

# CODE BLUE

## The growing threat of non-communicable diseases on maternal health

*Some 18 million women of reproductive age die each year from non-communicable diseases (NCDs).<sup>1</sup> The alarming prevalence and effects of NCDs pose a growing and often overlooked challenge to global maternal health that must be addressed to prevent needless deaths, disease, and complications. The Wilson Center and Emd Serono, a business of Merck, KGaA, Darmstadt, Germany, are partnering to bring to light and explore these issues in our upcoming **CODE BLUE** series.*

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### HERE WE PROVIDE A SNAPSHOT OF THE SEVEN NCDs THAT POSE THE GREATEST THREAT TO MATERNAL HEALTH AROUND THE WORLD:

- Cardiovascular Disease
  - Hypertension
  - Thyroid Disease
  - Multiple Sclerosis
  - Diabetes
  - Cancer
  - Mental Health
- 

#### 1 Cardiovascular diseases are responsible for more than 25 percent of all pregnancy-related deaths in the United States.<sup>2</sup>

Cardiovascular diseases (CVDs)—which include coronary heart disease, cerebrovascular disease, rheumatic heart disease, and more—are one of the largest contributors to maternal morbidity and mortality.<sup>3</sup> Part of the reason is that during pregnancy, the human body undergoes drastic changes in terms of blood volume, cardiac output, and blood pressure.<sup>4</sup> A healthy woman's body can withstand these changes with little difficulty; however, women with CVDs face a higher risk of maternal health complications and death because of the toll the changes take on their bodies. Research shows that women are susceptible to complications from CVDs throughout their pregnancy and up to five months post-partum.<sup>5</sup> In particular, women with CVDs are at a higher risk of developing blood clots, arrhythmias (irregular heart rhythms), and pulmonary edema (fluid accumulation in the lungs) during pregnancy.<sup>6,7</sup> Many of these potentially life-threatening complications can be prevented or at least managed with early detection.<sup>8</sup> Despite their high prevalence, CVDs often go undiagnosed and untreated in women. Many physicians fail to either recognize the symptoms of CVD in women or talk to their female patients about their risk of heart disease.<sup>9</sup>

#### 2 Diabetes complicates 1 in every 6 pregnancies around the world.<sup>10</sup>

Approximately 200 million women are currently living with diabetes, and 1 in 3 of them are of reproductive age.<sup>11</sup> The rate of diabetes in pregnancy is currently on the rise and affects about 14 million women every year.<sup>12</sup> Any form of diabetes, including type 1, type 2, and Gestational Diabetes Mellitus (GDM), during pregnancy increases risks to the health of both the mother and the fetus. Most diabetes cases in pregnancy are GDM (90 percent), and women with gestational diabetes have four times the risk of a stillbirth or death of a baby in its first week of life than those without it.<sup>13</sup> Screening for GDM is routine in many countries during prenatal care visits, with tests taking place anywhere between 24 and 28 weeks.<sup>14</sup> Untreated GDM not only increases a baby's risk of death, it also increases the mother's risk of developing both GDM in future pregnancies and type 2 diabetes as she gets older.<sup>15</sup>

