

VITAMIN - A

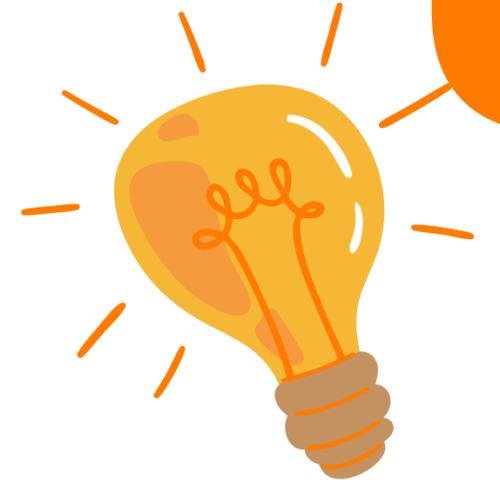
SECOND STAGE

DR.RASHAD AL - TUUAMAH
Medical Biochemistry

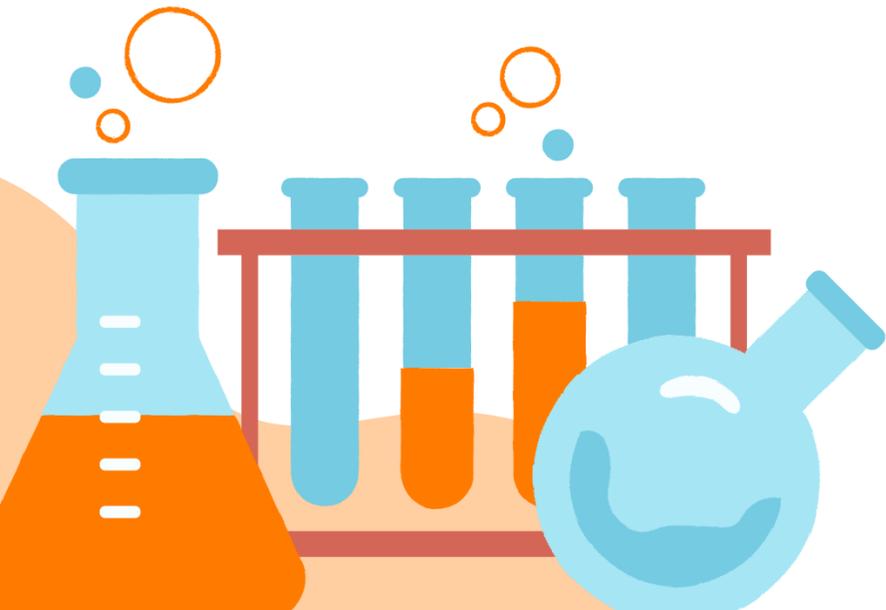


**VITAMIN A EXISTS IN SEVERAL FORMS,
INCLUDING RETINOL, RETINOID, AND
RETINOIC ACID. SPECIFICALLY, IT CAN
BE CLASSIFIED INTO:**

- **RETINOL**
- **RETINAL**
- **RETINOIC ACID**
- **B-CAROTENE (PROVITAMIN A)**



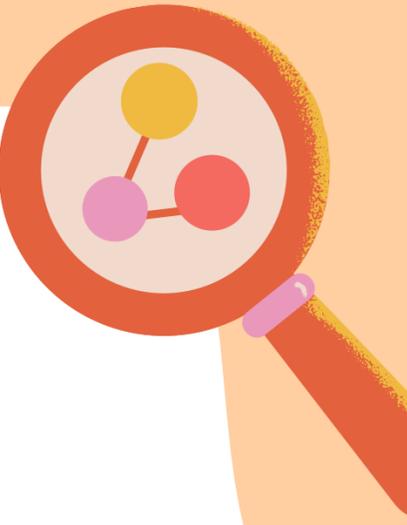
THE MECHANISM OF ACTION INVOLVES AN INTRACELLULAR RETINOL-BINDING PROTEIN THAT CARRIES RETINOL TO SITES IN THE NUCLEUS HERE, THE VITAMIN REGULATES TRANSCRIPTION IN A MANNER ANALOGOUS TO THAT OF STEROID HORMONES IN THE SPECIFIC CASE OF RETINOIC ACID, THE MECHANISM FOLLOWS THESE STEPS:-



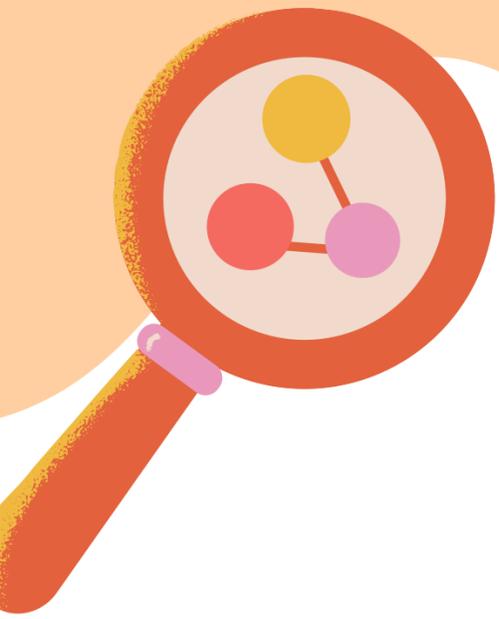
- **RETINOL IS OXIDIZED TO RETINOIC ACID.**
- **RETINOIC ACID BINDS WITH HIGH AFFINITY TO SPECIFIC RECEPTOR PROTEINS (RETINOIC ACID RECEPTORS [RARs]).**
- **THE ACTIVATED RETINOIC ACID–RAR COMPLEX BINDS TO RESPONSE ELEMENTS ON DNA AND RECRUITS ACTIVATORS OR REPRESSORS TO REGULATE RETINOID-SPECIFIC RNA SYNTHESIS.**
- **THE RAR PROTEINS ARE PART OF THE SUPERFAMILY OF TRANSCRIPTIONAL REGULATORS THAT INCLUDES THE NUCLEAR RECEPTORS FOR STEROID AND THYROID HORMONES AND VITAMIN D, ALL OF WHICH FUNCTION IN A SIMILAR WAY.**



REGARDING ITS RELEASE, IT INVOLVES THE LIVER, RETINOL, EXTRAHEPATIC TRANSPORT, AND THE RETINOL-BINDING PROTEIN COMPLEXED WITH TRANSTHYRETIN, FORMING A TERNARY COMPLEX THAT ACTS ON THE SURFACE OF THE CELLS OF PERIPHERAL TISSUES.



