Evidence Gaps Research Taxonomy Table
Research to Address Evidence Gaps in Preventive Services for the USPSTF
Topic: Research Gaps for Screening and Preventive Interventions for Oral Health in Children and Adolescents Aged 5 to 17 Years

To fulfill its mission to improve health by making evidence-based recommendations for preventive services, the USPSTF routinely highlights the most critical evidence gaps for making actionable preventive services recommendations. As summarized in the research needs and gaps table (Table 2) in the recommendation statement, the USPSTF often needs additional evidence to create the strongest recommendations for everyone and especially for persons with the greatest burden of disease.

In this table, the USPSTF summarizes key bodies of evidence needed to make recommendations for Screening and Preventive Interventions for Oral Health in Children and Adolescents Aged 5 to 17 Years. For each of the evidence gaps listed below, the USPSTF provides guidance to researchers and funders on the types of studies needed to expand the evidence in oral health for children and adolescents and enable the USPSTF to make evidence-based recommendations for oral health in primary care settings and be inclusive of populations with a high prevalence of oral health conditions.

The research taxonomy is intended to provide general guidance to investigators. Investigators are encouraged to develop research designs that are responsive to the research taxonomy outlined in the table, in collaboration with their research teams and areas of expertise and experience. The research developed will be reviewed according to standard USPSTF criteria for inclusion in its evidence report; inclusion criteria are summarized in the final Research Plan (https://www.uspreventiveservicestaskforce.org/uspstf/document/final-research-plan/oral-health-children-adolescents-screening-preventive-interventions) and Procedure Manual (https://www.uspreventiveservicestaskforce.org/uspstf/about-uspstf/methods-and-processes/procedure-manual).

Research Gap	Key Questions* or Contextual Questions	Direct/ Indirect Pathway†	Type of Gap‡	Study Characteristics	Population	Intervention/ Comparison	Outcomes/ Timing	Setting
Research is needed to assess the effectiveness and harms of primary care–based oral health screening strategies on oral health outcomes.	KQ1	Direct	Grade assignment/ health equity	RCTs, controlled trials, and observational studies. Studies should be well designed§ with low risk for bias using robust contemporaneous comparison groups	Children and adolescents aged 5 to 17 years; studies should be representative of the US population¶ and inclusive of groups	Screening vs. no screening	Change in dental caries, periodontal disease, and tooth loss	Range of US nondental primary care settings. Studies should be represent-ative of settings in the US and inclusive of

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					disproportion-ately affected by oral health issues			settings disproportion-ately affected by oral health issues
Research is needed on the diagnostic accuracy of oral health examinations and risk assessment tools in the primary care setting to identify children aged 5 to 17 years with oral health conditions.	KQ2	Indirect	Grade assignment/ health equity	RCTs, controlled trials, and observational studies. Studies should be well designed§ with low risk for bias using robust contemporaneous comparison groups	Children and adolescents aged 5 to 17 years; studies should be representative of the US population¶ and inclusive of groups disproportion-ately affected by oral health issues	Test performance (e.g., sensitivity, specificity, receiver operating characteristic analysis, area under the curve, calibration) of oral health screening examinations and risk assessment tools in primary care compared to no screening	Overall test performance in identifying children with outcomes, including dental caries, periodontal disease, tooth loss, change in quality of life, functional status, and morbidity	Range of US nondental primary care settings. Studies should be represent-ative of settings in the US and inclusive of settings disproportion-ately affected by oral health issues
Research is needed to access the accuracy of primary care–based oral health risk assessment tools to identify children aged 5 to 17 years at increased risk of oral health conditions.	KQ1	Direct	Grade assignment/ health equity	RCTs, controlled trials, and observational studies. Studies should be well designed§ with low risk for bias using robust contemporaneous comparison groups	Children and adolescents aged 5 to 17 years; studies should be representative of the US population¶ and inclusive of groups disproportion-ately affected by oral health issues	Assess test performance (e.g., sensitivity, specificity, receiver operating characteristic analysis, area under the curve, calibration) of oral health screening examinations and risk assessment tools in primary	Overall test performance in identifying children with outcomes, including dental caries, periodontal disease, tooth loss, change in quality of life, functional status, and morbidity	Range of US nondental primary care settings. Studies should be represent-ative of settings in the US and inclusive of settings disproportion-ately affected

