Health Information Technology and Provider Communication

University of Michigan; Ann Arbor, MI

This is a questionnaire designed to be completed by physicians, nurse practitioners, and physician assistants in a perioperative/operative and hospital setting. The tool includes questions to assess the current state of health information technology including clinical documentation, computerized provider order entry systems, clinical decision support systems, hardware, mobile devices, secure messaging, text messaging, and EHRs/EMRs.

Health Information Technology and Provider Communication

Please complete the survey below.

Thank you!

The purpose of this questionnaire is to identify health information and communication technologies in use on medical-surgical units in your hospital. Medical-surgical units include: medical, surgical, mixed medical-surgical, step-down, and telemetry units. Increasing use of health information and communication technologies is likely to affect communication between nurses and physicians, causing changes to workflow and communication practices. The word "physician" can apply to any provider licensed to provide care such as nurse practitioners (NPs) and physician assistants (PAs) who write orders and communicate with nursing staff. In this questionnaire we seek to learn what technologies are available in your medical-surgical units in order to assess the impact on downstream processes.

This survey is divided into SEVEN sections. Please answer the questions in all sections. You may complete this survey in consultation with or delegate to your direct reports.

SECTION 1

What is the name of the medical/surgical unit that you will report on in this survey?   _____

Does your hospital have a computerized system for the functions below? Please select only one response for each statement. "Fully implemented" means the identified function has completely replaced the paper-based process.

Electronic clinical documentation

	Fully implement-ed across all units	Fully implement-ed in at least one unit	Beginning to implement in at least one unit	Have resources to implement in the next year	Do not have resources but considering implement-ing	Not in place and not considering implement-ing	Don't know
Patient demographics	○	○	○	○	○	○	○
Physician notes	○	○	○	○	○	○	○
Nursing assessments	○	○	○	○	○	○	○
Problem lists	○	○	○	○	○	○	○
Medication lists	○	○	○	○	○	○	○
Discharge summaries	○	○	○	○	○	○	○
Advanced directives	○	○	○	○	○	○	○

Results viewing

	Fully implement-ed across all units	Fully implement-ed in at least one unit	Beginning to implement in at least one unit	Have resources to implement in the next year	Do not have resources but considering implement-ing	Not in place and not considering implement-ing	Don't know

Lab reports	○	○	○	○	○	○	○
Radiology reports	○	○	○	○	○	○	○
Radiology images	○	○	○	○	○	○	○
Diagnostic test results	○	○	○	○	○	○	○
Diagnostic test images	○	○	○	○	○	○	○
Consultant reports	○	○	○	○	○	○	○

Computerized provider order entry

	Fully implement-ed across all units	Fully implement-ed in at least one unit	Beginning to implement in at least one unit	Have resources to implement in the next year	Do not have resources but considering implement-i ng	Not in place and not considering implement-i ng	Don't know
Laboratory tests	○	○	○	○	○	○	○
Radiology tests	○	○	○	○	○	○	○
Medications	○	○	○	○	○	○	○
Consultation requests	○	○	○	○	○	○	○
Nursing orders	○	○	○	○	○	○	○

Clinical decision support

	Fully implement-ed across all units	Fully implement-ed in at least one unit	Beginning to implement in at least one unit	Have resources to implement in the next year	Do not have resources but considering implement-i ng	Not in place and not considering implement-i ng	Don't know
Clinical guidelines	○	○	○	○	○	○	○
Clinical reminders	○	○	○	○	○	○	○
Drug allergy alerts	○	○	○	○	○	○	○
Drug-drug interaction alerts	○	○	○	○	○	○	○
Drug-lab result interaction alerts	○	○	○	○	○	○	○
Drug dosing support	○	○	○	○	○	○	○

SECTION 2

In this section, we are interested in learning about the hardware (and hardware features) located on your medical-surgical units. Hardware refers to both STATIONARY computer terminals and LAPTOP computers used to access electronic health records.

What proportion of patient rooms on your medical-surgical units is equipped with STATIONARY computer terminals (i.e., work stations)?

○ 0%
○ < 25%
○ 26 - 50%
○ 51 - 75%
○ > 75%
○ 100%

On average, how many STATIONARY computer terminals are located in the station(s) that nurses use on your medical-surgical units?

