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<th>Research Objectives</th>
<th>Deliverables</th>
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| **1** Using a systems dynamics model, what mix of interventions are predicted to make the most positive impact on infant mortality rates and disparities within Medicaid and underserved populations and regions? Evaluate the impact of the following efforts on infant mortality:  
  - Safe sleep  
  - Improved access to care  
  - Progesterone | Infant mortality is a complex health problem. Marked racial and socioeconomic disparities in infant mortality persist in Ohio and nationally, despite a variety of efforts to address and reduce them. Some researchers have argued that, “....health interventions fall short of their goals because they are made in piecemeal fashion, rather than comprehensively and from a whole-system perspective” ([Homer and Hirsch; Hirsch et al](#)). This is likely the case with infant mortality in Ohio given an almost stagnant infant mortality rate for more than a decade despite the existence of various programs targeted at improving birth outcomes.  
  - As a result, there is a need for rigorous research in Ohio to identify the optimal mix of interventions and resources to improve infant mortality of Medicaid and underserved populations and address this complicated health issue from a system’s perspective. This effort will identify infant mortality solutions from a systems point of view (using a systems dynamics model), in order to address the complexity and uniqueness of Ohio’s infant mortality problems impacting Medicaid and underserved populations. |
| **2** Develop a predictive model to identify babies at the greatest risk of infant death among Ohio Medicaid recipients | State efforts could be better focused if babies with a higher risk of dying in the first year of life could be identified a priori.  
  - Existing state data from the past 5 years should be used to develop a predictive model of infant death.  
  - Separate models predictive of neonatal death, post neonatal death, and pre-term birth related causes of death may be developed.  
  - Linked Vital Statistics birth and death data, and Medicaid claims data should be used along with other data sources as appropriate.  
  - Recommend opportunities for intervening prior to death with appropriate applied statistical certainties. |
| **3** Recommend and apply a spatial GIS method to identify Ohio communities with the highest infant mortality experience, social determinants of health, factors that impact birth outcomes, access and healthcare service gaps and needs, among Medicaid and underserved populations. | A. Work with technical experts at ODH and Ohio Department of Medicaid to establish common data definitions and a data dictionary for all infant mortality related work  
  B. Recommend and apply a spatial GIS method that would be used across the state health and human services enterprise (e.g. ODH, ODM, ODMHAS) to identify Ohio communities with the highest infant mortality experience, social determinants of health, factors that impact birth outcomes, access and service needs among Medicaid and underserved populations/regions, and apply spatial methods to identify patterns of maternal, infant and child health outcomes among these populations/regions in Ohio. |
**Establish cohorts of Medicaid and non-Medicaid sub-populations/geolocations for benchmarking and comparisons**

**State-wide, identify by census track or zip code populations at risk of experiencing infant mortality (at risk populations for infant mortality)**

**For each community/zip code/census tract identified above, conduct research to evaluate the prevalence of specific areas of risk, access, service gaps, and outcomes, inclusive of but not limited to:**

- Disparities
- Preterm births
- Low birth weight babies
- Core HEDIS measures, including timeliness of prenatal care and postpartum visits
- Poverty
- Low/no educational attainment
- Access to care, progesterone, LARCs, and other as determined by the research findings
- Provider/health service capacity (by specialty e.g., licensure)
- Social determinants to consider include housing, transportation, racism, pollution, stress, education, etc.
- Birth outcomes to include infant mortality, prematurity, low birth weight, and disparities

**C. Identify and determine the best models to use for monitoring temporal trends in defined high-risk areas, services gaps and needs.**

**D. Set up a system for monitoring indicators (of risk factors and of birth outcomes) by geography over time. This system should be of use to multiple state agencies for timely evaluation and planning.**

**E. Provide technical assistance to ODM, ODH and other health and human services agencies’ staff for monitoring temporal trends in infant mortality and related birth outcomes, risk factor (including social determinants of health), access, and service capacity in the identified infant mortality hotspots for the Medicaid health care delivery systems.**

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<th>Evaluate the effectiveness of <strong>OIMRI</strong> (Ohio Infant Mortality Reduction Initiative) home visiting program on birth outcomes.</th>
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<td>- Development of an evaluation program for OIMRI that addresses access, utilization of health services (including specific referral sources), health outcomes, and disparities</td>
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<td>- Development of an analysis plan that uses OIMRI participant data linked to VS birth records; a non-intervention cohort methodology is preferred, utilizing an existing VS/Medicaid claims linkage</td>
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<td>- Development of an ongoing reporting structure with a timely performance feedback mechanism</td>
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| 5 | Produce a comprehensive report of Ohio’s effort to understand and improve infant mortality among Medicaid and underserved populations based a collective effort of aforementioned studies. | • Include below in each aforementioned study as a part of study deliverables
  - Provide progress reports quarterly, with discussion as appropriate.
  - Submit a draft summary report 5 weeks prior to the final report.
  - Submit final report.
  - Provide an oral presentation (either in person or via webinar) to the state.
• Produce a comprehensive report describing methods, results (including maps), interpretation (technical and in lay language), limitations, and discussion of analyses of a collective effort of aforementioned studies.
  Detail to be developed |

Studies will attempt to examine the availability and link to existing and available robust public assistance data sets (e.g., VS, SNAP, Child Welfare, WIC, PARIS, work assistance, etc.) And partner with Foodbank, public housing and Schools systems before considering to establish home-grown data collection systems. Studies will avoid duplication of existing study efforts inclusive but not limited to “Examining the Impact of Ohio’s Medicaid Expansion: Health improvement for Ohio’s women and children (aka, WRA study), Group 8 Evaluation, PCMH, MCH and social determinants of health studies under the Ohio Medicaid Assessment Survey.