Self-Assessment

# High Priority Practices

## General Instructions for the SAFER Self-Assessment Guides

The SAFER Guides are designed to help healthcare organizations conduct self-assessments to optimize the safety and safe use of electronic health records (EHRs) in the following areas.

- High Priority Practices
- Organizational Responsibilities
- Contingency Planning
- System Configuration
- System Interfaces
- Patient Identification
- Computerized Provider Order Entry with Decision Support
- Test Results Reporting and Follow-Up
- Clinician Communication

Each of the nine SAFER Guides begins with a Checklist of recommended practices. The downloadable SAFER Guides provide fillable circles that can be used to indicate the extent to which each recommended practice has been implemented. Following the Checklist, a Practice Worksheet gives a rationale for and examples of how to implement each recommended practice, as well as likely sources of input into assessment of each practice, and fillable fields to record team members and follow-up action. In addition to the downloadable version, the content of each SAFER Guide, with interactive references and supporting materials, can also be viewed on ONC's website at www.healthit.gov/SAFERGuide.

The SAFER Guides are based on the best evidence available at this time (2016), including a literature review, expert opinion, and field testing at a wide range of healthcare organizations, from small ambulatory practices to large health systems. The recommended practices in the SAFER Guides are intended to be useful for all EHR users. However, every organization faces unique circumstances and will implement a particular practice differently. As a result, some of the specific examples in the SAFER Guides for recommended practices may not be applicable to every organization.

The SAFER Guides are designed in part to help deal with safety concerns created by the continuously changing landscape that healthcare organizations face. Therefore, changes in technology, practice standards, regulations and policy should be taken into account when using the SAFER Guides. Periodic self-assessments using the SAFER Guides may also help organizations identify areas in which it is particularly important to address the implications of change for the safety and safe use of EHRs. Ultimately, the goal is to improve the overall safety of our health care system.

The SAFER Guides are not intended to be used for legal compliance purposes, and implementation of a recommended practice does not guarantee compliance with HIPAA, the HIPAA Security Rule, Medicare or Medicaid Conditions of Participation, or any other laws or regulations. The SAFER Guides are for informational purposes only and are not intended to be an exhaustive or definitive source. They do not constitute legal advice. Users of the SAFER Guides are encouraged to consult with their own legal counsel regarding compliance with Medicare or Medicaid program requirements, HIPAA, and any other laws.

For additional, general information on Medicare and Medicaid program requirements, please visit the Centers for Medicare & Medicaid Services website at www.cms.gov. For more information on HIPAA, please visit the HHS Office for Civil Rights website at www.hhs.gov/ocr.

Self-Assessment

# High Priority Practices

## Introduction

The *High Priority Practices SAFER Guide* identifies "high risk" and "high priority" recommended safety practices intended to optimize the safety and safe use of EHRs. It broadly addresses the EHR safety concerns discussed in greater detail in the other eight SAFER Guides. Assembling a multi-disciplinary safety team is recommended to complete this guide, as a team will be best equipped to identify which EHR-related safety practices should be addressed first and which of the other SAFER Guides to turn to next.

The potential benefits of EHRs may not be fully maximized unless the people responsible for their implementation, maintenance, and use are prepared for and manage the new challenges and risks they create.[1, 2, 3, 4, 5, 6] These new risks are both "social" (involving people, leadership, workflow, and policies) and "technical" (involving EHR hardware and software and system-to-system interfaces, configurations, upgrades, and maintenance). This guide is designed to help the people responsible for EHR safety in each specific complex "sociotechnical" healthcare organization focus on the most important safety challenges and risks introduced by EHRs.

Completing the self-assessment in the High Priority Practices SAFER Guide requires the engagement of people both within and outside the organization (e.g., EHR technology developers, diagnostic services providers). Because this guide is designed to help organizations prioritize EHR-related safety concerns, clinician leadership in the organization should be engaged to assess whether and how any particular recommended practice affects the organization's ability to deliver safe, high quality care.

Collaboration between clinicians and staff members while completing the self-assessment in this guide will enable an accurate snapshot of the organization's EHR status in terms of safety. Even more importantly, collaboration should lead to a consensus about the organization's future path to optimize EHR-related safety and quality: setting priorities among the recommended practices not yet addressed, ensuring a plan is in place to maintain recommended practices already in place, dedicating the required resources to make necessary improvements, and working together to mitigate the highest priority safety risks introduced by the EHR.

Self-Assessment

# High Priority Practices

## Table of Contents



The SAFER Self-Assessment Guides were developed by health IT safety researchers and informatics experts:

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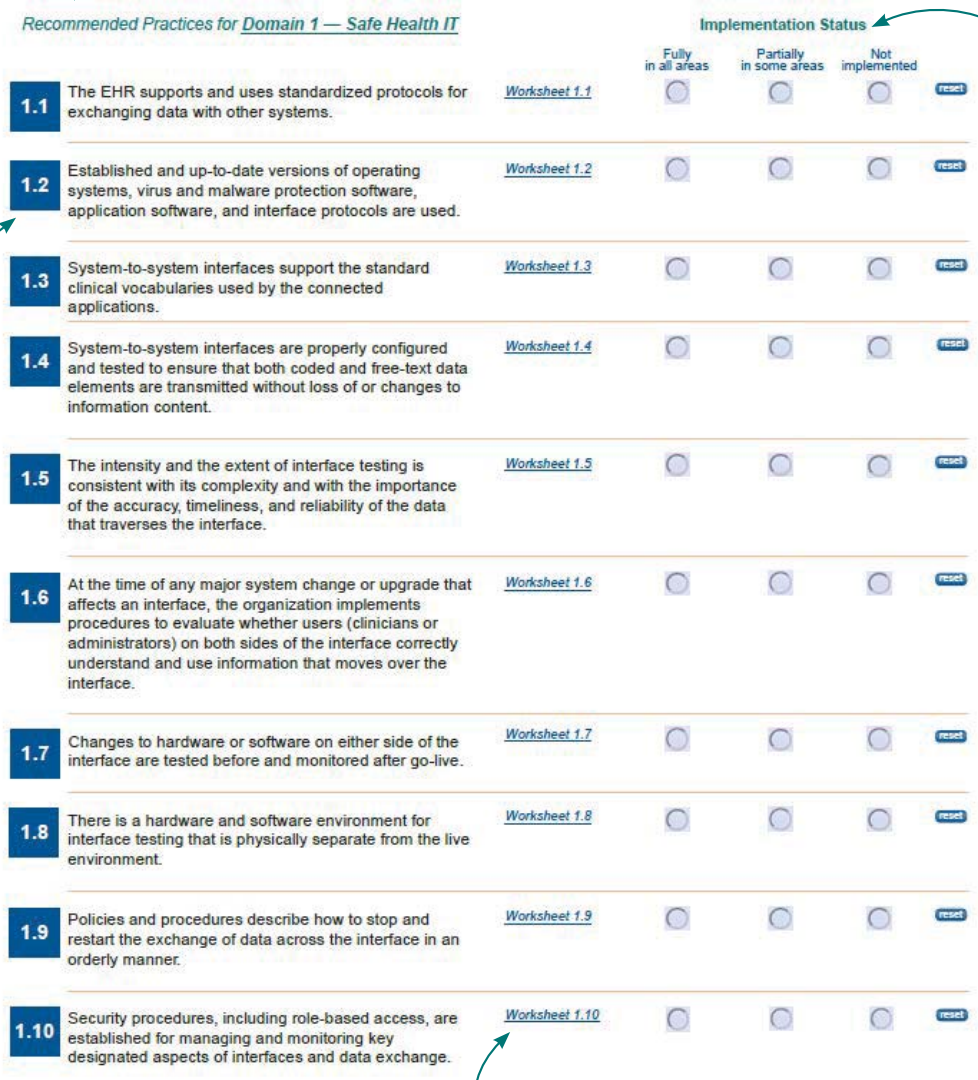
The *Checklist* is structured as a quick way to enter and print your self-assessment. Your selections on the checklist will automatically update the related section of the corresponding *Recommended Practice Worksheet*.

The *Domain* associated with the *Recommended Practice(s)* appears at the top of the column.

The *Recommended Practice(s)* for the topic appear below the associated *Domain*.



| Recommended Practices for Domain 1 — Safe Health IT | | Implementation Status: Fully in all areas | Partially in some areas | Not implemented | |
|---|---|---|---|---|---|
| 1.1 The EHR supports and uses standardized protocols for exchanging data with other systems. | Worksheet 1.1 | ○ | ○ | ○ | reset |
| 1.2 Established and up-to-date versions of operating systems, virus and malware protection software, application software, and interface protocols are used. | Worksheet 1.2 | ○ | ○ | ○ | reset |
| 1.3 System-to-system interfaces support the standard clinical vocabularies used by the connected applications. | Worksheet 1.3 | ○ | ○ | ○ | reset |
| 1.4 System-to-system interfaces are properly configured and tested to ensure that both coded and free-text data elements are transmitted without loss of or changes to information content. | Worksheet 1.4 | ○ | ○ | ○ | reset |
| 1.5 The intensity and the extent of interface testing is consistent with its complexity and with the importance of the accuracy, timeliness, and reliability of the data that traverses the interface. | Worksheet 1.5 | ○ | ○ | ○ | reset |
| 1.6 At the time of any major system change or upgrade that affects an interface, the organization implements procedures to evaluate whether users (clinicians or administrators) on both sides of the interface correctly understand and use information that moves over the interface. | Worksheet 1.6 | ○ | ○ | ○ | reset |
| 1.7 Changes to hardware or software on either side of the interface are tested before and monitored after go-live. | Worksheet 1.7 | ○ | ○ | ○ | reset |
| 1.8 There is a hardware and software environment for interface testing that is physically separate from the live environment. | Worksheet 1.8 | ○ | ○ | ○ | reset |
| 1.9 Policies and procedures describe how to stop and restart the exchange of data across the interface in an orderly manner. | Worksheet 1.9 | ○ | ○ | ○ | reset |
| 1.10 Security procedures, including role-based access, are established for managing and monitoring key designated aspects of interfaces and data exchange. | Worksheet 1.10 | ○ | ○ | ○ | reset |

Select the level of implementation achieved by your organization for each *Recommended Practice*.

Your *Implementation Status* will be reflected on the *Recommended Practice Worksheet* in this PDF.

To the right of each *Recommended Practice* is a link to the *Recommended Practice Worksheet* in the PDF.

The Worksheet provides guidance on implementing the Practice.