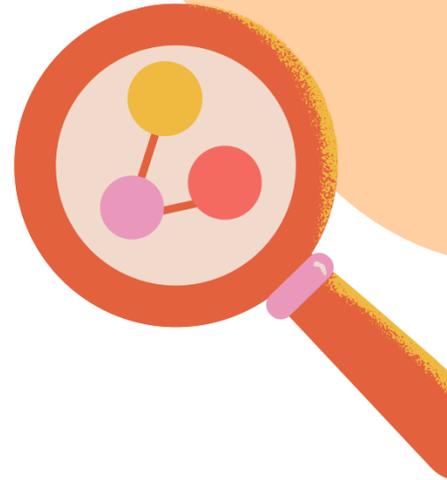
FOR DISTRIBUTION, GOOD SOURCES OF PREFORMED VITAMIN A INCLUDE LIVER, KIDNEY, CREAM, BUTTER, AND EGG YOLK. ON THE OTHER HAND, YELLOW, ORANGE, AND DARK-GREEN VEGETABLES AND FRUITS ARE EXCELLENT SOURCES OF CAROTENES (PROVITAMIN A).



**IN TERMS OF REPRODUCTION,
VITAMIN A IS ESSENTIAL FOR:
SPERMATOGENESIS IN THE MALE.
PREVENTING FETAL RESORPTION IN
THE FEMALE.**

**IT IS IMPORTANT TO NOTE THAT
RETINOIC ACID IS INACTIVE IN THESE
SPECIFIC REPRODUCTIVE PROCESSES.**



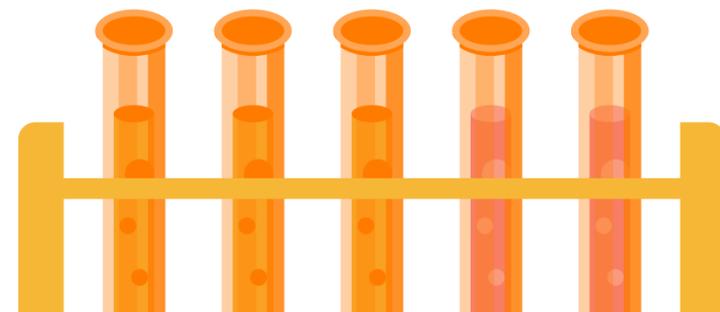


RETINOID TOXICITY AND TERA TOGENESIS
RETINOID TOXICITY (NOT
CAROTENE) PRODUCES A TOXIC
SYNDROME CALLED
HYPERVITAMINOSIS A, WHICH
CAN OCCUR AT DOSES LIKE 7.5
MG/DAY. CHRONIC
HYPERVITAMINOSIS AFFECTS
SEVERAL SYSTEMS:





- **SKIN : BECOMES DRY AND PRURITIC (BECAUSE OF DECREASED KERATIN SYNTHESIS).**
- **LIVER : CAN BECOME ENLARGED AND CIRRHOTIC.**
- **CNS: LEADS TO INCREASED INTRACRANIAL PRESSURE, MIMICKING A BRAIN TUMOR.**
- **BONE : PROMOTES BONE GROWTH BUT DECREASES BONE MINERAL DENSITY, LEADING TO AN INCREASED RISK OF FRACTURES.**



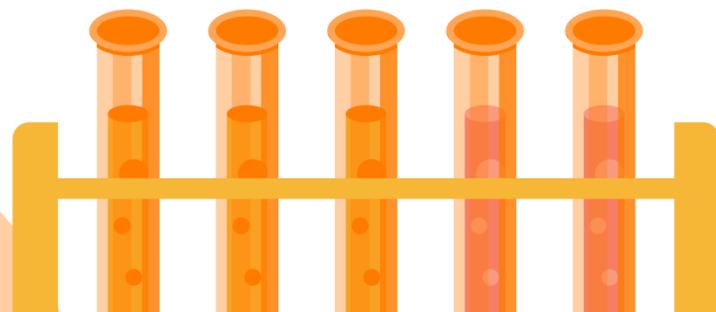


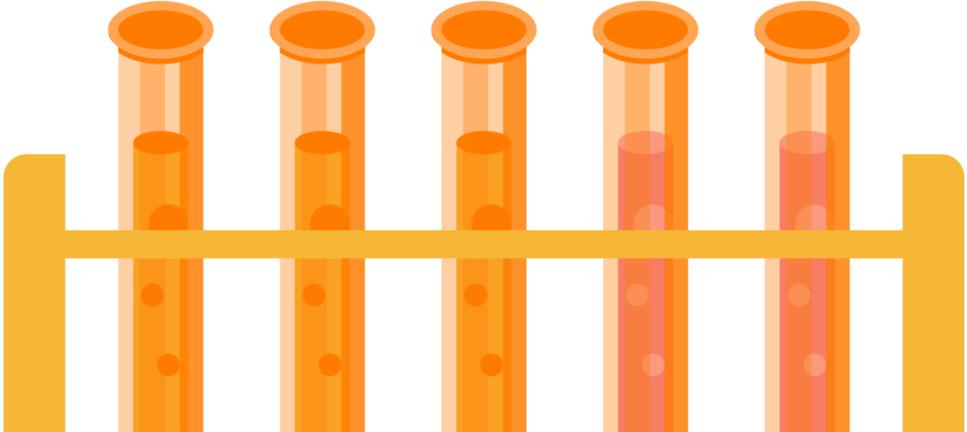
**CRUCIALLY, IN PREGNANT
WOMEN, IT CAUSES
TERATOGENESIS (CONGENITAL
MALFORMATIONS IN THE
DEVELOPING FETUS). THE UPPER
LIMIT (UL) IS 3,000 MG
PREFORMED VITAMIN A /DAY.**



