Statistical analysis was performed using Statistical Package for Social Science software for Microsoft Windows (SPSS Inc, Chicago, IL), version 22.0. We checked for normality using Shapiro-Wilk test. The mean and standard deviation or median and interquartile range summarised continuous variables. We compared the Cohorts using chi-square test for categorical variable and t-test or Mann-Whitney for paired and unpaired variables. We performed a multivariate analysis using binary logistic regression analysis to evaluate whether GA, sex, pH of cord blood at birth or PN protocol, influenced growth at 36 weeks PMA and at 24 months of life. The level of significance for all statistical tests was 2-sides ($p<0.05$).

Statistical analysis plan

CROSSTABS

/TABLES=InclusSideEff INCLUSaa InclusBayley IoSEX BISCategNPT07gg IVoRiskATOPIA IVoEspFUMO

VoRISCHIOINFETTIVO VoProfATB VoDiabeteGestazionale VoIUGRtot VoDISTURPRESS VoSTERunaDOSE

VoSTERdueDOSI VoSTERtot VoFLUSSIMETRIA VoDisTiroideiMaterni VIoPARTO VoDistaccoPlacenta VIoGemello

VIIoMorbidità FEF7g FEF14G FEF28G VIIoTrasferimento VIIoDimissioneDOMICILIARE VIIoExitus

VIIIoSURFACT VIIIoCAFFEIN VIIIoINOTROP VIIIoSTEROID IXoCVO IXoPICC VMinvasiva VMnoninvasiva

OXYGEN28gdv OXYGEN36w NEbefore72h NEsospensioni BY coorte

/FORMAT=AVALUE TABLES

/STATISTICS=CHISQ CORR RISK

/CELLS=COUNT ROW COLUMN

/COUNT ROUND CELL.

EXAMINE VARIABLES=IIoEG IIoPESO VIoNgemell VIoAPGAR1 VIoAPGAR5 VIoPHfunicolo VIoEBfunicolo

VIoTempCprimaora VIIoNEesclusiva NEinizioEC NEinizioEG NEsospensioni NEsospNUMERO NEsospDURATA

VIIoTrasferimentoEtà VIIoTrasferimentoEG DimissioneDomEtà VIIoDimissioneDomEG ExitusEtà

VIIoExitusEG VIIIoSURFACTetà1dose VIIIoSURFACTnDosi VIIIoCAFFEINetàstart VIIIoCAFFEINetàstop

VIIIoINOTROPetàstart VIIIoINOTROPetàstop VIIIoSTEROIDetàstart VIIIoSTEROIDetàstop IXoCVOdurata

IXoPICCdurata VMinvasivaSTART VMinvasivaSTOP DurataVMinvasiva VMnoninvSTART VMnoninvSTOP

