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| **Attachment 13: Survey Question Sources & Relevance** |
| **ENROLLMENT SURVEY FOR MOTHERS** |
| **Questionnaire Section**  | **Question Numbers** | **Source of Questions** | **Reference** | **Revision** | **Used to Measure** | **Relevance of Information Obtained** |
| Record of Consent | N/A | Navajo Birth Cohort Study | None | New | Record of Informed Consent | Administrative use |
| Introduction/Contact Information | N/A | Navajo Birth Cohort Study | None | New | Eligibility, contact information | Administrative use |
| Father Participation | N/A | Navajo Birth Cohort Study | None | New | Willingness to contact baby's father | Administrative use ; Fathers play an important role in exposure assessment for epigenetics and occupational/home history that could affect outcomes in the baby |
| Demographics | Q1-Q13 | Tar Creek project (Ettinger) | None | Q3 added about language preferences; Q11 revised from N.American to Navajo | Demographic factors  | Potential confounders or effect modifiers of relationships of interest: age, birthplace, race, socioeconomic status, education |
| Reproductive History | Q14-Q28 | Tar Creek project (Ettinger) | None | Q24 revised to include NAIHS facilities | Reproductive history | Previous reproductive history important covariate when assessing reproductive, birth, and developmental outcomes; Past history of miscarriages, birth control use, breastfeeding, fecundity, parity serves as important covariate information when assessing reproductive and birth outcomes.  |
| Current Pregnancy Information | Q29-Q36 | Tar Creek project (Ettinger) | None | Not Changed | Current pregnancy information | Potential confounders or effect modifiers of relationships of interest; Prenatal care, breast feeding, and multiplicity of birth have been associated with birth and reproductive health outcomes.  |
| Current Medications/ Substances | Q37-Q46 | Tar Creek project (Ettinger) | None | Not Changed | Use of medications and substances | Potential confounders or effect modifiers of relationships of interest; Certain medications and well as substance abuse may contribute to adverse birth outcomes.  |
| Alcohol Use | Q47-Q49 | Tar Creek project (Ettinger) | None | Not Changed | Use of alcohol | Potential confounders or effect modifiers of relationships of interest; Alcohol use during pregnancy has been associated with adverse birth outcomes. |
| Tobacco Use | Q50-Q59 | Tar Creek project (Ettinger) | None | Not Changed | Use of tobacco | Potential confounders or effect modifiers of relationships of interest; Tobacco use during pregnancy has been associated with adverse birth outcomes.  |
| Stress | Q60-Q65 | Kessler Psychological Distress Scale 6-item (K6) | Kessler RC, Andrews G, Colpe LJ, Hiripi E, Mroczek DK, Normand SL, Walters EE, Zaslavsky AM. Short screening scales to monitor population prevalences and trends in nonspecific psychological distress. Psychological Medicine 2002; 32: 959-976. (see Table 2 for specific questions) | Not Changed | A 6-question screening scale of psychological distress embedded within the 10-question scale were developed for the redesigned US National Health Interview Survey (NHIS). 6 questions evaluate: depressed mood, agitation, fatigue, guilt/worthlessness, and anxiety. | Potential confounders or effect modifiers of relationships of interest; Stress during pregnancy has been linked to adverse health fetal outcomes as well as vulnerability to certain chemical toxins.  |
| Physical Activity | Q66-Q68 | Navajo Birth Cohort Study | None | New | Physical activity | Potential confounders or effect modifiers of relationships of interest; Normal BMI and physical activity have been associated with better birth outcomes.  |
| Housing Characteristics | Q69-Q87 | DiNEH Project | None | Not Changed | Housing characteristics (exposures) | Potential exposure sources; Water damage, mold, mildew, livestock, presence of pets, and coal wood burning in the home may be important covariates. Questions complement environemntal home assessment testing.  |
| Water Usage | Q88-Q92 | DiNEH Project | None | Not Changed | Water usage exposures | Potential exposure sources; As indicated in the DiNEH project and CDC water hauling study, unregulated water sources may be contaminated with uranium or other heavy metals. These survey questions will complement the water testing in the home assessment.  |