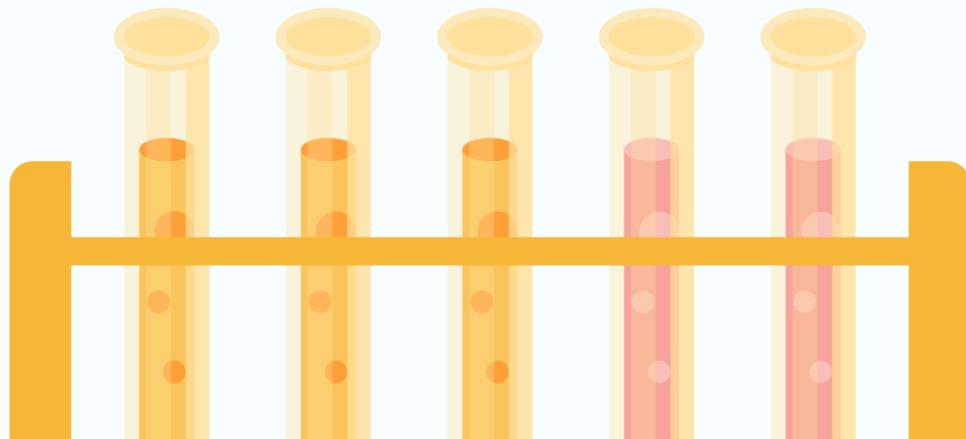


**CONGENITAL MALFORMATIONS
AND CLINICAL CONDITIONS
EXCESSIVE RETINOID EXPOSURE
OR DEVELOPMENTAL ISSUES CAN
LEAD TO SEVERAL CONGENITAL
MALFORMATIONS IN NEWBORNS,
INCLUDING:-**



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- **CLEFT LIP & PALATE (UNILATERAL OR BILATERAL).**
 - **SPINA BIFIDA: CAUSED BY INCOMPLETE CLOSING OF THE EMBRYONIC NEURAL TUBE. VERTEBRAE REMAIN INCOMPLETE (OPEN), AND IF THE OPENING IS LARGE ENOUGH, THE SPINAL CORD EMERGES. FORMS INCLUDE SPINA BIFIDA OCCULTA, MENINGOCELE, MYELOMENINGOCELE, AND MYELOSCHISIS**
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- **EXOMPHALOS (OMPHALOCELE): BOWEL COVERED BY A SAC OF AMNION.**
- **GASTROSCHISIS: MATTED LOOPS OF BOWEL WITH NO COVERING, USUALLY TO THE RIGHT OF THE UMBILICUS.**

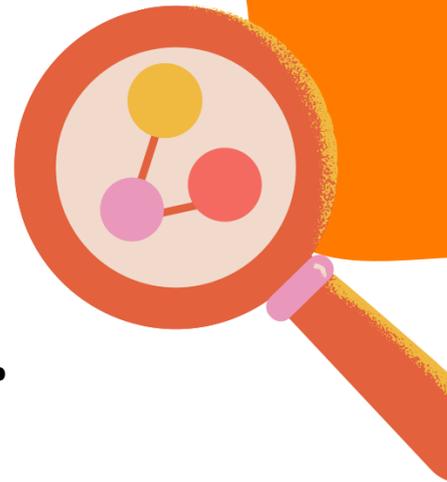


- **IMPERFORATE ANUS: A MALFORMATION WHERE THE ANAL OPENING IS MISSING OR CLOSED OFF, OFTEN INVOLVING DEFECTS IN THE MUSCLES AND NERVES ASSOCIATED WITH THE ANUS.**
- **DUODENAL ATRESIA: CHARACTERIZED BY A DISTENDED DUODENUM AND A SITE OF ATRESIA (BLOCKAGE).**





- **MECONIUM ILEUS: SMALL BOWEL OBSTRUCTION CAUSED BY UNUSUALLY THICK AND STICKY MECONIUM, OFTEN THE EARLIEST MANIFESTATION OF CYSTIC FIBROSIS. SYMPTOMS INCLUDE FAILURE TO PASS MECONIUM WITHIN 12-24 HOURS, ABDOMINAL DISTENTION, AND BILIOUS VOMITING.**
- **CONGENITAL DIAPHRAGMATIC HERNIA: A DEVELOPMENT DEFECT OF THE DIAPHRAGM, TYPICALLY OCCURRING ON THE LEFT SIDE.**

