

4-11-2014

Improving Accuracy of Vital Signs Capture Using Bedside Computerized Reminders for Nurses — Preliminary Results

Philip J. Kroth

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Improving Accuracy of Vital Signs Capture Using Bedside Computerized Reminders for Nurses – Preliminary Results

Philip J. Kroth, M.D.

ARUP Laboratories

April 16, 2003



Overview

- Rationale
- Purpose
- Bedside Gopher Workstation Demo
- Methods
- Results
- Limitations
- Conclusions



Rationale – General

- Problems associated with the capture of clinical, bedside measures are significant
- Many are technique and skill dependent
- Large data volume:
 - 1 million bedside measures per year (96 beds)
 - 2700+ measures/day (96 beds)
 - ~30 measures/day/bed



Rationale – General

■ Examples:

- Weights: Notoriously change in large increments that do not correlate with the clinical picture
- Blood pressures: Dependent on cuff size, cuff placement, and patient position
- Temperatures



Rationale – Our Project

- Pilot internal study showed 7% of temperatures stored on medical surgical wards were inaccurately low ($\leq 96.4^{\circ}\text{F}$)
- Causes of inaccuracy:
 - Poor technique/Poor probe placement
 - Recent ingestion of hot or cold beverages
 - Recent smoking or bathing
 - Poor patient cooperation (i.e. poor mental status etc.)



Purpose

- To determine whether computerized, *bedside reminders* (i.e. real-time bedside feedback) can improve the accuracy of bedside measures (*temperature measurement*)
- To determine how the level of training (i.e. RN, LPN, Aide, etc.) correlates with the accuracy of bedside measures (*temperature measures*)



Methods – Our Project

- Assigned nurses to control or intervention (reminder) groups by username check digit.
- Automatically included all nurses who worked at least one shift on any of the four medical-surgical wards in Wishard Hospital
- Preliminary data analyzed from 12:00 AM February 11 to 12:00 PM, March 9, 2003 – Study is ongoing
- Data from 70 bedside Gopher workstations that serve 96 beds on all four Wishard medical-surgical wards



Methods – Intervention Group

- A computerized reminder appears when the user attempts to store a temperature ≤ 96.4 °F
- The user can then either:
 1. Cancel temp and retake
 2. Cancel temp and do nothing
 3. Over-ride the reminder and store temperature but then must provide a reason for doing so



Methods – Control Group

- No reminder appears when trying to store a temperature ≤ 96.4 °F but data is still recorded in the usual manner
- This is the current standard of care in the hospital today.



Bedside Gopher Workstation



Stored Vitals for TEST3, PATIE...

DOOR
W6155A

PATIENT TEST3

999-3

SBP
11:22
04/15/03
90
SYSTOLIC BP AUTO

DBP
11:22
04/15/03
53
DIASTOLIC BP AUTO

PR
11:22
04/15/03
117
PULSE AUTO

T
11:21
04/15/03
102.4
TEMP AUTO ORAL

O2%
11:22
04/15/03
92
OXIMETRY

RR
11:22
04/15/03
12
RESP RATE AUTO



/R: (Development) 254K, .49 y 04/1
— THE MEDICAL GOPHER IS AT YOUR SERVICE —
Stn: PKROTH// Loc: 6NORTH
Services Accessible on this Workstation
APPT: YES

ser ID and Password to access the Gopher
ing Orders in the Clinics:
but due to a variety of computer network problems,
has been intermittently slow.
ence such problems, at the time of signing orders w
sure that you choose "Yes" to the question "LOGOUT
umstances, this will prevent such delays.

d?
tore>



Clear Restore Edit Suspend ToDo INQ PgUp PgDn Help

Stored Vitals for TEST6, PATIE...

WINDOW
W6155B

PATIENT TEST6

999999-6

SBP
11:20
04/15/03
110
SYSTOLIC BP AUTO

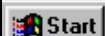
DBP
11:20
04/15/03
81
DIASTOLIC BP AUTO

PR
11:20
04/15/03
69
PULSE AUTO

T
11:20
04/15/03
98.9
TEMP AUTO ORAL

O2%
11:20
04/15/03
99
OXIMETRY

RR
11:20
04/15/03
14
RESP RATE AUTO



Vitals for 999-3 (TEST3, P...



REGEN Order Entry ...



11:24 AM

REGEN Order Entry Gopher

Auto

1,147 mb on REGEN/R: (Development) 257K, .16 y 04/15/03 11:28AM

5.02a THE MEDICAL GOPHER IS AT YOUR SERVICE (C) 1992 CAM

Stn: PKROTH// Loc: 6NORTH User: KROTH,PHILIP

Enter a valid task name or select one by number from the menu.

1.Task?

<Esc> <Ent> <Store>

Task choices

Patient orders

1) WRITE.ORDERS

2) REVIEW.OR.REPRINT.O»

Nursing services

3) VACCINE.QUESTIONNAI»

4) ACTIVATE.TRANSFER.O»

5) ARRIVAL

6) BED/ACUITY.CHANGE

7) DEPARTURE

8) WORK.COMPLETED

Other functions

9) INPATIENT.REPORTS

10) CHANGE.YOUR.PATIENT»

11) CHANGE.YOUR.PASSWORD

12) SUGGESTIONS.TO.DEVE»

13) USER.LOGOUT

Special Features

14) MAIL

15) CARTOONS

16) USER.PREFERENCES

17) REQUEST.DAILY.REPOR»

18) CHANGEOVER.NOTES

19) WEATHER

20) REVIEW.EKG

21) TO.DO

Access Other Systems

22) INQUIRY

23) CHANGE.OVER

Vitalnet II Data

24) VITALS.TASKS

25) COSIGN.VERBAL.ORDERS

Windows Features

26) WEB.INQUIRY

27) INTERQUAL.CRITERIA

28) UNLOAD.GOPHER

29) SHUTDOWN.WIN95

30) MONITOR.VITALS

Esc Enter Store Clear Restore Edit Suspend ToDo INQ PgUp PgDn Help

11:22
04/15/03
OXIMETRY
RR
11:22
04/15/03
RESP RATE AUTO
12

11:20
04/15/03
OXIMETRY
RR
11:20
04/15/03
RESP RATE AUTO
14

Start

Vitals for 999-3 (TEST3, P...

REGEN Order Entry ...

11:28 AM

REGEN Order Entry Gopher

Auto

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21) TO.DO

Access Other Systems

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Vitalnet II Data

24) VITALS.TASKS

25) COSIGN.VERBAL.ORDERS

Windows Features

26) WEB.INQUIRY

27) INTERQUAL.CRITERIA

28) UNLOAD.GOPHER

29) SHUTDOWN.WTN95

30) MONITOR.VITALS

Esc Enter Store Clear Restore Edit Suspend ToDo INQ PgUp PgDn Help

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04/15/03
OXIMETRY
RR
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04/15/03
RESP RATE AUTO
12

11:20
04/15/03
OXIMETRY
RR
11:20
04/15/03
RESP RATE AUTO
14

Start

Vitals for 999-3 (TEST3, P...

REGEN Order Entry ...

11:28 AM

REGEN Order Entry Gopher

Auto

1,147 mb on REGEN/R: (Development) 255K, .06 y 04/15/03 11:29AM

5.02a THE MEDICAL GOPHER IS AT YOUR SERVICE (C) 1992 CAM

Stn: PKROTH// Loc: 6NORTH User: KROTH,PHILIP

Enter the patient's name or press ESC to abort.

