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ABSTRACT-BOK



1) THE IMPORTANCE OF SURVEILLANCE OF FETUSES WITH GASTROSCHISIS

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OBJECTIVE: Fetuses with gastroschisis have an increased risk of intrauterine fetal death and the risk of fetal distress is well known. Bowel complications, especially the risk of closed/closing gastroschisis, are also important to detect prenatally. We present our results after changing our surveillance program.

METHOD: All fetuses with prenatally diagnosed gastroschisis from August 2002 to December 2010 were evaluated. The fetuses in uncomplicated cases were scheduled for elective CS at 36+0 weeks. During pregnancy, regular ultrasound examinations including Doppler of appropriate vessels including the superior mesenteric artery were performed. Daily CTG recordings were made from 33+0 weeks. The mothers resided close to the hospital from 34+0 weeks. The surveillance was intensified in complicated cases.

RESULT: Gastroschisis was diagnosed in 58 fetuses. There were no intrauterine fetal deaths. Mean gestational age at delivery was 35+2 weeks and mean birth weight was 2527g. Elective delivery was performed in 40% at mean 36+1 weeks. In 27% abnormal CTG at mean 34+1 weeks led to emergency CS. One of these fetuses was growth-retarded (-36%) and was delivered at 29+5 weeks and had a subsequent normal development. Spontaneous onset of labor started in 17% at mean 34+6 weeks. Closing or closed gastroschisis was correctly diagnosed prenatally in 5 fetuses. In 2 of these cases, closed gastroschisis with subsequent short bowel syndrome occurred already before viability. One infant died postnatally; the other cases could be delivered prior to irreversible bowel damage.

CONCLUSION: The intense surveillance of fetuses with gastroschisis appears to be important for detecting cases at risk for fetal distress and may thereby reduce the risk of intrauterine fetal death. Especially in complicated cases, for example growth retardation, the CTG surveillance may be of utter importance. In addition correct diagnosis of closing/closed gastroschisis is possible and may prevent the risk of vanishing bowel.

2) REPEAT COURSES OF ANTENATAL CORTICOSTEROIDS AND BLOOD PRESSURE AT 14-26 YEARS OF AGE

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BACKGROUND: Preterm birth has emerged as a risk factor for hypertension later in life. Antenatal Corticosteroids (ACS) is a frequent exposure for preterm infants, reducing the risk of, among others, infant respiratory distress syndrome. The safety of repeat courses of ACS is not fully examined. We have previously reported that exposure to repeat courses of ACS are associated with a dose-dependent decline in weight, length and head circumference at birth. Here we examined the same Swedish population-based cohort as to blood pressure and arterial stiffness at 14-26 years of age.

METHOD: Fifty eight subjects (36 boys) exposed to two to nine weekly courses of antenatal betamethasone were assessed at 14 to 26 years of age by measuring office systolic and diastolic blood pressure and by measuring arterial stiffness with non-invasive pulse-wave analysis. Individuals exposed *in utero* to a single course (n=25, 14 boys) of corticosteroids and unexposed individuals (n=44, 25 boys) matched for age, sex and gestational age at birth were included as comparison groups.

RESULT: ACS do not correlate to mean systolic blood pressure (p=0,75), mean diastolic blood pressure (p=0,75), aortic systolic blood pressure (p=0,50), aortic diastolic blood pressure (p=0,94) or augmentation index (p=0,68) neither in simple nor multivariate analyses. There were no differences between groups regarding hypertension, defined as >140/90 mmHg (1 individual in the unexposed group, 1 in the group exposed to a single course of ACS and 2 in the group exposed to repeat courses).

CONCLUSION: Repeat courses of ACS do not correlate to blood pressure and arterial stiffness 14 to 26 years after exposure.

3) COGNITIVE AND PSYCHOLOGICAL FUNCTIONING IN ADOLESCENTS AND YOUNG ADULTS AFTER REPEAT COURSES OF ANTENATAL CORTICOSTEROIDS

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BACKGROUND: It is unclear whether repeat courses of antenatal corticosteroids for preterm birth adversely affect cognitive function and behavior later in adult life. To date no follow-up studies beyond the pre-school years exist, and the results from studies in young children are inconclusive.

METHOD: Fifty-eight (36 boys) in a Swedish population-based cohort who were exposed *in utero* to two to nine weekly courses of antenatal betamethasone were evaluated at 14 to 26 years of age with a comprehensive neuropsychological test battery assessing general cognitive ability, memory and learning, working memory, attention and speed, and cognitive flexibility and inhibition. Behavior self-reports were also administered. Unexposed subjects (n =44, 25 boys), matched for age, sex, and gestational age at birth, served as a comparison group. An additional group of individuals exposed *in utero* to a single course (n=25, 14 boys) was included for dose-response analyses.