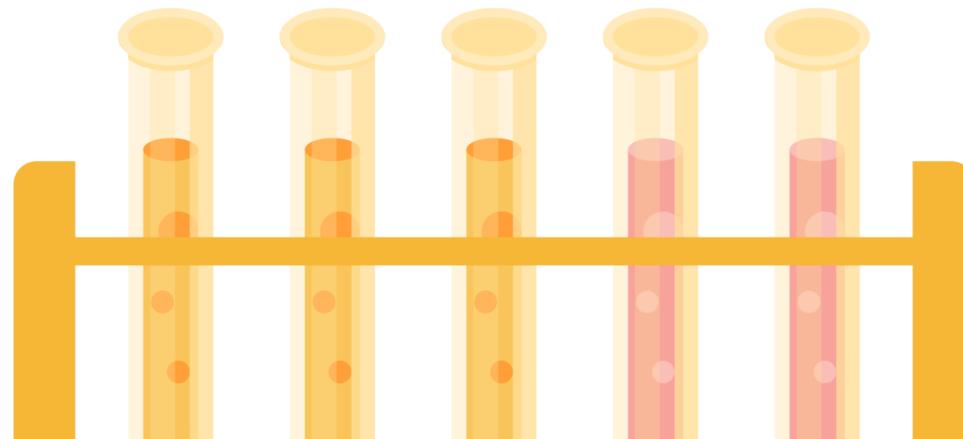




**DERMATOLOGICAL AND
CLINICAL OBSERVATIONS
CLINICAL PRESENTATIONS ALSO
INCLUDE VARIOUS DISEASES OF
THE SKIN AND OTHER TISSUES:-**

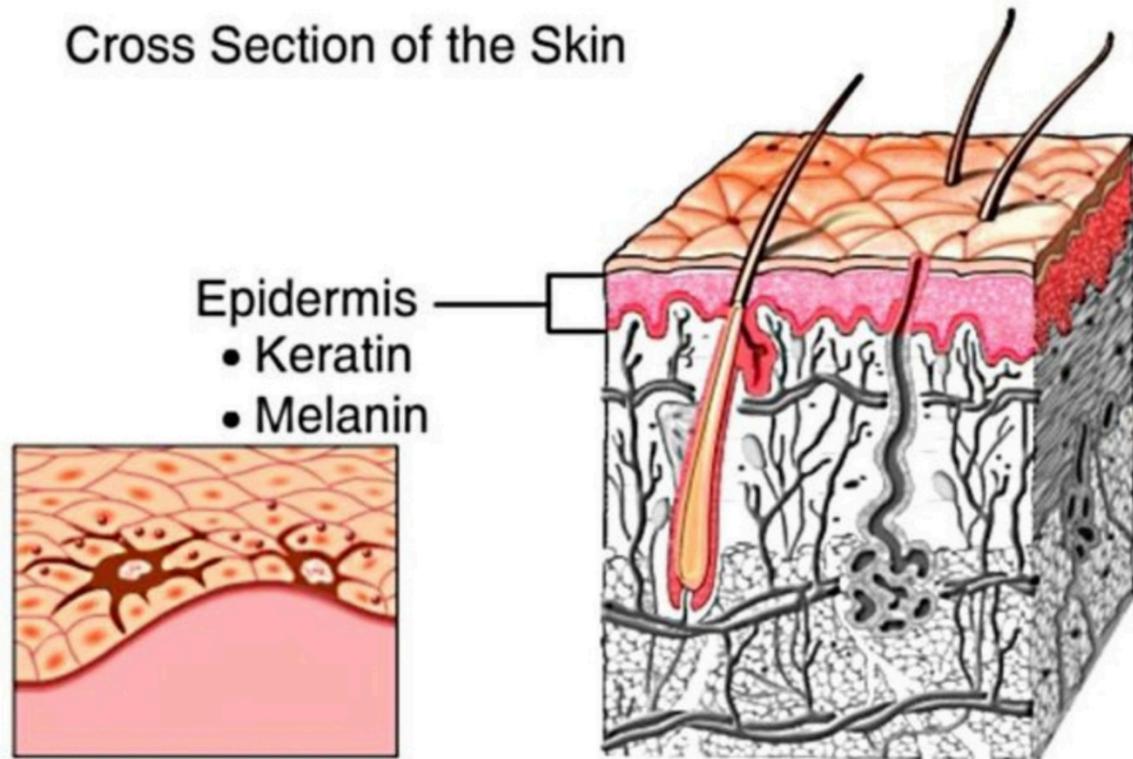


- **SKIN CONDITIONS: PSORIASIS, URTICARIA, ECZEMA, LICHEN PLANUS, ACNE, AND VITILIGO.**
- **SCALP PSORIASIS: SPECIFIC PLAQUE-LIKE PRESENTATIONS ON THE SCALP.**
- **GENERAL SKIN INFECTIONS: RED, INFLAMED, OR PUSTULAR LESIONS ON THE FACE OR BODY.**
- **NAIL CHANGES: THE NAILS CAN INDICATE UNDERLYING ISSUES SUCH AS INFECTION, HEART DISEASE, LIVER PROBLEMS, OR LUNG DISEASE.**

