Pregnancy Basics

- The average pregnancy is 40 weeks
- Pregnancy is divided into three trimesters
  - First trimester (1 - 12 weeks)
    - Pregnancy test positive about a week after implantation
    - All major organs and structures formed by 8 weeks
  - Second trimester (13 – 26 weeks)
    - Fetus grows from about 3 to about 14 inches
    - Baby is viable at 22 weeks
  - Third trimester (26 – 40 weeks)
    - Baby continues to grow in length and add fat
    - Baby’s organs continue to develop especially the central nervous system

Drugs in pregnancy

- Drugs in the mother’s circulation may cross the placenta and cause harm to the fetus or other adverse effects
- The old FDA Classification System to indicate drug’s potential for birth defects: A, B, C, D, or X
- The new Pregnancy and Lactation Rules replaces A – X
  - Effective June 30, 2015
  - Pregnancy section – dosing and potential risks
  - Registry collects data on drugs use in pregnancy
- New drugs will have new labeling – old drugs will be phased in
- Most eye drops were “C” – not sufficient information

Diagnostic

- Topical anesthetics and dilating drops
  - “C”
  - Avoid routine use
  - Use to evaluate new symptoms or monitor disease
  - Use punctal pressure
Glaucoma medications

- Low incidence of glaucoma in women of childbearing age
- Risk to fetus vs higher eye pressure must be weighed
- Discuss risks up front

Beta-blocker drops - examples timolol, levobunolol, carteolol

- “C”
- Avoid first trimester
- Lowest dose
- Discontinue 2 – 3 days before delivery
- Is secreted in breast milk

Carbonic anhydrase inhibitors - examples brinzolomide, dorzolomide, Azopt, Trusopt

- “C”
- Oral (acetazolamide, Diamox) – 2 case reports of fetal harm
- Drops – case reports of use in all trimesters without problems

Sympathomimetic drops

- Apraclonidine (lopidine) – mostly used with laser treatments “C”
- Brimonidine (Alphagan) – “B”
  - Limited case reports in humans show no harm
  - Animal studies show no fetal harm
  - Is secreted in breast milk – can cause apnea

Prostaglandin analogue drops - examples bimatoprost, latanoprost, travoprost, Lumigan, Xalatan, Travatan Z

- “C”
- Animal studies show risk of abortion or preterm delivery
- No study of drops in human pregnancies
- Case reports show no harm
- Avoid use in pregnancy

Other medications

- Corticosteroids
  - Systemic – prednisone
  - Stillbirths, intrauterine growth retardation, adrenal insufficiency in newborn
- Drops and ointment - examples dexamethasone, prednisolone acetate, fluorometholone, loteprednol, Maxidex, Pred Forte, FML. Lotemax, Alrex
  - “C”
  - Animal studies have shown birth defects
  - No human studies

- Nonsteroidal anti-inflammatory drops - examples bromfenac, diclofenac, ketorolac, napefenac, Bromday, Voltaren, Acular, Nevanac
  - “C”
  - Risk of closure of ductus arteriosis if used late in pregnancy

- Allergy relief drops
  - Alcaftadin (Lastacaf), cromolyn sodium, Crolom – “B”
  - Azelastine, bepotastine, olopatadine, Optivar, Bepreve, Pataday, Elestat – “C”

- Antibiotics
  - Erythromycin (ointment and systemic) and azithromycin (drops – Azasite and systemic – Zithromax) – “B”
  - Gentamicin, tobramycin, polymixinB/trimethoprim, Polytrim (drops and ointment) – “C”
  - Besifloxacin, gatifloxacin, levofloxacin, ofloxacin, moxifloxacin, Besivance, Zymaxid, Quixin Ocuflox, Vigamox drops – “C”
  - Bacitracin ointment – “C”
  - Tetracycline, Doxycycline – systemic – “D”
    - Discolors primary teeth if used after the first trimester

- Antiviral drugs –
  - Systemic
    - Acyclovir, Zovirax, valacyclovir, Valtrex – “B”
    - Gancyclovir, Cytovene – “C”
  - Drops/gel
    - Trifluridine, Viroptic, Zirgan – “C”

- Therapy for choroidal neovascularization
  - Pegaptanib, Macugen – “B”
  - Verteporfin, Visudyne, bevacizumab, Avastin, ranibizumab, Lucentis – “C”
• Botulinum toxin, Botox, Dysport, Xeomin for injection – “C”

Medication Resources
• Web sites for information about teratogenic substances
  o www.micromedex.com (Micromedex, Inc)
  o http:/sis.nlm.nih.gov (National Library of Medicine)
• Apps – expense, few eye drugs

Eye medications and breast feeding
• Medicines may be present in breast milk – usually very low doses
• Doses can be timed to be taken after feedings
• New FDA rules include “Lactation” subsection
• Web site

Eye conditions potentially worse during pregnancy
• Diabetic retinopathy
  o Especially with preexisting retinopathy
  o Exam during first trimester
  o Follow-up based on findings
• Gestational diabetes
  o 2 – 3% of pregnancies
  o Temporary diabetes induced by pregnancy
  o No risk of retinopathy

• Pituitary tumors
  o Often first diagnosed during pregnancy
  o Prolactinomas grow in response to hormones
  o Headaches
  o Possible visual field changes

• Dry eyes
  o Due to hormonal changes
  o Preexisting may worsen, or may develop for the first time
May cause contact lens intolerance
- Artificial tears, fish oil capsules and punctal plugs safe
- Cyclosporine, Restasis – “C”
- Xiidra not recommended

Eye conditions that may stabilize during pregnancy

- Autoimmune diseases
  - Graves disease
  - Multiple sclerosis
  - Rheumatoid arthritis
  - Systemic lupus erythematosi
  - Flares may be reduced
  - Stopping meds may worsen symptoms

- Migraine headaches
  - 1 - 2% will have first migraine during pregnancy
  - 50 – 80% with migraines will improve
  - 4 – 8% with migraines will be worse

Refractive errors

- May fluctuate
- Hormonal
- Defer refractive surgery
- Return to baseline about 2 weeks after delivery

Pregnancy complications with eye symptoms

- Preeclampsia
  - “Toxemia”
  - Most often in first pregnancies
  - High blood pressure; swelling of face, hands and feet, protein in urine

- Eclampsia
  - Seizures
  - Either can present with blurred vision or scotomas
  - Retinal complications
    - Edema, hemorrhages, serous detachments
    - Placoid areas of RPE and choroid
    - Resolve after delivery, but may result in permanent pigmentary changes
- Vision returns to normal after delivery

- Occlusive vascular disorders
  - Pregnancy may cause hypercoagulation
  - Clots may block blood vessels
  - Blockage of retinal arteries or veins can occur

Imaging during pregnancy
- A single x-ray will not cause harm
- CT scans that do not involve the uterus do not cause harm
- CT scans to abdomen or pelvis – associated with a slight increase in childhood cancers
- Ultrasound and MRI have not been associated with fetal harm
- Contrast materials should be avoided

Procedures during pregnancy
- Local anesthetics cross the placenta
  - Safety not established
- Sedation is not recommended
- LASIK preop measurements may change
- Postpone elective procedures
- Emergency procedures only

Summary
- Physician should discuss risks and benefits with pregnant patients
- Necessary meds – lowest dose/shortest duration
- Postpone elective exams/treatments
- Involve obstetrician in important decisions