Drug Diversion Surveillance Software

Product Review

2023

A Rxpert Solutions White Paper

Foreword

Ten to fifteen percent of healthcare workers will misuse substances in their lifetime.

If you are reading this paper, it is likely you understand that drug diversion in a healthcare setting is a serious issue and requires monitoring. Ten to fifteen percent of healthcare workers will misuse substances in their lifetime. A healthcare professional (HCP) working while impaired presents a significant risk to patient safety. The primary victim is the patient. Those risks may include: being cared for by an impaired healthcare provider who is not at peak performance, having pain medications withheld, as well as being infected with a contaminated drug supply which can lead to lifelong illness or permanent harm.

In addition to the patient safety risk, there is also a significant risk to the HCP. Yes, it is wrong that they are working while impaired and/or diverting medications from their workplace. Yet we must remember that substance-use disorder is a disease, one that needs to be treated before it results in death for the HCP. Certainly, there are those HCPs who divert for financial reasons and pose no medical risk to their patients or themselves, but we have found that most diversion within a facility is for self-use, and occasionally to supply a close family member or friend who has a substance-use disorder.

Lastly, diversion is a risk to the facility itself. Healthcare facilities have an obligation to protect their patients and staff, and when they don't, it can lead to significant financial losses. This includes civil penalties, criminal penalties, staffing costs, medication/supply costs, the extensive labor costs required for a diversion event, and loss of reputation which can affect census.

Despite this, for many healthcare facilities drug diversion mitigation and monitoring are still considered an optional program. In 2019, BD published the results of a survey that included more than 650 hospital executives and healthcare providers. Of those surveyed, 85% expressed concern regarding diversion, but only 20% believed it to be a problem at their facility. We can infer from this that the 80% who did not believe it to be a problem at their facility most likely did not feel it important enough to have a diversion program. Typically, such facilities will not identify a problem until an HCP has reached a certain level of impairment while on the job. At this point, it becomes clear: diversion has been there all along, with significant safety risks for the patients as well as the HCP.

- Terri Vidals, Founder of Rxpert Solutions

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Introduction and important notes

This paper encapsulates a review of the drug diversion software products as of the 4th quarter of 2022. A previous review was published in 2019 and those results may be reviewed here* so the reader can see how things have changed in 3 years. Much time and effort was invested to provide a fair review. Rxpert Solutions has no conflict of interest with any of the vendors. We are a vendor-agnostic company that provides diversion mitigation and monitoring services. The goal of the comparison is to educate the community on the various choices. It is resource-intensive to review various vendors and the intent of this research is to give facilities a head start. You may also wish to use the takeaways from the comparison to prompt questions during a vendor demonstration.

Vendors, as well as clients, were interviewed. In most cases, interviews were conducted with clients independently of the vendors. In other words, they were not handpicked by the vendor. The clients were told they would remain confidential so they could feel free to express their satisfaction or dissatisfaction with the product.

The vendor-picked clients are noted on the table. There were two of them. A vendor-selected client should not automatically be ruled out as biased. In the case of Anigent Client 1, this was a person who was very involved in validation and software input so she knew the product inside and out. She knew the full extent of the features and how to use them. In this case, being more of an expert on the product and having a direct line to the developers gave her a different perspective.

In the case of LogicStream, this client maintained an openness to including someone from the vendor side on the call with them, even though they were offered a confidential call. It was clear from the interview that they were extremely satisfied with the product and the way it performed. Do not discount their comments as they were genuine and had no motivation other than to share how satisfied they are with the software.

* - 2019 Software comparison: https://www.rxpert.solutions/drug-diversion-software-comparison/

The value of drug diversion software

A drug diversion program is as crucial as any other high-profile patient safety initiative, such as falls or central line infections. All are to be considered "Never Events," which means we must actively work toward eliminating drug diversion. There are several ways we move toward that end goal; implementing a drug diversion software program is one such way - a valuable spoke in the wheel.

Effective Software

Just as each spoke is required to support the others, the same is true with a diversion program. It is not uncommon, however, for a facility to have software that is not yielding any suspected cases of diversion. This leaves one to ask, Is the software not doing its job, or is the person at the facility overseeing the data output not effectively using the software?

During client interviews, it became clear that in some cases where there was a failure to see results, the client themselves did not have a deep working knowledge of the software. Those that did have such knowledge were continuously looking for ways to add more pieces to the puzzle when looking at the big picture.

There were four main points mentioned in the first review, and they are still valid 3 years later:

01 The vendor may say their product can or does perform in a particular area; however, having the capability is different from having a proven track record.

02 The product is still in the development stage, which means the client will be working with it to get the product where it needs to be. (While perhaps not as much as 3 years ago, there is always development going on and client input valued).

03 Each of these drug diversion monitoring software programs requires feedback from the facilities to improve the analytics and move toward more accurate alerts.

04 Having one of these drug diversion software programs does not preclude the facility from having a designated person with oversight of the diversion program.