## *Recommended Practices for **Domain 1 — Safe Health IT***

| | | | Implementation Status | | | |
|---|---|---|---|---|---|---|
| | | | Fully in all areas | Partially in some areas | Not implemented | |
| 1.1 | Data and application configurations are backed up and hardware systems are redundant. | *Worksheet 1.1* | ○ | ◉ | ○ | reset |
| 1.2 | EHR downtime and reactivation policies and procedures are complete, available, and reviewed regularly. | *Worksheet 1.2* | ○ | ○ | ◉ | reset |
| 1.3 | Allergies, problem list entries, and diagnostic test results, including interpretations of those results, such as “normal” and “high,” are entered/stored using standard, coded data elements in the EHR. | *Worksheet 1.3* | ○ | ◉ | ○ | reset |
| 1.4 | Evidence-based order sets and charting templates are available for common clinical conditions, procedures, and services. | *Worksheet 1.4* | ○ | ◉ | ○ | reset |
| 1.5 | Interactive clinical decision support (CDS) features and functions (e.g., interruptive warnings, passive suggestions, info buttons) are available and functioning. | *Worksheet 1.5* | ○ | ◉ | ○ | reset |
| 1.6 | Hardware and software modifications and system-system interfaces are tested (pre- and post-go-live) to ensure that data are not lost or incorrectly entered, displayed, or transmitted within or between EHR system components. | *Worksheet 1.6* | ○ | ◉ | ○ | reset |
| 1.7 | Clinical knowledge, rules, and logic embedded in the EHR are reviewed and addressed regularly and whenever changes are made in related systems. | *Worksheet 1.7* | ○ | ◉ | ○ | reset |
| 1.8 | Policies and procedures ensure accurate patient identification at each step in the clinical workflow. | *Worksheet 1.8* | ○ | ◉ | ○ | reset |

## *Recommended Practices for **Domain 2 — Using Health IT Safely***

| | | | Implementation Status | | | |
|---|---|---|---|---|---|---|
| | | | Fully in all areas | Partially in some areas | Not implemented | |
| 2.1 | Information required to accurately identify the patient is clearly displayed on screens and printouts. | *Worksheet 2.1* | ○ | ◉ | ○ | reset |
| 2.2 | The human-computer interface is easy to use and designed to ensure that required information is visible, readable, and understandable. | *Worksheet 2.2* | ○ | ◉ | ○ | reset |

*Recommended Practices for **Domain 2 — Using Health IT Safely***

| | | | Implementation Status | | | |
|---|---|---|---|---|---|---|
| | | | Fully in all areas | Partially in some areas | Not implemented | |
| 2.3 | The status of orders can be tracked in the system. | *Worksheet 2.3* | ○ | ◉ | ○ | reset |
| 2.4 | Clinicians are able to override computer-generated clinical interventions when they deem it necessary. | *Worksheet 2.4* | ○ | ◉ | ○ | reset |
| 2.5 | The EHR is used for ordering medications, diagnostic tests, and procedures. | *Worksheet 2.5* | ○ | ◉ | ○ | reset |
| 2.6 | Knowledgeable people are available to train, test, and provide continuous support for clinical EHR users. | *Worksheet 2.6* | ○ | ◉ | ○ | reset |
| 2.7 | Pre-defined orders have been established for common medications and diagnostic (laboratory/radiology) testing. | *Worksheet 2.7* | ○ | ◉ | ○ | reset |

*Recommended Practices for **Domain 3 — Monitoring Safety***

| | | | Implementation Status | | | |
|---|---|---|---|---|---|---|
| | | | Fully in all areas | Partially in some areas | Not implemented | |
| 3.1 | Key EHR safety metrics related to the practice/ organization are monitored. | *Worksheet 3.1* | ○ | ◉ | ○ | reset |
| 3.2 | EHR-related patient safety hazards are reported to all responsible parties, and steps are taken to address them. | *Worksheet 3.2* | ○ | ◉ | ○ | reset |
| 3.3 | Activities to optimize the safety and safe use of EHRs include clinician engagement. | *Worksheet 3.3* | ○ | ◉ | ○ | reset |

A multi-disciplinary team should complete this self-assessment and evaluate potential health IT-related patient safety risks addressed by this specific SAFER Guide within the context of your particular healthcare organization.

This Team Worksheet is intended to help organizations document the names and roles of the self-assessment team, as well as individual team members' activities. Typically, team members will be drawn from a number of different areas within your organization, and in some instances, from external sources. The Suggested Sources of Input section in each Recommended Practice Worksheet identifies the types of expertise or services to consider engaging. It may be particularly useful to engage specific clinician and other leaders with accountability for safety practices identified in this guide.

The Worksheet includes fillable boxes that allow you to document relevant information. The Assessment Team Leader box allows documentation of the person or persons responsible for ensuring that the self-assessment is completed. The section labeled Assessment Team Members enables you to record the names of individuals, departments, or other organizations that contributed to the self-assessment. The date that the self-assessment is completed can be recorded in the Assessment Completion Date section and can also serve as a reminder for periodic reassessments. The section labeled Assessment Team Notes is intended to be used, as needed, to record important considerations or conclusions arrived at through the assessment process. This section can also be used to track important factors such as pending software updates, vacant key leadership positions, resource needs, and challenges and barriers to completing the self-assessment or implementing the Recommended Practices in this SAFER Guide.

