Communicating Critical Test Results
Safe Practice Recommendations

Massachusetts hospitals are collaborating in a patient safety initiative to improve our ability to provide timely and reliable communication of critical test results to the clinician who can take action. Critical tests results are any values/interpretations where delays in reporting may result in serious adverse outcomes for patients. Delays can occur for laboratory, radiology, cardiology and other diagnostic tests in the inpatient, emergency, and ambulatory settings. A Consensus Group, representing all stakeholders in the process, has identified practices to promote successful communication of critical test results. We propose the following set of practices:

1. **Identify <u>who</u> the results should go to**
   o The primary responsibility for receiving and following up on test results lies with the ordering provider or the responsible provider as appropriate.
   o Test results must be reported directly to a provider who can take action, not an intermediary.

2. **Identify <u>who</u> the results should go to when the ordering provider is not available**
   o Create a call schedule/system that works to identify whom the results should go to when the ordering provider is not available.
   o Develop a procedure, at the time of admission, to link each patient with either a provider or a service.
   o Centralize and empower the hospital or practice call (communication) center to serve as the centralized repository of all call schedule and notification operations.

3. **Define <u>what</u> test results require timely and reliable communication**
   o Maintain a prioritized list of critical test vales/interpretations that require accelerated notification systems.
   o Limit the number of tests categorized as highest priority (red).

4. **Identify <u>when</u> test results should be actively reported to the ordering provider and establish explicit time frames for this process**
   o Define appropriate notification time parameters for communicating critical test results according to urgency, e.g. within 1 hour, within the shift (target 6-8 hours), within 3 days
   o Describe explicit steps in notification system; describe <u>when</u> reporters should initiate and follow up on notifying the ordering provider about critical test results.
   o Develop a fail-safe plan for communicating critical test results when the ordering or covering provider cannot be contacted within the designated time frame.

5. **Identify <u>how</u> to notify the responsible provider(s) (what communication system works best)**
    o Identify and utilize the communication techniques that are most appropriate for the particular clinical situation, e.g. active "push" system for results requiring a prompt clinical response.
    o Ensure acknowledgement of receipt of test results by a provider who can take action for all category of test values/interpretations

6. **Establish a shared policy for uniform communication of all types of tests results (laboratory, radiology, cardiology, pathology, etc.) to all recipients**
    o Make the notification system explicitly clear to all stakeholders.
    o Encourage and foster shared accountability and teamwork across and between clinical disciplines.
    o Decide what information should be included as a minimal data set to be communicated to the responsible person.

7. **Design reliability into the system**
    o Utilize forcing functions at the point of test ordering to identify the ordering provider with pager/beeper number.
    o Utilize forcing functions at the point of test ordering to improve clinical interpretation of diagnostic tests
    o Create tracking systems to assure timely and reliable communication of test results (back-up, double check).

8. **Support and maintain systems**
    o Partner with patients in the communication about test results.
    o Provide orientation and ongoing education on procedures for communicating critical test results to all healthcare providers.
    o Provide ongoing monitoring of the effectiveness of systems, e.g. weekly failure rates, test call systems, response times, etc.

9. **Support infrastructure development**
    o Adopt advanced communication technologies.
    o Improve laboratory and other test system capabilities.

Short Summary of Key Best Practices in Communicating Critical Test Results
1. Get the result to someone who can take action (often the attending, or PCP)
2. Have a clear backup system with clear delineation of when to escalate
3. Use central call systems
4. Agree on which tests require communication (a small number are most important)
5. Use the same policy across domains (laboratory, radiology, cardiology, etc.)

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1. Identify <u>who</u> the results should go to	
• The primary responsibility for receiving and following up on test results lies with the ordering provider or the responsible provider as appropriate	• The ordering provider should receive and follow up on the results of all ordered tests • The ordering provider has the responsibility to communicate outstanding diagnostic tests and assign responsibility for follow up to a covering provider
• Test results must be reported directly to a provider who can take action, not an intermediary *For red category values/interpretations, notify the nurse caring for a patient on the inpatient unit simultaneously*	• The PCP, if not the ordering physician, should be notified on all significant abnormal test results • Institutions can make institution specific additional recommendations for notification with clinicians who serve as "end point" for taking clinical action, e.g. nurse run coumadin clinics, etc • Identify situations when other should also be notified e.g. pharmacy etc. • Consider sending some test results to both the ordering physician and the PCP
2. Identify <u>who</u> the results should go to when the ordering provider is not available.	
• Develop a procedure, at the time of admission, to link each patient with either a provider or a service *A patient should be linked at all times with a provider (or practice) who is responsible for their care*	• Identify and/or validate a PCP or practice for each patient at the time of admission

