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# Addressing health disparities in the criminal legal system: Translational benefits, challenges, and facilitators of impactful research with incarcerated pregnant women

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**Implementation, Policy and Community Engagement Translational Science Case Study**

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## Abstract

This in-depth analysis illuminates a translational journey of a community-university research collaboration that examined health disparities among incarcerated pregnant women and spanned the translational spectrum, with the initial collaboration in 2011 paving the way for consequent research grants, publications, practices, programs, and legislation passed years later. The case study utilized data from interviews with research stakeholders, institutional and governmental sources, peer-reviewed publications, and news stories. Identified research and translational challenges included cultural differences between research and prison system; the prison system's lack of transparency; politics of using and translating research to policy change; and issues of capacity, power, privilege, and opportunity when doing community-engaged research/science. Among the facilitators of translation were the Clinical and Translational Science Award and institutional support; engagement of key stakeholders and influencers; authentic collaboration and team science; researchers as translation catalysts; pragmatic scientific approach; and policies and legislative activities. The research contributed to a variety of community and public health, policy/legislative, clinical/medical, and economic benefits. The case study findings enhance our understanding of translational science principles and processes leading to improved wellbeing and serve as a call for advancing the research agenda addressing health disparities related to criminal and social justice issues.



## Introduction

The lingering COVID-19 pandemic and recent socio-political and economic developments have magnified health disparities faced by incarcerated pregnant women, mothers, and their future children, who are special and underserved/underrepresented populations [1]. Of the estimated 55,000 annual admissions of pregnant people to US jails, many are lower-income individuals and/or people of color [2,3] and those possessing multiple, intersecting identities.

There are serious barriers to representative inclusion across the lifespan research (e.g., ongoing structural inequalities, research infrastructure challenges, and exclusion of vulnerable populations from research studies), and there is a need for structural competency, that is, an understanding of how social structures and systems contribute to health disparities and the ability to address these issues in research and clinical practice [4]. There is more than one human life (and one stage of the human lifespan) involved in each pregnancy case: the life, health, and wellbeing of the mother herself and those of her child(ren). While there is a strong need for effective health interventions and programs for pregnant people in incarceration settings, there is a lack of research that critically evaluates how to address the health needs of this population and which approaches are successful and why.

Translational science programs support the efficient and timely movement of translational research from the earliest discoveries in the lab to improvements in human health, healthcare delivery, and community wellbeing; however, the critical processes and drivers of research translation remain understudied. This longitudinal case study examines translational benefits, barriers, and facilitators of impactful research with incarcerated pregnant women conducted by University of Minnesota researchers and their community partners, enabling translation from innovation to powerful contributions to health policies, legislation, and practice. Translational problem-solving and its impact were based on the shared responsibilities and ongoing dialogue among those involved in research, exploring and integrating ethical, equity, and justice values that guide translational science, and ensuring that those values align with the goal of improving health outcomes [5].

## Case Study Methods

Our study utilized the Retrospective Translational Science Case Study approach [6], incorporating diverse data sources and methods as part of evaluating research/translational processes (including challenges and facilitators) and impact. We started with the secondary data collection and analysis that included the researchers' grant applications, reports, and publications; public stories/news related to their research; scientific publications in this area of science; organizational and policy documents; and bibliometrics as part of research impact analysis [7]. Next, we analyzed experiences and perceptions of research stakeholders from four original, semi-structured interviews with key informants. We also examined secondary data from over 50 interviews with 30 stakeholders featured in published sources.

For qualitative analysis of the transcribed interview recordings and secondary data, we utilized a combination of the evaluation coding [8,9] and protocol coding [9,10] informed by the protocol for retrospective translational science case studies of health interventions [6]. As a tool for our translational/research impact analysis, we also used the Translational Science Benefits Model (TSBM) Checklist [11], specifically, its Benefits/Indicators categories – by comparing and assigning them to the study findings (as summarized in Table 1 and Fig. 1 and described in detail in the Impact Contributions section).

## Case Study Findings

### *Health Problem Addressed by the Case*

The number of women incarcerated in the United States has increased by more than 600% over the past three decades. By 2009, more than 198,000 women were incarcerated in US prisons and jails, with the highest rate among individuals with racial and ethnic minority backgrounds [12]. Most of the women are of reproductive age, and thousands are either pregnant when they enter prison or have recently given birth [2,13]. By 2019, 80% of the 231,000 incarcerated women were mothers, and most of them were the main caregivers of their children [14].

Physical (e.g., chronic conditions and infectious diseases) and mental health problems (e.g., depression and substance abuse) are more common among people in prison than in the general population [15]. In most states, incarcerated women typically give birth in a local hospital and are returned to the prison, while their babies are taken in by relatives or the state's foster care system.