Assessment Team Leader

Assessment Completion Date

Assessment Team Members

Assessment Team Notes

reset page

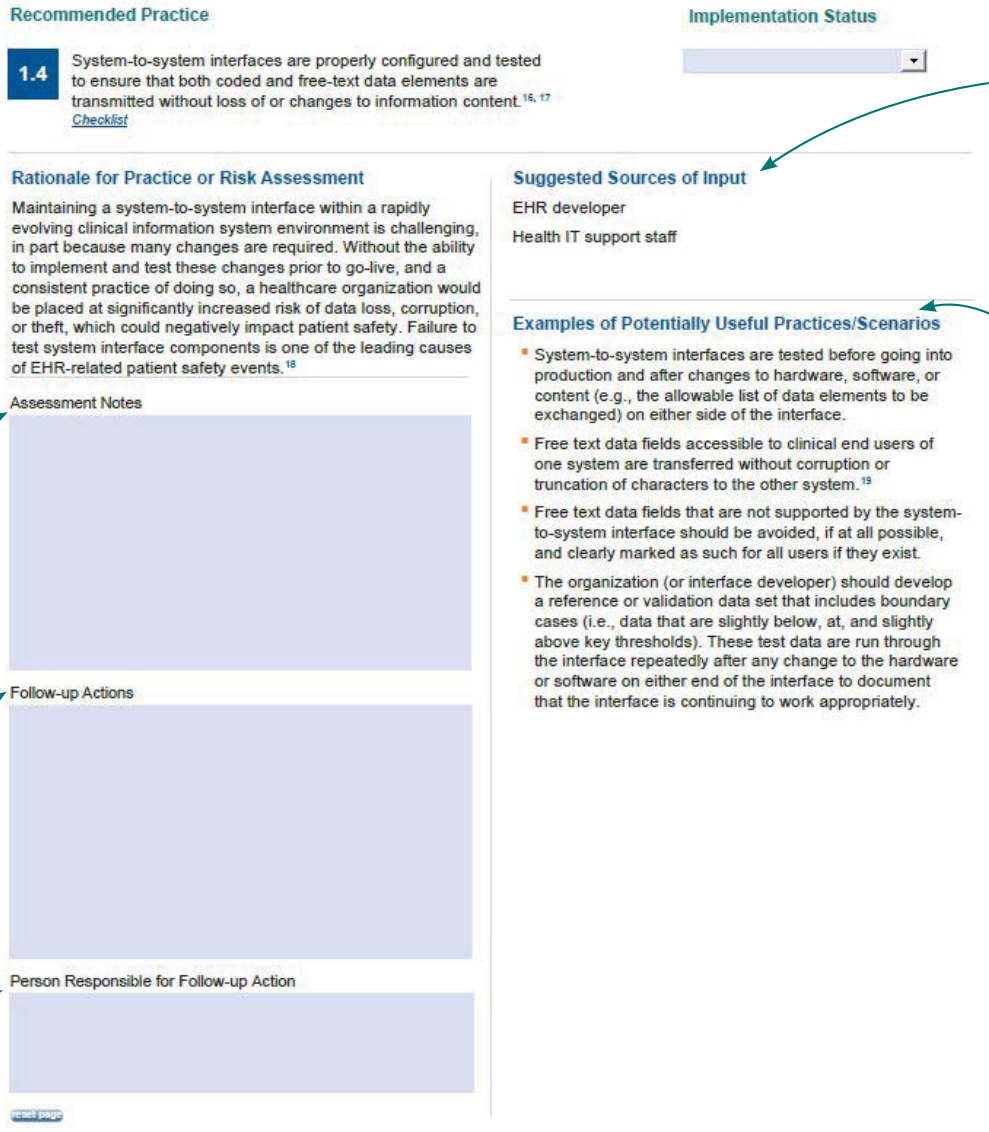
Each *Recommended Practice Worksheet* provides guidance on implementing a specific *Recommended Practice*, and allows you to enter and print information about your self-assessment.

The *Rationale* section provides guidance about "why" the safety activities are needed.

Enter any notes about your self-assessment.

Enter any follow-up activities required.

Enter the name of the person responsible for the follow-up activities.




The *Suggested Sources of Input* section indicates categories of personnel who can provide information to help evaluate your level of implementation.

The *Examples* section lists potentially useful practices or scenarios to inform your assessment and implementation of the specific *Recommended Practice*.

## Recommended Practice

**1.1** Data and application configurations are backed up and hardware systems are redundant.[7, 8, 9, 10]
*Checklist*

## Implementation Status

Partially in some areas

## Rationale for Practice or Risk Assessment

Hardware and software failures are inevitable. Without redundant backup hardware, delays in restoring system operation can affect business continuity. Without data backups, key clinical and administrative information can be lost.

Assessment Notes

Follow-up Actions

Person Responsible for Follow-up Action

reset page

## Suggested Sources of Input

Clinicians, support staff, and/or clinical administration

Health IT support staff

## Examples of Potentially Useful Practices/Scenarios

- If using a remotely hosted EHR (e.g., cloud-based solution), insist that your EHR provider back up data with tape, Internet, redundant drives, or any means necessary to allow full recovery from incidents.[11]
- Mission-critical hardware systems (e.g., database servers, network routers, connections to the Internet) are duplicated.[12]
- Data are encrypted and backed up frequently, and transferred to an off-site storage location at least weekly.[13, 14, 15]
- System backups are tested (e.g., restored to the test environment) on a monthly basis.

See the Contingency Planning Guide for related recommended practices.

