**Q1** Please provide your contact information below.


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**Q2** Please describe your company or organizations overall goals and mission.

The Columbia University College of Dental Medicine strives for excellence in dental education; scholarship to advance the basic, clinical, and social sciences; and delivery of “compassionate oral health care for individuals” that is “responsive to community needs.” (College of Dental Medicine online Mission Statement at https://www.dental.columbia.edu/about-us/our-mission.)

**Q3** Please indicate which category your organization falls under.

**Health Care Provider**

**Q4** Innovation Executive Summary. Please describe the innovation, and how it addresses the social determinants of health. Please identify how the innovation addresses the 6 innovation criteria (i.e. ROI, scaleability, feasibility, evidence based support for innovation, relevance to the Medicaid population and speed to market).

The MySmileBuddy Program (MSBP) addresses the epidemic of early childhood caries (“ECC” - tooth decay in children under age six years) – a disease 4 times more prevalent than childhood asthma overall and consequential to the wellbeing and oral function of 5% of children in low to modest-income families covered by Medicaid. Severely affected children suffer pain and infection early in life, demonstrate dysfunctions in eating, sleeping, and speaking, and often require extensive dental repair in the operating room under general anesthesia with attendant risks. Because dental repair does not suppress disease progression in the absence of concomitant behavioral change (effective tooth brushing with fluoride toothpastes and dietary/eating control), post-surgical disease recurrence is common and costly.

Innovation: The MSBP shifts intervention for ECC from professionally-delivered surgical repair to family-centered disease management through a holistic approach that incorporates social, behavioral, and environmental oral health determinants. It does not necessarily

involve traditional dental providers but complements care provided by dental and medical clinicians. The MSBP equips lay health workers with a suite of tablet-based interactive guides, apps, widgets, and videos that assist in engaging parents of at-risk children under age six years in (1) education about the causes and prevention or suppression of ECC; (2) assessing caries risk; (3) selecting one or more oral health promoting goals; (4) developing family-specific action plans to reach the selected goals; (5) facilitating family success in implementing their self-defined action plan, and (6) tracking progress toward goal attainment. MSBP's educational technology was developed beginning in 2009 with NIH support by a multidisciplinary team that included a behavioral scientist, health educator, community health worker, pediatrician, pediatric dentist, social worker, nutritionist, public health professional, and technologist. It is predicated on established theories of health behavior change, motivational interviewing, and caries science. The MSBP was validated through a pragmatic trial conducted from 2014-2018 sponsored by the federal Center for Medicaid and Medicare Innovation (CMMI) that engaged 1205 low-income children from 950 families.

MSBP addresses Social Determinants of Health (SDH)

The MSBP addresses SDH by moving oral health supervision for young children out of the environment of a dental office and into families' homes and by changing the actor from a dental professional to a lay community health worker (CHW). MSBP's CHWs are selected from the communities they serve to reflect the sociodemographic and language characteristics of the families they address. Our CHWs understand and appreciate the "conditions under which people are born, grow, live, work, and age" (WHO SDH definition) that empower or restrict families attainment of health and health care. Quoting from a documentary film of the MSBP (available at https://drive.google.com/file/d/ 0B8CIPL7bvC5GV1RUMHQ2MXBmX28/view), MSBP's Director reports that the CHWs "are from the same communities as these high risk families. They get it. They live the life. They understand what these families' lives are like." Quoting one of the CHWs in the film, "I think families are more comfortable with me at their home because they know I'm a member of their community and I relate with them and they can relate with me. We definitely share the same struggles. They know that I'm not judging them. I'm just there to help them. I try to focus on all the strengths that they have." MSBP's risk functions directly incorporate social determinants by quantifying sociodemographic correlates of disease while MSBP's CHWs assess income, housing, employment, and food insecurities that impact attention to oral health and refer families to relevant services as needed. The MSBP incorporates considerations of SDH in each of its components – from education to risk assessment to goal setting, action planning, and behavior change implementation.

Regarding the 5 SDH "categories," the MSBP addresses "education" through its low-literacy bilingual (English/Spanish) technology; "neighborhood and environment" through its home-based delivery and consideration of neighborhood resources; and "health and healthcare" directly by targeting early childhood oral health. It additionally addresses "social and community context" when developing action plans that involve relatives and neighbors critical to social adhesion and tangentially addresses "economic stability" by referring families to social, housing, legal, and employment services as needed.