Research studies of health disparities in prisons were rare at the time of the featured research's planning and implementation. In a systematic review of perinatal health care services for incarcerated pregnant women, researchers identified only six studies published in the international literature between 1980–2014 that described practices aimed at improving conditions of care: doulas (birth companions) supporting pregnant prisoners before, during, and after birth; enhanced prenatal care provided for all pregnant prisoners; and outreach workers identifying incarcerated women at risk of giving birth to an HIV-positive or substance-exposed infant and linking these women to prenatal care [16]. A more recent systematic review found only five studies published since 2014 that examined incarcerated pregnant women's needs, including quality prenatal care, education on pregnancy, childbirth and parenting, nutrition, and substance abuse management [17].

### *Key People and Partnerships Engaged in the Research*

From August 2011 to January 2013, Dr. Rebecca Shlafer (at that time an assistant professor in the University of Minnesota Department of Pediatrics) and Erica Gerrity (co-founder of the local non-profit Everyday Miracles) conducted a pilot research project funded by the UMN Clinical and Translational Science Institute ("Health Disparities in the Context of a Parenting and Pregnancy Support Program for Incarcerated Mothers Project") [18]. This community-university collaboration was formed out of a serendipitous meeting between UMN researchers and practitioners at the Everyday Miracles' Isis Rising (currently the Minnesota Prison Doula Project, MnPDP), a prison-based parenting, pregnancy, and birth program for women serving time at the Minnesota Correctional Facility-Shakopee. Isis Rising provided the expertise to implement the program within the prison, while the academic researchers provided skills needed to empirically investigate health needs of the participants. Key project staff included Dr. Rebecca Shlafer (co-PI) and one graduate research assistant from the University of Minnesota; Erica Gerrity, MSW (co-PI), two Isis Rising project coordinators and five group facilitators. Prior to the research, Dr. Shlafer was a UMN postdoctoral fellow in the Department of Pediatrics, with Ph.D. in child psychology and experience of working with children of incarcerated parents. The community group was led by the other co-PI, Erica Gerrity, an experienced clinical social worker working with mothers and children.

### *Research Aims, Methodology, and Results*

The pilot project was intended to document physical and mental health needs of women in the Shakopee Prison and evaluate impact and health outcomes of the MnPDP program – providing scientific evidence informing future programming and policies affecting incarcerated women in Minnesota [18]. The first program component, a 12-week New Moms Group, was available to women who were pregnant, had given birth recently, or were parenting children under 5 years of age. Weekly, two-hour group sessions were facilitated by a doula (a trained, experienced, non-medical professional who provides physical, emotional, and informational support to the mother before, during, and just after birth). In the second component, the Doula Program, pregnant women could meet with a doula individually to discuss prenatal education and birth planning. The doula met a laboring woman at the local hospital and stayed with her throughout the labor, birth, and postpartum.

To address the research aims, both qualitative and quantitative assessments were done before, during, and after program participation. All participants were asked to complete pre- and post-surveys about their current physical and mental health, the type and quality of prenatal care they received, and their satisfaction with the labor and delivery process. Doulas shared case notes, information collected at group sessions, a birth inventory that documented the mother and baby's health status and interventions used. Doulas also completed a post-birth survey about their perspectives of the birth experience.

Out of the 40 participants in the New Moms Group, 11 (age ranging 21–40) were pregnant and matched with a doula in the Doula Program. Participants commonly reported mental and physical health concerns. In evaluation surveys, they reported a decrease in depressive symptoms, more confidence as a parent,

receiving more support from other women and from prison staff at the end of the program than they did on the initial survey. The analysis of the participant surveys and doulas' written reports of the mothers' birth stories identified four key themes: care and emotional support, empowerment, collaborations with corrections staff, and normalizing and validating the birth [19]. The project results suggested that providing doula care might improve birth weight and maternal mental health outcomes, lower rates of cesarean delivery and complications, and save taxpayer dollars [20].

Table 1 outlines a summary of the case study elements and their characteristics that are further described in different sections of this manuscript.

## Research Impact Contributions to Health Care, Policy, Research, and Social Justice

Impacts of the case align with the following TSBM and other areas and indicators (presented in *italics*), including demonstrated benefits (those that have been observed and are verifiable) and potential benefits (those logically expected with moderate to high confidence).

***Community and public health translational benefits*** included improved *health care characteristics* (health care accessibility, health care delivery, and quality) and *health promotion* (quality of life). Incarcerated women reported higher levels of support from program staff, more parenting confidence, more support from other inmates, and more support from prison staff after their participation in the weekly support group. All doulas reported that they were able to establish a trusting relationship, normalize the delivery, empower, and provide physical, emotional, and informational support to the women during their labor, delivery, and recovery [21]. Fitting the benefit category of *health activities and products* (community health services and health education resources), the researchers translated their research into resources and activities, such as a Pregnancy Resource Guide for Incarcerated Mothers, a webinar about how to create a prison doula program, and trainings with the Department of Corrections (DOC) in MN and other states [22]. The research also influenced programmatic activities of the MnPDP, which developed the Prison Birth Storytelling Project featuring online booklets, video series, and podcast series highlighting diverse experiences of women who give birth while incarcerated [23].