## Recommended Practice

**1.2** EHR downtime and reactivation policies and procedures are complete, available, and reviewed regularly.[16, 17, 18]
*Checklist*

## Implementation Status

Not implemented

## Rationale for Practice or Risk Assessment

Failure to prepare for the inevitability of EHR downtimes greatly increases the potential for errors in patient care during these difficult times.

Assessment Notes

Follow-up Actions

Person Responsible for Follow-up Action

reset page

## Suggested Sources of Input

Clinicians, support staff, and/or clinical administration

Health IT support staff

## Examples of Potentially Useful Practices/Scenarios

- Policies describe:[19]
  - When a "downtime" should be called, including when the EHR is functionally unavailable (e.g., very slow response time)
  - Who will be in charge during the downtime
  - How everyone will be notified
  - Who is responsible for entering data collected during the downtime
  - How orders for medication, labs, imaging, and procedures will be executed and recorded
- Hospital personnel are trained and tested annually in these procedures.[20, 21, 22]
- The organization regularly conducts tabletop downtime and reactivation simulations or "drills."[19]

See the Contingency Planning Guide for related recommended practices.

## Recommended Practice

**1.3** Allergies, problem list entries, and diagnostic test results, including interpretations of those results, such as "normal" and "high," are entered/stored using standard, coded data elements in the EHR.[23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33]
*Checklist*

## Implementation Status

Partially in some areas

## Rationale for Practice or Risk Assessment

Free text data cannot be used by clinical decision support (CDS) logic[34] to check for data entry errors or notify clinicians about important new information.

## Suggested Sources of Input

Clinicians, support staff, and/or clinical administration

EHR developer

## Examples of Potentially Useful Practices/Scenarios

- RxNorm is used for coding medications and NDF-RT for medication classes.
- SNOMED-CT is used for coding allergens, reactions, and severity.
- SNOMED-CT, ICD-10, or ICD-9 is used for coding clinical problems and diagnoses.
- LOINC and SNOMED-CT are used for coding clinical laboratory results.
- Abnormal laboratory results are coded as such.

See the Computerized Provider Order Entry with Decision Support Guide and the Test Results Reporting and Follow-Up Guide for related recommended practices.

Assessment Notes

Follow-up Actions

Person Responsible for Follow-up Action

reset page

## Recommended Practice

**1.4** Evidence-based order sets and charting templates are available for common clinical conditions, procedures, and services.[23, 35]
*Checklist*

## Implementation Status

Partially in some areas

## Rationale for Practice or Risk Assessment

Requiring clinicians to enter individual orders for routine clinical practices increases risk of overlooking one or more items. Allowing individual clinicians to create order sets runs the risk of institutionalizing poor practice.

Assessment Notes

Follow-up Actions

Person Responsible for Follow-up Action

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## Suggested Sources of Input

Clinicians, support staff, and/or clinical administration

EHR developer

Health IT support staff

## Examples of Potentially Useful Practices/Scenarios

- Clinical content is developed or modified based on evidence through consensus by experts relying, where available, on nationally recognized, consensus-based clinical decision support (CDS) recommendations.
  See AHRQ's Clinical Decision Support Initiative.[36]
- Institute for Safe Medication Practices (ISMP) order set guidelines[37] are used to create order sets.
- Order sets exist for the ten most common clinical conditions (e.g., management of chest pain), diagnoses, procedures (e.g., insulin administration and monitoring), and clinical services (e.g., admission to labor and delivery).

See the Computerized Provider Order Entry with Decision Support Guide for related recommended practices.

## Recommended Practice

**1.5** Interactive clinical decision support (CDS) features and functions (e.g., interruptive warnings, passive suggestions, info buttons) are available and functioning.[38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49]
*Checklist*

## Implementation Status

Partially in some areas

## Rationale for Practice or Risk Assessment

Interactive CDS interventions help reduce the risks associated with ordering inappropriate, contraindicated, and non-therapeutic doses (i.e., under or overdoses) and provide just-in-time clinical knowledge to clinicians.

Assessment Notes

Follow-up Actions

Person Responsible for Follow-up Action

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## Suggested Sources of Input

Clinicians, support staff, and/or clinical administration

EHR developer

Health IT support staff

## Examples of Potentially Useful Practices/Scenarios

- Each practice identifies a certain number of highly specific, high priority CDS features and functions and monitors their availability and use.
- Appropriate CDS features and functions include:
  - Alerts for abnormal laboratory test results[5]
  - Tiered drug-drug interaction checks[39]
  - Drug-allergy interaction checks[50, 51]
  - "Reverse allergy" checking occurs when a new allergen is entered for a patient
  - Drug-food interaction support for instances in which the organization controls the patient's food choices
  - Drug-condition interaction checks (e.g., Accutane or tetracycline prescribed for a pregnant woman)
  - Drug-patient age interaction checks (e.g., medications contraindicated in the elderly)
  - Drug dosing support for maximum (dose, daily, and lifetime), minimum, renal,[52] weight-based, and age-appropriateness[53]

See the Computerized Provider Order Entry with Decision Support Guide for related recommended practices.

