

# Accessible Blood Glucose Monitor Interface

Team 2

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# Rehabilitation Engineering Research Center

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- RERC sponsors the design competition
- Funded by National Institute for Disabilities and Rehabilitation Research
- Open to:
  - Biomedical engineers
  - Mechanical engineers
  - Industrial engineers

# Introduction

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- Lower cost alternative to commercially available meters.
- All-in-one package
  - For the visually impaired
  - For patients with motor control disabilities

# Patient Need

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- 18.2 million American diabetics
- 5<sup>th</sup> leading cause of death in U.S.
- No cure
- Rise in obesity driving market growth
- Leading cause in new blindness in adults 20-74 years old
- Annually 12,000-24,000 diabetics loose sight

# Economic Costs

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- 1 out of every 10 health care dollars spent
- Annual per capita health care expenditure \$13,243
- Diabetes market \$132 billion/year industry

# Available Products

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- Accu-Chek Advantage
  - Portable
  - 26 second results
  - 4 uL blood sample
  - No alternative site testing
  - Snap-in code key calibration
  - Large legible display
  - Cost: \$65



# Available Products

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- OneTouch Ultra by Lifescan
  - Portable
  - 5 second results
  - 1 uL blood sample
  - Multiple site testing
  - Large legible display
  - Cost: \$75



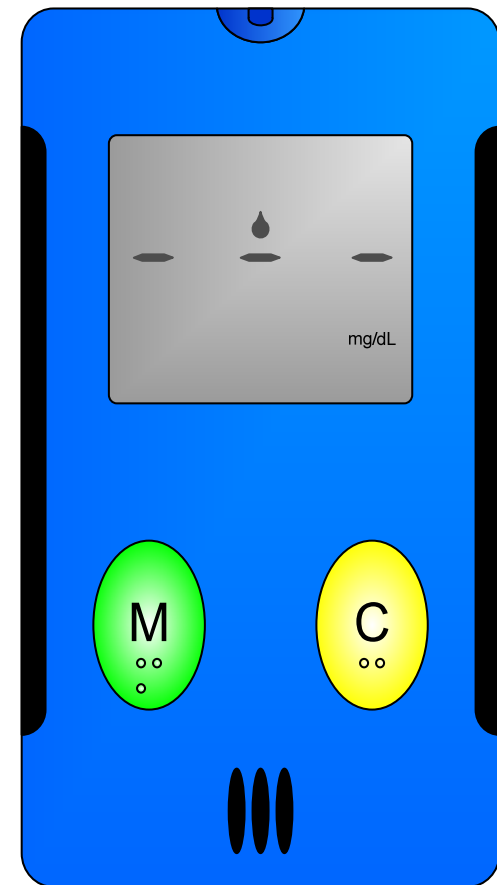
# Available Products

- Voicemate by Accu-Chek
  - Portable
  - 26 second results
  - 4 uL blood sample
  - Snap-in code key calibration
  - Step-by-step voice instructions
  - Modular
  - Cost: **\$570**



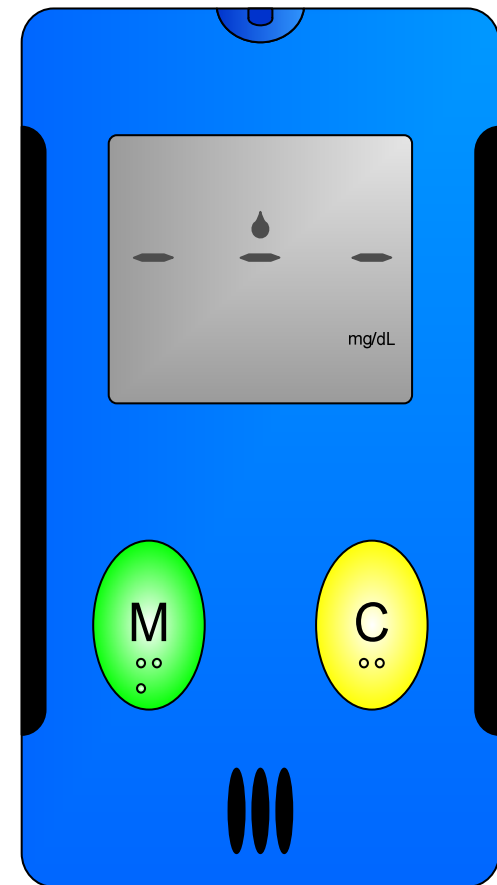
# Product Description

- Single compact unit
- Battery powered
- Clear voice instructions and results
- Snap-in code key calibration



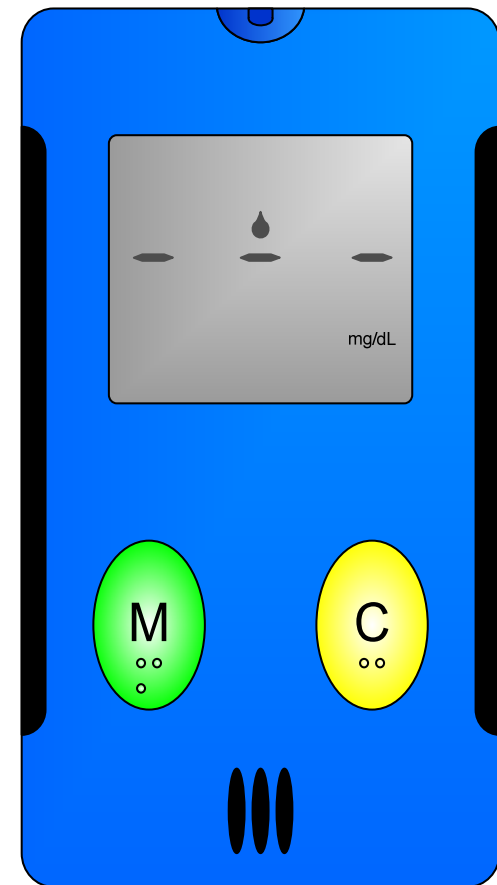
# Product Description

- Features for the visually impaired:
  - Braille enhanced buttons
  - High color contrast buttons
  - Large display
  - Clear voice output



# Product Description

- Features for patients with motor control disabilities:
  - Large buttons
  - Rubber side grips
  - Fits in the palm of your hand
  - Accommodate:
    - Parkinson's patients
    - MS patients
    - Arthritic patients



# Product Description

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- Other Features:
  - 14 and 30 day averaging
  - Stores up to 150 test results with date and time stamp
  - Testing conditions label
  - Download results to PC tracking software

# Estimated Costs

Gumstix mini-computer	\$120.00
Gumstix accessories	\$60.00
Printed circuit board	\$60.00
Other components	\$60.00
<b>Total</b>	<b>\$300.00</b>

# Timeline

Preliminary Design	Mid October 2005
Secondary Design	End October 2005
Third Design	Early November 2005
Optimal Design Analysis	Mid November 2005
Final Parts Order	Mid November 2005
Prototyping	December-February 2005-2006
Final Testing	February-April 2006

# Conclusion

- Portable size
- Lower cost
- User-friendly interface
- Easy to read display
- Audible output