**Table 1.** *Key translational case study elements and findings*

| Case study elements | Descriptive characteristics |
|---|---|
| Research problem | Health disparities in the context of parenting and pregnancy; maternal and neonatal outcomes among pregnant and postpartum women. |
| Population affected | Incarcerated pregnant women, new mothers, and their children. |
| Type of research/intervention [45] | 2.1.3. Maternal and neonatal interventions<br>2.1.4. Health education and behavior change<br>2.3.4. Complex interventions |
| Translational stages [46] | T2-Clinical Research, T3-Clinical Implementation, T4-Public Health |
| Research results | Providing doula care may improve birth weight and maternal mental health outcomes, lower rates of cesarean delivery that help with less chance of complications and save taxpayer dollars, and contribute to incarcerated pregnant women's care and emotional support, empowerment, collaborations with corrections staff, and normalizing and validating the birth. |
| Translational/research stakeholders | Incarcerated pregnant women and mothers; community-university researchers; correction system practitioners; medical providers; community advocates; university colleagues; legislative advisory committee and Senate members. |
| Translational milestones | Research completion/report, consequent research grants/studies, legislative advisory committee report and testimony, scientific publications, 2014 MN Anti-Shackling Law, 2021 Healthy Start Act, other states/systems following MN. |
| Translational/research impact (categories suggested by TSBM [11] and the authors) | Contributed to:<br>Community & public health translational benefits: health care characteristics (health care accessibility, health care delivery and quality), health promotion (quality of life), health activities and products (community health services and health education resources).<br>Policy and legislation translational benefits: committee participation, standards of care, expert testimony, scientific research reports, policies, and legislation.<br>Clinical and medical benefits: guidelines.<br>Expected economic translational benefits: financial savings & benefits (cost effectiveness and reduced social & financial cost of illness).<br>Additional outcomes and benefits: social and institutional change; health equity advocacy; catalyzing research (consequent health research studies/activities); and research dissemination, influence, and public awareness. |
| Translational/research challenges | Cultural differences between research and prison system; lack of trust; resistance to sharing information (access to research participants and data challenges); politics of using and translating research to policy change; challenges implementing community-engaged research (power, privilege, opportunity, and learning by doing science together); sufficient funding for program services; criticism regarding the research focus (science vs. social justice). |
| Translational/research facilitators | CTSA/institutional support; engagement of key stakeholders and influencers; authentic, cross-functional collaboration and team science; researchers as catalysts of translation; pragmatic scientific approach; policies and legislative activities; serendipity gained. |

Bolstered by the research, by 2016 the MnPDP served women in eight county jails and one prison for women. For the state prison alone, between November 2010 and December 2020, there were 160 births supported by doulas (Rae Baker, e-mail communication, December 2022). The interviewees observed a substantial shift in policy, practice, and shared knowledge within Minnesota and beyond, with other states using such experiences to inform their own legislation and practices around doula care, lactation, and anti-shackling. Using the MnPDP as a successful model, Alabama launched its own Prison Birth Project in 2016. At that time, Minnesota was contacted by 10 other states interested in implementing similar interventions [24]. The researchers helped inform programming in Alabama, Arkansas, Georgia, Michigan, and Virginia. The federal prison system is currently considering implementing lactation and doula care for every qualified person in federal custody [25].

***Economic translational benefits*** are expected and indicated in the *financial savings & benefits* (cost effectiveness and reduced social & financial cost of illness). According to health equity advocates, better conditions promoting healthy pregnancies and births ultimately improve the health of mother and child, benefit society by saving money for taxpayers, and build a strong foundation for babies [26]. A DOCs official suggested that " . . . there does appear to be a correlation between a reduction in the number of cesarean procedures connected to the education that the doulas provide . . . coaching the mom and supporting them in making some of those decisions. Our department pays for all medical expenses for a woman in our care, and if we can eliminate a surgical procedure, shorten her stay, better health outcomes, all of that is so beneficial. The ongoing postpartum support offered by the doulas has decreased some of our mental health demands."

***Policy and legislation translational benefits*** included *advisory activities* with the researchers' *committee participation* in Minnesota's Legislative Advisory Committee on the Care and Treatment for Incarcerated Women developing a report to the Minnesota legislature in January 2015 with recommendations for jails and prisons to follow "community *standards of care*" [27]. *Expert testimony* was key to the Healthy Start Act passing as the researchers provided testimony supporting the bill at the state legislature [28]. The research data on the physical and mental health effects on separated mothers and babies were directly used to inform the proposed legislation [29]. The *scientific research reports* indicator was evident in the "Legislative Advisory Committee on the Care of Pregnant Incarcerated Women (SF2423/HF2833) Committee Report" in January 2015 [30]. Demonstrating powerful, long-term impact, the research collaboration's results and advocacy efforts contributed to *policies and legislation*: the 2014 MN Anti-Shackling Law [31] to outlaw the use of restraints during and just after childbirth and to guarantee incarcerated people access to doulas, and the 2021 Healthy Start Act, the first legislation of its kind in the nation, to keep incarcerated mothers and their newborn babies together [29,32].

