Name________________________________

EKG Pocket Card
Thomas Luft, D.O. and Brenda Burrough, M.D.

EKG BASICS
1. Remember to look at the name, date and time on EKG
2. Find an old EKG for comparison
3. Follow a systematic approach:
   a. Rate
   b. Rhythm
   c. Axis
   d. Intervals
   e. PQRSU:
      Morphology of the P waves
      Morphology of the Q waves
      Look at R wave progression
      Evaluate the ST segments
      Morphology of the T waves
      Look for U waves
4. Summary interpretation: Anhrythmias, Blocks, Drug effects, Electrolyte disturbances, Hypertrophy, Infarction, Ischemia, etc.

RATE
Each little box represents 0.04 seconds, each big box represents 0.20 seconds.
If the rate is irregular or slow, count the number of QRS complexes between 30 big boxes and multiply by ten to get the heart rate.

RHYTHM
Questions to ask yourself to help determine the rhythm:
1. Is it tachy (>100) or brady (<60)?
2. Is there a P before every QRS?
   If not, it suggests a rhythm other than sinus
3. Is there a QRS after every P?
   If not, it suggests a block (second or third degree)
4. Is the QRS regular?
   If not, it suggests a-fib, PVCs, sinus arrhythmia, etc.
5. Is the QRS narrow?
   If not, it suggests conduction delay (LBBB, RBBB, etc.)
   or the QRS originates in the ventricle (V tach, ventricle paced)

Important Rhythms to Know
(see examples provided)

1. Sinus Rhythm: P waves are seen (upright in II and III), QRS follows every P wave
2. Junctional: narrow QRS, P waves are absent or P can be retrograde, before, after, or buried in the QRS
3. A fib: no P waves seen, irregularly irregular QRS
4. A flutter: regular QRS, saw tooth pattern
5. Ventricular tachycardia: wide QRS, if P waves are seen, they are disassociated with the QRS complex
6. Ventricular fibrillation: no discernable P waves or QRS complexes, “chaotic”, look in more than one lead

Examples:
1. Sinus bradycardia

2. Junctional

Name________________________________

EKG Pocket Card
Thomas Luft, D.O. and Brenda Burrough, M.D.

EKG BASICS
1. Remember to look at the name, date and time on EKG
2. Find an old EKG for comparison
3. Follow a systematic approach:
   a. Rate
   b. Rhythm
   c. Axis
   d. Intervals
   e. PQRSU:
      Morphology of the P waves
      Morphology of the Q waves
      Look at R wave progression
      Evaluate the ST segments
      Morphology of the T waves
      Look for U waves
4. Summary interpretation: Anhrythmias, Blocks, Drug effects, Electrolyte disturbances, Hypertrophy, Infarction, Ischemia, etc.

RATE
Each little box represents 0.04 seconds, each big box represents 0.20 seconds.
If the rate is irregular or slow, count the number of QRS complexes between 30 big boxes and multiply by ten to get the heart rate.

RHYTHM
Questions to ask yourself to help determine the rhythm:
1. Is it tachy (>100) or brady (<60)?
2. Is there a P before every QRS?
   If not, it suggests a rhythm other than sinus
3. Is there a QRS after every P?
   If not, it suggests a block (second or third degree)
4. Is the QRS regular?
   If not, it suggests a-fib, PVCs, sinus arrhythmia, etc.
5. Is the QRS narrow?
   If not, it suggests conduction delay (LBBB, RBBB, etc.)
   or the QRS originates in the ventricle (V tach, ventricle paced)

Important Rhythms to Know
(see examples provided)

1. Sinus Rhythm: P waves are seen (upright in II and III), QRS follows every P wave
2. Junctional: narrow QRS, P waves are absent or P can be retrograde, before, after, or buried in the QRS
3. A fib: no P waves seen, irregularly irregular QRS
4. A flutter: regular QRS, saw tooth pattern
5. Ventricular tachycardia: wide QRS, if P waves are seen, they are disassociated with the QRS complex
6. Ventricular fibrillation: no discernable P waves or QRS complexes, “chaotic”, look in more than one lead

Examples:
1. Sinus bradycardia

2. Junctional

Examples:
1. Sinus bradycardia

2. Junctional
2. QRS interval: beginning of the Q or R wave to the end of the S wave (normal is less than 0.12 secs)
   - **A.** Wide: beat that starts in the ventricle, impairment of conduction system (LBBB, RBBB, WPW), or the ventricle is paced
     - **1. RBBB:** Is there a terminating R wave (an R wave is the last wave of the QRS complex; may be RS, QR or just R), if so, this R represents the delayed RV depolarization and diagnosis, therefore, is **RBBB.**
       - a. Then keep going through QRS axis and Q analysis and then stop at that point.
     - **2. LBBB:** Is there no terminating R but rather a predominantly negative wave (Q or S) in V1? If so, look for mid-QRS notches usually best seen in those leads with tall R waves.
       - a. If present, diagnosis is **LBBB, STOP QRS analysis at this point.**
   - **B.** Long: 
     - **1. First degree AV block**
       - Second degree AV block
       - Type I or Wenckebach: PR progressively lengthens and a QRS is eventually dropped (P-R varies; R-R varies)
     - **2. Second degree AV block**
       - Type II: PR is constant but not every P leads to a QRS (P-R prolonged but constant; R-R varies)
     - **3. Third degree:** P and QRS are not associated with each other and each have their own rate (P-R varies, R-R constant)

