**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part II

| Author, Year<br>UI# | Demographics | Inclusion Criteria | Exclusion Criteria | Disease/Condition<br>Type (N) | Study Design<br>(Duration) |
|---|---|---|---|---|---|
| Northern Neonatal Nursing Initative Trial Group<br>1996<br>96304894 | Location: UK<br>Years of Birth: 1990-1992<br>Mean GA (range), wk: 29 (27-31)<br>Mean BW (range), g: 1253 (965-1543)<br>Male: 39%<br>Race: ND<br>Enrolled: 776<br>Evaluated: 776<br>Number of sites: 16 | GA <32 weeks; resident in northern UK | ND | Experiment 1: fresh frozen plasma treatment (257)<br>Experiment 2: gelatin plasma substitute (261)<br>Glucose controls (258) | Randomized controlled trial (2 years) |
| Hack<br>1996<br>97066007 | Location: US<br>Years of Birth: 7/1982-6/1988, 1/1990-12/1992<br>Mean GA (range), wk:<br>Sample 1: 25.9±2 (22-31)<br>Sample 1: 25.7±2 (22-31)<br>Mean BW (range), g:<br>Sample 1: 688.6±73 (560-740)<br>Sample 2: 670.6±56 (502-742)<br>Male:<br>Sample 1: 28%<br>Sample 2: 29%<br>Race: White<br>Sample 1: 31%<br>Sample 2: 37%<br>Enrolled: 280<br>Evaluated: 280<br>Number of sites: 1 | BW 500-759 g<br>Survived to 20 months corrected Age | ND | Sample 1: VLBW survived infants born in 1990-1992 (surfactant/dex era) (114)<br>Sample 2: VLBW survived infants born in 1982-1988 (surfactant and less dex. era) (166) | Prospective cohort (followed to 20 months corrected age) |
| Hack<br>2000<br>20358826 | Location: US<br>Years of Birth: : 1/1/1992-2/31/1995<br>Mean GA (range), wk: 26.4±1.8<br>Mean BW (range), g: 813±125<br>Male: 43%<br>Race: ND<br>Enrolled: 333<br>Evaluated: 221<br>Number of sites: 1 | BW<1000g | Major congenital malformations | VLBW infants (221) | Prospective cohort |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part II

| Author, Year<br>UI# | Demographics | Inclusion Criteria | Exclusion Criteria | Disease/Condition<br>Type (N) | Study Design<br>(Duration) |
|---|---|---|---|---|---|
| Wood<br>2000<br>20373840 | Location: UK and Ireland<br>Years of Birth: 1995-1996<br>Mean GA (range), wk: 22-25<br>Mean BW (range), g: ND<br>Male: ND<br>Race: ND<br>Enrolled: 314<br>Evaluated: 283<br>Number of sites: 276 | GA 20-25 weeks survivors | ND | Preterm infants (283) | Prospective cohort<br>(30 [28-40] months) |
| Singer<br>1997<br>98049057<br><br>Singer<br>2001<br>21163669 | Location: US<br>Years of Birth: 1989-1991<br>Mean GA (range), wk:<br>Sample 1: 27±2<br>Sample 2: 30±2<br>Controls: 40±2<br>Mean BW (range), g:<br>Sample 1: 956±248<br>Sample 2: 1252±178<br>Controls: 3451±526<br>Male:<br>Sample 1: 52%<br>Sample 2: 43%<br>Controls: 50%<br>Race: White<br>Sample 1: 55%<br>Sample 2: 48%<br>Controls: 51%<br>SES: Hollingshed classification:<br>Sample 1: 3.5±1<br>Sample 2: 3.6±1<br>Controls: 3.6±1<br>Enrolled: 464<br>Evaluated: 206 (123 controls)<br>Number of sites: 3 | Cases (sample 1&2): premature infants, BW < 1500g<br>Controls: term infants with no diagnosed medical illness or abnormalities at birth, >36 weeks, GW>2500g | Major congenital abnormality<br>Drug exposure<br>Maternal illness<br>HIV<br>Maternal mental retardation<br>>2 hours driving time from hospital | Sample 1: VLBW infants with BPD infants (122)<br>Sample 2: VLBW without BPD (84)<br>Sample 3: Full term infants (123) | Prospective cohort<br>(followed to 3 years corrected age) |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part II

| Author, Year UI# | Demographics | Inclusion Criteria | Exclusion Criteria | Disease/Condition Type (N) | Study Design (Duration) |
|---|---|---|---|---|---|
| Schmidt 2001 21298249 | Location: Canada, USA, Australia, New Zealand, Hong Kong<br>Years of Birth: 1996-1998<br>Mean GA:<br>Sample 1: 25.9 ±1.8<br>Sample 2: 26 ±1.9<br>Mean BW:<br>Sample 1: 782 ±131<br>Sample 2: 783 ± 130<br>Male: 51%<br>Race:<br>Sample 1:White: 69%, black: 13%, Asian: 5%, other: 12%<br>Sample 2: White: 67%, black: 14%, Asian: 7%, other: 12%<br>Enrolled: 2756<br>Evaluated: 1202<br>Number of sites: 32 | BW: 500-999g<br>2 hrs old<br>Born in 1 of the 32 participating centers in Canada, USA or Australia.<br>Born during 1/1996-3/1998 | Excluded total 981 (not eligible)<br>Unable to administer study drug within 6 hrs of birth , n=469<br>Structural heart disease<br>Renal disease or both, or strongly suspected (n=24)<br>dysmorphic feature or congenital abnormalities likely to affect life expectancy or neurologic development or to be associated with structural heart disease or renal disease (n=49)<br>Maternal tocolytic therapy with indomethacin or another prostaglandin inhibitor within 72hr before delivery (n=245)<br>Overt clinical bleeding at more than one site (n=8)<br>Platelet count <50.000 (n=25)<br>Hydrops (n=9)<br>Not considered viable (n=171)<br>Unlikely to be available for f/up (n=31) | Sample 1:<br>Indomethacin group [574]<br><br>Sample 2:<br>Placebo group [569] | Randomized, multicenter, placebo/controlled, double-blind trial<br><br>[18 mo CA] |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part II

| Author, Year<br>UI# | Demographics | Inclusion Criteria | Exclusion Criteria | Disease/Condition<br>Type (N) | Study Design<br>(Duration) |
|---|---|---|---|---|---|
| Battin<br>1998<br>99002694 | Location: British Columbia, Canada<br>Enrollment period: 1991-1993<br>Mean GA: ND (range: 23-25 wks)<br>Mean BW: ND<br>(Mean BW for the 333 live births during the study period : for GA of 23 wks: 581, for GA of 24 wks: 648, for GA of 25 wks: 764)<br>Male: ND<br>Race: ND<br>Enrolled: 333<br>(total live births GA: 23-28 wks)<br>Evaluated : 44<br>(out of 49 of GA 23-25 surviving to NICU discharge)<br>Number of sites: 2 | Prospective cohort:<br>Birth at British Children's Hospital and British Womens' Hospital<br>Born during 1991-1993<br>Extremely low gestational age (ELGA): 23-25 wks<br>Had follow up at 18 mo of age<br><br>Historical control group:<br>Born at the same institution<br>Born between 1983-1989<br>GA: 23-25 wks | Cases of therapeutic termination of pregnancies for lethal congenital anomalies<br>Outborns | Prospective cohort of ELGA born during a period when antenatal steroids, surfactant and dexamethasone for BPD had become an accepted treatment [44] | Prospective observational cohort study and a comparative study with an historical control group<br>(18 months) |
| Vohr<br>2000<br>20295211 | Location: US<br>Years of Birth: 1/93-12/94<br>Median GA (range), wk:<br>Mean BW (range), g: ND<br>Male: ND<br>Race: ND<br>Enrolled: ND<br>Evaluated: ND<br>Number of sites: 12 | Live born BW 401-1000 g | ND | 1151 extremely low birth weight survivors cared for in the 12 participating centers of the National Institute of Child Health and Human Development Neonatal Research Network | Prospective cohort<br>(18-22 months corrected age) |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part II

| Author, Year UI# | Demographics | Inclusion Criteria | Exclusion Criteria | Disease/Condition Type (N) | Study Design (Duration) |
|---|---|---|---|---|---|
| Piecuch 1997 98012134 | Location: US<br>Years of Birth: 1990-1994<br>Mean GA (range), wk:<br>Sample 1: 24<br>Sample 2: 25<br>Sample 3: 26<br>Mean BW (range), g:<br>Sample 1: 668±91 (450-850)<br>Sample 2: 790±115 (550-1000)<br>Sample 3: 842±158 (505-1260)<br>Male:<br>Sample 1: 50%<br>Sample 2: 73%<br>Sample 3: 50%<br>Race: ND<br>SES: high social risk<br>Sample 1: 89%<br>Sample 2: 43%<br>Sample 3: 68%<br>Enrolled: 94<br>Evaluated: 86<br>Number of sites: 1 | 24, 25 or 26 week GA<br>Non-anomalous<br>Born at University of California, San Francisco | ND<br><br>(Died after discharge (2)<br>Accidental severe central nervous system insult after discharge (1)<br>Lost to follow-up (5)} | Sample 1: GA 24 weeks (18)<br>Sample 2: GA 25 weeks (30)<br>Sample 3: GA 26 weeks (38) | Prospective cohort (at 12 months, 18 months, 2 ½ years, 4 ½ years. 7-8 years) |
| Victorian Infant Collaborative study Group, 1997 97466059 | Location: Australia<br>Years of Birth: 1979-80, 1985-87, 1991-92<br>Mean GA (range), wk: ND<br>Mean BW (range), g: ND<br>Male: ND<br>Race: ND<br>Enrolled: 36<br>Evaluated: 35<br>Number of sites: 3 | ELBW infants, BW 500-999 g born outside the level III perinatal centers in Victoria, Australia survived to age of 2 years | Excluded infants born in 1979-1980 for current review | ELBW infants (36):<br>Sample 1: born in 1985-1987 (19)<br>Sample 2: born in 1991-1992 (16) | Retrospective cohort (2 years) |
| Ambalavanan 2000 21031370 | Location: US<br>Years of Birth: 1/1990 to 12/1994<br>Mean GA (range), wk: 26±2<br>Mean BW (range), g: 829±123<br>Male: 45%<br>Race: African-American 66%<br>Enrolled: 218<br>Evaluated: 218<br>Number of sites: 1 | ELBW infants, BW <1000 g | ND | ELBW infants (218) | Retrospective cohort (followed to 18 months of age) |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part II

