

Novo Innovations Agent Grid Benefits Study

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Overview

The Novo Innovations Agent Grid – combined with Novo’s services, years of experience and strong relationships with leading EMR vendors – provides a comprehensive, practical solution that enables electronic exchange of information between hospitals and physician practices throughout the community. The resulting improvements in information exchange can drive greater revenue for hospitals and dramatically lower costs for both hospitals and physician practices.

This document is designed to highlight some of the benefits and cost impact of the Novo Grid. This is not a scientific study, but rather an assemblage of both measurable and anecdotal situations that have shown improvements in live operations.

Physician Office Benefits

The physician office gains a number of improvements when using the Novo Grid to receive results and reports from the hospital.

Staff Labor and Materials Costs

Costs in material and labor to process faxed results and reports are significantly reduced or eliminated when the Novo Grid is used. Today, offices purchase and use fax toner and paper to print results from the hospital, often throwing half of the faxes away due to the fact that some are duplicates, others are preliminary reports, and many are simply unwanted (e.g. inpatient lab results). As a result, nurses must sort through the faxes and either file them away in patient charts or input them into an EMR (often by scanning and manually indexing the faxes into the patient’s electronic chart).

With the Novo Grid in place, material costs for toner and paper are eliminated if an EMR is used, and reduced if paper charts are used (by eliminating the printing of unwanted faxes).

Labor to process faxes or access data from a portal or Web site is also significantly reduced. In a paper environment, the Novo Dropbox filters, organizes, and sorts the results into a report that can be printed one time, eliminating the need to sort through a pile of paper or log into a portal and access each result one at a time. In an EMR environment, Novo Agents can often complete the process without involving the staff at all.

In analyzing the financial impact, the following baselines were used:

- Each physician receives an average of 25 results each per day. Historical analysis of Novo sites indicate that physicians range between 10 -100 results per day.
- It takes approximately thirty minutes to an hour for staff to filter through a day’s worth of results for a single physician. This does not include time to file the result and notify the physician.
- It takes approximately 5 minutes per result for staff members to process the faxes into the EMR.
- Half of the results faxed are discarded as unwanted.
- Fax toner and paper costs \$.02 per page.

- Hourly rate for staff is \$12.00

The following table shows the estimated cost savings of using the Novo Grid to deliver results and reports to the practice for a month.

Number of Physicians in Office	2	6	12
Paper-based Office			
Without Novo	\$ 400	\$ 1,200	\$ 2,400
With Novo	\$ 100	\$ 300	\$ 600
Savings	\$ 300	\$ 900	\$ 1,800
EMR-based Office			
Without Novo	\$ 1,000	\$ 3,000	\$ 6,000
With Novo	\$ 100	\$ 300	\$ 600
Savings	\$ 900	\$ 2,700	\$ 5,400

With the Novo Grid, staff time is reduced significantly because the Novo Agent is doing much of the work, such as filtering and removing unwanted documents. As a result, practices can reduce the cost to process faxes by up to 75% in a paper-based practice. In an EMR setting, labor reductions can be as high as 90%.

At an average cost of \$250/month/practice, the Novo Grid is cost justifiable simply based on direct material and labor savings achieved by eliminating faxes.

Reduced Call Backs

Novo also reduces the time and effort associated with call-backs to the hospital to find lost or missing results and reports, improving staff and physician productivity.

While the number of occurrences will vary based on many factors, it is reasonable to estimate a practice can experience this type of event 2-3 times per week per physician at an average of 30 minutes per event. This can equate to a monthly cost of \$100 per physician or more.

The Novo Grid keeps a copy of each result in the practice for several months, allowing a quick search, retrieval, and printing or viewing of results from a Novo Dropbox. With an EMR, all results are automatically sent and inserted into the EMR by the Novo Agent, effectively eliminating the need to call the hospital for lost or missing results.

Data Quality

When a practice uses an EMR, the format of the data is critically important. If the data is faxed, the data must be scanned or otherwise imported as an image of the fax itself. Thus the discrete data elements within the fax are not available to the EMR software unless the office staff manually types the data into the EMR.