1.Patient ID

<Esc> <Ent> <Store> (F7) TEAM PERSONAL LOCATION

Patient ID choices

DOOR Bed number W6155A

1) TEST3, PATIENT (999-3)

TEST PATIENT

2) 999999-6

Esc Enter Store Clear Restore Edit Suspend ToDo INQ PgUp PgDn Help

11:22
04/15/03
RR
11:22
04/15/03
12
RESP RATE AUTO

11:20
04/15/03
RR
11:20
04/15/03
14
RESP RATE AUTO

Start Vitals for 999-3 (TEST3, P... REGEN Order Entry ... 11:29 AM

REGEN Order Entry Gopher

Auto

1,147 mb on REGEN/R: (Development) 255K, .06 y 04/15/03 11:29AM

5.02a THE MEDICAL GOPHER IS AT YOUR SERVICE (C) 1992 CAM

Stn: PKROTH// Loc: 6NORTH User: KROTH,PHILIP

Enter the patient's name or press ESC to abort.

1.Patient ID

<Esc> <Ent> <Store> (F7) TEAM PERSONAL LOCATION

Patient ID choices

DOOR Bed Number W0155A

1) TEST3, PATIENT (999-3)

TEST PATIENT

2) 999999-6

Esc Enter Store Clear Restore Edit Suspend ToDo INQ PgUp PgDn Help

11:22
04/15/03
RR
11:22
04/15/03
12
RESP RATE AUTO

11:20
04/15/03
RR
11:20
04/15/03
14
RESP RATE AUTO

Start Vitals for 999-3 (TEST3, P... REGEN Order Entry ... 11:29 AM

Stored Vitals for TEST3, PATIE...

DOOR
W6155A

PATIENT TEST3

999-3

SBP
11:22
04/15/03
90
SYSTOLIC BP AUTO

DBP
11:22
04/15/03
53
DIASTOLIC BP AUTO

PR
11:22
04/15/03
117
PULSE AUTO

T
11:21
04/15/03
102.4
TEMP AUTO ORAL

O2%
11:22
04/15/03
92
OXIMETRY

RR
11:22
04/15/03
12
RESP RATE AUTO

Vitals for 999-3 (TEST3, PATIENT) User: 7732-1 (Comm Port Monitor)

File Configure Format

Go To Gopher

Bedside Gopher

CLEAR ALL

Datascope Intake Output Output Drains Occult Bld Tests RT

☐ Logging

Device 1: Datascope (Comm Port 1)

Temperature: Not Available

Systolic Pressure MM HG

Recumben

Diastolic Pressure MM HG

MAP MM HG

Pulse Rate /MIN

Temperature DEG F

Oral

SaO2 %

Respiratory Rate /MIN

Weight LBS

Bedside Glucose mg/dl

Pain Scale (0-10)

Collect All

Recheck BP

AutoSave BP

Recheck Temp

Recheck SaO2

STORE DATA

Status

Clear

Version 2.007

Datascope: 04/15/2003 11:29:52 NibpStopTime: Old Data : last <> this <

Stored Vitals for TEST6, PATIE...

WINDOW
W6155B

PATIENT TEST6

999999-6

SBP
11:20
04/15/03
110
SYSTOLIC BP AUTO

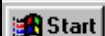
DBP
11:20
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81
DIASTOLIC BP AUTO

PR
11:20
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69
PULSE AUTO

T
11:20
04/15/03
98.9
TEMP AUTO ORAL

O2%
11:20
04/15/03
99
OXIMETRY

RR
11:20
04/15/03
14
RESP RATE AUTO



Vitals for 999-3 (TES...

REGEN Order Entry Gopher

11:29 AM

Stored Vitals for TEST3, PATIE...

DOOR
W6155A

PATIENT TEST3

999-3

SBP
11:22
04/15/03
90
SYSTOLIC BP AUTO

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TEMP AUTO ORAL

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11:22
04/15/03
92
OXIMETRY

RR
11:22
04/15/03
12
RESP RATE AUTO

Vitals for 999-3 (TEST3, PATIENT) User: 7732-1 (Comm Port Monitor)

File Configure Format

Go To Gopher

Bedside Gopher

CLEAR ALL

Datascope Intake Output Output Drains Occult Bld Tests RT

☐ Logging

Device 1: Datascope (Comm Port 1)

Temperature: Not Available

Systolic Pressure MM HG

Diastolic Pressure MM HG

MAP MM HG

Pulse Rate /MIN

Temperature

SaO2

Respiratory Rate

Weight LBS

Bedside Glucose mg/dl

Pain Scale (0-10)

Recumben

Collect All

Check BP

Temp

SaO2

STORE DATA

Direct Data Capture

Status

Clear

Version 2.007

Datascope: 04/15/2003 11:29:52 NibpStopTime: Old Data : last <> this <

Stored Vitals for TEST6, PATIE...

WINDOW
W6155B

PATIENT TEST6

999999-6

SBP
11:20
04/15/03
110
SYSTOLIC BP AUTO

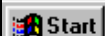
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Vitals for 999-3 (TES...

REGEN Order Entry Gopher

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OXIMETRY

RR
11:22
04/15/03
12
RESP RATE AUTO

Vitals for 999-3 (TEST3, PATIENT) User: 7732-1 (Comm Port Monitor)

File Configure Format

Go To Gopher

Bedside Gopher

CLEAR ALL

Datascope Intake Output Output Drains Occult Bld Tests RT

☐ Logging

Device 1: Datascope (Comm Port 1)

Pulse Rate Measured at 04/15/2003 11:26:34 Received on 04/15/2003 at 11:31:15

Systolic Pressure **138** MM HG

Recumben

Diastolic Pressure **90** MM HG

MAP **108** MM HG

Pulse Rate **89** /MIN

Temperature **98.8** DEG F

Oral

SaO2 **99** %

Respiratory Rate /MIN

Weight LBS

Bedside Glucose mg/dl

Pain Scale (0-10)

Collect All

Recheck BP

AutoSave BP

Recheck Temp

Recheck SaO2

STORE DATA

Status

Clear

Version 2.007

Datascope: 04/15/2003 11:31:13 Temperature: Not Available
04/15/2003 at 11:31:15 Datascope: MAP of 108.0 > Normal High of 102

Stored Vitals for TEST6, PATIE...

WINDOW
W6155B

PATIENT TEST6

999999-6

SBP
11:20
04/15/03
110
SYSTOLIC BP AUTO

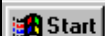
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04/15/03
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TEMP AUTO ORAL

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11:20
04/15/03
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OXIMETRY

RR
11:20
04/15/03
14
RESP RATE AUTO



Vitals for 999-3 (TES...



REGEN Order Entry Gopher



11:31 AM

Stored Vitals for TEST3, PATIE...