DurataVMnoninv BY coorte

```
  /PLOT NPPLOT
  /STATISTICS DESCRIPTIVES
  /CINTERVAL 95
  /MISSING PAIRWISE
  /NOTOTAL.


DATASET ACTIVATE Dataset1.
T-TEST GROUPS=coorte(0 1)
  /MISSING=ANALYSIS
  /VARIABLES=IIoEG IIoPESO VIoNgemell VIoAPGAR1 VIoAPGAR5
VIoPHfunicolo VIoEBfunicolo
    VIoTempCprimaora VIoCRIB2semplificato VIIoNEesclusiva NEinizioEC
NEinizioEG NEsospensioni NEsospNUMERO
    NEsospDURATA VIIoTrasferimentoEtà VIIoTrasferimentoEG
DimissioneDomEtà VIIoDimissioneDomEG VIIoDurataDegenza
    ExitusEtà VIIoExitusEG VIIIoSURFACTetà1dose VIIIoSURFACTnDosi
VIIIoCAFFEINetàstart
    VIIIoCAFFEINetàstop VIIIoFENTANILetàstart VIIIoFENTANILetàstop
VIIIoINOTROPetàstart
    VIIIoINOTROPetàstop VIIIoSTEROIDetàstart VIIIoSTEROIDetàstop
IXoCVOdurata IXoPICCdurata
    VMinvasivaSTART VMinvasivaSTOP DurataVMinvasiva VMnoninvSTART
VMnoninvSTOP DurataVMnoninv
  /CRITERIA=CI(.95).


T-TEST GROUPS=coorte(0 1)
  /MISSING=ANALYSIS
  /VARIABLES=CalNPT03gg CalNPT47gg CalNPT07gg GlucNPT03gg
GlucNPT47gg GlucNPT07gg ProtNPT03gg
    ProtNPT47gg ProtNPT07gg LipidiNPT03gg LipidiNPT47gg LipidiNPT07gg
CaNPT03gg CaNPT47gg CaNPT07gg
```

```
    PNPT03gg PNPT47gg PNPT07gg CalProtNPT03gg CalProtNPT47gg
CalProtNPT07gg
  /CRITERIA=CI(.95).

T-TEST GROUPS=coorte(0 1)
  /MISSING=ANALYSIS
  /VARIABLES=CalNE03gg CalNE47gg CalNE07gg GlucNE03gg GlucNE47gg
GlucNE07gg ProtNE03gg ProtNE47gg
    protNe07gg LipidiNE03gg LipidiNE47gg LipidiNE07gg CaNE03gg CaNE47gg
CaNE07gg PNE03gg PNE47gg
    PNE07gg CalProtNE03gg CalProtNE47gg CalProtNE07gg
  /CRITERIA=CI(.95).

T-TEST GROUPS=coorte(0 1)
  /MISSING=ANALYSIS
  /VARIABLES=KalTot03gg KalTot47gg KalTot07gg GlucTot03gg GlucTot47gg
GlucTot07gg ProtTot03gg ProtTot47gg ProtTot07gg
    LipidiTot03gg LipidiTot47gg LipidiTot07gg CaTot03gg CaTot47gg CaTot07gg
PTot03gg PTot47gg
    PTot07gg KalProtTot03gg kalProtTot47gg kalProtTot07gg
  /CRITERIA=CI(.95).

T-TEST GROUPS=coorte(0 1)
  /MISSING=ANALYSIS
  /VARIABLES=CalProkgTOT0 CalProkgTOT1 CalProkgTOT2 CalProkgTOT3
CalProkgTOT4 CalProkgTOT5 CalProkgTOT6
    CalProkgTOT7
  /CRITERIA=CI(.95).

T-TEST GROUPS=coorte(0 1)
```

```
  /MISSING=ANALYSIS
  /VARIABLES=ProtProkgTOT0 ProtProkgTOT1 ProtProkgTOT2 ProtProkgTOT3
ProtProkgTOT4 ProtProkgTOT5
    ProtProkgTOT6 ProtProkgTOT7
  /CRITERIA=CI(.95).

T-TEST GROUPS=coorte(0 1)
  /MISSING=ANALYSIS
  /VARIABLES=GlucProkgTOT0 GlucProkgTOT1 GlucProkgTOT2
GlucProkgTOT3 GlucProkgTOT4 GlucProkgTOT5
    GlucProkgTOT6 GlucProkgTOT7
  /CRITERIA=CI(.95).

T-TEST GROUPS=coorte(0 1)
  /MISSING=ANALYSIS
  /VARIABLES=LipProkgTOT0 LipProkgTOT1 LipProkgTOT2 LipProkgTOT3