***Clinical and medical benefits*** included research contributions to the development of *guidelines*, that is, formal recommendations or principles to assist with patient care for specific clinical circumstances. Under the guidelines of the 2021 Healthy Start Act, the Commissioner of Corrections can place women who are pregnant or have just given birth into community alternatives such as halfway houses or substance abuse rehabilitation centers, supervise the women and their newborn children, and provide them post-birth treatment for up to one year [28,33]. Doulas play an additional role now – a navigator for women in the community. They transport released women to the halfway house, help them get supplies for babies, take them to the doctor, and find resources for parenting education.

***Catalyzing research*** categories identified may fit the Scientific Outputs and Outcomes domain of the TSBM Logic Model [34]. The initial research pilot created nuanced questions about the target population and led to consequent health research studies/activities over the following decade; it "planted the seed that has grown over time . . . that led to other pilot grants, to larger grants, to continue programming and services" [29]. For example, research participants shared concerns about being unable to eat enough during their pregnancies and not knowing what they should eat in the first place. This became the focus of the "Nutritional Status and Unmet Needs among Incarcerated Women of Reproductive Age" research project in 2013, funded by the CTSI Pre-K Discovery Scholars Program [35]. In 2014, the "Incarcerated Parents in Minnesota and their Minor Children" research, funded by the CTSI KL2 Scholars Career Development Program [36], investigated the prevalence of parental incarceration and the number of affected children to guide the development of evidence-informed efforts for this population and provided financial support to continue implementing and evaluating the prison doula program [22,37,38].

Two more grants were awarded in 2018 for research conducted by Dr. Shlafer and her collaborators: "Identifying and Addressing Disparities in the Criminal Justice and Health Care Systems" (a multidisciplinary research project funded through the UMN Grand Challenges Research Initiative; $572,525 in direct costs; nine manuscripts published with a few more under review) and "Efficacy and Cost Effectiveness of Doula Care for Incarcerated Women" (funded by the NIH National Institute of Child Health and Human Development; $154,000 in direct costs; one publication [39]). Finally, in 2021, NIH/NICHD funded their research grant titled "Pregnancy and Postpartum Support Programs for Women in Prison: Maternal and Neonatal Outcomes" [40].

Another translational science outcome category was significant *research dissemination, influence, and public awareness*. The research became a model for research and programs in other states, for example, mental health and depression research in Arkansas, the Alabama Prison Birth Project, and the "Mother's Milk Initiative" at a prison in Alabama [41]. The researchers collaborated on the national (11 States: MN, MA, MI, OH, VA, CT, IL, CA, TN, WI, NE) and international (South America, Chile) levels [42]. Bibliometric research impact analysis revealed that by 2021, the research was promoted and referenced: in 207 different policy and news media resources from 149 organizations; in 124 documents by 91 groups such as the Centers for Disease Control and Prevention, the Interagency Working Group on Youth Programs, Organization for Economic Cooperation and Development, Danish Institute for Human Rights, and the American Medical Association; 83 times in 58 popular media channels, including newspapers, websites, and news outlets; and syndicated news stories have been republished 84 times [7].

The impact could be also seen in *cultivating the translational science workforce*, as Dr. Shlafer mentored many junior scholars and engaged in CTSI education programs. Michelle Lamere, the Assistant Director of Education Programs at UMN CTSI, appreciated "having somebody who really showed us what it looked like to translate into policy and practice and in the community. Being able to show the other scholars a kind of the depth and breadth of how translational research can play out was important. This health equity story is one that captures people's imagination and especially inspires younger people to get them involved."

***Social and institutional change*** (a category that is not captured by the TSBM) was acknowledged by multiple data sources. Erica Gerrity emphasized the importance of pursuing *social change* efforts in the community, where "we had to take our data and translate it in different ways." The social change process includes creating new policies and practices for the corrections system and working in the legislature to craft legislation grounded in research demonstrating the disparity and need for policies that could improve health.

There was a sizable *institutional change* within the prison that hosted the research program, reflected in new practices with increased responsiveness towards the needs of incarcerated women to support their health, wellbeing, and reproductive health literacy. A DOC representative shared that it "was really helpful that there was a lot of contact with the research subjects – with the pregnant women or women who had delivered – and I don't think their voices had been heard before." Another tangible research outcome mentioned was *raising the standards of record management* by medical and other prison staff: "No one had looked at the information like this. I think it helped give us greater focus about what was important to know. Prior to that, there was no paper trail of who was having babies. I think just the attention improved our ability to be able to look back at data and much easier to identify these women and guide us in terms of what's important."

The research contributed to *health equity advocacy*. The research work and results have been used by equity advocates [7,23,43]. Additionally, according to an interviewee: "We have former participants who are now doulas for the program, who come and present, who are deeply committed to . . . sharing their story for the goal of something bigger."

### Timeline of Key Events and Benefits

Figure 1 provides a graphical depiction of the key events in the development, implementation, translation, dissemination, and influence of the incarcerated pregnant women research. These events are linked to the translational benefits we identified in our analysis.

### Challenges for Research Implementation and Translation

Table 2 outlines challenges and mitigating strategies for successful research implementation and translation.

