Pregnant Workers Health Impact Assessment

2019

The Kentucky Pregnant Workers' Rights Act (KYPWRA) (SB18) works to clarify that Kentucky law protects women who need reasonable modifications in the workplace due to their pregnancy. SB18 ensures all pregnant workers have equal access to safe and healthy working conditions. The Pregnant Workers Health Impact Assessment works to inform decision making around the policy as a measure to improve the health outcomes of Kentucky's pregnant workers and their developing children.

DEPARTMENT OF
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ACRONYMS

ACRONYMS	DEFINITION
ADA	Americans with Disabilities Act
HIA	Health Impact Assessment
KYPWRA	Kentucky Pregnant Workers Rights Act
LBW	Low Birthweight
LGA	Large for Gestational Age
LMPHW	Louisville Metro Department of Public Health and Wellness
PCB	Polychlorinated Biphenyls
PCDF	Polychlorinated Dibenzofurans
PD	Pre-term Delivery
PDA	Pregnancy Discrimination Act
SAB	Spontaneous Abortion (commonly known as miscarriage)
SB18	Senate Bill 18
SGA	Small for Gestational Age
UTI	Urinary Tract Infection

ACKNOWLEDGEMENTS

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DEPARTMENT OF PUBLIC HEALTH AND WELLNESS

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EXECUTIVE SUMMARY OF THE PREGNANT WORKERS HEALTH IMPACT ASSESSMENT

The Kentucky Pregnant Workers Act (KYPWA) Senate Bill 18 ensures all pregnant workers have equal access to safe and healthy working conditions. The Pregnant Workers Health Impact Assessment reviewed available literature on the health impacts of working while pregnant in order to inform the KYPWA. Recommendations provide a more thorough understanding of how certain working environments can impact health and what accommodations can be made to reduce health disparities and improve health outcomes for pregnant workers and their developing children.

HEALTH IMPACT ASSESSMENT

Health Impact Assessment, or HIA, is a process to inform decision-makers about the potential health impacts of proposed decisions, including those related to legislation, regulations, programs, plans, and projects in diverse policy sectors. The Pregnant Workers HIA works to address health concerns as they relate to the KYPWA. The ability to maintain employment during pregnancy is critical for the health and wellbeing of a pregnant worker and her developing child. Income provides for food, housing, and access to health care. Many pregnant workers wish to continue working during pregnancy but can sometimes face hazardous conditions in the workplace that may place the health of a pregnancy at risk. Potentially hazardous working environments can include those that require heavy lifting, bending, and standing, those that have a high risk of chemical exposure, as well as those that have high temperatures and limited water. While many workers may need no accommodation at all, some workers may need to request accommodations, sometimes even for a brief amount of time, to ensure they are able to keep working free from harm. No worker should be forced to choose between their own health and their employment.

KEY FINDINGS

Many factors affect Kentucky's population of pregnant workers. Jobs available to people with limited education often pay lower wages and have less flexibility with accommodation requests. These workers are given less choice and control over the employment available to them than those with higher education and more flexible working hours. Pregnant workers contribute significant hours to the workforce, participating in the economy, and providing for their families. Making reasonable accommodations to the physical transitions of pregnancy can help alleviate health concerns, and the related disparities, while allowing pregnant workers to continue earning an income during this important stage of their lives.

RECOMMENDATIONS

The Pregnant Workers HIA reviews evidence that making reasonable accommodations in the workplace can protect the health and wellbeing of pregnant workers and their developing children. Pregnant workers can sometimes face challenges while working during pregnancy. Fear

of a layoff and unemployment may prevent some pregnant workers from communicating their concerns to their employer. Workers may require their own unique accommodations, sometimes for brief durations, and these cannot be standardized for all pregnant workers. Many workers may need no accommodation at all. Some pregnant workers may have a history of miscarriages which places them at higher risk and should not have to be required to share this information with employers. It is therefore recommended that a pregnant worker should be able to make requests for accommodations on their own without having to provide proof from a medical professional regarding the request for accommodation.

PHYSICAL LABOR

Jobs that require physical labor including heavy lifting, bending, and standing for long hours may create strain on pregnant workers and their developing children.[1,2] Basic measures to reduce that strain, if needed and requested by the employee, may help decrease the risk for a variety of poor health outcomes including preterm birth and increased risk of miscarriages.

Bending

A relationship has been observed between significant bending and preterm birth. If requested, provisions should be made to allow pregnant workers to take positions that do not require extensive, repetitive bending to avoid preterm birth.[3]

Standing

Standing for long hours (more than five hours) may be associated with preterm birth. If requested, provisions should be made to allow pregnant workers to take positions that do not require extensive standing to avoid preterm birth.[4]

Lifting

Evidence suggests a relationship exists between repetitive heavy lifting and an increased risk of miscarriage. Pregnant workers who customarily lift heavy objects in their jobs should be able to modify their workload, if requested, in order to reduce the amount of weight (no more than 40 pounds) and related strain on the body to avoid miscarriage.[5]

Rest

Physical labor can exhaust and strain a pregnant worker's body. It is recommended that pregnant workers be allowed to rest their legs during the workday to relieve the stress of standing and walking, if requested. Workers should be provided a chair or stool while working, if requested.[7] However, if a pregnant worker must stand, it is recommended that pregnant workers be allowed to put one foot up on a footrest, low stool, or box.

Shift Work

Evidence indicates a relationship between shift work and preterm birth. Pregnant workers working late shifts should be allowed to transition to earlier shifts, if requested, as a measure to protect the health and wellbeing of their pregnancy.[8]

ADDRESSING EXISTING RISK OF MISCARRIAGE

Pregnant workers who have miscarried once in their life have a higher risk of miscarrying in later pregnancies.[9] If requested, efforts should be made to allow women with a history of miscarriage to work in positions that do not add additional risk (including bending, lifting heavy weights, and standing for long periods of time, as discussed above).

EXPOSURES IN THE WORKING ENVIRONMENT

Pregnant workers may experience a diverse range of working environments. In order to protect the health of the worker and her developing child, steps should be taken, if requested, to reduce the risk of certain environmental factors.

Exposure to Chemicals
Evidence indicates that pregnant workers working in environments with risk to lead exposure can place their fetus at risk to developmental delays. Employers should inform all workers of the risks associated with lead exposure and other potential hazards to help reduce impacts on the developing child. Women working in environments with chemical exposures as well as radiation should be made aware of the risks to developing fetuses. Pregnant women should be allowed to receive work accommodations, if requested, to avoid exposures that risk a baby's development.[10,11]

Noise
Pregnant workers working in extremely loud environments such as near heavy machinery, loud music, guns, sirens, crowds of people, or a jack hammer, can place their babies at risk to hearing loss.[12] Employers should allow pregnant workers to work in quieter environments during pregnancy, if requested, to prevent potential hearing loss in the developing child.