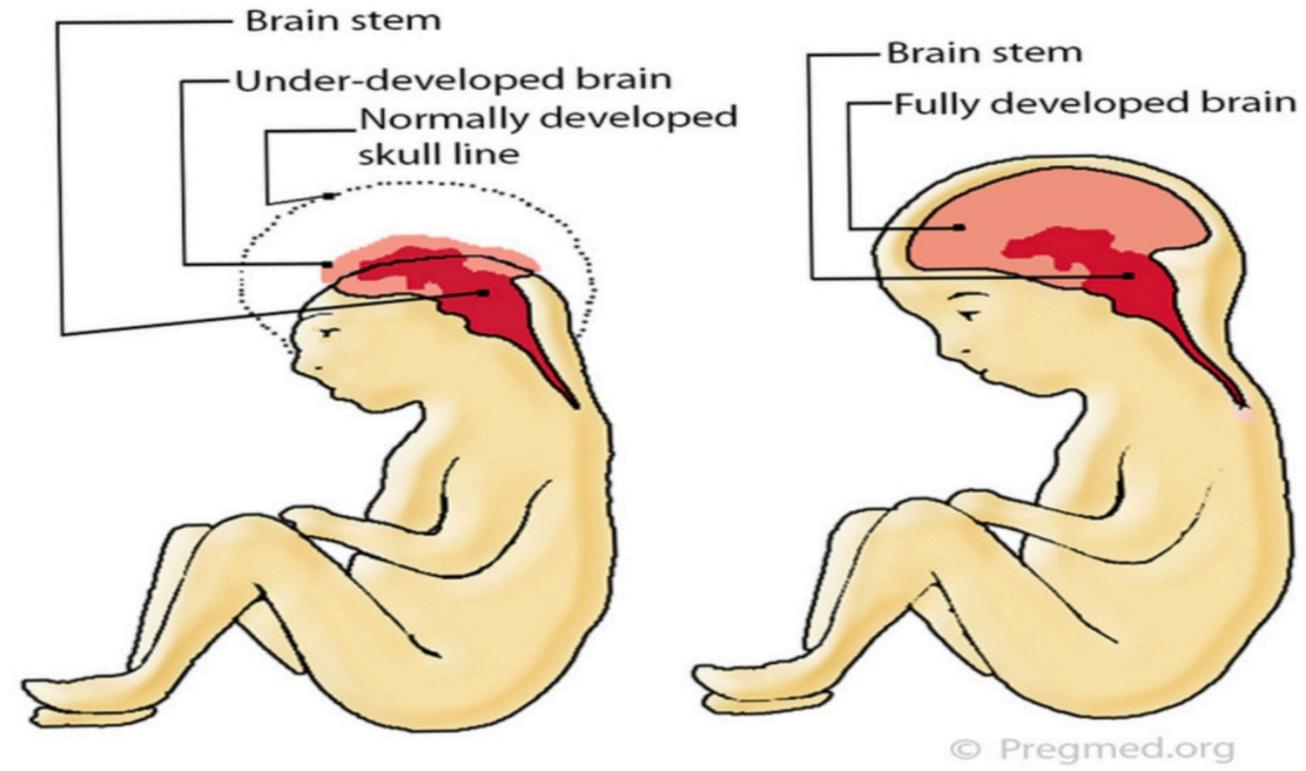


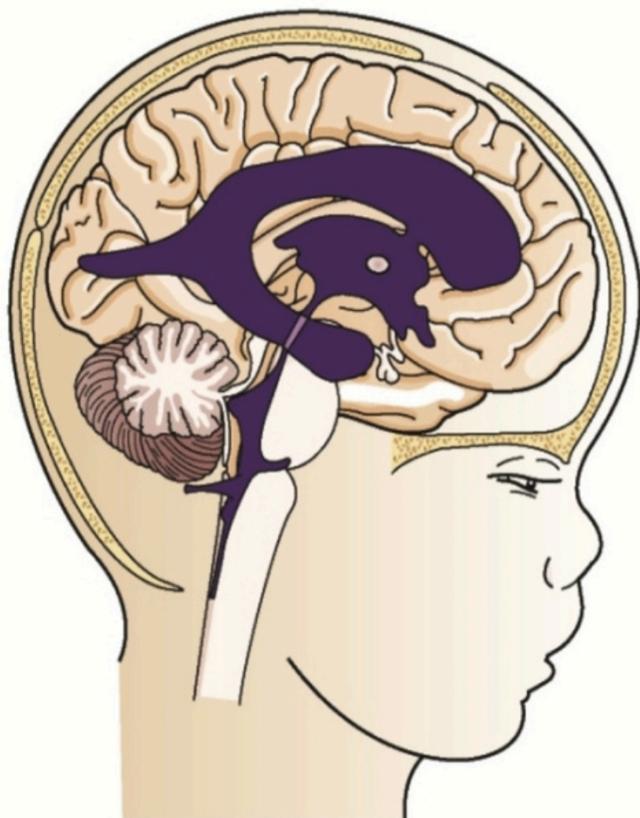


Cross Section of the Skin

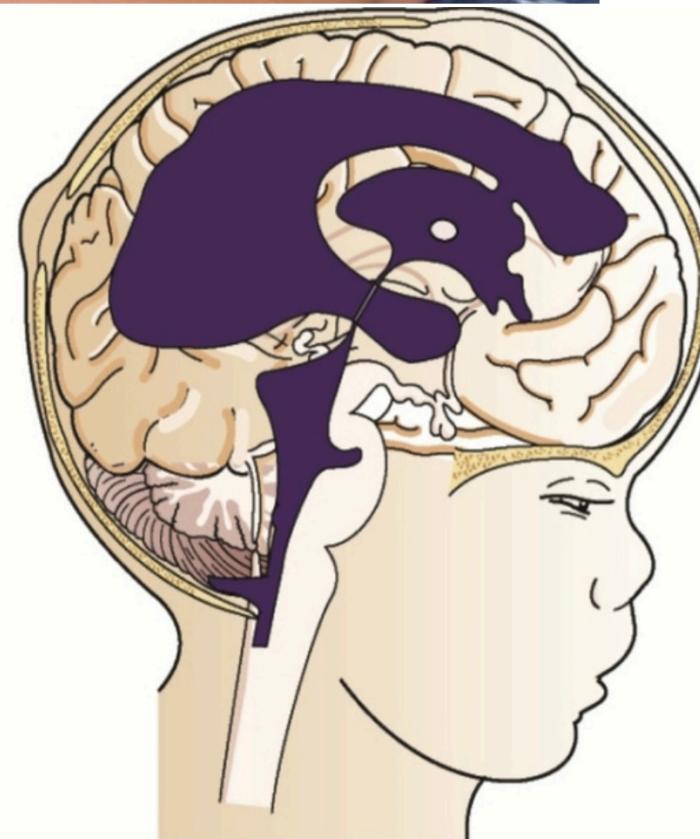


Newborn Having Anencephaly Fully Developed Newborn





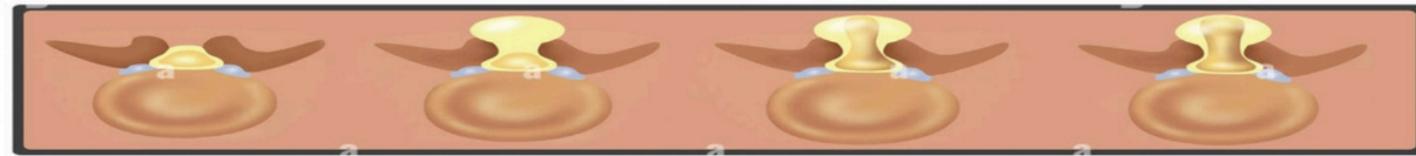
Non-Hydrocephalus



Hydrocephalus

Spina Bifida

Spina bifida is caused by the incomplete closing of the