ROOT CAUSE ANALYSIS (RCA) is a process to describe in chronological and precise detail what happened during a close call or an adverse event, identify the root causes of that event, and most importantly, recommend corrective actions. But does the RCA execute as intended? Were corrective actions implemented? Did they work?

In February 2006, a project was completed at the VA New York Harbor Healthcare System to identify factors that influence whether RCA action plans were implemented and effective. (Note Table 1, back page) for the number of RCAs involved.

The main findings included:
♦ 39 percent of actions proposed were implemented.
♦ 74 percent of such actions were effective.
♦ Actions that involved stronger fixes were more likely to be implemented and effective than weaker ones.

Methods
All individual RCAs completed before October 2005 were categorized by event type using the NCPS Categorization Glossary. Fifty percent of the RCAs from each Event Type Category were randomly selected for follow-up and review.

Action plans in each RCA were reviewed, individual actions categorized, and the staff assigned to implement those actions were interviewed. The implementation and effectiveness status of each action was analyzed.

RCA Hierarchy of Actions
Actions can be thought of as stronger or weaker based upon their likelihood of reducing a vulnerability. Stronger actions include architectural modifications and engineering controls or interlocks. Weaker actions provide staff with additional information or new procedures to follow, but not a “hard fix” that can eliminate the vulnerability.
♦ Stronger — The action is more likely to eliminate or greatly reduce the likelihood of an event; uses physical plant or systemic fixes; applies human factors principles.
♦ Intermediate — The action is likely to control the root cause or vulnerability; applies human factors principles, but also relies upon individual action, e.g. checklist or cognitive aid.
♦ Weaker — The action relies on policies, procedures, and additional training.

RCA Actions – What Our Review Found
Of the 26 RCAs reviewed (note Table 2, back page), 119 actions were proposed: 25 involved writing or amending policies; 24 called for more training; 10 proposed standardizing a process or procedure.

Of the total actions proposed, 30 percent (n=36) were considered strong. In one case reviewed — an inpatient suicide attempt that involved a pipe — the stronger action recommended was to remove the exposed pipe and thus eliminate the hazard.

Nineteen percent of the proposed actions were intermediate fixes and 51 percent (n=60) were considered weaker actions.

In summary, 119 actions were proposed by 26 RCA teams. On average, that’s 4.5 actions per RCA. Forty-nine actions (about 40 percent) were proposals to write policies or do more staff training. Half of the actions were stronger or intermediate fixes; half were weaker fixes.

Were Actions Implemented?
Forty-six actions were fully implemented, which is 39 percent of the total actions proposed:
♦ 25 percent (n=30) were partially implemented.
♦ 30 percent (n=36) were not implemented.

Table 3 (back page) shows the number of actions implemented and not implemented by action category.

Weaker actions were more frequently recommended, but less likely to be implemented:
♦ Four were policy actions; 16 percent of these proposed actions were implemented.
♦ Seven were training actions; 29 percent of these proposed actions were implemented.

Strong actions were recommended less frequently, but were more likely to be implemented:
♦ 100 percent of the recommended environmental control/change actions were implemented.
♦ 75 percent of actions recommended to standardize equipment were implemented.

On average, 1.8 actions were implemented per RCA. Also of note, RCAs in which 100 percent of the actions were implemented took the fewest number of days to complete. RCAs in which none of the actions were implemented took longer to complete.

Were the Actions Effective?
Thirty-four of the 46 actions implemented (74 percent) were either fully effective or partially effective. The majority of implemented and effective actions were strong actions, such as engineering changes or standardization of a process or a procedure. Actions were only partially effective if they were fully implemented at one facility, usually the facility where the RCA was conducted, but not at the other facility within our system. This was primarily due to a lack of information sharing, something we are working to overcome.

continued on back page
ON THE BASIS of reviewing RCA reports from 2000 to 2006, we ob-
served a number of adverse events related to specimen management in the
lab. This report summarizes our find-
ings, identifies vulnerabilities, and
offers recommendations to prevent sim-
ilar adverse events.

Vulnerabilities Identified in Lab

We identified vulnerabilities in sev-
ere processes of lab specimen manage-
ment that led to specimen misidentifi-
cation. Consequences for specimen
misidentification in the lab included:
four prostatectomies; delay in treatment
of tumors or infections; medical treat-
ment for the wrong patients; unneces-
sary diagnostic procedures; and unnec-
essary hospitalizations.