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W6155A

PATIENT TEST3

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11:22
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11:21
04/15/03
102.4
TEMP AUTO ORAL

O2%
11:22
04/15/03
92
OXIMETRY

RR
11:22
04/15/03
12
RESP RATE AUTO

Vitals for 999-3 (TEST3, PATIENT) User: 7732-1 (Comm Port Monitor)

File Configure Format

Go To Gopher

Bedside Gopher

CLEAR ALL

Datascope Intake Output Output Drains Occult Bld Tests RT

☐ Logging

Device 1: Datascope (Comm Port 1)

Pulse Rate Measured at 04/15/2003 11:26:34 Received on 04/15/2003 at 11:31:15

Collect All

Recheck BP

Systolic Pressure **138** MM HG

Recumbent

Diastolic Pressure **90** MM HG

MAP **108** MM HG

Pulse Rate **89** /MIN

Temperature **98.8** DEG F

Oral

SaO2 **99** %

Respiratory Rate /MIN

Weight lb

Bedside Glucose mg/dL

Pain Scale (0-10)

STORE DATA

Keyboard Entry

Status

Clear

Version 2.007

Datascope: 04/15/2003 11:31:13 Temperature: Not Available
04/15/2003 at 11:31:15 Datascope: MAP of 108.0 > Normal High of 102

Stored Vitals for TEST6, PATIE...

WINDOW
W6155B

PATIENT TEST6

999999-6

SBP
11:20
04/15/03
110
SYSTOLIC BP AUTO

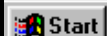
DBP
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Vitals for 999-3 (TES...



REGEN Order Entry Gopher



11:31 AM

Stored Vitals for TEST3, PATIE...

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PULSE AUTO

T
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TEMP AUTO ORAL

O2%
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04/15/03
92
OXIMETRY

RR
11:22
04/15/03
12
RESP RATE AUTO

Vitals for 999-3 (TEST3, PATIENT) User: 7732-1 (Comm Port Monitor)

File Configure Format

Go To Gopher

Bedside Gopher

CLEAR ALL

Datascope Intake Output Output Drains Occult Bld Tests RT

☐ Logging

Device 1: Datascope (Comm Port 1)

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Recumben

Diastolic Pressure **90** MM HG

MAP **108** MM HG

Pulse Rate **89** /MIN

Temperature **98.8** DEG F

Oral

SaO2 **99** %

Respiratory Rate **14** /MIN

Weight **190** LBS

Bedside Glucose **88** mg/dl

Pain Scale (0-10) **3**

Collect All

Recheck BP

AutoSave BP

Recheck Temp

Recheck SaO2

STORE DATA

Status

Clear

Version 2.007

Datascope: 04/15/2003 11:31:13 Temperature: Not Available
04/15/2003 at 11:31:15 Datascope: MAP of 108.0 > Normal High of 102

Stored Vitals for TEST6, PATIE...

WINDOW
W6155B

PATIENT TEST6

999999-6

SBP
11:20
04/15/03
110
SYSTOLIC BP AUTO

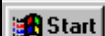
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RESP RATE AUTO



Vitals for 999-3 (TES...



REGEN Order Entry Gopher



11:32 AM

Stored Vitals for TEST3, PATIE...

DOOR
W6155A

PATIENT TEST3

999-3

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11:22
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11:22
04/15/03
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Vitals for 999-3 (TEST3, PATIENT) User: 7732-1 (Comm Port Monitor)

File Configure Format

Go To Gopher

Bedside Gopher

CLEAR ALL

Datascope Intake Output Output Drains Occult Bld Tests RT

☐ Logging

Device 1: Datascope (Comm Port 1)

Pulse Rate Measured at 04/15/2003 11:26:34 Received on 04/15/2003 at 11:31:15

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SaO2 **99** %

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Weight **190** LBS

Bedside Glucose **88** mg/dl

Pain Scale (0-10) **3**

Collect All

Recheck BP

AutoSave BP

Recheck Temp

Recheck SaO2

STORE DATA

Status

Clear

Datascope: 04/15/2003 11:31:13

04/15/2003 at 11:31:15 Datascope

Verify & Store Data

Stored Vitals for TEST6, PATIE...

WINDOW
W6155B

PATIENT TEST6

999999-6

SBP
11:20
04/15/03
110
SYSTOLIC BP AUTO

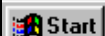
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Vitals for 999-3 (TES...



REGEN Order Entry Gopher



11:32 AM

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T
11:31
04/15/03
98.8
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OXIMETRY

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11:32
04/15/03
14
RESP RATE AUTO

Vitals for 999-3 (TEST3, PATIENT) User: 7732-1 (Comm Port Monitor)

File Configure Format

Go To Gopher

Bedside Gopher

CLEAR ALL

Datascope Intake Output Output Drains Occult Bld Tests RT

☐ Logging

Device 1: Datascope (Comm Port 1)

Datascope stored 04/15/2003 at 11:33:22

Systolic Pressure MM HG

Recumbent

Diastolic Pressure MM HG

MAP MM HG

Pulse Rate /MIN

Temperature DEG F

Oral

SaO2 %

Respiratory Rate /MIN

Weight LBS

Bedside Glucose mg/dl

Pain Scale (0-10)

Collect All

Recheck BP

AutoSave BP

Recheck Temp

Recheck SaO2

STORE DATA

Status

Clear

Version 2.007

Stored Vitals for TEST6, PATIE...

WINDOW
W6155B

PATIENT TEST6

999999-6

SBP
11:20
04/15/03
110
SYSTOLIC BP AUTO

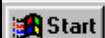
DBP
11:20
04/15/03
81
DIASTOLIC BP AUTO

PR
11:20
04/15/03
69
PULSE AUTO

T
11:20
04/15/03
98.9
TEMP AUTO ORAL

O2%
11:20
04/15/03
99
OXIMETRY

RR
11:20
04/15/03
14
RESP RATE AUTO



Vitals for 999-3 (TES...

REGEN Order Entry Gopher

11:33 AM

Stored Vitals for TEST3, PATIE...

DOOR
W6155A

PATIENT TEST3

999-3

SBP
11:31
04/15/03
138
SYSTOLIC BP AUTO

DBP
11:31
04/15/03
90
DIASTOLIC BP AUTO

PR
11:31
04/15/03
89
PULSE AUTO

T
11:31
04/15/03
98.8
TEMP AUTO ORAL

O2%
11:31
04/15/03
99
OXIMETRY

RR
11:32
04/15/03
14
RESP RATE AUTO

Vitals for 999-3 (TEST3, PATIENT) User: 7732-1 (Comm Port Monitor)

File Configure Format

Go To Gopher

Bedside Gopher

CLEAR ALL

Datascope Intake Output Output Drains Occult Bld Tests RT

☐ Logging

Device 1: Datascope (Comm Port 1)

Temperature: Not Available

Systolic Pressure MM HG Recumben
Diastolic Pressure MM HG
MAP MM HG
Pulse Rate /MIN

Temperature 94.8 DEG F Oral

SaO2 %
Respiratory Rate /MIN
Weight LBS
Bedside Glucose mg/dl
Pain Scale (0-10)

Collect All

Recheck BP

AutoSave BP

Recheck Temp

Recheck SaO2

STORE DATA

Status

Clear

Version 2.007

Datascope: 04/15/2003 12:17:37 Temperature: Not Available

Stored Vitals for TEST6, PATIE...

WINDOW
W6155B

PATIENT TEST6

999999-6

SBP
11:20
04/15/03
110
SYSTOLIC BP AUTO

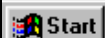
DBP
11:20
04/15/03
81
DIASTOLIC BP AUTO

PR
11:20
04/15/03
69
PULSE AUTO

T
11:20
04/15/03
98.9
TEMP AUTO ORAL

O2%
11:20
04/15/03
99
OXIMETRY

RR
11:20
04/15/03
14
RESP RATE AUTO



Vitals for 999-3 (TES...