| Author, Year UI# | Demographics | Inclusion Criteria | Exclusion Criteria | Disease/Condition Type (N) | Study Design (Duration) |
|---|---|---|---|---|---|
| Cheung 1999 99146391 | Location: Canada<br>Years of Birth: 1990-1993<br>Mean GA (range), wk:<br>Sample 1: 25 (22-29)<br>Sample 2: 26 (24-30)<br>Sample 3: 28 (23-32)<br>Mean BW (range), g:<br>Sample 1: 660±56<br>Sample 2: 873±73<br>Sample 3: 1127±71<br>Male: total 57%<br>Race: ND<br>Enrolled: 187<br>Evaluated: 164<br>Number of sites: 2 | BW<1250 gm<br>GA < 32 weeks<br>Mild or no significant respiratory disease ($O_2$ < 30%, RR < 70) | Major congenital abnormalities, syndromes<br>Infants with neurologic insult after discharge from NICU. | Sample 1:<br>BW 500-749 g (26)<br>Sample 2:<br>BW 750-999 g (63)<br>Sample 3:<br>BW 1000-1249 g (75) | Prospective cohort (followed to 24 months adjusted age) |
| Doyle 2001 21326609<br><br>Victorian Infant Collaborative study Group, 1997 97290716<br><br>***some subjects were overlapped with 20307288 (stated in text)**<br>***possibly overlapped with 98026322** | Location: Australia<br>Years of Birth: 1991-92<br>Mean GA (range), wk: 23-27<br>Mean BW (range), g: ND<br>Male: ND<br>Race: ND<br>Enrolled: 225<br>Evaluated: 225 (265 controls)<br>Number of sites: 1 | Cases: GA 23-27 weeks, survived to 2 and 5 years of age<br>Controls: randomly selected Contemporaneous normal birth weight controls (BW > 2499 g) | ND | Sample 1:<br>Pretem survivors (N= 401)<br>Controls: Randomly selected contemporaneous normal birth weight controls (BW>2499 grams) (N=265) | Prospective cohort (Doyle - 5 years; Victorian – 2 years) |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part II

| Author, Year UI# | Demographics | Inclusion Criteria | Exclusion Criteria | Disease/Condition Type (N) | Study Design (Duration) |
|---|---|---|---|---|---|
| Corbet<br>1995<br>95264244 | Location; USA<br>Years of Birth: 1986-1989<br>Mean GA:<br>Sample 1: 27 ± 2<br>Sample 2: 27 ± 2<br>Mean BW:<br>Sample 1: 934 ± 179<br>Sample 2: 931 ± 191<br>Males:<br>Sample 1: 50%<br>Sample 2: 50%<br>Race:<br>Sample 1: whites: 41%, blacks: 37%, others: 22%<br>Sample 2: whites: 46%, blacks: 36%, others: 18%<br>Enrolled: 1046<br>Evaluated: 597<br>Number of sites: Multicenter | Born alive<br>Qualifying BW (Not specified in this publications)<br>That were intubated and assigned randomly to receive either synthetic surfactant or air placebo as part of their participation in 3 multicenter RCTS.<br>Had follow up at 1 yr of age | ND | Sample 1:<br>Synthetic surfactant: [314]<br><br>Sample 2:<br>Air placebo [283] | Combination of 3 multicenter, randomized, double blind studies of synthetic surfactant vs air placebo<br>[1 yr] |
| Gerdes<br>1995<br>95264241 | Location: US<br>Years of Birth: 3/1989-4/1990<br>Mean GA (range), wk:<br>Experiment 1: 27.2±1.7<br>Experiment 2: 27.2±1.8<br>Mean BW (range), g:<br>Experiment 1: 907±121<br>Experiment 2: : 911±125<br>Male:<br>Experiment 1: 55%<br>Experiment 2: 56%<br>Race:<br>Experiment 1: White 55%, Black 37%, Hispanic 4%, Other 5%<br>Experiment 2: White 60%, Black 30%, Hispanic 5%, Other 5%<br>Enrolled: 826<br>Evaluated: 508<br>Number of sites: 33 | Mothers who were expected to deliver premature infants with BW 700-1100 g | All exclusion prenatal.<br>1) Proven fetal lung maturity<br>2) Known malformation or chromosome anomaly<br>3) Fetal growth retardation<br>4) Hydrops<br>5) Purulent amnionitis<br>6) Maternal heroin addiction<br>7) Obstetric decision not to support fetus<br>Postnatal exclusions:<br>1) Major malformation<br>2) ≥3 minor anomalies<br>3) Hydrops | Experiment 1: One doses surfactant (244)<br>Experiment 2: Three doses surfactant (264) | Randomized comparison trial<br>(1 year) |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part II

| Author, Year UI# | Demographics | Inclusion Criteria | Exclusion Criteria | Disease/Condition Type (N) | Study Design (Duration) |
|---|---|---|---|---|---|
| Marlow<br>2000<br>20150342 | Location: UK<br>Years of Birth: 1990-1994<br>Mean GA: ND<br>(Median and Range)<br>Sample 1: 28 (26-31)<br>Sample 2: 28 (26-31)<br>Mean BW: ND<br>(Median and range)<br>Sample 1: 960 (600-2914)<br>Sample 2: 1026 (410-2814)<br>Male: ND<br>Race: ND<br>Enrolled : 27<br>Evaluated: 15<br>Number of sites: 1 | For sensorineural hearing loss (SNHL) group<br>GA: <33 wks<br>Family resident of Greater Bristol area<br>Records at Hearing Assessment Center of Royal Hospital for Sick children.<br>Born during 1990-1994<br>Diagnosis of SNHL of 50 dB<br><br>For control group:<br>Matched controls 2:1 to cases<br>Admitted to the same NICUs as cases<br>Matched for sex and GA and next and preceding matching children in the admission books of St Michael's and Sothmead hospitals | ND | Sample 1:<br>SNHL group [15]<br><br>Sample 2:<br>Control group [30]<br>Matched with cases for sex, GA, admission dates in NICU | Retrospective case control study with a longitudinal component (unclear if retrospective or prospective)<br><br>(12 mo CA) |
| Lee<br>1998<br>98442293 | Location: Canada<br>Years of Birth: 1990-1995<br>Mean GA: ND<br>Mean BW:<br>Sample 1: 763 ±157<br>Sample 2: 807±176<br>Male: ND<br>Race: ND<br>Enrolled: ND (total N not given, data only for enrolled cases with candidemia: N= 29)<br>Evaluated: 50<br>Assessed for outcome: 35 (14 cases and 21 controls)<br>Number of sites: 2 | For cases:<br>Prematures with BW<1250 g<br>Admitted in the NICU s of UAH and RAH from 1990-1995<br>Diagnosis of candidemia: by at least one positive blood culture<br><br>Diagnosis of candidal meningitis: By isolation of candida in the CSF or >45x10 $^{6}$ WBCs in the CSF and candidemia.<br><br>For controls:<br>Prematures with BW <1250 g<br>Admitted to the same NICUs during the same period without candidal infection | *Neonates with major congenital anomalies* | Sample 1:<br>Premature infants <1250 with candidemia and/ or candida meningitis (25)<br><br>Sample 2:<br>Premature neonates with BW <1250 matched with cases for BW, GA, sex and admission dates, without candidal infection (25) | Retrospective longitudinal comparative study with case control design and cases defined based on exposure to candidemia<br><br>and matched controls ( f/up between 37 and 70 mo CA)<br><br>Average age at assessment: for cases :31 ±19 mo, and for controls: 28 ±20 mo |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part II

