



Where caring and
technology meet

Presenter

Mobile Tools for Nurses – A Case Study

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Thesis title: **Acceptability and Usability of the Interface of the NurseAssess Mobile Application with the Epic EHR**



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PICOT Question

What is the acceptability and usability (O)
of the NurseAssess app/EHR interface (I)
compared to usual practice (C)
for bedside nurses (P)
who participate in a sandbox pilot demonstration (T) within four weeks?

Problem Statement

- Nurses spend 19% to 35% of each shift documenting care and related activities (Collins et al., 2018).
- Mobile device integration into EHRs could increase documentation efficiency and reduce the burden of documentation on nurses (Collins et al., 2018).
- Nurse Tech Inc. (Oakland, CA) has developed NurseAssess, a mobile app that enables medical professionals to take patient assessment notes at the point of care. These are uploaded in real-time to the EHR. (NurseAssess, 2021)
- Project goal: to investigate the acceptability and usability of a mobile application from the perspective of bedside nurses.

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P-opulation
I-ntervention
C-omparison
O-utcome
T-ime



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Analysis

- **User-friendliness**
 - 100% of participants agreed that the ease of use of the app and its interface with Epic are acceptable.
 - 83% of participants agreed that it was easy to learn to use the app and its interface with Epic.
- **Time and convenience**
 - 100% of participants agreed that the app and its interface facilitate decision-making regarding possible interventions.
 - 83% of participants agreed that they could become productive quickly with the app and its interface with the EHR.
- **Trustworthiness**
 - 100% of participants confirmed that information entered into the app was transferred into the patient's chart in Epic accurately.
 - 83% of participants agreed that they would recommend the app and its EHR interface to other nurses and facilities.

Study Design

- Qualitative and quantitative methods
- Evaluated the acceptability and usability of the NurseAssess app and its interface to the EHR
- Subjects: six registered nurses participated in a demonstration scenario:
 - The Think-Aloud Protocol (TAP) was used to document participants' thought processes while using the app. (Maramba et al., 2019)
 - A questionnaire based on the Technology Acceptance Model (TAM) was completed. (Sanchez-Prieto et al., 2016)

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Limitations

- Population of Interest
 - Only registered nurses were queried. Other clinicians such as physicians might have contributed to a better understanding of the research problem.
- Sample Size
 - This study was limited by its small sample size of six registered nurses.
- Sample Location
 - The study subjects were from Solano and nearby California counties. Other localities might have yielded different results.
- Data Collection Procedure
 - The initial project design was in-person collection of the qualitative data. Due to the Covid-19 pandemic, other arrangements had to be made. Specifically, structured interviews and product demonstrations were conducted via Zoom.

Summary

- Participants positively accept the use of an app interfaced to an EHR.
- Most agreed that the app was easy to learn and use and would help them accomplish their bedside nursing tasks.
- Most were comfortable using the app.
- The sole negative response regarded correcting input errors. One participant stated that it was not easy to edit an entry that had a mistake.
- Participants strongly agreed more on the acceptability of the app/EHR interface than on its usability.
- More found the app usable than did not or were impartial about its usability.

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Sample Screenshots

Carrier 12:02 PM

Create New Assessment

Select Hospital Select Patient Select Assessment

Highland Hospital

Hospitals (16) available

- CHRISTUS Schumpert Highland Shreveport, Louisiana, United States
- Highland Community Hospital Piquette, Mississippi, United States
- Highland District Hospital Hillsboro, Ohio, United States
- Highland Hospital Charleston, West Virginia, United States
- Highland Hospital Oakland, California, United States
- Highland Hospital Rochester, New York, United States
- Highland Park Hospital Highland Park, Illinois, United States
- Highland Ridge Hospital Midvale, Utah, United States
- Highlands Hospital Connellsville, Pennsylvania, United States
- Highlands Regional Medical Center Prestonsburg, Kentucky, United States
- Highlands Regional Medical Center

Home Assessments Settings

Carrier 12:17 PM

Create New Assessment

Select Hospital Select Patient Select Assessment

Highland Hospital

Patients (2) available

- Nick 12 / 4 43 years
- Janny 4 / 2 32 years

Home Assessments Settings

Carrier 12:17 PM

Create New Assessment

Select Hospital Select Patient Select Assessment

Highland Hospital

Room 4 Bed 2

BMI Body Mass Index

BP Blood Pressure

Neuro Neurological

Braden Braden Skin Risk

Note Nurse's Note

Temp Temperature

Gosnell Gosnell Wound Scale

Norton Norton Pressure Ulcer Risk Scale

Pressure injury Pressure Sore Stage

Glasgow Glasgow Coma Scale

Weight Weight

Home Assessments Settings

Carrier 12:18 PM

Glasgow Coma Scale

Highland Hospital Janny Highland Hospital Room 4 Bed 2

Eye Opening

Spontaneous To verbal command To pain None

Best Motor Response

Obey verbal command Localize painful stimuli Flexion-withdrawal from painful stimuli Decorticate response to painful stimuli