REGEN Order Entry Gopher



1:17 PM

Stored Vitals for TEST3, PATIE...

DOOR
W6155A

PATIENT TEST3

999-3

SBP
11:31
04/15/03
138
SYSTOLIC BP AUTO

DBP
11:31
04/15/03
90
DIASTOLIC BP AUTO

PR
11:31
04/15/03
89
PULSE AUTO

T
11:31
04/15/03
98.8
TEMP AUTO ORAL

O2%
11:31
04/15/03
99
OXIMETRY

RR
11:32
04/15/03
14
RESP RATE AUTO

Vitals for 999-3 (TEST3, PATIENT) User: 7732-1 (Comm Port Monitor)

File Configure Format

Go To Gopher

Bedside Gopher

CLEAR ALL

Datascope Intake Output Output Drains Occult Bld Tests RT

☐ Logging

Device 1: Datascope (Comm Port 1)

Temperature: Not Available

Systolic Pressure MM HG
Diastolic Pressure MM HG
MAP MM HG
Pulse Rate /MIN

Recumben

Temperature 94.8 DEG F

Oral

SaO2 %

Respiratory Rate /MIN

Weight LBS

Bedside Glucose mg/dl

Pain Scale (0-10)

Collect All

Recheck BP

AutoSave BP

Recheck Temp

Recheck SaO2

STORE DATA

Status

Clear

Datascope: 04/15/2003 12:17:27

Stored Vitals for TEST6, PATIE...

WINDOW
W6155B

PATIENT TEST6

999999-6

SBP
11:20
04/15/03
110
SYSTOLIC BP AUTO

DBP
11:20
04/15/03
81
DIASTOLIC BP AUTO

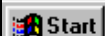
PR
11:20
04/15/03
69
PULSE AUTO

T
11:20
04/15/03
98.9
TEMP AUTO ORAL

O2%
11:20
04/15/03
99
OXIMETRY

RR
11:20
04/15/03
14
RESP RATE AUTO

Verify & Store Data



Vitals for 999-3 (TES...

REGEN Order Entry Gopher



1:17 PM

Stored Vitals for TEST3, PATIE...

DOOR
W6155A

PATIENT TEST3

999-3

SBP
11:31
04/15/03
138
SYSTOLIC BP AUTO

DBP
11:31
04/15/03
90
DIASTOLIC BP AUTO

PR
11:31
04/15/03
89
PULSE AUTO

T
11:31
04/15/03
98.8
TEMP AUTO ORAL

O2%
11:31
04/15/03
99
OXIMETRY

RR
11:32
04/15/03
14
RESP RATE AUTO

Vitals for 999-3 (TEST3, PATIENT) User: 7732-1 (Comm Port Monitor)

File Configure Format

Go To Gopher

Bedside Gopher

CLEAR ALL

Datascope Intake Output Output Drains Occult Bld Tests RT

☐ Logging

Device 1: Datascope (Comm Port 1)

Temperature: Not Available

Collect All

Systolic
Diastolic
MAP
Pulse R
Temper
SaO2
Respira
Weight

Parameter Care Notification

Temperature of 94.8 VERY LOW! Per hospital policy,
RETAKE TEMP and call M.D. if still low. — You must insert
probe into Datascope before a second temperature will
register. — Consider using a different body site.

STORE

Retake Temperature

Bedside Glucose mg/dl

Pain Scale (0-10)

STORE DATA

Status

Clear

Version 2.007

Datascope: 04/15/2003 12:17:37 Temperature: Not Available

Stored Vitals for TEST6, PATIE...

WINDOW
W6155B

PATIENT TEST6

999999-6

SBP
11:20
04/15/03
110
SYSTOLIC BP AUTO

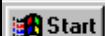
DBP
11:20
04/15/03
81
DIASTOLIC BP AUTO

PR
11:20
04/15/03
69
PULSE AUTO

T
11:20
04/15/03
8.9
TEMP AUTO ORAL

O2%
11:20
04/15/03
99
OXIMETRY

RR
11:20
04/15/03
14
RESP RATE AUTO



Vitals for 999-3 (TES...

REGEN Order Entry Gopher



1:18 PM

Stored Vitals for TEST3, PATIE...

DOOR
W6155A

PATIENT TEST3

999-3

SBP
11:31
04/15/03
138
SYSTOLIC BP AUTO

DBP
11:31
04/15/03
90
DIASTOLIC BP AUTO

PR
11:31
04/15/03
89
PULSE AUTO

T
11:31
04/15/03
98.8
TEMP AUTO ORAL

O2%
11:31
04/15/03
99
OXIMETRY

RR
11:32
04/15/03
14
RESP RATE AUTO

Vitals for 999-3 (TEST3, PATIENT) User: 7732-1 (Comm Port Monitor)

File Configure Format

Go To Gopher

Bedside Gopher

CLEAR ALL

Datascope Intake Output Output Drains Occult Bld Tests RT

☐ Logging

Device 1: Datascope (Comm Port 1)

Temperature: Not Available

Collect All

Systolic
Diastolic
MAP
Pulse R
Temper
SaO2
Respira
Weight
Bedside Glucose
Pain Scale (0-10)

Parameter Care Notification

Temperature of 94.8 VERY LOW! Per hospital policy,
RETAKE TEMP and call M.D. if still low. — You must insert
probe into Datascope before a second temperature will
register. — Consider using a different body site.

STORE

Retake Temperature

Retake Temp

STORE DATA

Status

Clear

Version 2.007

Datascope: 04/15/2003 12:17:37 Temperature: Not Available

Stored Vitals for TEST6, PATIE...

WINDOW
W6155B

PATIENT TEST6

999999-6

SBP
11:20
04/15/03
110
SYSTOLIC BP AUTO

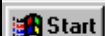
DBP
11:20
04/15/03
81
DIASTOLIC BP AUTO

PR
11:20
04/15/03
69
PULSE AUTO

T
11:20
04/15/03
8.9
TEMP AUTO ORAL

O2%
11:20
04/15/03
99
OXIMETRY

RR
11:20
04/15/03
14
RESP RATE AUTO



Vitals for 999-3 (TES...

REGEN Order Entry Gopher



1:18 PM

Stored Vitals for TEST3, PATIE...

DOOR
W6155A

PATIENT TEST3

999-3

SBP
11:31
04/15/03
138
SYSTOLIC BP AUTO

DBP
11:31
04/15/03
90
DIASTOLIC BP AUTO

PR
11:31
04/15/03
89
PULSE AUTO

T
13:34
04/15/03
98.8
TEMP AUTO ORAL

O2%
11:31
04/15/03
99
OXIMETRY

RR
11:32
04/15/03
14
RESP RATE AUTO

Vitals for 999-3 (TEST3, PATIENT) User: 7732-1 (Comm Port Monitor)

File Configure Format

Go To Gopher

Bedside Gopher

CLEAR ALL

Datascope Intake Output Output Drains Occult Bld Tests RT

☐ Logging

Device 1: Datascope (Comm Port 1)

Temperature: Not Available

Systolic Pressure MM HG Recumben

Diastolic Pressure MM HG

MAP MM HG

Pulse Rate /MIN

Temperature DEG F Oral

SaO2 %

Respiratory Rate /MIN

Weight LBS

Bedside Glucose mg/dl

Pain Scale (0-10)

Collect All

Recheck BP

AutoSave BP

Recheck Temp

Recheck SaO2

STORE DATA

Status

Clear

Version 2.007

Datascope: 04/15/2003 12:34:21 Temperature: Not Available

Stored Vitals for TEST6, PATIE...