| Author, Year UI# | Demographics | Inclusion Criteria | Exclusion Criteria | Disease/Condition Type (N) | Study Design (Duration) |
|---|---|---|---|---|---|
| DeReginer 1997<br>98041177 | Location: US<br>Years of Birth: 1987-1991<br>Mean GA (range), wk:<br>Sample 1: 28.0±1.5<br>Sample 2: 27.1±1.2<br>Sample 3: 27.5±1.7<br>Mean BW (range), g:<br>Sample 1: 1030±140<br>Sample 2: 1007±122<br>Sample 3: 1007±140<br>Male: ND<br>Race: ND<br>Enrolled: 174<br>Evaluated: 164<br>Number of sites: 2 | BW =1500 g survived until Discharged<br>Able to match to a patient in other two respiratory groups | Presence of independent of chronic lung disease known to adversely affect neurodevelopment, sensory, or growth, i.e. severe intracranial abnormalities, congenital anomalies or viral infections, etc.<br>Unable to match to a patient in other groups<br>Died after discharged (6)<br>Lost to follow-up (4) | Sample 1:<br>No chronic lung disease (58)<br><br>Sample 2:<br>Mild chronic lung disease (58)<br><br>Sample 3:<br>Severe chronic lung disease (58) | Retrospective chart review with marched subject group<br><br>(1 year of adjusted age) |
| Kurkinen-Raty 1998<br>98387235<br><br>(All+Lung)<br><br>***sample from the same big population as 20284814** | Location: Finland<br>Years of Birth: 1990-1996<br>Mean GA (range), wk:<br>Cases: 28.2 (23.8- 37.2)<br>Controls: 28.4 (22.9-36.9)<br>Mean BW (range), g:<br>Cases: 1138.3±434<br>Controls: 1272.4±547.2<br>Male: ND<br>Race: ND<br>Enrolled: 78 (78 controls)<br>Evaluated: 78 (78)<br>Number of sites: 1 | Preterm PROM between 17-30 weeks gestation; singleton; delivered > 2 hr after rupture<br>Controls: preterm no PROM; spontaneous preterm delivery matched for GA and year of delivery. | Rupture unconfirmed or transient | Sample 2: Preterm rupture (78)<br>Sample 2: Preterm delivery no rupture (78) | Retrospective cohort |
| Kurkinen-Raty, 2000<br>20284814<br><br>***sample from the same big population as 98197235** | Location: Finland<br>Years of Birth: 1990-1997<br>Mean GA (range), wk:<br>Cases: 30.5±2.1<br>Controls: 30.4±2.1<br>Mean BW (range), g:<br>Cases: 1294±469<br>Controls: 1605±427<br>Male: ND<br>Race: ND<br>Enrolled: 103 (103 controls)<br>Evaluated: 103 (103)<br>Number of sites: 1 | Casarean delivered singleton, GA 24-33 weeks<br>Controls: spontaneous delivered singleton after regular contractions and/or preterm rupture of the membranes no more than 24 hrs before. The mothers were matched one-to-one by gestational age at delivery plus or minus 1 week. | ND | Sample 1: Indicated preterm (i.e., preterm birth 'indicated' for maternal/fetal reasons (103)<br>Sample 2: Spontaneous preterm delivery due to preterm labor (103) | Retrospective cohort |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part II

| Author, Year<br>UI# | Predictors | Predictor Measures | Outcomes | Outcome Measures |
|---|---|---|---|---|
| Northern Neonatal Nursing Initiative Trial Group<br>1996<br>96304894 | Cardiovascular or Pulmonary Predictors: use of FFP or plasma substitute to expand vascular volume prophylactically | ND | **CNS Outcomes:**<br>Motor delay<br>Cerebral palsy<br>Seizure disorder<br>Post hemorrhagic hydrocephalus<br>**Ophthalmology:**<br>Visual impairment<br>Blindness<br>**Audiology Outcomes:**<br>Hearing disorders<br>Speech<br>**Other outcomes:**<br>Blind, deaf, or unable to walk – combined outcome<br>No severe disability – combined outcome<br>Overall developmental quotient – Griffith's | Motor delay: Griffith's gross motor quotient >350 below mean<br><br>Griffith's quotient for speech + hearing >350 below mean |
| Hack<br>1996<br>97066007 | General: Birth Weight | 500-750 gm | **CNS:**<br>Cerebral palsy<br>Motor and cognitive delay<br><br>**Ophthalmology:** Blindness<br><br>**Audiology:** Deafness | Neurosensory status<br>BSID: MDI, PDI |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part II

| Author, Year UI# | Predictors | Predictor Measures | Outcomes | Outcome Measures |
|---|---|---|---|---|
| Hack 2000 20358826 | General:<br>1) Birth weight<br>2)GA<br>3) SGA/IUGR<br>4) Antenatal steroids<br>5) Jaundice<br>CNS:<br>1) Intracranial/Intraventricular Hemorrhage<br>2) Periventricular leukomalacia<br>3) Ventriculomegaly/ ventricular dilation<br>Cardiovascular/Pulmonary: Chronic lung disease<br>Gastrointestinal: Necrotizing "entroclitis"<br>Other:<br>1) Infectious Disease<br>2) Dexamethasone<br>3) Perinatal factors (chorioamnionotis)<br>4) Multiple birth<br>5) C-section<br>6) Social risk<br>7) Male sex | ND | **CNS:**<br>Cerebral palsy<br>Motor delay<br>Cognitive delay MDI score<70<br>Post hemorrhagic Hydrocephalus<br><br>**Ophthalmology**: Blindness<br><br>**Audiology:** Deafness | Neurologic abnormality - includes:<br>CP, hypotonia, hypertonia<br>Shunt-dependent hydrocephalus |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part II

| Author, Year<br>UI# | Predictors | Predictor Measures | Outcomes | Outcome Measures |
|---|---|---|---|---|
| Wood<br>2000<br>20373840 | *General:*<br>1) GA<br>2) Gender<br>Other: Perinatal Factors→<br>Multiple gestation | ND | **CNS:**<br>Motor delay<br>Cognitive delay<br>Seizure disorder<br>Overall development<br><br>**Ophthalmology:**<br>Visual impairment<br>Blindness<br><br>**Audiology:**<br>Hearing disorder<br>Deafness<br>Speech<br>Communication disorder<br><br>**Other:**<br>Severely disabled<br>Other disability<br>No disability<br>Disability of hearing, vision, or communication | Bayley scales<br><br>Severe disability = need of physical assistance to perform daily activities.<br>If disability did not fit into this category = "other disability" |
| Singer<br>1997<br>98049057<br><br>Singer<br>2001<br>21163669 | Cardiovascular or pulmonary predictors:<br>1) Bronchopulmonary dysplasia<br>General : BW, Neurologic risk<br>Other: Race, Socioeconomic status | BPD: preterm,<1500g BW, oxygen for >28 days with radiographic evidence of CLD | **CNS outcomes:**<br>Cerebral palsy<br>Cognitive delay<br>Mental retardation<br><br>**Ophthalmology outcomes:**<br>Visual impairment<br><br>**Audiology outcomes:**<br>Hearing disorders<br>Speech<br>Language<br>Communication disorder | Bayley scale of infant development<br><br>Language (speech/communication) measured by Battelle Developmental Communication Subscale Domain→ receptive, expressive and total communication scores converted to DQ mean 100 and SD 15. |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part II

| Author, Year UI# | Predictors | Predictor Measures | Outcomes | Outcome Measures |
|---|---|---|---|---|
| Schmidt 2001 21298249 | 1) Prophylactic indomethacin administration : 0.1 mg/kg Q24 hrs X 3 days (vs NS placebo) in VLBW infants, during first 6 hrs of life | Nor further specified | Primary outcomes at 18 months of age:<br>1) Composite outcome: death or impairment<br>2) Death before 18 mo corrected age<br>3) Cerebral palsy<br>4) Cognitive delay (MDI<70)<br>5) Hearing loss requiring amplification<br>6) Bilateral blindness<br><br>Secondary long term outcomes outcomes:<br>1) Hydrocephalus, necessitating the placement of shunt<br>2) Seizure disorders<br>3) Microcephaly (HC<3 d %) | 1) Death before a corrected age of 18 months or documentation in survivors of one of the following: CP, Cognitive delay, Hearing loss requiring amplification, B/L blindness<br>2) Cerebral palsy diagnosed if had nonprogressive motor impairment with abnormal muscle tone and decreased range or control of movements.<br>3) Cognitive delay: as MDI less than 70 (2SD below the mean of 100) on the Bayley scale between 85-114: classified as normal, Scores below 70: marked cognitive delay.<br>4) Documentation of composite primary outcome: required documentation that the infant had died or had survived with one of the 4 types of impairment. A single missing component of the f/up assessment would result in designation of missing for primary outcome. A priori criteria for definitions of presence or absence of component of the primary outcome.<br>5) In cases it was difficult to obtain Audiologic test results, deafness requiring amplification was assumed to be absent if no such indication was present during the Bayley test. (n=27 )<br>6) Blindness: a corrected visual Acuity of less than 20/200. F/up evaluation around 18 mo: allowed range 18-21 mo.<br>(Home visits were permitted when necessary) |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part II

| Author, Year<br>UI# | Predictors | Predictor Measures | Outcomes | Outcome Measures |
|---|---|---|---|---|
| Battin<br>1998<br>99002694 | General:<br>1) GA (23-25 wks)<br><br>In comparative component with historical control group<br>General:<br>1) Birth during a period with routine use of: antenatal steroids, surfactant and dexamethasone for BPD (vs birth in presurfactant, presteroid period) | ND | **CNS:**<br>Neurodevelopmental outcome<br>CP<br>Low MDI (below 2 SDs)<br><br>**Ophthalmology- Audiology:**<br>Blind, Deaf | Neurologic exam<br><br><br><br>Bayley scale: MDI, PDI<br><br>Formal hearing test<br>Ophthalmologic examination |
| Vohr<br>2000<br>20295211 | **General:**<br>1) Birth weight<br>2) Maternal disease (HTN)<br>3) Antenatal steroids<br>CNS:<br>1) Intracranial/Intraventricular hemorrhage ( GR 3 to $ IVH/PVL)<br>Cardiovascular or Pulmonary:<br>1) Chronic lung disease (oxygen requirement at 36 weeks)<br>2) Other: postnatal steroids<br>3) Other: Surfactant<br>Gastrointestinal:<br>1) Necrotizing "enterocolitis"<br>Other:<br>1) Other: male sex<br>2) Other: Race (white)<br>3) Other: sepsis (early and late onset)<br>*4)* Other: maternal education | GR 3 to 4 IVH. PVL undefined sepsis undefined | **CNS :**<br>Cerebral palsy<br><br>**Neurodevelopmental:**<br>Motor delay (sitting, walking, picer grasp, feeding)<br>Seizure disorder<br>Post hemorrhagic Hydrocephalus (PHH) and shunt<br>Other: Neurologic exam (normal; abnormal)<br>Development (MDI and PDI by Bayley II Scale)<br><br>**Ophthalmology :**<br>Visual impairment (any)<br>Blindness (unilateral, bilateral)<br><br>**Audiology:**<br>Hearing disorders | "normal Neurologic exam": no abnormalities on neurologic exams |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part II