RESULT: Exposure to repeat courses of antenatal corticosteroids was neither associated with deficits in higher cognitive functions nor self-reported psychological health in later life. Mean scores obtained in two measures of attention and speed (Symbol Search and Digit Span Forward) were significantly lower in subjects exposed to two or more corticosteroid courses, but this was not dose-dependent. However, such differences were not observed with regard to more complex cognitive tasks, or on self-reported attention, adaptability or overall psychological function.

CONCLUSION: This study does not provide evidence for long-term adverse effects on cognitive or psychological functioning during adolescence and adulthood after repeat exposure to antenatal corticosteroids.

4) AMNIOTIC FLUID LACTATE (AFL) IN ROBSON CLASSIFICATION GROUP 1

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OBJECTIVE: The uterus is a well-known lactate producer. The level of myometrial lactate is mirrored in the amniotic fluid. The AFL value can be used in prediction of labor outcome, especially in poor progressing labors.

The aim of this work was to describe the AFL values in association to labour outcome in Robson Classification group 1 (nulliparous with a healthy pregnancy and a spontaneous onset of labour)

MATERIAL AND METHOD: AFL was collected at every vaginal examination during labor from 501 nulliparous women. Inclusion criteria for the study were healthy nulliparous women at term with a normal pregnancy and spontaneous onset of labor. Dystocia was defined when labor progress crossed the action line in the partogram or if no progress of labor was made over 2 hours or more.

RESULT: 320/501 (=64%) had a spontaneous vaginal delivery. In this normal group the median level of AFL was low at all examinations during labor (7.3 – 10.1 mmol/).

266/501 (=53%) of the labours were diagnosed as dystocic according to the definition. Dystocic labours with an operative intervention had a significant higher median AFL value (10.1-11.9 mmol/l) at all times of examinations.

Labours with hyperstimulation (>5 contractions/10 minutes) had a high AFL value (10.5-12.7 mmol/l), closely followed by dystocic labors exhibiting a poor response to oxytocin (10.3-12.0 mmol/l). Obstructed labor had a lower level of AFL during labor (9.1-10.7 mmol/l)

Caesarean section for fetal distress in labour before any oxytocin had been given, had the over all highest median level of AFL (11.1-14.3 mmol/l).

CONCLUSION: High AFL levels in the Robson classification group 1 have a strong association with operative delivery.

5) NATIONELLT PM FÖR OXYTOCINSTIMULERING VID VÄRKSVAGHET

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NMI-värksvaghet

BAKGRUND: SFOG och Barnmorskeförbundet (SBF) har utsett en arbetsgrupp för att, i samarbete med Sveriges Kommuner och Landsting (SKL) samt Statens Beredning för Medicinsk Utvärdering (SBU), ta fram vetenskapligt underlag för oxytocin användning vid värksvaghet under förlossning och skapa en Nationell Medicinsk Indikation (NMI).

RESULTAT: Arbetsgrupp och dess referensgrupp har arbetat i drygt 1.5 år. Efter litteraturgenomgång och nya metaanalyser av data från randomiserade kontrollerade studier kan kunskapsläget vid jämförelse mellan "aktiv handläggning" (åtgärd vid 2 tim fördröjning från förväntad progress (1 cm/tim)) och mer "avvaktande handläggning" (fördröjning 3-8 tim) sammanfattas med att;

- durationen av förlossningens aktiva fas förkortas med 1.5-4 tim (medel) vid "aktiv" jämfört med mer "avvaktande" handläggning.
- andelen av överstimuleringar (>5 kontraktioner/10 min) ökar c:a 2.5 ggr vid "aktiv handläggning", dock utan skillnad i neonatalt utfall mellan behandlingsgrupperna
- det föreligger **ingen skillnad** i andra utfallsvariabler som t.ex. spontan vaginal förlossning, kejsarsnitt, instrumentell förlossningar, förlossningsupplevelse eller neonatalt utfall mellan behandlingsgrupperna.

DISKUSSION: Arbetsgruppen har i **koncensus** tagit fram EN nationell rekommendation att definiera indikation - att vidta åtgärd vid fördröjning av förväntad progress med **3 tim**. Förutsättningar som ska vara uppfyllda är identifierade och i ett **NATIONELLT PM** rekommenderar vi EN oxytocinkoncentration, EN dos/dosökningsregim, maxdos samt mål för stimuleringen. Dokumentet är förankrat hos våra uppdragsgivare, SFOG och SBF. Detta nya PM bör införas i hela landet för patientsäkerheten och de födande kvinnornas förväntningars skull.

