

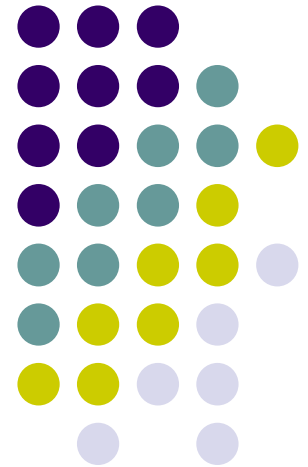
High Risk Obstetrics

Salih Y. Yasin, MD

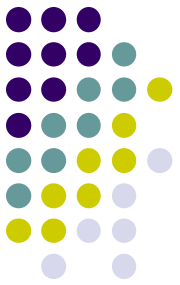
Professor, UM/OB/GYN

JMH WHC Director of Obstetrics and
Patient Safety

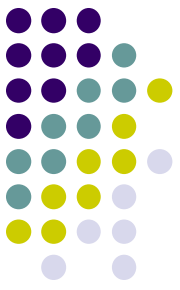
May 2019



AIMS OF OBSTETRICS:



To ascertain that all pregnancies are wanted and
culminate in a healthy fetus born to a healthy mother.
focus has changed from avoidance of death
to a “better” quality of life



HIGH RISK OBSTETRICS:

**Management of conditions
that are associated with higher chance
of sub-optimal outcome:**

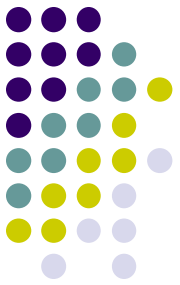
- 1. Patients with pre-existing medical conditions that affect outcome e.g. diabetes, hypertension, etc.**
- 2. Patients with previous poor obstetrical outcome e.g. growth abnormalities, previous congenital or chromosomal anomalies, stillbirths, neonatal deaths, preterm delivery, placental accidents etc**
- 3. Medical/ Obstetrical complications developing in pregnancy**
- 3. Patients with under-nutrition**



80/ 20 (Princeton) RULE

80% of babies with poor outcome are born to high-risk patients.

Risk status of the pregnancy may change at any time during the pregnancy, at presentation in labor, or due to intrapartum factors.

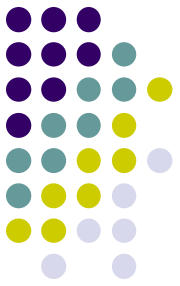


The major job of the OB Provider is:

**to anticipate and identify
those patients at risk,
assess fetal and maternal conditions
to optimize the outcome
for both: Mother and baby.**

**During this process certain assessments
are done (for intervention or non-intervention)
on ongoing pattern to prevent or minimize damage
in time (early enough)**

Liability Insurance Premiums for OB/GYN-Gynecologists 1970–2001

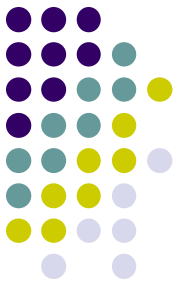


1970	\$2,237
1980	\$9,000
1985	\$23,300
1990	\$37,808
1995	\$29,186
2001	\$35,200

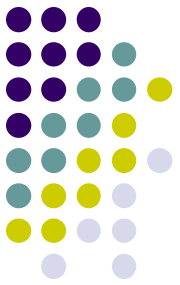
From Lockwood (2002).

2009 **\$150,000-200,000**

PERINATAL MORTALITY AND MORBIDITY

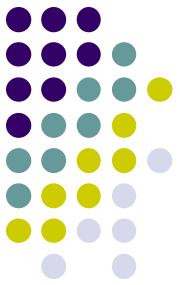


- Perinatal death rates decreased dramatically over the last 25 years: 1970 → 30/1,000 live births
1995 → 10/1,000—**No change since then**
- Perinatal deaths account for around 1.2% of all births and half of these are stillbirths.
- 80% of stillbirths occur before term (<37 weeks) and more than half occur before 28 weeks
- Intrapartum asphyxia is a rare cause of neonatal death
- Neonatal Deaths: 792/100,000 (1994)
- Of these, 63% occur from birth-28 days



Neonatal Deaths

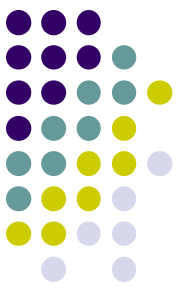
- Intrapartum asphyxia is a rare cause of neonatal death
- Neonatal Deaths: 792/100,000 (1994)
 - 63% birth-28 days
 - 37% 28 days-1 year
- The leading causes of infant deaths are preterm birth, low birth weight, congenital anomalies, and sudden infant death syndrome.
- Low birth weight babies increased 7.2% in 1994 (multiple gestation). The proportion of low birth infants differs in ethnic groups: 60/1000 white mothers, 120/1000 for African American mothers



Neonatal Morbidity

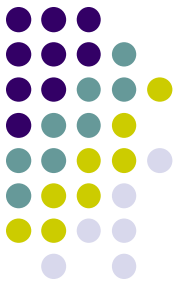
- **Infant Morbidity**: Low birth weight is a major contributor to morbidity and to a large fraction of neurological and intellectual deficits, personal tragedies, and societal costs.
- **Serious morbidity** increases with lower birth weights and age. Impact of survival of the very small infants (500-750 grams) on their neurobehavioral development emerged as a struggle between technology and ethics of medical interventions.
- Where to draw the line?

Some Goals for Mothers and Infants for the United States in 2010



(Baseline 1997) Goal 2010

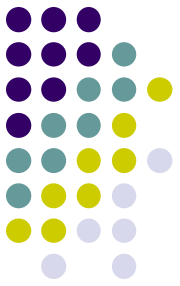
- Fetal deaths before 20 weeks (per 1000) 6.8 → 4.1
- Neonatal deaths before 29 days (per 1000) 4.8 → 2.9
- Maternal deaths (per 100,000) 8.4 → 3.3
- From *Healthy People 2010*, Centers for Disease Control and Prevention and the Health Resources and Services Administration (2000).



Maternal Mortality

- Embolism 19.6%
 - Hemorrhage 17.2%
 - Hypertensive Disorders 15.7%
 - Infection 12.6%
 - Cardiomyopathy 8.3%
 - Cerebrovascular accident 5.0%
 - Anesthesia 1.60%
 - Other 19.2% Unknown 0.7%
- The majority of the other medical conditions were cardiovascular, pulmonary, and neurological problems. From Chang and colleagues (2003).

Preconceptional counseling

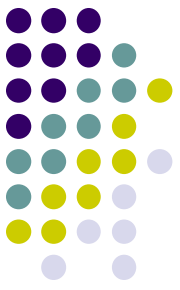


Is preventive medicine for obstetrics.

Factors that could potentially affect perinatal outcome are identified, and the woman is advised of her risks.

Whenever possible, a strategy is provided to reduce or eliminate the pathological influences revealed by her family, medical, or obstetrical history, or by specific testing.

Relationship of Chronic Renal Insufficiency with Pregnancy Outcome (in Percent)



Serum Creatinine (mg/dL) Outcome

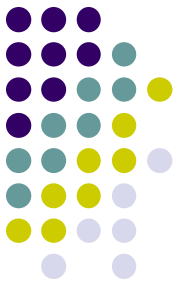
- ***Mild <1.5:PTB 13, PNM 5, IUGR 10, survival 84***
- ***Moderate 1.5–3.0:PTB 50, PNM 17, IUGR 20, Survival 62***
- ***Severe >3.0 PTB 100, PND 33, IUGR 100, Survival 50***
- Data from Cunningham (1990), Hou (1985), Imbasciati (1986), Jungers (1986), Katz (1980), Trevisan (2004), and all their co-workers.