| Author, Year<br>UI# | Predictors | Predictor Measures | Outcomes | Outcome Measures |
|---|---|---|---|---|
| Piecuch<br>1997<br>98012134 | General predictors:<br>1) GA<br>CNS predictors:<br>1) intracranial/ intraventricular hemorrhage<br>2) periventricular leukomalacia<br>*Cardiovascular or pulmonary predictors:*<br>1) chronic lung disease<br>*Other predictors:*<br>1) social risk: economic<br>2) social risk: substance abuse | CLD - at 36 weeks PCA, requirement for supplemental $O_2$<br>IVH grade 3 or 4 & PVL, according to sonogram<br><br>Social risk economic - maternal education <12 grade; complete unemployment in household; or government assistance for health insurance<br>Social risk substance abuse - positive toxicology screens or confirmed history of drug or alcohol abuse | **CNS outcomes:**<br>Cerebral palsy<br>Cognitive delay<br><br>**Ophthalmology outcomes:**<br>Visual impairment<br><br>**Audiology outcomes:**<br>Hearing disorders | Visual – Near point tests or Snellen eye charts<br>Audiologic - behavioral testing followed by BAER or pure tone audiometry.<br>Cognitive outcome - Bayley scales at 12 and 18 months; Stanford-Binet at 2.5-4 years; McCarthy scales at 4-6 years.<br>Abnormal neurological outcome – CP, quadriplegia, dysplegia, hemiplegia<br>Suspicious neurological outcome - clumsiness, tremors<br>Severe neurosensory abnormalities – Bilateral hearing loss, blindness<br>Mild neurosensory abnormalities - high frequency hearing loss without hearing aids, visual deficit without glasses |
| Victorian Infant Collaborative study Group, 1997<br>97466059<br><br>Arch Dis Child | Other: time period of birth | ND | **CNS:**<br>Cerebral Palsy<br>Cognitive delay<br>Post Hemorrhagic Hydrocephalus (PHH)<br>Ophthalmology: Blindness<br>**Audiology**: Deafness<br>**Other:**<br>Sensorineural disability: severe, mental, moderate, none. | CP neurologic exam<br>Bayley MDI, PDI scores<br><br>Blindness-not stated<br>Deafness-not stated<br>Degrees of sensorineural delay are defined as an aggregate measure and are approximated. |
| Victorian Infant Collaborative study Group, 1997<br>98026322 | General: BW<br><br>Other: period of time when born | Each sample were subdivided into BW=500-749 g and BW=750-999 g 1985-1987 vs. 1991-1992 | **CNS:**<br>Cerebral palsy<br>Neurodevelopmental:<br>Cognitive and motor delay<br>Disability<br><br>**Ophthalmology:** Blindness<br><br>**Audiology:** Deafness or hearing aid | CP was not defined<br>Bayley Scales of Infant Development DQ, using the published mean and SD<br>Disability: "Sever" – bilateral blindness, cerebral palsy with the child unlikely ever to walk, or a DQ score <-3SD; "Moderate" – bilateral sensorineural deafness requiring hearing aids, cerebral palsy in children not walking at 2 but expected to walk, or a DQ score from –3SD to <-2 SD; "Mild" – cerebral palsy but walking at 2 , or a DQ score form –2 SD to <-1 SD. |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part II

| Author, Year<br>UI# | Predictors | Predictor Measures | Outcomes | Outcome Measures |
|---|---|---|---|---|
| Ambalavanan<br>2000<br>21031370 | General: BW, GA, Antenatal steroids, Apgar score<br>Other: Race, Gender Multiple gestation, Maternal education, Maternal age<br>CNS:<br>Intracranial hemorrhage<br>Periventricular/Ventricular Dilation<br>Bronchopulmonary dysplasia<br>GI: Necrotizing "entrocolitis"<br>Interinal perforation,<br>Chorioamnionitis<br>Multiple gestation<br>Maternal education<br>Maternal age | Extensive list of the 21 predictor variables | **CNS:**<br>Motor delay<br>Cerebral palsy<br>Cognitive delay<br>Mental retardation<br>PHH<br>Neurologic exam<br>Major handicap<br><br>**Ophthalmology:**<br>Visual impairment<br>Blindness<br><br>**Audiology:**<br>Hearing disorders<br>Deafness | Bayley scales<br>Major handicap-presence of one or any poor outcome (i.e. CP, deadness, blindness). Mental retardation (MDI or PDI <70), PHH requiring sheet |
| Cheung<br>1999<br>99146391 | *General predictors:*<br>1) BW<br>2) GA<br>3) Apgar score<br>*CNS predictors:*<br>1) intracranial/ intraventricular hemorrhage<br>*Cardiovascular or pulmonary predictors:*<br>1) days of ventilation<br>2) days of $O_2$ use<br>*Other predictors:*<br>1) frequency of apnea<br>2) mean desaturation of apnea<br>3) mean frequency of apnea<br>4) Blisten index (socioeconomic status) | ND | **CNS outcomes:**<br>Motor delay<br>Cerebral palsy<br>Cognitive delay<br>Mental retardation<br>Seizure disorder<br>Neurodevelopmental disability<br><br>**Ophthalmology outcomes:**<br>Blindness<br><br>**Audiology outcomes:**<br>Hearing disorders<br><br>**Growth outcomes:**<br>Weight > 2 SD below the mean<br>Height > 2 SD below the mean<br>HC > 2 SD below the mean | Bayley scores<br>Stanford-Binet Intelligence Scale<br>Peabody Developmental Motor Scale<br>Neurodevelopmental disability: "children with 1 or more of a) cerebral palsy b) legal blindness c) hearing loss d) convulsive disorder e) cognitive delay |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part II

| Author, Year<br>UI# | Predictors | Predictor Measures | Outcomes | Outcome Measures |
|---|---|---|---|---|
| Doyle<br>2001<br>21326609<br><br>Victorian Infant Collaborative study Group, 1997<br>97290716<br>***some subjects were overlapped with 20307288 (stated in text)**<br>***possibly overlapped with 98026322** | *General predictors:*<br>1) GA<br>2) SGA/IUGR<br>3) antenatal steroids<br>4) gender (female)<br>5) postnatal age<br>*CNS predictors:*<br>1) intracranial/ intraventricular hemorrhage<br>2) periventricular leukomalacia<br>*Cardiovascular or pulmonary predictors:*<br>1) bronchopulmonary dysplasia<br>*Other predictors:*<br>1) dexamethasone<br>2) perinatal factors<br>a) multiple birth<br>b) cesarian section<br>3) socioeconomic variables<br>i) Asian mother<br>ii) higher SEC<br>iii) no English-speaking at home<br>4) surgery in primary hospital<br>5) patient with no adverse events | 1) SGA/IUGR - BW ratio <0.8<br>2) intracranial/ intraventricular hemorrhage - Papille system<br>3) periventricular leukomalacia - cystic lesions in PVWM dx < discharge<br>4) bronchopulmonary dysplasia - ROS + $O_2$ Rx after 28 days age<br>5) dexamethasone - postnatal steroid use | **CNS:**<br>Motor delay<br>Cerebral palsy<br>Cognitive delay<br>Mental retardation<br><br>**Ophthalmology outcomes:**<br>Blindness<br><br>**Audiology outcomes:**<br>Hearing disorders<br>Deafness<br><br>**Other:**<br>Survival without major disability at 5 years age<br>Survival with major neurosensory disability at 5 years age | 1) motor delay, cognitive delay - WPPSI-R and alternative IQ tests<br>2) cerebral palsy - not walking or walking with difficulty<br>3) mental retardation - IQ < 2 SD below mean for NBW group |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part II

| Author, Year<br>UI# | Predictors | Predictor Measures | Outcomes | Outcome Measures |
|---|---|---|---|---|
| Corbet<br>1995<br>95264244 | General:<br>1) Synthetic surfactant (single dose via ET tube of5 mg/kg vs air placebo) | Not further specified | **Growth:**<br>Growth status at 1 yr:<br>1) Weight<br>2) Height,<br>3) HC and percentiles distribution<br>**Other:** Health status at 1 yr:<br>1) Surgeries<br>2) Readmissions to hospital<br>3) CLD,Medications for CLD<br>4) Respiratory support on exam day<br>5) Medications for chronic neurologic disease<br>6) Asthma, Eczema<br>**CNS:** Neurodevelopmental outcome<br>1) MDI<br>2) PDI<br>3) Impairments: Present absent<br>4) Severity of impairment<br>5) Type of impairment (MDI<69, MDI 69-84)<br>6) CP<br>**Audiology**<br>1) B/L sensorineural deafness<br>2) Deafness not requiring amplification<br>**Ophthalmology:** (worst exam and last)<br>1) B/L blindness<br>2) Visual defect<br>3) No ROP, mild/moderate ROP, severe ROP)<br>4) Treatment for ROP (surgery, cryotherapy) | Assessment at 1 yr of corrected age<br>Not further specified |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part II

