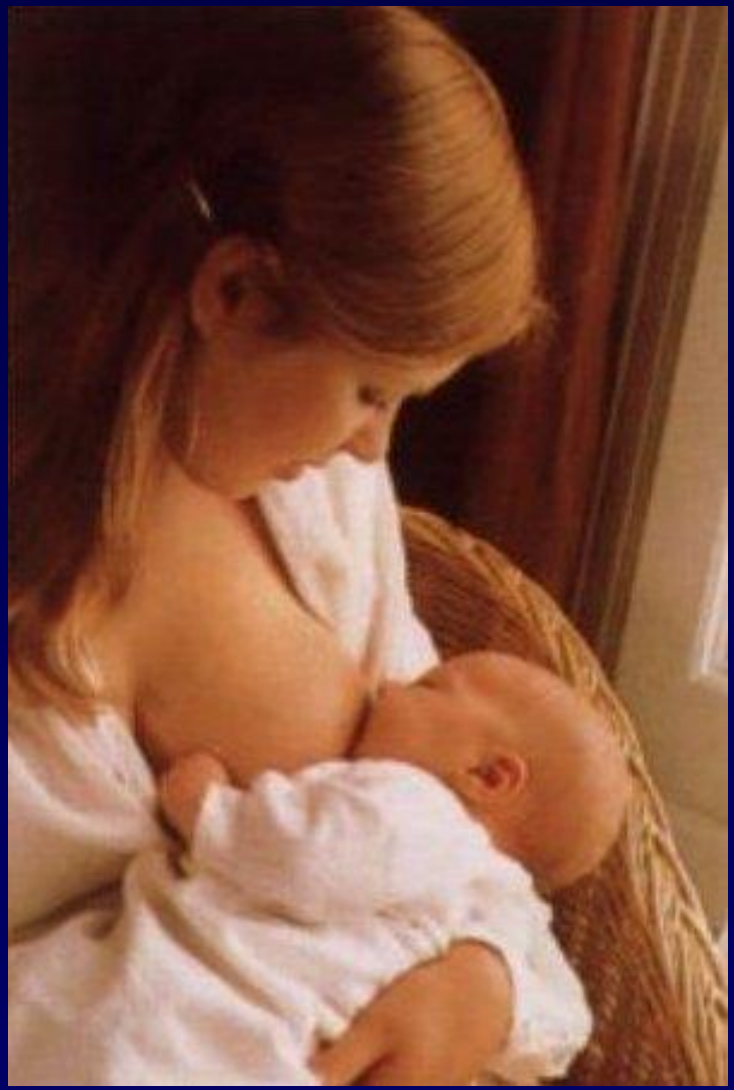
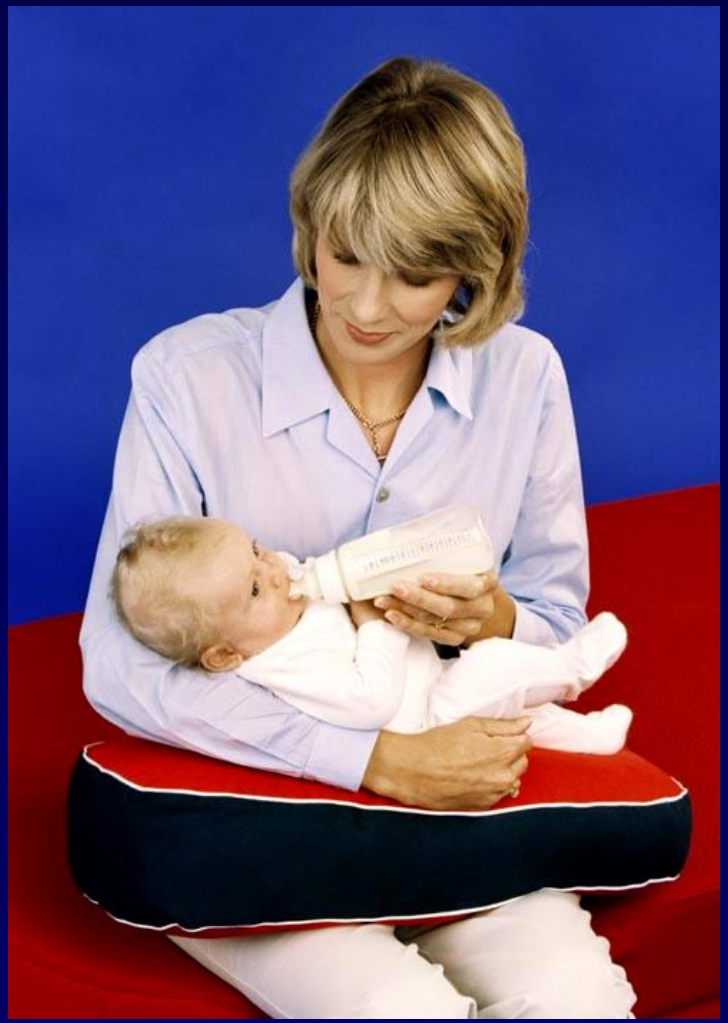
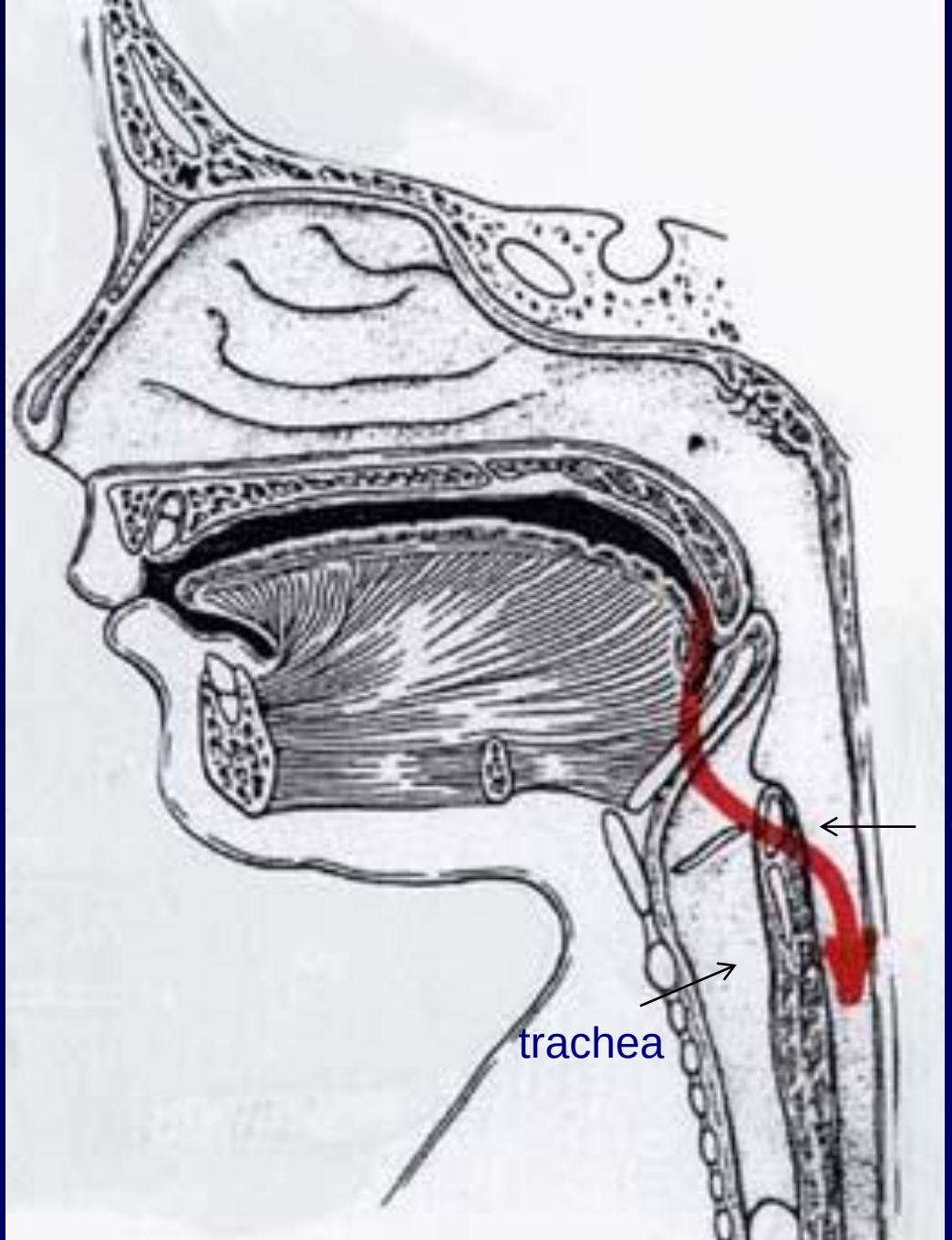
"Up to eat"