There were barriers on an institutional system level with access to research participants and data. The researchers pointed out the *cultural differences* between proactive public health and prevention research and the DOCs as a reactive, disciplinary system:

"I was met with 'Why do you care about this? . . . So few women are pregnant in prison. This isn't a priority for us'. If we couldn't do the prison doula work, . . . we'd have had no access to research. We were always doing this delicate dance with how much we push back on a system . . . and maintain access to the system."

A DOC official confirmed that there was an *initial lack of trust* and tremendous *resistance to sharing information*: "I think that our facility was very suspicious, concerned about confidentiality. We do not partner well with community agencies, because we are a prison, and there is an attitude that what happens here is not the business of a community agency or entity. . . . There was just a lot of concern that this is going to somehow come back to reflect poorly on our department . . . that the Doulas themselves would interfere with security. So, the researchers were really blazing a new trail." Their professional, respectful attitude, and positive program outcomes helped overcome the formidable challenges related to the lack of trust and made it much easier for future research efforts.

There was this ever-present challenge in terms of the *politics of using and translating the research to policy change*: policymaking is always complex, taking diverse variables and values into consideration. Translational success depends on gathering research data, collaborating with policy stakeholders, and sharing convincing evidence with policymakers. There were also *challenges implementing community-engaged research* at the fundamental science level, for example, teaching the doulas the importance of data collection, helping them collect and share data in a timely fashion, as well as maintaining their databases. A community research partner shared some frustration regarding *the power, privilege, and opportunity dynamic* conditioned by academic credentialing in our society, including such perceptions as to who is usually considered a "real expert" in research collaborations and the widespread "unspoken assumption" that the university folks always know more than their community counterparts.

The researchers lamented about their struggles around *getting enough financial resources* for program delivery services. It is a serious challenge for interventional research when it needs to happen in the program context where the people offering the intervention to reduce the health disparity are also the co-researchers trying to do the high-quality job.

According to one of the researchers, there were *judgmental perspectives* coming from a couple of colleagues who made her question whether her research was "real science" by saying "That's not science; that's social justice." To some degree, that made this emerging researcher doubt her research capacity and whether this was valuable work: "If I think back, maybe, my own passion was coming through in this work in a way that they felt like it wasn't rigorous science. One of the things that I learned was the power of reframing. I learned that this person could be anybody else to review my grants, and I'd need to convince a person like this. I guess in hindsight that was a benefit to me, even though it felt really hard at the time."

The case study identified multiple challenges to the successful implementation and translation of research. Overcoming these challenges required the ability to effectively collaborate, properly frame, and communicate the meaning and value of your research to stakeholders, impartial learning from criticism and failures, and tenacity to deal with barriers, doubts, and frustrations along the way.

### Facilitators of Translation

The case study identified translational facilitators (Table 3) that clinical research practitioners and translational scientists could use. Such facilitators contribute to what we would call "*translational scaffolding*": a system of processes, structures, and conditions for developing and consolidating vital opportunities and supports for impactful research implementation and translation. To be successful, this system requires collaborative engagement of academia, community, industry, government, and other stakeholders. Interacting with the earlier described mitigation strategies, the scaffolding facilitators helped research collaborators stay focused on their goals and avoid getting lost in the complexity of the translational process. Some of these facilitators overlap with the Resources and Scientific Activities categories within the TSBM logic model [34].