1st Trimester HgbA1C & major Congenital Anomalies



- | HgbA1C | % Anomalies |
|---------|-------------|
| 4.6-7.6 | 1.9 |
| 7.7-8.6 | 1.7 |
| 8.7-9.9 | 6.3 |
| 10-10.5 | 9.1 |
| >10.6 | 25 |
-
- Kitzmiller et al 1991

Obstetrical and Medical Risk Factors Detected During Prenatal Care in the United States in 2001

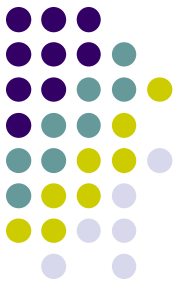


Total live births 4,025,933100..Total 616,929 (15.3%)

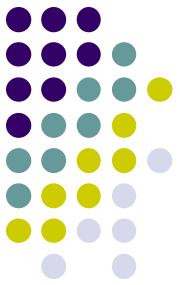
- Hypertension 182,561 (4.5%)
- Diabetes 124,242 (3.1%)
- Anemia 99,558 (2.5%)
- Hydramnios/oligohydramnios 54,694 (1.4%)
- Acute or chronic lung disease 48,246 (1.2%)
- Less than 1% each: Genital herpes 0.8%, Rh sensitization 0.7%;
Cardiac disease 0.5%, Renal disease 0.3%, Incompetent cervix 0.3%, Hemoglobinopathy 0.1%

Adapted from Martin and associates, 2002.

Hypertensive Disorders



- **Preeclampsia, Eclampsia, Chronic Hypertension**
- **10% of pregnancies**
- **Preeclampsia: HTN (140/90), proteinuria, +/- generalized edema**
- **Nulliparous, African Americans, Conditions with large placentas (Diabetes, multiple gestation etc)**
- **Vasospasm>> endothelial damage>>hypoperfusion>> end organ damage...Systemic disease- no system is spared**



CLASSIFICATION- NEW

- ✦ Preeclampsia/eclampsia

HTN, proteinuria (**with or w/o severe features**)- Eclampsia: Seizures in preeclampsia

- ✦ Chronic Hypertension

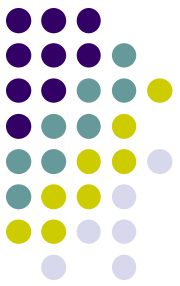
- ✦ HTN before pregnancy or <20 wks

- ✦ Preeclampsia superimposed on chronic hypertension

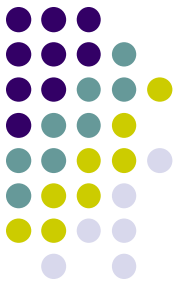
- ✦ Gestational Hypertension

Resolves or Chronic Hypertension (if HTN persists >12 wks PP)

- ✦ **Postpartum preeclampsia**



- **Severe features: BP >160/110, cerebral/ visual Sx, Epigastric/ RUQ pain, pulmonary edema, thrombocytopenia, DIC, hepatocellular damage (HELLP), double Cr/ renal insufficiency (? Protein/ IUGR out)**
- **Risks: IUGR, sudden fetal death, placental insufficiency, maternal Hypertensive crisis, MI, Stroke, Placental abruption, convulsion (Eclampsia), and possibly death**



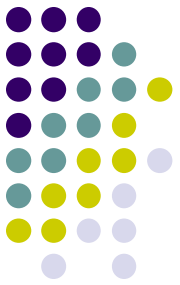
**Difficult to predict: Platelets, uric acid,
excessive weight gain, generalized edema**

**Rx: Gest HTN, not severe -> Expectant,
monitor mother and baby -> deliver @ 37**

HELLP syndrome -> Deliver

Severe after 34 wks - Expectant Rx of severe 34 weeks

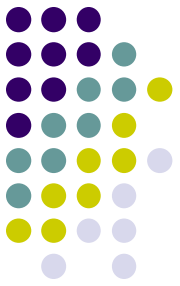
Previabile - stabilize and deliver



During Labor and Delivery:

- **Close fetal monitoring**
- **Close maternal monitoring**
 - **Active management of labor**
 - **Monitor intake output,**
 - **MgSO₄ seizure prophylaxis,**
 - **and watch for toxicity,**
 - **monitor organ functions,**
 - **control BP to <160/110,**
 - **Watch for possible serious complications**

Chronic Hypertension

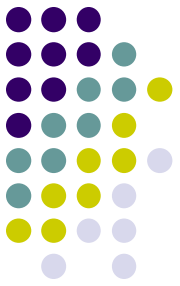


- **HTN before pregnancy or before 20 weeks,?
Failure of BP drop in the second trimester, older patients**
- **Same risks as Preeclampsia but with added risk of superimposed preeclampsia- worse prognosis**
- **Watch kidney function and treat HTN >150/90-100**
- **Fetal and maternal surveillance**
- **Deliver if complications or maturity**

Most common medical complication of pregnancy

4-6% of all pregnancies

Two disease entities:



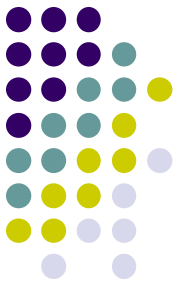
- **GESTATIONAL DIABETES**

Diabetes diagnosed for the first time during pregnancy, comprise 90% of cases

- **PREGESTATIONAL DIABETES**

Diabetes precedes pregnancy
10% of cases

Both disease entities share a common feature of abnormal glucose metabolism, but differ significantly in its implication, and perinatal outcome

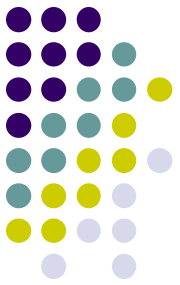


DIABETOGENIC FEATURES OF PREGNANCY

- Human placental lactogen
- Insulinases
- Estrogen
- Progesterone
- Growth Hormone
- ACTH and Cortisol
- Prolactin
- Resistance to insulin activity

Mostly are secondary to placental size and function as an endocrine organ

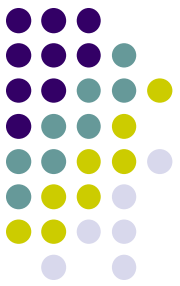
Peak of hormonal activity around 24-28 weeks gestation



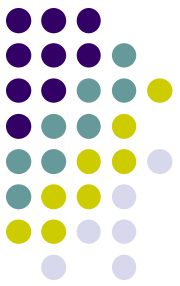
GESTATIONAL DIABETES PATIENTS AT RISK:

1. **Obese > 200 lbs**
2. **Age > 35 yrs**
3. **Family History**
4. **Previous large babies**
5. **Previous gestational diabetes**
6. **Size more than dates**
7. **Increased amniotic fluid
volume= Polyhydramnios**

If we follow these risk factors strictly, we will **miss 50%** of gestational diabetes

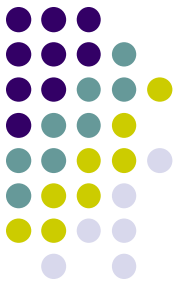


- Increase incidence of preeclampsia □ Preterm deliveries
- Operative deliveries
- Difficult deliveries, and possible consequences, shoulder dystocia, hypoxic insults
- Hypoglycemia
- Hypocalcaemia
- Hyperbilirubinemia
- Interference of Pulmonary maturity especially with poor control
- ?Sudden IUFD



Pregestational Diabetes:

- **A: Diet,**
- **B: Insulin <10 yrs, onset> 20 yrs age,**
- **C: 10-19 years duration and onset,**
- **D: >20 years duration and <10 yrs onset,**
- **F: Nephropathy,**
- **R: Retinopathy,**
- **H: Heart complications,**
- **T: Transplant**
- **→ The earlier the onset, the longer the duration, and the poorer the control → the more likely to have organ dysfunction due to vasulopathy**
- **A-D large babies, advanced D –T small babies**



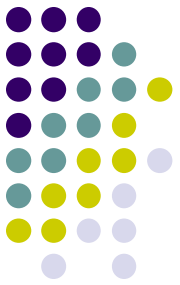
More frequent tendency of mother to go into DKA, as well as hypoglycemia, and its serious implication on the baby

Preterm delivery because of all possible confounding factors e.g. hypertension, poor control, growth abnormalities etc

Control: same guideline

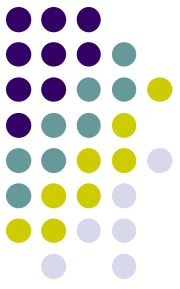
More brittle

More sensitive to Insulin



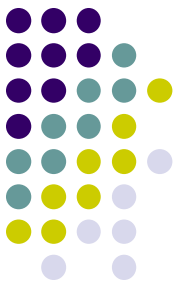
INFANT OF A DIABETIC MOTHER

Large for gestational age, Macrosomia: Fetal pancreas starts making pro-insulin as of 12-13 weeks, and is responsive to glucose as of 18-20 weeks. Higher glucose, more fetal Insulin=Growth Hormone like activity responsible for the common features of the “Infant of Diabetic Mother”



MANAGEMENT GUIDELINES

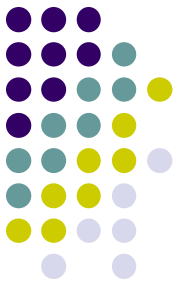
- ❖ Sugar control-home glucose monitoring-24 hour availability
- ❖ Ultrasound testing for anatomic survey
- ❖ Genetic screening
- ❖ Fetal echocardiogram 22-24 weeks, repeat as needed
- ❖ Serial sonos for growth



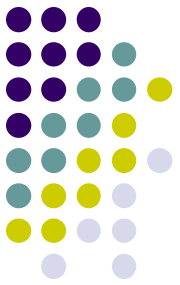
Preterm Birth Overview

- One preterm baby is born every minute
- Preterm babies account for 75-80% of all perinatal mortality and 50% of neurologic morbidity
- Increase in medically indicated preterm deliveries to 40%
- Spontaneous preterm birth accounts for 40%
 - Kiefer and Vintzileos, REV Obstet Gynecol-2008

Etiologies of Preterm Labor



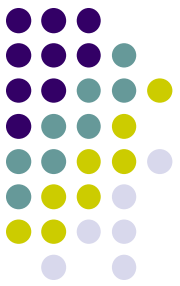
- **Uterine causes**
 - cervical incompetence
 - uterine anomalies
 - uterine stretch
- **Infectious causes**
 - association with chorioamnionitis



Current Approach

- Clinical history
 - clinical scoring systems
 - risk classification
 - high risk
 - previous PTD
 - multiple gestations
 - diabetes
 - hypertensive disorders
 - patient presentation
 - nulliparity –risks not established

Cunningham FG et al, eds. *Williams Obstetrics*. 21th ed. 2001.

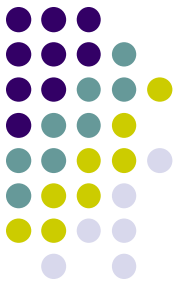


Commonly Used Interventions

- **Culture/treatment for infection**
- **Bed rest on left side**
- **Hydration**
- **Tocolytic agents**
- **Cerclage**
- **Home uterine monitoring**
- **Maternal transport**
- **Lifestyle changes:**
 - **Stress reduction**
 - **Pelvic rest**
 - **Relaxation techniques**
 - **Improve nutrition**
 - **No tobacco/alcohol**
 - **Work modification**

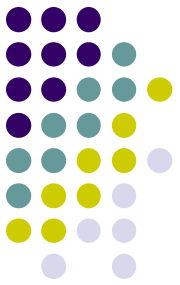
BIRTH

Effective Strategies



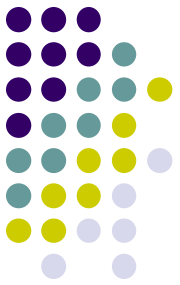
- Prevention of multifetal pregnancies
- Cervical cerclage, if indicated
- Prevention. Early diagnosis of STD's and GU infections
- Stop smoking and substance abuse
- The use of progesterone in women with previous preterm delivery

POST-DATES:



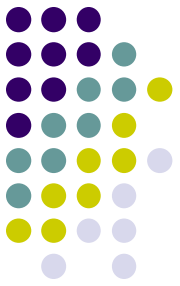
- **>42 weeks gestation**
- **Post-maturity syndrome- 15%**
- **Placental insufficiency**
- **Fetal distress, meconium aspiration and asphyxia**
- **Increased perinatal morbidity and mortality**
- **IUGR or Macrosomia with their possible serious consequences**
- **Watch closely- sonography for size, amniotic fluid, nonstress testing and biophysical profiles- low threshold for intervention**
- **NEW CONSIDERATIONS>>>>>>>>>41**

PREMATURE RUPTURE OF THE MEMBRANES (PROM)

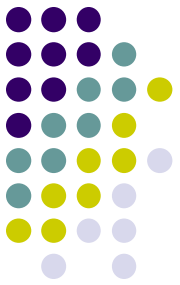


- **Rupture of the membranes before the onset of labor**
- **Preterm PROM → < 37 weeks**
- **Dx: demonstrate evidence of amniotic fluid in the vagina: nitrazine, ferning, gross pooling, etc**
- **Etiology: ?, same associated factors of preterm labor:**

PROM



- **Infections, cervical incompetence, abnormalities of the uterus, overdistension e.g. multifetal gestation, abnormalities of the membranes**
- **Risks ~ gestational age.. Infection, preterm birth, joint abnormalities, lung pathology, sepsis, cord prolapse, abruptio placenta, bacteremia and other complications of prematurity**

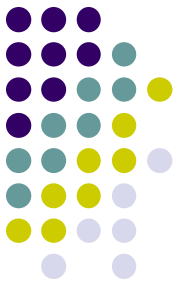


PROM

- **Rx→Risk Vs benefit**
- **>34 weeks → deliver**
- **20-34 weeks→ expectant- antibiotics, antenatal Steroids**
- **<20 weeks, offer TOP? Vs Expectant**

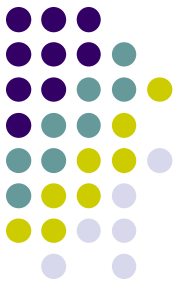
- **New Direction– Near Term babies and outcomes**

MULTIFETAL GESTATION:



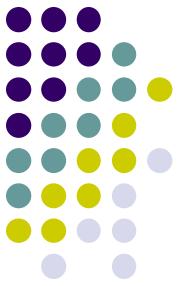
- **1% Twins contribute to 25% of NICU admissions**
- **Prematurity: premature labor/ PROM, medical complications as gestational diabetes and preeclampsia. Operative deliveries are increased, other possible insults including growth abnormalities → Twin transfusion syndrome, fetal death of one or more members of the multiple fetuses.**

Reproductive blessing Vs Sin?