Specimen Labeling During Collection

We reviewed multiple cases of
incorrect patient identification on lab-
oratory specimens. For instance, phle-
botomists used one printer, resulting in
mixing one another’s printed labels;
 specimens were batched in areas with
pre-printed labels from different
patients; and handwritten labels led to
mislabeled specimens.

Accessioning Specimens in the Lab

In several cases, the accessioning
process was described as a “one-man
shop” in an open area of the lab with
heavy traffic and multiple distractions,
such as: people, phone calls and pagers.

Eight RCAs mentioned specimens
labeled with incorrect accession num-
bers. Patients also received inappropri-
ate blood transfusions, had prostate
needle biopsies repeated, and unneces-
sary surgical and diagnostic procedures,
including cardiac catheterizations.

Manual Entry Lab Result Reporting

Manual entry of lab results to VistA
using the first initial of the last name
and last four digits of the SSN led to
multiple cases of misidentification.
This is not a unique identifier: many
VA facilities have encountered patients
with the same names and last four dig-
its of the SSN. No system of VistA
alerts has been developed when such
data duplication occurs in the same
health system. Examples included can-
cer diagnosis reports placed in the
wrong patient record and positive blood
culture reports for wrong patients, who
then received multiple doses of antibi-
otics.

Delta Check values were not used
on some of these cases. Delta Check
technology is designed to draw atten-
tion to lab results at significant vari-
çance with historical values. If the val-
ues are significantly different than his-
torial values, the specimen may have
been obtained from a different patient,
and repeat studies would be required.

Tissue Processing and Labeling

Hand-written labels were commonly
applied to specimen containers, tissue
cassettes, and slides – all leading to
misidentification. Tissue was also
processed for multiple patients together
with multiple pre-labeled slides on the
same counter, causing mix-ups. Slides
have also been labeled with wrong
accession numbers — without a redund-
ancy check for identification.

Outcomes included multiple repeat
prostate biopsies and radical prostatec-
tomy procedures.

Anatomic Pathology Reviews

Several cases included mislabeled
anatomic pathology slides. In each
case, slides from several patients were
placed in a single cardboard slide hold-
er tray. They were often labeled with
accession numbers, but without patient
names, providing no redundancy in
identification. When a second patholo-
gist review was required for cancer
cases, this was either not done in a
timely way or done without a second
check on patient identification.

Examples of outcomes from cases
related to anatomic pathology reviews
included a radical prostatectomy proce-
dure for the wrong patient and delays in
treatment for cases of cervical cancer
and melanoma.

Forms and Labels

For years, human factors-based vul-
nerabilities have existed in the report-
ing forms used by VA labs and blood
banks. The SF-515 is a standard report-
ing form for labs that was last revised
in 1997, has never been automated, and
requires handwritten entries. This form
includes small font size; minimal space
for a final report; space for multiple
accession numbers (potential for confu-
sion); blank space in the lower left cor-
er for addressograph label (no longer
in use); data categories such as “spon-
sor,” “rank,” “grade,” and “register-
number”; a typo “parient” in lieu of
“patient”; and a non-specific category
for “signer” rather than pathologist.

The SF-518 form for VA blood
banks was last revised in 1992 and has
many of the same problems. Though
bar codes will be used throughout VA
for blood identification and administra-
tion, many blood product labels have no
fewer than five bar codes, only one of
which is a unique identifier.

Considerations for Improvement

In discussing our findings with VA
lab medicine professionals, we de-
veloped a number of interventions to
address such vulnerabilities:

1. Implement the Bar Code Expansion
   project for lab specimen labeling and
   blood product administration in the VA,
   scheduled 2007-09.
2. Map each lab accession number to
   the patient’s full SSN.
3. Re-engineer the work area following
   human factors principles for lab per-
   sonnel who apply accession numbers to
   incoming specimens, and for histotech-
   nicians processing tissue specimens.
4. Eliminate hand-written labels in the lab.
5. Automate labeling of accession num-
   bers and minimize re-labeling.
6. Label slides with patient name,
   accession number, and SSN.
7. Limit pathology review with slide
   holder tray to one case at a time.
8. Re-engineer pathology first and sec-
   ond reviews of cancer cases with forc-
   ing functions to prevent final reporting
   until the second review is completed.
9. Replace current dictation system for
   pathology reporting with electronic
   templates for data entry. Consider use
   of “voice recognition technology.”
10. Standardize Delta Check applica-
    tions in labs throughout the VA.
Communication Matters – Part III: Becoming Active Healthcare Citizens

