

CE-IT Community

A Clinical Engineering/IT Collaboration

Best Practices For Assigning First Call Responsibilities For Healthcare Networking Issues

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Background

In recent years, medical devices have become increasingly more computerized. As part of this trend, more and more medical devices routinely appear on hospital networks where only personal computers (PCs) and information systems previously existed. This has happened to allow these medical devices to exchange information among themselves and with healthcare information systems. Traditionally, clinical engineering supported medical devices within healthcare institutions and information technology supported the PCs, servers, and other hardware residing on those institutions' networks. However, with the addition of medical devices to hospital networks, the blurring of support responsibilities has often occurred.

When medical devices lose their network connectivity, it presents some unique support challenges for a healthcare organization. For instance, users may be unsure as to who to contact for assistance in resolving the issue. Similarly, it may not be apparent what entity (e.g., clinical engineering (CE), information technology (IT)) is responsible for troubleshooting the issue. As a result, the potential for delays in successfully resolving medical device connectivity issues is significant.

To assist healthcare organizations with the timely resolution of issues associated with networked medical devices, the CE-IT Community has created this best practices document to serve as a foundational tool.

It should be noted that IT Service Management (ITSM) best practices already exist to specifically address incident management, problem management (incidents that become more systemic), and change management (communication of updates/modifications to key stakeholders and planning for system changes) as they arise within IT. In addition to the best practices outlined in this document, healthcare organizations should be aware of these existing ITSM best practices and evolve them to meet clinical end user support needs whenever possible.

Identifying Team

Ultimately, support is defined through the expectations of the customers being supported and specified through service level agreements (SLAs).

This means that what works in terms of support at one hospital may not work at another or what works for one department may not even work for another department. Ideally, support should be standardized to ensure consistency of service, to best leverage resources, to ensure that support is handled correctly. Therefore, it is unreasonable to expect that the level of support in a critical care unit, operating room, or emergency department would be the same as that provided in less critical care areas.

As a result, it is essential that a healthcare facility identify key resources in the support process not only in terms of those providing support (i.e., CE and IT resources) but also from the clinical areas receiving support. It may be necessary in some cases to engage resources in each clinical department independent of resources in other clinical areas to ensure that the coverage of each clinical department is adequate.

At minimum, healthcare organizations looking to address support of networked medical devices should establish a group consisting of CE resources, IT staff, and clinical staff (e.g., physicians, nurses, technologists, supervisors) that meet on a regular basis to create and shape the roles and accountabilities for the organization. It is essential to engage clinical staff in the process so their expectations are heard and met as ultimately it is their needs that must be addressed in the support process. In addition, it is important to select CE and IT resources who understand the clinical areas being supported.

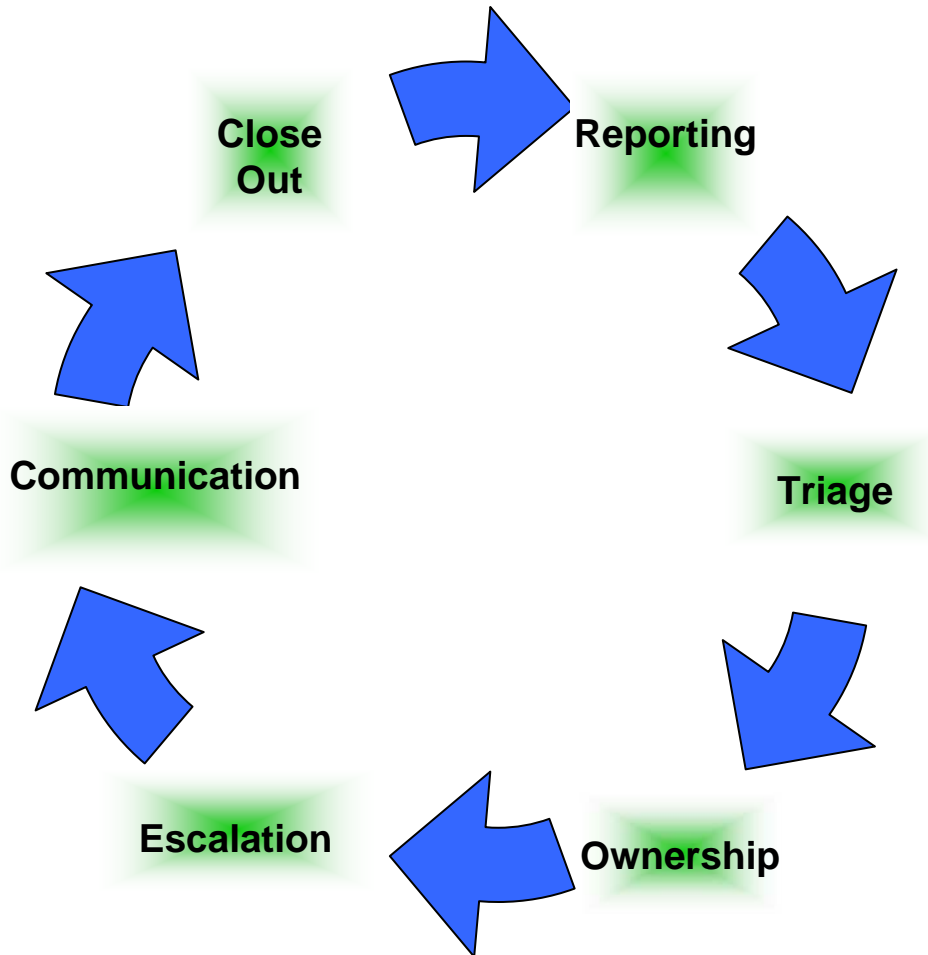
This group should be established with an understanding that their involvement in the support process does not end with the creation of the initial roles and accountabilities. Instead, this group should be expected to meet periodically to review any established support practices to ensure that they continue to meet the needs of the clinical customers, to address new support issues that may arise, and to deal with items that may need escalation beyond normal support channels, etc. At first this group may want to meet every few weeks or monthly. As there are fewer issues this group may only need to meet every few months or even less frequently.