MAINTAINING PHYSICAL NEEDS

Pregnancy leads to a range of changes in the body. Dietary and hydration needs increase due to the needs of the developing child. The need to use the restroom increases due to the positioning of the fetus in the abdomen. Employers should be aware of these changes in order to accommodate the needs of their pregnant workers.

Hydration
Hydration is critical during pregnancy as it helps keep the body cool, maintains sufficient amniotic fluid, and maintains critical body functions in a developing child.[13] Employers should allow pregnant workers to carry a bottle of water with them at all times during the work day, if requested, in order to stay hydrated.

> *"It is important for me to remain employed during pregnancy because I need financial stability now more than ever. I also need to maintain my benefits which are based from my employment status."*
>
> *-Pregnant worker of a community mental health service*

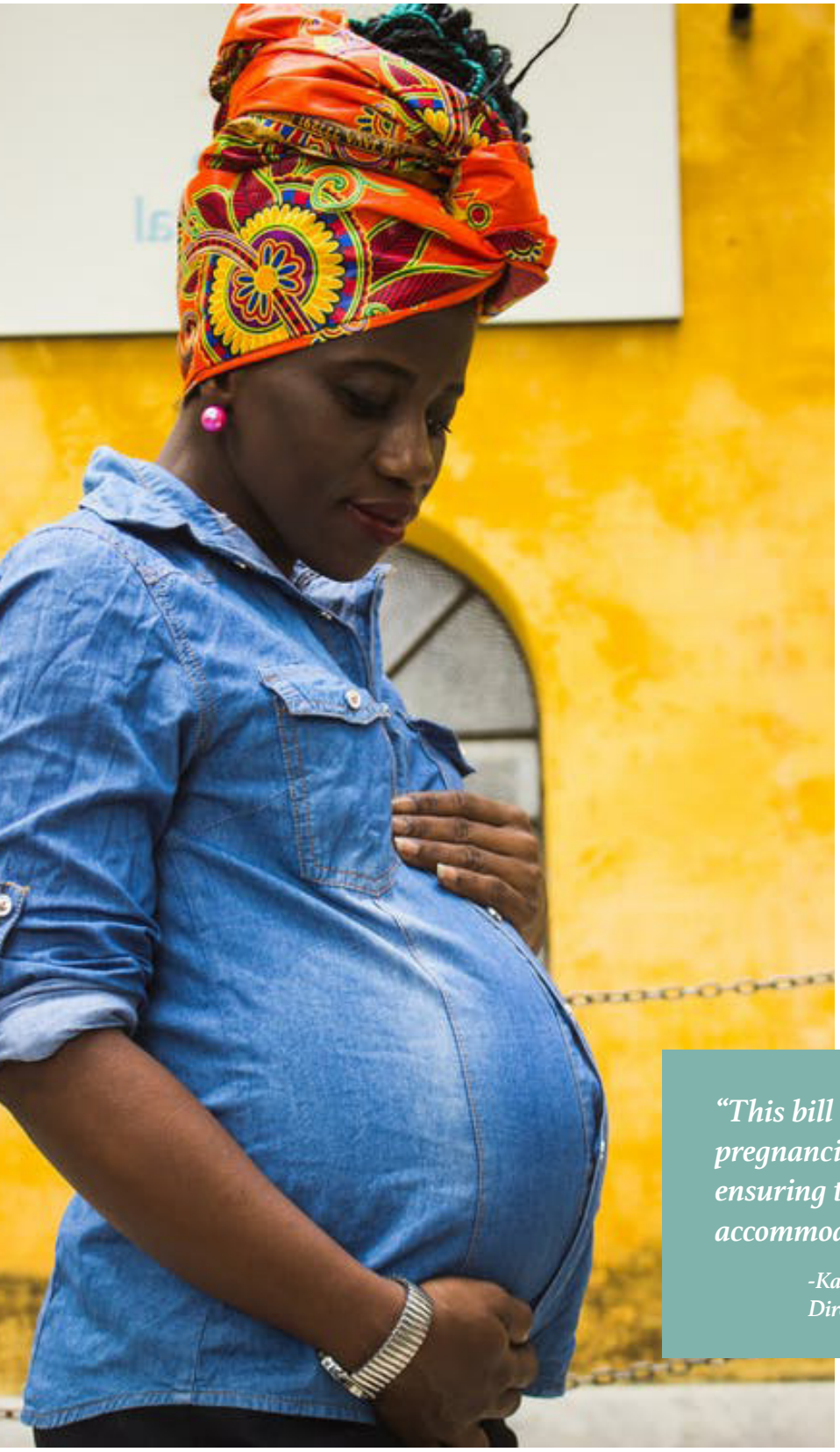
Restroom Breaks
Pregnant workers often experience a need for increased restroom breaks. In addition, those with urinary tract infections (UTI) will have additional needs. Due to the risks associated with UTIs, including preterm labor and preeclampsia, women should be allowed to use the restroom as requested.[14]

AFTER THE DELIVERY OF THE CHILD

Employers should understand the potential needs of their workers after childbirth.

Postpartum Recovery
Giving birth can be a traumatic experience on a person's body, often requiring surgery and an extended period of recovery. Employers should be aware of this need for recovery time and allow workers to request a lighter work load until the body is fully healed.

Breastfeeding
Breastfeeding provides the healthiest option of nutrition for infants. Breast milk helps build bodies as well as strengthens the immune system. Maintaining a pumping routine throughout the workday is therefore critical both for the child and the worker, as it helps prevent mastitis (a condition where the breast becomes infected).[15] It is recommended that if requested, employers provide a safe, comfortable, and private space for lactating workers to express breast milk at routine times throughout the workday. Lactation needs will vary for each worker according to the age of their child. A worker with an infant that is only a few months old may need to pump at least 2 to 3 times during an 8-hour workday (In the first few months of life, babies need to breastfeed 8 to 12 times in 24 hours).[16]



PREPARING FOR PREGNANT WORKERS

Conducting early screening of occupational risk, as well as monitoring manual labor and environmental conditions, improves the potential protection of the health of pregnant workers. It is recommended that Kentucky's employers and supervisors are trained on how to recognize and respond to the needs of pregnant employees. Information regarding recommended accommodations should be posted visibly in the workplace.

