# Pharmacist's Role in Collaborative Perinatal Care

Jessica Haskins, PharmD

# Objectives

* Discuss pharmacists' role in patient education during and after pregnancy
* Treatment and monitoring of common comorbidities during pregnancy
* Discuss medications that affect oral health in pregnancy

# Mr. Beau

# Perinatal Care

* Perinatal – time period prior to birth through after delivery
* Care of mother and fetus or newborn
* Approximately 22nd week of gestation through 1 week after birth (WHO definition)
* Perinatal health and maternal health are closely linked

# According to WHO:

* 290,000 women died due to complications in pregnancy and childbirth
  * Millennial Development Goal: 75% reduction in maternal mortality from 1990 to 2015
    * Currently, progress is too slow
    * Investing in healthcare system training is key to success
  * Developed countries: 16 deaths / 100,000 births
  * Developing countries: 230 deaths / 100,000 births

# Risk factors in maternal

* Access to quality care
* Rural areas
* Low income areas
* Less educated areas
* Lack of trained healthcare providers
* Insufficient number of visits to healthcare providers
  * Missed comorbidity diagnoses
  * Missed immunizations
  * Missed treatments to newborns

# Causes of maternal mortality

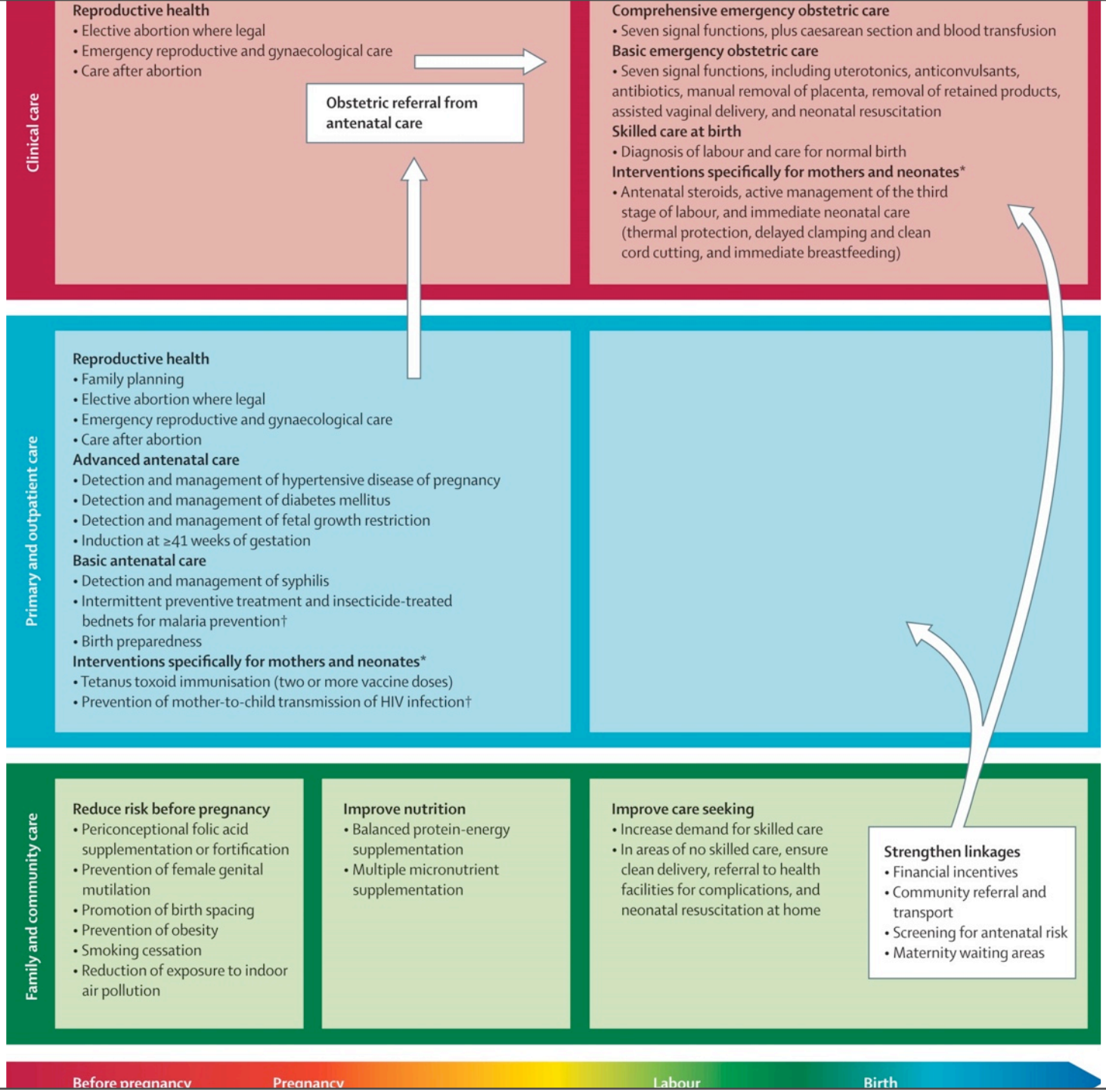
* Hemorrhage
* High blood pressure
* Infection
* Unsafe abortion
* Obstructed labor (6%)
  * Fistula:  hole in birth canal that causes incontinence, kidney problems, and death.