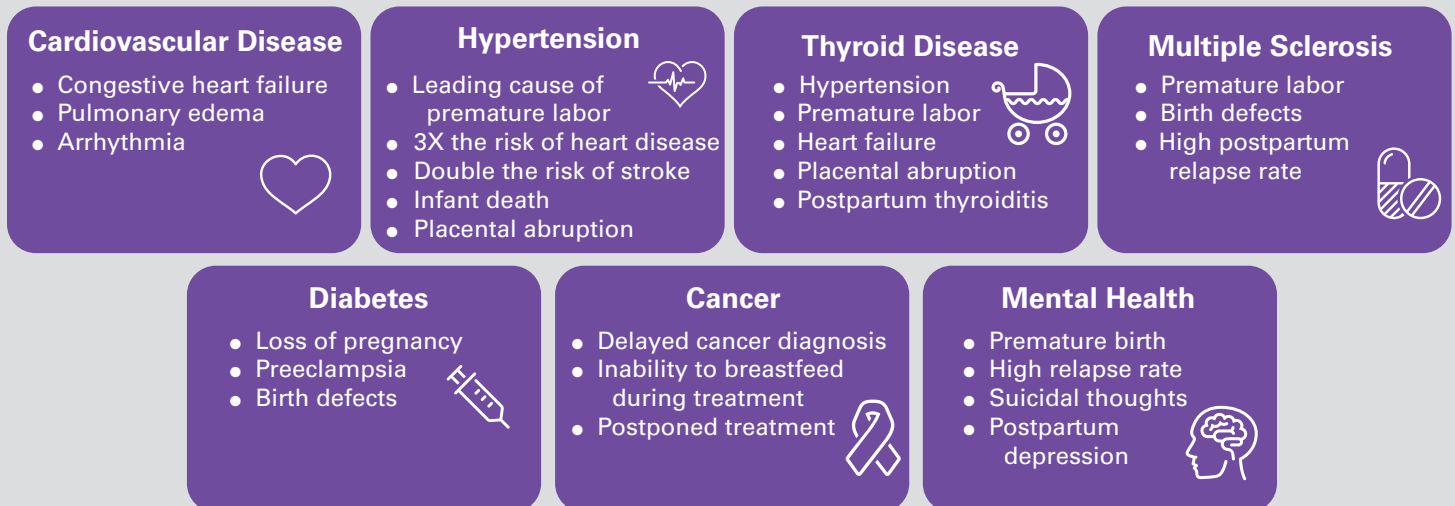
### 3 Hypertensive disorders result in approximately 76,000 global maternal deaths each year.<sup>16</sup>

Hypertensive (high blood pressure) disorders affect up to 10 percent of pregnancies globally.<sup>17</sup> One of them, preeclampsia, is a serious blood pressure condition that can occur after the 20th week of pregnancy or after giving birth. Ten million women develop preeclampsia each year around the world.<sup>18</sup> Women who survive preeclampsia face three to four times the risk of chronic hypertension, two times the risk of stroke, and two times the risk of coronary heart disease compared to those who had normal pregnancies.<sup>19</sup> Preeclampsia affects both mother and fetus and can result in premature birth, placental abruption (separation from the uterus), low birth weight, and even infant death. Eclampsia, the onset of comas or seizures in pregnant women, may follow preeclampsia and puts women at an even higher risk for fetal complications and stroke.<sup>20</sup>

### 4 One in eight women will develop thyroid complications in her lifetime.<sup>21</sup>

During pregnancy, the function of the thyroid, the gland that controls the body's metabolism, is critical. The body's higher demand for thyroid hormones often leads to a 10 to 40 percent increase in thyroid size.<sup>22</sup> If left untreated, both hyperthyroidism, the thyroid's overproduction of hormones, and hypothyroidism, the thyroid's underproduction of hormones<sup>23</sup> can lead to hypertension, placental abruption, preterm birth, and heart failure during pregnancy and labor.<sup>24</sup> In fact, women with mild hypothyroidism are three times more likely to have a placental abruption-related complication and two times more likely to have a preterm birth than those without it.<sup>25</sup> Hypothyroidism in women has also been linked with higher pre-pregnancy weight, as well as more weight gain during the pregnancy itself.<sup>26</sup> Thyroid issues don't always end immediately after birth—more than 10 percent of women experience postpartum thyroiditis, in which the thyroid swells in the first year.<sup>27</sup>