WINDOW
W6155B

PATIENT TEST6

999999-6

SBP
11:20
04/15/03
110
SYSTOLIC BP AUTO

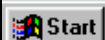
DBP
11:20
04/15/03
81
DIASTOLIC BP AUTO

PR
11:20
04/15/03
69
PULSE AUTO

T
11:20
04/15/03
98.9
TEMP AUTO ORAL

O2%
11:20
04/15/03
99
OXIMETRY

RR
11:20
04/15/03
14
RESP RATE AUTO



Vitals for 999-3 (TES...



REGEN Order Entry Gopher



1:34 PM

Stored Vitals for TEST3, PATIE...

DOOR
W6155A

PATIENT TEST3

999-3

SBP
11:31
04/15/03
138
SYSTOLIC BP AUTO

DBP
11:31
04/15/03
90
DIASTOLIC BP AUTO

PR
11:31
04/15/03
89
PULSE AUTO

T
13:34
04/15/03
98.8
TEMP AUTO ORAL

O2%
11:31
04/15/03
99
OXIMETRY

RR
11:32
04/15/03
14
RESP RATE AUTO

Vitals for 999-3 (TEST3, PATIENT) User: 7732-1 (Comm Port Monitor)

File Configure Format

Go To Gopher

Bedside Gopher

CLEAR ALL

Datascope Intake Output Output Drains Occult Bld Tests RT

☐ Logging

Device 1: Datascope (Comm Port 1)

Temperature: Not Available

Systolic Pressure MM HG Recumben

Diastolic Pressure MM HG

MAP MM HG

Pulse Rate /MIN

Temperature 94.9 DEG F Oral

SaO2 %

Respiratory Rate /MIN

Weight LBS

Bedside Glucose mg/dl

Pain Scale (0-10)

Collect All

Recheck BP

AutoSave BP

Recheck Temp

Recheck SaO2

STORE DATA

Status

Clear

Version 2.007

Datascope: 04/15/2003 12:34:21 Temperature: Not Available

Stored Vitals for TEST6, PATIE...

WINDOW
W6155B

PATIENT TEST6

999999-6

SBP
11:20
04/15/03
110
SYSTOLIC BP AUTO

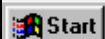
DBP
11:20
04/15/03
81
DIASTOLIC BP AUTO

PR
11:20
04/15/03
69
PULSE AUTO

T
11:20
04/15/03
98.9
TEMP AUTO ORAL

O2%
11:20
04/15/03
99
OXIMETRY

RR
11:20
04/15/03
14
RESP RATE AUTO



Vitals for 999-3 (TES...

REGEN Order Entry Gopher

1:36 PM

Stored Vitals for TEST3, PATIE...

DOOR
W6155A

PATIENT TEST3

999-3

SBP
11:31
04/15/03
138
SYSTOLIC BP AUTO

DBP
11:31
04/15/03
90
DIASTOLIC BP AUTO

PR
11:31
04/15/03
89
PULSE AUTO

T
13:34
04/15/03
98.8
TEMP AUTO ORAL

O2%
11:31
04/15/03
99
OXIMETRY

RR
11:32
04/15/03
14
RESP RATE AUTO

Vitals for 999-3 (TEST3, PATIENT) User: 7732-1 (Comm Port Monitor)

File Configure Format

Go To Gopher

Bedside Gopher

CLEAR ALL

Datascope Intake Output Output Drains Occult Bld Tests RT

☐ Logging

Device 1: Datascope (Comm Port 1)

Temperature: Not Available

Systolic Pressure MM HG Recumben
Diastolic Pressure MM HG
MAP MM HG
Pulse Rate /MIN

Temperature 94.9 DEG F Oral

SaO2 %

Respiratory Rate /MIN

Weight LBS

Bedside Glucose mg/dl

Pain Scale (0-10)

Collect All

Recheck BP

AutoSave BP

Recheck Temp

Recheck SaO2

STORE DATA

Status

Clear

Datascope: 04/15/2003 12:34:21

Stored Vitals for TEST6, PATIE...

WINDOW
W6155B

PATIENT TEST6

999999-6

SBP
11:20
04/15/03
110
SYSTOLIC BP AUTO

DBP
11:20
04/15/03
81
DIASTOLIC BP AUTO

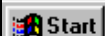
PR
11:20
04/15/03
69
PULSE AUTO

T
11:20
04/15/03
98.9
TEMP AUTO ORAL

O2%
11:20
04/15/03
99
OXIMETRY

RR
11:20
04/15/03
14
RESP RATE AUTO

Verify & Store Data



Vitals for 999-3 (TES...

REGEN Order Entry Gopher



1:36 PM

Stored Vitals for TEST3, PATIE...

DOOR
W6155A

PATIENT TEST3

999-3

SBP
11:31
04/15/03
138
SYSTOLIC BP AUTO

DBP
11:31
04/15/03
90
DIASTOLIC BP AUTO

PR
11:31
04/15/03
89
PULSE AUTO

T
13:34
04/15/03
98.8
TEMP AUTO ORAL

O2%
11:31
04/15/03
99
OXIMETRY

RR
11:32
04/15/03
14
RESP RATE AUTO

Vitals for 999-3 (TEST3, PATIENT) User: 7732-1 (Comm Port Monitor)

File Configure Format

Go To Gopher

Bedside Gopher

CLEAR ALL

Datascope Intake Output Output Drains Occult Bld Tests RT

☐ Logging

Device 1: Datascope (Comm Port 1)

Temperature: Not Available

Collect All

Systolic
Diastolic
MAP
Pulse R
Temper
SaO2
Respira
Weight

Parameter Care Notification

Temperature of 94.9 VERY LOW! Per hospital policy,
RETAKE TEMP and call M.D. if still low. — You must insert
probe into Datascope before a second temperature will
register. — Consider using a different body site.

STORE

Retake Temperature

Bedside Glucose mg/dl

Pain Scale (0-10)

STORE DATA

Status

Clear

Version 2.007

Datascope: 04/15/2003 13:34:21 Temperature: Not Available

Stored Vitals for TEST6, PATIE...

WINDOW
W6155B

PATIENT TEST6

999999-6

SBP
11:20
04/15/03
110
SYSTOLIC BP AUTO

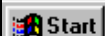
DBP
11:20
04/15/03
81
DIASTOLIC BP AUTO

PR
11:20
04/15/03
69
PULSE AUTO

T
13:34
04/15/03
8.9
TEMP AUTO ORAL

O2%
11:20
04/15/03
99
OXIMETRY

RR
11:20
04/15/03
14
RESP RATE AUTO



Vitals for 999-3 (TES...

REGEN Order Entry Gopher



1:38 PM

Stored Vitals for TEST3, PATIE...

