Tom Knight and Invistics Corporation

Tom Knight was at his office desk in the early hours of a Monday morning. He reviewed and updated his schedule for the week. When that was done, Tom's mind returned to the thought of designing an effective sales process targeting hospitals in the United States. He wanted to know how much of a change that would introduce for his now twenty-year old company and what he needed to prioritize in order to be successful.

Tom was the Founder and CEO of Invistics Corporation, a company that made software for inventory management and analytics. In fact, the name Invistics stands for inventory visibility and analytics. Tom's path toward Invistics began at MIT where he earned a bachelor's degree in mechanical engineering and a combined master's degree in engineering and business administration. Tom's graduate studies occurred as part of MIT's Leaders for Manufacturing program, which has a focus on producing technically-excellent leaders for industry. MIT graduates like Tom learn to apply engineering-based problem solving to business problems.

Upon graduating from MIT, Tom joined Alcoa, a global industrial corporation in the business of aluminum extraction and manufacturing. Tom's work at Alcoa was in manufacturing strategy and supply chain management. He then continued his career as a manufacturing manager in the energy and automation division of another global industrial leader, Siemens.

It was at Siemens that Tom's idea for Invistics got its start. Tom was at a trade show presenting on his work of utilizing advanced analytics to affect performance improvements at manufacturing facilities. That presentation attracted significant interest, so Tom thought, "There can be a business here."

Invistics got started with the goal of helping manufacturing to have the right things at the right time through inventory management. The startup quickly found that this premise worked especially well in pharmaceutical manufacturing. The real breakthrough occurred when the company understood that software-based inventory management was particularly crucial, in fact indispensable, for pharmaceutical manufacturers of controlled substances. This is where tight control is a necessity and

so inventory management is a top priority bar none due to compliance requirements. This industry segment has been the main focus for Invistics throughout its twenty-year history.

In 2018, however, Invistics received a grant from the National Institutes of Health to apply the Invistics software in the healthcare setting. Specifically, NIH was interested in whether the Invistics machine learning algorithms could be trained to identify patterns and cases of drug diversion. Drug diversion is theft of drugs from healthcare facilities. A simple example of drug diversion would be hospital clinical staff documenting that two pills of an opioid pain relief medication were administered to a patient, but in actuality administering only one and keeping one for themselves.

Even though comprehensive and precise data on the scale of drug diversion in the United States is not available, there is indicative evidence that the problem is significant. For example, a study by Porter Research in 2017 suggested that 65% of healthcare workers believe that the majority of diversion goes undetected.[1] This is noteworthy because numerous investigations have found that roughly 10% of healthcare workers abuse controlled substances, a rate similar to that of the U.S. population as a whole.[2]

The drug diversion problem has multifaceted and grave ramifications. Theft of drugs obviously has very negative economic outcomes for hospitals. There is more of an economic incentive to divert higher-value medications, which are more expensive for hospitals to procure and replenish. But even more grave than the economic outcomes are the possible health, and as a result legal, outcomes. For example, consider the risks to patients in the care of healthcare workers who might be abusing substances.

Drug diversion also doesn't lend itself easily to solutions. It is common for hospitals to attempt to prevent diversion by strict chain of custody policies.[3] An example of such a policy is a requirement that two clinicians sign off on a dispersion of a particular medication. Hospitals also conduct historical reporting and seek and investigate anomalies. Such methods have drawbacks, whether it be increased red tape, slowness in detection, or even false positives. It also warrants mentioning that

[1] Knight, T., May, B., Tyson, D., McAuley, S., Letzkus, P., and Enright, S.M (2022), *Detecting drug diversion in health-system data using machine learning and advanced analytics,* AM J Health-Syst Pharm, Vol. 79, 16.
[2] Ibid.
[3] Ibid.

diverters tend to get better at diversion over time. There is a diversion arms race that ultimately is profoundly harmful to patients, hospitals, and society.

This opportunity for NIH and Invistics to work together stemmed from an insight that tracking controlled substances in manufacturing and hospital settings could be similar to each other and the Invistics software could be practically adapted from one application area to another. The NIH-funded study trained the Invistics software to detect various patterns of drug diversion. The study found that supervised machine learning when applied to consolidated data sets can indeed detect known cases faster (a mean of 160 days and a median of 74 days faster, with a range of 7-579 days faster) than existing detection methods.[4]

The successful conclusion of the study suggested to Tom that there was a real opportunity there for profound social and business impact. The study was conducted in real hospital settings on real examples of drug diversion, and the Invistics technology worked – what is more, it worked significantly better than present alternatives. Invistics seemed to have passed that bar of viability in this specific application and industry segment.

The question was, should Tom and Invistics enter the hospital segment to address drug diversion. And if so, how?

Questions for student discussion:

1. What questions would you ask if you were Tom in evaluating whether to enter this new market?
2. How would you assess the size of the potential market?
3. What would your hospital market segmentation look like?
    - What hospital market segment would you target first and why?
4. How do you think selling to hospitals is different from selling to manufacturers?
5. How would you design your sales process for hospitals?
    - How would you find out about and detail the process through which hospitals purchase medications, equipment, services, and technologies?

[4] Ibid.

- Who are the main decision makers in a hospital's purchase decision? Who would be the decision makers for the Invistics purchase? What are their key performance indicators?
- What kinds of sales professionals do you need in order to be successful?

RES.SUD-01 Substance Use Disorders Ventures Program

Spring 2026