

“The Water of Life” . . .

Religious, counterfeit and
sonographic interpretations

Robert A. Welch, MD, MSA

Vice-Chair for Clinical Operations – OB/GYN, DMC

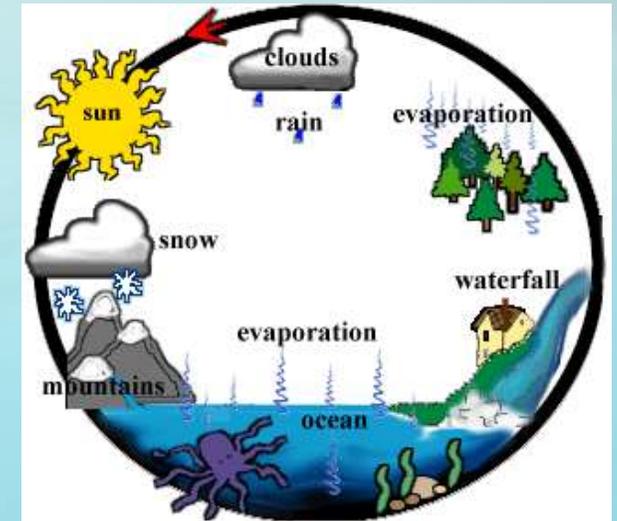
Director & Chief of Maternal-Fetal – WSU, DMC

Objectives

- Attendees will:
 - Learn about a religious interpretation of the “water of life”
 - Understand how charlatans and lay persons interpret the phrase
 - Learn about the amniotic fluid “circulation”
 - Contrast the composition of fetal and adult urine
 - Review how to measure “fetal urine output”
 - Understand syndromes and anomalies that lead to too much or too little
 - Use amniotic fluid to determine fetal lung maturity
 - Image other substances in the amniotic fluid

Context of “Water”

- Precious commodity taken for granted in our region because of its abundance (Great Lakes)
 - 75% of Earth’s surface area is covered by water
 - Free-flowing from taps and irrigation
 - Recycled naturally
 - Became bottled and sold relatively recently
- Not so abundant in Desert Southwest
- Lake Erie Algae bloom 2014
- Clean water supply not available in many areas of the World (Mexico!)



“Water” in Biblical Times

- People usually lived along rivers and streams for water supply
- Clean potable water was not abundant – a valuable commodity
- Construction of viaducts and pipes
- Because it was a valuable commodity necessary for survival, it was used as a metaphor for “bounty”
 - We hear of “Water of Life” from ancient times
 - We don’t hear of “Gold of Life” or “Silver of Life”

The Book of Revelation

- Reference to Water of Life in Revelation 22:1

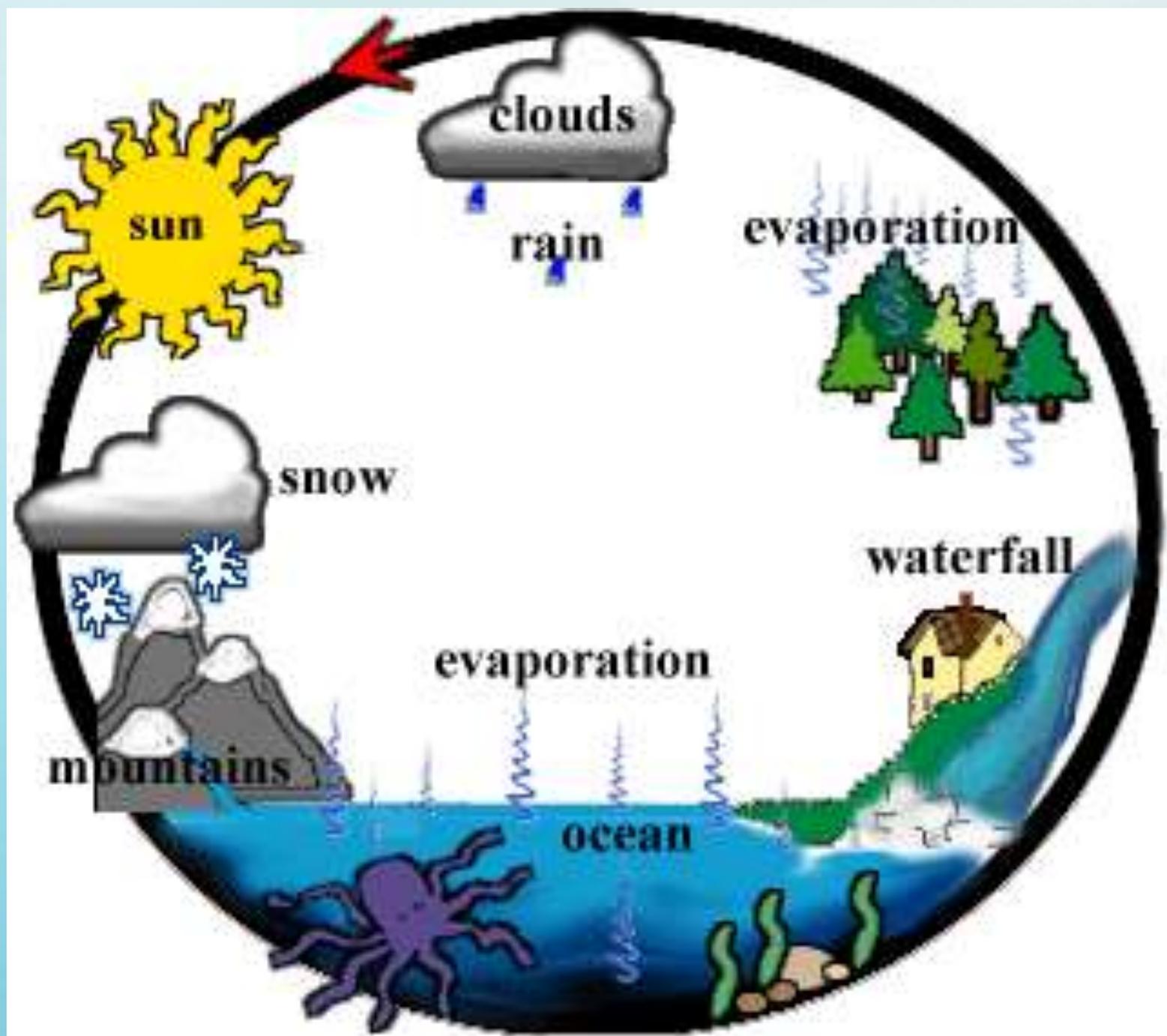
“I will give unto him that is athirst of the fountain of the water of life freely”

