

National neonatal infection guidance

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Late onset infection

- Risk groups

 - Preterm

 - “surgical” babies

- Gram-negative (GNB) bacteria account for 20-40% infections

- May reflect poor infection control

Background

- 15% UK NNUs investigated for infection control issues
- 12%/year close
- Antimicrobial Resistance and Health Care Associated Infection (ARHAI) group tasked by DH with formulating a framework for practice
 - Neonatal G-Negative infection sub-group

Defining an outbreak

- Two or more sterile site isolates of the same species with the same antibiogram, from different babies, within 2 weeks
- Triggers:
 - > 3 babies colonised with same GNB
 - Single case of rare GNB
 - Single case of ESBL or carbapenem resistant GNB
 - Single case of *pseudomonas aeruginosa*

Prevention

- Hand hygiene
- Staffing
- Cot spacing
- Equipment and environmental contamination

Infection reduction care bundles

- The Matching Michigan programme
 - 3 main interventions

● Technical

- Chlorhexidine Skin cleansing

● Educational

- Training on aseptic techniques

● Behavioural

- Root cause analysis for every positive blood culture

Benchmarking: Neonatal infection data collecting systems

● UK neonatal Badger system

- Ad-hoc form on patient home page

- Data to be submitted to National DH/HPA surveillance program for HCAs in all ICUs - Infection in Critical Care Quality Improvement Programme (ICQIP)

● NeonIN

● Vermont-Oxford Network's (VON's) Fight Bacterial Infection programme

Antibiotic stewardship programmes

NICE antibiotic guideline

- stop antibiotics after 36 hours, in culture-negative babies with no on-going evidence of infection
- Rationalise antibiotic choice for babies with proven infection
- Limit use of broad-spectrum antibiotics
- Write proposed duration on prescription chart
- Write reason for antibiotics on chart
 - Pharmacists can help police prescribing

Prolonged Duration of Initial Empirical Antibiotic Treatment Is Associated With Increased Rates of Necrotizing Enterocolitis and Death for Extremely Low Birth Weight Infants

- 5693 ELBW
- 19 centers
- Median days empirical antibiotics = 5 days (1-36 days)
- 53% received antibiotics for >5 days

Increased odds of NEC or death with each empirical treatment day

**Cotton MC, Taylor S, Stoll B, et al and the NICHD Neonatal Research Network
Pediatrics 2009;123;58-66 DOI: 10.1542/peds.2007-3423**

Infection prevention in the neonate

- Early feeds with Mother's own Breast milk
- On 1st day of life in all babies where possible

Late-Onset Septicaemia in a Norwegian National Cohort of Extremely Premature Infants Receiving Very Early Full Human Milk Feeding.

Ronnestad A et al, Pediatrics: 2005; 115:e269-e276

All Norwegian infants <1000g, GA <28wks, born 1999-2000
N=464

● 1st feed:

61% <24 hrs

92% <48 hrs

● Full enteral feeds

80% <14 days, 92% <21 days

(92% MEBM, 6% DEBM, 2% PTF)

● Associations

Late onset infection risk if FEF not established within 2 weeks RR 3.3 (2.0-6.9)

Late-Onset Septicaemia in a Norwegian National Cohort of Extremely Premature Infants Receiving Very Early Full Human Milk Feeding.

