

## **R069: Estimation of Vulnerable Newborn phenotypes: individual-level analyses of national and sub-national data – QUB**

For centuries, Low Birth Weight (LBW) (<2500g) has been used as the main marker of vulnerability in a newborn, but this is not granular enough to understand the risks and also causes. LBW is due to either being born preterm (<37 completed weeks of gestation) or growth-restricted (defined as <10th centile of birthweight for gestational age (GA) and sex i.e., small for gestational age (SGA)) or a combination of both. Global estimates of LBW do not discriminate between the babies who had LBW due to prematurity versus those linked to fetal growth restriction.

Population-level data are available for national estimates of LBW from surveys and routine facility data, and to a lesser extent for the prevalence of preterm birth from routine data. However, there are no reliable multi-country data on the various combinations or phenotypes of vulnerable newborns (i.e. prematurity, fetal growth restriction and the combination). Therefore, this is a collaborative approach involving governments, academics and also WHO and UNICEF and will help set jointly agreed priorities to improve data quality and use of data in programmes for vulnerable newborns all over the world.

### **Purpose**

The Vulnerable Newborn Measurement Collaboration comprises a multi-country partnership in order to apply standard definitions and undertake analyses for vulnerable newborn phenotypes, to generate estimates and to inform improved data quality and use in all regions of the world.

### **Research Aims and Objectives**

To undertake analyses of the Northern Ireland Maternity Services Dataset in order to describe the prevalence and mortality for various vulnerable newborn phenotypes based on birthweight (LBW vs normal birthweight), gestational age (term vs preterm) and small for gestational age (SGA vs appropriate for gestational age (AGA)). The final output which will comprise summary data for these phenotypes and will then be shared with collaborators from London School of Hygiene and Tropical Medicine to generate regional estimates of the prevalence and population attributable risk from these phenotypes.

**Objective 1:** Describe the prevalence of the 10 vulnerable newborn phenotypes amongst live births as detailed in the following section.

**Objective 2:** Describe the mortality risk for each of the 10 vulnerable newborn phenotypes amongst live births.

**Objective 3a:** Describe prevalence of the 10 vulnerable newborn phenotypes amongst stillbirths

**Objective 3b:** To compare stillbirth risk for each of the 10 vulnerable newborn phenotypes amongst pregnancies after 22 weeks.