DOOR
W6155A

PATIENT TEST3

999-3

SBP
11:31
04/15/03
138
SYSTOLIC BP AUTO

DBP
11:31
04/15/03
90
DIASTOLIC BP AUTO

PR
11:31
04/15/03
89
PULSE AUTO

T
13:34
04/15/03
98.8
TEMP AUTO ORAL

O2%
11:31
04/15/03
99
OXIMETRY

RR
11:32
04/15/03
14
RESP RATE AUTO

Vitals for 999-3 (TEST3, PATIENT) User: 7732-1 (Comm Port Monitor)

File Configure Format

Go To Gopher

Bedside Gopher

CLEAR ALL

Datascope Intake Output Output Drains Occult Bld Tests RT

☐ Logging

Device 1: Datascope (Comm Port 1)

Temperature: Not Available

Collect All

Store & Override

Parameter Care Notification

Temperature of 94.9 VERY LOW! Per hospital policy,
RETAKE TEMP and call M.D. if still low. — You must insert
probe into Datascope before a second temperature will
register. — Consider using a different body site.

STORE

Retake Temperature

Systolic

Diastolic

MAP

Pulse R

Temper

SaO2

Respira

Weight

Bedside Glucose mg/dl

Pain Scale (0-10)

STORE DATA

Status

Clear

Version 2.007

Datascope: 04/15/2003 12:34:21 Temperature: Not Available

Stored Vitals for TEST6, PATIE...

WINDOW
W6155B

PATIENT TEST6

9999-6

110

SYSTOLIC BP AUTO

81

DIASTOLIC BP AUTO

69

PULSE AUTO

8.9

TEMP AUTO ORAL

99

OXIMETRY

14

RESP RATE AUTO



Vitals for 999-3 (TES...



REGEN Order Entry Gopher



1:38 PM

Stored Vitals for TEST

DOOR
W6155A

PATIENT 7

999-3

SBP
11:31
04/15/03

SYSTOLIC

DBP
11:31
04/15/03

DIASTOLIC

PR
11:31
04/15/03

PULSE

T
11:31
04/15/03

TEMP AU

O2%
11:31
04/15/03

OXIM

RR
11:32
04/15/03

RESP RA

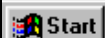
Reason for Storing

Enter your reason for storing this Temperature value of 94.9.

OK

Cancel

- ☐ I have attempted to retake the temperature at more than one body site (I.e. axillary, oral, or rectally) and it is still low. I have also verified that the patient has not recently consumed ice or other cold beverages (if taken orally).
- ☐ I have notified the patient's physician.
- ☐ Other: (Enter reason).



Vitals for 999-3 (TES...



REGEN Order Entry Gopher



1:20 PM

Stored Vitals for TEST

DOOR
W6155A

PATIENT 7

999-3

SBP
11:31
04/15/03

SYSTOLIC

DBP
11:31
04/15/03

DIASTOLIC

PR
11:31
04/15/03

PULSE

T
11:31
04/15/03

TEMP AU

O2%
11:31
04/15/03

OXIM

RR
11:32
04/15/03

RESP RA

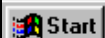
Reason for Storing

Enter your reason for storing this Temperature value of 94.9.

OK

Cancel

- ☐ I have attempted to retake the temperature at more than one body site (I.e. axillary, oral, or rectally) and it is still low. I have also verified that the patient has not recently consumed ice or other cold beverages (if taken orally.).
- ☒ I have notified the patient's physician.
- ☐ Other: (Enter reason).



Vitals for 999-3 (TES...

REGEN Order Entry Gopher



1:20 PM

Stored Vitals for TEST

DOOR
W6155A

PATIENT 7

999-3

SBP
11:31
04/15/03

SYSTOLIC

DBP
11:31
04/15/03

DIASTOLIC

PR
11:31
04/15/03

PULSE

T
11:31
04/15/03

TEMP AU

O2%
11:31
04/15/03

OXIM

RR
11:32
04/15/03

RESP RA

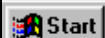
Reason for Storing

Enter your reason for storing this Temperature value of 94.9.

OK

Cancel

- ☐ I have attempted to retake the temperature at more than one body site (I.e. axillary, oral, or rectally) and it is still low. I have also verified that the patient has not recently consumed ice or other cold beverages (if taken orally).
- ☒ I have notified the patient's physician.
- ☐ Other: (Enter reason).



Vitals for 999-3 (TES...

REGEN Order Entry Gopher



1:20 PM

Stored Vitals for TEST

DOOR
W6155A

PATIENT 7

999-3

SBP
11:31
04/15/03

SYSTOLIC

DBP
11:31
04/15/03

DIASTOLIC

PR
11:31
04/15/03

PULSE

T
11:31
04/15/03

TEMP AU

O2%
11:31
04/15/03

OXIM

RR
11:32
04/15/03

RESP RA

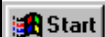
Reason for Storing

Enter your reason for storing this Temperature value of 94.9.

- ☐ I have attempted to retake the temperature at more than one body site (I.e. axillary and it is still low. I have also verified that the patient has not taken orally.).
- ☒ I have notified the patient's physician.
- ☐ Other: (Enter reason).

OK

Store & Reason



Vitals for 999-3 (TES...



REGEN Order Entry Gopher



1:20 PM

Stored Vitals for TEST3, PATIE...

DOOR
W6155A

PATIENT TEST3

999-3

SBP
11:31
04/15/03
138
SYSTOLIC BP AUTO

DBP
11:31
04/15/03
90
DIASTOLIC BP AUTO

PR
11:31
04/15/03
89
PULSE AUTO

T
13:21
04/15/03
94.9
TEMP AUTO ORAL

O2%
11:31
04/15/03
99
OXIMETRY

RR
11:32
04/15/03
14
RESP RATE AUTO

Vitals for 999-3 (TEST3, PATIENT) User: 7732-1 (Comm Port Monitor)

File Configure Format

Go To Gopher

Bedside Gopher

CLEAR ALL

Datascope Intake Output Output Drains Occult Bld Tests RT

☐ Logging

Device 1: Datascope (Comm Port 1)

Temperature: Not Available

Systolic Pressure MM HG

Recumben

Diastolic Pressure MM HG

MAP MM HG

Pulse Rate /MIN

Temperature DEG F

Oral

SaO2 %

Respiratory Rate /MIN

Weight LBS

Bedside Glucose mg/dl

Pain Scale (0-10)

Collect All

Recheck BP

AutoSave BP

Recheck Temp

Recheck SaO2

STORE DATA

Status

Clear

Version 2.007

Datascope: 04/15/2003 12:22:02 Temperature: Not Available

Stored Vitals for TEST6, PATIE...

WINDOW
W6155B

PATIENT TEST6

999999-6

SBP
11:20
04/15/03
110
SYSTOLIC BP AUTO

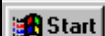
DBP
11:20
04/15/03
81
DIASTOLIC BP AUTO

PR
11:20
04/15/03
69
PULSE AUTO

T
11:20
04/15/03
98.9
TEMP AUTO ORAL

O2%
11:20
04/15/03
99
OXIMETRY

RR
11:20
04/15/03
14
RESP RATE AUTO



Vitals for 999-3 (TES...

REGEN Order Entry Gopher



1:22 PM

Stored Vitals for TEST3, PATIE...