Avital A, Donchin M, Springer C, Cohen S, Danino E

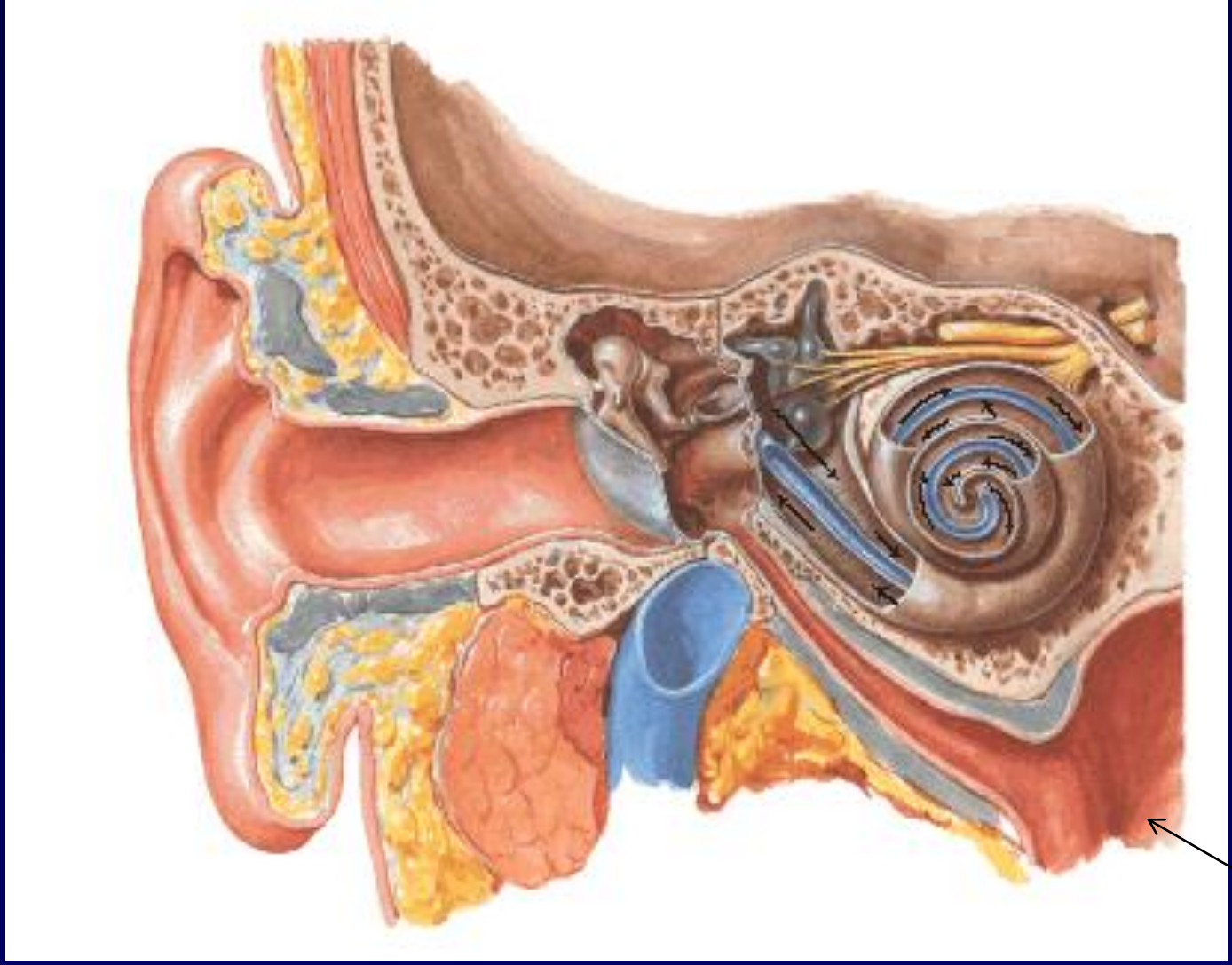
Hadassah EK, Jerusalem



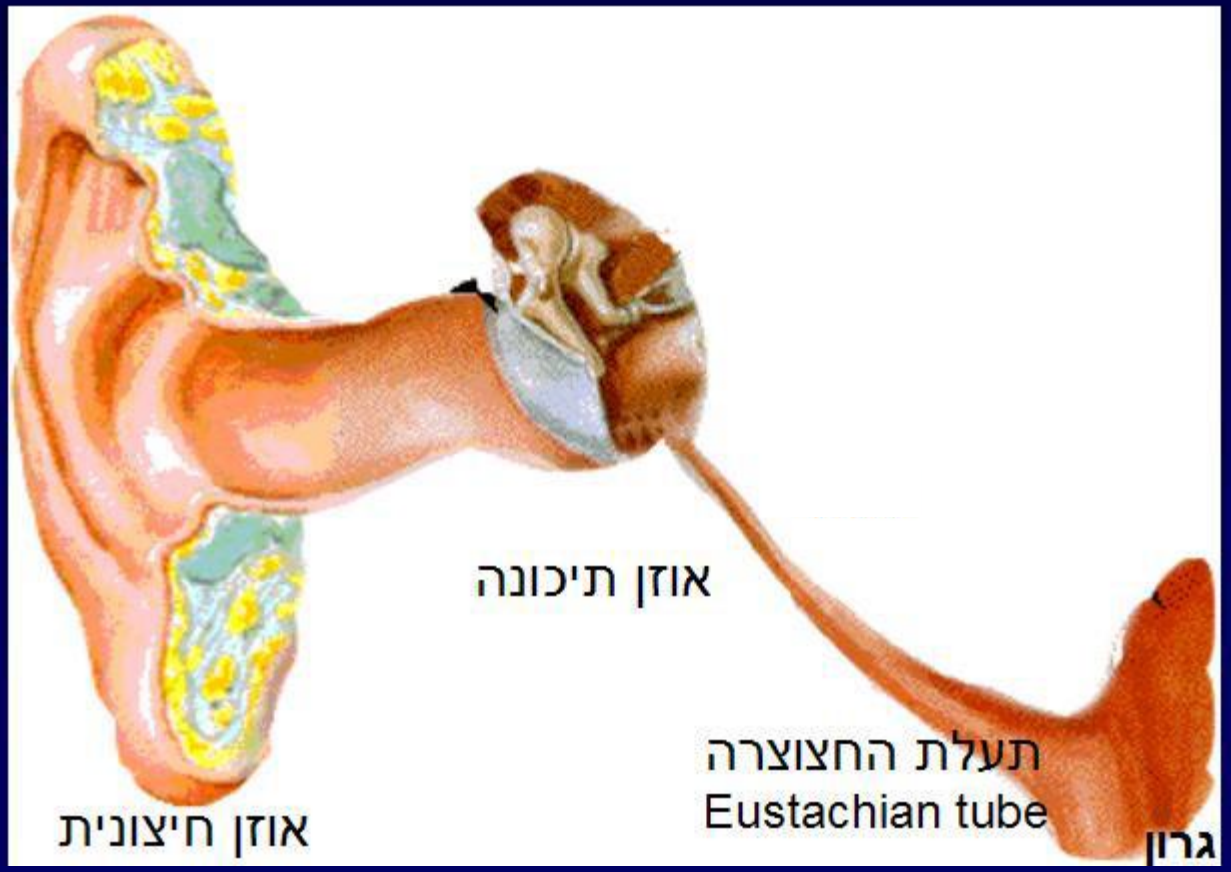



esophagus
trachea

The ear



external **middle** **internal**



Eustachian tube angle

adults 27.3 ° ± 2.7°

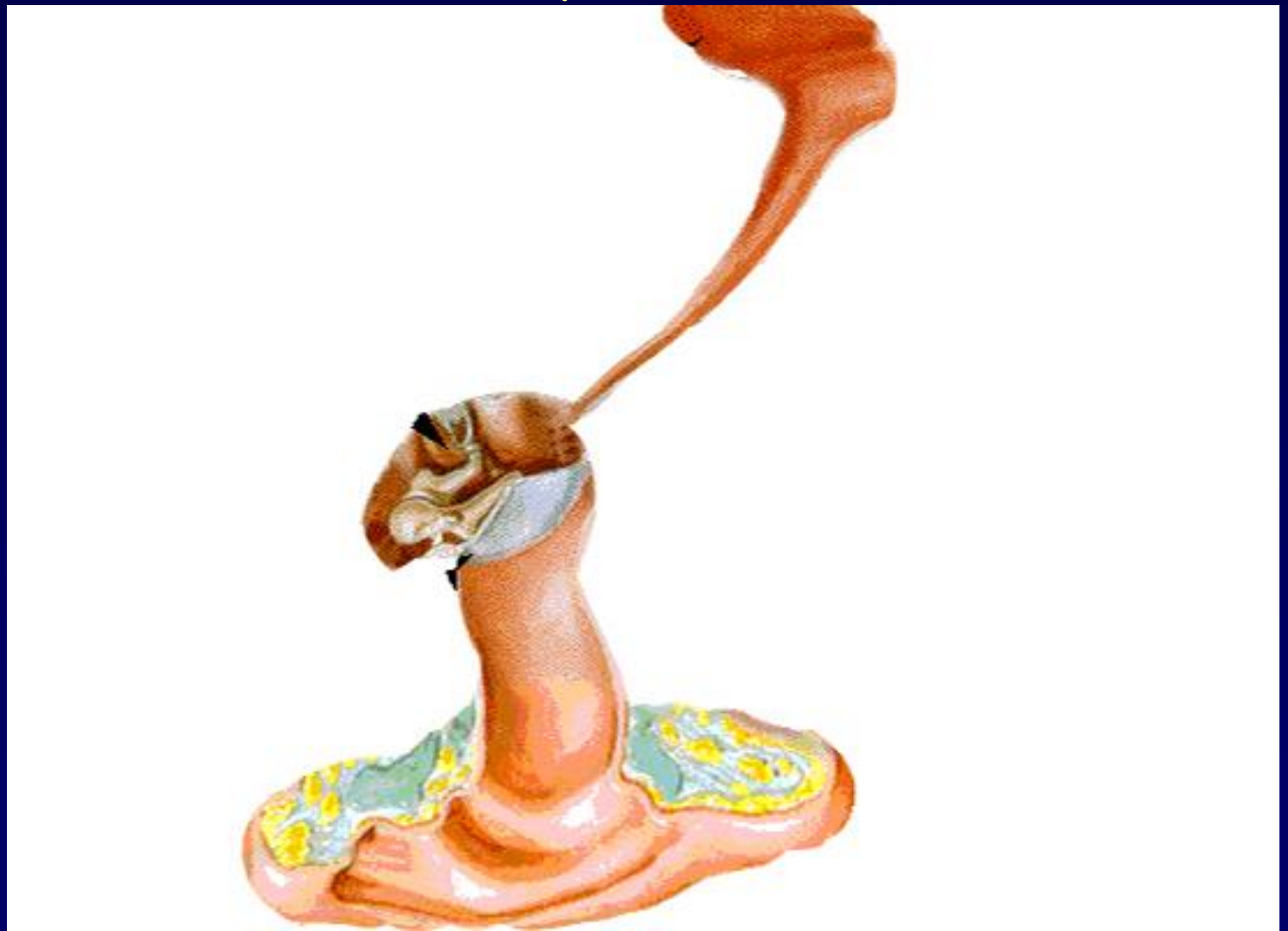
children 21.2° ± 4.8 °

head angle 30º

45º head angle

60º head angle

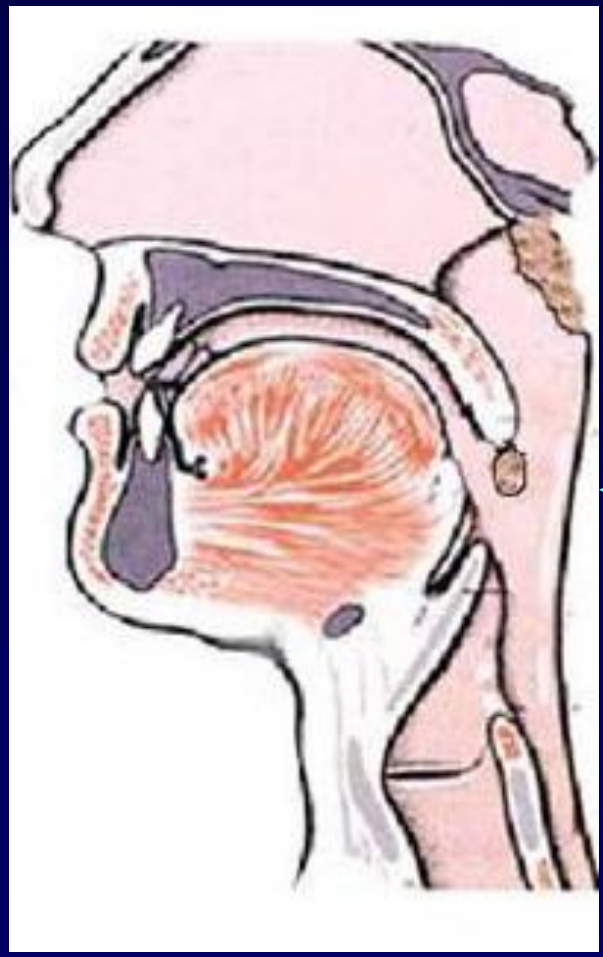
In supine position, liquid formula will enter freely the middle ear