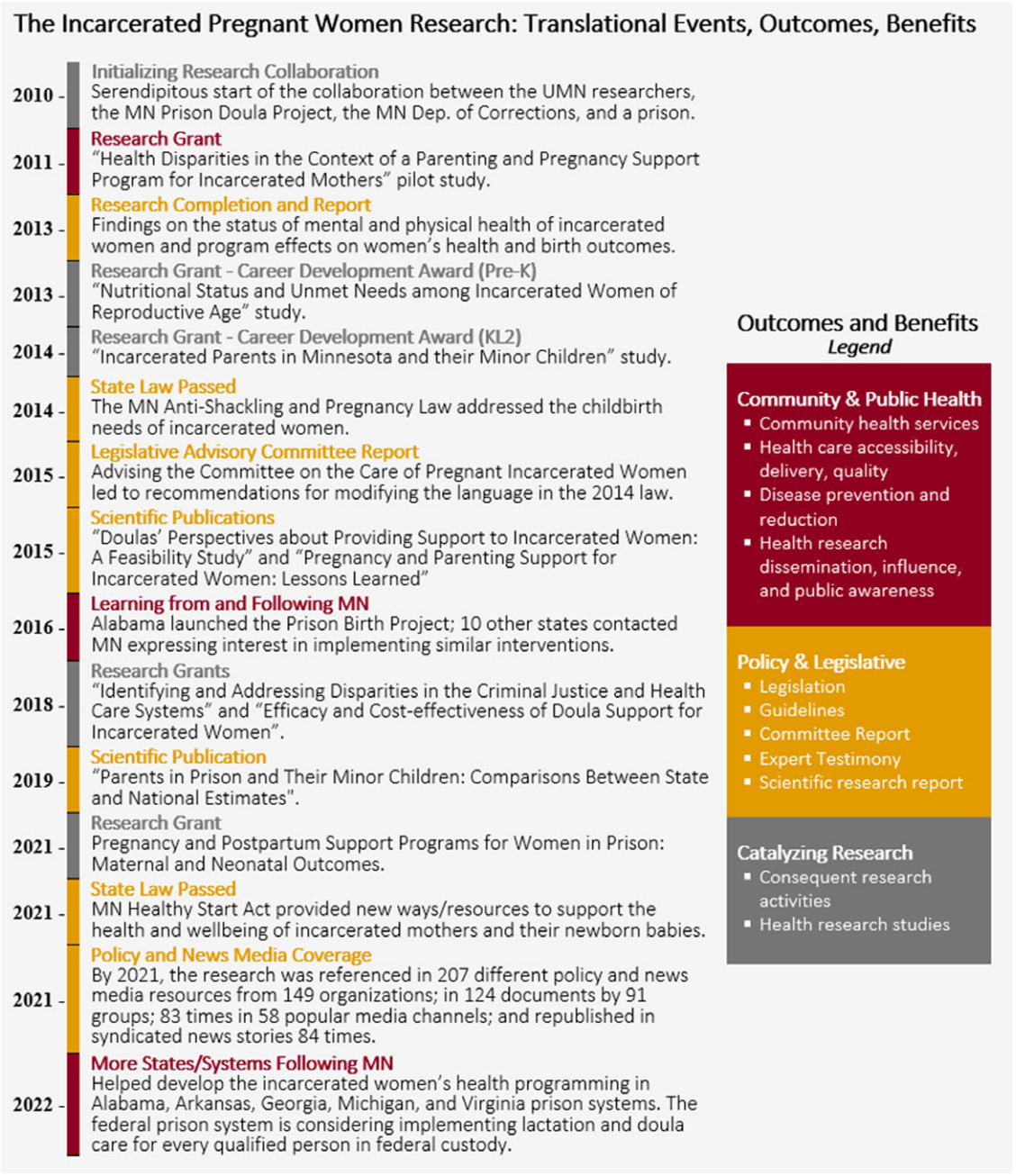


**Figure 1.** The timeline of the key events, outcomes, and benefits of the incarcerated pregnant women research.

### *Critical support provided by the UMN CTSA hub*

The UMN Clinical and Translational Science Institute (CTSI) support contributed to the research implementation and impact, community engagement, and the development of the researchers' skills. *Financial support* was important to make the research feasible (funding of $23,770 via the CTSI Community Health Collaborative Pilot Grant Program [44]). In terms of *training and mentoring* as a CTSI scholar, Dr. Shlafer improved important translational skills such as how to do impactful research, write winning grant proposals, communicate effectively, and engage with the media [22]. CTSI Career Development Awards have lasting impact across the scholar's professional journey because they are not just about funding a research project; they protect time for research and provide mentorship and skills to cultivate rigorous research and a successful career.

The community partner, Erica Gerrity, described CTSI's support as a valuable source of *engagement, validation, and appreciation*: "One of the first tiny successes in our partnership with CTSI was when it hosted a community-university research poster competition event, and we won a ribbon. It was our first success together, where people were validating that we were onto something. I think that the small grant to do community-university research partnership was transformative for us, . . . it just literally has changed my life."

**Table 2.** *Challenges and mitigation strategies for research implementation and translation*

| Challenges for research/translation | Mitigation strategies |
|---|---|
| Lack of trust due to cultural differences between proactive public health research and the reactive, disciplinary prison system. | The professional, personable, respectful attitude offered by the researchers. Demonstrating that program and research processes and outcomes are helpful for prison system partners and other stakeholders. Regular communication and prioritizing sharing of research results back to Department of Corrections (DOC) partners. |
| Resistance to sharing information; access to research participants and data was constantly challenged. | Building strong collaborative relationships with the prison system (started from partnership with the DOC Director of Research).<br>Leveraging the research by doing real-world work (e.g., group-based education and one-on-one birth support) to inform systems change in a system that is inherently resistant to change, particularly by outsiders. |
| Politics of using and translating research to policy change: policymakers are not researchers; policymaking is complex and takes diverse variables and values into consideration. | Doing the program; gathering the research evidence; collaborating with policy stakeholders; and sharing convincing evidence with policymakers. |
| Challenges implementing community-engaged research:<br>• Doulas lacking data collection/management skills<br>• Power, privilege, and opportunity when doing research/science; perceptions and unspoken assumptions as to who is usually considered a "real expert" in research collaborations. | Doing research with community, as community:<br>• Building trust and shared goals early<br>• Learning by doing science together (e.g., working with the doulas on data collection/management)<br>• Frame and communicate the meaning and value of the research to stakeholders<br>• Creating systems where programs had timely access to their data to inform their work. |
| Sufficient funding for both research and program delivery services. | Applying for additional grants from a variety of governmental, community, and university sources. |
| Criticism from academic colleagues regarding the research focus: science or social justice? | Learning from the criticism. Using a pragmatic scientific approach and communicating the value of doing health research in the context of pursuing social justice. |

