



# USING AN ELECTRONIC HEALTH RECORD SYSTEM AS A RISK-REDUCTION TOOL

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**Clinical Risk Management Department**

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## INTRODUCTION

An electronic health record (EHR) system provides the framework for systematic documentation of patient health information and is a valuable tool for quality checking and long-term performance monitoring.

EHRs offer opportunities to collect and analyze data — activities at the core of delivering quality patient care, preventing errors, and minimizing risk. Yet, the challenge for healthcare practices is understanding how to aggregate and evaluate the data, analyze the results, and develop strategies and initiatives that will help support performance improvement (also called quality improvement, quality assurance, and total quality management).

Performance improvement relies heavily on auditing. Typically, the term “auditing” has been associated with the financial aspects of business. However, ongoing validation of clinical information through auditing is also important from both continuity of patient care and risk perspectives.

Auditing can be daunting and overwhelming, especially for individuals who are not familiar with the audit process. This guideline will describe the audit process in detail and discuss how you can use your practice’s EHR system to enhance auditing and performance improvement activities. Understanding how to better use your system for these purposes has the potential to increase patient safety and satisfaction, reduce the likelihood of billing issues and/or fraud allegations, and support reimbursement.

If you are just now considering an EHR, talk with your potential vendors to ensure you obtain the optimal features that support quality monitoring and risk reduction.

## OBJECTIVES

The objectives of this guideline are to:

- Define the concept of performance improvement and its underlying principles;
- Describe, in detail, the process of auditing and how to develop an effective audit policy;
- Highlight a number of high-risk areas that practices should consider as possible audit measures, and describe how an EHR system can assist with auditing and data collection;
- Discuss how EHR reports are an integral part of the audit process and how practices can use these reports;
- Explain the importance of a comprehensive auditing process that culminates in data analysis, communication of results, and development and implementation of corrective actions.

## PERFORMANCE IMPROVEMENT

### What Is Performance Improvement?

Performance improvement, in the context of healthcare, is a systematic approach for ensuring consistent and safe patient outcomes. This approach includes a process for analyzing and using data to plan corrective action steps.

### Underlying Principles of Performance Improvement

As healthcare providers begin to consider opportunities for improvement, it is helpful to remember that the concept of performance improvement relies on several basic tenets.

1. **Errors are more likely the result of process breakdowns than human missteps.** For example, if a patient receives a drug he is allergic to, it could be the result of a failure to properly use allergy alerts built into the practice's EHR system.
2. **Evaluating data is the best way to identify and solve problems.** Without data, a medical team might decide to "fix" something that isn't broken. For example, in the scenario above, an initial reaction might be to reprimand the provider who prescribed the contraindicated drug. However, if the office consensus was to "turn off" the system's built-in allergy alerts, then the process itself is deficient and risky.

Without data, the team may be unable to measure the size and frequency of a problem. They may waste time and money correcting only one symptom of a larger problem. The practice may suffer financial loss and deteriorating morale, possibly even losing valuable employees.

3. **Those who own the process should be involved with solutions to the problem.** If all providers and office staff had been included in the design and implementation of the EHR system and had thoroughly understood the importance of the system, this patient's allergic reaction could have been avoided. Those who actually do the work are integral partners in the quality process. Some experts even advise that decision-making should occur at the level of expertise rather than authority — a novel concept for many organizations.

## CONDUCTING AN EHR AUDIT

### What Is an Audit?

An audit is a way of measuring system outputs against expectations that have been defined in policies, procedures, standards, or guidelines. Auditing is the cornerstone of a robust performance improvement program.

A comprehensive auditing policy might help:

- Increase the quality of patient care;
- Improve patients' perceptions of your practice;
- Decrease liability risks; and
- Positively affect your bottom line.

You can use auditing to identify areas for improvement and develop action plans. The data collected during auditing also can be used to monitor the results of corrective actions.