• Create a call schedule/system that works to identify whom the results should go to when the ordering provider is not available
 	
Clinical team members should always be able to easily identify which provider is responsible for each patient at any given point in time
 	
"Role-based" coverage models have proven more reliable than traditional call systems
	Elements of a successful call system:
	• Simple to understand
	• Easily available to all stakeholders
	• Call schedules are:
	  ▪ sent to the call center
	  ▪ input by the call center only
	  ▪ typed, legible
	  ▪ complete, using full names of providers
	  ▪ coordinated with answering services to validate accuracy
	• The procedures for changes to the call

Safe Practice Recommendation	Implementation Context
"Role-based models link each patient with a position/service designated at admission, then have an on-call system tied to that position; traditional call systems create a chain for each doctor rather than working from the patient	schedule are explicitly clear to all users Effective implementation strategies: *Simplify:* Call systems that use a "role-based" ("coverage list") model are patient focused , i.e. patient is linked to role (position) and the role is linked to a person *Access:* Place call schedule information on the hospital intranet; integrate technology solutions, e.g. auto-paging, auto-forwarding, etc.

• Centralize and empower the hospital (or practice) call (communication) center to serve as the centralized repository of all call schedule and notification operations
 	
*A **centralize**d hospital call system under the management of the communication center is a demonstrated strategy to promote reliability.*
 	
Practice call centers should be linked to the hospital call center.
	Effective Implementation Strategies:
	Build reliability
	• The hospital has the responsibility to know who is on call, in every service, every day; ancillary departments may maintain separate lists in addition but the call center should serve as back up for all services including reference laboratories for example.
	• Practice call centers should be coordinated for the practice i.e. who is on call for every physician, every day; practice call systems should be linked to the hospital call center
	• Assign accountability and responsibility for the accuracy and administrative control of call schedules to the call center
	    • Empower *only* the communications center with the authority to make edits/changes to call schedules
	    • Medical staff executive team defines rules to ensure the safety of the patient
	    • Maintain a database and ensure call center has an up-to-date personal notification plan for all providers
	    • Provide authority to activate the "fail safe" system if necessary
	
	Access
	• Support reporting clinicians in

Safe Practice Recommendation	Implementation Context
	identifying and reaching responsible provider • If ordering provider not available, call of test results is automatically forwarded to covering provider/service *Monitoring effectiveness of systems* • Conduct periodic tests to validate the accuracy of provider access information • Validate accuracy of contact information with physicians' answering services • Gather data about delays in notification process • Assure that users assign coverage 100% of the time • Validate that the call center has the most current call schedule list 100% of the time • Periodically test the "accepting coverage" process e.g. beeper/pager check or acknowledgment process
3. Define <u>what</u> test results require timely and reliable communication	
• Maintain a prioritized list of critical test vales/interpretations that require accelerated notification systems *Define a set of "high alert" results that get special precedence; set priorities to focus energies, limited resources on what really matters* o Limit the number of tests categorized as highest priority "red".	Ensure your institution's list: • Is segmented into categories that correspond to differentiated notification time requirements (Attachment A) • Introduces institution-wide standardized terminology for naming each category (e.g. red, orange, yellow categories) • Focus primarily on the Consensus Group set of "starter set" of results identified for the "red" category (Attachment B) • References existing standards and evidence on criticality • Addresses all practice areas, inpatient, outpatient and ED • Addresses all test types, laboratory, radiology, cardiology, pathology, etc. • Reviewed and verified at least annually, and includes a process for adding/dropping tests from each list
4. Identify <u>when</u> test results should be actively reported to the ordering provider and establish explicit time frames for this process	

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• Define appropriate notification time parameters for communicating critical test results according to urgency, e.g. within 1 hour, within the shift (target 6-8 hours), within 3 days *For Orange categories, the guiding principles for decision-making are:* o *maximize efficiencies of workflow issues* o *avoid unnecessary calls late at night* o *synchronize calls with other existing systems e.g. change of shifts, etc.*	Example: • "Red" category– requires stat page, acknowledgement and immediate clinical response necessary • "Orange" category – results should be called; acknowledgement necessary; clinical response necessary within hours • "Yellow" category – results can be sent passively; acknowledgement necessary • Utilize the proposed notification plan for Orange and Yellow Categories

