Electronic Signature Capture: Signing Up for More Efficient and Compliant Healthcare Delivery
Introduction
Healthcare organizations are increasingly committed to automating all aspects of their operations from clinical care to patient records to business and finance. Yet, as they seek to automate clinical, financial and administrative workflows, one function that has stubbornly barred the way is the need to capture signatures from patients and providers.

All too often, when a signature is required for consent or approval, a paper document is printed and manually routed and managed. Not only does this interrupt the automated workflow with manual processing that is inefficient and time-consuming, it can also severely jeopardize security and compliance with regulatory and legal requirements. That’s why more and more healthcare organizations are turning to advanced forms automation with electronic signature capture to automate the consent and approval process.

Basics of Electronic Signature Capture
In the past, managing healthcare consent and approval forms was almost entirely a paper-based process. The patient or provider would sign a hard-copy document, and the signed document would subsequently be filed or scanned and manually indexed into a hospital's document management solution.

Electronic signature capture solutions, on the other hand, create legally enforceable documents that are automatically indexed to the patient’s electronic medical record (EMR) or automatically sent to the hospital information system (HIS) or a clinical data repository (CDR). This:

- Eliminates paper handling and scanning costs for improved staff satisfaction
- Reduces the liability of lost documents
- Fills the automation gap between systems
- Increases document integrity and availability

Recently two trends have emerged that are helping electronic signature capture gain momentum in healthcare. First, the cost for electronic signature technology is declining. Second, there is a growing acceptance of electronic signatures by patients and providers due to retail consumer experience.

The two most common types of electronic signatures used in healthcare applications are:

- **Digitized or graphical signature**: An electronic representation of a handwritten signature, this type of eSignature is the one most people are familiar with from retail applications at point of purchase. It is the most common form used for patient signatures.

- **Digital signature**: This typically entails “clicking a button or entering a unique personal identification number (PIN), electronic identification, token or biometric scan at the completion of an entry for the signature process.”

Signing and manually managing paper consent and approval forms are costly and time consuming and can increase risks in legal cases and audits. Furthermore, paper forms are a roadblock to total system automation. That’s why hospitals, clinics and physician offices are turning to electronic signature to improve efficiency, increase compliance and fill the automation gap.
Opportunities Span the Entire Continuum of Care

Successfully implemented in a number of medical centers, ambulatory facilities and physician practices throughout the country, electronic signature capture is applicable throughout the entire continuum of care.

Among the areas that are candidates for the application of eSignature are:

- Patient admissions and registration
- Surgery
- Nursing units
- Radiology
- Laboratory
- Clinics
- Pharmacy
- Physician offices

Given the growing number of consent forms required in healthcare today, moving to eSignature can dramatically improve workflow and efficiency. The chart below shows the types of forms that are typically automated for electronic signature capture.

<table>
<thead>
<tr>
<th>Forms Requiring Patient Signatures</th>
<th>Forms Requiring Physician Signatures</th>
<th>Forms Co-signed by Patient and Physician</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Registration consent forms</td>
<td>• Physician orders</td>
<td>• Informed consents (for procedures)</td>
</tr>
<tr>
<td>• Registration financial documents</td>
<td>• Progress notes</td>
<td>• Discharge instructions</td>
</tr>
<tr>
<td>• Assessments/histories</td>
<td>• Medicare certifications</td>
<td></td>
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<tr>
<td>• Care directives</td>
<td></td>
<td></td>
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<tr>
<td>• MRI screening questionnaires</td>
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</tbody>
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Benefits of Electronic Signature Capture in Healthcare

Operational Benefits

Implementing electronic signature capture can provide a host of operational benefits for healthcare organizations.

**Better legal protection and regulatory compliance:** eSignatures provide better defense in legal and compliance cases because the system date- and time-stamps when the transaction occurred. This provides an audit trail that shows exactly when the document was signed and by whom.

**Improved confidentiality:** Security of documents and patient confidentiality is improved when documents are electronically managed in secure healthcare systems.

**Reduced costs:** Capturing signatures electronically eliminates the cost of

- Paper, printing, filing and faxing
- Labor and equipment required to scan signed documents into the EMR, HIS or clinical data repository
- Fines for noncompliance
Instant availability: Authorized users can instantly and concurrently access an electronic copy for patient care, patient billing or quality review.

Faster billing and fewer claim denials: Lost or hard-to-access consent forms can delay billing and result in denied claims. With eSignature, documents are immediately available for processing when and where they are needed.

Better patient safety: Improved record keeping and instant access to signed documents help promote better patient safety.

FirstHealth Moore Regional Hospital Ends the Paper Chase with eSignature

FirstHealth Moore Regional Hospital, a 395-bed acute-care facility located in Pinehurst, North Carolina, was opening a new heart center and wanted to introduce a more efficient registration process that would match the state-of-the-art healthcare provided by the facility. Bottomline Technologies’ Inprotica® solution provided the workflow and electronic signature capabilities needed to improve efficiency and remove paper from the registration process.