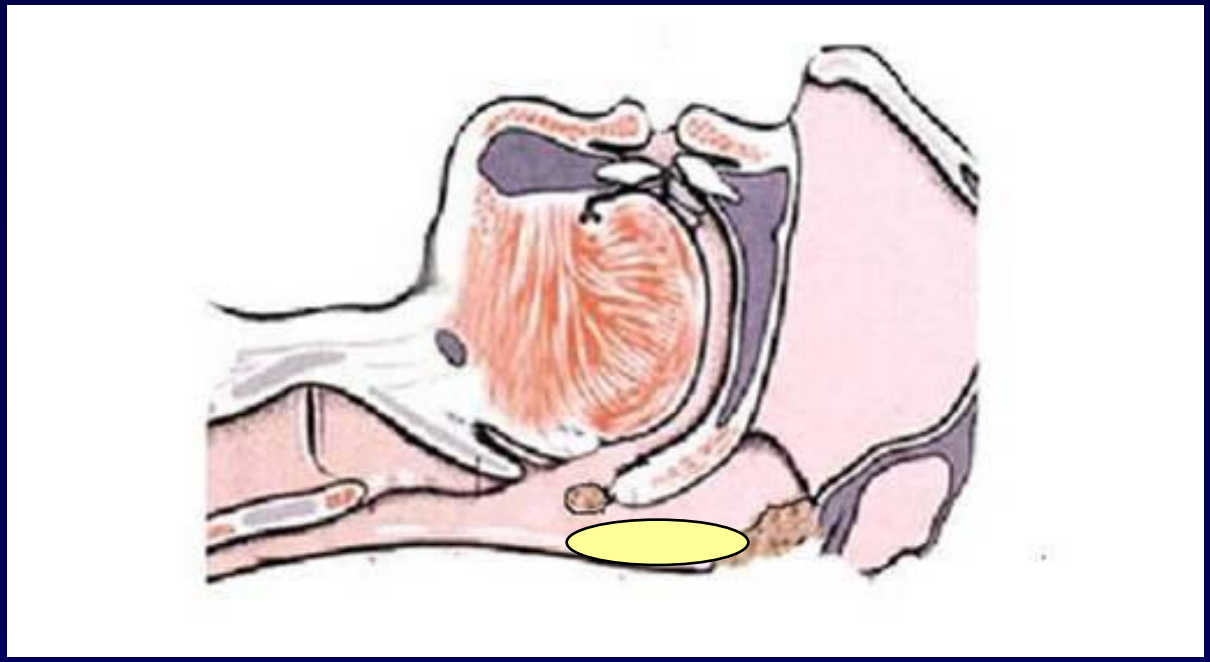


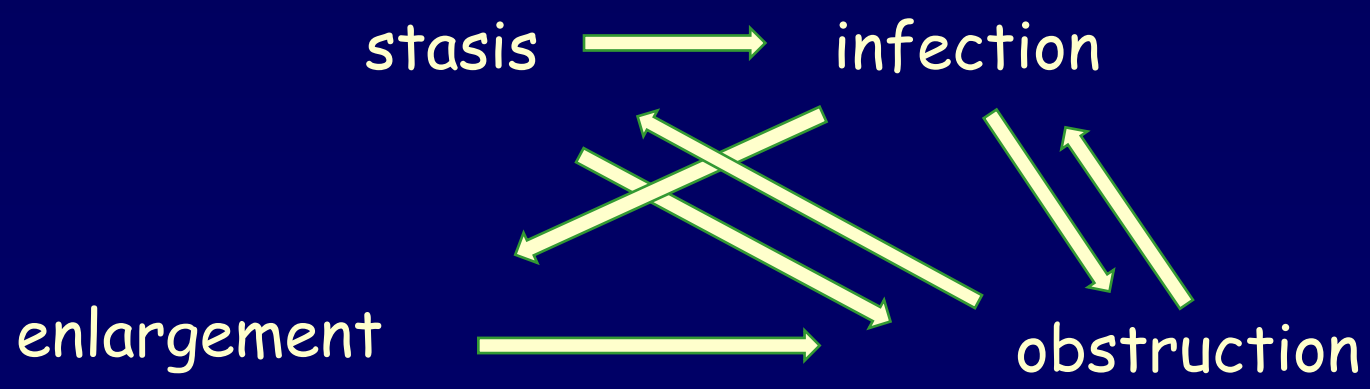
Middle ear and feeding position

- early sixties "positional otitis"

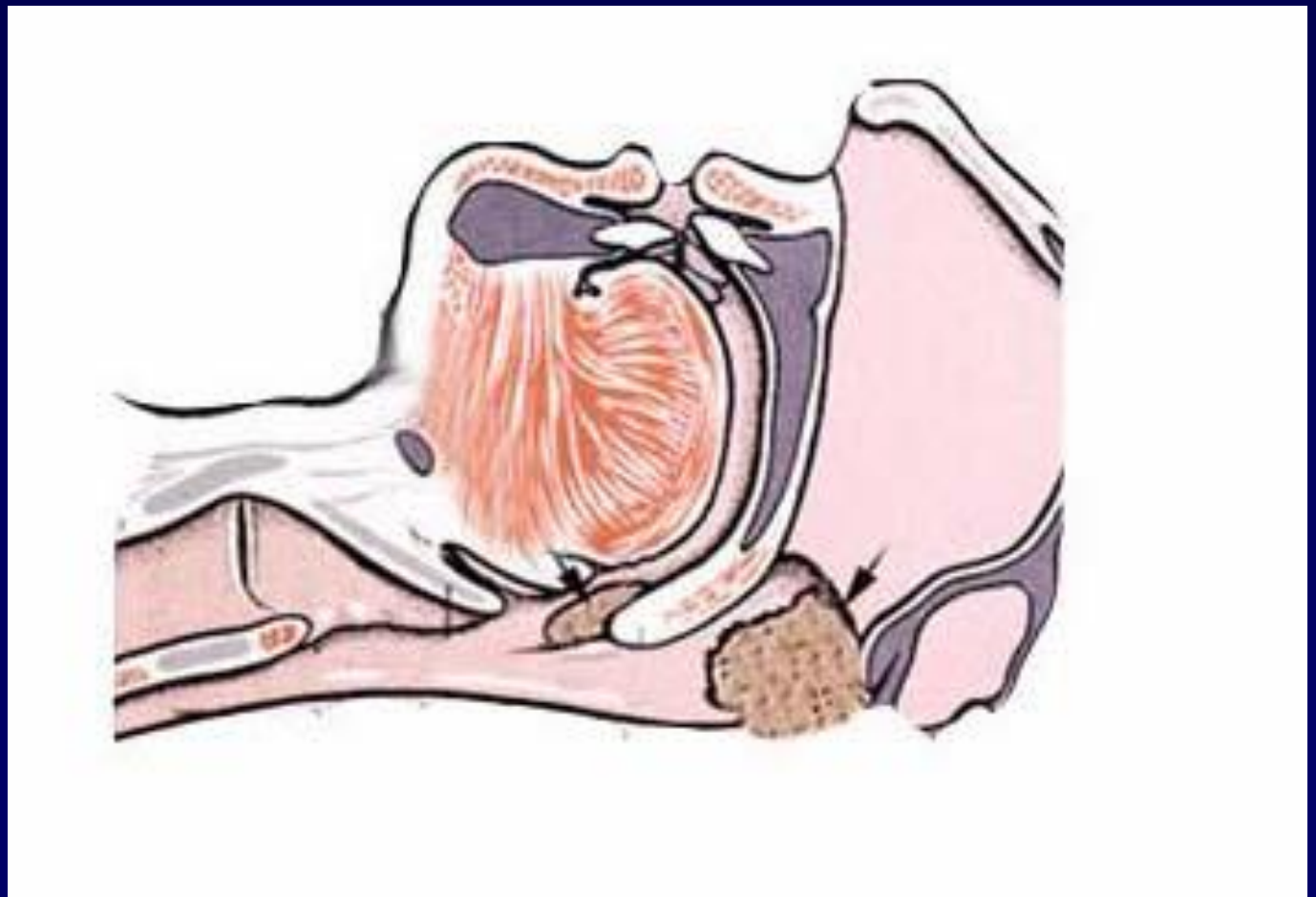
- 1995, Tully SB, J Pediatr. 1995, 126(6):S105-11
- 90 healthy 7-24 m children, normal tympanogram,
- after eating 1 single bottle of milk
  - supine 59.6% abnormal tympanogram
  - semi-supine 15% abnormal tympanogram
  - back to normal after 30 min


adenoids
tonsils



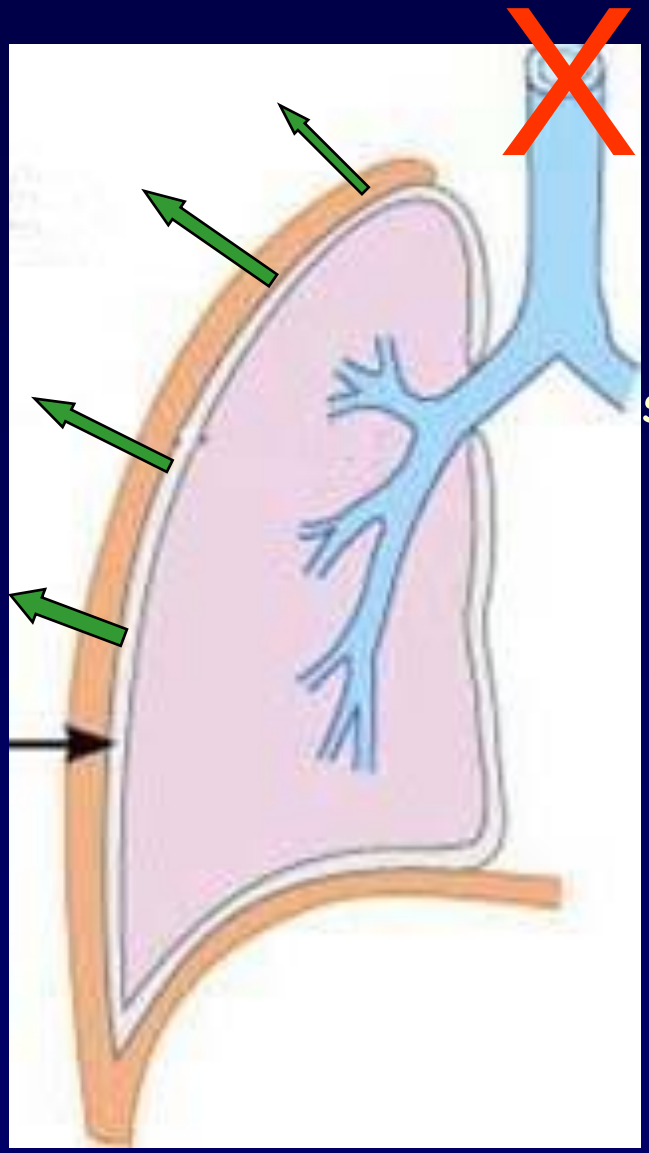

stasis
infection
enlargement
obstruction

adenoid then tonsillar hypertrophy



adenoid hypertrophy

Upper airway obstruction



increased intrapleural negative pressure

Konno A, Laryngoscope 1980, 1709-16

19children with adeno-tonsillar hypertrophy

sleep study before & after surgery

1. esophageal pressure X 4-6!!