REFERENS: Indikation för värkstimulering med oxytocin under aktiv förlossning. www.skl.se

6) MEDICINSK OCH BETEENDEVETENSKAPLIG UPPFÖLJNING NOPAIN/NEOPAIN & NEOPIOIDSTUDIerna

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BAKGRUND: Att upprepade gånger utsättas för smärta i tidig ålder kan ge ett förändrat tillstånd i smärtupplevelser senare i livet. För drygt 30 år sedan påvisade professor Kanwaljeet Sunny Anand, att adekvat smärtlindrade barn minskar stressreaktion och smärtupplevelse samt att deras chans till överlevnad ökade. I FN's barnkonvention står det; "Att förneka att barn känner smärta är att bryta mot den medicinska etiska koden". I de tidigare publicerade NOPAIN och NEOPAIN studierna randomiserades prematura barn, födda i graviditetsvecka 23-32, till förebyggande smärtlindring under vårdtiden i respirator. Frågeställning; Kan förebyggande smärtlindring med morfin eller lugnande läkemedel minska neurologiska komplikationer? Hypotesen kunde accepteras för Morfin i pilotstudien NOPAIN men inte i huvudstudien NEOPAIN.

METOD: Uppföljningsstudie som baseras på frågeställningarna; Hur mår barnen idag? Har de fått några medicinska diagnoser, eventuella komplikationer, vilka sjukhusbesök har gjorts, samt den kognitiva förmågan idag 5-15 år senare? Studien baseras på data från barnens BVC och sjukhusjournaler samt strukturerade intervjuer inklusive medicinsk och psykologisk bedömning.

RESULTAT: Pilotresultat är nyligen accepterade i Neurotoxicology and Teratolog. Visar att de förtidigtfödda NEOPAIN barn vid 6 års ålder, som behandlats med förebyggande smärtlindring, har lägre kroppsvikt, de uppvisar sämre kognitiva förmågor, samt att föräldrarna beskrev att barnen hade sociala problem speciellt i att knyta och behålla vänskapsrelationer.

Acknowledgement: Stipendier från Frimurarna och Sällskapet barnavård samt ALF projektmedel 20090490 och FP 7 Project - NeoOpioid – No pain during infancy by adapting off-patent medicines, Grant agreement no 223767.

7) SÄKER VÅRD EFTER FÖRLOSSNINGEN FÖR MODERN OCH DET NYFÖDDA BARNET – RAPPORT FRÅN ETT PÅGÅENDE PROJEKT

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BAKGRUND: Förlösande kvinnoklinik har ett ansvar för att uppföljning och kontroll av modern och hennes barn är planerad och har tillräcklig omfattning upp till en vecka efter barnets födelse. Andelen vaginalförlösta kvinnor med kort vårdtid (0-2 dygn) har de senaste 20 åren ökat från omkring 10 % till nu mer än 70 %. Detta ställer stora krav på BB-personalens förmåga att bedöma risker och förutse problem efter utskrivningen både för modern och för det nyfödda barnet. Det är en stor brist att nationella riktlinjer för BB-vården saknas både avseende medicinskt basprogram och när det gäller riskbedömning inför hemgång.

METOD: Våren 2010 bildades på initiativ av Barnmorskeförbundet, SFOG och Neonatalföreningen en arbetsgrupp med uppgift att arbeta fram nationella rekommendationer för vården av mor och barn den första veckan efter förlossningen. Arbetet inleddes med insamling av gällande PM/checklistor/vårdprogram från landets kvinnokliniker och neonatalavdelningar. Föreslagna rutiner, medicinska undersökningar, omvårdnadsåtgärder, checklistor och riskbedömningar evidensvärderas utifrån en systematisk litteratursökning och sammanställs till ett basprogram med tonvikt på patientsäkerhet. Arbetet förankras kontinuerligt hos ett antal referenspersoner inom de deltagande yrkesorganisationerna och godkänns i färdigt skick av respektive styrelse. Det gemensamma programmet görs sedan allmänt tillgängligt via de deltagande organisationernas hemsidor.

RESULTAT OCH KONKLUSION: Vi kommer att på mötet redovisa hur långt arbetet framskridit och ge tillfälle till input från åhörarna.

8) LONG TERM OUTCOME AFTER UMBILICAL ARTERY METABOLIC ACIDOSIS IN FULL-TERM NEWBORNS, A POPULATION BASED STUDY

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OBJECTIVE: Conflicting results exist concerning outcome in healthy infants with metabolic acidosis at birth. The aim of the present study was to evaluate if metabolic acidosis at birth in full-term infants who appear healthy is associated with long term developmental abnormalities.

