

## **Morbidity and mortality of infants with very low birth weight in Japan: center variation.**

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### **METHODS:**

A large multicenter neonatal research network that included level III NICUs from throughout Japan was established. A standardized mortality rate was formulated by giving a ratio of the observed deaths and the predicted deaths based on a 100-g birth weight interval mortality. A regression model was used to predict the factors that affect neonatal mortality.

### **RESULTS:**

The network included 37 centers and 2145 infants weighing  $\leq 1500$  g, born or admitted to the centers in 2003. The standardized mortality rate varied among the facilities (range: 0%-30%). Among all of the very low birth weight infants, 14% were outborn infants, 72% were delivered by cesarean sections, 27% had patent ductus arteriosus, 3% had gastrointestinal perforation, 8% had bacterial sepsis, and 13% had intraventricular hemorrhage. Medical interventions involved were: 41% antenatal corticosteroids, 54% surfactant therapy, 18% postnatal steroids for chronic lung disease, and 29% high-frequency oscillatory ventilation. We found variations in the medical interventions and the clinical outcomes among the centers.

### **CONCLUSIONS:**

The overall survival rate for very low birth weight infants among neonatal centers in Japan was approximately 90%. However, differences in the morbidity and mortality were observed among these centers.

[Pediatr Int.](#) 2011 Dec;53(6):1051-8. Epub 2011 Nov 14.

## **Outcomes of very-low-birthweight infants at 3 years of age born in 2003-2004 in Japan.**

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### **Source**

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### **Abstract**

#### **METHODS:**

A total of 3104 VLBW infants born in 2003 and 2004 registered in a NICU-network database were followed in the study.

#### **RESULTS:**

A total of 257 infants died and follow-up data were obtained from 1826 infants. Of the 1826 infants, 155 (8.5%) had cerebral palsy, 25 (1.4%) had visual impairment, and 12 (0.7%) had hearing impairment. Of the 1197 infants in whom DQ was measured, 184 (15.4%) had DQ < 70. The proportion of NDI in the evaluated infants was 19.2% (n= 350), ranging from 11.9% (BW 1251-1500 g) to 42.0% (BW ≤ 500 g). Odds ratios (95%CI) of NDI or death against the group BW 1251-1500 g were 20.62 (13.29-31.97) in BW ≤ 500 g, 7.25 (5.45-9.64) in BW 501-750 g, 2.85 (2.12-3.82) in BW 751-1000 g and 1.18 (0.85-1.64) in BW 1001-1250 g.

#### **CONCLUSION:**

the incidence of NDI was similar to previous overseas cohort studies despite the higher survival proportion in our study.

## Neonatal correlates of adverse outcomes in very low-birthweight infants in the NICU Network.

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### Source

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### METHODS:

Subjects were infants with birthweight  $\leq$  1500 g who were cared for in the tertiary neonatal intensive care units in Japan

### RESULTS:

Of the 3104 subjects, 257 died and 1826 were evaluated at 3 years of age. Cystic periventricular leukomalacia (PVL; OR, 23.9; 95%CI: 11.0-51.7), gastrointestinal perforation (OR, 8.5; 95%CI: 2.8-25.4), intraventricular hemorrhage (IVH) grade 3 or 4 (OR, 3.1; 95%CI: 1.3-7.2) and sepsis (OR, 2.6; 95%CI: 1.4-4.8) were neonatal factors significantly associated with an increased risk of death or CP. Significant correlates with death or developmental delay were cystic PVL (OR, 7.9; 95%CI: 3.7-16.8), gastrointestinal perforation (OR, 6.3; 95%CI: 1.9-20.8), sepsis (OR, 2.8; 95%CI: 1.6-4.8), IVH grade 3 or 4 (OR, 2.6; 95%CI: 1.2-5.7), chronic lung disease at 36 weeks of corrected gestational age (OR, 1.6; 95%CI: 1.1-2.4) and treatment for retinopathy of prematurity (ROP; OR, 1.5; 95%CI: 1.0-2.3).

### CONCLUSION:

Cystic PVL, gastrointestinal perforation, IVH and sepsis correlated with both death or CP and death or developmental delay in VLBW infants. Chronic lung disease at 36 weeks and treatment for ROP were associated with death or developmental delay, but not with death or CP.