Current drug diversion software: client reviews

The current drug diversion surveillance software products on the market are:

Anigent *

BD HealthSight **

ControlCheck by BlueSight the Medication Intelligence Company ***

DetectRX *

Flowlytics by Invistics

HelioMetrics **

Imprivata Fairwarning ***

LogicStream *

Omnicell Analytics

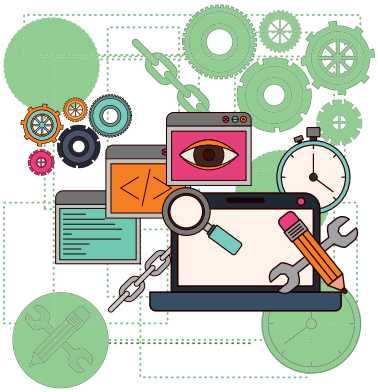
Protenus

RxAuditor Investigate by Medicist *

*new company not featured in last review

**vendor declined to participate

*** name change



In the following reviews, the client's responses will speak for themselves. However, the following considerations are relevant:

1. Consider the client's insights and suggestions

It is valuable to consider the responses of clients when asked if there was anything they would like to see or change in the software.

The same goes for the last row on the Client Review Table - other words from the client. The responses may give you an idea of questions you should be asking during a vendor demonstration. Ask the vendor what is on the roadmap. Their answers will tell you what is currently unavailable with their product.

2. Consider the client's particular needs

Second, it is possible for one client to be very happy with a software product, but another client is unhappy. How can this be? Intuitively, one may think if the product is good, then all clients should be happy with it. There are a few reasons this may not be the case:

- Some vendors monitor the data for you and tell you whom to do a deeper dive on. Other vendors do not, and leave that tracking and trending to the facility.

  There are pros and cons here. If a facility is short on resources or has inexperienced people in charge of monitoring the software, it may find itself content to trust the software vendor and dig into the HCPs which the vendor suggests. If you are a client with experience in diversion monitoring and are resource-light, it may be nice to have the software vendor narrow things down for you as long as you trust the software's logic and know it is looking at all the different variables you would consider.

  If you are considering a vendor who provides a managed service for you, you will want to ask if you will have access to the data in real time, so you can review anything you want at any time. To only have access to specific data the vendor determines to be important when the vendor delivers the information will restrict when and how the data can be used.

- Some vendors have a product that is data-heavy and it may overwhelm clients who are not ready for all of those data points. On the flip side, some vendors provide a product that is a bit more rudimentary and may be perfect for such clients, though it would seem insufficient for those who are ready for more data points.

- The facility's workflow can make a difference in product satisfaction. There are many things these software products can take into consideration, but if the workflow is not set up in such a way to capture the data or doesn't work with the software's logic, there will be frustration. A prime example of this is the pharmacy workflow as it relates to patient-specific medications. If a software product identifies administrations with no Automated Dispensing Machine (ADM) dispenses, on the

surface that seems like a great data point. However, if your facility sends a lot of patient-specific doses up to the floor and hands them off to the nurse, bypassing the ADM, there will be a significant number of alerts because all of those administrations will have no corresponding dispenses from the ADM. A vendor may or may not be able to turn off those alerts, and this would be an important question to ask. If they can turn off the alert, is it turned off for the drug - meaning no data involving that drug will be seen? This would mean no monitoring of any sort will be gathered for the medication.

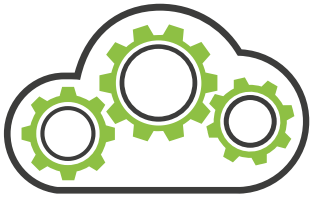
3. Be careful what you ask for

The above example of flagging administrations without a corresponding ADM dispense seems beneficial. With this data point, one could easily see if a HCP removed a medication on one patient and charted administration on a different patient - because this does happen. The more data points, the clearer the picture, right? Yes, it is a helpful data point - unless your facility sends a lot of patient-specific doses. How about being able to see non-controlled substance (non-CS) dispenses and administrations?

There are several non-CS medications that we should be keeping an eye on. Their pattern of use is one way we can identify a diversion concern, so of course we want to see all of that data. Or do we? Most likely your facility does not require a recorded waste (in full or partial) of those non-CS. Can the vendor monitor only the removal and administration and turn off the waste logic? If the waste logic has to stay on, every time a HCP should have wasted a partial or full vial of a non-CS, an alert will be fired. How often will that be? Do you want those potentially false alerts in your data? You will need to decide based on your facility's workflows and needs.

4. Test what the vendor claims

Just because the vendor says it *can* be done does not mean it can be done at your facility. Sometimes a vendor will say it can be done because they have the basis of the logic for it, but they don't actually have a client using that feature. Other times, they do have a client using the feature, however, your facility won't be able to make it work due to the process within the facility.