| Food Behaviors | Q93-Q99 | DiNEH Project | None | Not Changed | Livestock and gardening exposures | Potential exposure sources |
| Occupational/Environmental | Q100-Q115 | DiNEH Project | None | Not Changed | Occupational and environmental exposures | Potential exposure sources |

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| **ENROLLMENT SURVEY FOR FATHERS** |
| **Questionnaire Section**  | **Question Numbers** | **Source of Questions** | **Reference** | **Revision** | **Used to Measure** | **Relevance of Information Obtained** |
| Contact Information | N/A | Navajo Birth Cohort Study | None | New | Contact information | Administrative use |
| Demographics | Q1-Q9 | Tar Creek project (Ettinger) | None | Q3 added about language preferences; Q15 new question added | Demographic factors  | Potential confounders or effect modifiers of relationships of interest: age, birthplace, race, socioeconomic status, education |
| Health History | Q10-Q15 | Tar Creek project (Ettinger) | None | Not Changed | Health history | Potential confounders or effect modifiers of relationships of interest |
| Current Medications/ Substances | Q16-Q22 | Tar Creek project (Ettinger) | None | Not Changed | Use of medications and substances | Potential confounders or effect modifiers of relationships of interest |
| Alcohol Use | Q23-Q25 | Tar Creek project (Ettinger) | None | Not Changed | Use of alcohol | Potential confounders or effect modifiers of relationships of interest |
| Tobacco Use | Q26-Q35 | Tar Creek project (Ettinger) | None | Not Changed | Use of tobacco | Potential confounders or effect modifiers of relationships of interest |
| Stress | Q36-Q41 | Kessler Psychological Distress Scale 6-item (K6) | Kessler RC, Andrews G, Colpe LJ, Hiripi E, Mroczek DK, Normand SL, Walters EE, Zaslavsky AM. Short screening scales to monitor population prevalences and trends in nonspecific psychological distress. Psychological Medicine 2002; 32: 959-976. (see Table 2 for specific questions) | Not Changed | A 6-question screening scale of psychological distress embedded within the 10-question scale were developed for the redesigned US National Health Interview Survey (NHIS). 6 questions evaluate: depressed mood, agitation, fatigue, guilt/worthlessness, and anxiety. | Potential confounders or effect modifiers of relationships of interest |
| Physical Activity | Q42-Q44 | Navajo Birth Cohort Study | None | New | Physical activity | Potential confounders or effect modifiers of relationships of interest |
| Housing Characteristics | Q45-Q63 | DiNEH Project | None | Not Changed | Housing characteristics (exposures) | Potential exposure sources |
| Water Usage | Q64-Q68 | DiNEH Project | None | Not Changed | Water usage exposures | Potential exposure sources |
| Food Behaviors | Q69-Q74 | DiNEH Project | None | Not Changed | Livestock and gardening exposures | Potential exposure sources |
| Occupational/Environmental | Q75-Q90 | DiNEH Project | None | Not Changed | Occupational and environmental exposures | Potential exposure sources |

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| **POSTPARTUM SURVEY (2 MONTHS)** |
| **Questionnaire Section**  | **Question Numbers** | **Source of Questions** | **Reference** | **Revision** | **Used to Measure** | **Relevance of Information Obtained** |
| Contact Information | N/A | Navajo Birth Cohort Study | None | New | Updated contact information | Administrative use |
| Birth Information | Q1-Q2 | Tar Creek project (Ettinger) | None | Q1 revised to include NAIHS facilities | Birth information | Potential confounders or effect modifiers of relationships of interest: age, birthplace |
| Breastfeeding | Q3-Q5 | Tar Creek project (Ettinger) | None | Not Changed | Breastfeeding practices | Potential exposure sources |
| Infant Formula Preparation | Q7-Q8 | Tar Creek project (Ettinger) | None | Not Changed | Use and preparation of infant formula | Potential exposure sources |
| Cessation of Breastfeeding | Q9-Q10 | Tar Creek project (Ettinger) | None | Not Changed | Cessation of breastfeeding | Potential exposure sources |
| Pregnancy/Delivery Medical History | Q11-Q23 | Tar Creek project (Ettinger) | None | Not Changed | Common adverse events in pregnancy/delivery | Potential confounders or effect modifiers of relationships of interest |