“And he showed me a river of water of life, bright as crystal, proceeding out of the throne of God and of the Lamb”

- Catechism of the Catholic Church considers the reference to the Water of Life as the Holy Spirit.

The Gospel of John

- Passages John 4:10–26 are referred to the “Water of Life Discourse”
- Biblical scholars consider it to be a “single theme discourse”
- Interpreted as the theme of “Christ as the Life”





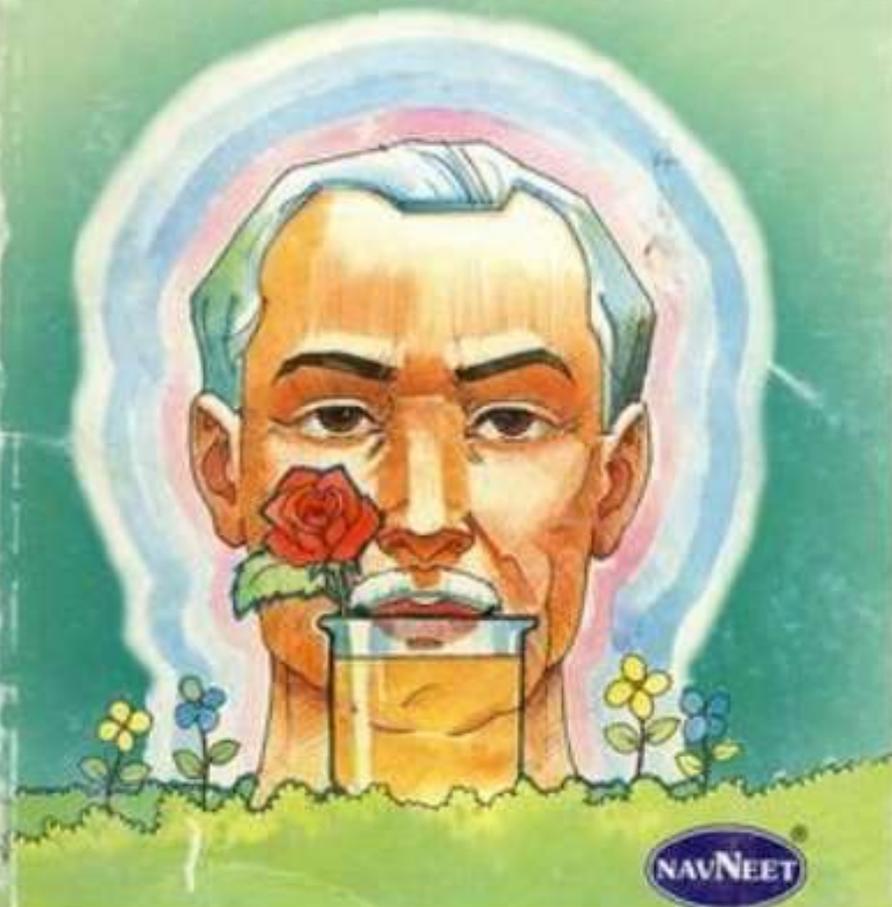
urine
10¢

Urophagia - Consumption of urine

- Promoted in several ancient cultures
 - Health
 - Healing
 - Cosmetic purposes
- Today – urine therapy known as a form of alternative medicine
- Consumed
 - Sexual activity
 - Ceremonial purposes



AUTO-URINE THERAPY



NAVNEET

AUTO-URINE THERAPY

- Has your illness resisted all kinds of treatment?
- Are there no specific medicines for your illness?
- Are you apprehensive about the side-effects of drugs?
- Have you despaired of life?

DO NOT LOSE HOPE.

HAVE RECOURSE TO AUTO-URINE THERAPY.