2. lipiodol into oropharynx:

before surgery: aspiration in 8/10

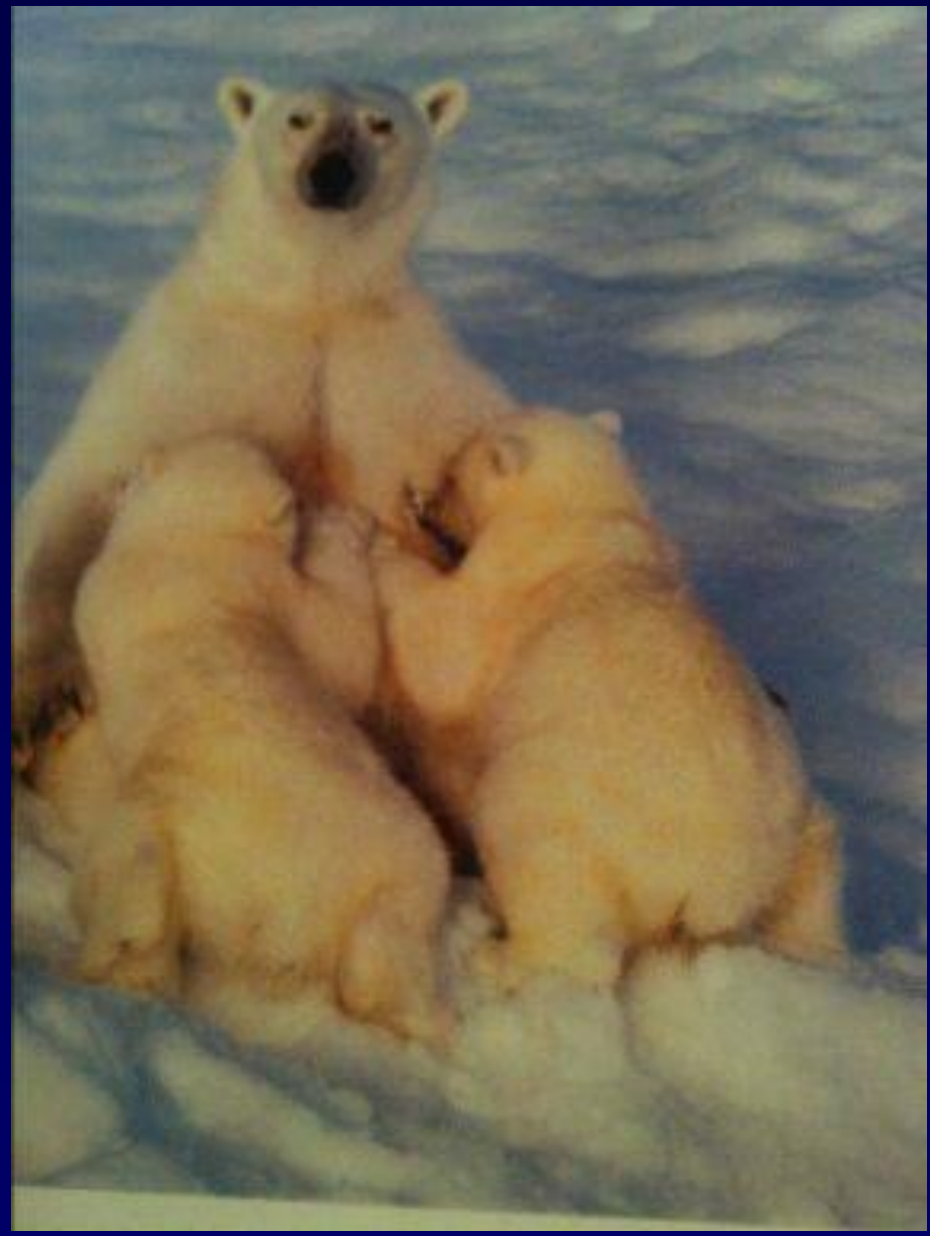
after surgery: aspiration 1/10

"adenoid bronchosinusitis"

- is there any connection between
  - feeding position of the infant and
  - respiratory and ENT morbidity

???

What happens in nature?



hypothesis

- Supine feeding cause more ENT and respiratory morbidity

Aims of study

- recruited mothers of 3 m. old babies, instructed about feeding their babies in upward position (intervention group).
- evaluated the change in feeding position after intervention program , compared to starting point
- evaluated different medical outcomes (respiratory, ENT, general sickness) after 3, 6, 9, 12 months of follow-up, concerning the previous month.

Methods

- Helsinki approval
- Danino E, nurse Doctorat Thesis, PhD
- Dr. M.Donchin - epidemiology
- Mother and Child Health Clinics
  - Rishon Le-zion – study group
  - Rehovot – control group
- study group: started n = 90, ended study n = 81
- control group: started n = 81, ended study n = 75

Study group protocol

- basic explanations of study at recruitment
- poster, pamphlet, nurse guidance at MCH clinics
- movie disk (12 minutes)
- diary card
- reinforcement
  - phone calls X3-4
  - SMS every month

Control group protocol

- demographic data
- feeding position at beginning and end of study
- medical outcomes during previous month preceding the 3 month follow up
- questionnaire

Collecting data

- Questionnaire
  - socio-demographic data (marital status, education, number of children, place, kindergarten)
  - position of feeding (pictures with 4 positions)
  - during day, during night
  - number of feedings
  - ergonomic measures (food, bottles, nipples)
  - morbidity (respiratory, ENT, general) during the last month

feeding positions

- 1 – supine – 0° angle

- 2 = 30°

- 3 = 45°

- 4 = 90°

Morbidity

- Respiratory
  - cough, wheeze, pneumonia, bronchitis
- ENT
  - SOM, OM
- General
  - Fever (>3 days) episodes
- *Validation* in 10% of infants of both groups, comparing parent's reports to patient's medical records

Results 1 : demographic

- compliance in filling questionnaires 94-98%
- age mother p=0.7, age father p=0.6
- Mother's education p=0.13
- % married p=0.41
- number of children, more in control (2.3) than in study group (1.8)
- male/female p=0.44
- age at recruitment study 3.6 m, control 3.2 m
- no diff in who feeds, in kindergarten, at home
- no diff in ergonomic factors (breast milk, formula, bottle)

Results 2 – feeding position

- Did we succeed to change feeding position?