    80-95% cure rate with surgery.

# Causes of newborn mortality

10,000 preventable newborn deaths occur daily.
90% in developing countries.

* Smoke and toxins released from mother cooking
* Smoking in mother
* Overweight/Obesity in mother
* Older age at delivery
* Placental Dysfunction Disorders
  * Pre-eclampsia, fetal growth restriction, placental abruption
* Maternal comorbidities: type 2 diabetes mellitus,


Clinical care
Reproductive health
• Elective abortion where legal
• Emergency reproductive and gynaecological care
• Care after abortion
Obstetric referral from antenatal care
Comprehensive emergency obstetric care
• Seven signal functions, plus caesarean section and blood transfusion
Basic emergency obstetric care
• Seven signal functions, including uterotonics, anticonvulsants, antibiotics, manual removal of placenta, removal of retained products, assisted vaginal delivery, and neonatal resuscitation
Skilled care at birth
• Diagnosis of labour and care for normal birth
Interventions specifically for mothers and neonates*
• Antenatal steroids, active management of the third stage of labour, and immediate neonatal care (thermal protection, delayed clamping and clean cord cutting, and immediate breastfeeding)
Primary and outpatient care
Reproductive health
• Family planning
• Elective abortion where legal
• Emergency reproductive and gynaecological care
• Care after abortion
Advanced antenatal care
• Detection and management of hypertensive disease of pregnancy
• Detection and management of diabetes mellitus
• Detection and management of fetal growth restriction
• Induction at ≥41 weeks of gestation
Basic antenatal care
• Detection and management of syphilis
• Intermittent preventive treatment and insecticide-treated bednets for malaria prevention†
• Birth preparedness
Interventions specifically for mothers and neonates*
• Tetanus toxoid immunisation (two or more vaccine doses)
• Prevention of mother-to-child transmission of HIV infection†
Family and community care
Reduce risk before pregnancy
• Periconceptional folic acid supplementation or fortification
• Prevention of female genital mutilation
• Promotion of birth spacing
• Prevention of obesity
• Smoking cessation
• Reduction of exposure to indoor air pollution
Improve nutrition
• Balanced protein-energy supplementation
• Multiple micronutrient supplementation
Improve care seeking
• Increase demand for skilled care
• In areas of no skilled care, ensure clean delivery, referral to health facilities for complications, and neonatal resuscitation at home
Strengthen linkages
• Financial incentives
• Community referral and transport
• Screening for antenatal risk
• Maternity waiting areas
Before pregnancy
Pregnancy
Labour
Birth

# Continuum of Care: Prenatal / Preconception

* Folic acid supplementation
  * Decreased neural tube defects
* Malaria treatment and / or prevention
* Syphilis detection and treatment
* Tetanus immunization
* Detection and treatment of diabetes mellitus, hypertension, fetal growth restriction, induction past 41 weeks gestation
* Increased community awareness of services and treatments

# Continuum of Care: Delivery and Postnatal

* Skilled care and emergency obstetric care
* Antibiotics for premature rupture of membranes
* Corticosteroids for preterm labor
* Active management for third stage of labor
* Neonatal resuscitation