Inprotica interfaces with the hospital’s McKesson® system and its Horizon Patient Folder so that data automatically flows between systems. When a patient registers, the person signs the required documents, including admission and Medicare forms, using an LCD signature pad attached to the registration workstation. Once completed, the forms are automatically sent via computer output to laser disk (COLD) to the Horizon Patient Folder, which is the repository for the electronic health record.

FirstHealth management and staff have identified three key benefits from their electronic signature capture application:

- Improved patient satisfaction, including less time at the registration desk
- Increased efficiency
- Reduced costs due to the elimination of the expense of paper, printing and document scanning

Based on the success in the Heart Center, Moore Regional Hospital is planning to roll out the Inprotica solution with electronic signature to the rest of the organization. To read more, please visit www.bottomline.com/collateral/healthcare_solutions/FirstHealth Bottomline Case Study.pdf.

Better Patient and Provider Experience

In addition to quantitative benefits such as decreased costs, increased compliance, and improved billing and claim support, electronic signature capture delivers qualitative improvements as well.

Better patient experience: Signing forms and documents electronically is easy and familiar, and patients can receive an electronic copy of the signed document via email if needed. In addition, the efficiency of the registration or consent experience reflects favorably on the overall competence of the institution.

Better provider experience: Integrating electronic signatures into the provider workflow can improve efficiency, reduce errors, and allow the physician to spend more time on patient care and less time on administrative details. The provider can now sign documents at the bedside without having to retrieve and process paper forms manually. The result: better physician satisfaction.
Obstacles to Implementing Electronic Signature Capture

The obstacles to electronic signature capture adoption are shrinking and today revolve mostly around device constraints. They generally fall into four categories:

1. **Cost:** This is less of an obstacle than it once was, because the cost of hardware has gone down dramatically in recent years. As you will see in the section that follows, there are many options and price points, ranging from a signature clipboard on the low end to an electronic tablet or Apple® iPad® on the high end.

2. **Space:** The form factor of different signature capture devices can pose challenges, depending on the application. Signature devices often attach to a workstation and there is limited space on a registrar’s desk or a provider’s cart-on-wheels (COW) at bedside. This can influence which signature-device option you select for an application.

3. **Theft:** Electronic tablets and other portable devices deliver mobility but also increase the risk of theft.

4. **Mobility:** You need to balance screen size and weight when selecting the best tablet for a particular application.

Before selecting eSignature technology, you need to analyze the cost, context and performance benefits of each option.

Technology Options for Electronic Signature Capture

Healthcare facilities can choose from a variety of electronic signature capture devices. Each has its advantages and disadvantages, and technology selection depends on the application that you are addressing. Many facilities and organizations use a mix of different signature capture devices, matching them to the particular application. The most popular options include:

**Retail Signature Pad:** Well known from grocery and retail store use, a signature pad captures graphical signatures. Most signature pads feature an LCD display with an attached pen stylus and range in size from 1” x 5” to 4” x 5”. In addition to its cost effectiveness, the principal advantage of a signature pad is its size—it’s small enough for even the most crowded registration desk. Its size is also its biggest drawback, since it limits the amount of information that can be displayed. As a result, the patient must read the signatory document on a workstation or on paper.

**Signature Clipboard:** Designed for use in applications that demand both an electronic and a paper copy, letter- or legal-sized electronic clipboards are often used in healthcare for patient consent applications, particularly in admission and registration. The patient signs the paper copy and the signature clipboard automatically collects an electronic copy of that signature. The major benefit of the signature clipboard is its price. It is the least expensive graphical signature capture device. Its biggest drawback is the need to generate paper forms.

**Electronic Tablets:** Electronic tablets—including Microsoft® Windows®-based devices and Apple® iPads®—can be used for automated forms management and electronic signature capture applications. Ideal for applications that require mobility, electronic tablets are often used by providers in clinical care settings or when bedside consents are required. In addition to mobility, benefits include screen size, interactive forms capabilities and the ability to capture multiple signatures. The biggest disadvantage is cost. Electronic tablets are by far the most expensive option.