LipProkgTOT4 LipProkgTOT5
    LipProkgTOT6 LipProkgTOT7
  /CRITERIA=CI(.95).

T-TEST GROUPS=coorte(0 1)
  /MISSING=ANALYSIS
  /VARIABLES=CalProkgNPT0 CalProkgNPT1 CalProkgNPT2 CalProkgNPT3
CalProkgNPT4 CalProkgNPT5
    CalProkgNPT6 CalProkgNPT7
  /CRITERIA=CI(.95).

T-TEST GROUPS=coorte(0 1)
  /MISSING=ANALYSIS
```

```
  /VARIABLES=ProtProkgNPT0 ProtProkgNPT1 ProtProkgNPT2 ProtProkgNPT3
ProtProkgNPT4 ProtProkgNPT5
    ProtProkgNPT6 ProtProkgNPT7
  /CRITERIA=CI(.95).

T-TEST GROUPS=coorte(0 1)
  /MISSING=ANALYSIS
  /VARIABLES=GlucPrkgNPT0 GlucPrkgNPT1 GlucPrkgNPT2 GlucPrkgNPT3
GlucPrkgNPT4 GlucPrkgNPT5
    GlucPrkgNPT6 GlucPrkgNPT7
  /CRITERIA=CI(.95).

T-TEST GROUPS=coorte(0 1)
  /MISSING=ANALYSIS
  /VARIABLES=LipProkgNPT0 LipProkgNPT1 LipProkgNPT2 LipProkgNPT3
LipProkgNPT4 LipProkgNPT5
    LipProkgNPT6 LipProkgNPT7
  /CRITERIA=CI(.95).

T-TEST GROUPS=coorte(0 1)
  /MISSING=ANALYSIS
  /VARIABLES=CalorieNE0 CalorieNE1 CalorieNE2 CalorieNE3 CalorieNE4
CalorieNE5 CalorieNE6 CalorieNE7
  /CRITERIA=CI(.95).

T-TEST GROUPS=coorte(0 1)
  /MISSING=ANALYSIS
  /VARIABLES=ProteineNE1 ProteineNE0 ProteineNE2 ProteineNE3 ProteineNE4
ProteineNE5 ProteineNE6
    ProteineNE7
```

```
  /CRITERIA=CI(.95).


T-TEST GROUPS=coorte(0 1)
  /MISSING=ANALYSIS
  /VARIABLES=GlucidiNE0 GlucidiNE1 GlucidiNE2 GlucidiNE3 GlucidiNE4
GlucidiNE5 GlucidiNE6 GlucidiNE7
  /CRITERIA=CI(.95).


T-TEST GROUPS=coorte(0 1)
  /MISSING=ANALYSIS
  /VARIABLES=LipidiNE0 LipidiNE1 LipidiNE2 LipidiNE3 LipidiNE4 LipidiNE5
LipidiNE6 LipidiNE7
  /CRITERIA=CI(.95).


DATASET ACTIVATE Dataset1.
CROSSTABS
  /TABLES=VIIoMorbidità VIIoNEC VIIoIVH IVHPrimaDiIpergl VIIoPLV
VIIoSEPSI VIIoSepsiCLINICA
    VIIoSepsiCOLTURAPOSITIVA SepsiPrimaDiIpergl VIIoROP ROPstadioIEII
VIIoBPD VIIoPDA VIIoANEMIAprematurità BY coorte
  /FORMAT=AVALUE TABLES
  /STATISTICS=CHISQ RISK
  /CELLS=COUNT ROW COLUMN
  /COUNT ROUND CELL.


EXAMINE VARIABLES=VIIoNECstadio VIIoNECeta VIIoIVHgrado VIIoIVHeta
VIIoPLVgrado VIIoPLVeta
    VIIoSEPSIeta VIIoROPstadio VIIoROPeta VIIoBPDstadio BY coorte
  /PLOT NPPLOT
  /STATISTICS DESCRIPTIVES
```

```
  /CINTERVAL 95
  /MISSING PAIRWISE
  /NOTOTAL.

*Nonparametric Tests: Independent Samples.
NPTESTS
  /INDEPENDENT TEST (VIIoNECstadio VIIoNECeta VIIoIVHgrado VIIoIVHeta
VIIoPLVgrado VIIoPLVeta
    VIIoSEPSIeta VIIoROPstadio VIIoROPeta VIIoBPDstadio) GROUP (coorte)
  /MISSING SCOPE=ANALYSIS USERMISSING=EXCLUDE
  /CRITERIA ALPHA=0.05  CILEVEL=95.

CROSSTABS
  /TABLES=IperglicemiaT1 IperglicemiaT2 IpoglicemiaT1 IpoglicemiaT2 IperNaT1
IpoNaT1 IperNaT2