Our ancient Vedic works, too, have recommended the drinking of one's own urine. In the Damar Tantra, composed by Lord Shiva Himself, auto-urine has been described as 'Shivambu'. 'Shiva' means 'salubrious, or beneficial, and 'ambu' means 'water'. Thus the combined term 'shivambu' means salubrious water.

- A large number of supposedly incurable diseases have been successfully treated with self-urine. Cases of complete cure of even a disease like cancer have been recorded.
- The idea that urine is nothing but poisonous waste rejected by the body is a total misconception.
- Barring exceptional cases, fresh urine is always completely free from micro-organisms (bacteria) of all kinds.
- Urine contains hormones, enzymes, vitamins, and numerous other nutritive and curative substances.

If we can drink the urine of cows, why can't we drink our own urine? Free your mind of the misguided disgust about urine and regain your lost health.

A book containing a complete exposition of the scientific basis of AUTO-URINE THERAPY

ISBN 81-243-0191-X



G 4512

NAVNEET PUBLICATIONS (INDIA) LIMITED

MoPo.CA

MoPo.CA

MoPo.CA

MoPo.CA

MoPo.CA

Urine content

- Aqueous solution:
 - 95% water
 - Urea 9.3 g/L
 - Chloride 1.87 g/L
 - Sodium 1.17 g/L
 - Potassium 0.75 g/L
 - Creatinine 0.67 g/L
 - Other dissolved ions, inorganic and organic compounds