PATIENT AND METHOD: From a population based cohort (14687 deliveries) 79 infant were prospectively identified having metabolic acidosis (umbilical artery pH<7.05 and BDecf >12.0 mmol/L). Two matched controls per case were selected. The child health and school health care records for these children's were scrutinized for developmental abnormalities'.

RESULT: Outcome measures for 230 out of 237 children (97%) were possible to determine. No differences were found concerning neurological or behavioral problems in need of referral action or neurodevelopmental diagnosis when comparing control children with acidotic children who had appeared healthy at birth, i.e. had not required special neonatal care or had no signs of encephalopathy.

CONCLUSION: Infants born with cord metabolic acidosis and who appear well do not have an increased risk for neurological or behavioral problems in need of referral actions or pedagogic arrangements at the age of 6.5 years.

9) LACTATE DEHYDROGENASE AS AN OUTCOME PREDICTOR IN HYPOTHERMIA TREATED NEWBORN INFANTS WITH HYPOXIC ISCHEMIC ENCEPHALOPATHY

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BACKGROUND: Since many outcome predictors are less valid in cooled infants it is important to find new early predictors that are easily accessible and also give temporal data. The need for such biomarkers makes total Lactate dehydrogenase (LDH), a well-known and valid biomarker of cellular damage, interesting. Therefore we wanted to investigate (1) if total plasma LDH predicts adverse outcome in hypothermia (HT) treated term infants with moderate or severe hypoxic-ischemic encephalopathy (HIE), and (2) whether LDH levels differ between infants with evidence of acute and non-acute insults and postnatal collapse.

METHOD: Plasma LDH activity was measured within 96h post partum in newborn infants treated with HT due to HIE (n=56) using entry-criteria as defined in the CoolCap trial¹. Adverse outcome was defined as either an MDI or PDI (Bayley Scales of Infant Development II, BSID II) at 18 months $\geq 2SD$ below the mean or death. The classification of acute and non-acute insults or postnatal collapse onset was made from clinical history and blood gases.

RESULT: LDH at >48h of age correlated with BSID II results (-0.597, $p < 0.0001$) at 18 months. Twenty-nine of 31 infants (94%) with values $< 2500U/L$ at >48h had normal outcome (N-1 Chi squared test, 25.27, $p < 0.0001$). Twelve of 15 infants (80%) with values $> 2500U/L$ at >48h of age either died or had an adverse outcome. LDH within 6h of birth differed significantly ($p = 0.002$) between infants with evidence for acute and non-acute insults and with postnatal collapse.

CONCLUSION: These clinically important results offer an inexpensive and safe biochemical marker of brain injury in newborn infants treated with HT after HIE that needs prospective validation.

3. Gluckman, P., et al. Selective head cooling with mild systemic hypothermia after neonatal encephalopathy: multicentre randomised trial. *Lancet* 2005.365: 663-70.

10) ABCA3-BRIST SOM ORSAK TILL SVÅR NEONATAL LUNGSJUKDOM

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BAKGRUND: ABCA3 är ett 1704 aminosyrors protein som tillhör gruppen "ATP-binding cassette transporters" och som uttrycks mest i lungvävnad. Det är där lokaliserat till lamellärcropparna i alveolära typ II-celler och har troligen betydelse för surfaktantomsättningen. Autosomalt recessiv ABCA3-brist är den vanligaste av nu kända medfödda rubbningar i surfaktantmetabolismen, och mer än 180 olika mutationer har identifierats. Sjukdomen presenterar sig vanligen med lunginsufficiens med dödlig utgång i nyföddhetsperioden men lindrigare former med debut senare under barnåren och längre överlevnad har också beskrivits.

METOD: Sedan några år tillbaka har i Lund misstänkta fall undersökts inte bara för surfaktant protein B-mutationer utan också för mutationer i ABCA3-genen.

RESULTAT: Vi har identifierat två fall av ABCA3-brist. 1) En fullgången pojke kom i respirator vid några timmars ålder och behövde därefter intensiv behandling med bland annat högfrekvensventilation, thoraxdrän och kväveoxidinhaling. Han var extremt svår att ventilera och syresätta och avled vid 9 dagars ålder. Han var homozygot för en ABCA3-mutation som tidigare beskrivits som sjukdomsframkallande. 2) En lätt prematurfödd flicka utvecklade en RDS-liknande sjukdomsbild men var vid 2 veckors ålder fortfarande på CPAP med 50-60% syrgas. Hon förbättrades av steroidbehandling men var fortsatt syrgaskrävande och behövde senare åter CPAP och därefter BIPAP. Låg kortvarigt i respirator vid 3 månaders ålder och var därefter helt beroende av BIPAP med mycket hög extra syrgastillförsel. Trakeotomerades vid 4 månaders ålder, men klarade sig efter detta aldrig utan respirator och avled tre veckor senare. Hon var compound heterozygot för två olika mutationer, den ena som härrörde från modern känt sjukdomsframkallande och den andra som härrörde från fadern tidigare ej beskriven.