Unfortunately, much of the functionality and power of EMRs is gained when data like lab results are obtained as discreet elements, not as an image. This drives their alerting and formatting logic and returns more value for the EMR purchase to the physician than simply serving as a document repository. Because Novo Agents receive, format and insert HL7 messages into the EMRs native interface, it provides the value to physicians by taking advantage of features of their EMR that they would not otherwise achieve.

Another aspect of data quality is the time it takes for physicians to receive and become aware of their results. With the Novo Grid, results are delivered and inserted into the EMR within minutes after they have been posted in the lab system. If the data is delivered as HL7, the EMR will be able to use its alerting and management features to their maximum capacity.

Physicians have reported receiving mammogram reports within hours instead of days and of being alerted to critical lab results by their EMR before they were contacted by the hospital by phone advising of the alert.

EMR Interface Costs

If a physician has an EMR, the cost of the HL7 interface is typically an option that must be purchased separately from the EMR vendor for each system to be interfaced. This charge is primarily to cover the service costs of interfacing the EMR to a remote system such as a lab or radiology system.

Hospitals represent a particularly complex environment for EMR vendors to integrate simply because of the number and complexity of the types of interfaces (labs, radiology, transcriptions, etc.). As a result, the cost of interfacing the EMR to hospital systems may be significant to the physician or to the hospital should they elect to purchase the interface from the vendor on behalf of the physician.

With the Novo Grid in place, the cost and complexity of interfacing hospital systems to the EMR vendor is reduced dramatically – as much as 1/8th of the effort compared to other approaches, based on EMR vendor feedback. As a result, some EMR vendors have changed their interface prices when connecting to a Novo Grid compared to standard list prices. Others have been willing to negotiate pricing when a Novo Grid is present to costs far below list price.

If a hospital elects to purchase the EMR interface from the vendor, the presence of a Novo Grid provide pricing leverage that can significantly reduce the cost as well.

The cost of interfaces varies from vendor to vendor, but an average savings of \$1,000 or more per interface is not unreasonable to expect with the Novo Grid in place.

Hospital Benefits

The benefit of the Novo Grid to physicians offers significant return by reducing or eliminating fax and in making the most of their EMR investments. Hospitals also receive advantages from using the Novo Grid as well. These benefits tend to be associated with increased competitive advantage can lead to increased business from physicians as well as cost avoidance in areas such as technology.

Increased Referrals

One of the most valuable aspects of the Novo Grid to hospitals is the ability to lower the cost of doing business for the physician by reducing costs for processing information like results and reports. As shown in the previous section, physicians can save hundreds to thousands of dollars per month if a Novo Agent is employed to do the work staff are required to do otherwise. As a result, it is often far less expensive to direct patients to Novo-connected hospitals for services like radiology exams than to send the patient to a laboratory or imaging center that relies on faxes and Web portals to deliver information. This is especially true when physicians use an EMR.

Novo has heard from hospitals and physicians alike that a demonstrable increase in lab and radiology referrals can often be seen from practices once they are on the grid. One physician in Atlanta reported sending at least 10 new radiology referrals a week to the local hospital that were previously being sent to a competitive imaging center.

It is difficult to put a dollar value on the increase in referrals due to the varying environments in which the Novo Grid is installed, but it is fair to say that Novo customers that operate in a competitive environment often state this as the greatest single value they see.

Staff Labor

Where physician offices see a reduction in staff labor to process information received from the hospital, hospitals often see a reduction in the use of technical and support resources to address the needs of physicians with EMRs and to meet the needs of physicians that call back looking for lost or missing results or reports.

Impact to the technical and operational staff within Information Technology department is likely the most significant to a hospital that is using the Novo Grid to interface remote, ambulatory EMRs. The Novo program provides the technology, expertise and effort to deal with the bulk of the effort needed to integrate EMRs to hospital information. Without Novo or comparable solution, the hospital would face the daunting task of interfacing these EMRs themselves.

We have heard from several customers that have used HL7 interface engines combined with network VPNs to interface to EMRs themselves to the physician office. The total cost to interface a single practice's EMR ranged from \$15,000 to \$65,000. The cost consisted of labor to manage, build and test the interfaces and materials to extend the interface engine and securely connect to the practice.

