

# MEDICAL PHYSIOLOGY

## Electrophysiology Conference Quiz 2A

September 12, 2000

For each question, circle one of the choices provided in each parenthesis to give an answer consistent with the material presented in conference and then give a brief answer to the because part of the question.

1. Hyperkalemia (increases, **decreases**, does not change) the rate of phase 4 depolarization of SA-node cells because \_\_\_\_\_?

**potassium conductance is increased making it more difficult for  $I_f$  to produce phase 4 depolarization.**

2. Hyperkalemia (increases, **decreases**, does not change) action potential conduction velocity in the AV-node because \_\_\_\_\_?

**the increased potassium conductance reduces the ability of the L-type calcium current to produce phase 0 depolarization; this reduces the rate of rise of the AV-node action potential and slows conduction.**

3. Hyperkalemia (increases, **decreases**, does not change) the probability EAD production because \_\_\_\_\_?

**the increased potassium conductance increases the delayed rectifier potassium current which reduces the ability of the calcium window current to produce an EAD.**

4. The hyperkalemic-induced change in ventricular action potential duration acts to (**increase**, decrease, not change) the probability of successful reentry conduction because \_\_\_\_\_?

**the decrease in action potential duration produced by hyperkalemia decreases the length of tissue occupied by the action potential.**

5. Hypocalcemia acts to (**increase**, decrease, not change) hyperkalemia's effect on EAD production because \_\_\_\_\_?

**less L-type calcium current would be available for EAD production.**

# MEDICAL PHYSIOLOGY

## Electrophysiology Conference Quiz 2B

### September 14, 2000

For each question, circle one of the choices provided in each parenthesis to give an answer consistent with the material presented in conference and then give a brief answer to the because part of the question.

1. Hyperkalemia (increases, **decreases**, does not change) heart rate because \_\_\_\_\_?

**in SA-node cells the maximum diastolic potential is shifted more negative and the rate of phase 4depolarization is slowed.**

2. Hyperkalemia (increases, **decreases**, does not change) action potential conduction velocity in the ventricle because \_\_\_\_\_?

**depolarization of the resting potential by high potassium inactivates sodium channels which reduces the number of resting sodium channels and reduces the rate of rise of the action potential.**

3. Hyperkalemia (increases, **decreases**, does not change) the probability DAD production because \_\_\_\_\_?

**the increase in potassium conductance acts to stabilize the resting potential and reduces the ability of inward currents to produce a DAD.**

4. The hyperkalemic-induced change in ventricular action potential conduction velocity acts to (**increase**, decrease, not change) the probability of successful reentry conduction because \_\_\_\_\_?

**the decrease in action potential conduction velocity produced by hyperkalemia decreases the length of tissue occupied by the action potential.**

5. Hypocalcemia acts to (**increase**, decrease, not change) hyperkalemia's effect on action potential conduction velocity in the ventricle \_\_\_\_\_?

**the hyperpolarizing shift in the sodium channel inactivation curve produced by low calcium reduces the number of resting sodium channels.**