MSBP addresses the 6 innovation criteria:

1. ROI: A detailed 2015 system dynamic model that considers caries epidemiology and disease dynamics for all young children in New York State Medicaid provides an estimated net annual savings to NYS Medicaid's dental program of $16.2M to $49.3M using various literature-based assumptions about the efficacy of motivational interviewing on which MSBP is based. The ROIs from this analysis range from $0.76 to $2.83 and average $1.49. More dramatic savings are anticipated based on the difference in cost between the MSBP and traditional dental repair as MSBP engages low-cost CHWs while traditional dental repair requires dental professionals and, frequently, surgical costs that include pre-admission medical physical and lab tests, use of hospital facilities including the OR and recovery room, and anesthesia and radiology charges. They typical cost of dental repair for ECC in the OR is $8-10,000 while the cost o a CHW intervention over 6-12 months ranges is under $2000 per child.

2. Scalability: The MSBP has strong potential to rapidly increase its reach through adoption by Medicaid Managed Care organizations, Early Head Start/EHS, WIC, and federally-sponsored Home Visiting programs (MIECHV). Its rapid adoption is also facilitated by health professional guidelines (American Academies of Pediatrics and Pediatric Dentistry, American Dental Association, American Association of Public Health Dentistry) that promote risk-based preventive and disease management interventions. The MSBP Team has explored scalability through two technology-transfer programs (NYC's e-Lab and Columbia University's BioMedX Program) and has been awarded funding by Columbia University for commercialization based on MSBP's promise of widespread adoption.

3. Feasibility: Regarding parental acceptance, the ease and convenience of implementing the MSBP was established through our

Medicaid Innovation Grant that found almost universal enrolment by parents who were informed about the Program. Among parents who participated in the MSBP, 98.9% agreed with the statement, “I would recommend the MSBP”, over 97% reported favorable experience with their CHW, and 99.1% agreed that the technology “helped me reach my goal” at the close of the intervention. Regarding feasibility of acceptance by programs that serve low-income preschoolers, EHS, WIC, and MIECHV all include requirements to address young children’s health – requirements that can be satisfied by adopting the MSBP. Regarding feasibility of acceptance by Medicaid dental managed care organizations, our MSBP Team has co-developed with Cindy Mann JD, former Director of the federal Center for Medicaid and CHIP Services, an implementation guide that explains to states and their managed care organizations how to feasibly implement the MSBP within legal and regulatory frameworks.

4. Evidence base support: Through our pragmatic trial with 950 families, MSBP’s innovative technology – itself predicated on established behavioral and caries science as well as principles of motivational interviewing – has been proven effective in: (1) changing parental knowledge about caries as a disease process; (2) changing parental adherence to effective tooth brushing (defined as twice- daily, parent-delivered, brushing with fluoridated toothpaste); and (3) changing parental dietary offerings to their children (specifically high-sugar retentive foods) and their children’s eating (e.g. reducing inappropriate use of sippy cups). Parental assessments of their children’s oral health improved over the course of the intervention with 52% of parents claiming that their child was in “poor or fair oral health” at the start of the Program to 2% reporting that their children are in “fair” oral health and none reporting “poor oral health” at the close of the 6-12 month intervention.

5. Relevance to Medicaid population: The MSBP was developed specifically for the Medicaid population of children under age six years to fulfill the dental component of the Medicaid EPSDT pediatric benefit. Unlike the traditional fee-for-service dental benefit, the MSBP supports whole-person health determinants. MSBP also supports Medicaid innovation that seeks to establish accountable, outcomes-based, value-driven care.

6. Speed to market: Having been awarded the Columbia University Technology Ventures fund to commercialize the MSBP, our Team is now in active discussion with Medicaid dental managed care vendors and exploration with EHS, WIC, and MIECHV. Based on these discussions, we anticipate moving IP out of the University and establishing a presence in the dental Medicaid market within the coming academic year (July 1 2018-June 30, 2019).

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| **Q5** Was your innovation implemented? If so, please explain when, the number of people impacted, and the results. | Yes (please specify when and the estimated number of people impacted):<br><br>2014-2018 1205 young children in 950 families |
| **Q6** Please identify the SDH Domain that your innovation addresses. (Select all that apply.) | **Education,**<br>**Health and Health Care ,**<br>**Neighborhood and Environment** |
| **Q7** I give the Department of Health the right to share the information submitted in this application publicly (for example: on the DOH website). I understand that there is no monetary reward/reimbursement for my submission or for attending the summit should my innovation be selected. | **I consent to have my innovation shared** |