• Describe explicit steps in notification system; describe <u>when</u> reporters should initiate and follow up on notifying the ordering provider about critical test results	An example of a sequential notification system for "red" category values/interpretations would include:
	  • first call to MD #1 (ordering or covering)
	  • coincident call to RN (inpatient), pharmacy, and/or PCP under specific circumstances;
	  • if no response after 15 minutes, call MD #1 again;
	  • after 30 minutes, escalate to MD #2; identified by call center
	  • after 45 minutes, call MD #2 again;
	  • after 60 minutes, activate "fail safe" plan; notification of "fail safe" clinical provider, examples below
	Note: time sequences above to be reviewed; an examples of a much more accelerated follow-up would be 3 calls within first 10 minutes.
	An example of a calling guidelines for "orange" category values/interpretations would include:
	  • If able to do trending, call "first incidence of"
	  • If unable to do trending, assume first incidence and call
	  • If unable to easily implement downgrade system, continue to call all labs

Safe Practice Recommendation	Implementation Context
	• Continue to call if values indicate worsening condition • Call if there is a significant change from previous levels

• Develop a fail-safe plan for communicating critical test results when the ordering or covering provider cannot be contacted within the designated time frame
 	
Laboratories and other diagnostic centers have the right to ensure that fail safe plans are in place for reporting critical findings and assuring that the patient will receive clinical attention.
	• Key elements of a "fail safe" plan
	  • Utilized when clinical action/decision is required ("red" category)
	  • Provides a schedule to identify a clinical provider who:
	    • is able to assume responsibility for patient
	    • can take clinical action
	    • available 24/7/365
	    • has access to the medical record
	• Examples of "fail safe" provider would be:
	  Inpatient areas
	  • ED physician
	  • Senior medical resident
	  • Medical Officer of the Month/Day
	  • A member of the medical emergency team
	  • A member of a mini-code team
	  • Lab Director
	  Outpatient areas
	  • PCP or covering physician, lab directors, or Clinic Directors who could call the EMT's or direct the patient to the ED

5. Identify <u>how</u> to notify the responsible provider(s) (what communication system works best)	
• Identify and utilize the communication techniques that are most appropriate for the particular clinical situation, e.g. active "push" system for results requiring a prompt clinical response	• "Red" category results should be called to the responsible provider; provider response to a page necessary • Results should not be left with secretary or answering machine

• Ensure acknowledgement of receipt of test results by a provider who can take action for all category of test values/interpretations	• When communicating test results, reporters should document
	  ▪ Name and credentials of reporter
	  ▪ Name and credentials of receiver
	  ▪ Test name
	  ▪ Test value/interpretation
	  ▪ Date & time

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Although the time frames for notification in the orange and yellow categories are extended, systems should reliably ensure the handoff to the responsible clinician is complete, i.e. systems should verify that a responsible provider is aware of the communication and has accepted the handoff. The responsibility for follow up should be clear to all parties.	• Acknowledgement necessary for red, orange and yellow category test reports • Guidelines for acceptable acknowledgment systems • Notifying practitioner must receive confirmation from the receiving provider that they have <u>accepted the responsibility for follow</u> up e.g. phone call, confirmation of receipt of list, change of shift report, call back from page, etc. • Acknowledgment must occur within time frames for each category of test • Communication of these test results/interpretations must occur between responsible providers, not an intermediary • Examples of unacceptable acknowledgement systems, include, answering machines, all e-mails including those with read-receipt
6. Establish a shared policy for uniform communication of all types of tests results (laboratory, radiology, cardiology, pathology, etc.) to all recipients.	
• Make the notification system explicitly clear to all stakeholders	• Develop a consistent standardized way for the reporter to identify (flagging) "red" category values/interpretations to alert the receiver that this is a "red" category finding • All stakeholders should share the same understanding of the clinical urgency category and the steps to take when escalation is necessary • Use "read back" techniques in the process of acknowledging receipt of results • Develop a shared policy with the key elements of: ▪ Definitions of all categories of values ▪ Lists of all values, from each area as an appendix ▪ Time parameters and procedures for notification for all categories ▪ A description of the "fail safe"

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	plan ▪ Description of the responsibilities of all team members ▪ Documentation requirements ▪ QI monitoring plan ▪ Plan for annual review and validation ▪ References
• Encourage and foster shared accountability and teamwork across and between clinical disciplines	• Implement face-to-face interdisciplinary change-of-shift debriefings for hand off of laboratory, cardiology, radiology and other clinical findings and other relevant clinical information, e.g. problem lists, allergies, medications, a "to do" list etc. • Describe relative responsibilities of the laboratory, radiology, pathology, cardiology, the ordering provider, covering provider, and the nurse • Address the importance of shared responsibility and partnering when facing a "red" category finding • Develop action plans/protocols for RN jointly by medicine and nursing and other related disciplines; clearly describe criteria for use, e.g. insulin, heparin, solution changes, glucose for hypoglycemia, monitoring expectations, etc.