Best Verbal Response

Oriented conversation Disoriented conversation Incomprehensible words Incomprehensible sounds

Tracheal intubation

Severe facial/eye swelling/damage

CALCULATE

SAVE

Unlogged

Home Assessments Settings

Carrier 12:18 PM

Glasgow Coma Scale

Highland Hospital Janny Highland Hospital Room 4 Bed 2

Eye Opening

RESULT

Total: 12

Moderate brain injury (GCS 10-12)

CLOSE

CALCULATE

SAVE

Unlogged

Home Assessments Settings

Carrier 12:30 PM

Schmid Fall Risk

Buskins San Francisco General Hospital Room 3322 A

Mobility

Ambulation with no gait disturbance

Ambulation or transfers with assistive devices or assist

Ambulation with unsteady gait and no assistance

Unable to ambulate or transfer

Mentation

Alert, oriented X3

Periodic confusion

Confusion at all times

Calculate

Save

Unlogged

Home Assessments Settings

Carrier 12:30 PM

Schmid Fall Risk

Buskins San Francisco General Hospital Room 3322 A

Mobility

Ambulation with no gait disturbance

Ambulation or transfers with assistive devices or assist

Calculate

Save

Unlogged

Home Assessments Settings

Carrier 12:38 PM

Braden Skin Risk

Buskins San Francisco General Hospital Room 3322 A

Activity

Bedfast

Chairfast

Walks Occasionally

Walks Frequently

Mobility

Completely Immobile

Very Limited

Calculate

Save

Unlogged

Home Assessments Settings

Carrier 12:38 PM

Braden Skin Risk

Buskins San Francisco General Hospital Room 3322 A

very Limited

Total: 17

AT RISK

Treatment Protocol:

- frequent turning
- maximal remobilization
- protect heels
- manage moisture, nutrition, friction, shear
- pressure-reduction support surface

Calculate

Save

Unlogged

Home Assessments Settings

Carrier 12:38 PM

Temperature

Buskins San Francisco General Hospital Room 3322 A

F	C
98.4	36.9
98.5	36.9
98.6	37
98.7	37.1
98.8	37.2

Calculate

Save

Unlogged

Home Assessments Settings

Carrier 12:38 PM

Payne-Martin Skin T...

Highland Hospital Janny Highland Hospital Room 4 Bed 2

Payne-Martin Classification For Skin Tears

Category 1A Skin tear, no tissue loss, linear tear, epidermis and dermis layers separated in an incision-like lesion

Category 1B Skin tear, flap type, partial thickness, epidermis and dermis are separated, wound edges within 1 mm separation

Category 2A Skin tear, scant tissue loss with 25% or less of the epidermal flap missing

Category 2B Skin tear, moderate to large tissue loss, more than 25% of epidermal flap lost

Category 3 Skin tear, complete tissue loss, epidermal skin flap absent

Calculate

Save

Unlogged

Home Assessments Settings

Sample Screenshots

Xfinity Mobile 14:03 100%

Back Respiratory

Highland Hospital Trinity Smi. Respiratory

Trinity Smi. Room Bed

Rate

Respiratory rate WOL Tachypnea Bradypnea

Sounds

☐ Clear/vesicular

☐ Decreased/atelectasis

☐ Fine crackles

☐ Coarse/moist crackles

☐ Gurgles/ronchi

☐ Inspiratory wheezes

☐ Expiratory wheezes

☐ Friction rub

☐ Sounds absent/pneumothorax

Cough . . .