## COMPOUNDING EFFECTS OF NONCOMMUNICABLE DISEASES AND PREGNANCY



### 5 Cancer diagnoses complicate up to 1 in every 1,000 pregnancies worldwide.<sup>28</sup>

Over the last 50 years, the rate of cancer diagnosis has increased globally, making cancer one of the leading causes of death.<sup>29</sup> Almost 3 in every 100 maternal deaths can be attributed to cancer.<sup>30</sup> In particular, breast, cervical, ovarian, and colorectal cancers contribute most significantly to maternal mortality.<sup>31</sup> In many cases, the diagnosis of cancer during pregnancy is delayed, as the symptoms of undiagnosed cancer and pregnancy (like nausea, fatigue, and headaches) often overlap. While rare, hormonal changes associated with pregnancy can stimulate some cancers to grow.<sup>32</sup> Pregnancies become high-risk once a cancer diagnosis is made, and women often face the difficult decision of which treatment to use and when to begin treatment, while taking into account the health of the fetus, as well.

## 6 Multiple Sclerosis (MS) is two to three times more prevalent in women than in men.<sup>33</sup>

MS is often disabling with symptoms that can include difficulty walking, vision problems, bladder dysfunction, and cognitive changes.<sup>34</sup> MS affects women of childbearing age more than any other group.<sup>35</sup> Since 1990, its global prevalence has increased 10.4 percent with approximately 2.3 million diagnosed cases in 2016.<sup>36</sup> While research shows that MS does not affect a person's ability to get pregnant, women with MS tend to experience more pregnancy-related complications than those without, particularly infections during pregnancy, premature labor, and fetal malformations.<sup>37</sup> The period of pregnancy is associated with a decrease in MS relapses due to the protection pregnancy-related hormones provide. The postpartum period however, is associated with an increase in relapses, as many mothers stop disease-fighting medicine while breastfeeding to avoid transferring medications to their babies.<sup>38</sup> Relapse symptoms like mobility issues, mood disturbance, and fatigue can greatly affect a woman's ability to properly care for a newborn baby.<sup>39</sup>

## 7 Mood or anxiety disorders affect about 10 percent of pregnant women.<sup>40</sup>

Major mental health disorders associated with pregnancy include, but are not limited to depression, anxiety, post-traumatic stress disorder, and bipolar disorder.<sup>41</sup> Globally, 13 percent of post-partum women experience a mental disorder<sup>42</sup> and in developing countries, roughly 20 percent of women experience a mental health issue during or after pregnancy.<sup>43</sup> In fact, women are more likely to develop anxiety or depression in the first year after childbirth than any other time of life.<sup>44</sup> Hormonal changes during and after pregnancy, plus sleep deprivation, adjustment to life changes, and body image all play into this increase in mood or anxiety disorders in pregnant and postpartum women.<sup>45</sup> Pregnant women are more likely to experience suicide ideation than the general population worldwide.<sup>46</sup> Globally, several studies indicate that women with depressive symptoms are significantly more likely to deliver preterm than women without depressive symptoms.<sup>47,48,49,50</sup> Women with histories of mental illness who discontinue psychiatric medications during pregnancy and breastfeeding are also particularly vulnerable.<sup>51</sup>

### Maternal deaths due to non-communicable diseases are largely preventable if the proper steps are taken:

- Integrate sexual, reproductive, maternal, newborn, and child health services with NCD education, diagnosis, and treatment.
- Raise the visibility of risk factors, like obesity, that contribute to both NCD incidence and maternal mortality rates. Obesity currently affects up to 30 percent of pregnant women, increases a woman's risk of several NCDs, and can affect the fetus due to increased risk of miscarriage, preterm birth, and birth defects.
- Support pre-conception planning and counseling with women and men BEFORE they try to get pregnant. Special focus on promoting healthy lifestyles for adolescents and young people.
- Promote consistent prenatal and postpartum checkups. Closely monitor women with NCDs throughout pregnancy and for one year postpartum.
- Increase research and funding for both NCDs and maternal mortality and morbidity causes.

The **CODE BLUE** series will consist of public events and blog articles focused on the devastating effects of NCDs on women's maternal health, disease and disability, and death. This series will examine the significance of several major NCDs in the United States and globally, and will focus on current innovations to increase awareness, diagnoses, and proper treatments; reduce the incidences; and identify gaps in research and funding.

## ENDNOTES

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