○ 1-3
○ 4-6
○ > 6

On your medical-surgical units, are STATIONARY computer terminals located in areas other than the nurses' station(s) or patient rooms?

○ Yes
○ No

Please specify other locations for STATIONARY computer terminals (e.g., common shared stations for the multi-disciplinary team):

_____

What proportion of STATIONARY computer terminals allows internet access?

○ < 25%
○ 26 - 50%
○ 51 - 75%
○ > 75%

On your medical-surgical units what proportion of STATIONARY computer terminals are in working order the majority of the time:

○ < 25%
○ 26 - 50%
○ 51 - 75%
○ > 75%

To what extent in the past year, have you had issues of user access to STATIONARY computer terminals (e.g., can't find an available and working terminal when needed or computer has been locked by another user)?

○ Frequently
○ Sometimes
○ Rarely/never

Are there any PORTABLE or LAPTOP computers (not including tablets) located on your medical-surgical units?

○ Yes
○ No

How many PORTABLE or LAPTOP computers located on your medical-surgical units are available for nurses to use?

○ 1-3
○ 4-6
○ >6

To what extent in the past year, have you had issues of user access to PORTABLE or LAPTOP (e.g., can't find an available and working portable or laptop when needed)?

○ Frequently
○ Sometimes
○ Rarely/Never
○ N/A

Are there any TABLET computers located on your medical-surgical units?

○ Yes
○ No

How many TABLETS are located on your medical-surgical units on average, and available for nurses to use?

○ 1-3
○ 4-6
○ > 6
○ We don't have any tablets.

SECTION 3

In this section, we are interested in learning about physicians' and nurses' use of hardware and computerized functions performed using that hardware (i.e., those from Section 1) on your medical-surgical units.

Hardware

Which types of staff use stationary computer terminals on your medical-surgical units? Please indicate all that apply:

☐ Physicians
☐ Nurses
☐ Techs/Nurse assistants
☐ Clerks
☐ Social workers
☐ Pharmacists
☐ Respiratory therapists
☐ Other

Please specify other personnel who use stationary
computer terminals on your medical-surgical units.

_____

Which types of staff use portable or laptop computers
on your medical-surgical units? Please indicate all
that apply:

☐ Physicians
☐ Nurses
☐ Techs/Nurse assistants
☐ Clerks
☐ Social workers
☐ Pharmacists
☐ Respiratory therapists
☐ Other
☐ We don't have portable or laptop computers

Please specify other personnel who use portable or
laptop computers on your medical-surgical units.

_____

Are some computers (stationary computer terminals or
portable/laptop) designated for specific groups
(e.g., for clerk use only, etc.)?

◯ Yes
◯ No

Please identify the specific group for whom the
computers are designated:

◯ Physicians
◯ Nurses
◯ Techs/Nurse assistants
◯ Clerks
◯ Social Workers
◯ Pharmacists
◯ Respiratory therapists
◯ Other

Computerized functions performed on hardware

Do nurses receive notification through the
computerized system when a physician enters an order?

◯ Regularly
◯ Sometimes
◯ Rarely/never
◯ Our computerized system doesn't have this function

Is there a way for nurses to acknowledge receipt of
an order in the computerized system?

◯ Yes
◯ No

Is there a way for nurses to be alerted when a STAT
order is placed in the computerized system?

◯ Yes
◯ No

Is there a way for nurses to acknowledge receipt of a
STAT order in the computerized system?

◯ Yes
◯ No

Is there a way for nurses to document in the
computerized system when an order has been carried
out?

◯ Yes
◯ No
◯ Sometimes

Do physicians use the computerized provider order
entry (CPOE) function as a way to communicate with
nurses (e.g., when a nurse pages a physician with a
request, the physician enters an order in CPOE
instead of answering the nurse directly)?

◯ Regularly
◯ Sometimes
◯ Rarely/never
◯ We don't have CPOE functionality

Do physicians and nurses have access to the same or
different information when using computerized
functions (e.g., CPOE)?