embryonic neural tube. A developmental congenital disorder, vertebrae remain incomplete (open) in their formation. If the opening is large enough the spinal chord emerges through the bone.



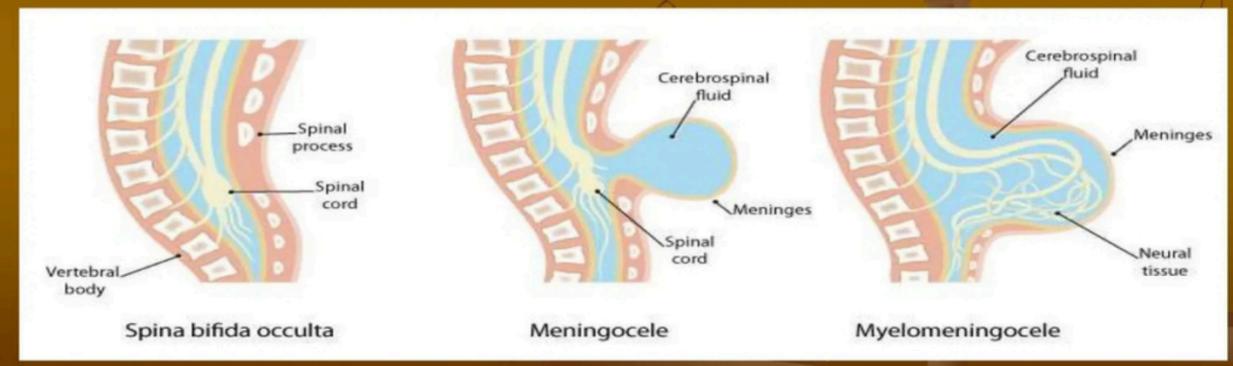
- 1. Spina bifida occulta
- 2. Spina bifida with meningocele
- 3. Spina bifida with meningocele
- 4. Spina bifida with myeloschisis