    IpoNaT2 IperKT1 IpoKT1 IperKT2 IpoKT2 IperClT1 IperClT2 IperCaT1
IpoCaT1 IperCaT2 IpoCaT2 IperPT1
    IpoPT1 IperPT2 IpoPT2 IperMgT1 IpoMgT1 IperMgT2 IpoMgT2 IperNT1
IpoNT1 IperNT2 IpoNT2 IperCreatT1
    IpoCreatT1 IperCreatT2 IpoCreatT2 IpertrigliceridemiaT1 IpertrigliceridemiaT2
FosfatasiT1
    FosfatasiT2 iperGGTT1 iperGGTT2 AcidosiMetabolicaT1 AlcalosiMetabolicaT1
AcidosiMetabolicaT2
    AlcalosiMetabolicaT2 BY coorte
  /FORMAT=AVALUE TABLES
  /STATISTICS=CHISQ RISK
  /CELLS=COUNT ROW COLUMN
  /COUNT ROUND CELL.
```

```
CROSSTABS
  /TABLES=RecuperoPeso14gg EUGRpeso28 EUGRcc28 EUGRpeso36w
EUGRcc36w EUGRlung36w BY coorte
  /FORMAT=AVALUE TABLES
  /STATISTICS=CHISQ RISK
  /CELLS=COUNT ROW COLUMN
  /COUNT ROUND CELL.

EXAMINE VARIABLES=PL24 BMI24 GgRecuperoPesoNasc giorniPatel36
giorniPatel14 growthvelocity36w LnGW36w
    growthvelocityRec36w LnGWRec36w PESO28pc XoCC28 XoCC28pc
XoLUNG28 XoLUNG28pc PESO36wk PESO36wpc
    XoLUNG36w XoLUNG36wpc XoCC36w XoCC36pc Peso12m PercPeso12m
Lung12m PercLung12m Peso24m PercPeso24m
    CC24m PercCC24m Lung24m PercLung24m CC12m PercCC12m BY coorte
  /PLOT NPPLOT
  /STATISTICS DESCRIPTIVES
  /CINTERVAL 95
  /MISSING PAIRWISE
  /NOTOTAL.

*Nonparametric Tests: Independent Samples.
NPTESTS
  /INDEPENDENT TEST (PL24 BMI24 PESO28pc XoCC28 XoLUNG28
XoCC28pc XoLUNG28pc PESO36wk PESO36wpc XoLUNG36w
    XoLUNG36wpc XoCC36w XoCC36pc Peso12m PercPeso12m CC12m
PercCC12m Lung12m PercLung12m Peso24m
    PercPeso24m CC24m PercCC24m Lung24m PercLung24m GgRecuperoPesoNasc
giorniPatel36 giorniPatel14 growthvelocity36w LnGW36w
    growthvelocityRec36w LnGWRec36w)
```

```
    GROUP (coorte)
  /MISSING SCOPE=ANALYSIS USERMISSING=EXCLUDE
  /CRITERIA ALPHA=0.05  CILEVEL=95.


EXAMINE VARIABLES=CalProkgNE814 GlucProkgNE814 ProtProkgNE814
LipProkgNE814 CalProkgTOT814
    GlucProkgTOT814 ProtProkgTOT814 LipProkgTOT814 CalProkgNPT814
GlucPrkgNPT814 ProtProkgNPT814
    LipProkgNPT814 RapportoCalNETOT03 RapportoCalNETOT47
RapportoCalNETOT07 RapportoCalNETOT814
    RapportoGlucNETOT03 RapportoGlucNETOT47 RapportoGlucNETOT07
RapportoGlucNETOT814
    RapportoProtNETOT03 RapportoProtNETOT47 RapportoProtNETOT07
RapportoProtNETOT814 RapportoLipNETOT03
    RapportoLipNETOT47 RapportoLipNETOT07 RapportoLipNETOT814 BY
coorte
  /PLOT BOXPLOT NPPLOT
  /COMPARE GROUPS
  /STATISTICS DESCRIPTIVES
  /CINTERVAL 95
  /MISSING PAIRWISE
  /NOTOTAL.



T-TEST GROUPS=coorte(0 1)
  /MISSING=ANALYSIS
  /VARIABLES=CalProkgNE814 GlucProkgNE814 ProtProkgNE814
LipProkgNE814 CalProkgTOT814
    GlucProkgTOT814 ProtProkgTOT814 LipProkgTOT814 CalProkgNPT814
GlucPrkgNPT814 ProtProkgNPT814
```