**Web-based Digital Signature:** While not as popular in healthcare as the other options, you can use Web forms to collect a PIN-based digital signature. Although a PIN-based digital signature might be confusing to some patients, it is starting to gain acceptance in other industries, including banking applications. This technology option offers the opportunity to use existing equipment, including mobile devices that support Web browsers. The disadvantage is potential confusion among users.
<table>
<thead>
<tr>
<th>Device Type</th>
<th>Applications</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail LCD Signature Pad</td>
<td>Admission and registration</td>
<td>• Cost</td>
<td>• Needs to be tethered to a workstation</td>
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<tr>
<td></td>
<td></td>
<td>• Familiarity from retail experience</td>
<td>• Limited display size</td>
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<td></td>
<td></td>
<td>• Small footprint</td>
<td>• Captures only one signature at a time</td>
</tr>
<tr>
<td>Signature Clipboard</td>
<td>Admission and registration</td>
<td>• Cost</td>
<td>• Needs to be tethered to a workstation</td>
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<tr>
<td></td>
<td></td>
<td>• Full-size document</td>
<td>• Footprint limits its use where space is at a premium</td>
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<td></td>
<td></td>
<td>• Can collect multiple signatures</td>
<td>• Hard-copy paper generation</td>
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<tr>
<td></td>
<td></td>
<td>• Patients can take hard copy</td>
<td></td>
</tr>
<tr>
<td>Windows-based Electronic Tablet</td>
<td>Patient consent forms and provider clinical care applications</td>
<td>• Mobility</td>
<td>• Cost</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Full-screen form</td>
<td>• Weight of device</td>
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<tr>
<td></td>
<td></td>
<td>• Can collect multiple signatures</td>
<td>• Susceptible to theft</td>
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<tr>
<td></td>
<td></td>
<td>• Interactive: can capture discrete data from checkboxes and drop-down menus</td>
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<tr>
<td></td>
<td></td>
<td>• Can zoom in on text for easier reading</td>
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<tr>
<td></td>
<td></td>
<td>• Forms can be highlighted for emphasis</td>
<td></td>
</tr>
<tr>
<td>iPad</td>
<td>Patient consent forms and provider clinical care applications</td>
<td>• Mobility</td>
<td>• Cost</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Cool factor</td>
<td>• Size of display: may need to scroll</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Can collect multiple signatures</td>
<td>• Touch-screen offers some application challenges</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Susceptible to theft</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Easy to lose stylus pen</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Awkward for patients to use finger for signing</td>
</tr>
</tbody>
</table>
Griffin Hospital Automates Consent Forms

Griffin Hospital, located in Derby, Connecticut, was determined to go paperless when it opened its new cancer center. The need for patient consent forms stood in the way of achieving this goal. Bottomline Technologies’ Logical Ink® provided a mobile documentation solution that made management of paperless consent forms easy for both patients and staff.

The solution eliminates paper from the consent process by managing a variety of forms electronically, including advanced beneficiary notices, authorization to use/disclose protected health information, outpatient acknowledgement and registration forms, and permission to undergo radiation therapy.

Logical Ink leverages tablet computers, digital ink and a pen-based interface to provide a simple and intuitive experience. Color highlights on required fields ensure that all data and signatures are completed, and validation rules ensure all necessary information is present before the patient is registered.

“The patients really like the system. Even older patients, who may not typically use computers, get very excited,” said Susan Anderson, director, registration. “Logical Ink is also a big hit with our staff. It is definitely quicker, since most of the information is prepopulated.”

To learn more about this success story, please click here: www.bottomline.com/collateral/healthcare_solutions/Griffin Hospital Case Study.pdf.

Meeting Legal Compliance Requirements

Electronic signatures are admissible in court and meet legal and industry compliance requirements. Like paper-based signatures, acceptance is predicated on the proper validation of the patient’s identity at the time of signature.

To ensure that electronic signature capture applications meet legal standards, the system must embed the signature into the document when it is captured and simultaneously date- and time-stamp the event. The document then is “locked,” typically in PDF format, and cannot be edited from that point forward.

Electronic signatures also meet healthcare compliance requirements, including the Health Insurance Portability and Accountability Act of 1996 (HIPAA) and Joint Commission standards.

HIPAA has not established an eSignature standard, but electronic signatures support HIPAA regulations if the authenticity of the signature can be validated and the document meets HIPAA security requirements. The Joint Commission accepts the use of eSignatures in hospitals and ambulatory care facilities, according to standard RC.01.02.01 in the 2009 Accreditation Manual for Hospitals and Ambulatory Care Facilities.²

Implementing Electronic Signature Capture Is as Simple as 1-2-3

1. Be sure that your solution provider offers a full range of different technology options for signature capture, including LCD signature pads, signature clipboards, Windows-based tablets and iPads, and Web PIN-based signature capture.

2. The solution you select must be capable of date- and time-stamping the capture of the electronic signature in order to meet legal compliance requirements.
3. If you plan to implement electronic signature capture on a tablet, be sure that the system's software is robust enough to:
   - Guide users through the process and highlight where to sign and/or initial
   - Allow users to perform interactive functions like checking a box or making selections from drop-down menus
   - Validate that all required signatures are present and other required information is completed

**Conclusion**

Automation is increasing in all areas of healthcare, spurred by the need for better cost efficiency, higher-quality care and mandates such as Meaningful Use that are driving the adoption of electronic health records. One area that has resisted automation is consent forms and other documents that require a patient and/or provider signature. Advanced forms management with electronic signature is helping fill this automation gap between systems.

Electronic signature capture offers a host of benefits such as improved compliance and audit protection, increased efficiency, reduced costs, and an improved patient and provider experience. Several different eSignature technologies are available, and healthcare facilities must carefully consider each application before deciding what technology and system to choose. Many facilities use a mix of signature capture technologies for different applications.

Electronic signature capture not only meets legal requirements and healthcare regulations, but also offers better protection than paper does because of its precise date- and time-capture capabilities and traceable audit trail. More and more healthcare organizations agree: the time to transition to eSignature is now.

**References**