SAVE Logoff

Home Assessments Settings

Xfinity Mobile
20:45
100%

Back

Genitourinary

Buskins

Room 3322
Bed A

San Francisco General Hospital

Urination

☒ WNL
 ☐ Burning
 ☐ Frequency
 ☐ Urgency
 ☐ Bladder distention
 ☐ Pelvic pain/discomfort
 ☐ Lower back/flank pain/discomfort

Continence

☐ Yes
 ☒ Stress incontinent w/ coughing, etc.
 ☐ Rarely incontinent
 ☐ Regularly incontinent

Save
Schedule

Neurological

San Francisco General Hospital

Room 3322 Bed A

Is patient alert & oriented X 3 ☒

Are all 4 extremities intact ☒

Disoriented

☐ Never

☒ Occasionally

☐ Frequently

☐ Constantly

Level Of Consciousness

☒ Alert

☐ Drowsy

Save ☒ Unflagged

10:55 AM Back 4G 92%

Body Mass Index

General

Lbs	Demo General	Weight	Kg	Room	Bed
170			77.11	2	E
171			77.57		
172			78.02		

Total: 27

Overweight

[How BMI is calculated](#)

OK

Calculate

Save

Logout

Home Assessments Settings

The screenshot shows the 'Blood Pressure' app interface. At the top, the status bar displays 'Xfinity Mobile', '20:41', and '100%' battery. The app header is purple with a white back arrow and the text 'Back'. Below the header, the app title 'Blood Pressure' is in white. The patient's name 'Buskins' and hospital 'San Francisco General Hospital' are listed. A male gender icon is on the left, and 'Room 3322' and 'Bed A' are on the right. The main content is a table of blood pressure readings. The table has two columns: 'Systolic' and 'Diastolic'. The readings are: 133/86, 134/87, 135/88, 136/89, and 137/90. At the bottom, there is a yellow 'Save' button and a purple 'Settings' button.

Systolic	Diastolic
133	86
134	87
135	88
136	89
137	90

Xfinity Mobile 13:45 100%

Grifff

G generic hospital Griff GI

G generic hospital for testing and ge... 433

Oral Mucosa

- ☐ Intact
- ☐ Moist
- ☐ Dry
- ☐ Pink
- ☐ Pale

Tongue

- ☒ WNL
- ☐ Pink
- ☐ White patches

Abdomen

- ☒ WNL
- ☐ Distended
- ☐ Ascites

Continue

Home Appointments Settings

Xfinity Mobile
20:42
100%

Back

Safety



Buskins

San Francisco General Hospital

Room 3322
Bed A

Safety

- ☐ Bed alarm in use
- ☒ ID band
- ☒ Bed low position
- ☒ Call bell within reach
- ☐ Restraints

 Save
 Print

 Home
 Assessments
 Settings

Xfinity Mobile
20:44
100%

Back
Psychosocial

Buskins
San Francisco General Hospital
Room 3322
Bed A

Psychosocial

☐ Coping effectively

☐ Expressed concerns regarding sexuality, culture, religious belief, ethnicity
 ☐ Emotional support needed
 ☐ Family support needed
 ☐ Suicide precautions needed
 ☐ Do you feel like hurting yourself now?
 ☐ Suicide precautions in place

Save
Unchanged

Home
Assessments
Settings

10:49

Back

Sleepiness

4G

92%

♀

Demio

Garnett

Room

2

Bed

E

Daytime sleepiness may be a sign of a sleep disorder or underlying medical condition. The questionnaire may be helpful to diagnose a sleep disorder or to monitor response to treatment.

	Never or almost never	Sometimes or occasionally	Often or frequently	Always or every day
Sitting and reading	☒	☐	☐	☐
Watching TV	☒	☐	☐	☐
Sitting inactive in a public place	☒	☐	☐	☐
Being a passenger in a car for an hour	☒	☐	☐	☐
Lying down in the afternoon	☒	☐	☐	☐
Sitting and talking to someone	☒	☐	☐	☐
Sitting quietly after lunch (no alcohol)	☒	☐	☐	☐
Shopping for a few minutes in traffic, while	☒	☐	☐	☐

Calculate

Save

Unsaved

Home

Assessments

Settings

10:52 40%

Blood Glucose

Demo (Default) Count 2 Unit E

0 9 4 mg/dL

1 4

Blood Glucose By Glucometer

Save Loginsynced

Home Record/Results Settings

Select Assessment

Demo	Exam	En
♂ Blood Glucose	Germati	2
Braden Braden Skin Risk		>
Respiratory Respiratory		>
Acuity Acuity		>
Pain (Dettailed) Pain (Dettailed)		>
RR Respiration Rate		>
Spo2 Oxygenation (Spo2)		>
GU Genitourinary		>
Smoking Smoking		>
GI Gastrointestinal		>
Note Nurse's Note		>
BMI Body Mass Index		>

Afforw Blood Glucose assessment saved

Dismiss

References

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