KONKLUSION: Den genetiska bakgrunden till flera olika diffusa "interstitiella" lungsjukdomar är nu klarlagd, även sådana med debut i nyföddhetsperioden. Det är viktigt att i oklara fall av svår lungsjukdom, särskilt hos fullgångna eller endast lätt prematura barn, tillvarata DNA för genetisk undersökning.

11) NURSE-PARENT COMMUNICATION IN THE NICU: A QUANTITATIVE STUDY

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BACKGROUND: The quality of the communication between parents and professionals in the NICU has a great impact of how the parents perceive their stay at the hospital and how well prepared they are for the future care of their infant when leaving the ward. Little is known about the characteristics of the communication between nurses and parents in the NICU.

METHOD: Thirty-three conversations between nurses and parents were recorded and transcribed. These were analyzed regarding the number of words used by the nurses and the parents involved. The words were classified as physical, practical, psychological, social, friendly, and non-hospital related chat. The nurses' responses to parents' expressions of emotions were classified as empathic, exploring, generalizing, ignoring, or premature comforting. Nurses' questions about the well-being of the parents, invitations to the parents to participate in the care of their infant, and feedback given to the parents when taking care of their infant were analyzed.

RESULT: The nurses spoke more than the parents in the majority of cases. The communication focused on physical and practical issues, whereas psychological aspects and chatting was given very little room. The parents seldom expressed emotions, and when they did the response from the nurses was frequently either ignoring or premature comforting. Only 12% of the empathic opportunities were given an adequate empathic response. Involvement of the parents in the care of their infants was in 2/3 of the situations achieved by an encouraging or inviting comment and in 1/3 by giving an order. Feedback was given to the parent in 19 occasions in the 33 conversations.

CONCLUSION: Based on these results, a course in communication technique to improve nurse-parent communication in the NICU has been offered to the nurses in our NICU. Conversations between nurses and parents after the intervention are currently being analyzed.

12) HIGH PROPORTION OF ESBL-CARRIERS AMONG NEONATES IN A TERTIARY HOSPITAL IN ECUADOR

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GOAL AND OBJETIVE: The aims of the study were to assess the proportion of fecal colonization by ESBL-producing Gram negative bacteria among neonates in a NICU, to investigate the resistance pattern of the ESBL strains and to determine the risk factors associated with ESBL colonization.

STUDY DESIGN: The study was a prospective, descriptive study. The settings were a NICU in a third level hospital in Ecuador. From January to April 2011, stool specimens were collected, every two weeks, from all neonates hospitalized. The screening of fecal samples for ESBL producing Enterobacteriaceae, was performed on MacConkey agar containing cefotaxime and ceftazidime 1 mg/L. Antimicrobial susceptibility testing was performed following Clinical and Laboratory Standards Institute guidelines and phenotypic confirmation was performed using the disk diffusion method on Muller-Hinton agar plates with disks containing ceftazidime and cefotaxime with and without clavulanic acid.

RESULT: In total, 160 specimens were collected from 100 patients. ESBL-positive strains were found in 55% of the samples. The majority of the ESBL-producing strains were *Escherichia coli* (80.3%) followed by *Klebsiella pneumoniae* (19.7 %). The strains showed a high frequency of gentamicin resistance (98.7%) and ciprofloxacin resistance (92.1%). Meropenem resistance was 3.9%. 71 % was susceptible to trimethoprim/sulfamethoxazole. As many as 39% of the neonates were ESBL-carriers within the first two weeks of admission. The predominating risk factor for colonization was the length of stay at NICU.

IMPORTANCE TO PUBLIC HEALTH AND CLINICAL MEDICINE: Severe infections caused by ESBL-producing bacteria are associated with increased morbidity and mortality. This is the first study performed in Ecuador assessing ESBL carriage in neonates in a NICU. The main result with a very high proportion of patients colonized with ESBL-producing bacteria will be important to (1) visualize the problem and increase the awareness of high ESBL prevalence in Ecuadorian hospitals, (2) in the development of strategies to limit spread of ESBL in NICU, (3) to assess the empirical and second line antibiotic treatment in severe infections caused by Gram-negative bacteria in a NICU and (4) to improve skills in infection control and bring attention to the challenge to manage this within public hospitals in Ecuador.