By Amy Carmack, MA, NCPS education technician

BEING A PATIENT in the complex world of healthcare can be overwhelming and confusing. Gone is the era of “Dr. Ben Casey”: days of singular conversations, limited questioning, and obedient patients. Patients can now be part of a fast-paced, interactive healthcare environment. Twenty-first century caregivers must rely equally on their ability to care for patients and on patients’ interpretation of their treatment.

Poor communication between patients and providers has been linked to a myriad of costly consequences, such as misdiagnoses, the ordering of unnecessary tests, and a high incidence of patient failure to comply with treatment plans.1

However, patients also need to take responsibility for their healthcare decisions. As physicians Michael Roizen and Mehmet Oz point out: “Ultimately, you are the person most responsible for the success of your healthcare team.”2

This final installment of our communication series will focus on the need and steps for patients to become “active healthcare citizens” and how caregivers can assist in this journey. We will also include the benefits both parties can garner as patients become more prepared, engaged, and responsible for their care.

Promoting Active Healthcare Citizens

Though there is no specific requirement to do so, patients should be encouraged to become involved in their treatment and plans of care. An active healthcare citizen is an individual who is prepared, engaged, and responsible for their health and care. Asking a patient to follow these three simple steps will create a new environment in which they can take charge of their healthcare.

This idea will also be in step with JCAHO’s 2007 Patient Safety Goal 13, which discusses patient involvement in their care, as well as provides caregivers resources and strategies to get patients involved.

Preparing For An Active Role

Engaging in the healthcare process is the first step to becoming an active healthcare citizen. Patients should be encouraged to keep a health journal3 and set up a personal health page on VA’s HealtheVet (www.health-evet.va.gov) and use these as a basis to engage in an interactive conversation with caregivers. These tools can be used to record such things as: symptoms, hospital visits, treatments, procedures, and medications.

Being an active healthcare citizen also means being well informed. Patients should be encouraged to find out as much as possible about specific care issues by discussing them with a caregiver or by researching them through credible sources.

Engaging Patients in Their Health

A patient who is prepared to discuss issues is one who can ask meaningful questions about medications, procedures, and treatment plans — questioning what they are for, why they are needed, and how they might affect one’s lifestyle, including any potential side-effects.

Health Responsibility

Research has found that only 15 percent of patients fully understand what their caregiver is telling them; 50 percent are unsure of how to implement care.1 A patient should be encouraged to have a full understanding of what actions must be taken — which is why being well informed about their care plan is so important.

A patient should understand exactly what a caregiver expects should be accomplished, such as scheduling a consultation or following a medication regime: The worst action a patient can take is no action — being uninvolved.

The Healthcare Professional-Partner

One of the most important roles a caregiver can play is that of a partner and advocate of an active healthcare citizen. Encourage patients to speak up by developing an open communication style3 and reducing communication barriers.

Partner Communication

As previously discussed in TIPS,3 there are several communication styles that can be employed to disseminate information and build relationships. In particular, patients look for relationships that are built on trust, not just good medical advice.

Providing a forum for them to openly discuss their concerns can help develop an active healthcare citizen’s awareness. Caring about what a patient has to say is one of the most important criteria for communicating with them.

Involving the Patient

Studies have found that the more balanced the relationship between provider and patient, the more likely the patient’s health will improve.3

Answering all of a patient’s questions, asking them to repeat back important information, and talking with patients, rather than to them, will encourage patients to become active in their healthcare — making them feel like an active healthcare citizen, not just another patient.

Breaking Down the Walls

When working with an active healthcare citizen, caregivers must be aware that a large communication barrier is time. Providers are ruled by tight schedules and a good healthcare citizen should understand this barrier.

Patients should be encouraged to bring their health journals and a list of questions to maximize their time. Providers should always ask what a patient needs to know before the end of a visit and prior to providing the patient with a medication reconciliation list. To effectively create a successful communication partnership, breaking down communication barriers takes work by all.