### **Who Should Be Involved in an Audit?**

For the best audit design and patient outcomes, the entire healthcare team should participate. This includes the practice's healthcare providers and clinical and clerical staff. Staff members responsible for your EHR implementation and ongoing maintenance of the system should also be involved in an audit.

Most processes and outcomes that audits measure involve multiple people in the practice. Thus, everyone's input and participation is beneficial. Who will perform the audit is best determined by the practice team as the audit is designed.

### **Selecting the Right Measures**

When selecting measures to include in your audit, you should keep several things in mind. First, review with your team the original objectives for implementing an EHR system. Make sure that the team has a working knowledge of the data elements and definitions associated with your system. Providing the team with a list of these elements and definitions will be helpful.

Information regarding evidence-based standards and your practice's involvement in mandatory and/or voluntary quality data reporting initiatives is also relevant to the audit that you design.

For more information, see the "Recommended Metrics to Audit" section below and Medical Protective's Performance Improvement Tool Template (Appendix A). The tool template is designed to guide providers in selecting (a) metrics that might be suitable for monitoring, (b) pertinent goals, and (c) simple corrective action plans. Keep in mind that not all metrics are suitable for all practice specialties, and goals and performance benchmarks should be tailored to your practice setting.

## Developing an Audit Policy

At minimum, the audit process that you implement should include the elements described in this section.

### *Definition*

All performance measures must be clearly defined so that more than one individual can produce the measure results without difficulty or concern that results cannot be compared from one audit to another.

Remember, one of the goals of performance improvement is to measure results over time, take action, and monitor the improvements made as a result of those actions. Without a clear definition of what is being measured, an audit will be difficult to replicate.

### *Goal*

To determine whether a measure is pertinent and the information gathered will be useful, the team should establish a goal for each measure. A goal, or objective, should broadly describe the result of a strategy, a desired future condition, or achievement.

For example, your goal might be to communicate test results to patients within an appropriate timeframe based on the type of results and the patients' conditions.

### *Target*

The team also should establish a target to determine the significance of the actual audits results. A target is a numerical value of a performance metric.

For example, using the situation described above, your target might be to communicate (a) 90 percent of all standard test results within an appropriate timeframe set by office policy, and (b) 100 percent of all critical tests results within an appropriate timeframe established by applicable professional guidelines.

The team should establish its target with the following considerations:

- Knowledge of evidence-based literature related to the specific measure;
- Knowledge of “best practice” results in comparable settings;
- Historical data within your medical practice; and/or
- Knowledge of external requirements — e.g., pay-for-performance benchmarks.

Additionally, when establishing a target, the team should consider whether (a) the goal of the measure is to ensure that something always happens or never happens, (b) the target is based on average performance or best practice performance, and (c) the target can be achieved immediately or in the long term.

### *Methodology*

What method will you use to obtain the data? If you are fully using your EHR, you can utilize the prebuilt and custom-built reports, which are an integral part of the system. For example, using the test tracking example, your methodology might involve running system reports to identify all test results that have been received, but are still pending follow-up with patients.

### *Frequency*

How often will you measure the metric and monitor the results? For metrics that have an immediate impact on patient safety, consider more frequent measurements, such as daily or weekly. For example, if one of your measures is to evaluate how often critical test results are communicated within a specified timeframe, you should monitor this measure on a frequent basis.

On the other hand, you might be evaluating the time your entire patient population must wait between a request for an appointment and actually being seen in the office. For this measure, you should consider monitoring on a monthly or quarterly basis to ensure you have an adequate sample of data.

You might be able to decrease the frequency of audits over time if your results demonstrate improvement.

### *Corrective Actions*

What steps will you take to improve the results if your target is not met? Developing corrective actions is crucial to the overall success of your performance improvement plan. These actions might involve a realignment of resources or a reprioritization of tasks. Any actions taken should be focused on improving the overall process.

