

## Original Research Reports

# Good Two-Year Outcome for Parents Whose Infants Were Admitted to a Neonatal Intensive Care Unit

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**Objective:** To evaluate the psychological functioning in parents whose infants were admitted to a neonatal intensive care unit (NICU) over the first 2 years of the infant's life. **Methods:** Prospective 2-year follow-up study of a random selection of NICU and control families. At baseline, 9 months, and 2 years, all parents received a clinical interview. Infants underwent a pediatric examination and Bayley II neurodevelopmental assessment at 2 years. Psychological distress is defined as having one or more of the following criteria: any psychiatric diagnosis on the Mini-International Neuropsychiatric Interview at 2 years; Edinburgh Post Natal Depression Scale score more than 12.5 at 2 years; Hospital Anxiety and Depression Scale score more than 11.0 at 2 years, receiving treatment with antidepressants/psychotherapy/counselling over the previous 15 months. **Results:** Overall, 300 families of

infants admitted to a NICU and 120 control families were approached to take part in the study. There was no difference in psychological distress in NICU parents (30.8%) vs control parents (28.2%). In fathers, there was no relationship between psychological distress and infant development measured using the Bayley II. In mothers, there was a relationship between psychological distress and the child's mental development, which was most significant in infants with severe developmental delay. **Conclusions:** There are no significant long-term negative psychological effects on parents whose infants were admitted to a NICU. Should interventions for parents be offered, they should focus on mothers whose infants are likely to have significant mental health development problems whether or not their infant is admitted to a NICU.

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### BACKGROUND

Having an infant admitted to a neonatal intensive care unit (NICU) is a stressful event. Parents of these infants are reported to have increased rates of anxiety, depression, and acute stress symptoms.<sup>1–4</sup> Specific scales have been developed to measure the trauma induced by a NICU.<sup>5,6</sup> Interventions have been trialed to reduce adverse health outcomes for parents.<sup>7</sup> However, it is not clear whether the anxiety associated with the NICU admission is normal and self-limiting or persists and is more related to the infant's

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## Outcome for Parents Whose Infants Were Admitted to NICU

developmental progress (often the sequelae of the reason for admission to the NICU) than the NICU admission itself. Taylor et al.,<sup>8</sup> for example, reported long-term family stress in very low-birth-weight infants, but their regression analyses suggested that this was mediated by ongoing problems in child functioning. Singer et al.<sup>9</sup> reported high initial levels of psychological distress in mothers (they did not include fathers) of very low-birth-weight infants compared with full-term infants. By 8 months, these differences were no longer significant, but by 2 years, mothers of “high-risk” very low-birth-weight infants had elevated levels of distress. The authors suggested that this distress was related to the mothers’ growing awareness of their child’s developmental delay.

The Christchurch Psychological Adjustment Related to Newborn Trauma or Stress Study is a 2-year longitudinal study, which followed up a cohort of parents whose infants were admitted to a NICU and compared them with a group of randomly selected parents whose infants were not admitted to NICU. Consistent with the Singer et al.<sup>9</sup> study, we have reported mothers and fathers with infants in NICU had higher levels of anxiety at baseline than control parents, but that these differences were no longer present at 9 months.<sup>10,11</sup> This article presents the 2-year outcome for these parents. As well as repeating the psychological measures at 2 years, we also assessed the mental and physical development of the parents’ children at 2 years of age. This design allows us to measure the parents’ psychological distress during the second year of their infant’s life. In particular, it allows us to study whether parental distress is present in those parents who have infants with significant developmental problems.

### METHODS

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#### Sample

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Christchurch Women’s Hospital is the only NICU serving a region in central Canterbury,<sup>12</sup> with around 7000 births per annum. All NICU admissions born to parents resident in a defined geographic area in a 12-month period (February 2001 to January 2002) were eligible for a study. Criteria for NICU admission were birth weight < 1800 g and gestation < 34 weeks or any illness in the infant. A table of random numbers was generated to select 300 families from the sequential NICU admission register to approach for the present

study. Families eligible to be approached for the control group for the companion study were every eighth birth at Christchurch Women’s Hospital to a family resident in central Canterbury whose infant was not admitted to the NICU. One in every 3 of these eligible families was selected at random (using a table of random numbers) to be approached as control families for the present study. Written informed consent was obtained from all subjects. This study was approved by the Canterbury Ethics Committee (reference number: 00/08/099).

#### Measures

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At baseline, 9 months, and 2 years, all parents underwent a clinical interview and completed self-report questionnaires. As well as containing demographic data and questions about the pregnancy, the interview consisted of an assessment of selected Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition<sup>13</sup> diagnoses using the Mini-International Neuropsychiatric Interview<sup>14</sup> and questions around the use of counseling or psychological treatment and the prescription of antidepressants or other psychotropic drugs.

The questionnaires included the Edinburgh Postnatal Depression Scale (EPNS)<sup>15</sup> and the Hospital Anxiety and Depression Scale (HADS).<sup>16</sup> Mothers and fathers were interviewed separately and completed self-reports independently.

#### Statistical Methods

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Baseline features were compared between the NICU and control groups using chi-square and Mann-Whitney *U* tests as appropriate. Parental psychological distress was compared between NICU and control groups using logistic regression, which allowed for the related parent samples, and using chi-square tests when fathers and mothers were analyzed separately. The association between infant development, Bayley scales Mental Developmental Index (MDI) and Psychomotor Development Index (PDI), and parental psychological distress was analyzed using a general linear model allowing for the related parent samples and a one-way analysis of variance when undertaken separately for mothers and fathers. When the Bayley scales were categorized, analyses used logistic regression and chi-square tests. A 2-tailed  $p < 0.05$  was taken to indicate statistical significance.

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