Prenatal Repair for Spina Bifida

Cincinnati Fetal Center

SPINA BIFIDA



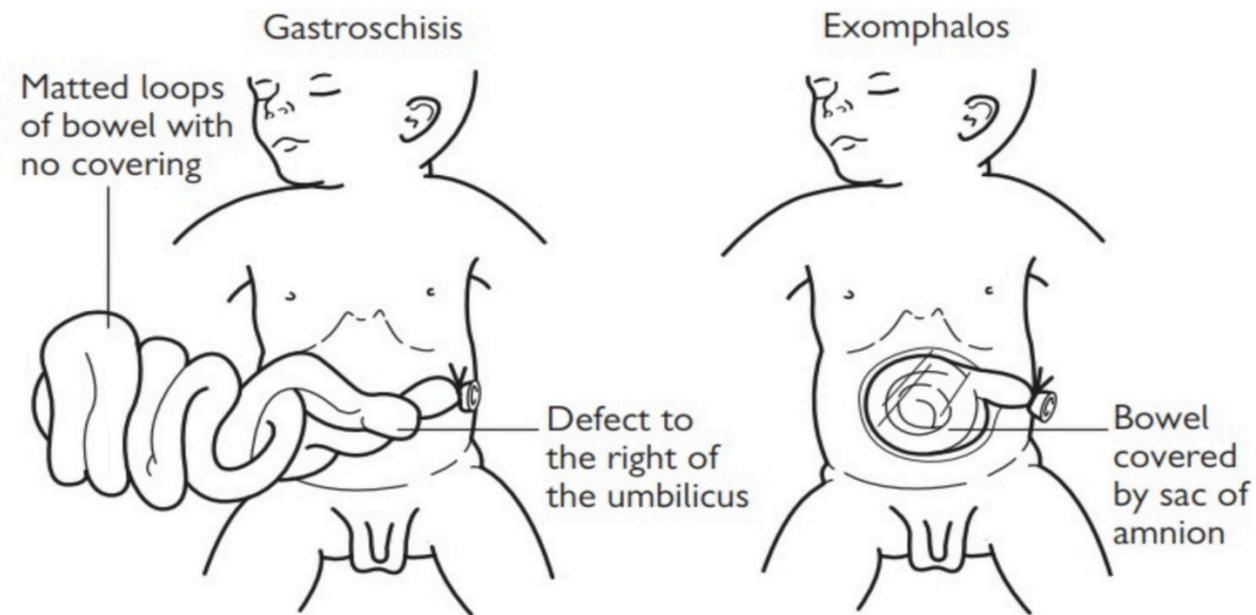
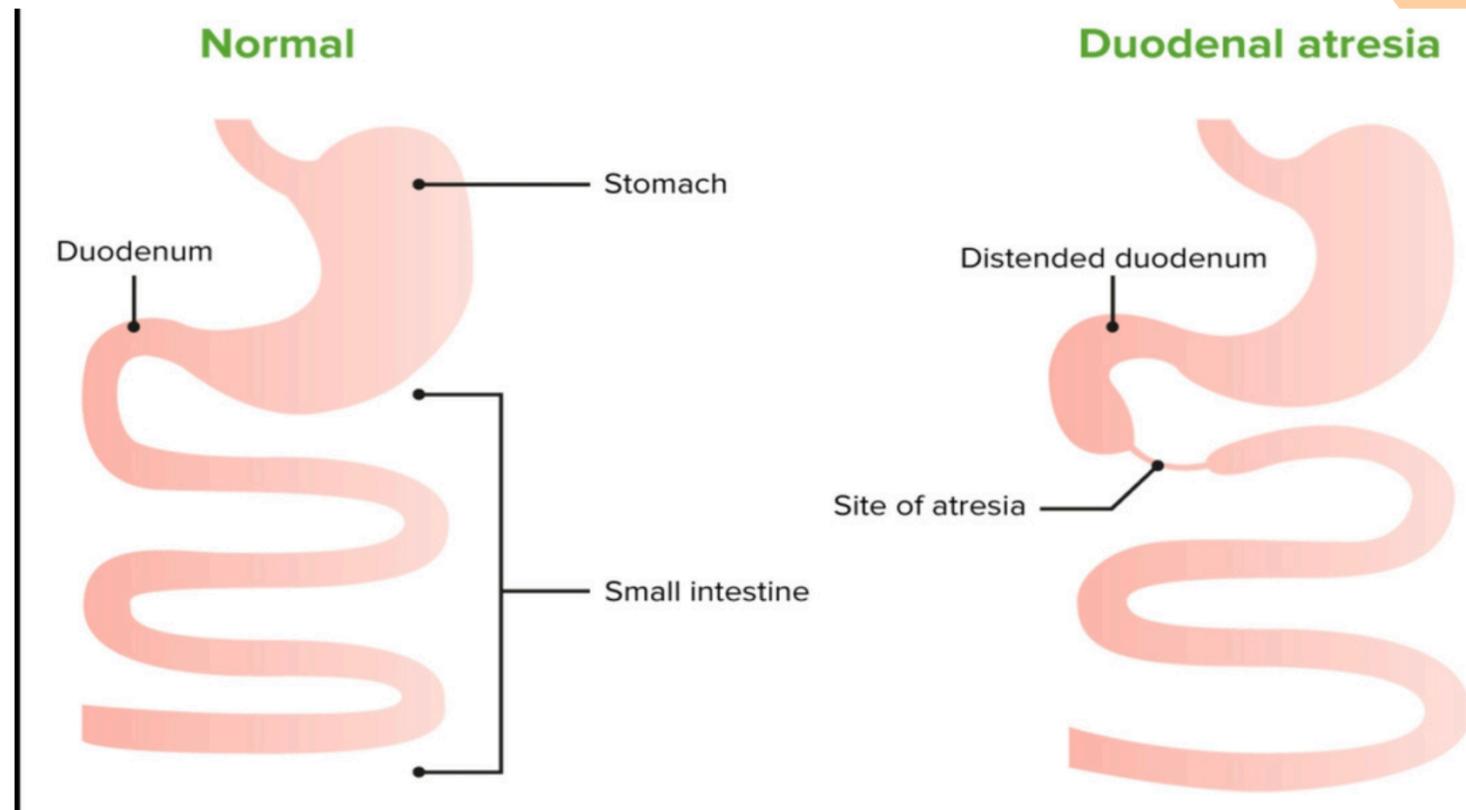
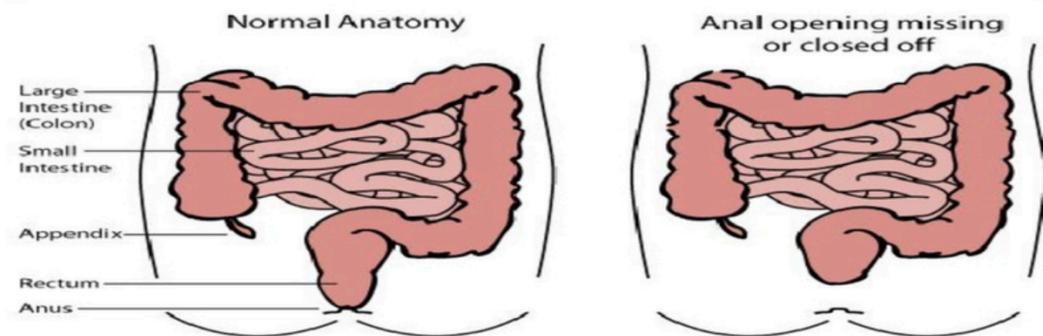


Fig. 23.15 Anterior abdominal wall defects.



What is Imperforate Anus?

FORMS OF IMPERFORATE ANUS - FRONTAL VIEW



Imperforate Anus | Pamela Morrison Physical Therapy, P.C.

- When a malformation of the anus is present, the muscles and **nerves** associated with the anus often have a similar degree of malformation.
- The position and nature of these malformations made repair difficult for early surgeons; the affected organs are located deep in the pelvis and are not well visualized through abdominal incisions.

Pathophysiology

The embryogenesis of these malformations remains unclear.