## **RECOMMENDED METRICS TO AUDIT**

The following suggested measures are intended to help healthcare providers audit the effectiveness of their EHR systems and begin to use the data available in the EHR to enhance patient care and services. All measures recommended represent either high-risk aspects of care and/or care documentation.



## Appointment Processes

### *Time from Request to Appointment*

Knowing how long patients have to wait from the time they call your office for an appointment until the actual appointment date is a measure of accessibility.

Your practice can use its EHR system to track times between appointment requests and appointment availability, allowing staff to identify possible scheduling inefficiencies within the office.

Some practices may find that their EHR systems do not have the capability to track this information, but their scheduling systems do. Using the scheduling system, they can generate a report with the appropriate data.

When you audit time from request to appointment, your practice should examine both the appropriateness of the wait time, as well as triage. For example:

- Is the patient calling for an appointment for their annual examination, or are they having problems?
- If the patient is having problems, does he or she need an appointment today, tomorrow, or sometime this week?

### *Cancelled Appointments and “No Shows”*

For both patient safety and liability reasons, healthcare practices need thorough processes for identifying, addressing, documenting, and following up on cancelled and missed appointments — especially in regard to noncompliant and/or difficult patients.

Your practice should be able to use its EHR system to manage these processes. For example, office staff might use the system to generate a daily report showing all appointments for that day that were cancelled or missed. This information will help pinpoint and streamline follow-up communication and tracking.

Further, with thorough data input, the system can generate reports showing whether follow-up has occurred, how quickly it occurred, and the outcome of the follow-up. This information provides solid documentation of the practice's efforts on behalf of the patient.

## Patient Encounters

### *Chief Complaint*

When patients' chief complaints or reasons for visiting are documented in the EHR, the system can generate reports that identify trends, such as communicable diseases (e.g., influenza).

Once trends are identified, you can use the information to manage various aspects of your practice. For example, the information may help you anticipate an increased need for resources, such as supplies or staffing.

### *Problem List*

If your practice maintains a problem list for each patient, determine whether your EHR has the functionality to make the list a required field or mandatory screen. This setting will help enforce appropriate review of the list, documentation of any changes in the patient's health status, and acknowledgement by the healthcare provider.

Additionally, work with your EHR vendor to ensure the problem list displays prominently in each patient's record.

### *Patient/Family History*

Your EHR should have a standard method for documenting patients' personal and family health histories. The system can use the information entered into the patient/family history to generate patient health reminders and alerts for preventive health screenings, creating a more comprehensive approach to patient care.

## **Patient Communication**

Healthcare practices can use their EHR systems to help manage patient communication. To realize the full benefits of the system, staff should diligently document all communication with patients — including front desk, on-call, answering service, and email communication — in each patient's electronic record.

### *Patient Reminders*

The patient reminder functions in EHR systems were specifically developed to improve patient outcomes and help providers reduce the risk of overlooking critical components of care or missing specific timeframes. For example, your EHR system might offer preventative health reminders for annual examinations, pap smears, prenatal visits, vaccinations, screening colonoscopies, and more.

Turning off these reminders is not advised, as it eliminates the benefits that the system offers and exposes your practice to additional risk. Systems that allow for customization of patient reminders will support practices' specific patient populations and accommodate ongoing changes in evidence-based standards.

### *Patient Education*

Patient education features in your practice's EHR system can help you provide patients with educational materials. Ideally, the healthcare providers in your practice will document in the EHR system all education provided to patients. The practice can use

this information as part of the EHR audit process to proactively identify any opportunities for improvement.

## **Medication Management**

### *Medication List/Reconciliation*

Your practice can use its EHR system to link patients' medication lists to their problem lists and disease-specific protocols, creating a more comprehensive approach to medication reconciliation. Also, the EHR is an excellent tool for monitoring patients' prescription refills and/or extended drug therapy.

Further, by using the report functions in your EHR system, you can identify gaps or redundancies in your practice's medication reconciliation process.