LipProkgNPT814 RapportoCalNETOT03 RapportoCalNETOT47 RapportoCalNETOT07 RapportoCalNETOT814

RapportoGlucNETOT03 RapportoGlucNETOT47 RapportoGlucNETOT07 RapportoGlucNETOT814

RapportoProtNETOT03 RapportoProtNETOT47 RapportoProtNETOT07 RapportoProtNETOT814 RapportoLipNETOT03

RapportoLipNETOT47 RapportoLipNETOT07 RapportoLipNETOT814

/CRITERIA=CI(.95).

*Nonparametric Tests: Independent Samples.

NPTESTS

/INDEPENDENT TEST (CalProkgNE814 GlucProkgNE814 ProtProkgNE814 LipProkgNE814 CalProkgTOT814

GlucProkgTOT814 ProtProkgTOT814 LipProkgTOT814 CalProkgNPT814 GlucPrkgNPT814 ProtProkgNPT814

LipProkgNPT814 RapportoCalNETOT03 RapportoCalNETOT47 RapportoCalNETOT07 RapportoCalNETOT814

RapportoGlucNETOT03 RapportoGlucNETOT47 RapportoGlucNETOT07 RapportoGlucNETOT814

RapportoProtNETOT03 RapportoProtNETOT47 RapportoProtNETOT07 RapportoProtNETOT814 RapportoLipNETOT03

RapportoLipNETOT47 RapportoLipNETOT07 RapportoLipNETOT814) GROUP (coorte)

/MISSING SCOPE=ANALYSIS USERMISSING=EXCLUDE

/CRITERIA ALPHA=0.05 CILEVEL=95.