Take, for example, this question in the Vendor Table: Does the software cross reference the patient's location to the location of the med removal? Even if the vendor offers that feature, if your facility does not have a workflow that places a patient in an updated location when they go to surgery or radiology, then this feature will not be of benefit for your facility. If your operating room does not chart electronically, software monitoring for administrations in the OR will not benefit you and will only frustrate you with false alerts. Many vendors state they offer integration with infusion pumps. Be sure to ask them what information is required for that and determine if your facility has what is required to make that work.

5. Ask the vendor about the intended end-user

It's important to ask the vendor about the end-user of their software, and what their recommended workflow is. Some are intended to engage nursing fully and allow as many users as you desire to have access to the data. Others are based on a model that requires payment for each user, so the facility would want to limit the number of users. Is the software primarily designed to track suspected diversion or to identify practice issues and unreconciled (unaccounted for) controlled substances (CS)?

6. Customer service is important

Most clients stated they were happy with the customer service provided. A timely response is important as well as timely action, when action is required.
Every vendor will tell you they pride themselves on customer service, so speak to as many of their clients as possible to determine how attentive their service is. This is where networking is valuable; it will help you get the straight story from others.

7. Ask the vendors about their weighting of risk scores

This is an especially important question. What types of risks do they consider to be more indicative of diversion? For example, do they consider a return the same risk as a full dose waste? What customization is available for clients if the client feels more risk should be applied to certain types of alerts?

8. Consider client expertise

Ultimately the reason a facility invests in one of these products is to actively monitor for and identify drug diversion. The clients were asked how many suspected diversion cases have been identified with the software. One must be careful drawing conclusions from the answers. In addition to the performance of the software, success with a product is, to a large degree, dependent upon the clients' expertise with the software; in addition, an understanding of what diversion looks like in the data, and how robust the facility's investigation and interviewing process is are also key. When it comes to client expertise, if the client does not maximize the software's potential or truly understand how to interpret the data, they will miss potential diversion. If the client does not understand clinically what diversion looks like, they will not look in all the right places within the software or EMR. If the facility does not have a solid investigation and interviewing process, an auditor can put together a solid case that will fall apart once it is handed off.

9. Data validation is needed

Keep in mind that with any new product where data is imported and programming logic is required, data validation will be needed. This may be time-consuming at the beginning and the facility needs to be prepared for that. A facility will be looking for mapping errors and validating that the data is transferring correctly and that the logic is applied correctly. For example, if the software identifies if pre and post-pain assessments have been done, are CS that doesn't require a pain score included

in the logic? Are procedural areas where no pain scores are needed being included? Each time the software is updated and new logic is introduced by the vendor, validation will need to be done again. If a client does not take time to do the validation, results will be inaccurate and the software can't possibly be used to its fullest. Other important questions to ask are how does the software learn to identify diversion better? Does client feedback impact the logic? Does the vendor use feedback from all their clients to impact the logic, and will that logic be rolled out to all clients so you will get the benefit of every facility's diversion cases? Or, will your facility give feedback that will impact your facility only?

Additional factors

A couple of additional items came up while interviewing clients represented on the table, as well as those who were not formally interviewed but arose during conversations while networking:

1. Pyxis integrating with the various software vendors.

Several hospitals expressed difficulty getting the C2 Safe data to the point that it actually prevented them from utilizing the diversion software to its full capacity. In light of BD having its own diversion software, the idea surfaced that perhaps BD had chosen not to "play nice" with other diversion software. BD was offered a chance to comment and they did. A person at the director level stated this was not intentional on the part of BD and that the required data could be exported from Knowledge Portal to Excel and then filtered for what was needed. All transaction details are there and can be filtered for C2 Safe transactions. He suggested that if a facility was having trouble with this export, they reach out to their Pyxis project manager who would work with them to get it done.

2. Omnicell and their relationship to Bluesight (formerly known as KitCheck).

When Omnicell One launched, it partnered with Bluesight and offered its premium diversion solution as an embedded bundled offering. Over time, Omnicell encountered more and more customers who already had their own relationship with a premium diversion partner and also wanted Omnicell One. To give the customers the ability to remain with their current partner or to contract directly with their choice of partner, Omnicell decided to decouple their products but still offer ControlCheck as a premium option by going directly through BlueSight. Omnicell made the decision to go back to doing what they do best and that is inventory optimization through their analytics product Omnicell Inventory Optimization Service (formerly known as Omnicell One). Because Omnicell Essentials focuses on inventory optimization it does provide a lot of data surrounding medication usage. Through point of care at the cabinet level, a client can see EHR activity which shows a closed loop, meaning one can see that the medication has been dispensed and charted as given. This data can be accessed through OmniCenter. This goes part of the way in monitoring for diversion and would be considered the basics of diversion monitoring. Omnicell Essentials will not manage an investigation, allow the uploading of information, or allow other team members to view the secure data. For this reason, a more robust diversion monitoring software may be desired. For those currently using Omnicell One with Bluesight or Pandora Analytics, Omnicell will work with the clients through the transitions as these phase out.