Accommodating pregnant workers, upon their request, is critical for reducing poor health outcomes including miscarriage; low birth weight; preterm births; birth defects; dehydration; insufficient amniotic fluid and related birth outcomes; unnecessary pain resulting from excessive standing, bending, or lifting; urinary tract infections and related risk of preeclampsia (a condition where the pregnant person experiences high blood pressure); and mastitis due to insufficient, safe locations for pumping. Adverse perinatal outcomes have a significant long term impact on a baby's health. Improving birth outcomes makes a sustainable impact for a lifetime of better health. Addressing these health concerns will ultimately strengthen the health of pregnant workers, their children, and the health of Kentucky's workforce.

"This bill will protect both the health of women's pregnancies and their financial stability by ensuring that they can obtain reasonable accommodations in the workplace."

-Katrina Thompson, Maternal Child Health and Advocacy Director, March of Dimes Kentucky & West Virginia

INTRODUCTION

The ability to maintain employment during pregnancy is critical for the health and wellbeing of a pregnant worker. Conditions in the workplace, however, can sometimes place the health of a pregnancy at risk. Working environments including those that require heavy lifting, bending, standing, high risk of chemical exposure, high temperatures, and limited water, among many others, can create challenging situations for pregnant workers that must choose between their own health, that of their developing child, and their employment. The Pregnant Workers Health Impact Assessment (HIA) works to assess these concerns as a measure reduce health disparities and improve health outcomes.

Federal legislation addresses some rights of pregnant workers. Under the Americans with Disabilities Act (ADA), pregnant workers who have a pregnancy-related disability such as preeclampsia or gestational diabetes, must be afforded reasonable accommodations.[17]

The Pregnancy Discrimination Act (PDA) of 1978 is an amendment to Title VII of the Civil Rights Act of 1964. It prohibits employers from discriminating against workers based on pregnancy, childbirth, or related medical conditions. The PDA forbids discrimination based on pregnancy when it comes to any aspect of employment, including hiring, firing, pay, job assignments, promotions, layoffs, training, and fringe benefits, such as time off and health insurance, and any other term or condition of employment. Under the PDA, employers must accommodate healthy pregnant women if they would accommodate others who are similar in their inability to work. Confusion persists about the meaning of this provision, confounding both employers and employees, and greater clarity is needed.[18,19]

Neither the PDA nor the ADA require the provision of affirmative reasonable accommodations for women who do not have a pregnancy-related disability. When requested, basic measures at work such as access to additional bathroom breaks, seats to alleviate weight off the feet, and the ability to carry water can protect the health of pregnant workers. The Pregnant Workers HIA reviews existing evidence on the relationship between various working conditions and pregnancy as a measure to inform lawmakers considering the Kentucky Pregnant Workers' Act (KYPWA) (SB 18).

"There isn't a designated space for pumping but I am planning to continue breastfeeding once I return so I will inquiring about accommodations when I return. I feel like there should be consistent modifications for women that are pregnant and returning from work."

-Pregnant worker of a community mental health service

HIA Process Summary

HIA is a process to inform decision-makers about the potential health impacts of proposed decisions, including those related to legislation, regulations, programs, plans, and projects in diverse policy sectors. The National Research Council defines HIA as "a systematic process that uses an array of data sources and analytic methods and considers input from stakeholders to determine the

potential effects of a proposed policy, plan, program, or project on the health of a population and the distribution of those effects within the population. HIA provides recommendations on monitoring and managing those effects." [20]

This summary of the Pregnant Workers HIA follows the basic six-step process of health impact assessment methodology to inform the KYPWA. Steps include screening, scoping, assessment, recommendations, reporting, and monitoring and evaluation.

Screening steps include determining a basic level of stakeholder interest, outlining potential health impacts of a decision, determining the time frame of the decision, and ensuring decision-making promotes and protects public health.

The **Scoping** process establishes the breadth of potential health impacts associated with decision making around KYPWA. Scoping subjects include the populations affected, geographic boundaries, sources of data, assessment methods and addresses stakeholder engagement.

The **Assessment** portion of the HIA evaluates the health impacts of the KYPWA. This assessment is composed of a literature review on health impacts of working while pregnant as well as Kentucky's demographics of working women.

Recommendations inform decisions as they relate to work during both pregnancy and the postpartum time-frame. Recommendations are developed through information from available research and provide decision makers with information to improve health outcomes of Kentucky's pregnant workers.

Within the **Reporting and Dissemination** process, information is shared with key stakeholders including Kentucky's legislators, Chambers of Commerce, health providers and the general public.

The **Monitoring and Evaluation** plan lays out a framework for assessment of each stage of the HIA. There are three types of evaluation in HIA: 1) process evaluation gauges the HIA's quality according to established standards and the original plan for the HIA; 2) impact evaluation assesses the HIA's impact on decision-making and its success according to the objectives established during scoping; and 3) outcome evaluation assesses changes in health status and health determinants as the decision is implemented. Monitoring tracks indicators that can be used to inform process, impact and outcome evaluations. The monitoring and evaluation plan strengthens both the integrity of the project and the effectiveness of the HIA.

SCREENING

The screening process for the Pregnant Workers HIA identified key factors regarding existing working standards for Kentucky's pregnant workers and the potential implications of the passing of the KYPWRA.

Nearly seventy-five percent of women entering the workforce in our country will be pregnant and employed at some point in their lives.[21] For some women, particularly those that have physically demanding work, they will have to decide between continuing in a taxing environment or quitting their jobs. Approximately two-thirds of working mothers are the sole, primary, or co-breadwinner for the family.[22] These women play a critical role in maintaining income for the health and wellbeing of their families. Due to the significant number of Kentucky's women impacted by this bill, a HIA was considered an appropriate measure.

Current policies designed to protect pregnant workers have limitations. While the ADA grants reasonable accommodations to pregnant workers with pregnancy-related disabilities, those workers who may have medical needs related to pregnancy that are not disabilities have no affirmative right to accommodation. Making reasonable modifications to accommodate the physical transitions of pregnancy can help alleviate health concerns, while allowing pregnant workers to continue earning an income during this important stage of their life.

Working within a limited time-frame prior to Kentucky's 2019 legislative session, LMPHW opted to do a rapid HIA, using existing literature and research as well as basic engagement of stakeholders and policy makers to inform the process. Tools to conduct the HIA included staff time, data from the federal census, and literature accessed through PubMed, an online database provided by the National Institutes of Health. Feedback was also attained form a pregnant worker and an employer of pregnant workers.