The Benefits of Being an Active Healthcare Citizen

Encouraging patients to take an active role in their health can improve relationships with caregivers, as well as improve their health. Research has found that there is a direct link between positive patient-provider relationships and active involvement and improvements in the quality of health.1,4

Patients have reported reductions in pain, improved emotional and physical health, reduced stress and anxiety, and a higher degree of compliance to prescribed treatments and medicine regimes.

Patients are actively involved in many aspects of their lives — why not encourage them to be active in their healthcare too?

References
Findings and Conclusions

- Stronger actions are easier to implement and are more effective than weaker actions.
- Actions that are assigned to specific departments or people are more likely to be implemented than those assigned to general areas.
- It is beneficial if RCA team members bring information back to their areas and initiate action implementation.
- The patient safety manager plays a critical role in RCA action implementation.

Moving Forward

To increase action implementation and effectiveness, we are working to instruct RCA teams to focus on stronger fixes — they're easier to implement and more effective. We have established a patient safety planning group, which is looking into a number of patient safety issues, such as how to better share lessons learned from RCAs with all staff. Such feedback should improve action implementation and monitoring.

We hope to establish a permanent Patient Safety Committee with representation from many areas, with a focus on RCA action implementation. We will continue to use JCAHO’s tracer methodology to observe long-term implementation of actions.

### Table 1: RCAs Reviewed by Year of Incident Occurrence

<table>
<thead>
<tr>
<th>Year</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCAs</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>2</td>
<td>7</td>
<td>6</td>
<td>26</td>
</tr>
</tbody>
</table>

### Table 2: RCAs Reviewed by Event Type

<table>
<thead>
<tr>
<th>Event Type</th>
<th>RCAs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delay in Treatment/Diagnosis/Surgery</td>
<td>6</td>
</tr>
<tr>
<td>Misidentification</td>
<td>5</td>
</tr>
<tr>
<td>Falls</td>
<td>2</td>
</tr>
<tr>
<td>Inpatient Suicide/Parasuicide</td>
<td>2</td>
</tr>
<tr>
<td>Missing Patients</td>
<td>2</td>
</tr>
<tr>
<td>Assault</td>
<td>1</td>
</tr>
<tr>
<td>High Alert Adverse Drug Events</td>
<td>1</td>
</tr>
<tr>
<td>Outpatient Suicide/Parasuicide</td>
<td>1</td>
</tr>
<tr>
<td>Toxic Substance Ingestion</td>
<td>1</td>
</tr>
<tr>
<td>Unsterilized/Contaminated Exposure</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>26</td>
</tr>
</tbody>
</table>

### Table 3: Total Number of Actions Proposed and Implemented by Action Type

<table>
<thead>
<tr>
<th>Action Type</th>
<th>Number</th>
<th>Not Implemented</th>
<th>Implemented</th>
<th>Strong Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy/Procedure</td>
<td>25</td>
<td>21</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Training/Education</td>
<td>24</td>
<td>17</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Standardize Process (protocols, checklists)</td>
<td>10</td>
<td>5</td>
<td>5</td>
<td>X</td>
</tr>
<tr>
<td>Enhanced Documentation</td>
<td>9</td>
<td>6</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Software/Hardware</td>
<td>7</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Staffing/Scheduling/Assignments</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Environmental Control/Change</td>
<td>5</td>
<td>0</td>
<td>5</td>
<td>X</td>
</tr>
<tr>
<td>Eliminate or Substitute System/Device</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>X</td>
</tr>
<tr>
<td>Engineering Device or Interlock</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>X</td>
</tr>
<tr>
<td>Standardize Equipment</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>X</td>
</tr>
<tr>
<td>Analyze</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>New Medical Device</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>X</td>
</tr>
<tr>
<td>Patient Scheduling</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Continuous Quality Improvement (CQI)</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Redundancy/Double Checks/Inspections</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Architectural/Physical Plant Changes</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>X</td>
</tr>
<tr>
<td>Auditory Warning</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Enhanced Information Display</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>New Device</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>X</td>
</tr>
<tr>
<td>New Non-medical Device</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>X</td>
</tr>
<tr>
<td>Standardization</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>X</td>
</tr>
<tr>
<td>Supervision</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Work Area Redesign</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>X</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>119</td>
<td>73</td>
<td>46</td>
<td></td>
</tr>
</tbody>
</table>