VENDOR TABLE

Questions	Invistics Flowlytics	ControlCheck (formerly known as Bluesight)	Protenus	Imprivata FairWarning	Anigent	DetectRX	LogicStream	Medacist RxAuditor Investigate
Year of first implementation (roughly)	2017	2017	2018	2019	2019	2022	2020	1998, current version since 2019
Average facility IT manpower hours needed for implementation	40-80	<10	16 (vendor on-site at facility)	2-5	<40	8-16	<40	40-80
Average time to complete implementation	<17 weeks	6-10 weeks	4 weeks	6-8 weeks	6-8 weeks	8-12 weeks	6-8 weeks	customer dependent
Average training time included with implementation	4 hrs with pharmacy group, 33-66 hrs with others involved.	weekly calls, each client gets assigned an implementation specialist, enginerring lead, product lead, data validator, & account manager	weekly calls and ad hoc as needed	weekly calls, many on-line training sessions, certifcation program, and master training if desired.	Weekly calls and PRN until client comfortable	weekly calls for couple of months, then monthly or quarterly per customer request	Per customer request, technical and operational support	Support specialist assigned. 2-3 sessions & per customer request
Definition of implementation	Scope as defined in SOW		User interface customization. Validation of data followed by automating a secure daily transmission.	Completion of extracts, delivery, loading & appending data, and end-to-end QA as well as cusotmizing the application and workflows for the most successful experience, end user access and training	On-site visit to understand how the site works operationally, set up of IT security, configuration/build, & training	Establishing connection, data feeds, past data, SFTP setup, validating data, customization and training	Starting with facility IT engagement, ending with going live	All milestones met, trained and fully functional
Support offered after deployment	M-F 0830-1730 EST	24/7/365	24/7/365 online/email 7am-9pm EST phone	Assigned a diversion specialist who reviews all alerts generated and is available to provide their expertise as well as ad hoc investigation requests.	M-F business hours	24/7/365	Ongoing meetings and support M-F business hours	24/7/365, after hours 800 number support line
Stages of medication pathway monitored for diversion	Wholesaler to Reverse Distributor	Wholesaler to Reverse Distributor	vault to waste stream	CS vault to floor and back	ADM to patient/waste/return, waste assay capabilities	ADM to patient/waste/return (Vault logic in place, however not tested)	Wholesaler to waste	ADM to patient/waste/return
Electronic Medical Records (EHR) supported	All major	All major	All major	All	All major	All	All	All major
Automated Dispensing Machines (ADM) supported	All major	All major	All major	All major	All major	All	All major	All major
Type of analysis	Artificial Intelligence	Unsupervised Machine Learning	Artificial Intelligence	Artificial Intelligence	Intelligent Risk Scoring & Machine Learning	Artificial Intelligence	Clinical rule processing & machine learning	
Real time data feed available	☑	☑	☐ 1	☐	☑	☑	☑	☑
Data feed off archived data is standard (archive time varies, in all cases no more than 24 hrs)	☑	☑	☐	☐ 1	☐	☑	☑	☑
System for notification if EHR, ADM feed stops transferring	☑	☑	☑	☑	☑	☑	☑	☑
Ability to search for staff across multiple facilities (float staff)	☑	☐ 12	☑	☑	☑	☑	☑	☑
Software has current performance in all patient care area types including general nursing, perioperative, outpatient clinics, etc	☑	☑	☑	☑	☑	☐ 2	☐ 5	☑
Different alert logic applied to procedural areas versus medicine areas	☐ 6	☐	☐	☑	☑	☐	☑	☑

VENDOR TABLE

Questions	Invistics Flowlytics	ControlCheck (formerly known as Bluesight)	Protenus	Imprivata FairWarning	Anigent	DetectRX	LogicStream	Medacist RxAuditor Investigate
Software identifies administrations that have no removal associated with it	6	☑	☐	6	☑	☐	☑	☑
Reports available at the system level as well as individual facility level	☑	☑	☑	☑	☑	☐	☑	☑
Customizable System	☑	☑	☑	☑	☑	☑	☑	☑
Weighted Risk Scores	☑	11	☑	☑	☑	14	☑	☑
Capable of monitoring removals of other CNS depressants along with CS meds and factor into risk score	☐	☐	☑	☐	8	8	☑	☐
Capable of monitoring cancelled removal transaction of non-CS in conjunction w/ CS removals & factor into risk score	☑	☐	☑	☐	☐	☐	☐	☐
Integration with time/attendance offered	☑	☑	☑	☑	9	☑	13	☑
Integration with infusion pump systems	☑	6	☑	8	☑	13	☑	8
Capable or monitoring pain score anomalies	7	☑	☑	☑	10	13	☑	☐
Compares surgery types and patient parameters within a surgery.	6	☐	☐	☐	☑	☐	☐	☐
Cross references the patient's location to the location of the med removal	☐	☑	☑	☐	10	☑	☑	☑
Frequency of automated software/patching updates	every 8 weeks unless urgent	every 2-3 weeks	every 2 weeks	monthly	as needed	as needed	every 3 weeks	every 2 weeks
Ability to set up notifications for suspicious alerts versus need to check the dashboard daily	☑	☑	☑	3	☑	☑	☐	☐
Deployment includes back testing (confirming identification of past known diversion cases) if customer requests	☑	☑	☑	☑	☑	☑	☐	☑
User database from Active Directory - Single Sign On available	☑	☑	☑	☑	☑	☑	☑	☑
Cloud based	☑	☑	☑	☑	☑	☑	4	☐
Access from any PC (with appropriate security in place)	☑	☑	☑	☑	☑	☑	☑	☑
Length of backup storage	as BAA states, typically 2 years	indefinitely; generally 3-6 months	per customer's retention policy (up to 7 years)	per customer's retention policy; typically 2 years	as BAA states; typically 3 years	per customer's policy, no limits at this point	per customer's policy; typically 1 year	As long as client has an active contract in place, data goes back to start date of service
Automated backups	☑	☑	☑	☑	☑	☑	☑	☑
HIPAA Compliant	☑	☑	☑	☑	☑	☑	☑	☑