SCOPING

The HIA Scoping process established the range of factors to consider within the KYPWRA. Scoping subjects included the populations affected, sources of data to address baseline health statistics as well as health impacts of different working environments on pregnant workers, assessment methods, and a narrowing down of health issues on which to focus. The scope of the HIA was defined by employees of LMPHW with experience in maternal and child health, environmental health, and social work.

Goals established by the stakeholders of the HIA are to inform decision makers around the health implications associated with SB 18 and to improve health outcomes and reduce disparities of Kentucky's pregnant workers.

The scope of this HIA addresses both environmental and social determinants of health affecting Kentucky's population of pregnant workers. Environmental determinants in the workplace include exposure to chemicals, temperature, and jobs requiring a range of physical activities. Jobs that expose pregnant workers to toxic chemicals can cause birth defects [23] while extreme physical activity and heavy lifting may induce preterm labor. [24] High temperatures and limited water can lead to dehydration, placing physical stress on a pregnant worker and that of her developing child. [25]

Social determinants include employment and income which ultimately affects housing, nutrition, and access to health insurance. Good housing and nutrition lead to reduced stress, reductions in chronic disease, and healthier pregnancies. On the other hand, poverty, poor housing, and poor nutrition are associated with increased stress, cardiac health concerns, chronic disease, and a reduction in life expectancy. [26]

Additional social determinants include language, level of education, and racism. Employees for whom English is not their first language may face discrimination and limited options within the work environment. Jobs available to people with limited education often pay lower wages and have less flexibility with accommodation requests. Women of color make up a significantly higher portion of this wage level than other races, a statistic that has broad implications for health and equity.

Stakeholder Engagement

A "stakeholder" is defined as an individual or group that is potentially affected by decision making around KYPWRA. Stakeholder engagement for this rapid HIA included health professionals, pregnant workers, employers of pregnant workers, employees of LMPHW, the American Civil Liberties Union, A Better Balance, and policy makers.

Potentially Affected Populations

1. Employed women of child bearing age who may become pregnant, are currently pregnant, or recently pregnant;

2. Families of pregnant women;

3. Employers of women who may become pregnant, are currently pregnant, or were recently pregnant; and

4. Within these population categories, there are specific subpopulations that are more vulnerable to potential health impacts. These include low income populations, people of color, women who are at high risk for miscarriages, and pregnant women over the age of 35.

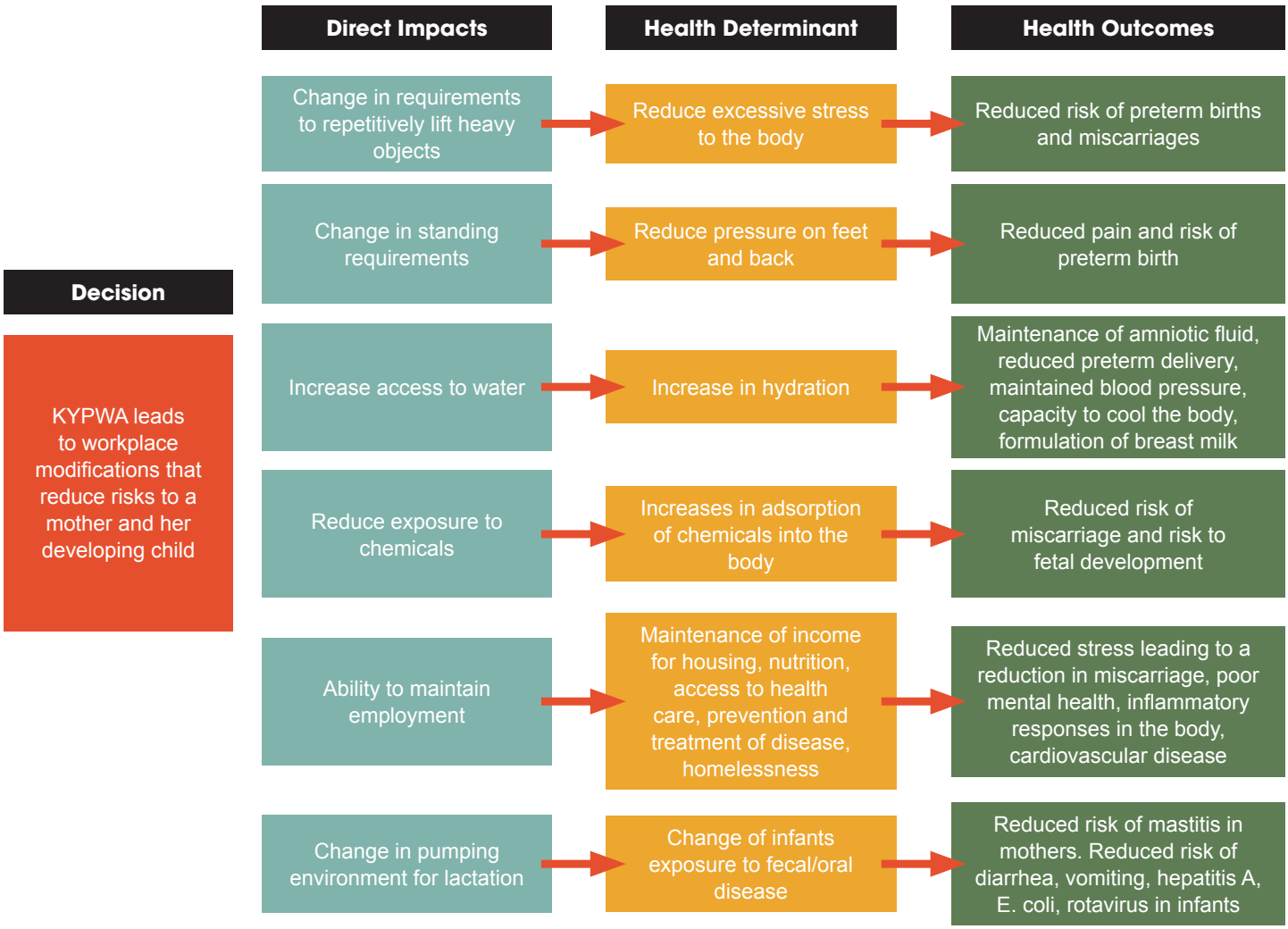
Geographic Boundaries

As the proposed legislation is under consideration within the Kentucky legislature, the geographic boundaries to this HIA are within the borders of the Commonwealth of Kentucky. However, as other states have proposed similar legislation, the HIA could potentially help inform such policies.

