Human Factors: The Dirty Dozen in CTG Misinterpretation
Joan Jones Midwifery Educator KEMH 2019
According to Gordon Dupont
The dirty dozen

- Lack of communication
- Complacency
- Lack of knowledge
- Distraction
- Lack of teamwork
- Fatigue
- Lack of resources
- Pressure
- Stress
- Lack of awareness
- Norms
Lack of Effective Communication

- Confirmation bias “This trace looks normal, don’t you think?”
- Lack of appropriate escalation

Helpful tools in communication
- DR C BRAVADO
- SBAR
Complacency

- Insidious error caused by overconfidence
- Caution with pre designed stickers
- Change the language from ‘How is the CTG trace’? to ‘How is the baby’?
- Big picture thinking required
Lack of knowledge

- Understand fetal physiology

- Baseline Rate 108 - 110
  <34 week gestation

- Baseline Rate 158– 160
  Term + 10 gestation baby
Anything that takes your mind off the task of caring for a woman in labour

Placement of an epidural

Typically the time when the CTG is neglected
Lack of teamwork

- Teams change

What will help:

- Introductions at the start of each shift
- Multidisciplinary simulation training on a regular basis
"No, left foot, LEFT foot, yeah, right there."

"Now EVERYBODY SCRATCH!"
Fatigue

- 2am – 6am Window of Circadian low
- 50% of births following spontaneous labour occur between 1am and 7am
- Rest breaks during shift
- Adequate staffing levels
Lack of resources

- Stocks to be diligently checked and maintained before they are required
- Fetal Scalp electrodes compatible with CTG monitors
Pressure

- Self Pressure (will we be seen as incompetent if we ask for help?)
- Practice effective prioritisation
- Delegation of tasks
- Ask for help
- Escalation to senior member of the team even if ‘off-site’
Lack of Assertiveness

- Failing to speak up when things don’t seem right
- Break down the chain of command
- Develop a culture where juniors are expected to speak up and applauded for doing so
Stress

- Stress is the subconscious response to the demands placed upon us
- Stress can lead to errors when in excess
- We become distracted and less able to perform complex tasks such as CTG interpretation and management
Lack of awareness

- Lack of alertness
- Lack of vigilance
- Linked with complacency
- Lack of situational awareness
- Can be combined with lack of Knowledge, stress and fatigue
where is the lion? - Meme by pradhyu89 :) Memedroid
Norms

- Norms are unwritten rules
- Followed and tolerated by most of the group
- Higher tolerance of an abnormal CTG in the second stage
- Interpretation of the CTG in the first or second stage are the same
Questions
Summary

- Care for yourself
- Fetal physiology
- Understand that CTG changes may be caused by infection/inflammation, not only hypoxia
- Ask ‘how is the baby’
- Fresh eyes
- Break down hierarchical boundaries
- Feel free to ask and escalate
- Avoid negative norms
- Care for yourself
Dr C Bravado

Dr - determine risks

C - contractions

Bra - baseline rate

V - variability

A - accelerations

D - decelerations

O - outcome - see management →

TRACE 1

Obstetric History

- 24 year old
- G2 P1
- T + 5
- Uneventful pregnancy
- Attended Maternal Fetal Assessment Unit for CTG post mature pregnancy
## Outcome

Spontaneous onset of labour the next day
SVD
Live male APGARS 9:9:9
Early discharge home after 6 hours

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Dr C Bravado
Dr - determine risks
C - contractions
Bra - baseline rate
V - variability
A - accelerations
D - decelerations
O - outcome - see management →

TRACE 2
Obstetric History

- 28 year old
- G2 P0
- 30+1 Gestation
- Uneventful pregnancy
- Attended Maternal Fetal Assessment with a history of diminished fetal movement
Discuss in your group what are your Options / Management for this case
Outcome

Ultrasound normal growth interval

Weekly CTG’s Abnormal till 34 weeks gestation then normal CTG

Spontaneous onset of labour at 38 weeks gestation
SVD
Live female APGARS 9:9:9

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### TRACE 3

**Obstetric History**

- 36 year old lady
- G2 P0 (1 miscarriage 6/40) 1997
- Booked with Midwifery Group Practice
- A Negative blood group Anti D administered at 28 and 34 weeks gestation
- GTT normal
- Uneventful pregnancy
• Self referral to MFAU with history of reduced fetal movements at 37/40
• CTG Abnormal despite position change, rehydration
• Bedside ultrasound Amniotic Fluid Index (AFI)10, no head or trunk movement seen, minimal limb movement seen. Patient teary, does not want intervention
• Does this require immediate action by you? Yes, No
• What management should the obstetric team consider?
Outcome

- Category 1 C/S for sinusoidal pattern (long discussion with woman eventually agreed for C/S) 37+1 Gestation
- ? fetal maternal bleed
- APGARS 8:9:9
- Birth weight 2800
- Infant very pale at delivery developed Respiratory Distress Syndrome (RDS) required Continuous Positive Airway Pressure (CPAP)
- Hb 55
- Kleihaur strongly positive
- Blood group O positive
- Blood transfusion 54mls O Negative Red blood cells
- Warded with Mum aged 24 hours. Discharged home day 7

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Maternal Management

- Rhophylac infusion administered
- Rhophylac®, Rh₀(D), Immune Globulin Intravenous (Human), is indicated for suppression of rhesus (Rh) isoimmunisation
- Genetic services
- Haematology
- ? Future pregnancies
TRACE 4

Obstetric History

- 30 year old
- G4 P2 (SVB x 2, 1 miscarriage 7/40)
- 2 uncomplicated pregnancies
- Booked at secondary hospital
- Low risk pregnancy

MFAU

- Transferred from secondary hospital at 32/40 gestation with history of 62 hours spontaneous rupture of membranes and diminished fetal movement
- States is feeling unwell flu type symptoms for the last 2/7
- ? Maternal sepsis ? chorionamnionitis
Outcome

- Category 1 C/S called 22.30hrs
- APGARS 3:5:5
- Birth weight 2010gms
- Endotracheal Tube Intubation (ETI) ventilation
- Surfactant 2 doses
- Continuous Positive Airway Pressure (CPI)
- Blood Cultures – No growth
- Discharged home aged 3 weeks

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QUESTIONS
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- Distraction
- Lack of teamwork
- Fatigue
- Lack of resources
- Pressure
- Stress
- Lack of awareness
- Norms
Summary

- Look at the whole clinical picture
- Make your decisions underpinned by physiology
- Think about the baby not the CTG
- Review the condition of the baby regularly with fresh eyes
- Become more aware of the dirty dozen