VENDOR TABLE

Questions	Invistics Flowlytics	ControlCheck (formerly known as Bluesight)	Protenus	Imprivata FairWarning	Anigent	DetectRX	LogicStream	Medacist RxAuditor Investigate
Product differentiator (according to vendor)	NIH grant used for extensive testing of AI capabilities. All facilities get the AI benefits of each other without sharing sensitive information.	Provide a lab sandbox for the customers so they can provide feedback on upcoming features. Focus on collaboration, diversion is not a pharmacy only issue and customers need a product that works for nursing as well.	The AI identifies and surfaces inappropriate behaviors that may otherwise go unnoticed as they happen. Monitoring includes the use of email notifications to end-users and managers to help improve policy education and practice. This type of behavior is then recorded in the AI so any continued bad practice can be addressed.	Have a certified solutions for every EHR and ADM. Have worked with EHR vendors to develop a script to get the data feed consistently. Full managed solution provider, meaning they review P&P, assist with education of employees regarding product and expectations, & Imprivata staff review all alerts and notify client if further review needed.	Developed by a diversion specialist pharmacist Incorporates onsite and/or 3rd party quantatative analysis (assay) of wasted medications Incorporates a Medication Administration & Analysis Program (MAAP) technology. Follows both the medication and employee Logic incorporates patient population numbers for peer to peer comparisons	Risk scores start out equal and the customer can adjust the weighting. Provides ability to monitor non-CS high risk meds. E.g. can monitor insulin administrations on patients who did not have a glucose reading recorded. Provides details that are associated with a risk score and all events within a 12 hr period before and after event User risk trending with a click of a button Can incorporate badge data if the facility provides it Intuitive software	Logic in place for groups of meds. E.g. if multiple meds are dispensed for a patient and all have delayed administration, a different alert will fire than if only the CS had a delayed admin. Approach to EHR data is different, they have the potential to capture all fields, even those not normally used by other software. Have created a workflow to optimize nursing participation rendering it not so Pharmacy heavy. Company has clinical knowledge as a result of their clinical process improvement offering and they translate that knowledge into diversion software for data reconciliation.	States they own the only US patent for drug diversion analytics 24 yrs of experience Insights go deeper than any competitor: 2000 clients in centralized data base covers 67% of US patient population monitors 3,000,000 clinicians

HealthSight BD and Heliometrics declined to participate

Notes:

1 - Customer receives list of concernining individuals at defined intervals so even though data coming in live or every 24 hrs, the customer does not see it as a real time feed.

2 - Immature in OR area

3 - All customers must purchase the full managed service meaning an Imprivata team member reviews all alerts and assigns an investigation and notify customer when something warrants further attention.

4 - Most on the cloud, customers do have option to store on premises. If on premises, backups are facility's responsibility

5 - Immature in Pharmacy, focus at this time inpatient setting

6 - Currently being piloted

7 - Monitor for pain score charting, but not anomalies in pain scores.

8 - On the road map

9 - Incorporates attendence, however does not use the clockin/out system

10 - Intentionally does not capture for several reasons

11 - AI is used to consider risks which means some weighting, but essentially equal.

12 - Software has ability, however, to search float pool all facilities within the system would need single sign on. None of their customers currently have that.