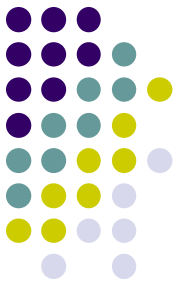
- **Ever additional fetus, decreases the duration of pregnancy by 3-4 weeks**
- **Though viewed by many as joyful, obstetrically this is a complication that needs very careful attention with strict maternal and fetal surveillance**
- **Mode of delivery: 3 or more → Cesarean section**
- **Twins → presenting first twin, size, and other considerations → newer approaches: Vx/Vx vs. other combinations**

IUGR:

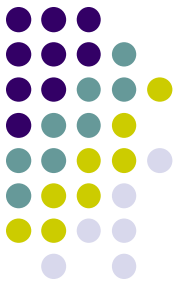


- **EFW <10%le for gestational age**
- **When EFW <3%le most pathology**
- **Small for gestational age-growth restriction**
- **Constitutional- Morphology is a reflection of genetics**
- **New Concept “Suspected IUGR”- Abd Circ**

IUGR

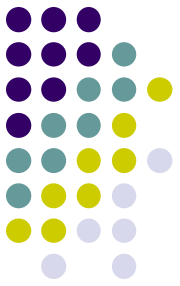


- **Symmetric: early infections, chromosomal abnormalities, and severe medical disease**
- **Asymmetric: Head sparing- late insult e.g. preeclampsia (**SUSPECTED AC**)**
- **Significant increase in perinatal morbidity and mortality**
- **Effects of later neurobehavioral pathology**
- **Recognize, diagnose, monitor carefully and deliver as deemed necessary**

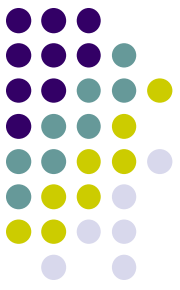


- **Brief review of Intrapartum Monitoring**

Intrapartum Care- Risk Concerns



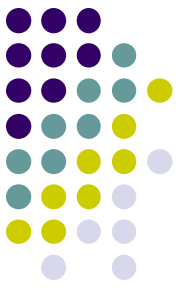
- >80% of liability cases- Intrapartum care issues, the majority of claims relate to:
 - a. Inappropriate use of oxytocin /other uterotonics**
 - b. Inappropriate use and interpretation of fetal monitoring**
 - c. Lack of timely delivery**
 - d. Non availability of the Obstetrical provider**



1997 and 2008 NICHD

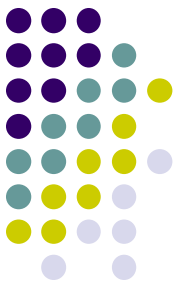
Electronic Fetal Heart Rate Monitoring: Research Guidelines for Interpretation

Published simultaneously by the Journal of Obstetric, Gynecologic, and Neonatal Nursing (J Obstet Gynecol Neonatal Nurs 1997; 26: 635-640) and the American Journal of Obstetrics and Gynecology (Am J Obstet Gynecol 1997;177:1385-90).



Factors controlling FHR

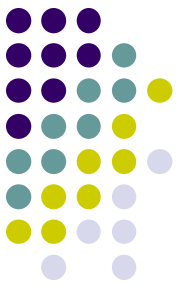
- Parasympathetic Nervous System
- Sympathetic Nervous System
- Chemoreceptors
- Baroreceptors
- Central Nervous System
- Hormonal Regulation
- Blood Volume Control
- Frank-Starling Mechanism



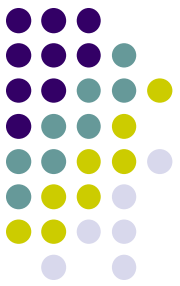
Abn. FHR patterns & Hypoxia: Evidence

- *Link between FHR patterns and APGAR scores*
- *Bisonette showed relationship(next graph)*
- *Schifrin attempted prediction by looking*
 - *Normal: almost always right*
 - *Depressed: more often wrong*
 - *When born depressed: always was predicted*
- **There is a correlation with outcome**
 - **Not all abnormal patterns are associated with poor outcome**
 - **Extent of which intervention ameliorates or prevents bad outcome is unknown**
 - **Electronic fetal monitoring is most correct with reassuring strips**

Relationship between FHR and 1 min APGAR score

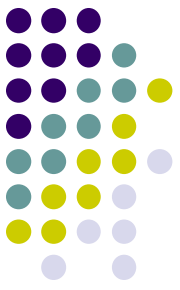


<i>FHR pattern</i>	<i>Percent</i>	<i>MEAN APGAR</i>	<i>APGAR 4-6</i>	<i>APGAR 0-3</i>
<i>Normal</i>	45	8.2	5	0.9
<i>Tachycardia</i>	3.4	7.9	4.2	4.2
<i>Bradycardia</i>	5.3	8.1	7.9	0
<i>Acceleration</i>	7.3	8.4	1.9	0
<i>Early Decel</i>	17	8.0	4.9	0.8
<i>Late Decel</i>	2.8	5.4	35	25
<i>Loss of BTBV</i>				
• <i>Uncomplicated</i>	5.6	7.2	17.5	5.0
• <i>Complicated</i>	1.5	6.7	18.5	18.2
<i>Variable with NL baseline</i>	9.9	7.7	12.7	2.8
<i>Variable with ABNL baseline</i>	2.0	5.9	0	50



The interpretation of the fetal heart rate tracing should follow a systematic approach with a full qualitative and quantitative description of the following

- Baseline rate
- Baseline FHR variability
- Presence of accelerations
- Periodic or episodic decelerations
- Changes or trends of FHR patterns over time
- Frequency and intensity of uterine contractions



Variability

- *In presence of decels, loss of variability is associated with fetal acidosis and low APGAR*
- *With hypoxia, decels precede loss of BTBV*
- *Difficult pattern: flat baseline, no decel, nl baseline*
 - *May represent previous insult now corrected with permanent neurologic damage*
 - *Congenital anomaly (CNS or cardiac)*
- *Loss of variability in the absence of deceleration is not a sign of hypoxia*

