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Mobile phone applications for daily practice in orthopedics, traumatology and emergency – the use of scales mobile guide



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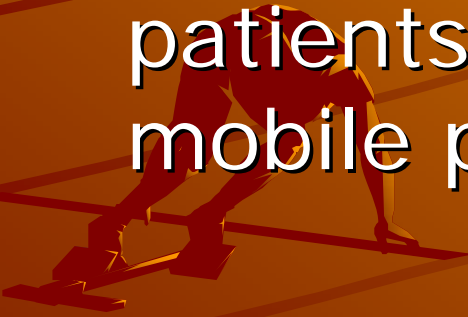
⁴ Polish Telemedicine Society

Background:

- ◆ Outcomes assessment as well scoring systems are widely used in clinical research, and more often in clinical practice. There are some barriers creating practical difficulties to administer printed questionnaires in emergency or orthopedic offices. Telehealth technology could reduce these barriers and encourage better doctor-patient interaction regarding patient symptoms and quality-of-life monitoring.

Background:

- ◆ The aim of this study was to develop a new system for transmitting patients' scoring and outcomes using mobile phones and the internet.



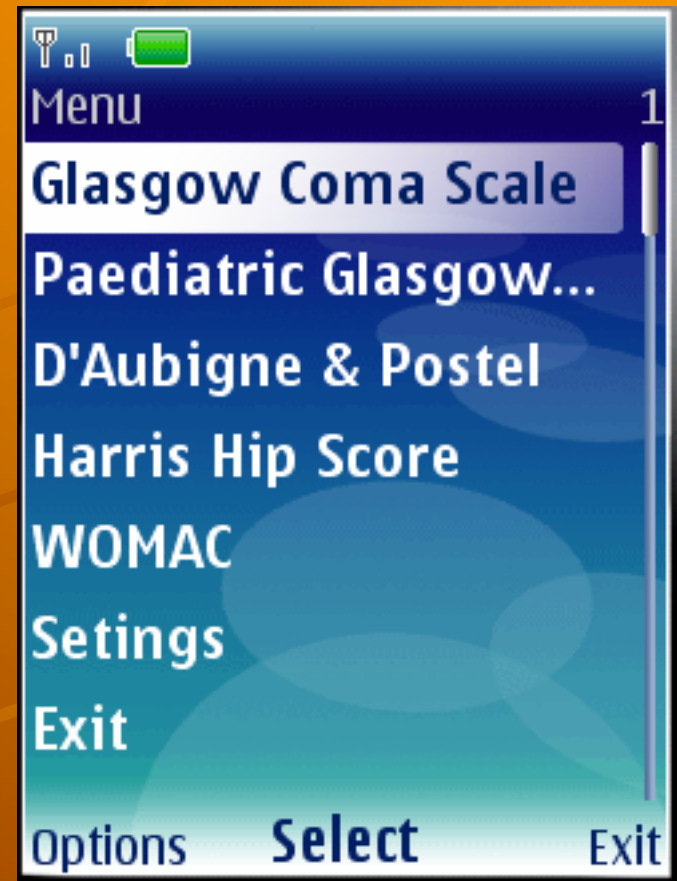
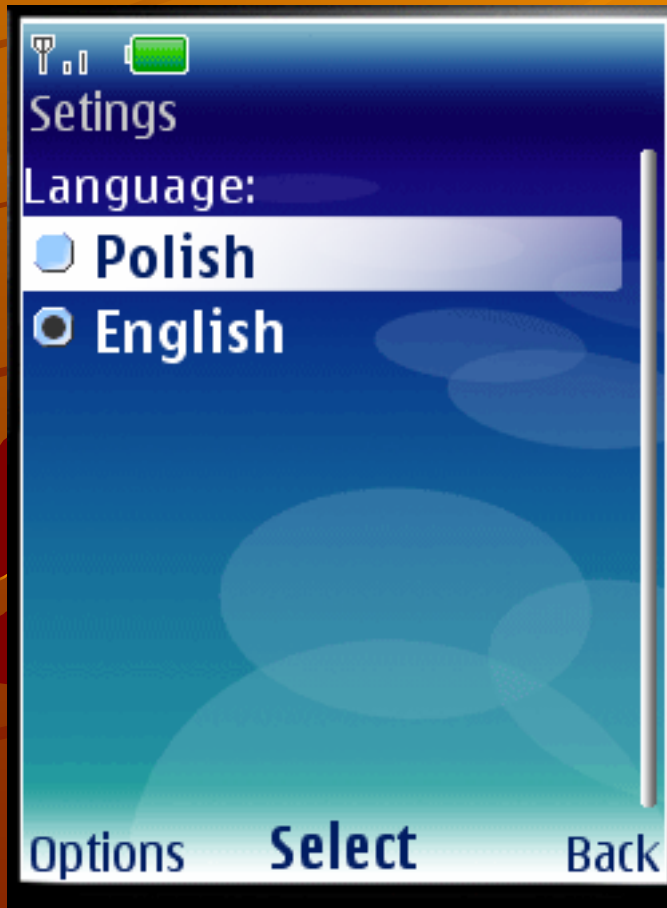
Methods:

- ✦ We have developed a prototype of a Wireless Outcomes and Scoring Monitoring System, which allows structured questionnaires and scales to be used by the medical management team.
- ✦ The patients' responses assessment or answers are directly assessed.
- ✦ Data can be sent to an authorized website immediately accessible by the medical team, and are displayed in a graphic format that highlights the patient's state of health.