**Table 3.** *Facilitators of research translation*

| Facilitators of research translation |
|---|
| **CTSA/institutional support**<br>Funding; training and mentoring; source of engagement, validation, and appreciation. |
| **Engagement of key stakeholders and influencers**<br>Incarcerated pregnant women and mothers; correction system practitioners; medical providers; community advocates; university colleagues; legislative advisory committee and Senate members. |
| **Authentic, cross-functional collaboration / team science**<br>Exploring complex needs and discussing comprehensive solutions as a community-university team allowed for creative problem-solving using novel and traditional methods. Research collaboration developed into an ongoing, sustainable partnership across multiple initiatives that contributed to policy changes, justice, and health equity improvements. |
| **Research partners as catalysts of translation**<br>Their determination, inquisitiveness, adaptability, passion, and diplomacy helped shape translational success. |
| **Pragmatic scientific approach**<br>Complex needs and problems often ask for comprehensive solutions that may incorporate both simple and complex, traditional and novel components. The combination of programmatic and community-based participatory research elements was pragmatic, inclusive, and productive. |
| **Policies and legislative activities**<br>"Regulation" and "incentive" facilitators: participation in advisory and other governmental committees; expert testimonies to governmental, judicial, and regulatory bodies; and scientific research reports. |
| **Serendipity gained**<br>Research partnership formed in part by chance. A newly appointed Department of Corrections official in Alabama used lessons from MN Prison Doula Project to create the Alabama Prison Birth Project. |

### *Engagement of key stakeholders and influencers*

Engaging a broad range of stakeholders was essential for its successful translation. Key stakeholders included researchers; incarcerated pregnant women and mothers; correction system practitioners; medical providers; community advocates; academic colleagues; a legislative advisory committee composed of diverse experts and representatives; and members of the MN House Judiciary Committee and Senate. The researchers worked with advocates to find legislators to sponsor the bill, educating legislators on how the law could meet the needs of pregnant women [22].

The instrumental players included the Director of Research from the DOCs, the Parenting Coordinator at the women's prison, and the head of the Minnesota Sheriffs Association. The role of research participants and beneficiaries, the incarcerated mothers

and pregnant women, cannot be overestimated. According to Erica Gerrity, "We are always leaning really hard onto our clients. It is trying to go back to the source – to the people that are directly impacted by these health disparities – and asking them what they think and want and letting them drive the course of our work."

### *Authentic collaboration and team science*

The research team was uniquely composed to carry out a multidisciplinary collaboration between non-profit program practitioners (doulas, mental health practitioners, parent educators), academic researchers (specialized in psychology, human development, health equity), and prison system professionals. It was valuable, according to Erica Gerrity, "how much time my research partner and I spent together getting to know each other and getting into a really authentic relationship with one another, so there could be a deep mutual trust, respect, and understanding." According to Dr. Shlafer, that first formal research collaboration developed into an ongoing, sustainable partnership across multiple initiatives: "I think it is a testament to interdisciplinary collaboration, long-standing community partnerships that have taken a long time to build and foster, and really centering the lived experiences of incarcerated women, in every step that we took; really listening to them and their needs" [29].

### *Research partners as catalysts of translation*

Research collaborators have to work hard to bring research discoveries and their translational benefits to fruition. One interviewee observed that "Rebecca was able to bridge a lot of stakeholders who might traditionally be adversarial, . . . understood the importance of community engagement, and had this vision, passion, and commitment." Ms. Gerrity's work and research with incarcerated women was complemented by her role as a passionate public speaker, committed to system change work on behalf of at-risk children and families, presenting on the female incarcerated population and prison parenting and birth [18].

The university-community partners' beliefs, values, and skills merged to play an important role in the research progression. The researchers' determination, inquisitiveness, adaptability, passion, and diplomacy were catalyzing factors for successfully translating research into practice and policy.

### *Pragmatic scientific approach*

Complex needs and problems often ask for comprehensive solutions that may incorporate both simple and complex, traditional and novel, components. The study utilized the multidisciplinary MnPDP approach and the Community-Based Participatory Research framework to provide and evaluate pregnancy and parenting support to incarcerated parents. Research was fully integrated in service delivery and responsive to participants' needs, which helped build trust and both program and participant capacity [21]. In terms of the health intervention typology, this research can be classified as "maternal and neonatal interventions," "health education and behavior change," and "complex interventions" [45], moving through the translational stages of T2-Clinical Research, T3-Clinical Implementation, and T4-Public Health [46]. The combination of programmatic and research elements grounded in this partnership was pragmatic, inclusive, sustainable, and productive to explore complex issues and engage stakeholders for comprehensive solutions.

### *Policies and legislative activities*

Policies and associated legislative/advisory activities are both tangible outcomes and powerful facilitators for translation of research into practices addressing health equity and justice issues. They can be called "*regulation/incentive facilitators*" helping authorize, regulate, and incentivize the implementation of health-related practices investigated and recommended by research. Relevant examples of such facilitators include activities and products described earlier in the research impact section: participation in advisory and other governmental committees; expert testimonies to governmental, judicial, and regulatory bodies; and scientific reports.