## Recommended Practice

**1.6** Hardware and software modifications and system-system interfaces are tested (pre- and post-go-live) to ensure that data are not lost or incorrectly entered, displayed, or transmitted within or between EHR system components.[54, 55, 56, 57, 58, 59, 60]

*Checklist*

## Implementation Status

Partially in some areas

## Rationale for Practice or Risk Assessment

Failure to test new or modified hardware and software functions along with system-system interfaces, both pre- and post-go-live, increases the risk of inadvertent errors and patient harm. Routine changes can result in unexpected side-effects leading to incomplete or unreliable functionality.

Assessment Notes

Follow-up Actions

Person Responsible for Follow-up Action

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## Suggested Sources of Input

Clinicians, support staff, and/or clinical administration

EHR developer

Health IT support staff

## Examples of Potentially Useful Practices/Scenarios

- Hardware and software should be tested both pre- and post-go-live. Include tests using clearly named "test" patients (e.g., ZZtest345 with patient ID 999999999) in the "live" environment.
- High priority clinical processes should be simulated using real clinicians.
- Use the Leapfrog Group's "Evaluation Tool for Computerized Physician Order Entry" or some similar automated tool to assess point-of-care CDS intervention completeness and reliability on a regular basis.[54]
- Applications and system-system interfaces are tested to ensure that data are neither lost nor incorrectly entered, displayed, or transmitted.
- Interfaces (e.g., HL-7) capable of sending, receiving, acknowledging, and canceling orders and results exist and are tested between ADT-Laboratory, -Pharmacy, and -Radiology; and CPOE-Pharmacy, -Laboratory, and -Radiology.
- Error logs are regularly inspected and errors are fixed.

See the System Configuration Guide, the System Interfaces Guide, and the Test Results Reporting and Follow-Up Guide for related recommended practices.

## Recommended Practice

**1.7** Clinical knowledge, rules, and logic embedded in the EHR are reviewed and addressed regularly and whenever changes are made in related systems.[43, 61, 62, 63, 64, 65]
*Checklist*

## Implementation Status

Partially in some areas

## Rationale for Practice or Risk Assessment

Medical knowledge is constantly evolving. Failure to review and update clinical content can result in outdated practices continuing long after they should be discontinued or updated.

## Suggested Sources of Input

Clinicians, support staff, and/or clinical administration

Health IT support staff

## Examples of Potentially Useful Practices/Scenarios

- Clinical content (e.g., order sets, default values, charting templates, patient education materials, health maintenance reminders) are reviewed at least bi-annually or as needed (e.g., following user feedback, changes in clinical practice standards, manufacturer alert) against recent evidence and best practices.

See the Computerized Provider Order Entry with Decision Support Guide for related recommended practices.

Assessment Notes

Follow-up Actions

Person Responsible for Follow-up Action

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## Recommended Practice

**1.8** Policies and procedures ensure accurate patient identification at each step in the clinical workflow.
*Checklist*

## Implementation Status

Partially in some areas

## Rationale for Practice or Risk Assessment

Wrong patient charting is one of the more common safety problems in EHRs and can result in both data integrity and data confidentiality issues when protected health information (PHI) is disclosed in the wrong chart and is missing from the right chart. Accurate and consistent patient identification is essential for safety in an EHR-enabled healthcare system.

Assessment Notes

Follow-up Actions

Person Responsible for Follow-up Action

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## Suggested Sources of Input

EHR developer

Health IT support staff

## Examples of Potentially Useful Practices/Scenarios

- Clinicians are trained to use all available patient information to facilitate positive patient identification, including: last name, first name, date of birth, gender, medical record number, in-patient location or home address in the ambulatory setting, recent photograph (if available), and responsible physician (if available).[66]
- The EHR developer implements a master patient index that employs a probabilistic matching algorithm that uses patient's first and last names; date of birth; gender; and zip code, telephone number, or social security number.[67]
- The system generates an alert when a user attempts to create a record for a new patient or looks up an existing patient by name and there are other patients in the database with the same first and last names as that patient.[66]
- Before allowing the user to change the current patient and display data for another patient, the system asks the user whether all entered, but unsaved, data should be saved and signed, saved to a temporary location, or discarded.[68]

See the Patient Identification Guide for related recommended practices.

## Recommended Practice

**2.1** Information required to accurately identify the patient is clearly displayed on screens and printouts.[66, 68, 69]
*Checklist*

## Implementation Status

Partially in some areas

## Rationale for Practice or Risk Assessment

If clinicians cannot clearly identify the patient whose chart they are working on, they are at increased risk of making EHR entries in the wrong record or relying on information on the wrong patient, resulting in patient care and treatment errors, which are among the most common types of errors in the modern EHR-enabled healthcare system.

Assessment Notes

Follow-up Actions

Person Responsible for Follow-up Action

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## Suggested Sources of Input

EHR developer

Health IT support staff

## Examples of Potentially Useful Practices/Scenarios

- Information required for patient identification includes:
  - Last name
  - First name
  - Date of birth, with calculated age
  - Gender
  - Medical record number
  - In-patient location, or home address in the ambulatory setting
  - Recent photograph (recommended)
  - Responsible physician (e.g., attending, admitting)
- The duplicate patient identification rate (i.e., the percentage of EHR records that refer to the same unique individual as another EHR record) is monitored.[70, 71, 72, 73]

See the Computerized Provider Order Entry with Decision Support Guide and the Patient Identification Guide for related recommended practices.