Beer ingredients

- Water
- Starch Source
- Hops
- Yeast
- Clarifying Agent

- Alcohol 4 – 6%

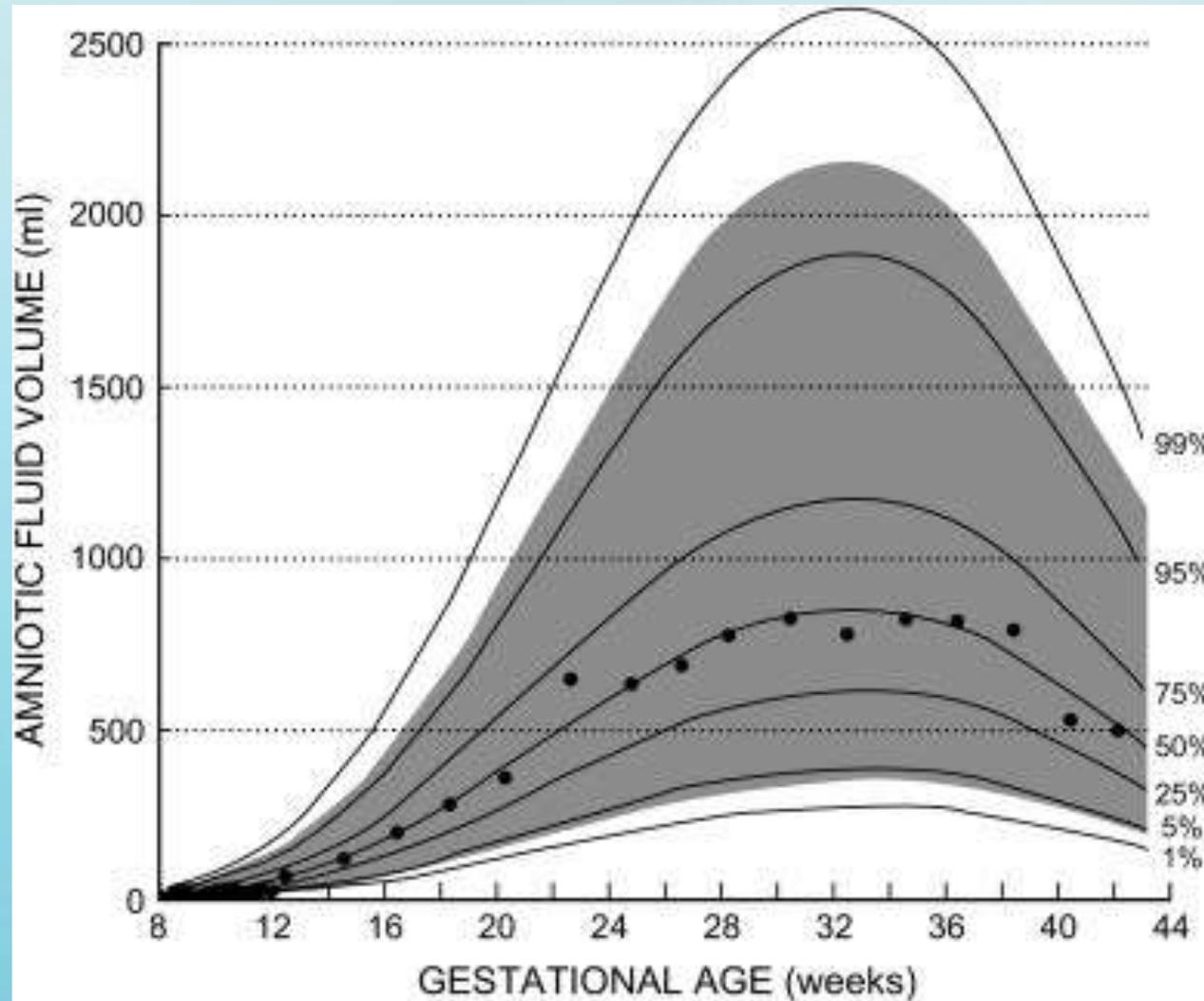




Development of amniotic fluid

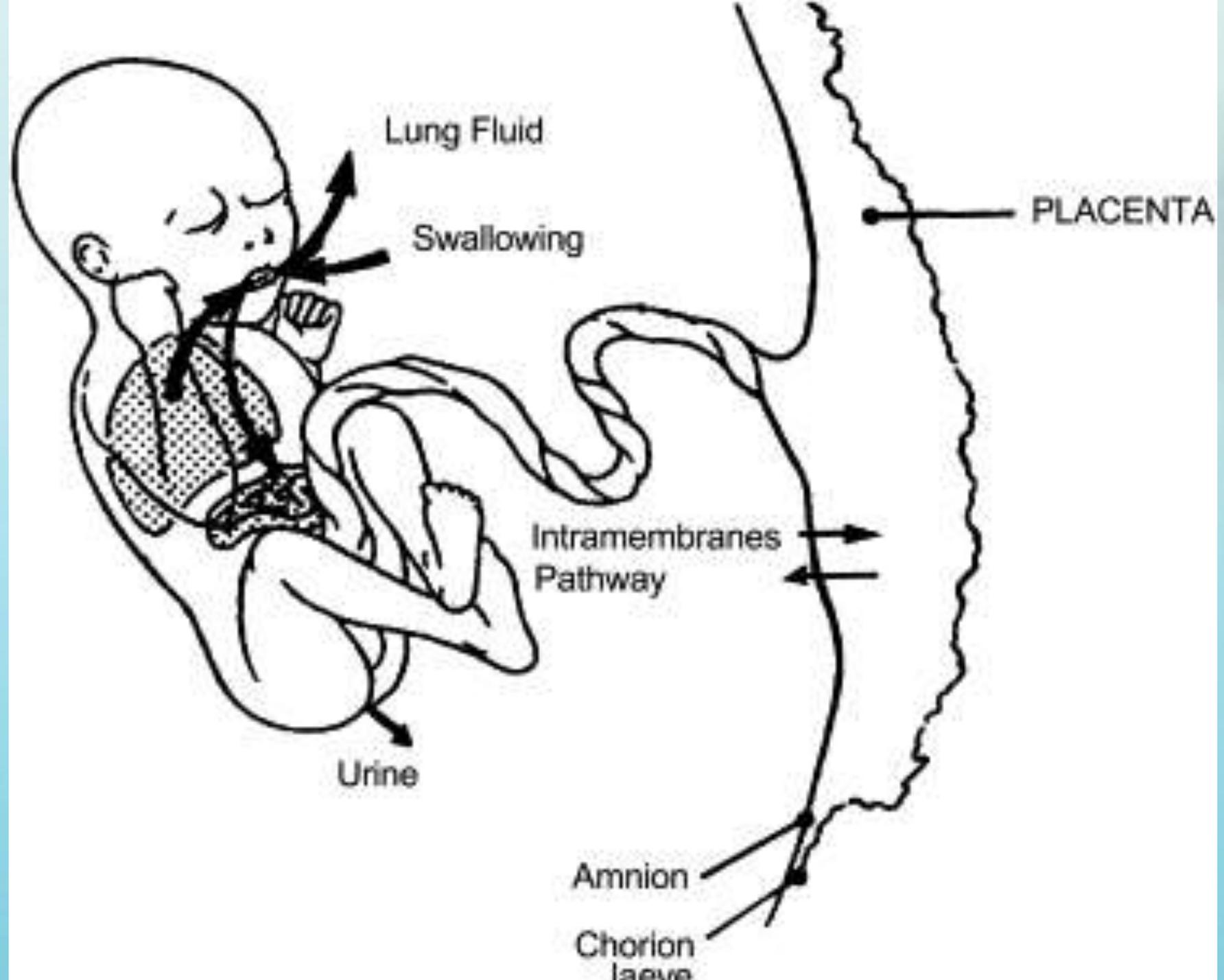
- Embryonic period of development
 - Water from maternal plasma (hydrostatic and osmotic forces)
 - 25 ml volume
 - Urine starts at around 8 weeks
 - Swallowing starts shortly thereafter
- Early fetal period
 - 400 ml by 20 weeks
 - Similar to fetal plasma (lack of keratinized epithelium)
 - Keratinization of fetal skin is complete by 25 weeks
 - By 28 weeks, volume is around 800 ml and plateaus

Amniotic Fluid Volume in Pregnancy



Amniotic Fluid Circulation

- Becomes important after skin is keratinized
 - Fetal urine (around 300 ml/kg; 600 – 1200 ml/day at term)
 - Secretion of oral, nasal, tracheal and pulmonary fluids (60 – 100 ml/day)
Fetal Breathing Movements
 - Passive transfer of fluid and nutrients across the intramembranous pathway (200 – 500 ml/day)
 - Membranes (10 ml/day)
 - Fetal swallowing eliminates amniotic fluid