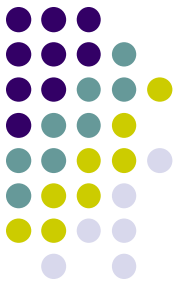
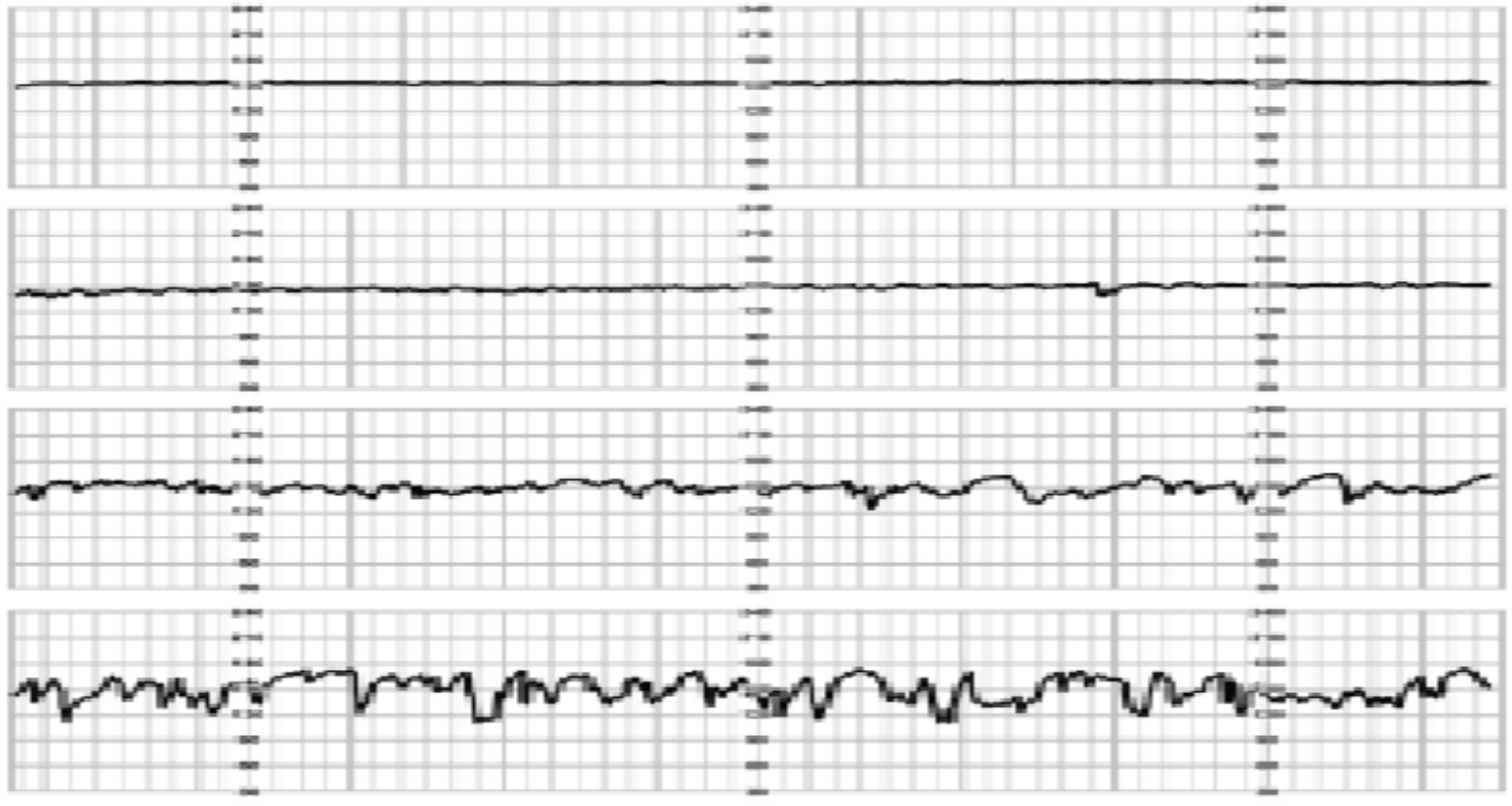
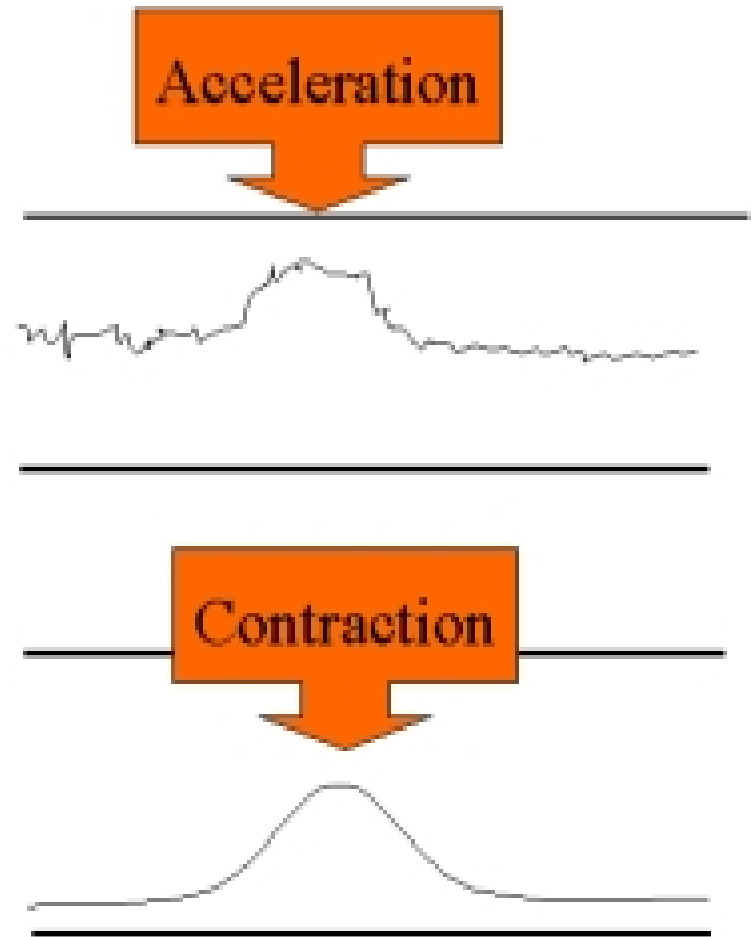


Figure 1. Varying degrees of FHR variability.



Periodic FHR Changes

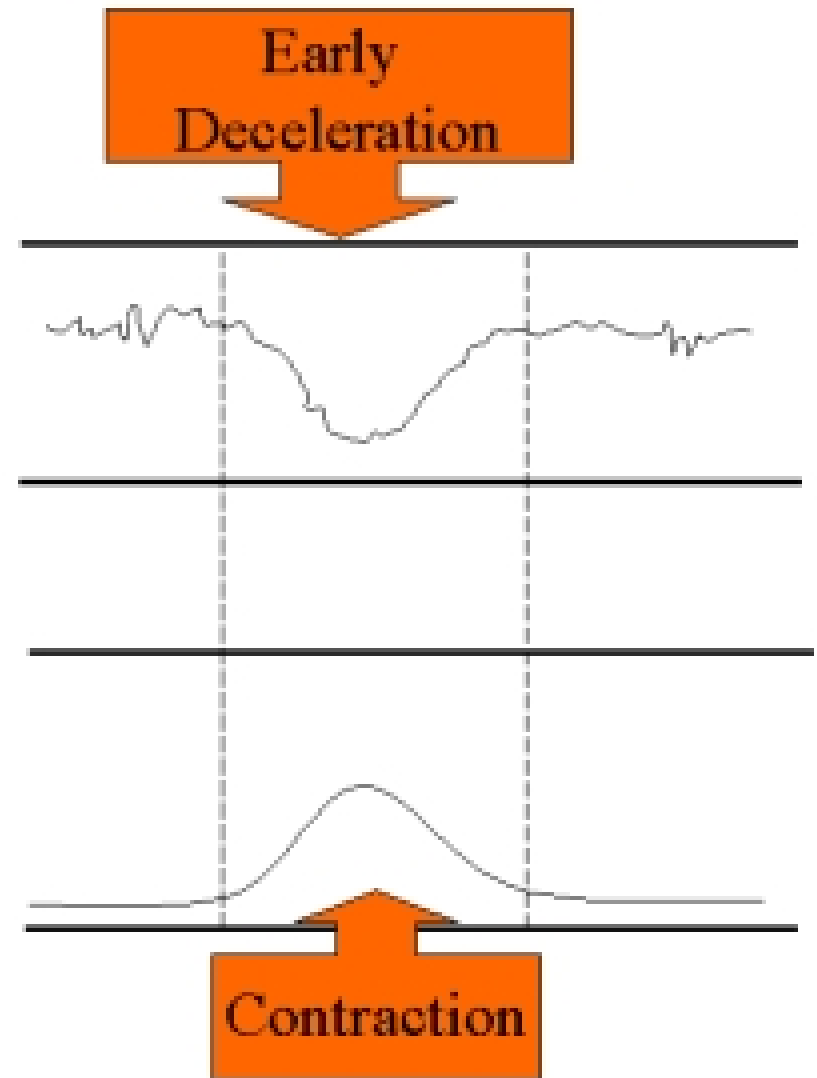
- Acceleration: increase in FHR with response to contractions or fetal activity
- NORMAL and desirable
- Sign of fetal well being