## Recommended Practice

**2.2** The human-computer interface is easy to use and designed to ensure that required information is visible, readable, and understandable.[69, 74, 75, 76, 77]

*Checklist*

## Implementation Status

Partially in some areas

## Rationale for Practice or Risk Assessment

Clinicians are constantly under time pressure. User interfaces that are difficult to see, comprehend, and use significantly increase the risk of error and patient harm.

Assessment Notes

Follow-up Actions

Person Responsible for Follow-up Action

reset page

## Suggested Sources of Input

EHR developer

Health IT support staff

## Examples of Potentially Useful Practices/Scenarios

- Visible: columns are wide enough to view critical data.[66, 75]
- Readable: appropriate font sizes and contrast are used.
- Understandable: the most recent orders and results are clearly marked.[69]
- Consistent: similar functions have similar labels; different functions have different labels.[78]
- When possible, items that are related, or have similar functions, are grouped and displayed together, rather than alphabetically (e.g., grouping similar menu items).[78]
- System response time is adequate (e.g., mean under 3 seconds, max under 10 seconds).
- User input data fields are large enough to enter required information, and selection options are clearly defined and easy to select.

See the System Configuration Guide for related recommended practices.

## Recommended Practice

**2.3** The status of orders can be tracked in the system.[23, 79, 80, 81]
*Checklist*

## Implementation Status

Partially in some areas

## Rationale for Practice or Risk Assessment

Errors often occur when users assume that orders entered into the computer will be done as specified. To facilitate closed loop communication and tracking of tasks and orders, the EHR should provide users with information regarding task and order status.

Assessment Notes

Follow-up Actions

Person Responsible for Follow-up Action

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## Suggested Sources of Input

EHR developer

Health IT support staff

## Examples of Potentially Useful Practices/Scenarios

- The EHR has mechanisms in place **and** the organization has procedures in place to ensure that users are notified of key actions or inactions relating to their orders, such as when ordered medications get discontinued (manually or automatically), when antibiotic renewals are not processed, and when orders placed at later times of the day will not be acted on until the next day.[82, 83]
- Users are able to track the status of orders (e.g., specimen collected, specimen received, resulted).[84, 85, 86, 87, 88, 89, 90, 91]
- There is clear distinction (e.g., different font or color) between newly entered and copied data.[75, 92]

See the Computerized Provider Order Entry with Decision Support Guide and the Test Results Reporting and Folllow-Up Guide for related recommended practices.

## Recommended Practice

**2.4** Clinicians are able to override computer-generated clinical interventions when they deem it necessary.[93, 94]
*Checklist*

## Implementation Status

Partially in some areas

## Rationale for Practice or Risk Assessment

Computers cannot practice medicine. Disallowing clinician overrides of computer-generated interventions precludes safe interventions when needed by clinicians with accurate data and greater medical knowledge.

Assessment Notes

Follow-up Actions

Person Responsible for Follow-up Action

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## Suggested Sources of Input

Clinicians, support staff, and/or clinical administration

EHR developer

Health IT support staff

## Examples of Potentially Useful Practices/Scenarios

- Hard stop alerts (i.e., the user must take an action before proceeding) are used only for the most egregious potential errors. Hard stop alert overrides are closely monitored and reviewed often.[93]
- The alert override rate (i.e., the number of point-of-care alerts that clinicians override divided by the total number of point-of-care alerts generated) is monitored, and alerts with high override rates are reviewed.[44]

See the Computerized Provider Order Entry with Decision Support Guide for related recommended practices.

## Recommended Practice

**2.5** The EHR is used for ordering medications, diagnostic tests, and procedures.[23]
*Checklist*

## Implementation Status

Partially in some areas

## Rationale for Practice or Risk Assessment

Partial EHR use means that clinicians must look in two separate places to find the most recent orders, which increases the potential to miss or delay filling critical orders. Hybrid systems, part electronic and part paper, are particularly hazardous.[95]

Assessment Notes

Follow-up Actions

Person Responsible for Follow-up Action

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## Suggested Sources of Input

Clinicians, support staff, and/or clinical administration

Diagnostic services

Health IT support staff

Pharmacy

## Examples of Potentially Useful Practices/Scenarios

- The CPOE rate (i.e., the number of orders electronically entered by clinicians divided by the total number of orders entered) is monitored.
- The percentage of verbal or paper orders that are entered by ancillary personnel is less than 10 percent.[96]
- Free text and "miscellaneous" orders are discouraged by providing appropriate supports.[97]
- Policies and procedures are in place that clearly identify and manage hazards associated with ordering that continues to occur outside of the EHR.
- Recommendations from The Joint Commission are followed when submitting orders to RNs by text messaging. This is acceptable as long as the texting platform has:[98]
  - A secure sign-on process
  - Encrypted messaging
  - Delivery and read receipts
  - Date and time stamps
  - Customized message retention time frames
  - A specified contact list of individuals authorized to receive and record orders

See the Computerized Provider Order Entry with Decision Support Guide and the Test Results Reporting and Folllow-Up Guide for related recommended practices.

## Recommended Practice

**2.6** Knowledgeable people are available to train, test, and provide continuous support for clinical EHR users.[99]
*Checklist*

## Implementation Status

Partially in some areas

## Rationale for Practice or Risk Assessment

Clinicians cannot use EHRs safely if they have not been trained and do not have access to assistance when needed. EHRs are complex tools. To maximize patient safety, clinicians must not be expected to "learn the basics on the job."