PATHWAY TO BETTER HEALTH THROUGH WORKPLACE ACCOMMODATIONS

Figure 1 shows the relationship between adopting a policy to make minor accommodations, when requested, in the workplace for pregnant workers (KYPWRA) and the health outcomes associated with these accommodations. The decision would lead to specific direct impacts such as access to water if requested, and the ability to sit as needed. These direct impacts affect specific health determinants such as hydration and relief of pressure on the back. The health determinants then lead to improved health outcomes such as the ability to prevent over heating as well as a reduction in the risk of preterm birth.

Figure 1: Pathway to Better Health through Workplace Accommodations



ASSESSMENT

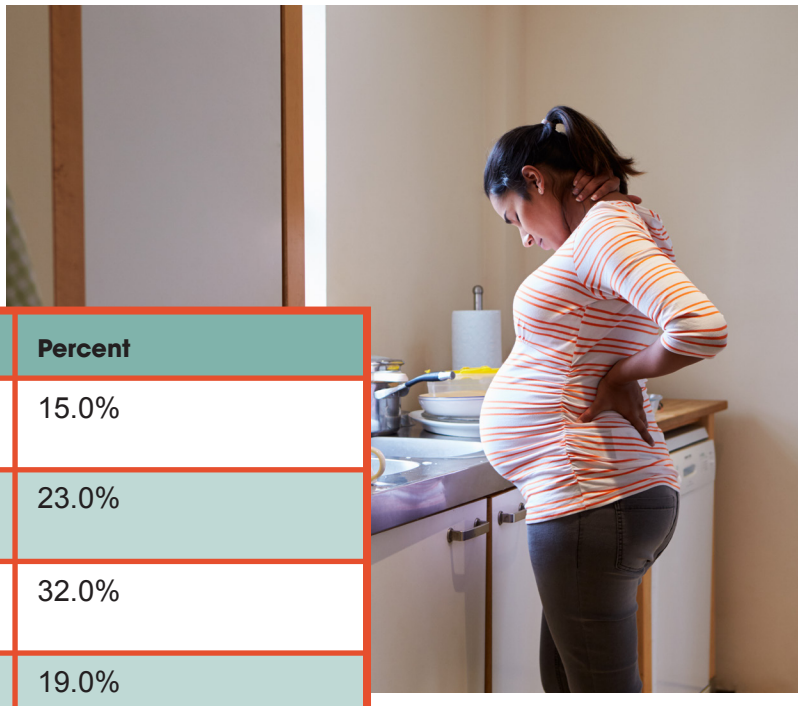
This section of the HIA evaluates health impacts of the KYPWRA through a synthesis of literature review and data collection on demographics. The analysis describes how accommodations in the workplace would affect the health of pregnant workers and their developing child. The assessment also addresses health impacts on the families supported by the pregnant workers.

Literature review methodology consisted of a review of relevant articles on PubMed using the search terms, "pregnancy and work," and "health impacts of working while pregnant". Articles were also researched on the basis of recommendations currently included in the KYPWRA. These included "standing", "lifting", "twisting", and "exposure to chemicals" while pregnant. Health impacts were reviewed around dehydration, overheating, and general stress on the body. Articles were also reviewed for their context relating lactation and the work environment as well as postpartum recovery.

DEMOGRAPHICS OF KENTUCKY'S WORKING WOMEN

With a significant amount of Kentucky's workforce comprised of women of childbearing age, it is critical to review the relationships between the working environment and its impact on pregnancy. Of the pregnancies counted in the 2013 census, 62% of women were working while pregnant.[27] Many women must work in order to maintain the health and wellbeing of their families. While Kentucky's population of working women is diverse, it is also critical to address which populations are working in the most high-risk positions. Women of different demographics will experience significantly different working environments and ultimately different birth outcomes.

The majority of Kentucky's female workforce does not have an advanced education. Of women with births in the last 12 months, 15% did not have a high school diploma and the majority of these individuals had less than a full college degree (70%).[28] Level of education can impact the type of work available which ultimately impacts their health. Those with higher educations may work in positions that are less physically demanding, while those with less than a high school or college diploma may work in positions that require much more physical labor such as that found in factory jobs. Such positions often require extensive lifting, bending, or twisting, activities that can lead to poor birth outcomes.[29] Individuals with a high school degree or less are also often challenged to find work with income that provides a living wage. In the same light, such individuals may also have fewer opportunities to find work that is accommodating of pregnancy. [30]



Level of Education Attainment	Number (thousands)	Percent
Less than high school graduate	580	15.0%
High school graduate (includes equivalency)	909.0	23.0%
Some college or associate degree	1250.5	32.0%
Bachelor's degree	751.1	19.0%
Graduate or professional degree	439.4	11.0%

Table 1: Educational Attainment of Kentucky Women with Births in the Last 12 Months

US Census. [31]

Women of color also experience differences in working environments due to racial inequities, including limited access to higher education or opportunities.[32,33] These biases may act as an additional burden alongside the prevention from acquiring basic measures to protect their health and the health of their infants during pregnancy.[34] As observed in Table 2, nearly one-third of Kentucky's population identifies as a race other than white. Such demographics may have implications on birth outcomes as they relate to employment and work.

Race	Number (thousands)	Percent
White	2,689	68.4%
Black or African American	572.1	14.6%
American Indian and Alaska Native	41.4	1.1%
Asian	247.9	6.3%
Native Hawaiian and other Pacific Islander	9	0.2%
Some other race	253.5	6.4%
Two or more races	117.5	3.0%

Table 2: Kentucky's Workforce Demographic for Female Employees

Based on women 15-50 years of age. US Census. [35]

Individuals experiencing poverty face significantly higher rates of certain health outcomes including heart disease and malnutrition.[36] Nearly one-third of the population that gave birth in Kentucky was below 100% of the poverty level as of the 2013 census. This indicates that a significant number of the state's working women who gave birth are already at higher risk to poor health outcomes, a factor that could compound issues of working while pregnant. Women that lose their job as a result of pregnancy place their family at risk to increased poverty, lack of health insurance, and homelessness.[37]

Poverty Level	Number (thousands)	Percent
Below 100 percent of poverty level	1,071.50	27%
100 to 199 percent of poverty level	851.2	22%
200 percent of poverty level	1,996.30	51%

Table 3: Numbers of Births According to Poverty Level in Kentucky

US Census. [38]

A pregnant person's age may have an impact on her capacity to carry out certain work requirements. More than half of all live births to Kentucky women between 2013-2015 were to women ages 20-29 years (58.8%). Women aged 30-39 years accounted for 30.6% of all births, while 8.9% of births occurred to women under age 20 and 1.7% to women 40 and older. Adverse birth outcomes including premature birth and low birth weight (LBW) are more commonly experienced by younger and older women, compared to women in their twenties and early thirties.[39] It may be valuable to recognize the relationships between the age of employees, existing risks associated with those ages, and the exacerbation that certain working environments may have on birth outcomes.