Periodic FHR Changes

■ Early Deceleration

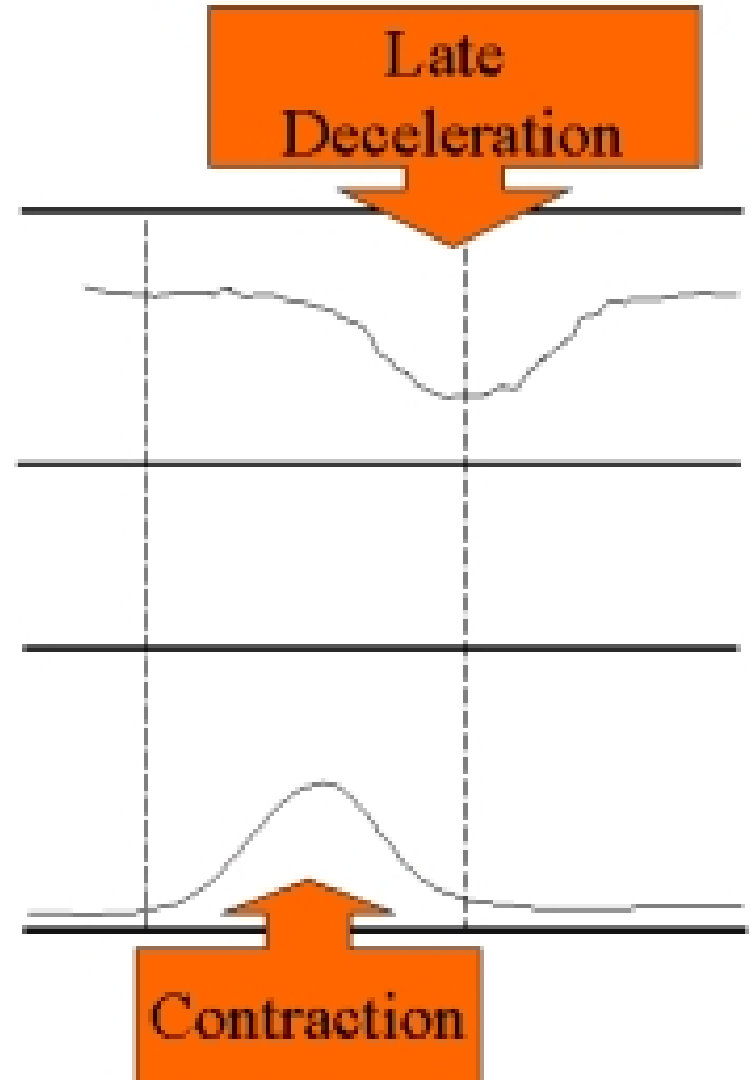
- Decrease in FHR simultaneously with uterine contraction
- Not < 100bpm
- VAGAL discharge due to dural stimulation from **head compression**



Periodic FHR Changes

■ Late Deceleration:

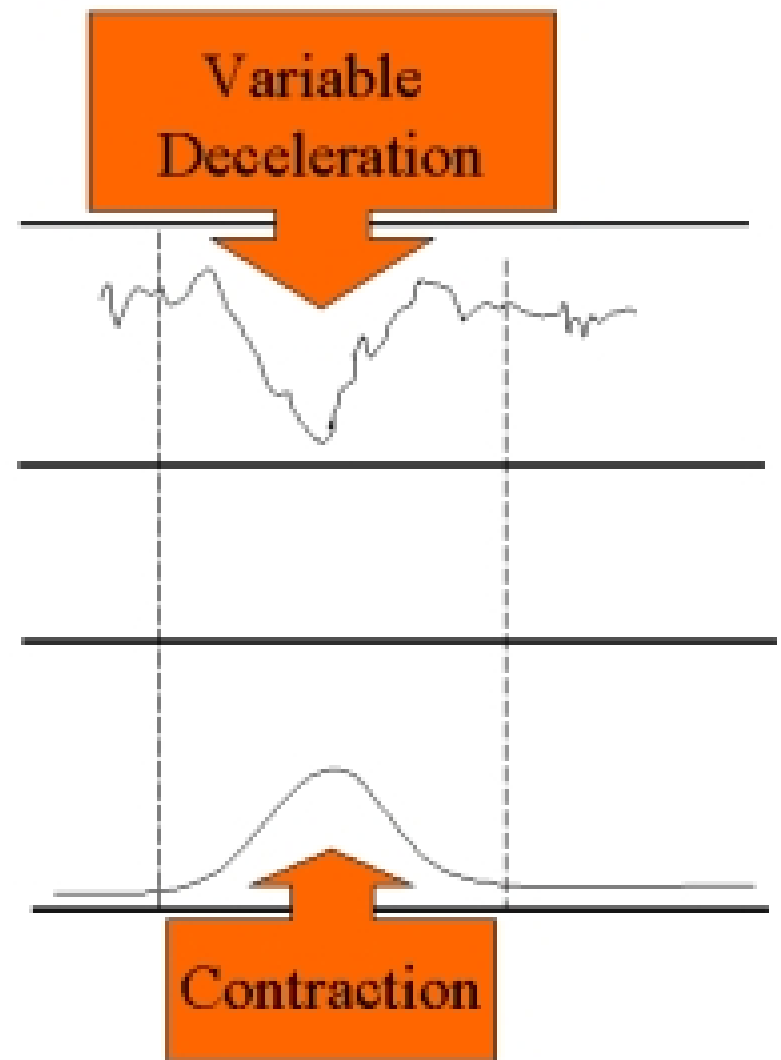
- Onset, nadir and recovery delayed in respect to contraction
- Reflex response of $\uparrow p\text{CO}_2$ sensed by chemoreceptors
- Fetal hypoxia due to **uteroplacental insufficiency**
 - Loss of short term variability

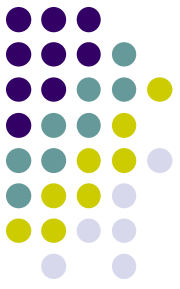


Periodic FHR Changes

■ Variable Deceleration

- Due to **umbilical cord compression**
- Goodlin's Rule of 60's (severe variables)
 - ↓HR 60 bpm
 - ↓HR to 60 bpm
 - ↓HR for 60 seconds
- Mild: to 90 bpm for <30 sec
- V-shaped

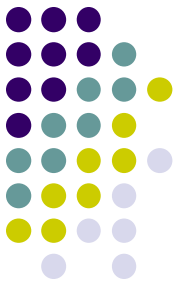




Three Sixties → Significant Variables

- Drop by 60 b/min
- Drop to 60 b/min
- Lasts more than 60 seconds

Management of Variables

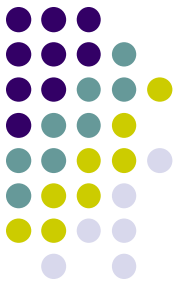


- Change position to where FHR pattern is most improved. Trendelenburg may be helpful.
- Discontinue oxytocin.
- Check for cord prolapse or imminent delivery by vaginal exam.
- Administer 100% O₂ by tight face mask.
- Consider amnioinfusion [35-37]
- ▲ Role of fetal scalp pH?
- ▲ Delivery