Assessment Notes

Follow-up Actions

Person Responsible for Follow-up Action

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## Suggested Sources of Input

Clinicians, support staff, and/or clinical administration

Health IT support staff

## Examples of Potentially Useful Practices/Scenarios

- All clinicians receive training appropriate to their expected use of the EHR. An assessment is made of the need for such specialized training, beyond system-wide, generic training.[83]
- Trainers have advanced EHR and/or informatics training and knowledge of the clinical workflow for the unit/practice they will be assisting.
- Trainers are available before and after go-live, and provide on-going support for users during EHR optimization.[99]
- All clinicians are trained and tested on basic EHR and CPOE operations before being issued login credentials.
- The clinician training rate (i.e., the number of clinicians trained to use the EHR who have passed a basic competency test divided by the total number of clinicians with EHR user privileges) is monitored.
- When any category of clinician users of EHRs requests training, especially when they also indicate that they are not adequately trained to safely do their jobs, such training is promptly provided. The organization has processes to identify training opportunities that would optimize the safe use of EHRs.

See the Organizational Responsibilities Guide for related recommended practices.

## Recommended Practice

**2.7** Pre-defined orders have been established for common medications and diagnostic (laboratory/radiology) testing.[100]
*Checklist*

## Implementation Status

Partially in some areas

## Rationale for Practice or Risk Assessment

Unnecessary clinical practice variation should be minimized. Forcing clinicians to enter specific values (e.g., for medications) that are then matched to a list of allowable values, or to select from a set of possible values, increases variability and can result in errors.

Assessment Notes

Follow-up Actions

Person Responsible for Follow-up Action

reset page

## Suggested Sources of Input

Clinicians, support staff, and/or clinical administration

Health IT support staff

## Examples of Potentially Useful Practices/Scenarios

- Complete medication order sentences exist for the most commonly ordered medications, laboratory tests, and radiology studies.[101]

See the Computerized Provider Order Entry with Decision Support Guide for related recommended practices.

## Recommended Practice

**3.1** Key EHR safety metrics related to the practice/organization are monitored.[102]
*Checklist*

## Implementation Status

Partially in some areas

## Rationale for Practice or Risk Assessment

Measurement and monitoring of key performance indicators are essential for improvements in safety.

Assessment Notes

Follow-up Actions

Person Responsible for Follow-up Action

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## Suggested Sources of Input

Clinicians, support staff, and/or clinical administration

EHR developer

Health IT support staff

## Examples of Potentially Useful Practices/Scenarios

- See multiple examples of measurements related to health IT safety in the National Quality Forum report "Identification and Prioritization of Health IT Patient Safety Measures."[70]
- **EHR uptime rate**
  Minutes the EHR was available to clinicians divided by the number of minutes in the reporting period.[102, 103]
- **System response time**
  Mean time to display a recent CBC result on a test patient, measured every minute of every day in the reporting period.[104]
- **Serious EHR-related adverse events**
  A list of reported EHR-related adverse events, whether they resulted in patient harm, including any reported breaches of patient confidentiality.
- **Potential wrong patient error rate**
  Requests to “change” orders that result in cancellation of the first order and the creation of an order for the same item on a different patient by the same user.[70]

See the Organizational Responsibilities Guide and System Configuration Guide for related recommended practices.

## Recommended Practice

**3.2** EHR-related patient safety hazards are reported to all responsible parties, and steps are taken to address them.
*Checklist*

## Implementation Status

Partially in some areas

## Rationale for Practice or Risk Assessment

Ensuring that EHR-related patient safety hazards are systematically identified, reported, and addressed is essential to improving the safety of EHRs.

## Suggested Sources of Input

Clinicians, support staff, and/or clinical administration

EHR developer

Health IT support staff

## Examples of Potentially Useful Practices/Scenarios

- The organization clearly identifies, through policies and procedures, how to address reports of EHR safety hazards.
- The organization ensures that reports of hazards and adverse events are reported, as appropriate, to EHR developers as well as senior leadership and boards.
- The organization has a relationship with a patient safety organization (PSO), and ensures that individuals with appropriate health information technology expertise and experience in investigating and addressing EHR-related patient safety incidents are involved.
- The total number of EHR-related software errors (i.e., bugs) reported is monitored.
- The serious EHR error fix rate (i.e., the number of errors with the potential for causing direct patient harm that were fixed within one month divided by the total number of errors that were reported) is monitored.

See the Organizational Responsibilities Guide for related recommended practices.

Assessment Notes

Follow-up Actions

Person Responsible for Follow-up Action

reset page

## Recommended Practice

**3.3** Activities to optimize the safety and safe use of EHRs include clinician engagement.
*Checklist*

## Implementation Status

Partially in some areas

## Rationale for Practice or Risk Assessment

Unless clinicians are included in decisions that affect their use of the EHR, they may not understand or accept changes, which increases risks. Clinicians should be engaged in identifying opportunities for the EHR to support safe and effective clinical use.

Assessment Notes

Follow-up Actions

Person Responsible for Follow-up Action

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## Suggested Sources of Input

- Clinicians, support staff, and/or clinical administration
- Diagnostic services
- EHR developer
- Health IT support staff
- Pharmacy

## Examples of Potentially Useful Practices/Scenarios

- In large organizations, representatives from the following groups are involved in decision making about EHR safety: clinicians, administrators, patients, IT/informatics, board of directors and CEO, and quality and legal staff.[105,106]

See the Organizational Responsibilities Guide for related recommended practices.

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