13 - Logic in place but remains to be piloted

14 - All equal and customer can adjust weighting

CLIENT REVIEW TABLE

Questions	Invistics Flowlytics Client #1	Invistics Flowlytics Client #2	ControlCheck (formerly known as Bluesight)	Protenus	Imprivata FairWarning	Anigent Client 1 *	Anigent Client 2	LogicStream *	Medacist RxAuditor Investigate	HealthSight BD
Size of facility	600 beds, multiple facilities	1000+ beds, surgery centers, multiple facilities	1200 beds, multiple facilities	300 beds, clinics	250 beds, multiple facilities	300 beds, clinics	250 beds, multiple facilities	900 beds, multiple facilities	600 beds	1800 beds, multiple facilities
Electronic Medical Record (EMR)	Epic	Epic	Epic	Epic	Epic	Epic	Epic	Epic	Epic	Cerner
Automated Dispensing Machine (ADM)	Pyxis	Pyxis	Pyxis	Omnicell	Pyxis	Pyxis	Pyxis	Pyxis	Pyxis 2.0	Pyxis
What was being done to monitor for diversion prior to software purchase?	facility produced tool	RxAuditor	RxAuditor	Omnicell reports	RxAuditor	facility produced tool, manual reports	facility produced tool, manual reports	RxAuditor	Manual process	facility produced tool & Pyxis proactive diversion report
Overall how satisfied are you with the product? * 1=unsatisfied 5=very satisfied	3	4	3.5	3.5	4	4.5	2	5	2.5	4
Would you purchase again?	Did renew, but always looking	Yes	probably not	probably	Yes	Yes	No	Yes	No	yes
Are there a lot of false postives on the transactional or trending level?	Accurate on the transactional level. On a trending level client does not find the data compelling. false positives with the HEAT score.	Not on a transactional level. Some on the trending level	Yes	On a transactional level, alerts are pretty accurate. On a trending level there are a lot of false positives.	No	Very low if fully utilizing the software including the waste assay module	Yes, both levels	No. Most false positives were the fault of EMR and issue at facility level, not software	Yes, on a transactional level. Can't reconcile drips for example and that creates a false alert.	No
Approximately how long was the learning curve (X work weeks)?	Client uses it daily all day. For a new user, there is a lot to take in and there is some clutter that can impede understanding.	A few months for a daily user to really learn and optimize all of the information and various ways to use the data.	A few weeks, pretty straighforward	Short curve but client admits there is a lot they don't know and does not use the software to its full capacity	3 months	Modules are straightforward. Amount of data can be overwhelming for those who don't know how to interpret the data	It's been over a year and still not comfortable	Not much. User friendly. Currently piloting iwth nursing and they have picked it up quickly.	Been using the software for 9 months and finally has a fairly good understanding. Software is not user friendly. Can serach it. but antiquated with the search terms "and" "or" so it may be the client has not maximized how to search. No good training resources.	Varies by learning curve but pretty easy to learn. BD will assist if needed
Was there an increase in diversion cases found after implementation?	No, but has initiated more investigations.	Yes	No	No, however more investigations	No, but takes less time to find them	Yes	No	Yes	Yes	No
Did you evaluate other solutions? If so, what was the reason you selected the one you did?	Yes. Flowlytics seemed ahead of the others in terms of development, pricing	unknown	unknown	Yes, already using Protenus for the privacy software and price was right. Functionality seemd comprable to other vendor reviewed	unknown	No	No	unknown	unknown	Yes, chose BD for finacial reasons
How would you rate the system response time?	Fast	Fast	So slow	Fast	Fast	Good	Varies, most of the time ok	Fast	Fine	Great
Has it saved you time in terms of monitoring?	Yes	Yes	None. Each manager spends 1-2 hrs/week tracking down undocumented meds. Diversion specialist spending hours looking for diversion with no results.	Yes, probably cuts time by about 70% while touching more data. More data, however, often means more time spent looking at things but this is meaningful time.	Yes, cut by 65%	Exponentially increases the effectivemenss with ability to monitor and reduce selection bias	replaced some manual reports but spend a lot of time validating data	Yes	Yes	Yes, cut by 50-75%
How are you alerted to possible diversion?	Various dashboards	Various dashboards	Actively review the data	Managed service = vendor identifies a certain number of cases on a weekly basis based on clients requested limits. These cases are separated into suspected diversion versus policy violations.	Managed service = vendor reaches out when there is a diversion concern. Client also has the ablity to initiate an investigation if they need to.	Review the data, a dashboard is being developed	Review the data in a couple different modules	Dashboard	Dashboard that divides users into 3 categories (high, medium and low risk)	Dashboard
Is there anything you would like to see or change in the software?	Speed at which new features are developed. More benefit from the pharmacy workflow module and an ability to redirect the risk score to someone else when an item removed from Safe is not administered to the patient. Need to be able to attribute a missing CS drip waste to another person, not the person who removed the drip Infusion wastes are still considered late wastes	Different logic surrounding alerts for procedural areas A better way to compare anesthesiologists - vendor states the logic is there however has not been rolled out to this client. Outlier Report identifies false postives for trending often, different weighted logic needed perhaps? Pharmacy module not as useful due to lack of a way to assign risk to staff other than the one who removed the med from the vault	Medication mapping is currently a manual process Dispenses with a return fire an alert since there was no administration Treats a missing administration, a return and a full dose waste all the same.	Currently number of shifts is not taken into consideration Add logic to recognize when a discrepancy is not a ture discrepancy because the RN never actaually remvoed the med. Give more risk weight to a RN giving more pain meds then a nurse giving a scheduled med.	Would like to review non-CS	No, conceptually it is well designed	Would like to have the MAPP risk score defined better. Would like to see reports that show who is dispensing more meds, accessing more patients, and if a nurse was the only one to remove a med. These may be included in the peer ot peer score but unclear if they are and would like to understand the score better.	Not really. They are flexible with optimization and make improvements based on client feedback.	Software logic does not differentiate between a LPN vs RN (LPN can't give IV meds so sould not be grouped with RNs) Does not reconcile drips Only choice is case open or case closed and when closed diversion or no diversion Would like access to a case to be driven by case rather than location Would like templates	Pharmacy assigns audits to nursing and would like a way to incorporate a deadline for completion A way to export a reconciliation report as a PDF Add a search field for users Ability to audit a nurse across all facilities. Can do this currently but only if the auditor has access to all facilities. can exclude certain meds from reconciliation but those still show up as alerts When investigating a user, there is no way to know if there is already an ongoing investigation of the person. Ability to export practice trends from the dashboard. Get CII Safe data incorporated into the monitoring