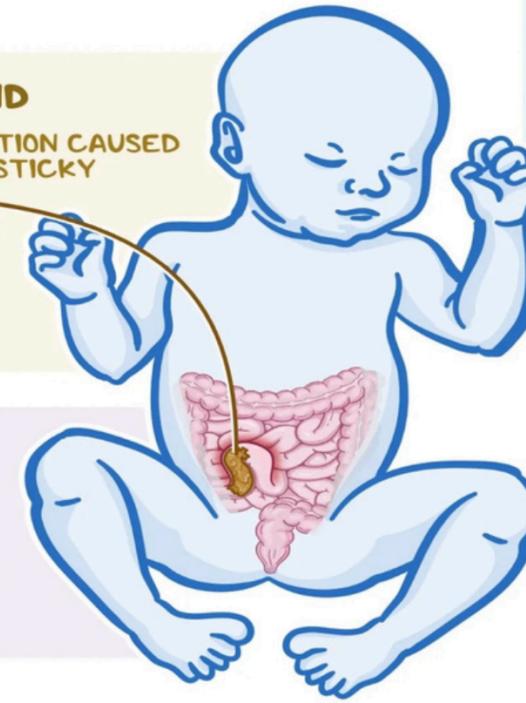
- The rectum and anus are believed to develop from the dorsal portion of the hindgut or cloacal cavity when lateral ingrowth of the mesenchyme forms the urorectal septum in the midline.

BACKGROUND

- * SMALL BOWEL OBSTRUCTION CAUSED by UNUSUALLY THICK & STICKY **MECONIUM**
 - ~ EARLIEST MANIFESTATION of CYSTIC FIBROSIS
- * **COMPLICATIONS:**
 - ~ INTESTINES RUPTURE
 - ~ MECONIUM PERITONITIS

SYMPTOMS

- * FAILURE to PASS MECONIUM within FIRST 12 - 24 HOURS
- * ABDOMINAL DISTENTION
- * BILIOUS VOMITING



DIAGNOSIS

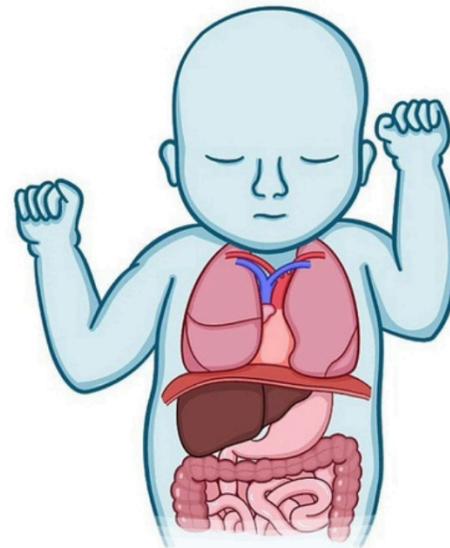
- * PRENATAL ULTRASOUND
- * **ABDOMINAL X-RAY**
 - ~ "SOAP BUBBLE" APPEARANCE
- * WATER-SOLUBLE CONTRAST ENEMA
- * DIGITAL RECTAL EXAM
 - ~ EMPTY RECTUM



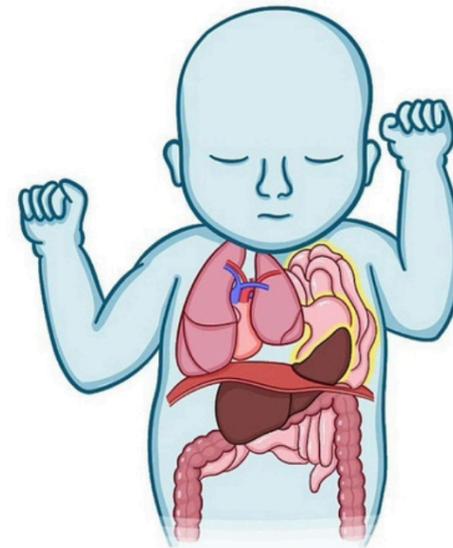
OSMOSIS.org

CONGENITAL DIAPHRAGMATIC HERNIA

DEVELOPMENT DEFECT of DIAPHRAGM



NORMAL

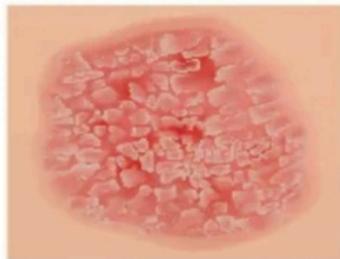


TYPICALLY LEFT SIDE

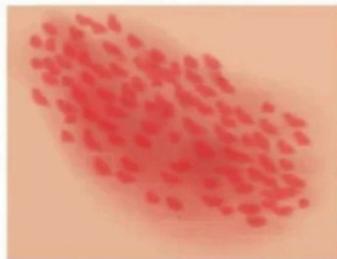


DISEASES OF THE SKIN

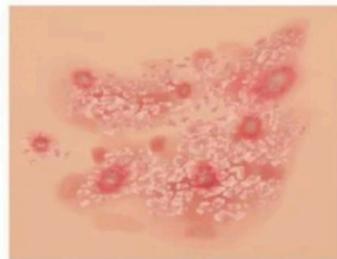
PSORIASIS



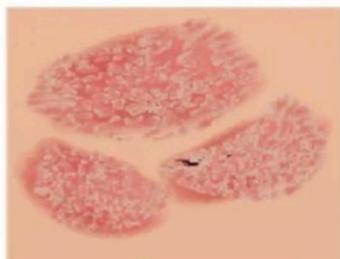
URTICARIA



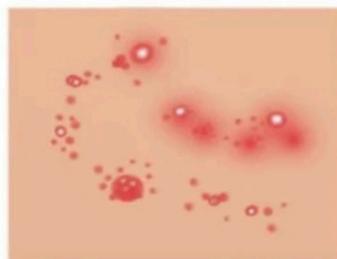
ECZEMA



LICHEN PLANUS



ACNE



VITILIGO



Scalp psoriasis



8 NAIL CHANGES

YOUR BODY CRYING FOR HELP

Infection



Heart disease



Liver problem



Infection



Lung disease



**THANK YOU
FOR YOUR
ATTENTION**