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## Antenatal corticosteroids promote survival of extremely preterm infants born at 22 to 23 weeks of gestation.

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### STUDY DESIGN:

We performed a retrospective analysis of 11,607 infants born at 22 to 33 weeks of gestation between 2003 and 2007 from the Neonatal Research Network of Japan. We evaluated the gestational age effects of ACS administered to mothers with threatened preterm birth on several factors related to neonatal morbidity and mortality.

### RESULTS:

By logistic regression analysis, ACS exposure decreased respiratory distress syndrome and severe intraventricular hemorrhage in infants born between 24 and 29 weeks of gestation. Cox regression analysis revealed that ACS exposure was associated with a significant decrease in mortality of preterm infants born at 22 or 23 weeks of gestation (adjusted hazard ratio, 0.72; 95% CI, 0.53 to 0.97; P=.03). This effect was also observed at 24 to 25 and 26 to 27 weeks of gestation and in the overall study population.

### CONCLUSIONS:

ACS exposure improved survival of extremely preterm infants. ACS treatment should be considered for threatened preterm birth at 22 to 23 weeks of gestation.

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## **Trends in morbidity and mortality among very low birth weight infants from 2003 to 2008 in Japan.**

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### **Source**

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### **Abstract**

**Methods:**This is a cohort study of VLBW infants born from 2003 through 2008.

**Results:**Over the 6-year period, 19,344 infants were registered and analyzed. Crude mortality rates among the infants at discharge decreased significantly (from 10.8 to 8.7%) during the study period.

Significant increases were observed in some morbidities, including symptomatic patent ductus arteriosus with an odds ratio of 1.11 (1.09-1.13); late-onset adrenal insufficiency, 1.21 (1.17-1.26); and necrotizing enterocolitis/intestinal perforation, 1.10 (1.01-1.12). However, the severe form of intraventricular hemorrhage, with an odds ratio of 0.98 (0.92-0.99), decreased significantly. Risk-adjusted trends in other morbidities showed no significant change.

**Conclusions:**Mortality of VLBW infants decreased significantly over the 6-year study period. Decreasing morbidity is essential for further improvement in the outcomes in VLBW infants.

[Pediatrics](#). Vol. 130 No. 4 October 1, 2012 pp. e957 -e965 **Comparison of Mortality and Morbidity of Very Low Birth Weight Infants Between Canada and Japan.**

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### **OBJECTIVE:**

To compare neonatal outcomes of very low birth weight (VLBW) infants admitted to NICUs participating in the Canadian Neonatal Network and the Neonatal Research Network of Japan.

### **METHODS:**

Secondary analyses of VLBW infants in both national databases between 2006 and 2008 were conducted. The primary outcome was a composite of mortality or any major morbidity defined as severe neurologic injury, bronchopulmonary dysplasia, necrotizing enterocolitis, or severe retinopathy of prematurity at discharge. Secondary outcomes included individual components of primary outcome and late-onset sepsis. Logistic regression adjusting for confounders was performed.

### **RESULTS:**

A total of 5341 infants from the Canadian Neonatal Network and 9812 infants from the Neonatal Research Network of Japan were compared. There were higher rates of maternal hypertension, diabetes mellitus, outborn, prenatal steroid use, and multiples in Canada, whereas cesarean deliveries were higher in Japan. Composite primary outcome was better in Japan in comparison with Canada (adjusted odds ratio [AOR] 0.87, 95% confidence interval [CI] 0.79–0.96). The odds of mortality (AOR 0.40, 95% CI 0.34–0.47), severe neurologic injury (AOR 0.57, 95% CI 0.49–0.66), necrotizing enterocolitis (AOR 0.23, 95% CI 0.19–0.29), and late-onset sepsis (AOR 0.22, 95% CI 0.19–0.25) were lower in Japan; however, the odds of bronchopulmonary dysplasia (AOR 1.24, 95% CI 1.10–1.42) and severe retinopathy of prematurity (AOR 1.98, 95%CI 1.69–2.33) were higher in Japan.

### **CONCLUSIONS:**

Composite outcome of mortality or major morbidity was significantly lower in Japan than Canada for VLBW infants. However, there were significant differences in various individual outcomes identifying areas for improvement for both networks.