Kentucky has one of the highest rates of pre-term birth in the country, ranking 5th of all states. More than 11% of all babies born in Kentucky are born preterm, defined as earlier than 37 weeks of gestation.[40] Babies born with LBW (below 5.5 lbs.) are at risk for difficulties that can impact them throughout their lives, including heart disease and diabetes. In 2017, 8.7% of all Kentucky infants were born LBW.[41] Kentucky data from 2012-2016 show that LBW was more common among Black infants (14.2%) than either White (8.3%) or Hispanic infants (6.5%).[42] For 2016, the infant mortality rate for Kentucky was 7.1/1,000 overall; however, the mortality rate for Black infants was higher (12.6) than for either White (6.4) or Hispanic/Latino infants (7.0).[43] Health disparities related to race may be compounded by poor birth outcomes related to the working environment.

TYPES OF HIGH-RISK LABOR

Researchers have identified a broad list of labor that can potentially affect the health of pregnant workers and their fetuses. Work in a factory, work in packing and shipping warehouses, as well as work that requires extensive standing and lifting, has been identified as a common concern.[44] Newborns of mothers working in factories, mining, and construction, have been found to experience higher rates of LBW and small for gestational age (SGA) compared to babies born to mothers who did not work outside the home. Newborns of farmers and forestry workers have also been found to have a higher risk of pre-term delivery (PD), LBW and SGA compared to office, non-manual and service workers.[45]

Mothers who work in the agricultural industry face a wide range of risks including excessive heat, accidents, falls, repetitive motion and adverse pesticide exposure. A community based participatory research study found that women working in nurseries and ferneries for the floral industry listed a broad range of health concerns during their pregnancy. Most women (approximately 90%) experienced some complication during their pregnancies, and more than 10% of women had preterm deliveries. Additionally, more than 10% of infants experienced a health complication including a birth defect or an illness.[46]

Agricultural workers across the country include populations of immigrant workers. These workers may face additional language barriers when communicating their concerns around their health and pregnancy in the workplace. Research shows that certain occupations such as hairdressing and cosmetology, as well as working in nail salons, may have an impact on fetal growth, preterm delivery and perinatal death. In a study utilizing the Finish Medical Birth Registry, researchers found that hairdressers and cosmetologists were exposed to a range of chemicals, poor posture and psychological stress, and had a higher risk of reduced fetal growth than women in an occupation with not exposure to these chemicals (teachers). Hair-dressers also had a higher risk of preterm birth and perinatal death.[47]

> *"A woman's body goes through many changes throughout the stages of pregnancy and sometimes there are special accommodations needed [including an] appropriate chair or work station, support for your legs, adequate breaks and [appropriate] work load."*
>
> *-Pregnant worker of a community mental health service*

IMPACT OF GENERAL PHYSICAL LABOR ON BIRTH OUTCOMES

A wide range of research has addressed the impact of physical activity during pregnancy on the health of the infant and the woman, finding that modest physical activity during pregnancy can be beneficial for good health outcomes at birth. Working is good for women in terms of improved birth weight, as well as prevention of obesity in the woman.[48] The lowest risk was found in association to modest physical activity, two to four hours per week. A study by Casas et al. assessed whether maternal employment during pregnancy - overall and in selected occupational sectors - is associated with birth weight, SGA, term LBW, length of gestation, and preterm delivery in a population-based birth cohort design. Results of the study suggests that, overall, employment during pregnancy is associated with a reduction in the risk of preterm birth while certain jobs such as working in the food industry increased risk of preterm delivery. Within this study nurses had a lower risk of SGA infants.[49]

Different types of physical labor and the intensity of the work may impact birth outcomes. A study utilizing the Southhampton Women's Survey, investigated the risks of physical activity at work during each trimester and the effect it had on head and abdominal circumference, preterm delivery, and the determination of SGA. Factors assessed included working hours, standing/walking, kneeling/squatting, trunk bending, lifting and night shifts. Risk of preterm delivery was elevated nearly threefold in women whose work at 34 weeks entailed trunk bending for more than one hour per day. Small head circumference was more common in babies born to women who worked more than 40 hours per week.[50]

A literature review examining case-control studies, which compared two different groups, as well as cohort studies (where only one group of women are studied)

addressed various poor health outcomes as they relate to working environments. This review acknowledged that studies both showing and not showing an association between employment and adverse outcomes exist. The authors raised the concern that no randomized trials (a type of study that is considered the best for making strong conclusions) have been implemented. The author identified that the strongest associations between preterm birth and work were observed with prolonged standing, long working hours, and lifting heavy objects.[51]

SHIFT WORK

Shift work, or working at night (10:00 pm to 7:00 am), may increase the risk of preterm delivery. Long working hours and extra shifts, as well as the shift in circadian rhythm may be a source of trauma on the body.[55,56] Women that do shift work should be made aware of the stresses that this type of labor may have on the body as a measure to protect the health of a developing child.

LIFTING

Lifting is often identified as an area of concern for working pregnant women. Research presents a variety of results in a range of different contexts. An association has been documented between occupational lifting and the risk of fetal death according to gestational age. In one study, the risk increased for both the frequency of daily lifts as well as the total burden lifted per day. For women lifting 101-200 kg (222 to 444 lbs.) per day the risk of miscarriage increased 38% compared to non-lifters. When lifting exceeded more than 1000 kg (2204 lbs.) per day, miscarriage rates more than doubled. Late miscarriage was associated with total daily weight load but not with number of lifts per day. There may be a case for advising pregnant women against heavy lifting, in particular during early pregnancy.[57]

A study utilizing the Danish National Birth Cohort, investigated if occupational lifting and psychosocial job strain interact to affect fetal growth and gestational length. Women that work in stressful environments often experience high demands while having limited control over their work environment. The study noted that for each additional 250 kg (550 lbs.) lifted per day, women who did significant lifting but had limited control over their work environment had increased odds of giving birth to a large for gestational age (LGA) child. On the other hand, women with high physical demands but also high control over their work had increased odds of giving birth to a SGA child.[58] The hypothesis is that women with high stress have a higher risk of gestational diabetes which leads to larger children. Those with smaller children had experienced the physical stress of lifting.