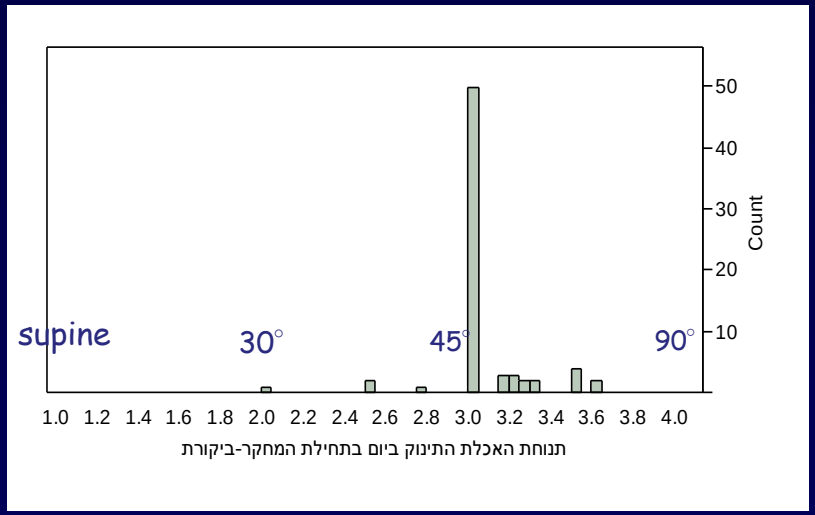
changing feeding position

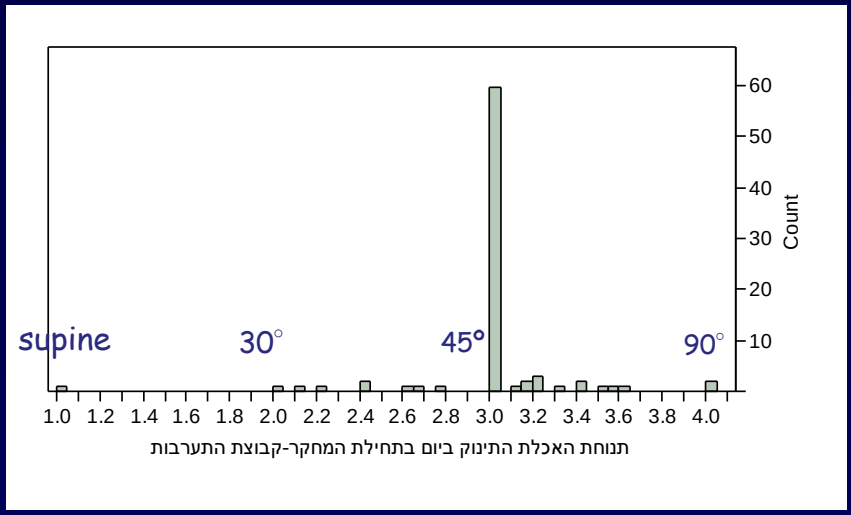
- study group : 50% at end of study improved feeding position (toward upright position)
- control group : 20% at end study worsened feeding position (toward supine position)
- during days $p<0.0001$, during nights $p<0.02$