# Healthcare Provider Roles

* OB/ GYN MDs
* NP/ PA
* Dental care
* Pharmacists
* Nurses
* Midwives

# Pharmacists' Roles

* Preconception
  * Folic acid supplementation
  * Prenatal vitamin selection
  * Insurance issues
  * Patient education of comorbidities and treatment options
* Pregnancy
  * Over-the-counter medication questions
  * Prescription medication questions
  * Patient education on medication and healthy lifestyle choices

# Pharmacists' Roles

* Postpartum
  * Newborn and infant treatment and education
  * Breastfeeding patient education
  * Vitamin and supplement selection for mother and newborn
  * Special dietary needs of newborn and formula selection
  * Insurance issues

# Pharmacists' Roles
# Patient education

* Preconception questions:
  * Safe medication use for comorbidities
  * Family planning and fertility treatments
  * Pregnancy test education
  * Vitamin and supplement education

# Pharmacists' Roles
# Drug Metabolism in Pregnancy

* Cardiovascular: Increased heart rate, decreased albumin
* Respiratory: Decrease in lung capacity
* Renal: Increase in blood flow and filtration rate
* GI: Delayed gastric emptying, increased nausea & vomiting

# Pharmacists' Roles
# Drug Metabolism in Pregnancy

* Hematologic:  Increase in WBC & RBC, increase in clotting factors; increase in plasma volume
* Endocrine:  Increased thyroid hormone production

# Drug Metabolism in Breastfeeding

* Many mothers stop breastfeeding due to fear of medication transfer to infant
* Lipid soluble drugs are more likely to be in milk
* Breastfeeding schedule and peak drug levels in milk
* Volume of drug distribution in breast milk
  * Drugs that are widely distributed in body will be concentrated less in milk
* Protein binding (albumin) of drug
  * More protein binding decreases milk exposure
* Molecular weight of drug
  * Smaller molecules are more easily passed through cells

# Drug Metabolism in Breastfeeding

## InfantRisk Center:

www.infantrisk.org

Texas Tech University Health Sciences Center

Lab studies of medications in breastfeeding and pregnancy

www.medsmilk.com for medication use in breastfeeding updates

# Comorbidities and pregnancy

# Comorbidities and Pregnancy

* Diabetes
* HIV/ AIDS
* Herpes Simplex virus
* Hepatitis B
* Bacterial infection
* Oral Candidiasis
* Seizures
* Mental illness
* Cardiovascular disease
* Asthma

# Treatment options for

* Category A:  No risk to fetus demonstrated in first trimester
* Category B:
  * Animal studies do not indicate risk to fetus and no controlled studies in pregnant women
  * Animal studies have shown fetal risk, but controlled studies in pregnant women have not shown fetal risk
* Category C:
  * Animal studies show fetal risk and no controlled studies in women
  * No available studies in women or animals
* Category D:
  * Positive evidence of fetal risk, but benefit may outweigh risk
* Category X:  known teratogen; contraindicated.

# Comorbidities and Pregnancy: Treatment

* Diabetes:
  * Insulin is no longer the only option, but it is preferred
  * Glyburide, Metformin:  effective and no fetal harm
* HIV / AIDS
  * Risk vs benefit of treatment during pregnancy and labor to decrease fetal exposure of virus
  * Begin treatment with low CD4 counts or symptoms; otherwise, wait until second trimester
  * Breastfeeding NOT recommended if formula available

# Comorbidities and Pregnancy: Treatment

* Herpes Simplex Virus:
  * Acyclovir is preferred
* Hepatitis B:
  * Hepatitis B Immunoglobulin administered to mother and infant
  * Hepatitis C has no treatment to decrease transmission to infant
* Bacterial Infection:
  * Pregnancy:  Penicillin (B), amoxicillin (B), cephalexin (B), azithromycin (B), metronidazole (B), clindamycin (B)

# Comorbidities and Pregnancy: Treatment

* Oral Candidiasis:
  * Pregnancy:  Nystatin (C ) is considered the safest
  * Breastfeeding:  Typically treat infant with nystatin, fluconazole, or gentian violet
* Vaginal Yeast Infection:
  * Pregnancy:  Topical antifungal agents are safest: miconazole, clotrimazole
* Seizures:
  * Pregnancy:  medication withdrawal if seizure-free for 2 years; phenobarbital is preferred over phenytoin, but both are category D.  Gabapentin and topiramate are category C.