| Current Medications/ Substances | Q24-Q32 | Tar Creek project (Ettinger) | None | Not Changed | Use of medications and substances | Potential confounders or effect modifiers of relationships of interest |
| Alcohol Use | Q33-Q35 | Tar Creek project (Ettinger) | None | Not Changed | Use of alcohol | Potential confounders or effect modifiers of relationships of interest |
| Tobacco Use | Q36-Q45 | Tar Creek project (Ettinger) | None | Not Changed | Use of tobacco | Potential confounders or effect modifiers of relationships of interest |
| Postnatal Depression | Q46-Q55 | Edinburgh Postnatal Depression Scale (EPDS) | Cox JL, Holden JM, Sagovsky R. Detection of postnatal depression: Development of the 10-item Edinburgh Postnatal Depression Scale. British Journal of Psychiatry 1987; 150:782-786. | Not Changed | A widely used screening tool for postpartum depression which has been adapted and validated in many languages. The 10-item EPDS questionnaire was developed to identify women who have postpartum depression and may be used up to 8 weeks postpartum and can also be applied for depression screening during pregnancy. | Potential confounders or effect modifiers of relationships of interest |
| Housing Characteristics | Q50-Q67\*\* | DiNEH Project | None | Not Changed | Housing characteristics (exposures) | Potential exposure sources |
| Water Usage | Q68-Q72\*\* | DiNEH Project | None | Not Changed | Water usage exposures | Potential exposure sources |
| \*\*Note: these questions are misnumbered and should start with Q56 |  |  |  |  |  |  |

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| **POSTPARTUM SURVEY (6,9, 12 MONTHS)** |
| **Questionnaire Section**  | **Question Numbers** | **Source of Questions** | **Reference** | **Revision** | **Used to Measure** | **Relevance of Information Obtained** |
| Contact Information | N/A | Navajo Birth Cohort Study | None | New | Updated contact information | Administrative use |
| Current Breastfeeding | Q1-Q2 | Tar Creek project (Ettinger) | None | Not Changed | Current breastfeeding practices | Potential exposure sources |
| Infant Formula | Q3-Q4 | Tar Creek project (Ettinger) | None | Not Changed | Use and preparation of infant formula | Potential exposure sources |
| Cessation of Breastfeeding | Q5 | Tar Creek project (Ettinger) | None | Not Changed | Cessation of breastfeeding | Potential exposure sources |
| Introduction of Foods | Q6-Q9 | Tar Creek project (Ettinger) | None | Not Changed | Introduction of foods | Potential exposure sources |
| Foods Sources (WIC) | Q10 | Tar Creek project (Ettinger) | None | Not Changed | Use of WIC program services | Potential confounders or effect modifiers of relationships of interest |
| Home Questions and Observations | Q11-Q28 | Home Observation for Measurement of the Environment (HOME) Inventory Scale | Caldwell BM, Bradley R. Home Observation for Measurement of the Environment. University of Arkansas, Little Rock, 1979. Additional references available here: http://fhdri.clas.asu.edu/home/references.html | Not Changed | Designed to measure the quality and quantity of stimulation and support available to a child in the home environment. Infant/Toddler (IT) HOME is designed for use during infancy (birth to age three). These questions are designed for children up to age 12 months. | Potential confounders or effect modifiers of relationships of interest |
| Perceived Stress Scale | Q29-Q32 | Perceived Stress Scale 4-item scale (PSS-4) | Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. Journal of Health and Social Behavior 1983; 24: 386-396. More information available at: http://www.ncsu.edu/assessment/resources/perceived\_stress\_scale.pdf | Not Changed | Most widely used psychological instrument for measuring perception of stress. The PPS includes 10 questions (PSS-10), but a short 4-item scale (PSS-4) can be made from questions #2,4,5, and 10 of the PPS-10.  | Potential confounders or effect modifiers of relationships of interest |
| **NUTRITION SURVEYS** |
| **Questionnaire Name/ Section**  | **Question Numbers** | **Source of Questions** | **Reference** | **Revision** | **Used to Measure** | **Relevance of Information Obtained** |