Controls

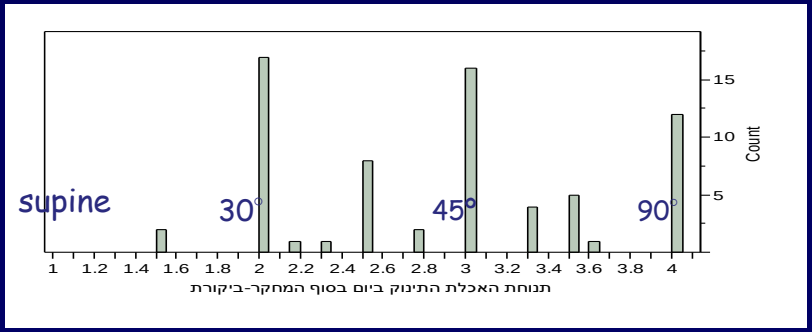
Intervention

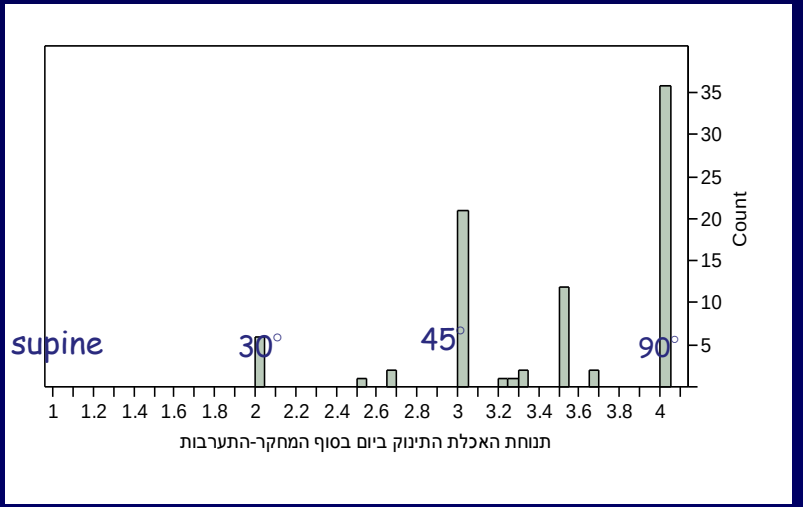
Beginning of study





End of study

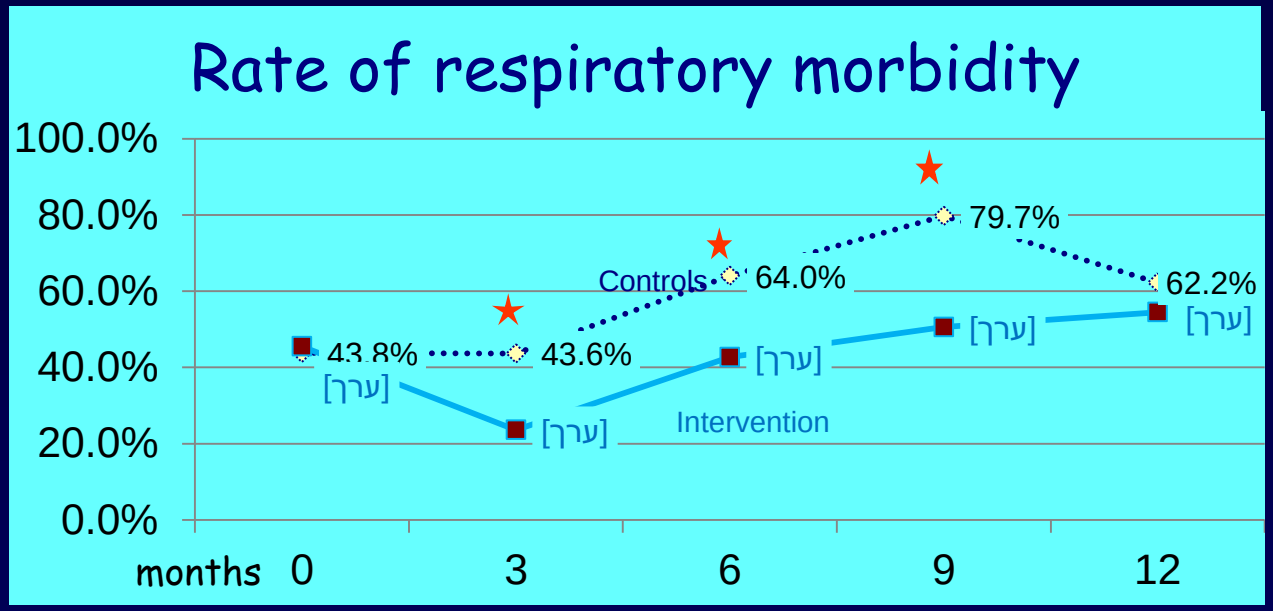


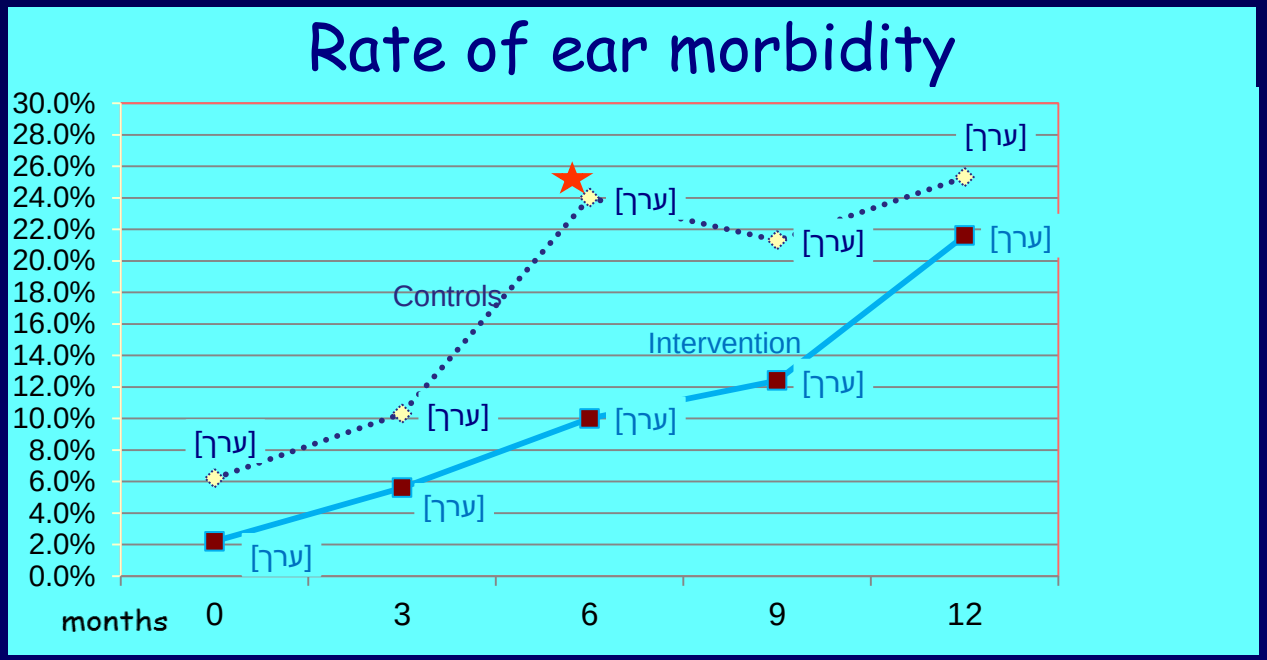


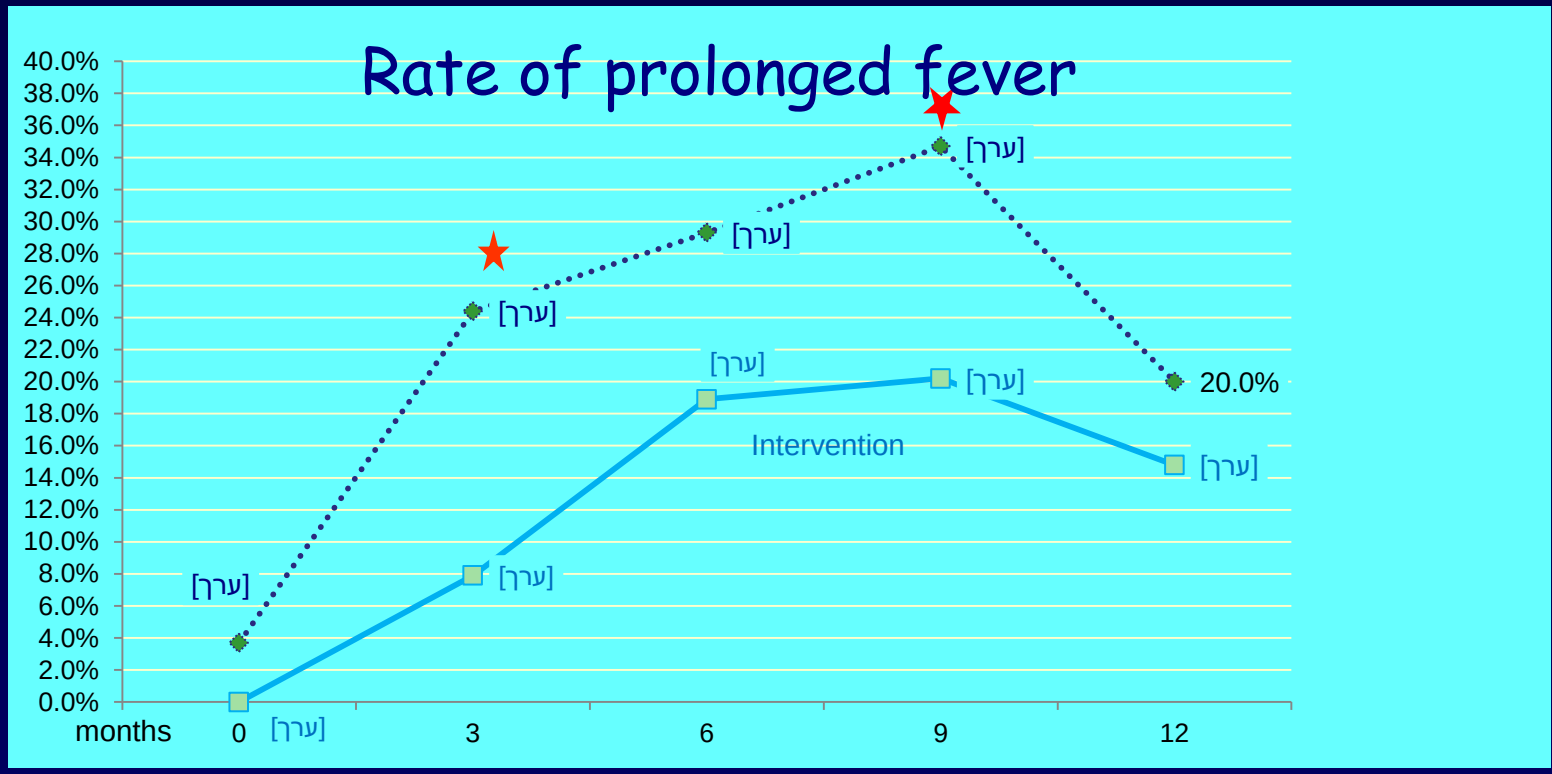
29% > 45°

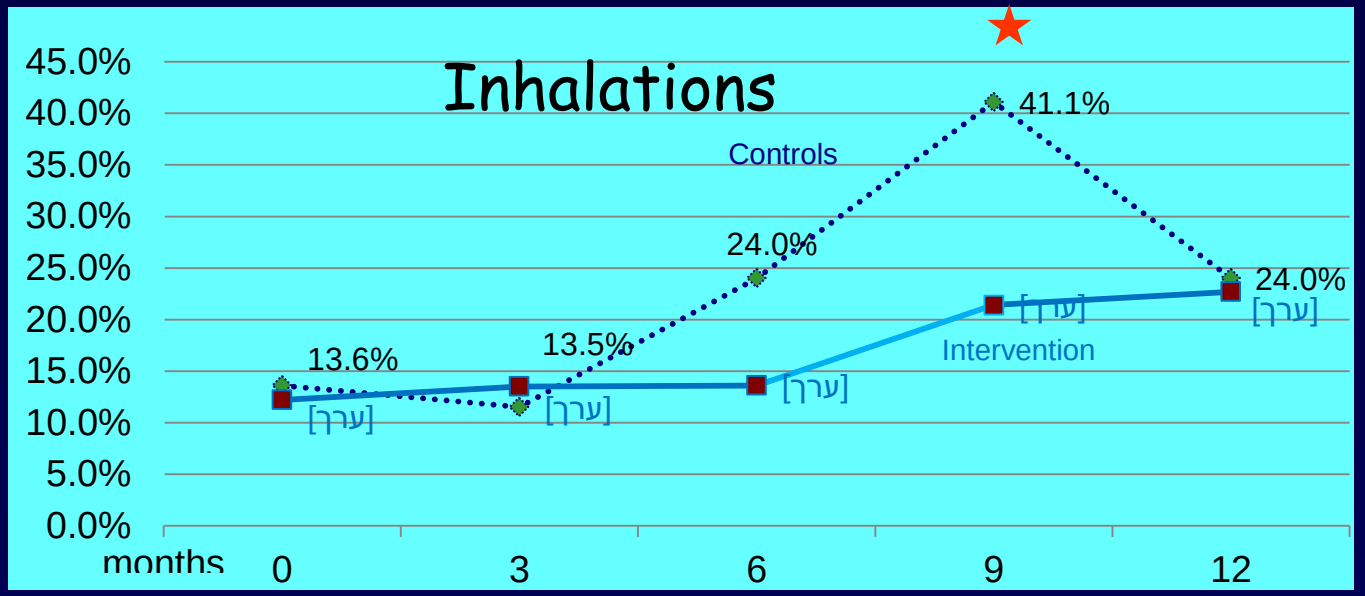
61%> 45°

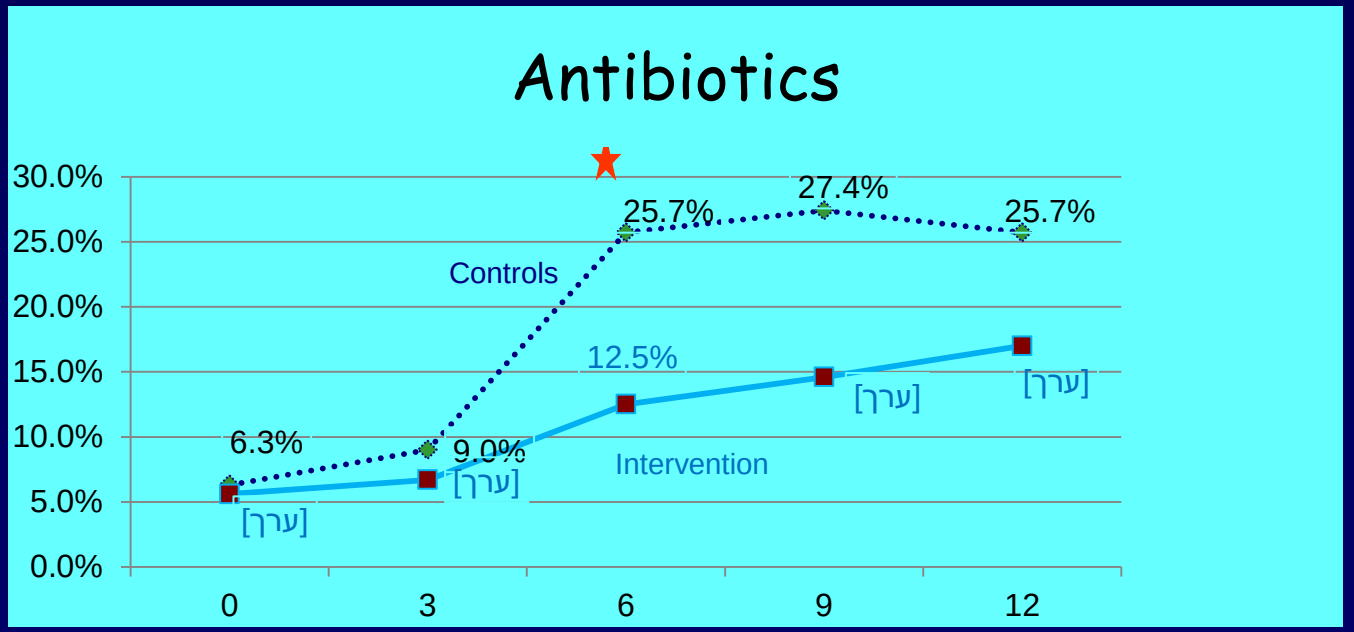
What about morbidity?


Rate of respiratory morbidity
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
months 0 3 6 9 12
Controls
43.8%
43.6%
64.0%
79.7%
62.2%
Intervention
[ערך]


Rate of ear morbidity
30.0%
28.0%
26.0%
24.0%
22.0%
20.0%
18.0%
16.0%
14.0%
12.0%
10.0%
8.0%
6.0%
4.0%
2.0%
0.0%