STANDING

Research has evaluated the influence of standing and walking at work in the second trimester (4-6 months of pregnancy) on preterm delivery. Findings suggested that excessive standing and walking at work during the second trimester may present a particular risk for preterm delivery. Women that stood for more than five hours per work day had a 20% greater risk of preterm delivery compared to women standing two hours or less. For women walking for more than five hours per day, the risk increased to 40%. Women who reported more than five hours of both standing and walking had a three times greater risk of preterm delivery compared with women who reported two hours or less on either of the exposures.[59]

Researchers also found that the risk of having a SGA infant was increased among the women who worked at least six hours a day in a standing position. The risk for a SGA infant also slightly increased as the gestational age at work cessation increased. The results suggest that prolonged standing and working late into pregnancy may increase the risk of delivering a SGA infant.[60]

HYDRATION

Hydration is critical to the health and wellbeing of pregnant workers. Access to water is helpful for preventing hemorrhoids, UTI's and constipation, common challenges incurred during pregnancy. Hydration is also necessary for the transfer of nutrients into the placenta. A woman's fluid intake needs increase during pregnancy as she is managing the circulation of nutrients and waste for two. Water can help reduce fatigue, headaches, swelling and overheating. Ensuring that women have sufficient access to water in the workplace, if requested, can ultimately prevent a range of poor health outcomes. [61]

NOISE

Women working in extremely loud environments such as near heavy machinery, loud music, guns, sirens, crowds of people, or a jack hammer, may place their unborn child at risk to hearing loss.[62] In a retrospective study, children between the ages of 4 and 10 were tested for high-frequency hearing loss. Those with hearing loss were more likely to be born to mothers who had reported an occupational exposure to noise range from 85 to 95 dB during pregnancy.[63] Research also suggests that women exposed to extreme noise may also have an increased risk of preterm birth. Women exposed to 80 dB for an 8-hour shift were at increased risk of preterm delivery.[64] Women exposed to high noise levels during pregnancy are also at a significantly higher risk for having a SGA newborn and high blood pressure during pregnancy.[65] Physicians recommend that pregnant women should be allowed to work in quieter environments during pregnancy, if requested.[66]

HIGH RISK PREGNANCIES AS RELATED TO PREVIOUS HIGH-RISK BIRTHS

Research has observed that when a woman has one pregnancy with a miscarriage or preterm birth, there is an even higher risk of miscarriage or preterm birth in following pregnancies.[67] This has implications for women who are working in environments that increase the risk of preterm birth including jobs that require bending and lifting.

CHEMICAL EXPOSURES

Chemical exposure during pregnancy can have a direct association with a wide range of health concerns in developing infants and children. A review summarizing relationships between prenatal and/or early life exposures to environmental chemical contaminants and fetal, child, and adult health included prenatal high-level methylmercury (CH(3)Hg) exposure, high-level prenatal exposure to polychlorinated biphenyls (PCBs), polychlorinated dibenzofurans (PCDFs), and related toxicants. These chemicals can lead to delayed developmental milestones, cognitive, motor, auditory, and visual deficits, as well as neonatal tooth abnormalities.[68] Women working in environments with toxic chemicals such as in manufacturing and research laboratories, should take precautions to protect the health of their developing child.

Women should also be aware of the risks associated with lead exposure in the workplace. The associations between occupational lead exposure and reproductive outcomes are strong. Offspring of mothers with occupational exposure to lead had a 34% increased risk of LBW as well as a 2.87 times higher risk of having a neural tube defect, defects of the brain, spine, or spinal cord.[69]

Hairdressers and cosmetologists as well as people working in nail salons are commonly exposed to chemicals, poor posture and psychological stress that may increase the risk of adverse pregnancy outcomes. A study using the Finnish Medical Birth Registry assessed whether work as a hairdresser and cosmetologist during pregnancy increases the risk of LBW, preterm delivery, SGA and perinatal death. The study observed a 44% increase in risk to having a LBW baby, a 21% increase risk in preterm delivery, and a 62% higher risk of perinatal death in hairdressers. In cosmetologists, the risk of SGA was 53% higher and perinatal death was 36% higher. This study provides evidence that work as a hairdresser or cosmetologist may reduce fetal growth and may also increase the risk of preterm delivery and perinatal death.[70]

RESTROOM BREAKS

Pregnant women commonly develop a need for more frequent bathroom breaks during pregnancy. Not using the bathroom frequently leads to UTIs and UTIs can lead to preterm birth. Women in certain work environments often have restricted times for bathroom breaks. It is critical that a woman be able to flush the bladder due to the increased risk of various poor birth outcomes related to UTIs. Research by Dautt-Leyva et al. addressed maternal and perinatal complications in pregnant women with UTIs caused by Escherichia coli (E. coli). Results of this study found that the primary risk caused by E. coli based UTIs was risk of preterm labor and fever that created a risk for miscarriage.[71]

LACTATION

Breastfeeding confers numerous health benefits to infants and their mothers. Among infants born in Kentucky in 2015, 73.9% were breastfed for at least some time. Breastfeeding rates decreased over time; 48.6% of infants were still breastfed at six months and 28.2% at one year of age. Worksites that provide programs and facilities that support lactation provide critical support for women's ability to continue breastfeeding their children.[72]

Mastitis is a condition that happens when bacteria enter the breast through the nipple when a nursing mother has a cracked or sore nipple. The condition can be worsened when a mother most go long stretches between nursing or is unable to completely empty the breast. Research by Wren-Atilola HM et al. suggests that prevention of subclinical mastitis along with increased breastfeeding frequency may improve early infant growth and prevent low head circumference.[73]

RECOMMENDATIONS

The Pregnant Workers HIA reviews evidence that making reasonable accommodations in the workplace can protect the health and well being of pregnant workers and their developing child. Pregnant workers contribute significant hours to the workforce, participating in the economy, and providing for their families. Should a worker request accommodations for the physical transitions of pregnancy, such accommodations can help alleviate health concerns while allowing pregnant workers to continue earning an income during this important stage of their life. The following recommendations are presented as a measure to inform lawmakers about these important issues as well as address health outcomes associated with the implementation of the legislation.

PHYSICAL LABOR

Jobs that require physical labor including heavy lifting, bending, and standing for long hours may create strain on pregnant workers and their baby. Basic measures to reduce that strain, if requested and needed, can help reduce a variety of poor health outcomes including preterm birth and increased risk to miscarriages.

Bending

A relationship has been observed between significant bending and preterm birth. If requested, provisions should be made to allow pregnant workers to take positions that do not require extensive, repetitive bending to avoid preterm birth.