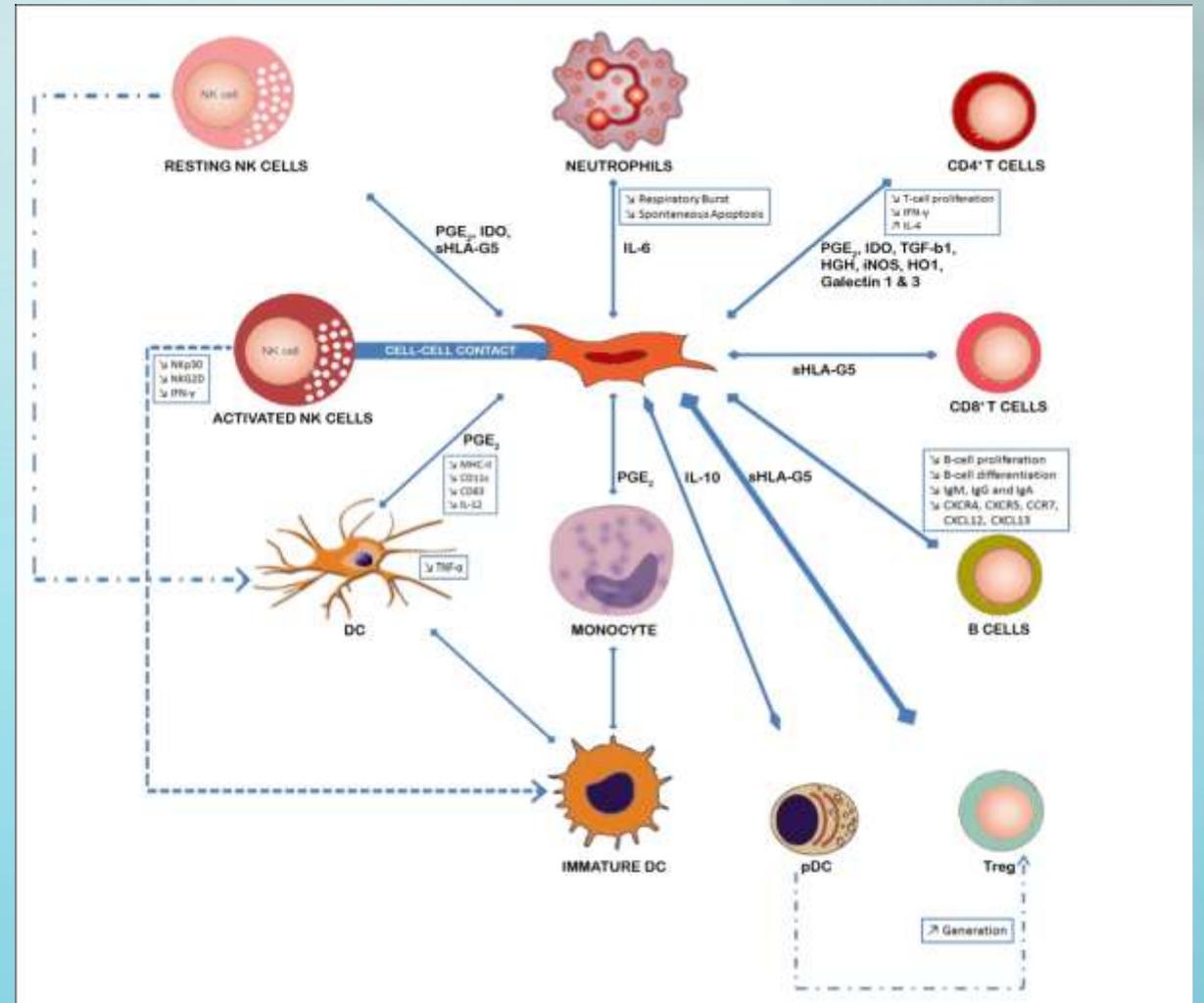


Nutritive Functions of Amniotic Fluid (AF)

- AF contains carbohydrates, proteins and peptides, lipids, lactate, pyruvate, electrolytes, enzymes and hormones.
- Prior to keratinization of the fetal skin, amino acids diffuse from the placenta
- Like breast milk, AF is rich in taurine, glutamine and other amino acids important for rapidly developing cells
- Multiple growth factors and erythropoietin

