previous efforts in charactering and developing metadata models for describing microbiome metadata. Due to the heterogeneity in microbiome and exposome data, we aligned them along a conceptual representation of different data used in translational research; microbiomes being biospecimen-derived, and exposomes being a combination of sensor measurements, surveys and computationally modelled data. We performed a review of literature describing microbiome data, metadata, and semantics [4–15], along with existing datasets [16] and developed an initial metadata model. We reviewed the model with microbiome domain experts for its accuracy and completeness, and with translational researchers for its utility in different studies, and iteratively refined it. We then incorporated the logical model into OpenFurther's metadata repository MDR [17,18] for harmonization of different microbiome datasets, as well as integration and assimilation of microbiome-exposome events utilizing the UPIE. RESULTS/ANTICIPATED RESULTS: Our model for describing the microbiome currently includes three domains (1) the specimen collected for analysis, (2) the microbial genomics pipelines, and (3) details of the microbiome genomics. For (1), we utilized biospecimen data model that harmonizes the data structures of caTissue, OpenSpecimen and other commonly available specimen management platform. (3) includes details about the organisms, isolate, host specifics, sequencing methodology, genomic sequences and annotations, microbiome phenotype, genomic data and storage, genomic copies and associated times stamps. We then incorporated this logical model into the MDR as assets and associations that UPIE utilizes to harmonize different microbiome datasets, followed by integration and assimilation of microbiome-exposome events. Details of (2) are ongoing. DISCUSSION/SIGNIFICANCE OF IMPACT: The role of the microbiome and co-influences from environmental exposures in etio-pathology of various pulmonary conditions isn't well understood [19–24]. This metadata model for the microbiome provides a systematic approach for integrating microbial genomics with sensor-based environmental and physiological data, and clinical data that are present in varying spatial and temporal granularities and require complex methods for integration, assimilation and analysis. Incorporation of this microbiome model will advance the performance of sensor-based exposure studies of the (UPIE) to support novel research paradigms that will improve our understanding of the role of microbiome in promoting and preventing airway inflammation by performing a range of hypothesis-driven microbiome-exposome pediatric asthma studies across the translational spectrum.

Clinical Epidemiology/Clinical Trial

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Vitamin D assay utilization and outcomes in pregnant women in an urban safety net medical center: a retrospective cohort study

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OBJECTIVES/SPECIFIC AIMS: The goals of this retrospective cohort study is threefold: 1) to assess how many pregnant women at Boston Medical Center from 2012 to 2017 have had their vitamin D status checked prior to and during pregnancy, 2) determine associations between vitamin D levels, birth outcomes and demographics and 3) assess how many of those found to have lower than satisfactory vitamin D levels (<30ng/mL) received interventions, including receiving vitamin D supplementation and/or being referred to an appropriate specialist such as an endocrinologist or a nutritionist. METHODS/STUDY POPULATION: Our study population is mothers over age 18 who received care at Boston Medical Center during their pregnancy from 2012 to 2017. Our primary outcomes are vitamin D utilization rates and associations between vitamin D levels with clinical outcomes during pregnancy and at birth. Secondary outcomes are demographic predictors of mothers who receive vitamin D testing and those who have complications associated with low vitamin D. We will conduct multiple linear regressions to check for associations between vitamin D levels, birth outcomes and demographic variables. We will adjust vitamin D levels with maternal BMI. De-identified clinical data was gathered from Boston University Medical Center's (BUMC) Clinical Data Warehouse. This retrospective study was approved with a HIPAA waiver by the BUMC Institutional Data Warehouse. All statistical analysis was completed using SAS version 9.4 and was primarily done by the student PI and reviewed by Dr. Hossein, the co-investigator who is trained as a statistician and geneticist. The team also utilized Boston University's Biostatistics, Epidemiology & Research Design (BERD) team to check the feasibility of the statistical methods. RESULTS/ANTICIPATED RESULTS: We anticipate that our descriptive demographic data will reflect the medical center's predominantly black/Hispanic and low-income profile. Based on previous literature, we expect low vitamin D levels to have positive associations with gestational diabetes, pre-eclampsia, and preterm birth. Analyses are currently actively in progress and we expect to have results before the ACTS conference date in March, 2019. DISCUSSION/SIGNIFICANCE OF IMPACT: Vitamin D is an essential part of the human body system. It is well documented in current literature that vitamin D is correlated with bone health, mental health and maternal health. Moreover, there is evidence that maternal vitamin D supplementation prevents vitamin D deficiency in newborns. Previous literature suggests that low vitamin D may be associated with gestational diabetes, pre-eclampsia, and pre-term births. Boston Medical Center is Massachusetts' largest urban medical center and acts as its only safety-net hospital, serving predominantly low-income and socially marginalized patient populations. There is limited existing research on assessment of maternal vitamin D in urban hospital settings. Pregnant women rarely receive vitamin D screenings as part of their prenatal checkups as current national and regional guidelines do not require pregnant women to be screened for vitamin D deficiency or insufficiency. The results will demonstrate the potential effects vitamin D supplementation, or lack thereof, in expectant mothers living in urban, safety net communities. We hope to inform prenatal care practices and attitudes of vitamin D supplementation in maternal health with the results of our study.

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A comparison between the Rolling 6 and 3+3 dose escalation study designs for phase 1 clinical trials

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OBJECTIVES/SPECIFIC AIMS: The development of new anticancer agents for children requires an inherently longer timeline than in adults. The 3+3 study design for Phase 1 dose escalation trials is commonly used to estimate the maximum tolerated dose and assess safety. The Rolling 6 study design was developed to shorten

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