• Decide what information should be included as a <u>minimal data set</u> to be communicated to the responsible person.	• The clinical team should provide sufficient information to the responsible or back up provider to support action;
	  • in many situations the RN will be central in providing access to this information
	  • the laboratory will provide results information and recent previous results when available
	• Examples of a minimal data set should include:
	  ▪ This is a "red" (orange) category finding
	  ▪ Significant co-morbidities
	  ▪ Prior test results, if available
	  ▪ Related medication (s)

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	- Other relevant clinical information - Plan for integrated medical record solutions to link clinical information with laboratory results, e.g. - Drug-lab interactions - Previous test results - Complex criteria, thresholds
7. Design reliability into the system	
- Utilize forcing functions at the point of test ordering to identify the ordering provider with complete contact information (pager/beeper number) - Utilize forcing functions at the point of test ordering to improve clinical interpretation of diagnostic tests	- Use manual or computer systems - Expand information at point of test ordering regarding call back instructions, e.g. alternative contact providers, identify PCP, patient contact information, location, etc. - Expand information at point of test ordering (for radiology, cardiology, pathology, and cytology) to include: - Diagnosis - Reason for requesting this test - What you want to assess or rule out
Create tracking systems to assure timely and reliable communication of test results (back-up, double check)	- Develop special procedures for situations where delays typically occur: - after discharge - ambulatory (cross border) - late arriving - other predictable relevant situations (shift changes, after-hours, surgeon in OR, etc.) - The responsibility for tracking and follow up on positive findings lies with the individual physician practice - Develop or utilize existing **tracking systems** in ambulatory areas to prevent test results falling through the cracks, e.g. automated or manual tickler systems - Design reliable follow up systems for high risk situations e.g. certified letters with return receipt requested - Explore possibility that laboratory, cardiology and radiology would monitor the receipt (acknowledgement) and document handoff of findings
8. Support and maintain systems	

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• Partner with patients in the communication about test results *Include family as appropriate, given consideration to confidentiality and regulatory compliance.*	• **"Nothing about me, without me"**. • Provide patients access to their test results (whenever medically reasonable) • Develop strategies to assist clinicians in assessing when and how to notify patients, especially in cases when patient is no longer at the hospital • Develop strategies to educate patients/families to participate in monitoring prompt tur naround of critical test results e.g. JCAHO Speak Up program
• Provide orientation and ongoing education on procedures for communicating critical test results to all healthcare providers	Orientation and periodic continuing education programs for physicians, nurses, laboratory personnel, and all other clinical disciplines should include information on patient safety including: • Fundamentals of patient safety • Principles of teamwork and handoffs • Medical error from a systems perspective • Error identification • Definitions and models of error • Cognitive error and medical decision making • Learning from the experience of others • Quality improvement • Non punitive atmosphere for reporting medical error • Etc. Provide orientation and continuing education on: 　▪ How to communicate critical test results 　▪ How to respond to critical test results in the "red" category 　▪ Principles of communication and teamwork for clinical emergencies
• Provide ongoing monitoring of the effectiveness of systems	• Monitor effectiveness of: 　▪ call schedule 　▪ existing notification system 　▪ feedback loops/tracking systems Examples include: weekly failure rates, testing call systems, response times,

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	number of "lost" test results in "yellow" category, etc.
9. Support infrastructure development	
• Adopt advanced communication technologies	Upgrade call enter/communication capabilities: ▪ intranet access ▪ automatic page forwarding and other automated notification systems ▪ e-mail with attention to confidentiality issues
• Improve laboratory, radiology, cardiology and other ancillary systems technology capabilities	Upgrade capability to: ▪ enable reporting of complex threshold criteria ▪ track trends in patient conditions ▪ link to medical record to identify 1st diagnosis of cancer/diabetes ▪ distribute tracking system reports to responsible clinicians ▪ link documentation of acknowledgement fields to tracking reports to monitor feedback loop ▪ evaluate the use of POC testing in critical and ambulatory areas carefully with consideration of emerging evidenced based studies.

Attachment A – Operating definitions for Communicating Critical Test Results Initiative

Attachment B –Consensus group recommendations for "starter set" values/interpretations for RED, ORANGE, YELLOW Categories from Laboratory, Radiology, and Cardiology

Attachment C – List of References