For some critical support areas, particularly those areas with significant support needs, a regular (e.g., monthly, quarterly) meeting with representatives from CE, IT, and the clinical department(s) to go over any ongoing issues should be convened. This provides clinical departments an opportunity to raise concerns that may not otherwise be heard, to engage those departments in the support process, and to give CE and IT an opportunity to obtain feedback on their performance on a regular basis. All of these help to strengthen the overall support process.

Roles and Responsibilities

It is easy for healthcare organizations to recognize that CE and IT are necessary entities in the support process. At the same time, clinical staff is an important collaborator in the support process as they need to report issues correctly, be available to work with support staff, provide training, and in some cases actually provide support. Support should not be viewed as merely being provided by CE and IT but rather should be viewed as a shared responsibility with the clinical departments with all three having an equal stake in the support process and an increase in patient safety.

Once an organization has established a support working group, the first responsibility of the group should be to define the roles and accountabilities. This process should be as detailed as possible to ensure that the customer's needs are covered under various scenarios that may occur. As identified in the diagram below, there are many issues that should be defined, including: reporting, triage, ownership, escalation, communication and close out.



- **Issue reporting**—this may include utilizing a Help Desk, contacting resources via phone or pager, differences in reporting for afterhours support, and what resources should be contacted. In many cases, end users are not going to be able to determine if a problem exists with a medical device, the network to which that device is connected, or the other system(s) with which the device is trying to communicate. As a result, the reporting process must be simple enough so that the end user does not need to make any diagnosis of the problem but can merely contact a resource to report the issue.
- **Issue triage**—once the end user has reported an issue, it is critical to get the issue into the hands of the appropriate resource to troubleshoot and resolve the issue as quickly as possible. Ideally, the individual that receives the initial issue report would be able to understand enough about the medical device, network, and interconnectivity to be able to troubleshoot and diagnose the problem. However,

one individual may not possess all of the necessary knowledge to resolve an issue. As a result, a triage process needs to be defined. This would include the actions that the initial receiver of the incident report is required to perform and how, if necessary, this individual would then use this information to pass along the issue for follow up to a specific CE, IT, or department resource. If the individual receiving the call cannot complete the diagnosis, then an alternate process for reassigning the incident should be defined. As resolution time may be critical, it is essential to define how required resources will be contacted and to ensure that necessary resources are engaged until the issue is resolved.

- **Issue ownership**—every reported issue needs to have an owner. If an issue is first handed to CE for follow up, then CE needs to retain ownership of the issue. If CE needs to hand off the issue to IT, then IT will become the issue owner. Often the transfer of ownership leads to delays in the support process because the issues are not clearly handed off. As a result it is essential to define how issue ownership is established and to require positive confirmation of the ownership transfer when handoffs occur. On a related note there are some items that CE and IT may feel belong to the other party for support. These disagreements cannot be allowed to exist because they lead to unresolved support for end users. Therefore, it is essential for departments to come to agreement on responsibility for these items and budget for support accordingly. If necessary the clinical department may need to determine whether CE or IT would be more appropriate to handle the items.
- **Issue escalation**—not all issues can be handled internally in a timely manner. As a result, it is necessary to define how issues are escalated both within the healthcare organization and externally with vendors and other third party organizations.
- **Issue communication**—because there are multiple groups potentially working on an issue, it is essential that updates are communicated to the appropriate individuals. Therefore, it is necessary to define what information should be communicated, how and to whom the information should be communicated, and how frequently it should be communicated.
- **Issue close out**—again because so many different groups may be involved with an issue, it is necessary to define how it will be closed out once it is resolved. This may include who will be notified, what information will be provided, how resolution details will be documented and stored for future reference, etc.