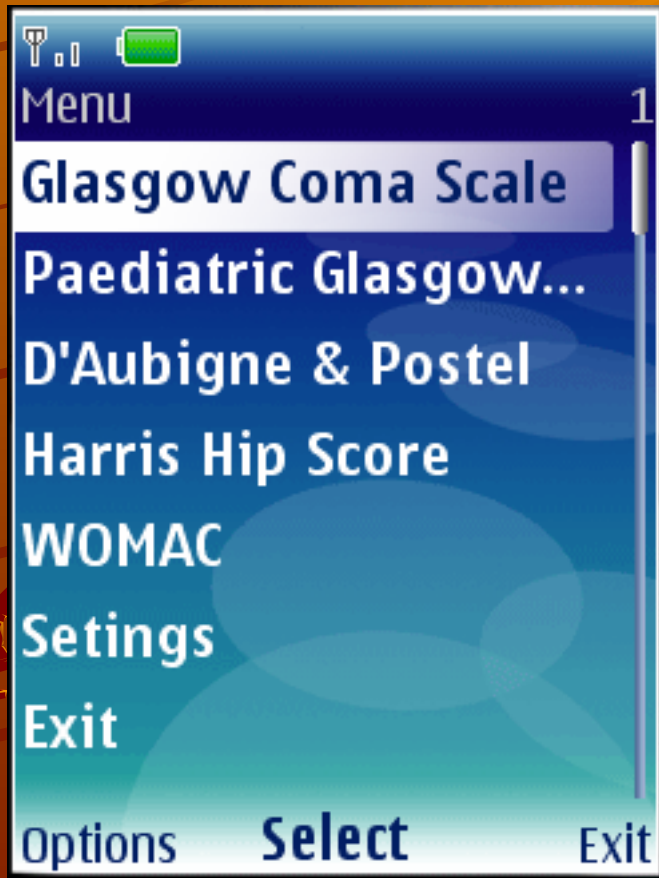
Methods:

- ◆ Glasgow Coma Scale, Harris Hip Score and Merle d'Aubigne Score and WOMAC score implemented into mobile phone.
- ◆ The scales or questionnaires are delivered by display on a mobile phone, and answered by using the mobile phone keypad.
- ◆ An application was implemented in J2ME technology that may operate on almost all mobile phones supporting Java language. It extends mobile phones functionality.

Menu – Outcome Scores



Glasgow Coma Scale



Glasgow Coma Scale

Glasgow Coma Scale

Best Eye Response(E):

- Eyes open sponta...
- Eye opening to v...
- Eye opening to p...
- No eye opening (...)

Best Verbal Response(V):

- Oriented (+5)
- Confused (+4)
- Inappropriate w...

Options **Select** Back

Score

Score:

9


Interpretation:

Moderate (9-12)

GCS9 = E2 + V3 + M4

Send Back

Harris Hip Score



Harris Hip Score

Limp:

- None(11)
- Slight(8)
- Moderate(5)
- Severe(0)

Support:

- None(11)
- Cane for long wal...
- Cane most of the

Options **Select** Back

Merle d'Aubigneu & Postel

☰ .l [Battery]

D'Aubigne & Postel

Pain:

- Intense & Perma...
- Severe w/ night...
- Severe when wal...
- Tolerable w/ limi...
- Mild walking pai...
- Mild & inconstant...
- No pain(6)

Mobilityv:

Options **Select** Back

☰ .l [Battery]

Score

Score:

Poor

Interpretation:

**Pain after walking;
Cane used outdoors**

Send Back

WOMAC

Severity during the past month:

Step 1/24

Pain - Walking:

- 0 - none
- 1 - slight
- 2 - moderate
- 3 - severe
- 4 - extreme

Options **Select** Back

WOMAC

Severity during the past month:

Step 5/24

Pain - Weightbearing:

- 0 - none
- 1 - slight
- 2 - moderate
- 3 - severe
- 4 - extreme

Options **Select** Back

WOMAC

Severity during the past month:

Step 1/24

Pain - Walking:

- 0 - none
- 1 - slight
- 2 - moderate
- 3 - severe
- 4 - extreme

Options **Select** Back

Score

Score:

15

Reported WOMAC

Score:15

Send Back

Results:

- ✦ Feasibility, usefulness and user friendliness were evaluated by clinicians - pilot users.
- ✦ Feasibility and applicability was assumed as a useful tool for younger physicians or clinicians who rarely deal with evaluated cases. Glasgow Coma Scale appeared useful for referring cases to neurosurgical consultation.

Conclusion:

- ◆ The outcomes scaling and scoring utilizing mobile phone may increase the overall use of these evaluation tools to improve evidence data. These preliminary results encourage further studies to improve other assessments in clinical monitoring. It is expected that presented application could be useful in patients' distance monitoring.