The Promise and the Reality of Artificial Intelligence in Electronic Benefit Verification

Some pharmaceutical brand teams have already adopted 'logic-based' electronic benefit verification (eBV) solutions for their products. However, a newer approach, using artificial intelligence and machine learning, vastly improves the speed and accuracy of benefit verification, and provides demonstrable benefits for patients, prescribers, drug makers, insurance plans and patient support services providers.

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Executive Summary

Biologic therapies and other specialty medications represent an increasingly large piece of spending on prescribed medications. For instance, in the U.S., specialty medicines represent a growing share of total medicine spending over the past decade, rising from 21.8% of spending in 2007 to 39.6% in 2016, and the largest proportion of the new medicines launched in the last five years have been specialty drugs, according to the latest data from IQVIA[1]. In 2016, specialty medicines accounted for 42.6% of the net spending in 2016, according to the report.

Due to the relatively high cost and complexity associated with distribution, storage and administration of specialty drugs, they often face greater scrutiny from insurers. The ability to verify the patient's insurance coverage for these medications in a timely and accurate fashion is an ongoing challenge for both prescribers and patients. While the need to verify benefits is not new for the medical practice prescribing specialty therapies, the demand for a more efficient method is growing.

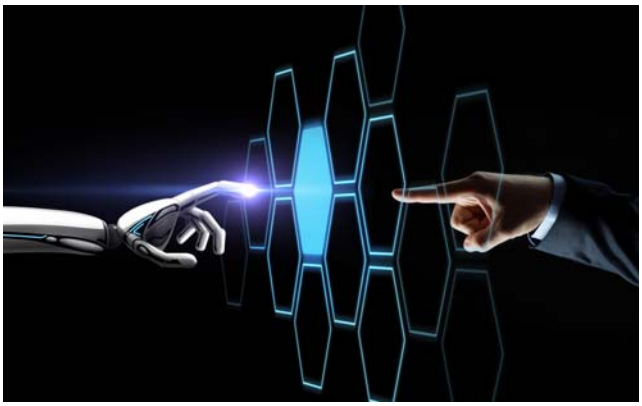
When the patient's insurance benefits cannot be verified quickly and reliably, initiation of therapy is delayed for the patient. In some cases, the failure to rapidly reconcile insurance information may represent added financial uncertainty and risk for both the patient and the practice.

Moreover, the high cost of biologics and other specialty medications and perceived affordability issues can create a significant barrier for some patients, in terms of their willingness to access and adhere to a needed treatment plan. When the brand team provides the most advanced benefit verification solution, prescribers are able to quickly and reliably access accurate benefit information that can help remove this uncertainty and allow patients to initiate therapy faster. Reducing affordability concerns help patients remain adherent to therapy longer (as cost issues are often to blame for poor long-term adherence to therapy), thereby supporting improved clinical outcomes.

Today's patient-centric healthcare environment demands an electronic benefit verification (eBV) solution that can quickly provide a complete understanding of how the health plan covers a patient's prescribed treatment costs for a given prescribed therapy. When it comes to complex specialty medications that are often administered right in the prescribers' offices or clinical settings, this insurance coverage relates not just to the cost of the drug, but also to the associated medical and drug administration fees.

Recent innovations have generated multiple approaches for eBV that create unique benefits and pose potential trade-offs. As a result, it's critical for manufacturers to select the eBV approach that enables patients to initiate treatment, without compromising the quality, speed and confidence all stakeholders have come to expect from the benefit verification process.

[1]IQVIA Institute for Human Data Science, Medicine Use and Spending in the U.S.: A Review of 2016 and Outlook to 2021, May 2017, pp. 9, 12. Accessed at: https://www.iqvia.com/-/media/iqvia/pdfs/institute-reports/medicines-use-and-spending-in-the-us.pdf?_=1515506747944



AI-based eBV Systems: The Underlying Principles

The machine-learning technology for eBV described here works on principles of optimization, using algorithms known as Naive Bayes probabilistic classifiers and others. These fast, simple and scalable algorithms are ideally suited to handle large, complex data sets with thousands or hundreds of data points.

This approach, which is based on Bayes' theorem of probability, combines probability models with decision rules and is able to predict the probability of an outcome based on the presence or absence of numerous other known data points or properties. The general goal of using a machine learning approach is to let the machine derive and remember the rules and revise its understanding of the rules (and their complex interactions) as new information is presented continuously throughout the year.

Sorting Through the Technology Options

Given the complexity of this process, an effective eBV solution requires the right workflow to navigate the process, expert counselors to engage key stakeholders when needed and robust technology that automates processes effectively and consistently, and delivers reliable, accurate results. Today, two technological approaches are available to provide eBV capabilities for a specialty medication:

1. The historic logic-based approach:

This "first-generation" eBV solution uses formulary information from supported payers to manually create a repository of deterministic coverage rules about the specialty medication at hand. In general, benefit verification requests for prescribers are made electronically and then handled through a nightly batch feed, with responses generated the following day. This prevalent approach relies on an underlying data model that centralizes all of the relevant coverage rules associated with the branded specialty medication from supported private and government payers.