CLIENT REVIEW TABLE

Questions	Invistics Flowlytics Client #1	Invistics Flowlytics Client #2	ControlCheck (formerly known as Bluesight)	Protenus	Imprivata FairWarning	Anigent Client 1 *	Anigent Client 2	LogicStream *	Medacist RxAuditor Investigate	HealthSight BD
Would you recommend the product?	Yes	Yes	Yes, but with some caveats	Yes, based on the fact that all solutions are similiar as far as client is aware.	Yes	Yes	No	Yes	No	Yes
Customer service needs met?	Yes, in general	Yes	Used to be very responsive, but something has changed.	Excellent. regular meetings since implementation. Address issues as timely as possible.	Yes	Yes, amazing amount of responsiveness to accomidate people's expectations	Originally there was a struggle with communication but that is getting better	Yes	Yes	Yes
What was done post implementation to assure your success with product?	Frequent touch points with senior leadership if needed. Weekly calls which continue. User group with other clients.	unknown, but still meet regularly with customer service person	Struggles, client feels the vendor misrepresented the product and should have known that Pyxis would not play in their sandbox.	Assigned a service person Regular meetings, troubleshooting	Weekly meetings	Ongoing networking for site specific needs and builds, hands on looking at data to confirm the accuracy	Some one-on-one meetings with observations. Biweekly core team meetings to discuss current state and requests.	Regular meetings which continue as needed	Unsure	weekly meetings Assigned Post Upgrade Consultant
How many highly suspected or confirmed diversion cases where the software was the trigger for the investigation?	None since implementation. Software has played a supplimental role	9 in 2 years	2 in 7 months	3 in 3 years	4 in 1 year	None in the 6 months software was fully functioning	None, trending is not the current focus. Software is being used to find individual unaccounted for meds.	4 in 1 year	None in the 9 months she has been overseeing. The software has been useful for cleaning up practice issues.	none in 3 months live
What areas of medication pathway are included in the solution you have?	Wholesaler to Reverse Distributor	Wholesaler, vault, ADM to patient/waste/return	Wholesaler to waste, however WHL not working well and no CII Data because Pyxis won't send the data	S vault to floor and bac	CS vault to floor and back	ADM to patient/waste/return, waste assay	ADM to patient/waste/return, waste assay capabilities	ADM to patient/waste/return , CS compounding through IV room	ADM to patient/waste/return	ADM to patient/waste/return
Is the alert logic different in the procedural areas then it is in medicine areas?	No	No	No	Not using in the OR, but believes can customize the logic	No	Yes	Unsure	No	No, she believes it is the same	Not using in procedural areas
How well does the pharmacy module work	WHL works well. CII Safe to floor not valuable	WHL works well. CII Safe to floor not valuable	Not well	Well except for patient specific meds	N/A	N/A	N/A	N/A	N/A	N/A
Is the addition of new meds or ADMs seamless to set up?	new meds - some issues. new ADM - seamless	Yes	Med mapping is manual and difficult.	Yes	Yes, ADM	Yes	Have not added any	Yes	Have not added any	Easy, does require facility to to matching of new med products
Does the software incorporate ADM discrepancy monitoring logic to rule out false discrepancies?	Yes	Yes		No	Yes	No	No	No	Yes, but since only gets data monthly it is not very useful.	No
How well does the logic work for patient own meds delivered straight to the floor?	It only works if the med was loaded into an ADM and built in EHR to tie it to the patient.	It only works if the med was loaded into an ADM and built in EHR to tie it to the patient.	no logic, creates a lot of clutter as they all result in a variance.	no logic	no logic, client has very few patient specific and has remvoed those meds from vendor formulary.	It only works if the med was loaded into an ADM and built in EHR to tie it to the patient.	Not useful	Works well if item goes through the IV room for compounding then to the ADM.	no logic	It only works if the med was loaded into an ADM and built in EHR to tie it to the patient.
Other words from the client(s)	Diversion software programs are not going to tell you who is diverting, but it will tell you who to investigate. Software can ferrit out possible diversion as well as non-compliance which is important Every system is different so there will never be a turn key solution and any vendor that says it's turnkey is not realistic.	The software has a lot of data points which will not be optimized if the client does not really understand the software and how it works. Once you do understand there is a wealth of information. Can be used to identify poor practice as well as suspected diversion	Pyxis and Bluesight do not work well together The original design was great and easy to work with, but with the new upgrade the team is struggling/ Patient specific meds delivered straight to RN creates a variance and without CII Safe data this is even worse. Combo doses (where 2 different strenths of tablets are called for) show a variance Have identified several practice issues but a lot of noise and labor intensive. It does not compare at the unit level so a person may not show up as an outlier until they are an outlier at a hospital level.	Filters are based on hospital policies Has improved practice issues and discrepancy numbers Looks at units well, but does not track users over longer periods of time well. Responsive and fairly nimble	Support is fantastic Client has taught the vendor what the expectations are and the vendor does a good job identifying possible diversion User friendly way to keep track of findings and actions on a user.	Adaptation is difficult if the staff using the software does not understand what diversion looks like Good at monitoring anesthesia especially when incorporating the waste module Good emphasis on accuracy Labor intensive due to the large volume of information The company is not currently resourced well enough to meet all the customer's needs	Software has a lot of potential. In the current state it is a good tool to match Pyxis removals to documentation Once the client understands the peer to peer score criteria she will be more confident with the product Some errors found in validation which makes it harder for client to trust the data. Once those issues are fixed and the client is educated on how to interpret the scores, there may be more confidence.	Client has been very happy, nothing negative to say. User friendly, it is clear what the data is saying. Good relationship with the vendor. Also uses the vendor's drug shortage module and is satisfied with that.	Only gets the data monthly and the date varies. Client is working to correct some workflow issues that have been there all along but her predecessor did not address. Company is responsive to those needs. Good at basic reconciliation to match ADM removals to admin/waste/returns.	Currently meds will only be reconcilied if the order ID, patient ID, and med ID are the same. Upgrade will allow reconciliation by med strength. Really like how they did with training, virtually with superusers Most streamlined to implement of all BD products User names are masked No diversion detected, but several practice issues highlighted.