### *Drug Interaction and Allergy Alerts*

EHRs are capable of alerting providers to potential dangerous drug interactions and allergies. These alerts should not be ignored or circumvented, as they help protect patients and prevent reactions to contraindicated medications.

Work with your EHR vendor to (a) ensure your practice is realizing the full potential of the system's alert functions, and (b) tailor the alerts to meet the specific needs of your practice.

Also, it is imperative to note that drug and allergy alerts work only if current data are available for the system to analyze. Thus, it's important to make sure the providers in your practice are reviewing patients' allergies at each office visit and updating the system immediately.

### *E-Prescribing*

Many EHR systems have built-in electronic prescribing functionality. Features of e-prescribing may include a formulary, weight-based dosing formulas, and automatic generation of medication lists as prescriptions are written. Some systems also may integrate e-prescribing with test results, patient problem lists, and disease-specific protocols.

E-prescribing builds a robust patient/drug database, supports evidence-based disease management, optimizes the selection of medications, and reduces the risk prescribing errors. E-prescribing also may help providers respond more promptly to patients' medication needs.

Auditing your practice's e-prescribing process is strongly recommended to identify any potential problems and ensure safe patient outcomes.

### *Prescription Data*

You can use your practice's EHR system to generate reports from patients' medication lists and/or from the e-prescribing function. These reports offer many advantages. For example, your practice may want to use the data to:

- Develop patient education materials for medications that are frequently prescribed in your practice;
- Determine whether any of the medications ordered by providers are associated with extreme risks; and/or
- Identify patients who are receiving medications that have been recalled or removed from the market.

## **Information Management**

### *Release of Information*

To ensure patient confidentiality and HIPAA compliance, your practice can use its EHR system to track the release of patients' medical information. Security safeguards generally are built into EHRs to ensure only authorized staff can print information from the electronic record.

Using the EHR to create an aggregate report on released information for your practice can identify where the requests for information originate. This type of trending can provide some insight into your practice for performance improvement or resource utilization opportunities.

### *Amended and Incomplete Records*

The goal for any office is to have few, if any, amended records. Auditing records on a regular basis can show when and how often records are amended.

Your practice also can use its EHR system to audit the completeness of patients' health records. Are all components of the record in place and completed, including all required signatures? Is all information included to substantiate the billing for the services?

These types of audits should focus on an individual practitioner/staff member to ensure that corrective actions will lead to improvement. When analyzing the audit results, determine why the practitioner is amending or not completing records; this information will help you identify appropriate improvement strategies.

## Test Result Tracking and Referral Tracking

### *Test Result Tracking*

Your practice should have a well-articulated procedure for tracking patients' lab, radiology, and other test results. Many EHR systems can automate this procedure, improving both timeliness and completeness of the function.

Make sure providers and staff in your practice are consistently using the EHR system to track test results. The automated functions built into the system should not be circumvented — e.g., do not use a paper tickler system as a workaround. These functions are included in the EHR to help minimize the risks associated with lost or overlooked results.

You may find it helpful to have your system generate a daily task list that flags certain situations that could lead to risk exposure. Circumstances that should be flagged include:

- Tests ordered, but no results received;
- Test results received, but not viewed by the healthcare provider; and
- Test results viewed by the healthcare provider, but not communicated to the patient.

Routinely running reports to identify overlooked test results is critical, even if test results are included on your daily task list. Failure to address test results is a frequent underlying cause of the top allegation in medical malpractice claims — failure to diagnose. By using your EHR system to better track and manage tests, your practice can aim to ensure that no results go missing or unnoticed.

### *Referral Tracking*

Although it might not be necessary to track all routine referrals, you should be able to identify patients whose medical histories and current medical conditions require close follow-up.

If you provide accurate and thorough documentation in your EHR system, it should be able to create a report that lists all patients requiring close follow-up. Auditing referral tracking reports closely will provide you with the information that you need to ensure appropriate follow-up is completed in a timely manner.