# Case 1 – Angie

24 y/o female patient, allergy to penicillin

Called over the weekend about a sore tooth and wants to also discuss teeth whitening

Mentions she may be pregnant, but she's not sure yet

Turns out, she has a mild tooth infection… How can we treat her infection? How can we treat her pain?

Oh, and antibiotics 'like, always give me a yeast

# Comorbidities and Pregnancy: Treatment

* Mental Illness:
  * Depression
    * Pregnancy: Risk vs benefit; sertraline preferred
    * Breastfeeding: Paroxetine, sertraline, & nortriptyline have lowest detection levels in infants
  * ADD/ ADHD
    * Amphetamines are contraindicated in breastfeeding
  * Anxiety: buspirone (B) is preferred in pregnancy, but not breastfeeding
  * Addiction/ substance abuse
    * Pregnancy: nicotine replacement therapy, methadone (C ), Subutex (Buprenorphine C)

# Comorbidities and Pregnancy: Treatment

* Cardiovascular Disease
  * Hypertension
    * Pregnancy: Methyldopa is preferred; clonidine and hydralazine have been used
    * Breastfeeding: ACE-I, calcium channel blocker
  * Arrhythmia
    * Pregnancy: Atenolol, labetalol, and metoprolol in second and third trimesters is preferred
    * Warfarin is contraindicated in pregnancy
    * Breastfeeding: labetalol, propranolol, and metoprolol are preferred
    * Amiodarone is contraindicated in breastfeeding

# Comorbidities and Pregnancy: Treatment

* Asthma:
  * B2-agonists: albuterol inhalation preferred in second and third trimesters; compatible with breastfeeding
  * Theophylline: no congenital defects but some adverse effects; ER formulation preferred in breastfeeding
  * Steroids: Some reports of congenital effects in pregnancy with prednisone and beclomethasone

# Comorbidities and Pregnancy: Treatment and Education

* Pain:
  * Pregnancy: Lidocaine (B), acetaminophen (B), oxycodone (B)
  * Breastfeeding: Ibuprofen

# Medications that affect oral health in pregnancy

# Comorbidity treatment and oral health

* Asthma – typically inhalation steroids are avoided in pregnancy; albuterol is preferred for immediate relief
* Seizures – some cases of craniofacial malformations with phenytoin & carbamazepine; valproic acid can cause cleft palate in 1–2% of cases
* Depression – nortriptyline can cause anticholinergic effects such as dry mouth

# Pharmacists' Roles: Vitamins and Supplements

* Folic Acid:  0.4mg to 0.8mg recommended for women of child-bearing age
  * Decrease incidence of spina bifida & anencephaly
* Prenatal vitamins
  * Omega 3 fatty acids EPA and DHA support heart, immunity, brain, eyes, and CNS
  * Calcium:  1000mg / day in pregnancy & breastfeeding

# Pharmacists' Roles: Vitamins and Supplements

* Oral health:  brushing and flossing
* Lifestyle changes:  avoid sugary foods, eat nutritious snacks and meals, light exercise

# Pharmacists' Roles

* Immunizations
  * Flu
  * TdAP

# Pharmacists' Roles: Post Partum

'The most accessible healthcare professional'

* What is safe and effective?
* Newborn and infant treatment for over-the-counter remedies
* Medication review of prescriptions
* Patient education on treatment duration, side effects, and treatment expectation

# Pharmacists' Roles: Newborn and Infant Care

* Diaper rash
* Nutritional supplement
* Vitamin supplement
  * Vitamin D 400 iu / day in breastfeeding to help calcium and phosphorus absorption
* Teething
* Fever
* Vomiting/ diarrhea

# Case 2 – Alvin

* 26 y/o male, severe lack of sleep, but excited new dad
* Drops off wife's discharge prescription at pharmacy
* Wants 'to know what you recommend to have on hand for a new baby'

# Pharmacists' Role: Breastfeeding

* Thrush/ Yeast infection
* Cracked/ sore nipple treatment
* Cough and cold treatment
* Allergies
* Pain / inflammation
* Vitamin supplementation
  * Calcium

# Other medication issues

* Insurance / affordability
* Formula selection

Comprehensive care of perinatal patients require gives the best outcomes for mother and child.

JESSICA.HASKINS@WALGREENS.COM

# QUESTIONS??