Management of late decelerations



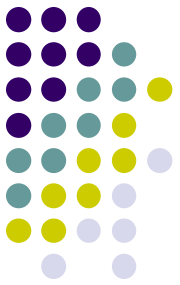
- Place patient on side [23,24]
- Administer O2 by tight face mask [25]
- Discontinue oxytocin.
- Correct any hypotension
- IV hydration.
- If hyperstimulation is present consider terbutaline 0.25 mg SC [26,27]
- If late decels persist for more than 30 min despite the above maneuvers->reassess for intervention



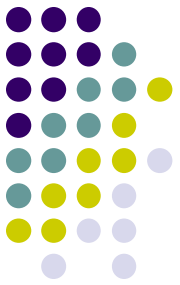
Causes of Severe Fetal Bradycardia

- Rapid descent
- Tetanic uterine contractions
- Vigorous vaginal examination
- Epidural and spinal anesthesia
- Prolonged cord compression
- Cord prolapse
- Maternal seizures
- Paracervical block

INTERVENTIONS FOR FETAL BRADYCARDIA



- *Check that you're not picking up maternal heart rate*
- *Check for [Cord Prolapse](#)*
- *Stop Oxytocin (if being given)*
- *Give O2 to mom--Actually increases fetal O2 sats*
- *Change maternal position, e.g. to lateral decubitus position*
- *Check maternal BP*
- *Run IVF wide open*
- *Change in position (lat. decub)*
- *Scalp stimulation--give between decels, not during; to assess degree of fetal compromise*



Nonreassuring (Category 2) vs. Ominous Patterns (Category 3) (NICHD 2008)

Nonreassuring patterns

ASSESS CAREFULLY

Fetal tachycardia

Fetal bradycardia

Saltatory variability

Variable decelerations
associated with a
nonreassuring pattern

Late decelerations with
preserved variability

Ominous patterns= INTERVENTION

Persistent late decelerations
with loss of variability

Nonreassuring variable
decelerations associated
with loss of variability

Prolonged severe bradycardia

Sinusoidal pattern

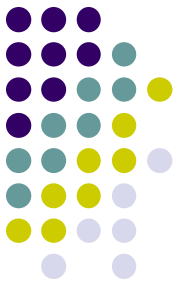
Confirmed loss of variability
not associated with fetal
quiescence, medications or
severe prematurity

A Systematic Approach to Reading Fetal Heart Rate Recordings



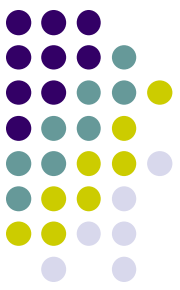
1. **Evaluate** recording--is it continuous and adequate for interpretation?
2. Identify type of monitor used--external versus internal
3. Identify baseline fetal heart rate and presence of variability
4. Determine whether accelerations or decelerations from the baseline occur.
5. Identify pattern of uterine contractions, including regularity, rate, intensity, duration and baseline tone between contractions.
6. Correlate accelerations and decelerations with uterine contractions and identify the pattern.
7. Identify changes in the FHR recording over time, if possible.
8. Conclude whether the FHR recording is reassuring, nonreassuring or ominous.
9. Develop a plan, in the context of the clinical scenario, according to interpretation of the FHR.
10. Document in detail interpretation of FHR, clinical conclusion and plan of management.

ROAD MAP



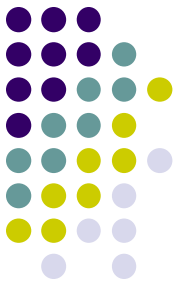
- **Identification of high risk conditions**
- **Preconceptional Counseling- EARLY Consult**
- **Effect of pregnancy on the disease**
- **Effect of the disease on the pregnancy**
- **Perinatal outcome and course**
- **Outlining management plan**
- **Safe Intrapartum practices, monitoring etc**
- **Consultation with Neonatologists, pediatric surgeons and specialists and other supportive services: social, chaplain, family**

Alert #30, July 2004, Preventing infant Death and Injury During Delivery



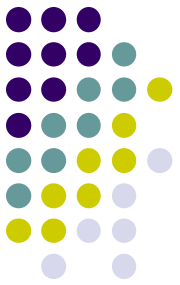
- Identified Factors: lack of prenatal care 4%, maternal age 13%, previous CS 11%, diabetes 4%, substance abuse 4%.
- Identified complications during birth: Non reassuring fetal status 77%, abruption 8%, ruptured uterus 8%, breech 6%.
- CS: 49% were emergent, 4% delay in CS.
- Vag Deliveries (46%): 21% vacuum attempt/procedure, 13% mid forceps, 11% failure to do indicated CS and 8% VBACs.

Risk Concerns



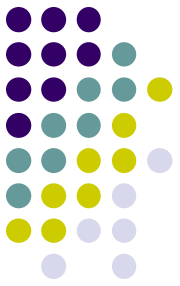
- a. Failure to identify high-risk condition
- b. Lack of screening/testing/monitoring of identified high-risk pregnancies
- c. Failure to communicate results and clinical information to clinicians and patients

Adverse Event



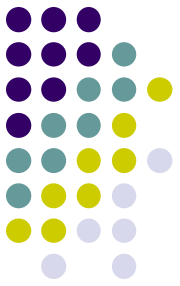
- An event over which healthcare personnel could exercise control and which is associated in whole or in part with medical intervention rather than the condition for which such intervention occurred and which satisfies the following requirements:

Adverse Event, 2



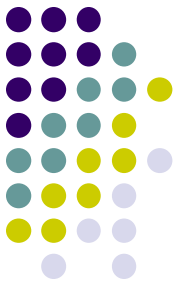
- Wrong procedure, wrong patient, wrong site, unrelated to condition
- Required surgical repair or damage-unrecognized, undisclosed
- Removal of unplanned retained objects
- OR-→→

Adverse Event, 3



- Resulted in:
 - Death
 - Brain or spinal damage
 - Permanent disfigurement
 - Fx/ dislocation of bones/ joints
 - Neurological/ physical/ sensory damage
 - Required specialized medical care/ surgery resulting from non emergent intervention
 - Transfer within or to outside facility to higher acuity of care due to intervention

Risk Modification Guidelines



- Prevention: Medication Errors

- Do not use list

- Leading zeros, none trailing

- Verbal orders, read back

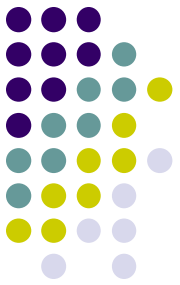
- Correct patient info, clarification, avoid multidose vials, double checks/verify for calculated doses and high risk meds, look alike, sound alike

- 5Rs: right drug, patient, dose, time, route

- Properly Labeled meds, standard times

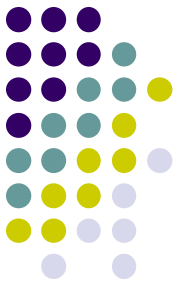
- Pumps

- Documentation



Basics

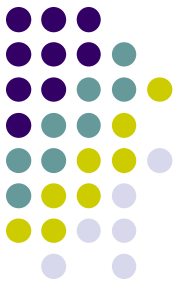
- Adherence to professional Organizations standards and guidelines (e.g. ACOG)
- Guidelines applicable → all professionals/ facilities
- Teamwork
 - Common language of clinical definitions e.g. EFM
 - Consensus of clinical decisions for uniformity
 - Prompt on site response of Obstetrical providers when requested