DOOR
W6155A

PATIENT TEST3

999-3

SBP
11:31
04/15/03

138

SYSTOLIC BP AUTO

DBP
11:31
04/15/03

90

DIASTOLIC BP AUTO

PR
11:31
04/15/03

89

PULSE AUTO

T
13:21
04/15/03

94.9

TEMP AUTO ORAL

O2%
11:31
04/15/03

99

OXIMETRY

RR
11:32
04/15/03

14

RESP RATE AUTO

Vitals for 999-3 (TEST3, PATIENT) User: 7732-1 (Comm Port Monitor)

File Configure Format

Go To Gopher

Bedside Gopher

CLEAR ALL

Data Intake Output Output Drains Occult Bld Tests RT

Logging

Comm Port (Comm Port 1)

able

Return to Order Entry System

Diastolic Pressure MM HG

MAP MM HG

Pulse Rate /MIN

Temperature DEG F

Oral

SaO2 %

Respiratory Rate /MIN

Weight LBS

Bedside Glucose mg/dl

Pain Scale (0-10)

Collect All

Recheck BP

AutoSave BP

Recheck Temp

Recheck SaO2

STORE DATA

Status

Clear

Version 2.007

Date/Time: 04/15/2003 12:22:02 Temperature: Not Available

Stored Vitals for TEST6, PATIE...

WINDOW
W6155B

PATIENT TEST6

999999-6

SBP
11:20
04/15/03

110

SYSTOLIC BP AUTO

DBP
11:20
04/15/03

81

DIASTOLIC BP AUTO

PR
11:20
04/15/03

69

PULSE AUTO

T
11:20
04/15/03

98.9

TEMP AUTO ORAL

O2%
11:20
04/15/03

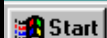
99

OXIMETRY

RR
11:20
04/15/03

14

RESP RATE AUTO



Vitals for 999-3 (TES...



REGEN Order Entry Gopher



1:22 PM

REGEN Order Entry Gopher

Auto

1,147 mb on REGEN/R: (Development)257K, .00 y 04/15/03 01:48PM

5.02a THE MEDICAL GOPHER IS AT YOUR SERVICE (C) 1992 CAM

Stn: PKROTH// Loc: 6NORTH User: KROTH,PHILIP

Enter a valid task name or select one by number from the menu.

1.Task?

<Esc> <Ent> <Store>

Task choices

Patient orders

1) WRITE.ORDERS

2) REVIEW.OR.REPRINT.O»

Nursing services

3) VACCINE.QUESTIONNAI»

4) ACTIVATE.TRANSFER.O»

5) ARRIVAL

6) BED/ACUITY.CHANGE

7) DEPARTURE

8) WORK.COMPLETED

Other functions

9) INPATIENT.REPORTS

10) CHANGE.YOUR.PATIENT»

11) CHANGE.YOUR.PASSWORD

12) SUGGESTIONS.TO.DEVE»

13) USER.LOGOUT

Special Features

14) MAIL

15) CARTOONS

16) USER.PREFERENCES

17) REQUEST.DAILY.REPOR»

18) CHANGEOVER.NOTES

19) WEATHER

20) REVIEW.EKG

21) TO.DO

Access Other Systems

22) INQUIRY

23) CHANGE.OVER

Vitalnet II Data

24) VITALS.TASKS

25) COSIGN.VERBAL.ORDERS

Windows Features

26) WEB.INQUIRY

27) INTERQUAL.CRITERIA

28) UNLOAD.GOPHER

29) SHUTDOWN.WIN95

30) MONITOR.VITALS

Esc Enter Store Clear Restore Edit Suspend ToDo INQ PgUp PgDn Help

11:31
04/15/03
OXIMETRY
RR
11:32
04/15/03
RESP RATE AUTO

14

11:20
04/15/03
OXIMETRY
RR
11:20
04/15/03
RESP RATE AUTO

14

Start

Vitals for 999-3 (TEST3, P...

REGEN Order Entry ...

1:48 PM

REGEN Order Entry Gopher

Auto

1,147 mb on REGEN/R: (Development) 257K, .00 y 04/15/03 01:48PM

5.02a THE MEDICAL GOPHER IS AT YOUR SERVICE (C) 1992 CAM

Stn: PKROTH// Loc: 6NORTH User: KROTH,PHILIP

Enter a valid task name or select one by number from the menu.

1.Task?

<Esc> <Ent> <Store>

Task choices

Patient orders

1) WRITE.ORDERS

2) REVIEW.OR.REPRINT.O»

Nursing services

3) VACCINE.QUESTIONNAI»

4) ACTIVATE.TRANSFER.O»

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6) BED/ACUITY.CHANGE

7) DEPARTURE

8) WORK.COMPLETED

Other functions

9) INPATIENT.REPORTS

10) CHANGE.YOUR.PATIENT»

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Special Features

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Access Other Systems

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26) WEB.INQUIRY

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29) SHUTDOWN.WIN95

30) MONITOR.VITALS

Esc Enter Store Clear Restore Edit Suspend ToDo INQ PgUp PgDn Help

11:31
04/15/03
OXIMETRY
RR
11:32
04/15/03
RESP RATE AUTO

14

11:20
04/15/03
OXIMETRY
RR
11:20
04/15/03
RESP RATE AUTO

14

Start

Vitals for 999-3 (TEST3, P...

REGEN Order Entry ...

1:48 PM

Stored Vitals for TEST3, PATIE...

DOOR
W6155A

PATIENT TEST3

999-3

SBP
11:31
04/15/03
138
SYSTOLIC BP AUTO

DBP
11:31
04/15/03
90
DIASTOLIC BP AUTO

PR
11:31
04/15/03
89
PULSE AUTO

T
13:45
04/15/03
94.9
TEMP AUTO ORAL

O2%
11:31
04/15/03
99
OXIMETRY

RR
11:32
04/15/03
14
RESP RATE AUTO



/R: (Development) 254K, .55 y 04/1
— THE MEDICAL GOPHER IS AT YOUR SERVICE —
Stn: PKROTH// Loc: 6NORTH
Services Accessible on this Workstation
APPT: YES

ser ID and Password to access the Gopher
ing Orders in the Clinics:
but due to a variety of computer network problems,
has been intermittently slow.
ence such problems, at the time of signing orders w
sure that you choose "Yes" to the question "LOGOUT
umstances, this will prevent such delays.

d?

ore>

4 5 6 7 8 9 0 .

Clear Restore Edit Suspend ToDo INQ PgUp PgDn Help

Stored Vitals for TEST6, PATIE...

WINDOW
W6155B

PATIENT TEST6

999999-6

SBP
11:20
04/15/03
110
SYSTOLIC BP AUTO

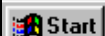
DBP
11:20
04/15/03
81
DIASTOLIC BP AUTO

PR
11:20
04/15/03
69
PULSE AUTO

T
11:20
04/15/03
98.9
TEMP AUTO ORAL

O2%
11:20
04/15/03
99
OXIMETRY

RR
11:20
04/15/03
14
RESP RATE AUTO



Vitals for 999-3 (TEST3, P...



REGEN Order Entry ...



1:50 PM



Study Results

- 191 unique nurses
- 7985 temperature measures
- 709 unique patients
- 42 temp's/nurse
- 11 temp's/patient



Results – Subjects By Nursing Type

	Control	Reminder
RN:	34 (58%)	25 (42%)
LPN:	16 (47%)	18 (53%)
Aides:	26 (45%)	32 (55%)
Other:	20 (50%)	20 (50%)
Total:	96 (50%)	95 (50%)



Results -- Overall

- 320 Low temps recorded
- 0.45 Low temps/patient (average)
- 1.7 Low temps/nurse (average)
- 85% of low temp's repeated because of a reminder are in the normal range.