## REPORTS

EHR systems have the capacity to generate a range of reports that will help your practice audit the effectiveness and efficiency of its processes. Work with your EHR vendor to automate as many audit reports as possible.

It is beneficial to work with your vendor early in the selection and implementation process, as custom report templates will often cost more after the system has been installed.

The ideal audit report is one that you can run directly from your system. Sometimes a certain amount of manual calculation or counting of the data is necessary to get the information that you need to measure performance. Again, work with your vendor to obtain the most refined reports possible from your system so that performance measures can be calculated accurately.

If you can generate system reports without difficulty, your practice might run 100 percent of all occurrences for the measure that you are auditing. However, if you have to conduct a portion of the review manually, sampling is acceptable. As a general rule, sample sizes should fall into the following ranges:

- Population<sup>1</sup> = <30: Measure 100 percent of the population.
- Population = 30–100: Sample size should be at least 30 cases.
- Population = 101–500: Sample size should be at least 50 cases.
- Population = >500: Sample size should be at least 70 cases.

Initially, your practice should plan to run reports to calculate its aggregate results. It is always best to first review the usefulness and integrity of reports at a system level before proceeding with practitioner-specific reporting.

Ultimately, sharing practitioner-specific reports with each practitioner in a confidential, professional manner will support positive change in your practice and may have significant influence on your results.

## **CLOSING THE LOOP**

Conducting audits and running reports from your EHR is not enough to say you have a performance improvement program in your practice setting. You also must “close the loop” by analyzing the results, communicating with the team, and developing and implementing corrective actions.

### **Analyzing Results**

It is critical to conduct ongoing analysis of both the audit framework and the results themselves. Involving all members of the team in the analysis will significantly contribute to future improvements.

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<sup>1</sup> Population is defined as the number of patients, cases, or events.

Displaying results in easy-to-understand graphs is extremely helpful, not only for the analysis but also for use in the communication process. Your EHR system may include some graphic reporting capabilities.

Questions to ask when reviewing your results include:

- Are we getting better or are we getting worse?
- Can we see the effect of our latest action step(s)?
- Where are we compared with our established target?

Remember, audits are a way to detect failures or identify successes depending on the measure you are auditing.

### **Communicating with the Team**

Once you've analyzed the audit data, you will need to communicate the results in a positive manner to those in your practice. This communication can take various forms. For example, you may present aggregate results in a staff meeting and provide individual results during periodic performance review.

### **Developing and Implementing Corrective Actions**

Once you've analyzed and communicated audit results, the next step is to develop and implement corrective action plans. This process should involve identifying best practices to use as benchmarks for data comparison.

Planning and implementing corrective actions requires involvement and commitment from your entire team. After the corrective actions have been implemented, continue to audit the measure to ensure changes are applied consistently and to see whether improvement occurs.

## **CONFIDENTIALITY AND PRIVACY**

All office practice staff should be aware of and understand their responsibility for protecting patients' health information and respecting patients' privacy. The practice's confidentiality and privacy policies apply to all performance improvement and auditing activities, including the generation of reports.

## **CONCLUSION**

When used appropriately, an EHR system is an excellent tool for risk mitigation, quality checking, and long-term performance improvement monitoring.

The activities of identifying areas for improvement, designing efficient audits, aggregating and analyzing data, communicating results, taking action based on the

findings, and monitoring for long-term improvement are critical to delivering quality patient care, preventing errors, and minimizing risk within your healthcare practice.

Although these efforts take time and resources, they ultimately can improve patient outcomes, increase patient satisfaction, and possibly reduce your liability exposure.

