

# Breast pump trial – preterm infants

**TITLE:**

**Randomized Trial Comparing the Efficacy of a Novel Manual Breast Pump With a Standard Electric Breast Pump in Mothers Who Delivered Preterm Infants**

**AUTHORS:**

Mary S Fewtrell, MD, FRCPCH, Penny Lucas, SRN, RSCN, Sharon Collier *et al.*  
MRC Childhood Nutrition Research Centre, Institute of Child Health, London, England

**SOURCE:**

*Paediatrics* : Paediatrics Vol 107 No 6 June 2001

**Method:**

**145 women who delivered infants of <35 weeks gestation were randomised to use either the MP (n=74) or EP (n=71).**

Mothers were asked to complete a form each time they expressed milk recording the amount of milk produced and time taken.

Milk production was measured over a fixed 20 minute period of expression during the second week post-partum, and at 7- 10 days postpartum, mothers were asked to complete a questionnaire about their assigned pump. Research nurses collected information on the infants' progress each day.

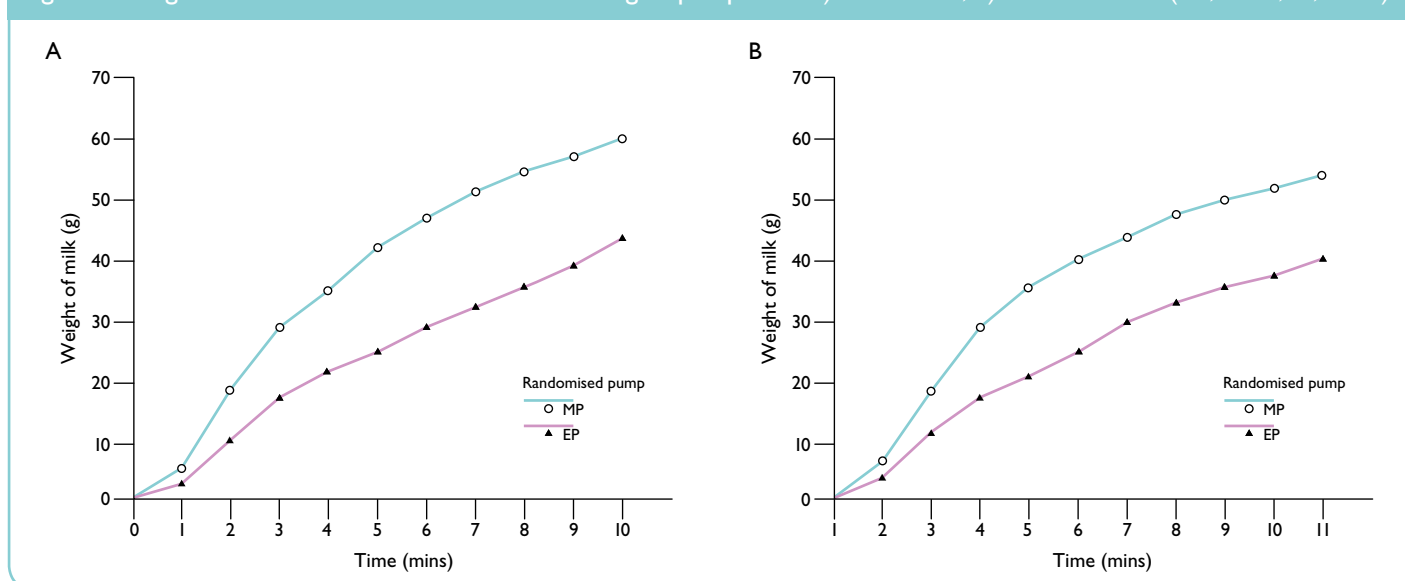
**The primary outcome measurement was the total volume of milk expressed by the mother during the trial** and the secondary outcome measures were:

- the volume of milk expressed in a set 20 minute period during the second week postpartum.
- the time taken to express a designated volume of milk during the second week postpartum.
- the creatatocrit (fat content) of milk expressed during the set

**Study Objective:**

**To compare the efficacy of a standard hospital grade electrical pump used in 94% of UK neonatal units at the time (EP; Egnell Ameda Elite Pump) versus a novel manual pump (MP; Philips AVENT Manual Pump).**

Figure 1: Weight of milk at 1 minute intervals according to pump used A) first breast, B) second breast (MP, n=24; EP, n=21)





period in the second week postpartum.

- maternal ratings on the pump characteristics (ease of use, amount of suction, comfort, pleasant to use and overall opinion of pump).

#### Results:

- The total milk production over the whole study period was similar in the two groups, although mothers who used the EP and double pumped showed shorter expression times than mothers that used the MP (single pumping).
- When mothers who were using the MP were compared with mothers who were using the EP and who double pumped exclusively, the calculated milk output per breast per minute for the whole study was higher in the MP group (3.1 ml/breast/min [SD = 2.5] vs 2.4 ml/breast/min [SD = 1.9]; P = 0.2), and the estimated time spent expressing per session if sequential rather than double pumping had been used was significantly lower in the MP group (20 minutes [SD = 6] vs 25 minutes [SD = 9]; P = 0.004).
- When compared on equal terms with both groups of mothers expressing milk sequentially over a fixed period of 20 minutes at a mean of 11 days (SD = 2.5) postpartum, mothers using the MP showed a significantly greater milk flow and volume expressed, (112ml [SD = 69] for MP versus 76 ml [SD = 44] for EP), suggesting a quicker let-down. In addition, the volume of milk expressed was higher at each measurement time point for mothers using the MP than the EP. (Please refer to Figure 1)

- Creamatocrit was unaffected by pump type.
- Similar proportions of mothers from each pump group developed sore nipples (7% both groups) or engorgement (4% MP vs 6% EP). Similar numbers of infants from each group developed necrotizing enterocolitis (4 MP vs 5 EP).
- Results from the consumer questionnaire showed that the MP significantly outperformed the EP in all 5 categories; 'ease of use', 'amount of suction', 'comfort' and 'pleasant to use' and 'overall opinion'. (Please refer to Table 1)

#### Conclusion:

The authors concluded that, despite its significantly lower cost, the MP showed similar efficacy to the EP in everyday clinical practice. Furthermore, when compared on equal terms (sequential pumping), mothers who were using the MP showed greater milk flow and produced more milk in a fixed time period, perhaps reflecting a more physiologic pump design.

Table 1: Results of Breast Pump Questionnaire: Numbers are the percentages of mothers in each pump group awarding each score. For each parameter, 1 is the most favourable and 7 is the least favourable score. (MP, n=58; EP, n=49)

Parameter		Score					P ( $\chi^2$ )
		1	2	3	4	5	
Ease of use	MP	43	41	9	7	0	0.03
	EP	33	27	25	10	6	
Amount of suction	MP	26	47	14	10	4	0.05
	EP	29	24	25	16	10	
Comfort	MP	29	43	9	17	1	0.003
	EP	12	25	29	25	7	
Pleasant to use	MP	24	35	17	21	3	0.01
	EP	6	20	27	37	10	
Overall opinion	MP	26	47	19	5	3	0.003
	EP	12	22	41	18	6	