| Author, Year UI# | Predictors | Predictor Measures | Outcomes | Outcome Measures |
|---|---|---|---|---|
| Gerdes 1995 95264241 | Cardiovascular or Pulmonary: Surfactant use | ND | **CNS:**<br>Cerebral palsy<br>Cognitive delay<br>Mental retardation<br>**Ophthalmology:** Visual impairment, Blindness<br>**Audiology:** Hearing Disorder, Deafness<br>**Pulmonary:**<br>1) Asthma<br>2)e/o CLD<br>3) respiratory support @ 1yr<br>**Growth**: Height, Weight, HC<br>**Other**: hospital re-admissions, h/o surgery | Mental retardation Bayley Scales MDI<69 |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part II

| Author, Year<br>UI# | Predictors | Predictor Measures | Outcomes | Outcome Measures |
|---|---|---|---|---|
| Marlow<br>2000<br>20150342 | **General:** 1) Birth weight<br>2) Apgar score 3) CRIB scores<br>**CNS:**<br>1) Maximum bilirubin level<br>2) Abnormal cerebral US scan<br>**Audiology:**<br>1) Sensorineural hearing loss<br>**Cardiovascular/Pulomonary:**<br>1) Duration of intubation, respiratory support, oxygen, pH<7.2, base excess<br>2) Dopamine 3) Furosemide<br>4) Indomethacin use<br>**Other:**<br>5) Netilmicin 6) Vancomycin<br>7) Positive blood cultures<br>8) Bilirubin >200 ?mol/l<br>9) Bilirubin>GA x 10<br>10) Creatinine >60 mmol/l<br>11) Netilmicin 12) Vancomycin<br>Combination of the above:<br>1) Bili.200 + acidosis<br>2) Bili> 200 + sepsis<br>3) Bili >200+ netilmicin<br>4) Bili> 200+ vancomycin<br>5) Bili>200+ furosemide<br>6) Peak bil+ acidosis<br>7) Peak bili+ sepsis<br>8) Peak bili+ netilmicin<br>9) Peak bili+ furosemide<br>10) Creatinine>60+ netilmicin or vancomycin or furosemide<br>11) Netilmicin+furosemide<br>12) Vancomycin+ furosemide | Not further specified | In case control component:<br>**Audiology:**<br>1) Sensorineural hearing loss (SNHL) of 50 dB within 9 months from birth<br><br>In Longitudinal component:<br>**CNS:**<br>1) Cerebral palsy at 12 months of age in the 2 groups (SNHL and control group) | Cases of SNHL were identified if the hearing loss had been identified within 3 months of discharge home, (within 9 mo from birth); after excluding cases with conductive hearing loss, possible congenital cause, or had neonatal bacterial meningitis |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part II

| Author, Year<br>UI# | Predictors | Predictor Measures | Outcomes | Outcome Measures |
|---|---|---|---|---|
| Lee<br>1998<br>98442293 | **General:**<br>1) Candidemia and/or Candidal meningitis | Diagnosis of Candidemia: by at least one positive Blood Culture<br>Diagnosis of Candidal meningitis: by isolation of Candida in the CSF or >45x10 $^{6}$ WBCs in the CSF and candidemia. | **CNS:**<br>1) Neurodevelopmental disabilities (NDDs)<br>2) Cognitive delay<br>3) Cerebral palsy<br><br>**Ophthalmology:**<br>1) Legal blindness<br><br>**Audiology:**<br>1) Hearing loss<br><br>**Growth:**<br>1) Growth retardation | 1) Bayley Scales of Infant development; MDI, PDI for ages < 24 mo.<br>2) Stanford-Binet Intelligence Scale and Peabody Development Motor Scales for ages > 24 mo .<br>3) Scores obtained by psychologists, psychometricians, pediatricians specialized.<br><br>Neurodevelopmental Disabilities:<br>1) Cerebral palsy (all types and severity)<br>2) Legal blindness (corrected VA of the better eye<20/200)<br>3) Hearing loss (neurosensory hearing loss in the better ear > 30 dB) (done by certified audiologist<br>4) And/or cognitive delay (MDI>3 SDs below the mean)<br><br>Growth retardation: Weight, Height, HC > 2 SDs below the mean<br><br>(Between 3-6 yrs CA) |
| DeReginer<br>1997<br>98041177 | Cardiovascular/ Pulmonary:<br>Chronic lung disease | Classification based on the duration of supplemental oxygen requirements.<br><br>"No CLD" – breathing room air at 28 days<br>"Mild CLD" – requiring supplemental oxygen at 28 days but not at 36 weeks PMA<br>Sever CLD" – reqiring oxygen at 28 days and 36 weeks PMA | **General:**<br>Motor and cognitive delay<br>Cerebral palsy<br>**Opthalmology:**<br>Visual impairment<br>Blindness<br>**Audiology:**<br>Hearing loss<br>Deafness<br>**Growth:**<br>Weight Z score<br>Length Z score<br>Head circumference Z score<br>**Other:** any adverse outcome | Bayley PDI & MDI |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part II

| Author, Year<br>UI# | Predictors | Predictor Measures | Outcomes | Outcome Measures |
|---|---|---|---|---|
| Kurkinen-Raty<br>1998<br>98387235<br><br>***sample from the same big population as 20284814** | General : PROM | Diagnose was through clinical assessment or with the use of a PROM-test, which detects insulin growth factor binding protein-1 in the cervico-vaginal secretions, or with the use of a nitrazine test. | **CNS:**<br>Motor delay<br>Cerebral delay<br>**Ophthalmology**: Visual Blindness<br>**Audiology:** Hearing disorders<br><br>**Pulmonary**: Chronic lung disease<br><br>**Growth:** weight percent<br>**Other:**<br>Days of re-hospitalization<br>Steroid therapy at followed up | Neurologic exams<br><br>Diagnosis of CLD was made if infants required oxygen, continuous bronchodilator, or steroid tx because of respiratory signs and symptoms.<br>Diagnoses of RDS were made based on need for respiratory support, radiologic findings, and clinical assessments |
| Kurkinen-Raty,<br>2000<br>20284814<br><br>***sample from the same big population as 98197235** | General predictors:<br>Birth weight<br>GA<br>Antenatal steroids<br>Cord pH<br><br>Bronchopulmonary dysphasia (BPD)<br><br>Other predictors:<br>Indicated preterm delivery<br>Spontaneous perterm delivery | BPD diagnoses were based on radiologic finding | **CNS:**<br>Motor delay<br>Cerebral palsy<br>**Ophthalmology**<br>Visual impairment<br>**Audiology**<br>Hearing disorder<br>**Pulmonary**<br>Chronic lung disease (CLD) at 1 year<br>**Growth:**<br>Wt, Ht, HC | Motor delay = abnormalities of tone or reflexes but functionally normal or borderline<br>CP = spastic diplegia or hemiplegia or spastictetraplegia<br><br>Diagnosis of CLD was made if infants required oxygen, continuous bronchodilator, or steroid tx because of respiratory signs and symptoms. |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part III

| Author, Year | Associations found | Potential Biases |
|---|---|---|
| Northern Neonatal Nursing Initiative Trial Group<br>1996<br>96304894 | No significant differences by Griffith's Developmental quotients, incidence of CP, seizures, hearing disorders. Initial demographics available in an earlier study. | Study was government and private funded |
| Hack<br>1996<br>97066007<br>Pediatrics | MR (MDI<84) CP Blind Deaf Major Neurosensory abnormal +MDI<80<br>1982-1988 52% 10% 10% - 49%<br>1990-1992 34% 10% 2% 6% 35%<br><br>20-month Neurodevelopmental outcomes did not change appreciably between the 2 eras. 20% of infants had subnormal cognitive function (MDI<70) and 10% had CP during 1990-1992 period. One third of infants with BW 500-750 gram had major neurosensory abnormalities and / or MDI<80. | No data on funding source |
| Hack<br>2000<br>20358826 | *MDI Score < 70:*<br>CLD: 55% (49/89); 2.18 (1.20-3.94)<br>*MDI Score<70 (multi stepwise logistic regression)*<br>Male sex: 2.73 (1.52-4.92)<br>Social risk: 1.48 (1.09-2.00)<br>CLD: 2.18 (1.20-3.94)<br>*OR adjusted for sex, social risk & BW:*<br><br>Gr III-IV IVH:<br>50% (16/32); 8.55 (3.52-20.76)<br>50% (8/16); 4.45 (1.54-12.84)<br>50% (17/34); 5.48 (2.41-12.47)<br>CLD: 30% (27/89); 3.09 (1.51-6.35)<br>Sepsis: 14% (13/93); 3.47 (1.16-10.36)<br>Jaundice: 26% (6/23); 5.15 (1.63-16.22)<br>*Mult. Stepwise Logistic regression:*<br>*Male sex: 2.79 (1.02-7.62)*<br>*Sepsis: 3.15 (1.05-9.48)*<br>*Jaundice: 4.80 (1.46-15.73)*<br>*Predictors of neurologic abnormality were a severely abnormal finding on cerebral ultrasound (OR, 8,09; 95% CI 3.69-17.71) and chronic lung disease (OR 2.46; 95% CI 1.12-5.40); predictors of deafness were male sex (OR 2.79 95% CI 1.02-7.62), sepsis (OR 3.15 95 % CI 1.05-9.48), and jaundice (maximal bilirubin level >171)* | The authors concluded that there is an urgent need for research into the etiology and prevention of neonatal morbidity. |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part III