## RESOURCES

- American Health Information Management Association (AHIMA): Electronic Health Record Management — <http://www.ahima.org/resources/ehr.aspx>
- AHIMA: Assessing and Improving EHR Data Quality — [http://library.ahima.org/xpedio/groups/public/documents/ahima/bok1\\_050085.hcsp?dDocName=bok1\\_050085](http://library.ahima.org/xpedio/groups/public/documents/ahima/bok1_050085.hcsp?dDocName=bok1_050085)
- AHIMA: Documentation Bad Habits — [http://library.ahima.org/xpedio/groups/public/documents/ahima/bok1\\_038463.hcsp?dDocName=bok1\\_038463](http://library.ahima.org/xpedio/groups/public/documents/ahima/bok1_038463.hcsp?dDocName=bok1_038463)
- Institute for Healthcare Improvement: Knowledge Center — <http://www.ihl.org/knowledge/Pages/default.aspx>
- Office of the National Coordinator for Health Information Technology — <http://www.healthit.gov/providers-professionals>



## Appendix A. Electronic Health Records (EHR) Performance Improvement Plan Template

This document is designed to guide providers in selecting (a) metrics that might be suitable for monitoring, (b) pertinent goals, and (c) simple corrective action plans. Keep in mind that not all metrics are suitable for all practice specialties, and goals and performance benchmarks should be tailored to your practice setting. Refer to MedPro's guideline *Using an Electronic Health Record System as a Risk-Reduction Tool* for more information about audit sample size, analyzing results, and developing corrective action plans.

Suggested Performance Measures to Monitor	Definitions of the Measures	Suggested Goals	Suggested Target Compliance Percentage	Possible Audit Methodologies	Suggested Monitoring Frequency	Suggested Corrective Actions (if Target Compliance Percentage Is Not Met)
<b>Utilization of the EHR by providers and staff</b>	% of providers and staff using EHR (all information requisite to patient care is available in the EHR).	To ensure full adoption of EHR, standardize documentation process and eliminate the possibility of "working around" the electronic health documentation system.	100%	System Report, Manual Review, or Combined System Report/Manual Review	Monthly	<ol style="list-style-type: none"> <li>1. Share system utilization reports with individual providers and staff.</li> <li>2. Include system utilization in performance management/incentive programs.</li> <li>3. Share aggregate audit results with providers and staff at regular intervals.</li> </ol>
<b>Timely access to all EHRs</b>	% of time the EHR is available when needed.	To reduce or eliminate a potential barrier to full adoption of the EHR by all users. To ensure access to all patient data at all times.	100%	System Report, Manual Review, or Combined System Report/Manual Review	Monthly	<ol style="list-style-type: none"> <li>1. Share aggregate audit results with providers and staff at regular intervals.</li> </ol>
<b>Authentication of EHR (signatures)</b>	% of EHRs that are authenticated by authorized provider or staff within required timeframe.	To ensure EHRs comply with federal and state guidelines.	>95%	System Report, Manual Review, or Combined System Report/Manual Review	Weekly	<ol style="list-style-type: none"> <li>1. Share system authentication reports with individual providers and staff.</li> <li>2. Include system authentication review results in performance management/incentive programs.</li> <li>3. Share aggregate audit results with providers and staff at regular intervals.</li> </ol>
<b>Late entries into the EHR</b>	% of EHRs with late entries based on required timeframe.	To minimize risks associated with untimely documentation or documentation in the wrong EHR.	<5%	System Report, Manual Review, or Combined System Report/Manual Review	Monthly	<ol style="list-style-type: none"> <li>1. Share aggregate audit results with providers and staff at regular intervals.</li> </ol>
<b>Edits of the EHR</b>	% of EHRs with edits (chart amendments or changes).	To minimize risks associated with untimely documentation or documentation in the wrong EHR.	<5%	System Report, Manual Review, or Combined System Report/Manual Review	Monthly	<ol style="list-style-type: none"> <li>1. Share aggregate audit results with providers and staff at regular intervals.</li> </ol>
<b>Loss of data from the EHR</b>	Number of EHRs where data have been lost	To track and trend occurrences of lost data from the EHR.	0	System Report, Manual Review, or Combined System Report/Manual Review	Monthly	<ol style="list-style-type: none"> <li>1. Review issues of lost data with vendor to identify safeguards to prevent further incidents.</li> <li>2. Share aggregate audit results with providers and staff at regular intervals.</li> </ol>