DATASET ACTIVATE Dataset1.

```
T-TEST GROUPS=Coorte(0 1)
  /MISSING=ANALYSIS
  /VARIABLES=PL24 BMI24 Peso12m PercPeso12m CC12m PercCC12m
Lung12m PercLung12m Peso24m PercPeso24m CC24m
    PercCC24m Lung24m PercLung24m PESO28 PESO28pc XoCC28 XoCC28pc
XoLUNG28 XoLUNG28pc PESO36wk
    PESO36wpc XoLUNG36w XoLUNG36wpc XoCC36w XoCC36pc
GgRecuperoPesoNasc giorniPatel36 giorniPatel14 growthvelocity36w LnGW36w
    growthvelocityRec36w LnGWRec36w
  /CRITERIA=CI(.95).

DATASET ACTIVATE Dataset1.
CROSSTABS
  /TABLES=IperglicemiaTOT IpoglicemiaTOT InsulinaT1 InsulinaT2 InsulinaTOT
IperNaTOT IpoNaTOT
    IperKTOT IpoKTOT IperClTOT IperCaTOT IpoCaTOT IperPTOT IpoPTOT
IperMgTOT IpoMgTOT IperNTOT IpoNTOT
    IperCreatTOT IpoCreatTOT IpertrigliceridemiaTOT FosfatasiTOT iperGGTtot
AcidosiMetabolicaTOT
    AlcalosiMetabolicaTOT BY Coorte
  /FORMAT=AVALUE TABLES
  /STATISTICS=CHISQ RISK
  /CELLS=COUNT ROW COLUMN
  /COUNT ROUND CELL.

COMPUTE BMI24= (Peso24m / 1000)/((Lung24m * Lung24m)/10000).
EXECUTE.

DATASET ACTIVATE Dataset1.
```

```
COMPUTE PL24=PercPeso24m / PercLung24m.
EXECUTE.

DATASET ACTIVATE Dataset1.
COMPUTE RapportoCalProtNPT0=CalProkgNPT0 / ProtProkgNPT0.
EXECUTE.

COMPUTE RapportoCalProtNPT1=CalProkgNPT1 / ProtProkgNPT1.
EXECUTE.

COMPUTE RapportoCalProtNPT2=CalProkgNPT2 / ProtProkgNPT2.
EXECUTE.

COMPUTE RapportoCalProtNPT3=CalProkgNPT3 / ProtProkgNPT3.
EXECUTE.

COMPUTE RapportoCalProtNPT4=CalProkgNPT4 / ProtProkgNPT4.
EXECUTE.

COMPUTE RapportoCalProtNPT5=CalProkgNPT5 / ProtProkgNPT5.
EXECUTE.

COMPUTE RapportoCalProtNPT6=CalProkgNPT6 / ProtProkgNPT6.
EXECUTE.

COMPUTE RapportoCalProtNPT7=CalProkgNPT7 / ProtProkgNPT7.
EXECUTE.
COMPUTE RapportoCalProtTOT0=CalProkgTOT0 / ProtProkgTOT0.
```

```
EXECUTE.

COMPUTE RapportoCalProtTOT1=CalProkgTOT1 / ProtProkgTOT1.
EXECUTE.

COMPUTE RapportoCalProtTOT2=CalProkgTOT2 / ProtProkgTOT2.
EXECUTE.

COMPUTE RapportoCalProtTOT3=CalProkgTOT3 / ProtProkgTOT3.
EXECUTE.

COMPUTE RapportoCalProtTOT4=CalProkgTOT4 / ProtProkgTOT4.
EXECUTE.

COMPUTE RapportoCalProtTOT5=CalProkgTOT5 / ProtProkgTOT5.
EXECUTE.

COMPUTE RapportoCalProtTOT6=CalProkgTOT6 / ProtProkgTOT6.
EXECUTE.

COMPUTE RapportoCalProtTOT7=CalProkgTOT7 / ProtProkgTOT7.
EXECUTE.

COMPUTE RapportoCalProtNE0=CalorieNE0 /ProteineNE0.
EXECUTE.

COMPUTE RapportoCalProtNE1=CalorieNE1 / ProteineNE1.
EXECUTE.
```

```
COMPUTE RapportoCalProtNE2=CalorieNE2 / ProteineNE2.
EXECUTE.

COMPUTE RapportoCalProtNE3=CalorieNE3 / ProteineNE3.
EXECUTE.

COMPUTE RapportoCalProtNE4=CalorieNE4 / ProteineNE4.
EXECUTE.

COMPUTE RapportoCalProtNE5=CalorieNE5 / ProteineNE5.
EXECUTE.

COMPUTE RapportoCalProtNE6=CalorieNE6 / ProteineNE6.
EXECUTE.

COMPUTE RapportoCalProtNE7=CalorieNE7 / ProteineNE7.
EXECUTE.

T-TEST GROUPS=coorte(0 1)
  /MISSING=ANALYSIS
  /VARIABLES=RapportoCalProtNPT0 RapportoCalProtNPT1
RapportoCalProtNPT2 RapportoCalProtNPT3 RapportoCalProtNPT4
RapportoCalProtNPT5 RapportoCalProtNPT6 RapportoCalProtNPT7
  /CRITERIA=CI(.95).

T-TEST GROUPS=coorte(0 1)
  /MISSING=ANALYSIS
```

```
  /VARIABLES=RapportoCalProtTOT0 RapportoCalProtTOT1
RapportoCalProtTOT2 RapportoCalProtTOT3 RapportoCalProtTOT4
RapportoCalProtTOT5 RapportoCalProtTOT6 RapportoCalProtTOT7
  /CRITERIA=CI(.95).


T-TEST GROUPS=coorte(0 1)
  /MISSING=ANALYSIS
  /VARIABLES=RapportoCalProtNE0 RapportoCalProtNE1 RapportoCalProtNE2
RapportoCalProtNE3 RapportoCalProtNE4 RapportoCalProtNE5
RapportoCalProtNE6 RapportoCalProtNE7
  /CRITERIA=CI(.95).


DATASET ACTIVATE Dataset1.
T-TEST GROUPS=Coorte(0 1)
  /MISSING=ANALYSIS
  /VARIABLES=XoPESO0pc XoCC0pc XoLUNG0pc
  /CRITERIA=CI(.95).
```