13) LONG-TERM FOLLOW-UP AFTER NEONATAL COLONIZATION WITH EXTENDED SPECTRUM BETA-LACTAMASE GRAM-NEGATIVE BACTERIA

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OBJECTIVE: Neonatal colonization of the gut with multiresistant (ESBL= Extended spectrum beta-lactamase) gram-negative bacteria has become more common in recent years. The aim of this study was to investigate whether neonatal ESBL colonization becomes long-lasting or disappears.

METHOD: Follow-up study of a cohort (13 infants, 7 boys, 10 preterm) born 2008-2009 in Stockholm and colonized during neonatal intensive care with the same clone of *Klebsiella pneumoniae*-ESBL, as determined by PFGE. Stool cultures were performed every second month after hospital discharge until 2 years of age.

RESULT: Co-colonization of the gut with *E.coli* ESBL was seen in 9 children. Four children remained ESBL-positive at two years of age. One child was ESBL-positive at final follow-up preceded by 3 subsequent negative cultures. Two children had a negative culture at two years of age but had been ESBL-positive in one or more of the preceding 3 cultures. Six children had 3 or more subsequent negative cultures and remained culture negative at the last sampling occasion. One patient with severe lung disease died. During the 2-year follow-up, one infant was treated for a lower urinary tract infection caused by *K.pneumoniae*-ESBL. No other infection caused by ESBL-producing bacteria occurred.

CONCLUSION: Neonatal colonization with ESBL-producing gram-negative bacteria may be a transient condition for some infants, but results in long-lasting colonization or re-colonization in about 50%. No infant suffered from serious infection caused by ESBL-producing bacteria during the follow-up.

14) PRETERM BIRTH AND FETAL GROWTH RESTRICTION ARE PERINATAL RISK FACTORS FOR REDUCED EXERCISE CAPACITY IN HEALTHY YOUNG MEN

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BACKGROUND: Physical inactivity and unfitnes increase the risk for cardiovascular disease and diabetes. The aim of this study was to investigate the impact of perinatal risk factors on exercise capacity in young men.

METHOD: A population-based study linking results from exercise test in young men conscripting for military service (1993-2001) to data from the Medical Birth Register and the National Population and Housing Census 1990. Exercise capacity (W_{max} = maximal load on test bicycle) was analysed in relation to gestational age (GA), birth weight standard deviation score (BWSDS), parental socioeconomic status and education, as well as blood pressure and body mass index (BMI) in conscripting men. Data were analysed using multiple regression.

RESULT: The cohort included 218,915 healthy young men (median age 18 years) considered for military service. Preterm birth predicted low W_{max} irrespective of BWSDS. In addition, in men born at term, low BWSDS also predicted low W_{max} ($P<0.001$ for interaction between GA and BWSDS). Low parental education level, and both low and high BMI at conscript, were also associated with reduced W_{max} .

CONCLUSION: Preterm birth and low birth weight at term are perinatal risk factors for reduced exercise capacity in young men. All men were considered healthy and fit for military service, suggesting the effect could not be explained by major impairment in lung function and motor performance. The effect size of being born too early or too small equal or exceed that of other known risk factors for unfitnes in adults, such as low education and overweight.

15) PERI-OPERATIVE NUTRITION FOR EXTREMELY PRETERM INFANTS UNDERGOING SURGICAL TREATMENT FOR PDA

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BACKGROUND AND AIM: In Sweden, 24% of extremely preterm infants undergo surgery for patent ductus arteriosus (PDA). The aim of this study was to evaluate peri-operative nutrition in these infants.

METHOD: Population-based cohort (EXPRESS^{1,2}) of 118 extremely preterm infants (gestational age < 27 weeks, birth weight 719 ± 161 g [mean ± SD], 63 (53%) boys, 19 multiples) treated with surgical ligation of PDA (mean postnatal age 22 [range 3-82] days) and surviving to 1 year-of-age. Detailed data on peri-operative nutrition was collected from hospital charts (24 infants with missing/incomplete records). Daily intakes of all enteral and parenteral nutrients, including blood products, were entered into a computer based tool (*Nutrium™*) for nutrition analysis. Provision of energy, protein, fat and carbohydrate was calculated three days before (day -3), on the day of surgery (day 0) and three days after surgery (day +3). Data were compared to minimal requirements according to international recommendations.³

RESULT: The fluid volume day 0 was 166 ± 44 ml/kg/d and was the same as three days before (165 ± 31) and after surgery (164 ± 36, mean ± SD values).