Documenting and Notification

Once the roles and accountabilities have been established, they should be documented clearly and concisely so that an end user can quickly look at the document and determine how he or she needs to report an issue, how he or she can escalate an issue, etc. Ideally, the roles and accountabilities should be summarized in a single page that can be distributed to end users as a quick reference. The support working group may maintain a more detailed document but end users need to be able to determine what to do with an issue very quickly and do not have time to read through a large document.

If necessary, departments should be trained on the support process and what responsibilities the staff has as part of the process.

In addition, the support document should evolve. As support needs change, the document should be updated to reflect changes to the roles and accountabilities. End users need to be continually updated as to any changes being made to the process. Furthermore, the end users should be given a means to convey concerns about the roles and accountabilities since these are in place to support the end users and end user feedback is critical to their continued success.

It is likely that initially there may be changes to the roles and accountabilities. As a result, it may be necessary to survey users during the initial rollout of this document to the supported clinical areas to ensure that the document is working and make changes if it is not.

Conclusion

As medical devices become increasingly computerized and networked, the responsibilities for supporting these devices has become less clear as both CE and IT have some role in the support process. For end users of the devices this can create significant problems should delays in support occur because of uncertainty in the support process. As a result, it is essential for a hospital to clearly create a medical device support plan before issues arise so customers are not left without support should issues arise. This guidance document provides best practices for helping hospitals begin this support plan creation process. As this is not an issue that will go away any time in the near future, hospitals should use these best practices to begin defining their support process now to ensure successful and timely issue resolution in the future.

Case Study

To better illustrate the best practices outlined in this document, this section presents a case study involving support of an actual radiology department where multiple imaging modalities send images into a picture archive and communication system (PACS).

A large health system found that after installing a PACS there were times when modalities couldn't successfully send studies to the PACS. Historically, the radiology department would page CE about modality issues but the PACS and network were supported by IT. It was increasingly difficult for the radiology staff to determine whether they should contact CE or IT. In cases where they contacted the incorrect group there were delays in response because the subsequent handoff of issues between departments wasn't done effectively. Furthermore, there were issues when vendors would need to be brought in and there was confusion about who owned the issue, who would contact the vendor, who was the point of escalation, etc. Often CE thought IT was managing the issue and IT though CE was managing the issue so nothing moved forward towards resolution. Ultimately the radiology department was left with issues that lingered longer than necessary, and this led to unhappy end users. At the same time, the radiology department assumed that since everything was now computerized, they no longer had to perform some duties, such as QA processes and training, which they had performed prior to the implementation of the PACS. This led to CE and IT resources being challenged to perform clinical responsibilities outside of their areas of expertise.

As a result of these problems, the health system established a support working group specifically to oversee radiology support. Selection of the group was the first step in the process. Radiology directors, the CE director, an IT director, and various system

administrators were selected as representatives for the group with the caveat that as specific issues arose, other CE, IT, or radiology resources could be pulled into the meetings.

This group met several times to understand what radiology's support expectations were. Out of these meetings a number of issues were identified, including the following:

- End users wanted to be able to contact either CE or IT as they had always done and didn't want a single point of contact. As a result, the group needed to address the ability to triage quickly and ensure successful issue handoff takes place.
- Process and training issues were the responsibility of radiology.
- Radiology wanted CE to retain the relationship with the modality vendors, so CE was to pull in the modality vendor even for network related issues when they were associated with a modality.
- CE, IT, and radiology each had different preferred methods of contact that needed to be clearly documented for the end users.
- The group did not want vendors to contact other vendors directly without a hospital representative involved in the conversation.
- Radiology wanted to be able to escalate issues at their own discretion without any predefined criteria.

All of these items as well as other issues, such as who owns and escalates issues, how end users are notified of progress of issue resolution, etc. were defined in the roles and accountabilities document. This document was then shared with key individuals within radiology to get their approval.

Once the document was approved, CE and IT monitored the support process over time to ensure that the agreed upon support structure met the needs of the end users. Slight modifications were made as needed. In addition, the working group that drafted the original document continued to meet on a monthly basis to go over larger or ongoing support issues and how support was being handled. This gave radiology the opportunity to provide direct feedback on the support project and also gave CE and IT the opportunity to collaborate. Communication was open and radiology was able to verify support delays were not being introduced into the process.