2. QT interval: Beginning of QRS to the end of the T wave
   - **A.** Short (< 0.12 secs): WPW, Atrial ectopic beats, Junctional
   - **B.** Long: 
     - **First degree AV block**
     - Second degree AV block
       - Type I or Wenckebach: PR progressively lengthens and a QRS is eventually dropped (P-R varies; R-R varies)
     - **Type II:** PR is constant but not every P leads to a QRS (P-R prolonged but constant; R-R varies)
     - **Third degree:** P and QRS are not associated with each other and each have their own rate (P-R varies, R-R constant)

2. QRS interval: beginning of the Q or R wave to the end of the S wave (normal is less than 0.12 secs)
   - **A.** Wide: beat that starts in the ventricle, impairment of conduction system (LBBB, RBBB, WPW), or the ventricle is paced
     - **1. RBBB:** Is there a terminating R wave (an R wave is the last wave of the QRS complex; may be RS, QR or just R), if so, this R represents the delayed RV depolarization and diagnosis, therefore, is **RBBB.**
       - a. Then keep going through QRS axis and Q analysis and then stop at that point.
     - **2. LBBB:** Is there no terminating R but rather a predominantly negative wave (Q or S) in V1? If so, look for mid-QRS notches usually best seen in those leads with tall R waves.
       - a. If present, diagnosis is **LBBB, STOP QRS analysis at this point.**
   - **B.** Long: 
     - **1. First degree AV block**
     - **Second degree AV block**
       - Type I or Wenckebach: PR progressively lengthens and a QRS is eventually dropped (P-R varies; R-R varies)
     - **Type II:** PR is constant but not every P leads to a QRS (P-R prolonged but constant; R-R varies)
     - **Third degree:** P and QRS are not associated with each other and each have their own rate (P-R varies, R-R constant)

2. QT interval: Beginning of QRS to the end of the T wave
   - **A.** Short (< 0.12 secs): WPW, Atrial ectopic beats, Junctional
   - **B.** Long: 
     - **First degree AV block**
     - **Second degree AV block**
       - Type I or Wenckebach: PR progressively lengthens and a QRS is eventually dropped (P-R varies; R-R varies)
     - **Type II:** PR is constant but not every P leads to a QRS (P-R prolonged but constant; R-R varies)
     - **Third degree:** P and QRS are not associated with each other and each have their own rate (P-R varies, R-R constant)

2. QRS interval: beginning of the Q or R wave to the end of the S wave (normal is less than 0.12 secs)
   - **A.** Wide: beat that starts in the ventricle, impairment of conduction system (LBBB, RBBB, WPW), or the ventricle is paced
     - **1. RBBB:** Is there a terminating R wave (an R wave is the last wave of the QRS complex; may be RS, QR or just R), if so, this R represents the delayed RV depolarization and diagnosis, therefore, is **RBBB.**
       - a. Then keep going through QRS axis and Q analysis and then stop at that point.
     - **2. LBBB:** Is there no terminating R but rather a predominantly negative wave (Q or S) in V1? If so, look for mid-QRS notches usually best seen in those leads with tall R waves.
       - a. If present, diagnosis is **LBBB, STOP QRS analysis at this point.**
   - **B.** Long: 
     - **First degree AV block**
     - **Second degree AV block**
       - Type I or Wenckebach: PR progressively lengthens and a QRS is eventually dropped (P-R varies; R-R varies)
     - **Type II:** PR is constant but not every P leads to a QRS (P-R prolonged but constant; R-R varies)
     - **Third degree:** P and QRS are not associated with each other and each have their own rate (P-R varies, R-R constant)

2. QT interval: Beginning of QRS to the end of the T wave
   - **A.** Short (< 0.12 secs): WPW, Atrial ectopic beats, Junctional
   - **B.** Long: 
     - **First degree AV block**
     - **Second degree AV block**
       - Type I or Wenckebach: PR progressively lengthens and a QRS is eventually dropped (P-R varies; R-R varies)
     - **Type II:** PR is constant but not every P leads to a QRS (P-R prolonged but constant; R-R varies)
     - **Third degree:** P and QRS are not associated with each other and each have their own rate (P-R varies, R-R constant)