### *Serendipity gained*

Serendipity refers to the occurrence of a fortunate and unexpected discovery or invention that happens by chance or accident, as well as to "the ability to recognize and leverage or create value from unexpected information" [47]. In clinical and translational science, serendipity can play an important role in advancing scientific knowledge and improving human health. Applying the perspectives of "serendipity gained" [48] and "serendipity as a strategic advantage" [47], we identified the following unanticipated events' role in shaping the research and its translation. The research partnership was formed in part due to chance. In 2010, Rebecca Shlafer was a postdoctoral fellow hoping to do community-engaged research focused on incarceration and families. She reached out to the MN DOC and asked about parenting programs in the prison system. Coincidentally, the DOC had just given permission for the MnPDP to start providing pregnancy services inside a women's prison, and they suggested contacting Erica Gerrity, the project founder and director. The research partnership started during those initial phone calls about the building of this program to provide group-based and one-on-one continuous doula support.

Serendipity also played a role in translation of the research to practices outside Minnesota. For instance, the position of the Deputy Commissioner for Women's Services in the Alabama DOCs was created in response to a critical report from the US Department of Justice in 2014, detailing deplorable conditions in a women's prison in that state. Addressing those issues, the deputy commissioner also thought about childbirth in prison and its role in determining a woman's post-incarceration future. That was when she learned about the MnPDP and utilized the research lessons to support the creation of the Alabama Prison Birth Project to provide doula support to pregnant women in Alabama's Tutweiler prison [24]. The Deputy Commissioner was in the same room when the MnPDP team presented in Alabama and she said, "It's not a matter of *if* we'll have a doula program; it's a matter of *when*."

Serendipity "gained" and "as a strategic advantage" can be an invaluable asset in clinical and translational science, helping researchers make unexpected breakthroughs and advance our understanding of complex health problems, biological and social processes, and translational pathways. Clearly, serendipity alone is not enough to ensure the overall scientific/translational progress – it must be leveraged and accompanied by a rigorous scientific approach, stakeholder engagement, institutional support, and researchers' determination and adaptability.

## *Current Status of the Research/Translation*

The programs providing support to incarcerated mothers have undergone transformation. In 2019, the MnPDP and the Alabama Prison Birth Project merged into the Ostara Initiative

[41,49]. With the Healthy Start Act signed into law in 2021, the researchers are now investigating different aspects of program implementation and exploring the realization of similar models in other states. Specifically, researchers are trying to better understand the facilitators and barriers to implementing similar programs in other states. In addition, the researchers seek to understand program impacts on maternal and child health, including rates of adverse birth outcomes, breastfeeding initiation and duration, maternal nutrition, maternal depression and anxiety, maternal satisfaction of doula support, and infant health in the first year of life. An ongoing multi-site, mixed-methods research grant funded by NIH/NICHD in 2021 [40] is taking the next step in exploring the issues examined in the original 2011 research: assessing maternal and neonatal outcomes (e.g., birth outcomes, breastfeeding initiation, maternal mental health) among participants in prison-based support programs in six states and exploring how to scale this up across the country.

A DOC partner lamented the lack of data about the wellbeing of incarcerated parents' children: "We don't have a good understanding of what happens with these babies, where they go, and how they are cared for. Are there things we could be doing that could help them have better outcomes?"

According to Ms. Gerrity, one of the future directions for the research and its translation into health equity and social justice include getting more qualitative data – for example mothers' perceptions of and satisfaction with their pregnancy and birth experiences – and making a case for the fact that some of the egregious treatment of incarcerated people is not anomalous, but rather an extensive pattern that exists throughout the country.

## Conclusion and Implications

This study has illuminated a case of community-university research that demonstrated significant translational benefits. Overcoming challenges and leveraging enablers for translational progress, the research moved along the translational continuum, contributing to transformational changes on the legal, clinical, organizational, and interpersonal levels.

Successful translational practices and lessons learned from this study include the importance of establishing trust and bidirectional communication between research stakeholders and leveraging the research by doing real-world work to inform systems change in a system that is inherently resistant to change, particularly by outsiders. Aligned with the scientific literature on community-engaged and community-based participatory research [50,51], the case demonstrated the importance of doing research with community, as community – via learning by doing science together, communicating the meaning and value of the research to stakeholders, and ensuring their access to the useful data.

Translational science can be a key driving force of and contributor to social justice. Among helpful strategies are using a pragmatic scientific approach and communicating the value of doing health research in the context of pursuing social justice. Translational scaffolding and ensuing research impact can be boosted by targeted federal and institutional support, meaningful engagement of diverse stakeholders, authentic community-research-industry collaboration, and building translational capacity.

This case study aims to enhance our collective understanding of translational science principles and capacity to improve research processes and outcomes. It is also a call for advancing the community-based participatory research addressing health disparities related to social justice issues, nontraditional settings, and marginalized populations.

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