| Author, Year | Associations found | Potential Biases |
|---|---|---|
| Wood<br>2000<br>20373840 | Infants 22-25 weeks GA developmentally assessed at median 30 months<br>• 138/283 had disability 49%(64 met criteria for severe disability)<br>• 49% no disability<br>• 53/283 severely delayed 19%(Bayley below 3 SD)<br>• 32/283 2-3 below SD 11%<br>• 28 severe neuromotor disability 10%<br>• 7 blind or perceived light only 2%<br>• 8 hearing loss that was uncorrectable or required hearing aids 3%<br>Survived without overall disability<br>22 wks----------0.7 %<br>23 wks----------5%<br>24 wks----------12%<br>25 wks----------23%<br>Severe disability at 30 months<br>22 ----------0.7%<br>23 ----------3%<br>24----------6%<br>25----------9%<br>• no relation between morbidity pattern and either gestational age &multiple birth<br>• boys were likely to be disabled than girls | Severe disability common; children born extremely premature |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part III

| Author, Year | Associations found | Potential Biases |
|---|---|---|
| Singer 1997<br>98049057<br><br>Singer 2001<br>21163669 | Evaluation at 36 months corrected age. VLBW, VLBW with BPD, full term (FT).<br>Bayley MDI / % with MDI below 70<br>VLBW: 90 ± 16 (38-126), 11%<br>VLBW w/ BPD: 84 ± 24 (10-116), 21%<br>FT: 96 ± 12 (57-127), 4%<br>P = 0.001 for VLBW vs. VLBW w/ BPD<br>Bayley PDI / % with PDI below 70<br>VLBW: 98 ± 20 (33-122), 9%<br>VLBW w/ BPD: 84 ± 29 (8-127), 9%<br>FT: 103 ± 15 (58-128), 1%<br>P = 0.001 for VLBW vs. VLBW w/ BPD<br>At 3 years BPD predicted poorer motor outcome but not poorer mental outcome.<br>**Receptive DQ**: BPD < VLBW < Term, p < 05<br>**Receptive DQ < 85:** BPD 49%, VLBW 34%, Term 30%,<br>BPD < VLBW + Term p < .05<br>**Expressive DQ:** BPD < VLBW + Term, p < .05<br>**Expressive DQ<85:** BPD 44%, VLBW 25%, Term 25%<br>BPD < VLBW + Term p < .05<br>**Communication DQ**: BPD < VLBW + Term, p < .05<br>**Communication DQ < 85:** BPD 43%, VLBW 31%, Term 28%, NS<br>Rank order listing of risk factors in order of magnitude of effect and the number of communication DQ lowered by the risk factor: PDA lowered DQ by 13 points, Minority race by 6 points, lower socioeconomic status by 5 points, and higher neurologic risk by 5 points. p .001<br>**Bayley Scales MDI:**<br>BPD 83.7 ± 24, VLBW 90 ±16, Term 96.4 ± 12, BPD < VLBW < Term, p< 0.05<br>**Bayley Scales PDI:**<br>BPD 84.1 28, VLBW 97.4 19, Term 102.8 14<br>BPD < VLBW + Term, p< .05<br>**ROP:** BPD 43%, VLBW 4%, p= .001<br>**Seizures**: BPD 7%,<br>**Neurologic score**: BPD 1.3 ± 2, VLBW 58 ± 1, p < .001 | Single region, but at least it is a region<br>Unclear if examiners were blinded to groups status<br>Study was government funded |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part III

| Author, Year | Associations found | Potential Biases |
|---|---|---|
| Schmidt 2001 21298249 | 1) There was no difference in primary outcomes between the 2 groups at 18 months of age.<br>2) Among the 574 infants who were assigned to prophylaxis with indomethacin, 271 (47%) died or survived with impairment as compared with 261 of 569 infants (46%) assigned to placebo (OR: 1.1; 95% Confidence intervals; 0.8-1.4)<br>3) In VLBW infants, prophylaxis with indomethacine does not improve the rate of survival without neurosensory impairments at 18 months of age<br>4) There was no difference in any of the secondary outcomes between the 2 groups, at 18 months of age.<br>**Primary: Composite / CNS Outcomes:** **Indomethacin vs. Placebo**<br>• Death or impairment 271/574(47%) vs. 261/569 (46%)<br>• Death before 18 mo 121/595 (21%) vs 111/594 (19%)<br>• Cerebral palsy 58/467 (12%) vs 55/477 (12%)<br>• Cognitive delay (MDI<70 by Bayley scale 118 /444 (27%) vs 117/457 (26%)<br>**Audiology outcome:**<br>• Hearing loss requiring amplification 10/456 (2%) vs 10/466 (2%)<br>**Ophthalmology outcome:**<br>• Bilateral blindness 9/456 (2%) vs 7/472 (1%)<br>(Odds ratios adjusted for BW stratum and Center)<br>**Secondary CNS outcomes** were not affected by indomethacin administration:<br>• Hydrocephalus requiring shunt 15/470 (3%) vs 9/480 (2%)<br>• Seizure disorder 8/470 (2%) vs 7/483 (1%)<br>• Microcephaly 49/461 (11%) v s 54/475 (11%)<br><br>Kaplan Meier estimates of survival in the 2 groups:<br>• 0 months n=601 vs 601<br>• 6 months n=479 (80%) vs 490 (82%)<br>• 12 months n=473 (79%) vs 487 (81%)<br>• 18 months n=470 (78%) vs 483 (80%) | 1) By using the Bayley test at 18 mo the authors found that more than one quarter of all surviving infants had moderate to severe cognitive delays, defined by MDIs< 70. The validity of the MDI score at this age as a predictor of later intellectual functioning remains to be determined.<br>2) At a post hoc calculation the study had a 90% power to detect a 20% reduction in risk, had it existed<br>3) Authors report that the outcome assessments were done blindly by investigators unaware of treatment groups assignments<br>4) Authors report that they had almost complete ascertainment for the primary outcome at 2 yrs of age. |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part III

| Author, Year | Associations found | Potential Biases |
|---|---|---|
| Battin<br>1998<br>99002694 | **CNS outcomes:**<br>Major impairment was present in 36% of infants born at 23-25 wks GA, during 1991-1993 (N=44)<br>1) Cerebral palsy 9/44 (20%)<br>2) Low MDI 8/44 (18%)<br>**Ophthalmology** outcome:<br>1) Blind 4/44 (9%)<br>**Audiology** outcome:<br>1) Deaf 4/44 (9%)<br>**Combined** outcome:<br>1) Overall impaired 16/44 (36%)<br>2) Multiple handicaps 6/16 (38%)<br><br>Analysis of only 24-25 wks GA infants (N=43):<br>Major handicaps: 15/44 (34%)<br><br>The percentage of infants with major impairments and/ or multiple handicaps, for the 23-25 wks GA group, was the same in 1991-1993 and 1983-1989 periods<br>(However, no data on the number of infants from this cohort that were actually followed up at 18 mo of age) | 1) During 1991-93 period there is no concurrent control group for the comparative assessment of neurodevelopmental outcome<br>2) Group of infants of 23-25 wks GA, born during 1991-1993, was not matched to the historical control group born during 1983-1989. Possibility of confounders cannot be excluded.<br>3) No data were given on the number of infants in the historical control group that had f/up at 18 mo of age.<br>No data on source of funding |
| Vohr<br>2000<br>20295211 | Studied effect of early IVH at 5 to 11 hours of age on IQ distribution and presence of cerebral palsy (CP). Assessed at 36 months CA.<br>Early IVH present / Early IVH absent / P value<br>N: 29 / 249<br>Binet IQ: 78.7 (25) / 87.5 (20) / 0.09<br>Binet IQ < 70: 38% / 19% / 0.03<br>PPVT-R: 76.6 (28) / 86.0 (21) / 0.15<br>CP at 36 months: 25% / 8% / 0.01<br>Later IVH had effect on Binet IQ similar to early IVH. | IVH rates seems high<br>No data on funding source |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part III

| Author, Year | Associations found | Potential Biases |
|---|---|---|
| Piecuch<br>1997<br>98012134 | Mean age at follow-up was 32 months. Bayley exams were done at 18 months.<br>Neurologic abnormalities and CP did not differ significantly across the gestational ages of 24 to 26 weeks. Between 67% and 89% were normal in each gestational age group.<br>Significant differences (P = 0.036) related to gestational age were found in 18 month Bayley exam scores when group as normal borderline or deficient<br>Normal / Deficient<br>24 wk 28% 39%<br>25 wk 47% 30%<br>26 wk 71% 11%<br>Significant differences (P = 0.008) related to gestational age were found in the combined end point of CP or an abnormal Bayley exam score:<br>Neither / One / Both<br>24 wk 28% 39% 33%<br>25 wk 47% 23% 30%<br>26 wk 63% 34% 3% | All inborn infants<br>No data on funding source |
| Victorian Infant Collaborative study Group,<br>1997<br>97466059 | *All children born outside the level III perinatal centers. Assessment at 2 years corrected age.*<br>*1985-1987* / *1991-1992*<br>*n* *19* *16*<br>*Cerebral Palsy* *19.1%* *12.5%*<br>*Cognitive delay* *19.1%* *18.8%*<br>*Blind* *5.6%* *6.2%*<br>*Deaf* *0* *0*<br>*Sensorineural disability*<br>*Mild* *15.8%* *6.2%*<br>*Moderate* *0* *0*<br>Severe 5.3% 12.5% | Incomplete reporting of demographic data, methods and results.<br>Study was government funded |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part III