months 0 3 6 9 12
Controls
Intervention
[ערך]


Rate of prolonged fever
40.0%
38.0%
36.0%
34.0%
32.0%
30.0%
28.0%
26.0%
24.0%
22.0%
20.0%
18.0%
16.0%
14.0%
12.0%
10.0%
8.0%
6.0%
4.0%
2.0%
0.0%
months
0
3
6
9
12
[ערך]
20.0%
Intervention


Inhalations
45.0%
40.0%
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
months
0
3
6
9
12
Controls
13.6%
13.5%
24.0%
41.1%
24.0%
Intervention
[ערך]


Antibiotics
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
0
3
6
9
12
Controls
6.3%
9.0%
25.7%
27.4%
25.7%
Intervention
12.5%
[ערך]

Morbidity
(area under the curve)

	Intervention	Control	
	mean (SE)	mean (SE)	P
ears	0.50 (0.08)	0.81 (0.10)	**<0.01**
respiratory	1.76 (0.13)	2.49 (0.12)	**<0.001**
fever	0.63 (0.08)	1.07 (0.11)	**<0.001**
inhalations	0.71 (0.10)	1.01 (0.12)	**<0.05**
antibiotics	0.50 (0.08)	0.87 (0.11)	**<0.005**

what happens in developing countries?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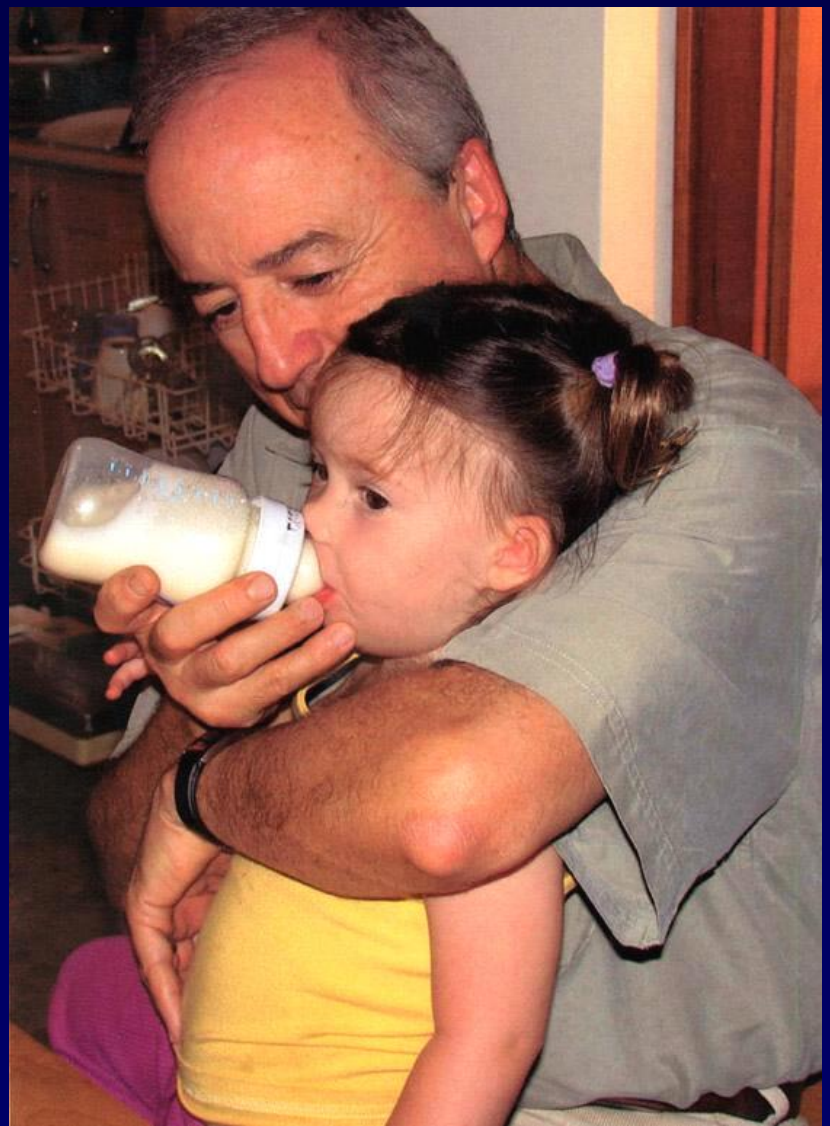
in summary,

- we have shown a positive influence of the intervention program on the habits of mothers concerning the feeding position of their infant.
- higher feeding position of the infant is accompanied with less respiratory, ENT and general sickness.
- to the famous "back to sleep" campaign, we could add "seat to eat" or "up to eat"


BACK TO SLEEP


SEAT TO EAT



- Thanks for your attention !!