

Session 2

Blood Glucose Meter Performance,
Interferences and Limitations

Meter performance is limited by a variety of environmental, physiological, and operator factors

Possible factors & interferences that have been investigated and reported in the published literature

- **Environmental Factors**
 - Exposure of test strips
 - Use of generic strips
 - Age of strips
 - Reuse of strips
 - Altitude
 - Humidity & temperature

- **Environmental Factors (continued)**
 - Specimen preservatives
 - Volume of sample
 - Animal blood (use in control and survey materials)

- **Patient-Specific Variables**

- Extremes in hydration
- Hypotension
- Prandial state
- Hematocrit
- Hemodialysis
- Hemolysis
- Extremes in pH (cases of severe acidosis)
- Hypoglycemia
- Blood sources (arterial, capillary, or venous)
- Specimen matrix (plasma and whole blood)

- **Substances or Conditions**

- Acetaminophen (therapeutic drug levels)
- Ascorbic acid
- Dopamine
- Fluorescein IV
- Mannitol
- Salicylate
- Therapeutic products with non-glucose sugars
 - maltose, galactose, and xylose
 - problem with glucose dehydrogenase pyrroloquinoline quinone (GDH-PQQ) test strips

Issues/Questions to Consider

- Investigation of interference effects is responsibility of instrument manufacturers
- Information provided is often too vague to be of value
- No specific single criterion exists for delineating the presence of “significant” interference
- Guidelines have been established for the evaluation of interference effects
 - CLSI EP7
 - IFCC Guideline
- No current consensus exists among manufacturers about the most appropriate way to publish guidelines on how interfering substances affect a particular method

Issues/Questions to Consider

- Should there be standardized procedures for evaluating interferences?
- How aware of these factors/interferences are end users? Has such an awareness survey been done?
- Are package inserts enough?
- Is more public education needed?
- Sources of information for the end users
 - Package instructions/inserts
 - Pharmacist (public)/Central lab (hospital staff)
 - Web, e.g. AACCC's Lab Tests Online