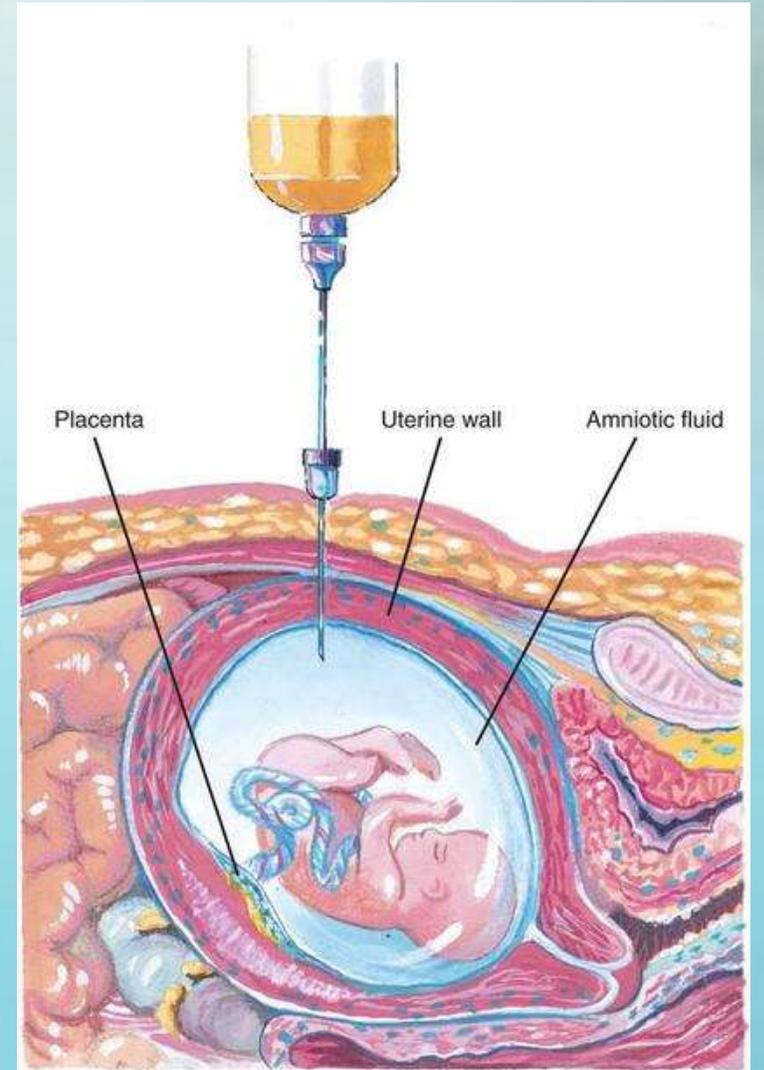
Protective role of Amniotic Fluid

- Cushion
- Part of innate immune system
 - Chemical and cellular mediators



Amniotic Fluid as a Diagnostic Medium

- Amniocentesis started in the 1970's
 - Fetal chromosomes originally
 - Open neural tube defects
 - Micro deletions
- AF bilirubin levels (delta OD 450)
 - Now mostly replaced by prenatal diagnosis
 - Middle cerebral artery Doppler
- Preterm labor and PPRM assessment (IAI)
 - Matrix metalloproteinase, interleukins, WBCs, bacteria
- CMV, toxoplasma, parvovirus B-19



Amniotic Fluid for Lung Maturity

- Uncertain dates, medical complications, etc.
- Fetal breathing movements release lung contents (phospholipids)
- Lamellar Body Count (little packets of surfactant)
- Lecithin/Sphingomyelin Ratio (L/S ratio)
- Phosphatidylglycerol (PG)

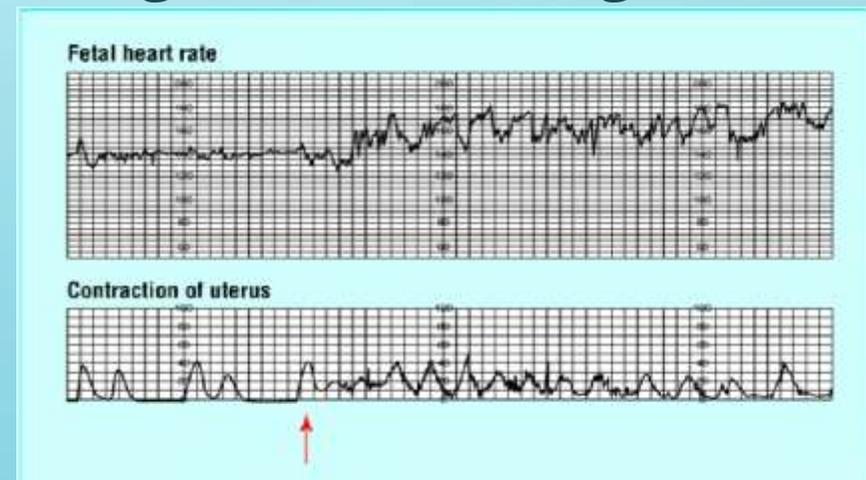
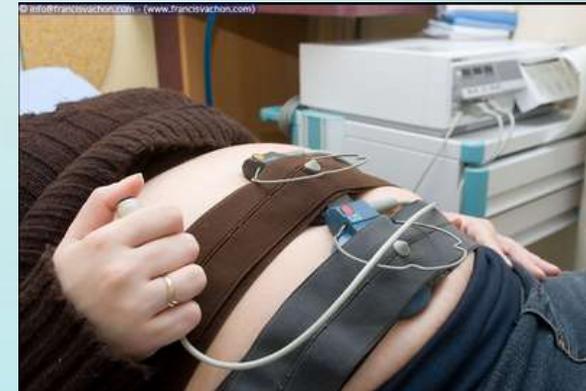
Biophysical Profile

- 5 components
 - Fetal Heart Monitor assessment (Non-stress test)
 - Fetal movement (same thing)
 - Fetal tone (same thing)
 - Fetal breathing (same thing)
(What develops last is lost first!)
 - Amniotic fluid volume (AFI or MVP) (a measure inconsistent with the others, **better for historical assessment**)