◯ Physicians and nurses have access to the same
  information
◯ Some information is accessible to physicians only
◯ Some information is accessible to nurses only

Please choose ONE of the following statements that best applies to your medical-surgical units:	◯ Physicians work mostly on computers located in the nursing unit ◯ Physicians work mostly on computers located away from the nursing unit ◯ Physicians work mostly off-site (e.g., remote access from office, home, other hospital) ◯ We don't have computers available for work on our medical-surgical units
Do physicians on your medical-surgical units have others document in the electronic health record on their behalf (e.g., scribe, PA, nurse clinician)?	◯ Regularly ◯ Sometimes ◯ Rarely/never ◯ We do not have scribes available
Do physicians and nurses communicate via some other computer application such as middleware? Middleware is software that enables communication between an operating system and applications in a distributed computing system (e.g., smart phone apps that let physicians know nurse staff assignments for a shift, or that send patient alarms to physician and/or nurse smart phones).	◯ Regularly ◯ Sometimes ◯ Rarely/never ◯ We do not have any middleware available
Do physicians use electronic tablets for communicating with nurses?	◯ Yes ◯ No
Do nurses use electronic tablets for communicating with physicians?	◯ Yes ◯ No
In your hospital, are there specific protocols or policies that specify which information and communication technologies physicians or nurses should use in given clinical situations?	◯ Yes ◯ No

SECTION 4

In this section, we are interested in learning about the infrastructure for electronic communication technologies on medical-surgical units in your hospital. The infrastructure for electronic communication technologies includes paging systems and electronic white boards.

Does your hospital have a paging website (that allows for web messaging), a telephone paging system, or both? Please select only ONE of the following choices:	◯ Paging website (needs internet connection. Allows input of text as well as numbers). ◯ Telephone paging system (through hospital operator or automated system). ◯ Both paging website and telephone paging systems.
What percentage of physicians carry pagers?	◯ < 25% ◯ 26 - 50% ◯ 51 - 75% ◯ > 75%
Do physician pagers have the capability to display text?	◯ Yes ◯ No
Do physician pagers have the capability to send as well as receive text messages?	◯ Yes ◯ No
What percentage of nurses carries pagers?	◯ < 25% ◯ 26 - 50% ◯ 51 - 75% ◯ > 75%
If nurses carry pagers, do their pagers have the capability to display text?	◯ Yes ◯ No ◯ N/A

Do nurse pagers have the capability to send as well as receive text messages?

○ Yes
○ No
○ N/A

Are there any electronic white boards (i.e., electronic displays that integrate information such as bed status, when patients are off unit for tests, etc.) on your medical-surgical units (not white boards in patient rooms)?

○ All of our medical-surgical units have electronic white boards
○ Some of our medical-surgical units have electronic white boards
○ Few of our medical-surgical units have electronic white boards
○ None of our medical-surgical units have electronic white boards

What is the purpose of electronic white boards, if used on your medical-surgical units?

_____

SECTION 5

In this section, we are interested in learning more about the use of electronic communication technologies on medical-surgical units in your hospital (i.e., cell phones, pagers, email, web messaging, and electronic white boards).

On medical-surgical units, do nurses use cellular telephones for work-related purposes?

○ Yes
○ No

Are the cell phones supplied by the hospital?

○ Yes
○ No

On medical-surgical units, do physicians use cellular telephones for work-related purposes?

○ Yes
○ No

Are the cell phones supplied by the hospital?

○ Yes
○ No

Please choose ONE of the following statements that best applies to your medical-surgical units:

○ Nurses generally prefer to page physicians to a phone covered by a clerk.
○ Nurses generally prefer to page physicians to another phone (e.g., their own phone, a phone close to a   patient's room).
○ Nurses generally prefer to call physicians' cell phones.
○ Nurses generally prefer to text physicians.

Please choose ONE of the following statements that best applies to your medical-surgical units:

○ Physicians generally prefer to page nurses to a phone covered by a clerk.
○ Physicians generally prefer to page nurses to another phone (e.g., their own phone, a phone close to a patient's room).
○ Physicians generally prefer to call nurses' cell phones.
○ Physicians generally prefer to text nurses.

Do physicians and nurses use an email program within the electronic health record system to communicate with each other (i.e., physician to nurse; nurse to physician)?