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Suggested Performance Measures to Monitor	Definitions of the Measures	Suggested Goals	Suggested Target Compliance Percentage	Possible Audit Methodologies	Suggested Monitoring Frequency	Suggested Corrective Actions (if Target Compliance Percentage Is Not Met)
<b>Patient wait time prior to scheduled appointment (time of scheduled appointment to actual time of exam)</b>	% of patients seen within 15 minutes or less of scheduled appointment	To support the highest level of patient satisfaction.	90%	System Report, Combined System Report/Manual Review, or Manual Review	Monthly	1. Share aggregate audit results with providers and staff at regular intervals.
<b>Patient wait time prior to securing an appointment (date of request for appointment to actual appointment date)</b>	% of patients scheduled within one week or less of request for appointment	To support the highest level of patient satisfaction.	90%	System Report, Combined System Report/Manual Review, or Manual Review	Monthly	1. Share aggregate audit results with providers and staff at regular intervals.
<b>"No show" appointments</b>	% of scheduled appointments when patient is classified as a "no show"	To ensure appropriate follow up and support patient satisfaction.	<5%	System Report, if available. Otherwise run "no show" list and review individual records for follow-up.	Monthly	<ol style="list-style-type: none"> <li>1. Telephone call reminders of next day appointments.</li> <li>2. Postcard reminders the week before appointment.</li> <li>3. Introductory packet explaining location of practice, parking areas, and office hours, as well as provisions for after-hours, weekend, holiday, and emergency communication.</li> <li>4. Share aggregate audit results with providers and staff at regular intervals.</li> </ol>
<b>"No show" appointments with follow-up</b>	% of "no show" appointments with follow-up phone call documented in the EHR	To ensure appropriate follow-up and support patient satisfaction.	100%	System Report, if available. Otherwise run "no show" list and review individual records for follow-up.	Monthly	<ol style="list-style-type: none"> <li>1. Telephone call reminders of next day appointments.</li> <li>2. Postcard reminders the week before appointment.</li> <li>3. Introductory packet explaining location of practice, parking areas, and office hours, as well as provisions for after-hours, weekend, holiday, and emergency communication.</li> <li>4. Share aggregate audit results with providers and staff at regular intervals.</li> </ol>

## Appendix A. Electronic Health Records (EHR) Performance Improvement Plan Template

Suggested Performance Measures to Monitor	Definitions of the Measures	Suggested Goals	Suggested Target Compliance Percentage	Possible Audit Methodologies	Suggested Monitoring Frequency	Suggested Corrective Actions (if Target Compliance Percentage Is Not Met)
<b>Cancelled appointments</b>	% of scheduled appointments when patient is classified as a "cancelled appointment"	To ensure appropriate follow-up and support patient satisfaction.	<5%	System Report, if available. Otherwise run "cancelled appointment" list and review individual records for follow-up.	Monthly	<ol style="list-style-type: none"> <li>1. Telephone call reminders of next day appointments.</li> <li>2. Postcard reminders the week before appointment.</li> <li>3. Introductory packet explaining location of practice, parking areas, and office hours, as well as provisions for after-hours, weekend, holiday, and emergency communication.</li> <li>4. Share aggregate audit results with providers and staff at regular intervals.</li> </ol>
<b>Cancelled appointments with follow-up</b>	% of "cancelled appointment" with follow-up phone call documented in the EHR	To ensure appropriate follow-up and support patient satisfaction.	100%	System Report, if available. Otherwise run "cancelled appointment" list and review individual records for follow-up.	Monthly	<ol style="list-style-type: none"> <li>1. Telephone call reminders of next day appointments.</li> <li>2. Postcard reminders the week before appointment.</li> <li>3. Introductory packet explaining location of practice, parking areas, and office hours, as well as provisions for after-hours, weekend, holiday, and emergency communication.</li> <li>4. Share aggregate audit results with providers and staff at regular intervals.</li> </ol>
<b>Medication List, including new, revised and discontinued patient medications, and identification of any recalled drugs</b>	% of EHRs with current medication list (reviewed and updated each visit), includes medications from other providers, documentation of order and discontinuation dates.	To support accurate medication reconciliation and provide information to identify potential duplications, omissions, interactions and/or contraindications.	>90%	System Report, Combined System Report/Manual Review, or Manual Review	Weekly	<ol style="list-style-type: none"> <li>1. Share aggregate audit results with providers and staff at regular intervals.</li> </ol>
<b>Allergies/adverse drug reactions</b>	% of EHRs with current allergy and adverse drug reaction information (updated at last appointment).	To minimize risks to the patient associated with allergies and adverse drug reactions.	>90%	System Report, Manual Review, or Combined System Report/Manual Review	Weekly	<ol style="list-style-type: none"> <li>1. Share aggregate audit results with providers and staff at regular intervals.</li> </ol>