DetectRX was in the contract phase with their first customer at the time of this interview therefore no client interview performed

*Vendor selected client

Key Takeaways

Diversion surveillance software is an investment. In order to take a diversion monitoring program to a higher level, this investment is worth the cost. The software significantly increases the amount of information one has access to. Because one can see so much, a facility will most certainly discover that the following realities exist:

- Poor practice exists, perhaps to a larger extent than realized. In some cases, it will be individuals with poor practice, but in other cases, it will be unit-wide. Either way, these discoveries, if corrected, are opportunities to improve patient safety and that is always a good thing.
- In addition to finding poor practice, the software will guide you toward who may be diverting. Once a HCP has been identified as possibly diverting, a deeper dive into the data must be done.
- During this deeper dive, a legitimate reason for a particular risk score may be found indicating it is unlikely diversion is occurring. This is an important point: a facility would never want to take a risk score at face value and move forward assuming the HCP is diverting CS without investigating the details. These deeper dives can be labor intensive but are absolutely necessary.
- In order to do these deeper dives, a facility must understand what the data is telling them and how to use that data to investigate a HCP's activity further. This requires someone who has taken the time to learn the software well and understands what diversion looks like.

Diversion techniques vary and are evolving all the time. Once the software is purchased, make sure you have someone at the helm who can utilize it to its fullest whether this is someone at the facility, a vendor-provided managed service, or an outside expert who has been contracted to monitor.

Anyone that tells you all you need to do is turn on the software and you are done, is either not being honest with you, or has not yet understood what it will require. Facilities will need one or more persons to monitor, interpret and respond to the data the software presents. This person(s) will need to understand what diversion is, what it looks like, how to fully utilize the software, and how to conduct a thorough and accurate investigation.

Diversion surveillance software is just one spoke in the wheel when it comes to identifying possible diversion. There are certain types of diversion activities the software won't identify. A facility with a strong culture of safety, which includes self-reporting and colleagues speaking up with concerns of impairment or diversion, is important as well. The software will augment this culture. It will never replace a culture of safety.

About Rxpert Solutions

Rxpert Solutions is a leading provider of drug diversion mitigation and monitoring services, helping clients achieve their compliance and safety goals by mitigating the risks inherent with diversion of controlled substances. Allow us to partner with you in performing a risk assessment to find your vulnerabilities in controlled substance security, policies and procedures, workflows and education. If your facility has a third-party surveillance software solution, Rxpert Solutions can help you maximize your investment. We provide expert Drug Diversion Monitoring as a Service (DMaaS) through a comprehensive and consultative partnership specifically designed to assist healthcare facilities. To learn more about Rxpert Solutions and how we can help your facility, visit rxpert.solutions