The labor effort consisted of several activities involving different personnel:

- Management resources to coordinate with the practice, EMR vendor or consultant, hospital departments, technology resources and others.
- Interface resources to build and test the interface – usually working with the EMR vendors or consultants for the very first time.
- Technical networking resources to connect and address security concerns.
- Department or IT resources to test the interfaces.
- Resources to support the interfaces and networking components.

In addition, material costs also must be addressed, including:

- Expanding the port on the interface engine. In some cases, each new practice will require the adding an additional port to the engine at a cost of \$2,500 - \$5,000.
- Building a VPN connection to the practice often means upgrading the firewall in the practice at a cost of \$500 or more.
- Security components such as PKI certificates must also be purchased if not already available.

With a Novo Grid, these costs are significantly reduced or eliminated. For example, Novo resources perform the project management, interfacing and networking activities through our unique technology. In addition, we have established relationships with the EMR vendor community, providing a greater level of expertise than can be acquired by the hospital's IT team working with one vendor at a time – enabling Novo to install and configure an EMR in a fraction of the time it would take a hospital to do.

From a material cost perspective, the Novo Grid eliminates the need for VPNs to the practices and only requires one port on the interface engine for all of the practices connected to the grid.

The overall impact of the Novo Grid as compared with hospitals building custom interfaces to remote EMRs varies, but it is fair to say that the cost of using Novo is less than ½ of the cost of doing the same level of interfacing using hospital resources alone.

Other Delivery Methods

As hospitals have deployed the Novo Grid to practices, many have stopped sending results and reports via courier and mail delivery and are relying on the Novo Grid to distribute the information. While costs for this improvement can vary widely, savings can reach thousands of dollars per month if a large number of physicians use the grid in lieu of delivering paper.

Training and Support

Another cost to the hospital is in the training and support of the physician office staff that usually accompanies new applications. In the case of the Novo Grid, the use of intelligent software agents eliminates much of the need to train staff since the agent does its work in the background, without involving the staff.

The use of software agents also reduces calls made from the practice to the hospital by reducing or eliminating user support calls, since most activity is triggered by an agent or an office administrator – not end-users.

EMR Interface Costs

Recent changes to the Stark Laws have made it possible for hospitals to fund technology to physicians for the purpose of interfacing the EMR with the hospital. One approach being seen more and more is where the hospital purchases the EMR interfaces from the

vendor. When this is the case, using Novo allows the EMR vendor to significantly reduce costs associated with installing, configuring and testing the interface.

Several EMR vendors claim that an Novo interface takes about 1-2 hours to implement, whereas it would take between 8-24 hours if working directly with the hospital to create a custom interface. This reduction in effort enables the hospital to better negotiate a lower price from the vendor as opposed to buying at list price.

Conclusions

The advantages of implementing a Novo Grid is significant to hospitals and physicians alike when it comes to interfacing EMRs or enabling a new way to deliver information like test results and reports to practice as a replacement for fax delivery.

Physicians can experience a significant reduction in labor and materials to process external information from hospitals, while increasing the quality of information. This has the effect of making it less expensive to do business with the hospital that offers the Novo system to interface to the EMR, as opposed to hospitals that do not.

Hospitals also experience a reduction in costs to interface EMRs compared to other approaches, both in labor and materials.

There are also soft costs that should be considered. For example, the business performance improvements seen when the Novo Grid is used has shown to increase physician satisfaction with the hospital partner. Patient safety is increased when critical information contained in the test results are known immediately instead of waiting for the information to be provided in a more traditional manner.

Other areas can also be improved. For example, hospitals today are reviewing their security policies to ensure that test results and other electronic Personal Health Information are delivered to practices in a secure and auditable manner - something that cannot be easily achieved using fax. The ability of the Novo Grid to replace fax with a secure, audited delivery mechanism addresses this problem.

In summary, we have listed many advantages derived from using the Novo Grid and recognize that there are likely many more – such as the positive impact on patient care – that are not identified in this document. But perhaps the key aspect to consider is that the cost of the Novo Grid on a per-practice basis is sufficiently less that the direct savings shown in real-world cases. The net result is that the cost of the Novo Grid is far less than the direct savings achieved by its use.