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<b>ePrescriptions</b>	% of all medications ordered include the associated lab test protocol and appropriate frequency.	To minimize risks to the patient associated with side effects/toxic effects of some medications.	100%	System Report, Manual Review, or Combined System Report/Manual Review	Weekly	1. Share aggregate audit results the providers and staff at regular intervals.
<b>Diagnostic results reconciliation, i.e., outstanding test reports</b>	% of tests ordered where results are actually received, % of all test results (lab, pathology, radiology, cardiopulmonary) viewed and acknowledged by ordering provider, % of all abnormal test results with documented communication to the patient, including impact on treatment plan or care.	To minimize risks to the patient associated with missed and/or unaddressed test results.	100%	System Report, Manual Review, or Combined System Report/Manual Review (by provider and total)	Daily	1. Establish process that assigns responsibility to an appropriate employee(s) for the receipt and transmission of all test results (including critical test values) into the EHR. 2. Share system test results reports with providers on a daily basis for action. 3. Share aggregate audit results to providers and staff at regular intervals.
<b>Authorizations and consents</b>	% of EHRs that include authorization/consent to treatment form - present and signed (including consent for investigational medications, drugs, treatment, and invasive procedures ), evidence of risk/benefits discussed by appropriate provider and establishment of guardian if applicable.	To ensure authorization and informed consent are obtained and documented in all required circumstances.	100%	System Report, Manual Review, or Combined System Report/Manual Review (by provider and total)	Monthly	1. Establish office procedures for treatment authorization and informed consent. 2. Share aggregate audit results with providers and staff at regular intervals.
<b>Release of Information</b>	% of EHRs where a release of information has been requested and fulfilled that meets the following criteria: (1) signed patient authorization, or court order or a subpoena; (2) date/time of release; (3) content of release (only copies can be released); (4) released by; and (5) review of medical record by a provider prior to release to an attorney or pursuant to a court order.	To ensure patient confidentiality and compliance with HIPAA regulations.	100%	System Report, Combined System Report/Manual Review, or Manual Review	Monthly	1. Share aggregate audit results with providers and staff at regular intervals.
<b>Limited access to records</b>	% of EHRs accessed by providers and/or staff without a need to be involved in the patient's care (including all aspects - test results, treatment decisions, patient information, etc.)	To ensure patient confidentiality and compliance with HIPAA regulations.	0%	System Report/audit user access log	Monthly	1. Follow practice's policy on incidents of noncompliance with patient privacy, confidentiality, and HIPAA regulations.
<b>Amended records</b>	% of EHRs where an amendment to the record was made	To ensure no inappropriate changes are made to the record.	<5%	System Report/audit user access log	Monthly	1. Follow practice's policy on amendments/deletions/additions to the record.