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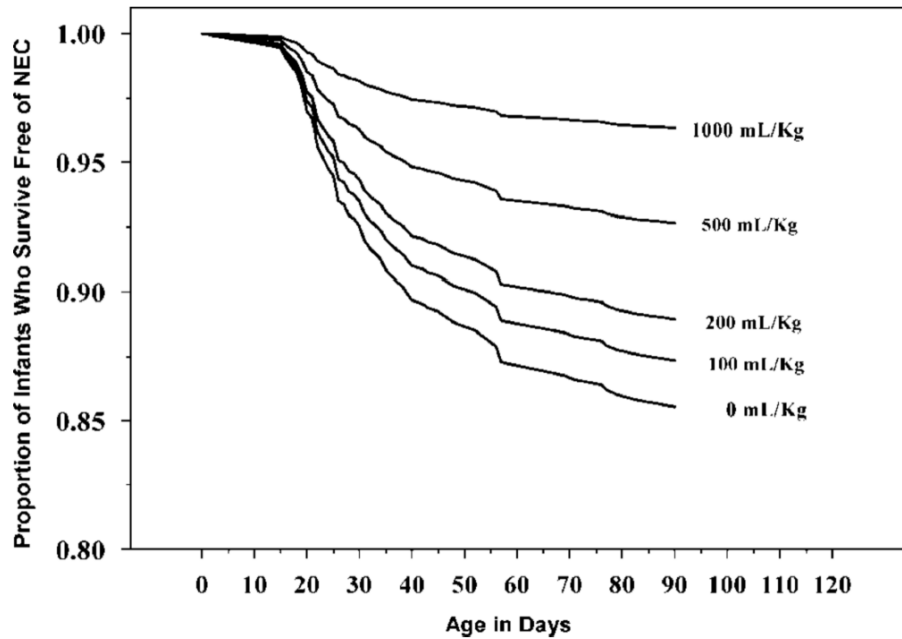
- All Norwegian infants <1000g, GA <28wks, born 1999-2000
- Number = 464
- Possible NEC 19 (4%)
- Confirmed NEC 9 (2.2%)

Role of human milk in extremely low birth weight infants' risk of necrotizing enterocolitis or death

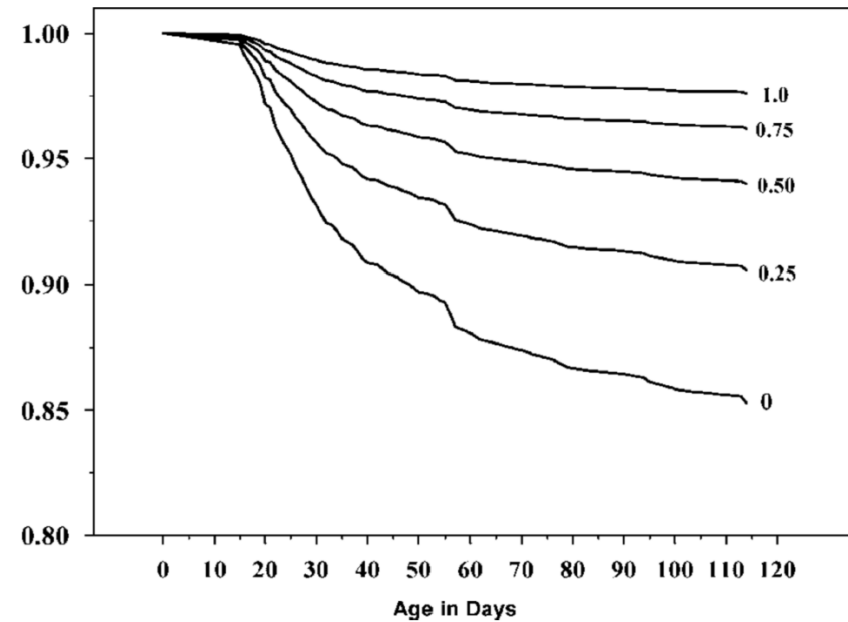
J Meinen-Derr¹, B Poindexter², L Wrage³, AL Morrow¹, B Stoll⁴, EF Donovan¹, and the National Institute of Child Health and Human Development Neonatal Research Network

J Perinatol. 2009 January ; 29(1): 57–62.