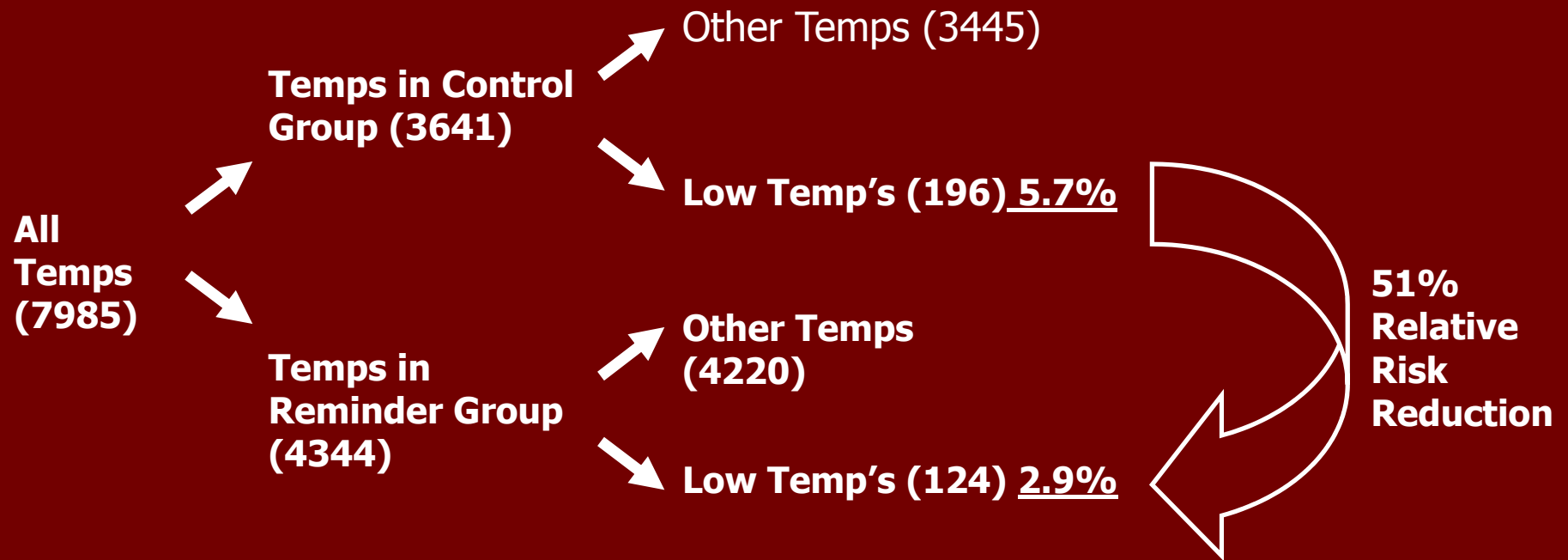


Results

- 5.7% Low temps recorded in control group
- 2.9% Low temps recorded in reminder group
- 2.8% overall *absolute* risk reduction
- 51% overall *relative* risk reduction in reminder vs. control group.



Results – By Temperature



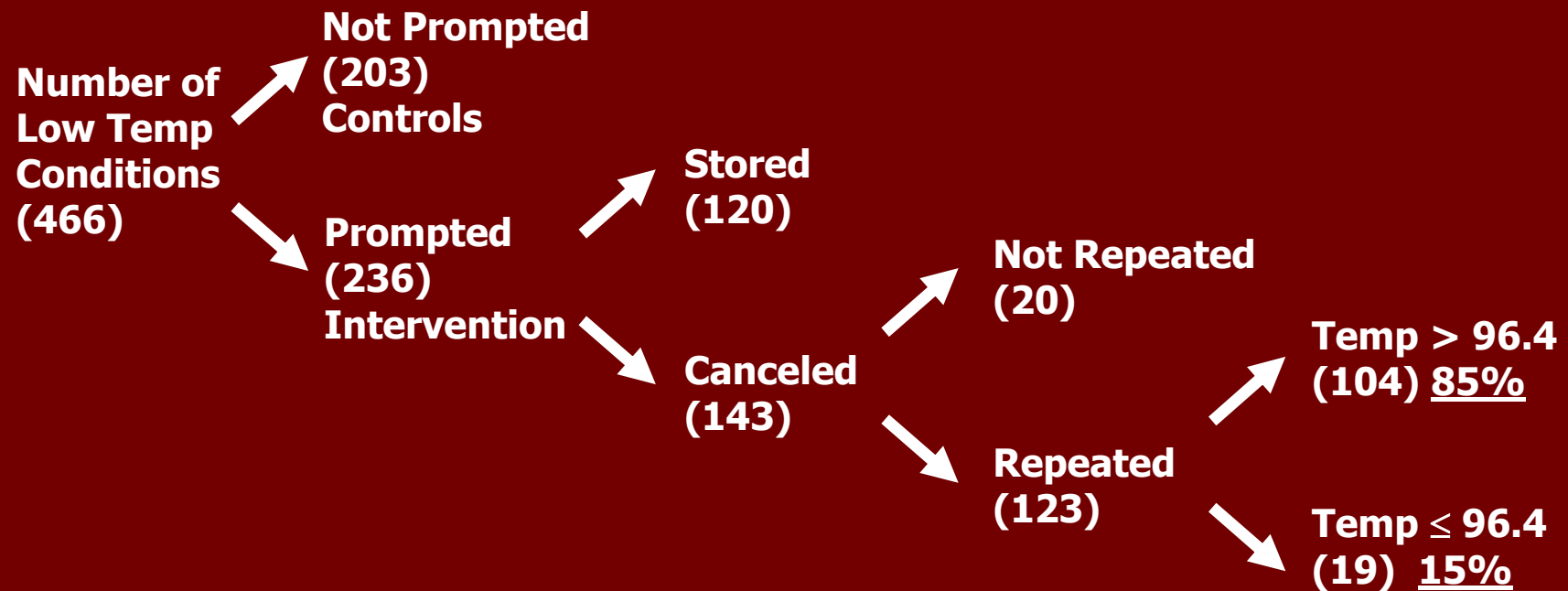


Results – by Nursing Type

	Recorded Temperatures	Recorded Low Temperatures	
		Control	Reminder
RN:	1186 (15%)	27 (2.3%)	10 (0.8%)
LPN:	589 (7%)	12 (2.0%)	8 (1.3%)
Aides:	5996 (75%)	150 (2.5%)	101 (1.7%)
Other:	214 (3%)	7 (3.3%)	5 (2.3%)



Results – By Reminder





Conclusions

- Inaccurately recorded bedside temperatures are very common (5.7%!)
- Reminders for nurses at the bedside can improve the accuracy of temperature measurement
- The effect of the reminder may be associated with the level of training



Limitations

- Small n – but data collection is ongoing.
- No statistical power yet but should have after three month's of data



Future Work

- Improve accuracy of other patient measures, i.e. weight, blood pressure
- Capture additional bedside parameters, i.e. pain scale, peak flows, and others



Thanks to

- Clement J. McDonald, M.D.
- Anne Belsito, M.S.
- Paul Dexter, M.D.
- J. Marc Overhage, M.D., PhD.
- Siu Hui, PhD.



Improving Accuracy of Vital Signs Capture Using Bedside Computerized Reminders for Nurses – Preliminary Results

Philip J. Kroth, M.D.

ARUP Laboratories

April 16, 2003