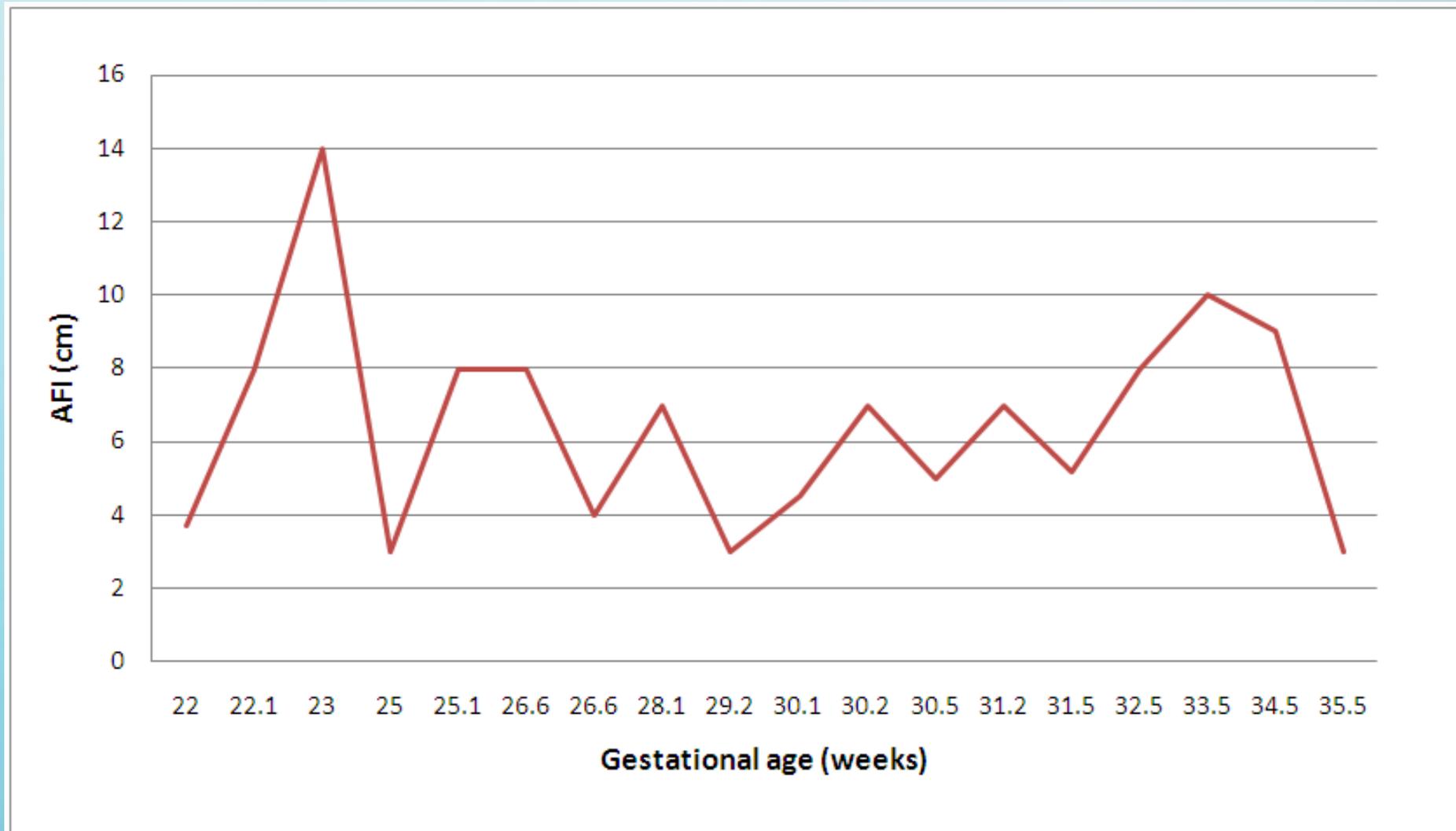
Modified Biophysical Profile

- Non-stress test
- Amniotic fluid assessment (AFI)

Shown to be just as effective in monitoring fetal well-being as a full BPP!



AFI variations with pregnancy . . .



Amniotic Fluid Index

- AFI between 8 – 18 considered normal
- Median AFI is approximately 14 from 20 – 35 weeks
- AFI < 5 considered oligohydramnios (5th percentile)
- AFI > 20 – 24 considered polyhydramnios

Too much amniotic fluid . . .