| **Food Frequency Questionnaire\*\*** | N/A | Original Source: Harvard Nurses' Health Study and Health Professionals' Study. Revised and validated for use in Native American, low-income, and pregnant women. | 1: Willett WC, Sampson L, Stampfer MJ, Rosner B, Bain C, Witschi J, Hennekens CH, Speizer FE. Reproducibility and validity of a semiquantitative food frequency questionnaire. Am J Epidemiol. 1985 Jul;122(1):51-65. 2: Wei EK, Gardner J, Field AE, Rosner BA, Colditz GA, Suitor CW. Validity of a food frequency questionnaire in assessing nutrient intakes of low-income pregnant women. Matern Child Health J. 1999 Dec;3(4):241-6. 3: Baer HJ, Blum RE, Rockett HR, Leppert J, Gardner JD, Suitor CW, Colditz GA. Use of a food frequency questionnaire in American Indian and Caucasian pregnant women: a validation study. BMC Public Health. 2005 Dec 15;5:135. 4: Watts V, Rockett H, Baer H, Leppert J, Colditz G. Assessing diet quality in a population of low-income pregnant women: a comparison between Native Americans and whites. Matern Child Health J. 2007 Mar;11(2):127-36.  | See details below | Nutritional intake from diet will be assessed using a semi-quantitative food-frequency questionnaire based on the methods of Willet et al. and validated in Native American populations (Watts et al. 2007). Dr. Ettinger has extensive experience in nutritional assessment in Native populations living near the Tar Creek Superfund Site where this questionnaire was using successfully to establish maternal dietary patterns and nutrient intake during pregnancy and the relationships to environmental exposures. Navajo Team members have provided supplemental input to the questionnaire based on traditional diets and the UNM-CTSA nutritionists have developed nutritional equivalents for those foods.  | Potential confounders or effect modifiers of relationships of interest |
| Dairy | Q1-Q8 | Tar Creek project (Ettinger) | Same as above | Not changed | Same as above | Potential confounders or effect modifiers of relationships of interest |
| Fruits | Q9-Q15 | Tar Creek project (Ettinger) | Same as above | Not Changed | Same as above | Potential confounders or effect modifiers of relationships of interest |
| Vegetables | Q16-Q28 | Tar Creek project (Ettinger) | Same as above | Added Q28 "wild spinach or other native (wild) plants" | Same as above | Potential confounders or effect modifiers of relationships of interest |
| Meat and Fish | Q29-Q39 | Tar Creek project (Ettinger) | Same as above | Added "corn dog" to Q33; "Navajo burger" to Q36; revised Q37 and Q38 to include "lamb (mutton)" | Same as above | Potential confounders or effect modifiers of relationships of interest |
| Sweets, Cereals, Baked Goods | Q40-Q50 | Tar Creek project (Ettinger) | Same as above | Added Q50 "tortilla" | Same as above | Potential confounders or effect modifiers of relationships of interest |
| Other Foods | Q51-Q61 | Tar Creek project (Ettinger) | Same as above | Added Q51 "Navajo taco"; Q52 "frybread"; Q53 "blue corn mush" | Same as above | Potential confounders or effect modifiers of relationships of interest |
| Beverages | Q62-Q69 | Tar Creek project (Ettinger) | Same as above | Not changed | Same as above | Potential confounders or effect modifiers of relationships of interest |
| Other Eating Habits | Q70-Q84 | Tar Creek project (Ettinger) | Same as above | Added Q73 "prenatal vitamins"; Q74 "type of prenatal vitamins"; revised Q77 to include "lamb (mutton)" | Same as above | Potential confounders or effect modifiers of relationships of interest |
| \*\* Note: FFQ included in IRB/OMB packet has been revised based on extensive consultations with Navajo Team members about Navajo-specific foods |  |  |  |  |  | Potential confounders or effect modifiers of relationships of interest |
| **Questionnaire Name/ Section**  | **Question Numbers** | **Source of Questions** | **Reference** | **Revision** | **Used to Measure** | **Relevance of Information Obtained** |
| **WIC Women's Nutrition Questionnaire** | Arizona Department of Health Services | http://www.azdhs.gov/azwic/ | Not Changed | WIC nutritional assessments are general screening tools and not used for research purposes. The study team will consult with Navajo WIC program as needed. | Potential confounders or effect modifiers of relationships of interest |
| Energy and Nutrients | Q1-Q6 | Arizona WIC Program | http://www.azdhs.gov/azwic/ | Not Changed | Will consult with WIC programs as needed | Potential confounders or effect modifiers of relationships of interest |
| Food Groups | Q1-Q8 | Arizona WIC Program | http://www.azdhs.gov/azwic/ | Not Changed | Will consult with WIC programs as needed | Potential confounders or effect modifiers |