Nutrients, % of minimal req. (95%CI)	Day -3	Day 0	Day +3	Minimal req ³
Energy	83-91	62-70	83-89	110 kcal/kg/d
Protein	73-81	68-80	71-77	4.0g/kg/d
Fat	82-98	45-55	85-99	4.8g/kg/d
Carbohydrate	95-105	111-121	96-104	12g/100kcal

CONCLUSION: Peri-operative nutrition for extremely preterm infants undergoing surgical treatment for PDA is suboptimal and needs to be improved. The significance of malnutrition for outcome after PDA surgery is still unclear and will be investigated.

1. JAMA 2009;301(21):2225-2233

2. Acta Paediatr 2010;99:978-992

3. J Pediatr Gastroenterol Nutr 2010;50:1-9

16) REGIONAL DIFFERENCES IN PERI- AND NEONATAL OUTCOMES OF EXTREMELY PRETERM INFANTS IN SWEDEN (EXPRESS)

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BACKGROUND: The EXPRESS study has shown favourable peri-and neonatal outcomes of extremely preterm infants (EPT, <27weeks) in Sweden compared with international studies.

OBJECTIVE: To determine whether there are differences in peri- and neonatal outcomes in spite of favourable national rates and whether outcomes can be related to regional differences in the use of perinatal interventions.

METHOD: Population-based prospective study of all EPT children born in Sweden from April 1, 2004, to March 31, 2007. Of 1011 births, 707 were born alive and 497 survived to one year. Each region was assigned a perinatal activity score (PAS) based on the rate of selected perinatal interventions. Mortality rates were calculated, adjusted for background factors and related to PAS.

RESULT: There were few regional differences in obstetric and neonatal background data. PAS varied from 74 to 100 (median 82) between regions. When the 3 regions with the highest PAS (median 98) were compared with 4 regions with lower PAS (median 79) the following adjusted odds ratios (AOR) were found for infants born at 22-26 weeks: Perinatal death, AOR 0.6 (95%CI 0.4-0.8), infant mortality 0.6 (95% CI 0.4-0.9). There was no increase in the rate of survivors with severe neonatal morbidity; AOR 0.7 (95% CI 0.5-1.0). Increased survival was confined to infants born at 22-24 weeks; perinatal death 0.3 (95% CI 0.2-0.5); infant mortality 0.4 (95% CI 0.3-0.8). There were no differences in infant mortality rates for infants born at 25-26 weeks or for infants born at 22-24 weeks, or at 22-26 weeks who were alive at 12 hours of age.

CONCLUSION: There are differences in peri- and neonatal outcomes between regions in Sweden which can be explained by the intensity of perinatal interventions.

17) NEURODEVELOPMENTAL OUTCOME OF EXTREMELY PRETERM INFANTS AT 2.5 YEARS OF AGE; EXTREMELY PRETERM INFANTS STUDY IN SWEDEN (EXPRESS)

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BACKGROUND: Active perinatal increases the survival of extremely preterm infants but there are concerns that improved survival might increase the rate of disabled survivors.

OBJECTIVE: To determine neurodevelopmental outcome at 30 months corrected age (CA) of extremely preterm children (EPT, < 27 weeks) in a Swedish National cohort.

DESIGN/METHOD: Population-based prospective study of all EPT children born in Sweden from April 1, 2004, to March 31, 2007. Of 707 infants born alive 497 (70%) survived to one year. In survivors, neurosensory impairments (NSI) and development (Bayley-III) were assessed and compared with a matched control group of children born at term.

RESULTS: At a median age of 30 months CA, 414 of 460 eligible children (90%) were formally assessed. The rates of cerebral palsy, moderate and severe visual impairments and severe hearing loss were 7.0%, 3.0%, 0.8% and 0.8%, respectively vs 0.0%, 0.0%, 0.3%, 0.0%, respectively among controls. Cognition < -2SD but > -3SD, and < -3SD was 5.0% and 6.2%, respectively vs 0.3% and 0.3%, respectively among controls. In 454 children either formally assessed or assessed by chart review, the rates of light to moderate and severe disabilities were 15% and 15%, respectively compared with 3.2% and 1.1%, respectively among controls.

CONCLUSION: NSI and disability rates are favourable compared with earlier studies despite marked increase in survival

18) NEUROSENSORISKT UTFALL SAMT FUNKTIONSNEDSÄTTNINGAR VID 10-16 ÅRS ÅLDER HOS EXTREMT PREMATURFÖDDA BARN, FÖDDA EFTER AKTIVT PERINATALT OMHÄNDERTAGANDE FÖRE 26 VECKORS GESTATIONSÅLDER. UPPSALA-UMEÅ-STUDIEN.