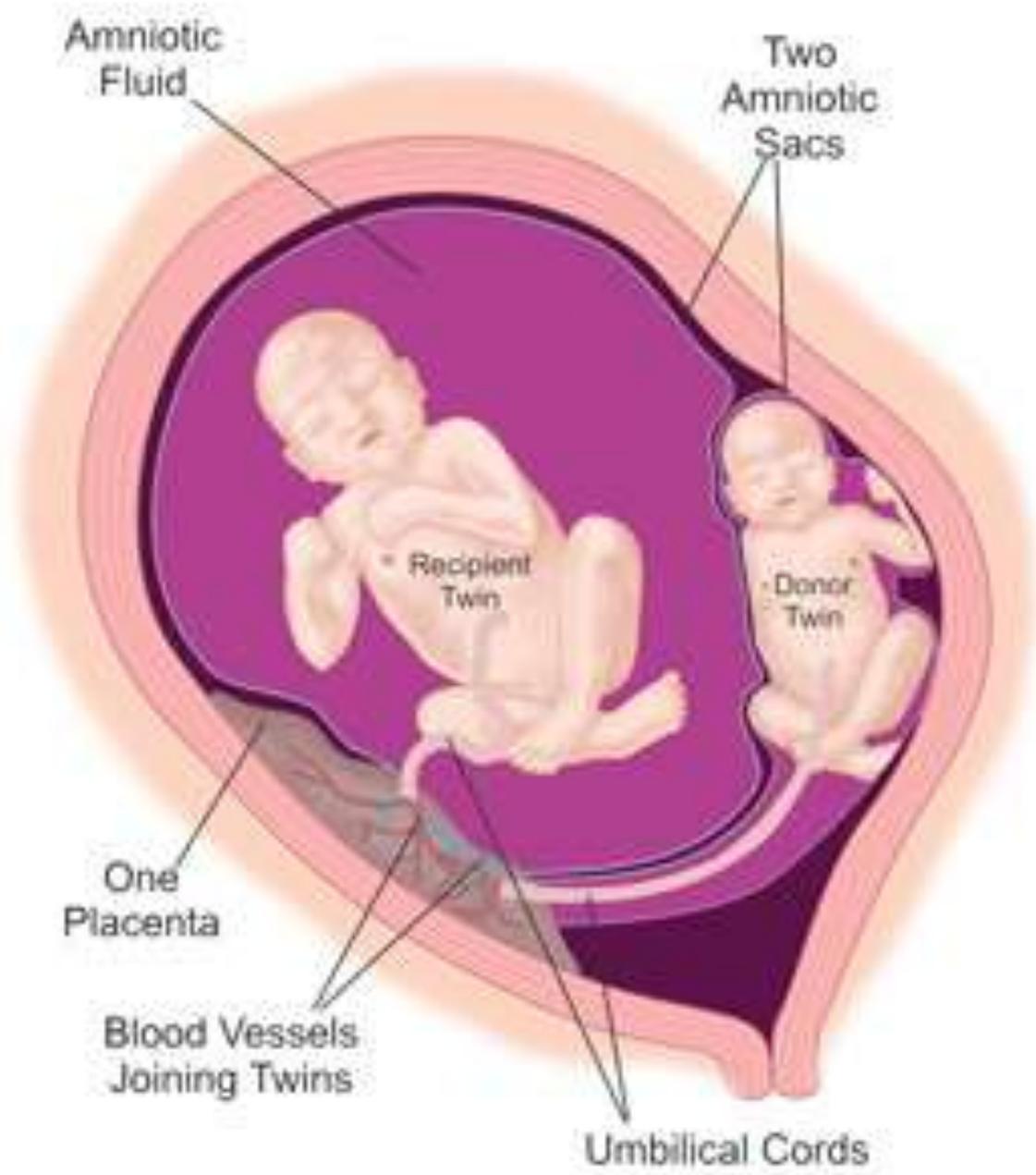
- Polyhydramnios – AFI > 24 cm (or MVP > 8 cm)
- Chronic and acute types – usually not a problem unless severe
- Common causes:
 - Most are idiopathic
 - Intrauterine infection (TORCH)
 - Rh –isoimmunization
 - Chorioangioma of the placenta
 - Maternal diabetes (with fetal hyperglycemia leading to polyuria)

Polyhydramnios – additional causes

- Impaired fetal swallowing
 - Fetal gastrointestinal
 - Esophageal atresia,
 - duodenal atresia
 - Facial cleft
 - Neck masses
 - Tracheoesophageal fistula
 - Diaphragmatic hernias, others
- Fetal renal disorders – Bartter syndrome
- Fetal neurological disorders – anencephaly
- Fetal aneuploidies – T21, T18, skeletal dysplasias
- Monochorionic twins (transfusion syndrome)



Twin-to-Twin Transfusion Syndrome





Too little amniotic fluid . . .

- Oligohydramnios
 - AFI \leq 5 cm (or MVP $<$ 2 cm)
 - Causes:
 - Preterm PROM
 - Fetal growth restriction
 - Chronic placental abruption (amniochorionic separation)
 - Fetal anomalies (urinary tract obstruction)
- Anhydramnios – complete absence of AF

Anhydramnios – renal agenesis



Fetal akinesia sequence . .



Extra substances in the amniotic fluid

- Meconium
 - Earliest stool of the mammalian infant
 - Unlike later feces, composed of components ingested during fetal life
 - Usually completely cleared within 24 hours of birth (source for testing)
 - May be passed before birth and only verified significance is a “patent anus”!
 - May be suspected on ultrasound and deserves reporting!
 - Meconium aspiration may occur with fetal gasping, so monitoring is important . . .
- “Sludge” – bacteria and wbc's

Echogenic amniotic fluid . . .



“Sludge”



“Water of Life” Summary

- The phrase has religious and counterfeit meanings
- We take “The Water of Life” for granted in our daily lives
- The fetus is bathed in “The Water of Life” throughout gestation
- We can use our assessment of “The Water of Life” in our day-to-day practices
- Finally . . . I suggest that you drink beer in lieu of “The Water of Life”!

“The Water of Life”