Standing

Standing for long hours may be associated with preterm birth. If requested, provisions should be made to allow pregnant workers to take positions that do not require extensive standing (standing for more than five hours) to avoid preterm birth.

Lifting

Evidence suggests a relationship exists between repetitive heavy lifting and an increased risk to miscarriage. Pregnant workers who customarily lift heavy objects (more than 40 pounds) in their jobs should be able to modify their workload, if requested, in order to reduce the amount of weight and related strain on the body to avoid miscarriage.

Rest

Physical labor can strain a pregnant worker's body. It is recommended that pregnant workers be allowed to rest their legs during the workday, if requested, to relieve the stress of standing and walking. Women should be provided a chair or stool while working, if requested. However, if a pregnant worker must stand, it is recommended that pregnant workers be allowed to put one foot up on a foot-rest, low stool or box, if they so request.

Shift Work

Evidence indicates a relationship between shift work and preterm birth. Pregnant workers working late shifts should be allowed to transition to earlier shifts, if requested, as a measure to protect the health and wellbeing of their child.

EXPOSURES IN THE WORKING ENVIRONMENT

Pregnant workers may experience a diverse range of working environments. In order to protect the health of the pregnant worker, steps should be taken, if requested, to reduce the risk of certain environmental factors.

Exposure to Chemicals

Evidence indicates that women working in environments with risk to lead exposure can place their fetus at risk to developmental delays.

Employers should make women aware of the risk to lead exposure to ensure developing fetuses and breastfeeding infants are not put at risk to impacts on development. Women working in environments with chemical exposures as well as radiation should be made aware of the risks to developing fetuses. Pregnant workers should be granted accommodations, if requested, to avoid exposures that risk a baby's development.

Noise

Pregnant workers working in extremely loud environments such as near heavy machinery, loud music, guns, sirens, crowds of people, or a jack hammer, can place their babies at risk to hearing loss. Employers should allow pregnant workers to work in quieter environments, if requested, during pregnancy so as to prevent hearing loss in the developing child, and prevent preterm birth.

MAINTAINING PHYSICAL NEEDS

Pregnancy leads to a range of changes in the body. Dietary and hydration needs increase due to the needs of the growing fetus. The need to use the restroom increases due to the positioning of the infant in the abdomen. Employers should be aware of these changes in order to accommodate the needs of their pregnant workers.

Hydration

Hydration is critical during pregnancy as it helps keep the body cool, maintains sufficient amniotic fluid, and maintains critical body functions in a developing child. Employers should allow pregnant workers to carry a bottle of water with them at all times during the workday, if requested, in order to stay hydrated.

Restroom Breaks

Pregnant workers often experience a need for increased restroom breaks, in order to prevent UTIs. Due to the risks associated with UTIs including preterm labor and preeclampsia, pregnant workers should be allowed to use the restroom as requested.

AFTER THE DELIVERY OF THE CHILD

Employers should understand the potential needs of their workers after childbirth.

Postpartum Recovery

Giving birth can be a traumatic experience on a person's body, often requiring surgery and an extended period of recovery. Employers should be aware of this need for recovery time and allow workers to request a lighter workload until the body is fully healed.

Breastfeeding

Breastfeeding provides the healthiest option of nutrition for infants. Breast milk helps build bodies as well as strengthens the immune system. Maintaining a pumping routine throughout the workday is therefore critical both for the child and the worker, as it helps prevent mastitis. It is recommended that employers provide a safe, comfortable, and private space for lactating parents to express breast milk at routine times throughout the work day, if requested. Workers' lactation needs will vary according to the age of their child. A worker with an infant that is only a few months old may need to pump at least 2 to 3 times during an 8-hour workday. (In the first few months of life, babies need to breastfeed eight to 12 times in 24 hours).

PROTECTION FOR ALL PREGNANT WORKERS

Pregnant workers may be placed in a difficult situation as they navigate the challenges of working during pregnancy. Fear of a layoff and unemployment may prevent some workers from communicating their concerns to their employer. Each worker may require their own unique accommodations and these cannot be standardized for all pregnant workers. Many workers may need no accommodation at all. Pregnant workers may have a history of miscarriages which places them at higher risk and should not have to be required to share this information with employers. It is therefore recommended that pregnant workers should be able to make requests for accommodations on their own without having to provide proof from a medical professional regarding the request for accommodation.

PREPARING FOR PREGNANT WORKERS

Conducting early screening of occupational risk as well as monitoring manual labor and environmental conditions improves the potential protection of the health of pregnant workers. It is recommended that Kentucky's employers and supervisors are trained on how to recognize and respond to all pregnant employees' needs so as to be prepared when a pregnant worker is employed.

Information regarding recommended accommodations should be posted visibly in the workplace.

CONCLUSION

Maintaining employment during pregnancy helps ensure that a pregnant worker has sufficient resources to maintain their own health and that of her developing child as well as provide for their family. Providing safe accommodating working environments improves the chances of healthy pregnancies, reduces poor health outcomes, and ultimately builds a stronger workforce.

As previously reviewed, working environments including those that require heavy lifting, bending, standing, those that have a high risk of chemical exposure, as well as those that have high levels of noise, or limited water, among many others, can impact the health of a pregnant worker and her child. Accommodating these concerns is critical for reducing poor health outcomes including miscarriage, low birth weight, preterm births, birth defects, dehydration, unnecessary pain resulting from excessive standing, bending, or lifting, urinary tract infections and related risk of preeclampsia, and mastitis.

If requested, basic measures at work such as access to additional bathroom breaks, shifting workloads, providing seats to alleviate weight off the feet, reducing exposure to chemicals and loud noises, ensuring the ability to carry water on the floor, as well as providing locations for pumping can ensure safe and healthy outcomes for pregnant workers.

Kentucky's population of working women is diverse. Employing measures to reduce poor health outcomes in the workplace would not only improve the health of the pregnant worker and the developing child, it could also address some of the many disparities that exist across the Commonwealth. Health disparities affected by economics, education, and race would experience a positive impact from the benefits of reasonable accommodations in the workplace. The Pregnant Workers HIA works to assess these concerns, addressing reasonable accommodations in the workplace as a measure to reduce health disparities and improve health outcomes by informing the KYPWRA.

"As an owner of a storage facility, the benefits of a happy, healthy and productive pregnant worker far outweigh the "cost" of providing basic accommodations necessary. The challenges that small business owners such as myself would face would be limiting physical activity such as heavy lifting which co-workers could cover and scheduling. A great employee is a valuable asset to a business and it makes business sense to offer basic accommodations for pregnant workers."

-Helen Helton, Aladdin Self Storage LLC

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