| Author, Year | Associations found | Potential Biases |
|---|---|---|
| Victorian Infant Collaborative study Group, 1997<br>98026322 | Birth weight < 1000g; assessed at 2 years corrected age. | Incomplete reporting of demographic data, methods and results.<br>Study was government funded |

| Cohort | n | DQ < -3 SD | DQ –3 to –2 SD | DQ –2 to –1 SD | DQ> -1 SD |
|---|---|---|---|---|---|
| '91-'92 | 237 | 5.9% | 6.3% | 13.9% | 73.4% |
| '85-'87 | 211 | 6.2% | 4.3% | 14.2% | 75.4% |

| Cohort | n | Mild CP | Mod. CP | Severe CP | Any CP | Blindness | Deaf |
|---|---|---|---|---|---|---|---|
| '91-'92 | 237 | 3.8% | 1.7% | 3.8% | 9.3% | 2.1% | 0.8% |
| '85-'87 | 211 | NS | NS | NS | 6.6% | 4.3% | 0.5% |

| Cohort | No disability | Mild Disability | Moderate disability | Severe disability |
|---|---|---|---|---|
| '91-92<br>n = 237 | 71.3% | 14.8% | 7.2% | 6.8% |
| '85-'87<br>n = 211 | 71.6% | 15.6% | 6.2% | 6.6% |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part III

| Author, Year | Associations found | Potential Biases |
|---|---|---|
| Ambalavanan 2000 21031370 | ELBW:<br>MDI<68 : 12%<br>PDI<68: 20%<br>Major handicap: 28%<br>CP:28%<br>MR 16%<br>Post-hemorrhagic hydrocephalus: 5%<br>Deaf 1.4%<br>Blindness 1%<br>Predictors of major handicap (Low MDI and/or PDI): Grade of IVH, PVL, absence of chorio (in this population, not in most others), NEC≥II; race; multiple gestation, BPD, maternal education<br><br>For ELBW infants without IVH, the prevalence of major handicap, low MDI, and Low PDI was 25%, 17%, 16%, respectively.<br>For ELBW infants with grade III IVH, the prevalence of major handicap, low MDI, and Low PDI was 33%, 29%, 24% respectively.<br>For ELBW infants with grade IV IVH, the prevalence of major handicap, low MDI, and Low PDI was 69%, 44%, 63% respectively.<br>This study identifies major determinants of adverse neurodevelopmental outcome (i.e. major handicaps, low MDI, low PDI) of ELBW (<1 kg) infants born 1990-1994. Grade of IVH is strong predictor of adverse outcome. But note large % of ELBW without IVH who had major handicap, low MDI, and Low PDI. **BPD** was a significant determinant of low MDI and PDI. Mat education level was significant determinant of neurodevelopmental outcome. NEC, race, multiple gestation, PVL independently contributed to poor outcome in ELBW infant. Lower BW predicted low PDI. | Retrospective, relatively small sample size (218).<br>No data on funding source |
| Cheung 1999 99146391 | Mental score:<br>*Days of ventilation: (N=64) <0.0001*<br>Motor Score:<br>*Days of ventilation: (N=164) <0.004*<br>Mental Score:<br>*Grade of IVH: (N=164) 0.003*<br>Motor Score:<br>*Grade of IVH: (N=164) <0.0001*<br>Mental Score:<br>*Infants <1250g with gr. 3 or 4 IVH: (N=50) <0.001*<br>Motor Score:<br>*Infants <1250g with gr. 3 or 4 IVH: (N=50) <0.001* | No data on funding source |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part III

| Author, Year | Associations found | Potential Biases |
|---|---|---|
| Doyle<br>2001<br>21326609<br><br>Victorian Infant Collaborative study Group, 1997<br>97290716<br><br>***some subjects were overlapped with 20307288 (stated in text)**<br>***possibly overlapped with 98026322** | Evaluation at 5 years corrected age:<br>**CP :** 23-27 wk survivors (11.3%) 25/221 Blindness : 23-27 wk (1.8%) 4/221<br>FT controls (0%) FT control 0%<br>**Deafness : 23-27 wk (0.9%) 2/221**<br>FT control 0%<br>**IQ <-2 SD: 23-27 wk (15.4%) 34/221**<br>**Major neurosensory disability**<br>23 –27 wk (19.6%) 44/225 FT control (4.1%) 10/245<br>**Major disability among survivors**<br>23 wk GA: 2/5 (40%) 24 wk GA: 7/21 (33%)<br>25 wk GA: 13/51 (25%) 26 wk GA: 17/71 (24%)<br>27 wk GA: 5/79 (6%) Overall 23-27 wk: 19%<br>**OR for survival with major disability at 5 years:**<br>OR each 1 wk increase in GA = 0.59 (95% CI 0.43, 0.8)<br>**Prognostic factors with major disability at 5 years:** IVH, cystic PVL, surgery during primary hospitalization, postnatal steroid treatment.<br>Rates of survival free of major disability for surviving PT infants:<br>None 96/103 =93% One 59/71 =83 %<br>Two 23/43 =53 % Three 3/9 =33%<br>Four 0/1 = 0<br>Evaluation at 2 years corrected age. Data shown are for births in 1991-1992.<br>Gestational age Sensorineural disability (% of survivors)<br>n Severe Moderate Mild None<br>23 weeks 5 29% 20% 40% 20%<br>24 weeks 21 14.3% 19% 33.3% 33.3%<br>25 weeks 51 5.9% 21.6% 25% 47%<br>26 weeks 68 8.8% 11.8% 20.6% 58.8%<br>27 weeks 74 1.4% 10.8% 23% 64.9%<br>Overall 219 6.4% 14.6% 24.2% 54.8%<br>Decrease in disability with increase in gestational age was significant, p = 0.014.<br>Also showed significant fall in severe disability with increase in gestational age, Odds ratio = 0.58 (0.36-0.94)<br>Comparison of cohorts born in 1985-1987 vs. 1991: 1992 did not demonstrate any difference between cohorts. | Perinatal data lacking on some infants, Especially outborn (in level II or I)<br>Different methods of testing IQ<br>Different times of assessing Neurodevelopmental outcome<br>Some children not evaluated at 5 years (evaluated at 2 years)<br>210/401 preterm infants were assessed at both 2 and 5 years<br>The classification of disability or no disability was the same at both 2 and 5 years (90.5% agreement; k=0.691)<br>Inadequate discussion of study population demographics<br>Also various surrogate data<br>Study was government funded |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part III

| Author, Year | Associations found | Potential Biases |
|---|---|---|
| Corbet<br>1995<br>95264244 | **Growth** AT 1 YR: Mean measurements of Height (74 cm), weight (9.1 kg) and HC (46 cm) and growth percentiles were equivalent in the 2 groups.<br>**Health Status** AT 1 YR: No difference in parameters between 2 groups<br>1) Surgeries (33% vs 34%) 2) Readmission to hospital (45% vs 39%)<br>2) CLD (11% vs 10%) 4) Medications for CLD (14% vs 14%)<br>3) Respiratory support (4% vs 2%)<br>4) Med. for chronic neurologic problems (1% vs 2%)<br>5) Asthma (this only was s/s : 9% vs 3%) 8) Eczema (2% vs 1%)<br>**Neurodevelopmental Outcome:** No difference in the outcomes between the 2 groups in these parameters.<br>1) Mean MDI (values <50= 49): 2) Mean MDI (only children with MDI>69)<br>2) Number of children with MDI<69: 4) Number of children with PDI<69<br>3) Mean PDI (values<50=49) 6) Mean PDI (only children with PDI>69)<br>**CNS Impairment:** No difference in any impairments between 2 groups<br>1) Present: 43% vs 37% 2) Absent: 57% vs 63%<br>2) Mild/moderate: 20% vs 14% 4) Severe:23% vs 23%<br>3) MDI<69: 17% vs 16% 6) MDI: 69-84: 18% vs 14%<br>4) CP mild: 8% vs 7% 8) CP moderate/severe: 7% vs 7%<br>**Audiology:**<br>1) B/L sensorineural hearing deafness: 0% vs 1%<br>2) Deafness not needing amplification: 0% vs 1%<br>**Ophthalmology:**<br>1) B/L blindness: 3% vs 2% 2) Visual defect: 8% vs 8%<br>Worst examination<br>2) No ROP: 30% vs 33% 2) Mild/moderate ROP: 53% vs 52%<br>3) Severe ROP: 17% vs 15% 4) Surgical treatment for ROP:10% vs 12%<br>4) Cryotherapy for ROP: 5% vs 6%<br>Last examination<br>5) No ROP: 69% vs 72% 2) Mild/moderate ROP: 26% vs 22%<br>6) Severe ROP: 5% vs 6% 4) Surgical treatment for ROP: 4% vs 4%<br>7) Cryotherapy for ROP: 2% vs 3%<br>Infants who survived after treatment at birth with single dose synthetic surfactant fare as well in terms of growth, development and late morbidities as infants who survive without treatment. No difference in medical history during first year of life, growth, incidence of visual or auditory defects, CP, neurodevelopmental delay at 1 yr adjusted age. | The incidence of severe impairment in the 19% of infants who did not return for evaluation at the age of 1 yr may be higher than in those who were evaluated.<br>Source of funding not reported.<br>The neurodevelopmental evaluation of infants at 1 yr may not be absolutely reliable for the estimation of later outcome.<br>The estimated mental retardation is likely to be low, and the estimated CP is likely to be high, compared to estimates at 2 and 3 yrs. |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part III