Research Gap	Key Questions* or Contextual Questions	Direct/ Indirect Pathway†	Type of Gap‡	Study Characteristics	Population	Intervention/ Comparison	Outcomes/ Timing	Setting
						care compared to no screening		by oral health issues
Research is needed to assess the effectiveness and harms of preventive interventions, including but not limited to, fluoride gel, fluoride varnish, sealants, silver diamine fluoride, and xylitol in the primary care setting on oral health conditions.	KQ4 & KQ5	Direct	Grade assignment/ health equity	RCTs, controlled trials, and observational studies. Studies should be well designed§ with low risk for bias using robust contemporaneous comparison groups	Children and adolescents aged 5 to 17 years; studies should be representative of the US population¶ and inclusive of groups disproportion-ately affected by oral health issues	Compare preventive interventions (e.g., fluoride gel, fluoride varnish) to no intervention/ placebo	KQ 4: Change in dental caries, tooth loss, quality of life, functional status, or morbidity KQ 5: Dental fluorosis, tooth staining, bone effects, and neurological effects	Range of US nondental primary care settings. Studies should be represent-ative of settings in the US and inclusive of settings disproportion-ately affected by oral health issues
Research is needed to assess the effectiveness and harms of oral health education and behavioral counseling interventions on oral health outcomes.	KQ2	Direct	Grade assignment/ health equity	RCTs, controlled trials, and observational studies. Studies should be well designed§ with low risk for bias using robust contemporaneous comparison groups	Children and adolescents aged 5 to 17 years; studies should be representative of the US population¶ and inclusive of groups disproportion-ately affected by oral health issues	Compare education and behavioral counseling interventions to no intervention/ placebo	Incidence or change in severity of dental caries, periodontal disease, or tooth loss Improved quality of life, functional status, and morbidity	Range of US nondental primary care settings. Studies should be represent-ative of settings in the US and inclusive of settings disproportion-ately affected by oral health issues

Research Gap	Key Questions* or Contextual Questions	Direct/ Indirect Pathway†	Type of Gap‡	Study Characteristics	Population	Intervention/ Comparison	Outcomes/ Timing	Setting
Research is needed to identify the effectiveness of strategies to improve quality of life, function, or other clinically important oral health outcomes.	KQ4	Direct	Grade assignment/ health equity	RCTs, controlled trials, and observational studies. Studies should be well designed§ with low risk for bias using robust contemporaneous comparison groups	Children and adolescents aged 5 to 17 years; studies should be representative of the US population¶ and inclusive of groups disproportion-ately affected by oral health issues	Compare interventions to no intervention	Incidence or change in severity of dental caries, periodontal disease, or tooth loss Improved quality of life, functional status, and morbidity	Range of US nondental primary care settings. Studies should be represent-ative of settings in the US and inclusive of settings disproportion-ately affected by oral health issues

* Key questions are an integral part of the approach to conducting systematic reviews that the USPSTF uses in its recommendation process. Along with the analytic framework, these questions specify the logic and scope of the topic and are critical to guiding the literature searches, data abstraction, and analysis processes (https://uspreventiveservicestaskforce.org/uspstf/about-uspstf/methods-and-processes/procedure-manual).

† The direct pathway is typically derived from RCTs of the targeted screening or preventive intervention that adequately measure the desired health outcomes in the population(s) of interest. If certainty for net benefit cannot be derived from the direct pathway, then the USPSTF determines if the evidence is sufficient across the key questions and linkages in the indirect pathway to determine overall certainty.

‡ Types of gaps may include: grade assignment (moving from an I statement to a letter grade), change in letter grade (e.g., from a C to B or C to D), health equity, combined (e.g., grade assignment and health equity), or general gap (e.g., uptake of a clinical preventive service).

§ Well-designed studies should include, but are not limited to, nonbiased selection of screening participants, addressing confounders (e.g., use of well-matched comparison groups at recruitment on baseline clinical and demographic characteristics), and avoidance of use of historical controls. For additional information on guidelines used by the USPSTF to evaluate evidence please see: Harris RP, Helfand M, Woolf SH, et al. Current methods of the U.S. Preventive Services Task Force: a review of the process. *Am J Prev Med.* 2001;20(3):21-35.

¶ Studies should report and describe demographic characteristics (including but not limited to age, social factors, race and ethnicity, gender, rurality [and/or geographically underserved areas]) and settings of enrolled participants.

Abbreviations: RCT = randomized clinical trial; USPSTF = US Preventive Services Task Force.