Total breast milk over first 14 days



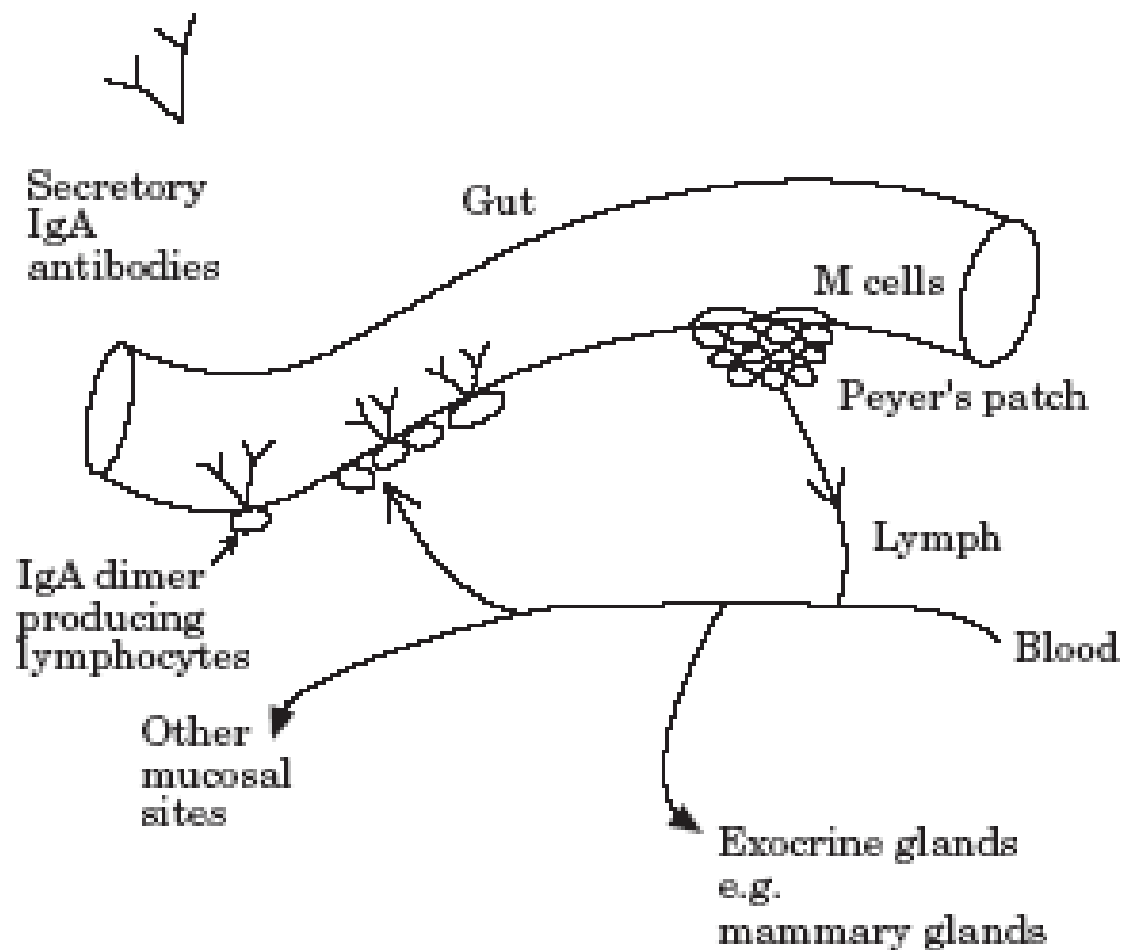
Proportion of breast milk in total intake



The role of breastfeeding in prevention of neonatal infection

Lars Å. Hanson^a and Marina Korotkova^b

Semin Neonatol 2002; 7: 275–281



Screening

- All NICUs screen for MRSA
- Rectal swabs for GNB weekly in 21% NICUs
 - may need to be more frequently in outbreak

Management of outbreaks

- Reporting
- Involvement of families
- Hand hygiene
- Staffing & cot spacing
- Environmental sampling & decontamination
- Patient screening
- Patient management

Summary - Infection prevention in the neonate

- Surveillance systems
- Prevention
 - Infection control – Matching Michigan programme
 - Minimise crowding
 - 1:1 ICU; 1:2 HDU; 1:4 SCBU
 - Careful use of indwelling catheters and PN
 - Early feeds with Mother's own Breast milk
- Careful use of antibiotics – “Antibiotic stewardship”
 - Avoid prophylaxis
 - Stop if no evidence of infection
 - Avoid broad spectrum antibiotics

Critical systematic review of the level of evidence for routine use of probiotics for reduction of mortality and prevention of necrotizing enterocolitis and sepsis in preterm infants

Walter A. Mihatsch^{a,*}, Christian P. Braegger^b, Tamas Decsi^c, Sanja Kolacek^d, Hartmut Lanzinger^e, Benjamin Mayer^f, Luis A. Moreno^g, Frank Pohlandt^h, John Puntisⁱ, Raanan Shamir^j, Ulrich Stadtmüller^k, Hania Szajewska^l, Dominique Turck^m, Johannes B. van Goudoever^d