| Author, Year | Associations found | Potential Biases |
|---|---|---|
| Gerdes<br>1995<br>95264241 | Severe ROP:<br>1 dose: 47(16) 3 dose: 35(11)<br>Physical evidence of CLD:<br>1 dose: 43(18) 3 dose: 40(15)<br>Medication for CLD:<br>1 dose: 35(14) 3 dose: 30(11)<br>Medication for chronic neurologic disease:<br>1 dose: 12(5) 3 dose: 3(1)<br>Index<2 SD (%):<br>1 dose: 29(15) 3 dose: 30(13)<br>Impairment present:<br>1 dose: 106(44) 3 dose: 92(35)<br>No impairment:<br>1 dose: 123(51) 3 dose: 155(59)<br>Severity of impairment:<br>Mild/moderate:<br>1 dose: 40(17) 3 dose: 39(15)<br>Serious:<br>1 dose: 66(27) 3 dose: 53(20)<br>Types of impairments:<br>MDI<69:<br>1 dose: 40(16) 3 dose: 38(14)<br>Moderate/severe CP:<br>1 dose: 22(9) 3 dose: 16(6)<br>Bilateral sensorineural deafness:<br>1 dose: 5(2) 3 dose: 10(2)<br>Deafness not requiring amplification:<br>1 dose: 5(2) 3 dose: 2(1)<br>Bilateral blindness:<br>1 dose: 10(4) 3 dose: 4(2)<br>Visual defect:<br>1 dose: 24(10) 3 dose: 22(8) | 25% loss to follow up, equal in both groups; 1 year follow-up does not predict long-term outcome from all infants<br>No data on funding source<br><br>"Prenatal and postantal exclusion criteria were identical to those used in an earlier prophylactic trial of this synthetic surfactant"<br>Died by 1-year adjusted age<br>Lost to follow-up |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part III

| Author, Year | Associations found | Potential Biases |
|---|---|---|
| Marlow<br>2000<br>20150342 | Pulmonary and Other predictors evaluation for **Audiology outcome**.<br>Children with sensorineural hearing loss [15] as compared to control group[30] had longer periods of:<br>1) Intubation, (14 ds vs 2 ds)<br>2) Ventilation (34 ds vs 6 ds)<br>3) Oxygen therapy (57 ds vs 10 ds)<br>4) Acidosis (12 ds vs 0.5 ds), and<br>5) More treatments with dopamine (33% vs 7%)or<br>6) Furosemide (87% vs 53%)<br><br>7) Neither P/T of aminoglycosides<br>8) nor duration of jaundice<br>9) or level of bilirubin varied between the 2 groups.<br><br>SNHL was more likely when :<br>1) netilmicin use coexisted with the peak of bilirubin (87% vs 14%)_<br>2) when acidosis occurred when bilirubin was over 200 ?mol/l, (31% vs 4%)<br>3) when furosemide was used in the face of high creatinine levels (64% vs 27%)<br>4) when furosemide was used with netilmicin (67% vs 37%)<br><br>**CNS outcome at 12 mo:**<br>At 12 months of age evidence of cerebral palsy was present in 7/15 (47%) of children with SNHL vs 2/30 (7%) of children without SNHL.(p=0.022) | 1) Very small sample size (cases with SNHL only 15)<br>2) Analyzed too many predictors and combination thereof, for very few outcomes. Very wide confidence intervals; and even those predictors found to be associated with the SNHL this may have been due to chance.<br>3) The association found between SNHL and cerebral palsy was <u>not</u> based on an adjusted analyses for possible confounders;<br>4) The 2 groups were different in many factors that were associated with both SNHL and CP<br>Not reported source of funding |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part III

| Author, Year | Associations found | | | Potential Biases |
|---|---|---|---|---|
| Lee 1998 98442293 | **Growth, CNS and Audiology, and ophthalmology outcomes** for prematures<1250 g with candidemia/candida meningitis | Cases | Controls | Cannot exclude missed association due to the small number of patients analyzed n both groups |
| | **Growth:** | | | |
| | 1) No difference in Growth retardation: | 7/14 survivors(50%) | 11/21 survivors (50%) | |
| | **CNS:** | | | |
| | 1) No difference in MDIs of survivors | 83 ±20 | 90 ±20 (p>0.05) | |
| | 2) Lower PDIs in survivors | 71 ±21 | 87±18 (p<0.05) | |
| | 3) No difference in overall Neurodevelopmental disabilities (NDDs) | 4/14 (29%) | 3/21 (14%) (p>0.05) | |
| | 4) Cerebral palsy | 4/14 (29%) | 3/21 (14%) | |
| | **Ophthalmology:** | | | |
| | 1) Vision loss | 2/14 (14%) | 1/21 (5%) | |
| | **Audiology:** | | | |
| | 1) Hearing loss | 2/14 (14%) | 1/21 (5%) | |
| | (All the children with NDDs had Cerebral palsy with or without visual or hearing deficit) | | | |
| | Prematures<1250 g with candidemia/candida meningitis had: Higher Combined mortality and NDDs | 60% (OR=3.9; 1.2-12.6) | 28% (p< 0.05) | |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part III

| Author, Year | Associations found | Potential Biases |
|---|---|---|
| DeReginer<br>1997<br>98041177 | ***Chronic lung disease***<br>*Any adverse outcome:*<br>2/54<br>12/54 P<0.001<br>18/56<br>*Sensorineural hearing loss:*<br>0/54<br>0/54 P<0.05<br>*3/56*<br>*Low MDI<2 SD from mean:*<br>0/54<br>4/54 P<0.05<br>*5/56*<br>*Low PDI<2 SD from mean:*<br>1/54<br>4/54 P<0.05<br>*7/56*<br>*Weight Z-score:*<br>*No numbers given <0.05*<br>*Chronic lung disease and cerebral palsy, unilateral blindness, length Z-score, head circumference Z-score are not significant.* | Matching scheme used is likely to be ineffective<br>Large proportion of study population excluded by their matching strategy: subjects excluded were: 329/387=85% with no chronic lung disease; 53/111=47.7% with mild chronic lung disease; 122/180=68% with severe chronic lung disease<br>No data on funding source |
| Kurkinen-Raty<br>1998<br>98387235<br><br>***sample from the same big population as 20284814** | Retrospective controlled cohort study of early PROM between 17 and 30 weeks of gestation. Assements at one year corrected age. N = 55 for early PROM and 56 for control.<br><br>Outcome / Early PROM / Control / OR (CI)<br>Cerebral palsy 18% 16% 1.2 (0.4, 3.1)<br>Delayed motor Development 9% 16% 0.5 (0.2, 1.7)<br>Visual disability 4% 4% 1.0 (0.1, 7.5)<br>Hearing loss 7% 9% 0.8 (0.2, 3.2)<br>Good nuerosensory development 67% 61% 1.2 (0.6, 2.2)<br>Early PROM seems to be a major obstetric and neonatal problem with pulmonary ramifications extending beyond the neonatal period. However, most of these infants can be saved. | No data on funding source |

**Evidence Table 5B. Studies Evaluating Association of LBW to Audiology Outcomes**
Part III

| Author, Year | Associations found | Potential Biases |
|---|---|---|
| Kurkinen-Raty, 2000<br>20284814<br><br>***sample from the same big population as 98197235** | **CLD at 1 year age:**<br>Indicated PT delivery: (81) 12/81 (15%)<br>Spontaneous PT delivery: (94) 3/94 (3%)<br>RR 4.6 (1.4, 1.6)<br>**Growth:**<br>Indicated PT delivery: (81)<br>Spontaneous PT delivery: (94)<br>Weight RR =0.03 (-5.3, 0.3)<br>L RR = 0.002<br>HC RR = 0.03<br>**CP:**<br>Indicated PT delivery: (81) 5/81 (6%)<br>Spontaneous PT delivery: (94) 10/94 (11%)<br>RR=0.6 (0.25-1.6)<br>**Delayed motor:**<br>Indicated PT delivery: (81) 8/81 (6%)<br>Spontaneous PT delivery: (94) 8/94 (9%)<br>RR 1.2 (0.5-3.0)<br>**Visual disability:**<br>Indicated PT delivery: (81)<br>Spontaneous PT delivery: (94)<br>RR =1.9 (0.5, 7.8)<br>**Hearing loss:**<br>Indicated PT delivery: (81)<br>Spontaneous PT delivery: (94)<br>RR =1.9 (0.5, 7.8)<br><br>This study demonstrated that premature infants who were born due to 'indicated maternal/fetal reasons' vs. spontaneous preterm delivered infants had worse pulmonary outcome a 1 yr age. More infants in 'indicated' group were SGA and were significantly smaller than control group at 1 yr in Wt, HT, and HC. There was no difference between groups in neurosensory outcomes. | Outcome not well defined<br>Difficult to know if lack of difference between<br>groups is due to sample size or event rate.<br>No data on funding source |