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BAKGRUND: Aktivt perinatalt omhändertagande ökar överlevnaden hos extremt prematurfödda barn (EPT, <26 gestationsveckor). Med ökat antal överlevande väcks frågan om det sker till priset av ökad andel barn med svåra handikapp. Syftet med studien är att undersöka neurosensoriskt utfall samt förekomsten av handikapp och funktionshinder hos 10-16 gamla EPT-barn, födda vid universitetssjukhusen i Uppsala och Umeå, vilka tillämpat aktivt perinatalt omhändertagande av samtliga barn.

METOD: Utfallen för 121 EPT födda 1992-1998 jämfördes med en matchad, fullgången kontrollgrupp. Neurosensoriska handikapp undersöktes via journalgenomgång samt frågeformular (Parent Report), intelligens via WISC-III-R samt funktionshinder och speciella vård- och omsorgsbehov via ett validerat frågeformulär, QulCCC.

RESULTAT: Totalt föddes 213 EPT på de aktuella sjukhusen under åren 1992-1998, 140 överlevde till utskrivning till hemmet och vid 10-16 års ålder var 134 vid liv. 131 rekryterades till studien. För resultat se tabell 1-2.

Tabell 1: Neurosensoriskt/intellektuellt handikapp hos EPT respektive kontroller vid 10-16 års ålder.

	EPT (N=121)	Kontroller (N=100)
Cerebral pares (måttlig eller svår)	6,6%	0*
Grav synnedsättning	5,7%	0*
Måttlig/grav hörselnedsättning	4,1%	0
IQ <70	26,4%	3%**
IQ 54-69 (<-2SD till -3SD)	19,8%	0**
IQ <54 (<-3SD)	6,6%	3%
Neurosensoriskt/intellektuellt handikapp (ett eller flera)	26%	3%**

Tabell 2: Andel barn med handikapp.

Grad av handikapp

	EPT (N=121)	Kontroller (N=100)
Inget	45,4%	90% **
Milt	28,9%	7%**
Måttligt	19,8%	3%**
Svårt	6,6%	0%*

Svårt handikapp; Grav CP-skada (oförmåga att gå), blindhet eller visus <20/200 på bästa ögat eller IQ <-3SD. Måttligt handikapp; måttlig CP-skada (svårighet att gå med hjälpmedel), hörselskada som kräver bilaterala hjälpmedel eller värre, eller IQ -3 till <-2SD. Lindrigt handikapp; lindrig CP-skada (gångare med högst minimal begränsning, eller IQ -2SD till <-1SD. *P<0.05; **P<0.005

KONKLUSION: Hos EPT-barn förekommer en hög andel handikapp, funktionshinder och speciella vårdbehov, men denna andel har inte ökat trots markant ökad överlevnad. Våra resultat är jämförbara med resultaten från centra som förespråkar konservativt perinatalt omhändertagande. Väldigt få EPT-barn hade så svåra mentala/neurosensoriska handikapp att det påverkade deras ADL.

19) LONGTERM FOLLOW UP OF COGNITIVE FUNCTION IN CHILDREN BORN AT THE LIMIT OF VIABILITY AFTER ACTIVE PERINATAL CARE UMEÅ- UPPSALA STUDY

KOGNITIV UTVECKLING HOS BARN FÖDDA VECKA 23- 25 EFTER AKTIV PERINATALVÅRD: EN LÅNGTIDSUPPFÖLJNING 9-16 ÅR.

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BACKGROUND: The active perinatal strategies have resulted in a marked increase in the survival of smallest of the extremely preterm children (EPT), born before 26 weeks of gestation. Knowledge about their cognitive function in school age and beyond is sparse.

OBJECTIVE: To generate an overview of cognitive abilities and difficulties at school age in order to understand the need for support in a school- and home- environment.

METHOD: The outcomes of 121 surviving EPT children, born 1992- 1998, were compared to a control group of term children. Children underwent standardized cognitive assessments (WISC-III) at 9-16 years of age.

RESULT: The EPT group had a mean IQ of 80.4 (controls 103). Twenty-nine % of the EPT children had an IQ below 70 (controls 3.4 %), of which 9 % were under IQ 55 (controls 0). Another 30 % of EPT children were within IQ 70- 84 (controls 12.6%). The preterm group has a greater variance between cognitive domains, with the verbal IQ and processing- speed as significant strengths. Cognitive profile of EPT children in comparison with their term-born peers will be presented in detail at the meeting.

CONCLUSION: Different types of cognitive dysfunctions and special educational needs remain high in EPT children, and reassuring to find the need for educational adjustment seem to be met. Rates of dysfunctions are similar to those from centres with less active perinatal care policies. Very few are severely mentally disabled that curtail their activities in daily life.