2. The newer artificial intelligence (AI) approach:

Using this "next generation" approach, the underlying AI methodology harnesses the power of machine learning to probabilistically determine coverage outcomes using completed payer verifications (Box, left). The starting data are augmented continuously by occasional input derived from counselors who phone the insurance plan to reconcile complex benefit information. A well-designed AI approach seamlessly integrates into both the service hub associated with the specialty medication and the prescriber's workflow, and such a solution provides near real-time responses with greater accuracy compared to the logic-based eBV process.

A more complete comparison of the two approaches, along with the advantages of the artificial intelligence approach using machine learning brings to all stakeholders, are described in detail below.

Improvements for All Stakeholders

The newer AI-driven, machine-learning approach for eBV helps to streamline and automate benefit verification investigations. This yields faster and more reliable coverage answers, reducing the amount of human intervention needed. This approach provides demonstrable improvements for many stakeholders:

Patients
- Enables faster access to therapy
- Eliminates uncertainty and fear around out-of-pocket expenses
- Supports greater potential for long-term adherence to therapy by reducing financial obstacles that are often to blame for poor adherence

Prescribers
- Enables faster initiation of therapy for patients

Payers
- Reduces costs and improves efficiency for call center and customer service staff
- Elevates the benefit counselors to focus on complex cases that still require human intervention

Drug Manufacturers
- Facilitates faster access and adherence to prescribed products
- Broadens provider reach
- Boosts market share and profitability for the product
- Provides economies of scale to reduce the cost of eBV systems

Hub Services Provider
- Yields greater efficiency in patient access services
- Demonstrates innovation, strengthens reputational capital, and drives improved custome service and satisfaction among clients
- Helps to reduce overall costs associated with providing the branded hub services programs

A Closer Look at the Two Different eBV Approaches

Logic-based eBV Technology

Traditional logic-based eBV systems rely on a set of specific coverage rules that are determined and programmed into the system by humans. These parameters reflect the governing rules and other factors that guide decision-making by hundreds of private and government health insurance plans, related to any given specialty medication.

Logic-based eBV approaches are deterministic in nature and rely on humans to manually and correctly glean product coverage, on a payer-by-payer basis—often with heavy reliance on the manufacturer or hub to provide build coverage rules. However, the insurance landscape is complex and insurance coverage rules from different payers are constantly being modified (and new coverage-related requirements are constantly emerging). As a result, at any given point in time, these rules represent a static snapshot of the coverage landscape and thus, by design, run the risk of being out-of-date.

Artificial Intelligence-based eBV Technology

By contrast, an eBV system powered by AI technologies with machine learning capabilities uses massive amounts of historic data to "train" the models, which, in turn, determine a coverage answer.

If, at any time, the solution isn't confident in the coverage information it provides — for instance, whether it is a complex coverage decision requiring high-touch services, or a case the solution has not encountered before — the system automatically triggers a trained benefit specialist to intervene and phone the payer to reconcile the coverage information. Every time a benefits counselor makes a call to reconcile a complex coverage decision or a rejected insurance claim associated with the drug within a patient's plan, the results are captured by the system, and this feedback is used to automatically retrain the models with the new data.

The algorithms in the machine learning system continuously analyze this new input, identifying trends and recognizing the emergence of new rules; using these refined rules to continuously inform predictions related to future benefits evaluations — without the need for costly manual re-programming of the underlying model.

Quality Data –An Essential Element of Machine-based eBV Solutions

As with any computer-based model, the quality of the input data directly impacts the quality of the benefit predictions. For benefit verification, those input data sources include verified benefit information related to the drug's coverage status on numerous private and government plans, applicable copay amounts, diagnosis codes, required prior authorization and step therapy protocols, and more. To improve the cleanliness and integrity, input data are subjected to a series of rules that aim to reduce inconsistencies and "noise," while removing outlier data points from the governing data set. These steps, coupled with a consistent data governance process, ensure the most reliable predictions possible.

Keeping the rules current within these logic-based eBV systems is an arduous, expensive and error-prone process, and typically relies on the manufacturer to notify the eBV service provider when coverage discrepancies arise. Reprogramming updates and rule revisions can take up to three months. During this time, providers and patients may receive unreliable or outdated coverage information and thus experience delays in treatment or reimbursement. Moreover, this delay creates both frustration and workflow disruption for physicians.

This inherent shortcoming of the logic-based eBV systems becomes especially problematic when the entire eBV solution needs to be updated to capture annual rule revisions related to changing copay amounts, formulary tier status, prior authorization rules that may have been added when a generic alternative is introduced to the market, and more.

What the Future Holds

Going forward, a variety of ongoing advancements will help strengthen the AI-based eBV system's ability to accurately and reliably predict complex benefit-related outcomes. These advancements include Genetic Algorithms that are able to better identify which data features have the best predictive power, and efforts to improve data consistency and reduce data noise. These innovations promise to drive improvements in the speed and precision of the predicted outputs that these powerful machine learning eBV systems can provide.

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Learn More

Lash Group, the leader in patient support services and an AmerisourceBergen company, provides eBV solutions tailored to the goals of your product and the needs of your patients. In collaboration with a network of technology partners, Lash Group delivers a comprehensive set of solutions to address the evolving requirements of patient care. Start a conversation to learn more.

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