen and B. V. Pedersen, "Prognosis of Luxated Permanent Teeth—The Development of Pulp Necrosis," *Dental Traumatology* 1, no. 6 (1985): 207–220.

42. F. M. Andreasen, J. O. Andreasen, and T. Bayer, "Prognosis of Root-Fractured Permanent Incisors-Prediction of Healing Modalities," *Dental Traumatology* 5, no. 1 (1989): 11–22.

43. J. O. Andreasen, F. M. Andreasen, I. Mejàre, and M. Cvek, "Healing of 400 Intra-Alveolar Root Fractures. 1. Effect of Pre-Injury and Injury Factors Such as Sex, Age, Stage of Root Development, Fracture Type, Location of Fracture and Severity of Dislocation," *Dental Traumatology* 20, no. 4 (2004): 192–202.

44. J. O. Andreasen, L. K. Bakland, and F. M. Andreasen, "Traumatic Intrusion of Permanent Teeth. Part 3. A Clinical Study of the Effect of Treatment Variables Such as Treatment Delay, Method of Repositioning, Type of Splint, Length of Splinting and Antibiotics on 140 Teeth," *Dental Traumatology* 22, no. 2 (2006): 99–111.

45. T. I. Wigen, R. Agnalt, and I. Jacobsen, "Intrusive Luxation of Permanent Incisors in Norwegians Aged 6-17 Years: A Retrospective Study of Treatment and Outcome," *Dental Traumatology* 24, no. 6 (2008): 612–618.

46. F. M. Andreasen and J. O. Andreasen, "Diagnosis of Luxation Injuries: The Importance of Standardized Clinical, Radiographic and Photographic Techniques in Clinical Investigations," *Dental Traumatology* 1, no. 5 (October 1985): 160–169, https://doi.org/10.1111/j.1600-9657.1985.tb00651.x.

47. F. M. Andreasen and J. O. Andreasen, "Resorption and Mineralization Processes Following Root Fracture of Permanent Incisors," *Dental Traumatology* 4, no. 5 (1988): 202–214.

48. M. Cvek, J. O. Andreasen, and M. K. Borum, "Healing of 208 Intra-Alveolar Root Fractures in Patients Aged 7-17 Years," *Dental Traumatology* 17, no. 2 (April 2001): 53–62.

49. J. O. Andreasen, L. K. Bakland, and F. M. Andreasen, "Traumatic Intrusion of Permanent Teeth. Part 2. A Clinical Study of the Effect of Preinjury and Injury Factors, Such as Sex, Age, Stage of Root Development, Tooth Location, and Extent of Injury Including Number of Intruded Teeth on 140 Intruded Permanent Teeth," *Dental Traumatology* 22, no. 2 (2006): 90–98.

Supporting Information

Additional supporting information can be found online in the Supporting Information section.
Supplement 1–4.

28363973, 2025, 4, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/gpi2.70041 by Universidad Del Desarrollo, Wiley Online Library on [11/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License