Perinatal Continuum

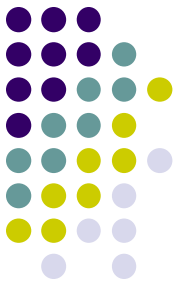
- Level of care
- Neonatal care capabilities(1-4, 35, 32,30,24)
- Maternal Care capabilities
- Maternal/ Neonatal Exam and Transport (EMTALA)
- Informed decision making: educate and document to avoid provider/pt mismatch of expectations

Antepartum Care

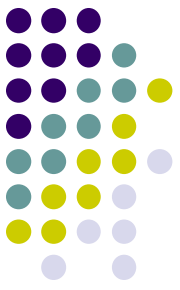


- Risk Concerns
 - a. Failure to identify high-risk condition
 - b. Lack of screening/testing/monitoring of identified high-risk pregnancies
 - c. Failure to communicate results and clinical information to clinicians and patients

AP Care strategies



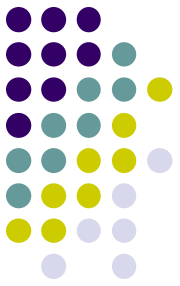
- Uniform records-available L&D 36 wks
- Communications among clinicians of results and care plans
- When areas of concern arise (e.g. growth pattern, abn results, pt's anger)→ communicate to parties involved
- EDC assignment by 20 wks, GBS Rx, high risk situations, document fetal well being
- PTL/PROM: evaluate in person



Intrapartum- Strategies

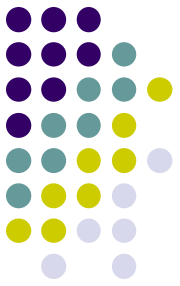
- Intrapartum fetal assessment establishment
- Monitoring protocols per practices e.g. ACOG
- ?Fetal well-being → Notify Ob provider while starting intrauterine resuscitation
- Fetal well being assessment points when:
ROM, medication Rx, use of uterotonics (induction/augmentation), anesthesia placement

INTRAPARTUM → THE BIG SEVEN



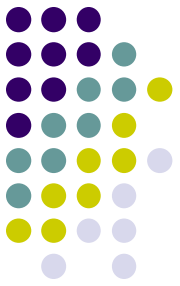
1. Induction/ augmentation of labor
2. Cervical ripening
3. VBAC
4. Epidural Anesthesia
5. OVD
6. Shoulder dystocia
7. CS capability

The Big Seven, 1 → Uterotonics

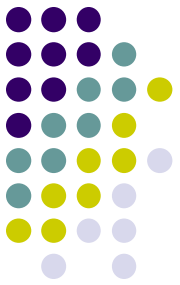


- **Risk Concerns**: uterotonics use and inadequate response to hyperstimulation
- **Reduction**:
 1. Document Indication for use
 2. Adequate monitoring
 3. Strict active Rx protocols
 4. Respond to hyperstimulation
 5. Watch for use in VBACs- risk of rupture

The Big Seven,²→ Cervical Ripening



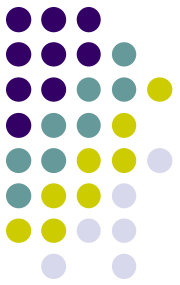
- Concern is hyperstimulation
- Risk Reduction:
 - Establish a policy for use
 - Monitoring
 - Prepare for intervention for maternal or fetal emergencies



The Big Seven, 3→VBAC

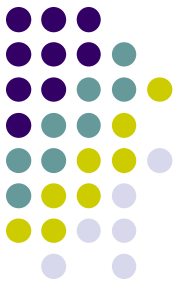
- Risk Concern: **Uterine rupture**
- Uterine rupture is increased from .45→ 1.45%
1.5%→ 7% spont. vs. induced labor_(AJOG
184:1122, 2001)
- **Strategies**
 - Identify candidates- written criteria
 - Counseling/ documentation of same
 - Capability fro emergency CS
 - Physician availability
 - Continuous EFM monitoring-
 - Periodically: Mock Uterine rupture codes

VBAC



- Uterine rupture is...increased with the use of various PG cervical ripening agents for the induction of labor and their use for this purpose is discouraged
- ACOG Comm. Opinion #271, 4/2002

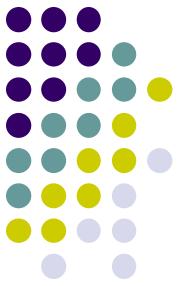
VBAC- Consent



- I understand that:

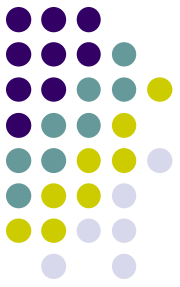
If my uterus ruptures during my VBAC, there may not be sufficient time to operate and to prevent the death of or permanent brain injury to my baby

The Big Seven, 4→ Epidural Anesthesia



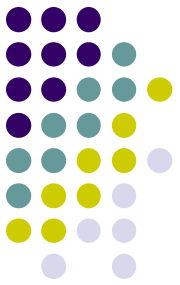
- Risk Concern: Hypotension, EFM during procedure, ?Uterine Activity
- Strategies:
 - Competent anesthesia providers
 - Maternal Fetal assessment during placement, OB providers available to deal with emergencies when arise
 - Dedicated personnel during the process

The Big Seven, 5→ Operative Vaginal Delivery



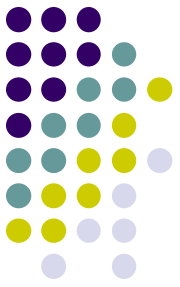
- Concern: Allegation of fetal trauma due to Forceps/ Vacuum delivery
- Informed consent, Indication, documentation
- Reduction Strategies:
 1. Documented maternal/ Fetal indications
 2. Avoidance of repetitive use of either instrument
 3. Safety guidelines

OVD



- Use the vacuum only when there is a specific obstetric indication is present (FDA 1998)
- Document prior to use
 - EFW, Pelvis adequacy, Cervical exam, indication, patient agreement
 - After use: instrument, duration, problems at use, maternal/neonatal findings, inform parents

The Big Seven,6→ Shoulder Dystocia



- Risk Concerns: Not predictable or preventable, can occur in any delivery, and should be dealt with as a perinatal emergency
- When OCCURS
 - Skilled providers, Neonatal resuscitation
 - Avoid mid-pelvic OVD when ?macrosomia
 - Customary maneuvers, timing, No fundal pressure
 - Drills should be practiced

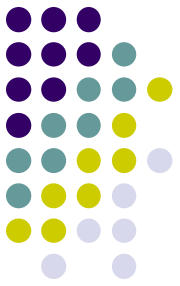
The Big Seven, 7 → CS Capability



- Every facility that offers perinatal services must be able to initiate a Cesarean section within 30 minutes of the decision when a CS is performed for non-reassuring fetal status or maternal emergency

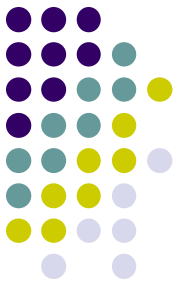
Decision to Incision Time

The Continuum- Neonatal Period

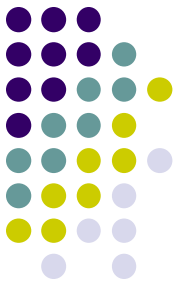


- Neonatal Resuscitation
 - Staff available for airway Rx including intubation
 - Births/ 1 certified neonatal resuscitation- an additional available if needed
 - Neonatal resuscitation record
 - Meconium aspiration prior to Pos. Press. Vent (PPV).

Future?



- Create non punitive environment for reporting errors
- Promote the Culture of Safety
- Establish Clear lines of communications
- Look for system issues
- Record what you do, why and your expectations
- Focus on what you can control: Outcomes, Quality, loss prevention
- WE CAN DO BETTER



THANK YOU