○ Regularly
○ Sometimes
○ Rarely/never
○ Our computerized system doesn't have that function

Do physicians and nurses use an email program separate from the electronic health record system to communicate with each other (i.e., physician to nurse; nurse to physician)?

○ Regularly
○ Sometimes
○ Rarely/never
○ Our computerized system doesn't have that function

SECTION 6

In this section, we are interested in learning about non-electronic ways of communicating such as face-to-face, landline telephones, magnetic or non-electronic white boards, and paper/pencil.

Face-to-face communication:

	Rarely (less than once/week)	Sometimes (at least once/week)	Regularly (> once/week)	All the time (daily)
Physicians use face-to-face communication with nurses.	◯	◯	◯	◯
Nurses use face-to-face communication with physicians.	◯	◯	◯	◯
Nurses communicate with a physician extender (nurse practitioner or physician assistant) before contacting a physician.	◯	◯	◯	◯
Physicians give verbal orders to nurses.	◯	◯	◯	◯
Bedside nurses participate in patient care rounds.	◯	◯	◯	◯

On medical-surgical units, are landline telephones placed in any location not including the nurses' station or patient rooms?
- ◯ Yes
- ◯ No

Do the landline telephones on your medical-surgical units have texting functions?
- ◯ All
- ◯ Most
- ◯ Few/none

What percent of nurses have individual telephones dedicated for work-related purposes?
- ◯ < 25%
- ◯ 26 - 50%
- ◯ 51 - 75%
- ◯ > 75%

If nurses have individual telephones, please select ONE of the following statements that best applies to your medical-surgical units:
- ◯ Each nurse is assigned his/her own telephone number which is used every time s/he works.
- ◯ Each nurse is assigned a different telephone number every time s/he works.
- ◯ N/A

Is there at least one clerk available to answer the telephone on each medical-surgical unit on all shifts?
- ◯ Yes
- ◯ No

For how many hours in a 24 hour period is NO CLERK AVAILABLE?
- ◯ 4 hours
- ◯ 6 hours
- ◯ 8 hours
- ◯ 10 hours
- ◯ 12 hours
- ◯ > 12 hours

To what extent in the past year, have you had issues of user access to landline telephones (i.e., can't find an available and working telephone when needed)?
- ◯ Frequently
- ◯ Sometimes
- ◯ Rarely/never

If magnetic or non-electronic white boards are used on your medical-surgical units, what is their purpose?

_____

Do physicians and/or nurses use clip boards or paper and pen/pencil to communicate with each other (e.g., nurse places a hand-written note to the physician on the patient's chart)?

○ Frequently
○ Sometimes
○ Rarely/never

Does your hospital use any other medium to facilitate communication between physicians and nurses?

○ Yes
○ No

Please describe any other medium used to facilitate communication between physicians and nurses:

_____

SECTION 7

In this final section, we are interested in hearing from the person who completed the majority of questions in this survey. Please answer the following questions about yourself and your hospital:

What is your job title? Please include your professional and educational degrees. Your name is not requested.

_____

How many years' experience have you had with the DESIGN of health information and communication technologies in a healthcare setting?

○ < 5 years
○ 6-10 years
○ 11- 20 years
○ > 20 years

How many years' experience have you had with the DEPLOYMENT of health information and communication technologies in a healthcare setting?

○ < 5 years
○ 6-10 years
○ 11- 20 years
○ > 20 years

What is the total number of acute care hospital beds (including ICU beds) at your hospital (not overall healthcare system)?

○ < 100 beds
○ 100 - 300 beds
○ 301 - 500 beds
○ > 500 beds

How many medical-surgical units are in your hospital (Medical-surgical units include: medical, surgical, mixed medical-surgical, step-down, and telemetry units)?

○ 1
○ 2
○ 3
○ 4
○ 5
○ > 5

Do hospitalists provide care on your medical-surgical units?

○ Yes
○ No

Do locum tenens physicians (i.e., temporary physicians hired to fill a gap in coverage) provide care on your medical-surgical units?

○ On all units
○ On some units
○ No

Does your hospital have a physician residency program?

○ Yes
○ No

Is there anything else that you think we should know about communication media and health information technology that are in use in your hospital?

_____